Bioversity International

Catalogue of Conserved Coconut Germplasm

Bourdeix R, Batugal P, Oliver JT, George MLC, editors











COGENT

Bioversity International is an independent international scientific organization that seeks to improve the well-being of present and future generations of people by enhancing conservation and the deployment of agricultural biodiversity on farms and in forests. It is one of 15 centres supported by the Consultative Group on International Agricultural Research (CGIAR), an association of public and private members who support efforts to mobilize cutting-edge science to reduce hunger and poverty, improve human nutrition and health, and protect the environment. Bioversity has its headquarters in Maccarese, near Rome, Italy, with offices in more than 20 other countries worldwide. The organization operates through four programmes: Diversity for Livelihoods, Understanding and Managing Biodiversity, Global Partnerships, and Commodities for Livelihoods.

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COGENT, the International Coconut Genetic Resources Network founded by Bioversity International (then the International Plant Genetic Resources Institute, IPGRI) in 1992, is a global network of coconut-producing countries, aimed at improving the production and use of coconut and the conservation of its diversity.

As a network, COGENT synergizes the efforts of partners to strengthen coconut conservation and research programmes, and empower communities dependent on coconut for their livelihoods to adopt improved technologies and diversified production and marketing systems. We do this by bringing together crop scientists, social scientists, private sector stakeholders, enterprise and innovations specialists, and decision makers to develop models of best practice, guidelines and other knowledge that contribute to the effective conservation and use of coconut genetic resources. More details are available at www.cogentnetwork.org

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Bioversity International
Via dei Tre Denari, 472/a
00057 Maccarese
Rome, Italy

COGENT
Regional Office for Asia, the Pacific and Oceania
PO Box 236, UPM Post Office,
43400 Serdang, Selangor Darul Ehsan,
Serdang, Malaysia

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About the editors

Dr Roland Bourdeix
Senior Researcher
CIRAD (Centre international de recherche agronomique pour le développement)
CEFE (Centre for evolutionary and evolutive ecology)
CRIOBE (Centre de recherches insulaires et observatoire de l'environnement)

Campus CNRS / CEFE / 2ème étage / C - 1919
Route de Mende - 34293 Montpellier Cedex 5, France
Phone: +33 4 67 61 32 85
Fax : +33 4 67 41 21 38
Email: roland.bourdeix@cirad.fr

Dr Pons Batugal
Former COGENT Coordinator (1994- 2006)
Current position and address:
President, Farmers Community Development Foundation International (FCDF)
Block 5, Sacay Grand Villas, University of the Philippines at Los Baños
Campus, Los Baños, Laguna 4031 Philippines
Phone: +6349 536 6210
Email: pbatugal@gmail.com

M Jeffrey T. Oliver
Former COGENT communication officer
Current position and address:
Corporate communication officer
IITA, PMB 5320, Ibadan
Oyo State, Nigeria
Email: J.Oliver@cgiar.org

Dr Maria Luz George
Former COGENT Coordinator (2006-2009)
Current position and address:
Head, Project Management Unit CIMMYT Int.
Km. 45, Carretera Mexico-Veracruz
El Batan, Texcoco, Edo. de México
CP 56130 Mexico
Phone: +52(595) 9521900
Fax: +52(595) 9521983
Email: M.George@cgiar.org

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The photo credits are indicated by initials tagged on the pictures.

RB: Roland Bourdeix, JPL: Jean-Pierre Labouisse, JTO: Jeffrey T Oliver, PB: Pons Batugal

Contents

Foreword vi
Introduction vii
Coconut palm nomenclature 1
Catalogue structure and layout 4
Lists of Coconut germplasm 6
Germplasm descriptions according to country of origin 11
- Benin 11
  - West African Tall Ouidah (WAT06) 12
- Brazil 15
  - Brazilian Green Dwarf (BGD) in Brazil and Côte d'Ivoire 16
  - Brazilian Green Dwarf (BGD) in the Philippines 18
- Cambodia 21
  - Cambodia Tall Koh Rong (KAT10) 22
  - Cambodia Green Dwarf (KGD) 24
- Cameroon 27
  - Cameroon Kribi Tall (CKT) 28
  - Cameroon Red Dwarf (CRD) 30
  - Cameroon Red Dwarf (CRD) in India 32
- Comoro Islands 35
  - Comoro Moheli Tall (CMT) 36
- Côte d'Ivoire 39
  - West African Tall (WAT) in Côte d'Ivoire 40
  - West African Tall (WAT) in India 42
  - West African Tall Akabo (WAT03) 44
  - West African Tall Mensah (WAT04) 46
- Fiji 49
  - Niu Leka Dwarf (NLAD) 50
  - Rotuman Tall (RTMT) 52
- France (French Polynesia, Mayotte and New Caledonia) 55
  - New Caledonia Tall (NCT) 56
  - Lifou Tall (LFT) 58
  - Nu Fella Tall (NUFT) 60
  - Mayotte Tall (MYOT) 62
  - Nu Quawen Tall (NUQT) 64
  - Nu Wehung Tall (NWHT) 66

France (French Polynesia, Mayotte and New Caledonia) *continued*
Rangiroa Tall (RGT) ... 68
Tahitian Red Dwarf (TRD) ... 70
Tahitian Tall (TAT) ... 72
India ... 75
Andaman Giant Tall (AGT) in Côte d'Ivoire ... 76
Andaman Giant Tall (AGT) in India ... 78
Andaman Ordinary Tall (ADOT) in Côte d'Ivoire ... 80
Andaman Ordinary Tall (ADOT) in India ... 82
Ayiramkachi Tall (AYRT) ... 84
Chowghat Green Dwarf (CGD) ... 86
Chowghat Orange Dwarf (COD) ... 88
Gangabondam Green Dwarf (GBGD) ... 90
Indian West Coast Tall (WCT) ... 92
Indian West Coast Tall Spicata (WCT01) ... 94
Kappadam Tall (KPDT) ... 96
Laccadive Micro Tall (LMT) in Côte d'Ivoire ... 98
Laccadive Micro Tall (LMT) in India ... 100
Laccadive Ordinary Tall (LCT) in Côte d'Ivoire ... 102
Laccadive Ordinary Tall (LCT) in India ... 104
Nadora Tall (NDRT) ... 106
Rangoon Kobbari Tall (RKBT) ... 108
Sakhi Gopal Tall (SKGT02) ... 110
Tiptur Tall (TPT) ... 112
Indonesia ... 115
Borneo Tall (BONT) ... 116
Java Tall (JVT) ... 118
Kinabuhutan Tall (KNT) ... 120
Mamuaya Tall (MAMT) ... 122
Mapanget Tall (MPT) ... 124
Mapanget Tall-2 (MPT02) ... 126
Mapanget Tall-10 (MPT10) ... 128
Mapanget-Tall 99 (MPT99) ... 130
Marinsow Tall (MWT) ... 132
Palu Tall (PUT) ... 134
Pandu Tall (PDT) ... 136
Pungkol Tall (PGLT) ... 138
Raja Brown Dwarf Ternate (RBD01) ... 140
Santongbolang Tall (SNTT) ... 142

Sea Tall (SET) 144
Tenga Tall (TGT) 146
Malaysia 149
Malayan Green Dwarf (MGD) 150
Malayan Red Dwarf (MRD) 152
Malayan Straits Settlement Apricot Tall (SSAT) 154
Malayan Straight Settlement Green Tall (SSGT) 156
Malayan Tall 3 Heads (MLT36) 158
Malayan Yellow Dwarf (MYD) 160
Marshall Islands 163
Marshall Islands Green Dwarf (MIGD) 164
Mozambique 167
Mozambique tall (MZT) 168
Nigeria 171
Nigerian Tall (NIT) 172
Panama 175
Panama Tall (PNT) 176
Panama Tall Aguadulce (PNT01) 178
Panama Tall Monagre (PNT02) 180
Papua New Guinea 183
Karkar Tall (KKT) 184
Madang Brown Dwarf (MBD) in Côte d'Ivoire 186
Madang Brown Dwarf (MBD) in Papua New Guinea and Vanuatu 188
Markham Valley Tall (MVT) in Côte d'Ivoire 190
Markham Valley Tall (MVT) in India 192
Philippines 195
Aguinaldo Tall (AGDT) 196
Antique Tall Mapatag (ANTT01) 198
Bago Oshiro Tall (BAOT) 200
Baguer Green Dwarf (BAGD) 202
Ballesteros Tall (BALT01 and BALT02) 204
Bataan Tall (BAAT01, BAAT02, BAAT03) 206
Baybay Tall (BAYT) in Côte d'Ivoire 210
Baybay Tall (BAYT) in the Philippines 212
Catigan Green Dwarf (CATD) 214
Kinabalan Green Dwarf (KIND) 216
Philippines Lono Tall (PLNT) 218
Philippines Ordinary Tall (PHOT) 220
Pilipog Green Dwarf (PILD) in Côte d'Ivoire 222

Philippines *continued*
Pilipog Green Dwarf (PILD) in the Philippines 224
San Ramon Tall (SNRT) 226
Tacunan Green Dwarf (TACD) 228
Tagnanan Tall (TAGT) 230
Samoa 233
Samoan Tall Spicata (SMOT03) 234
Samoan Yellow Dwarf (SYD) 236
Seychelles 239
Seychelles Tall (SCT) 240
Solomon Islands 243
Rennell Island Tall (RIT) 244
Solomon Island Tall (SIT) 246
Sri Lanka 249
King Coconut (RTB) 250
Sri Lanka Green Dwarf (PGD) 252
Sri Lanka Tall (SLT) 254
Sri Lanka Tall Ambakelle (SLT02) 256
Surinam 259
Surinam Brown Dwarf (SUBD) 260
Tanzania 263
East African Tall (EAT) 264
East African Tall Zanzibar (EAT33) 266
Pemba Red Dwarf Tanga (PRD01) 268
Thailand 271
Aromatic Green Dwarf (AROD) 272
Thailand Green Dwarf (THD) 274
Thailand Tall Sawi (THT01) 276
Tonga 279
Niu Kafa Tall Tonga (NKF03) 280
Tonga Tall (TONT) 282
Trinidad and Tobago 285
Saint Vincent Tall (STVT) 286
Vanuatu 289
Vanuatu Red Dwarf (VRD) 290
Vanuatu Tall (VTT) 292

Vietnam 295
Cochin China Tall (CCNT) 296
Annexes 299
Annex 1. List of Coconut germplasm registered in the Coconut Genetic Resources Database 301
a. List of Coconut germplasm registered in the Coconut Genetic Resources Database ordered by alphabetic order of international cultivar names 301
b. List of Coconut germplasm registered in the Coconut Genetic Resources Database ordered by country of origin 328
c. List of Coconut germplasm registered in the Coconut Genetic Resources Database ordered by country of conservation 357
Annex 2. Guidelines for producing coconut pictures 387

Foreword

Since its establishment in 1992, the International Coconut Genetic Resources Network (COGENT) has made tremendous progress in conserving the diversity of coconuts, both *ex situ* in formal collections and *in situ* on farms, and in promoting the use of this diversity by resource-poor coconut farmers and their communities around the world. The present publication, which is a joint initiative of COGENT, Bioversity International and the *Centre de coopération internationale en recherche agronomique pour le développement* (CIRAD) represents the most ambitious attempt so far to document and describe this diversity in a form accessible to a wide range of users. The Catalogue of Conserved Coconut Germplasm provides comprehensive information on 116 accessions conserved in the collections of 27 coconut-producing countries. The aim of the publication is to provide coconut breeders and other researchers, as well as students and policy-makers in the research-and-development community, with a better appreciation of the available genetic resources of a crop that is of special importance to resource-poor farmers.

Coconuts are overwhelmingly grown by smallholders cultivating less than four ha of land, often in coastal communities or other vulnerable situations. Diverse germplasm provides the raw material both for crop breeding to enhance productivity in these difficult environments, and for attempts to diversify the use of coconuts, from conventional copra production into a range of higher-value products that can help to lift coconut producers and their communities out of poverty. Most research-and-development organizations in coconut-producing countries have very limited access to genetic diversity nationally and very little information on the diversity that may be available elsewhere. The germplasm exchange system established by COGENT and the underpinning information system, of which this publication forms a part, should greatly improve their access to diversity and help them to provide farmers with a greater choice of varieties to meet their evolving needs.

The Catalogue provides a wealth of information, both as text and illustrations. The descriptive material will help users to identify varieties they already hold, while the information on evaluation and uses will help them to select new materials to suit various purposes, whether as promising parents for breeding programmes or for immediate use at the farm and community level. Both scientific evaluations relating to variables such as pest and disease responses and yield are provided, as well as information on more traditional uses and cultural aspects.

The whole-hearted commitment of numerous curators, breeders and other research staff of national coconut programmes of COGENT member-countries who prepared the data and pictures used in this publication is gratefully acknowledged. The collaboration of CIRAD was also vital to the success of this project. Further, we are grateful to the Asian Development Bank and the International Fund for Agricultural Development for supporting the projects that generated the data and illustrations on which the catalogue is based, as well as the publication process itself.

Richard Markham
Director (2003-2008)
Commodities for Livelihoods Programme
Bioversity International

Introduction

Although coconut is known worldwide as the symbol of tropical beaches, little is commonly known about this palm and its products. Coconut genetic diversity is comprehensively and safely conserved, and remains underutilized by most stakeholders from both tropical and non-tropical countries. The situation is worst in the northern hemisphere where over 90% of the people who see a picture of a coconut complete with husk, may not even recognize it as a coconut!

Coconut genetic diversity is needed to ensure sustainable coconut production. This diversity is vital for breeding improved varieties and hybrids for higher-yields and for other traits preferred by smallholder producers and adapted to biotic and abiotic stresses in rainfed growing environments. Unfortunately, most of the 38 member-countries of the International Coconut Genetic Resources Network (COGENT) do not have, individually, a wide range of coconut genetic diversity. Some countries implement breeding programmes using a limited number of varieties which may not be suitable or adequate enough to effectively achieve their breeding objectives. This is partly because many of them are not aware of the available germplasm in other countries which they could use to provide a wider genetic base in their breeding programmes.

Illustrated descriptions of coconut varieties were initially provided by a few authors such as Pruhdhomme (1906) and Liyanage (1958). In their paper, full pages of drawings or photographs that show various split coconut fruits of different shape and size are found. In some documents linked to surveys or characterization of coconut germplasm, there are also a few pictures and drawings describing various coconut varieties (Whitehead 1966; Le saint et al. 1983; Sangare et al. 1984; Foale 1987; N'Cho et al. 1988). However, such publications are limited in number.

The idea of making an illustrated coconut germplasm catalogue as a printed book was first presented in 1993 to the COGENT Steering Committee meeting held in Montpellier, France. An unpublished draft containing the full description of a dozen of coconut varieties was presented by R. Bourdeix from CIRAD.

The first catalogue of Coconut germplasm, as printed book, was published in India under the title "Coconut descriptors" (Ratnambal et al. 1995). In this publication, each variety is described in four full pages, of which, two are colour plates and the other two pages consist of a table giving values for most of the standardized descriptors (IBPGR 1992). However, this book, as indicated by its name, is mainly aimed at scientists. There is no description of the varieties in their ethnobotanic, economic or historic contexts. Thus, the distribution of this book is very limited and does not reach general public. The second volume was published in 2001 only as a CD-Rom to reduce publication costs.

Since 2000, the COGENT network, Bioversity and CIRAD have been collaborating to develop and publish this catalogue of coconut germplasm. From the beginning, the work has aimed to produce a high quality catalogue. The objective of this effort is not only to show as many referenced varieties as possible, but also to provide as much available information (pictures and text) as possible, in order to help stakeholders to identify and select coconut varieties for their various uses. The catalogue presents comprehensive and sound scientific content aiming at increasing awareness of the coconut and its diversity. The information in the catalogue has been presented in a popular manner so that it is attractive and understandable enough to the general public, while retaining its technical rigour to be appreciated by scientists, researchers and students, thereby appealing to a much wider spectrum of readers.

The editors

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Coconut palm nomenclature

Baudouin L, Bourdeix R, Harries H, George MLC

Efforts to standardize coconut cultivar names have been undertaken for decades. The completion of this chapter has benefited from a separate work aiming to publish an international list of Coconut cultivars names by the above mentioned authors.

The International Workshop on Coconut Genetic Resources, held in Cipanas (Indonesia) in October 1991 recommended setting up the International Coconut Genetic Resources Network (presently known as COGENT) and to network information and documentation. This was implemented during a meeting held in Montpellier (France) in May 1992, where representatives from national collections clarified the status of existing collections and outlined what would become the Coconut Genetic Resources Database (CGRD). They compiled a list of descriptors and designed standardized methods of observation.

Once the first version of the CGRD was released, Brazil, China, Cook Islands, India, Indonesia, Côte d'Ivoire, Jamaica, Mexico, Papua New Guinea, the Philippines, Sri Lanka, Thailand, Tonga, Tuvalu, Vanuatu, Vietnam and Western Samoa were visited by CIRAD experts in the framework of the CGRD project (Bourdeix 1996; 1997a; 1997b; 1998; Bourdeix et al. 1999; Baudouin 2002). National researchers were trained in gathering and inputting data into the database. These visits offered the experts many opportunities to interact with national researchers about the names of their coconut cultivars. Many new names were recorded and some had to be revised. All modifications were made under the direct authority of the researchers in charge of their national coconut research programmes. Surveys made in the Philippines and in Brazil added further names. The CGRD now contains passport and characterization data of 1416 conserved accessions in 22 countries worldwide. It is the major source for the drafting of the present international coconut cultivars name list.

The national researchers in charge of the coconut genetic resources programme are fully responsible for naming the coconut cultivars from their country. However, they are prompted to follow a number of guidelines in order to ensure proper standardization. An international name must not duplicate any previously recorded name (including synonym names).

The international name of a coconut cultivar is made of two parts: a cultivar name and an abbreviation. Specific populations or origins or variants within a cultivar can be referred to using a population name after the cultivar name and by a number after the abbreviation. To avoid confusion, it is highly desirable to use standardized naming procedure. The present document explains how a coconut cultivar is named.

A cultivar name should consist of two parts. It should not exceed 30 characters and is written in English (except possibly for the first part).

The first part of the name includes one of these:

- a vernacular cultivar name,
- a place or region or country of origin,
- a prominent biological trait of the cultivar,
- an ethnological trait linked to the history of the cultivar,
- a colour, if the cultivar is homogeneous for fruit colour (autogamous dwarfs), or
- a combination of those.

The name of the country of origin (or the corresponding adjective) is optional but may be the only element of part one. If not, the other elements are placed after the country. Avoid unnecessary words such as "local", "ordinary" or "coconut". Examples are given below:

- Agta Tall: Agta is a vernacular name describing a prominent trait (blackish necrotic pericarp),
- Markham Valley Tall: Markham Valley is a place name,

- Indian West Coast Tall: was renamed from "West Coast Tall". "Indian" is desirable here because "West Coast" alone can refer to many places in the world,
- Andaman Giant Tall: combination of a place (Andaman) and a prominent trait,
- Malayan Yellow Dwarf: combination of a place (country) and a colour,
- Raja Brown Dwarf, combination of an ethnological trait and a colour.

The international abbreviation of a cultivar consists in three to four letters, eventually followed by two digits. An abbreviation must not duplicate any previously recorded abbreviation (preferably including synonym abbreviation). The first part of the abbreviation is a mnemonic of the full name, as shown in the following examples:

- For the West African Tall, the abbreviation is WAT,
- For the Bali Yellow Dwarf, BAYD was preferred to the previous AYD, which was a poor mnemonic (The abbreviation BYD already designates Brazilian Yellow Dwarf).

For self-pollinating varieties: a letter (G, Y, R, O or B) codes the colour of the fruit. In the case of green fruits, the letter G can be omitted.

- MYD for Malayan Yellow Dwarf,
- CATD (without G) for Catigan Green Dwarf.

The abbreviation also indicates the type, by using the letters T or D when applicable. For instance:

- PRD for Pemba Red Dwarf (autogamous dwarf with homogeneous colour),
- WAT for West African Tall (allogamous tall with various colours within the cultivar),
- RTB for King Coconut (synonym Rath Thembili, semi tall).

The idea of populations within a cultivar has been developed in order to be accurate in specifying the origin of germplasm, while avoiding creating too many unnecessary cultivar names. This population name is added after the cultivar name; and two digit numbers are added to the abbreviation. Examples are given below, with population names in italics:

- Cotabato Tall *Ionas* (COTT01) is one of several populations collected near Cotabato in the Philippines during a "Course grid strategy" survey,
- East African Tall *Kenya* (EAT32): corresponds to the former Kenya Tall conserved in India,
- Malayan Yellow Dwarf *Jamaica* (MYD03) is more heterogeneous than the usual MYD. This population has been maintained for a long period outside of country of origin and it has diverged from the original population through genetic drift, selection or unwanted pollen mixture,
- Panama Tall *Aguadulce* (PNT01) is phenotypically close to the typical Panama Tall (PNT) but is introgressed with a small proportion of genes from the Atlantic coast coconut palms,
- Sri Lanka Tall *Ambakelle* (SLT02) is a selected population of the Sri Lanka Tall (SLT),
- Maitum Tall *Spicata* designates some individual palms that have special characteristics of the inflorescence, belonging to the Maitum tall cultivar.

Use of the international cultivar names in scientific publications is strongly recommended. Whilst there may be good reasons to use another name, it is a good practice to include a table or a list establishing the link between the alternative names and the international names.

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Catalogue structure and layout

Bourdeix R, Batugal P

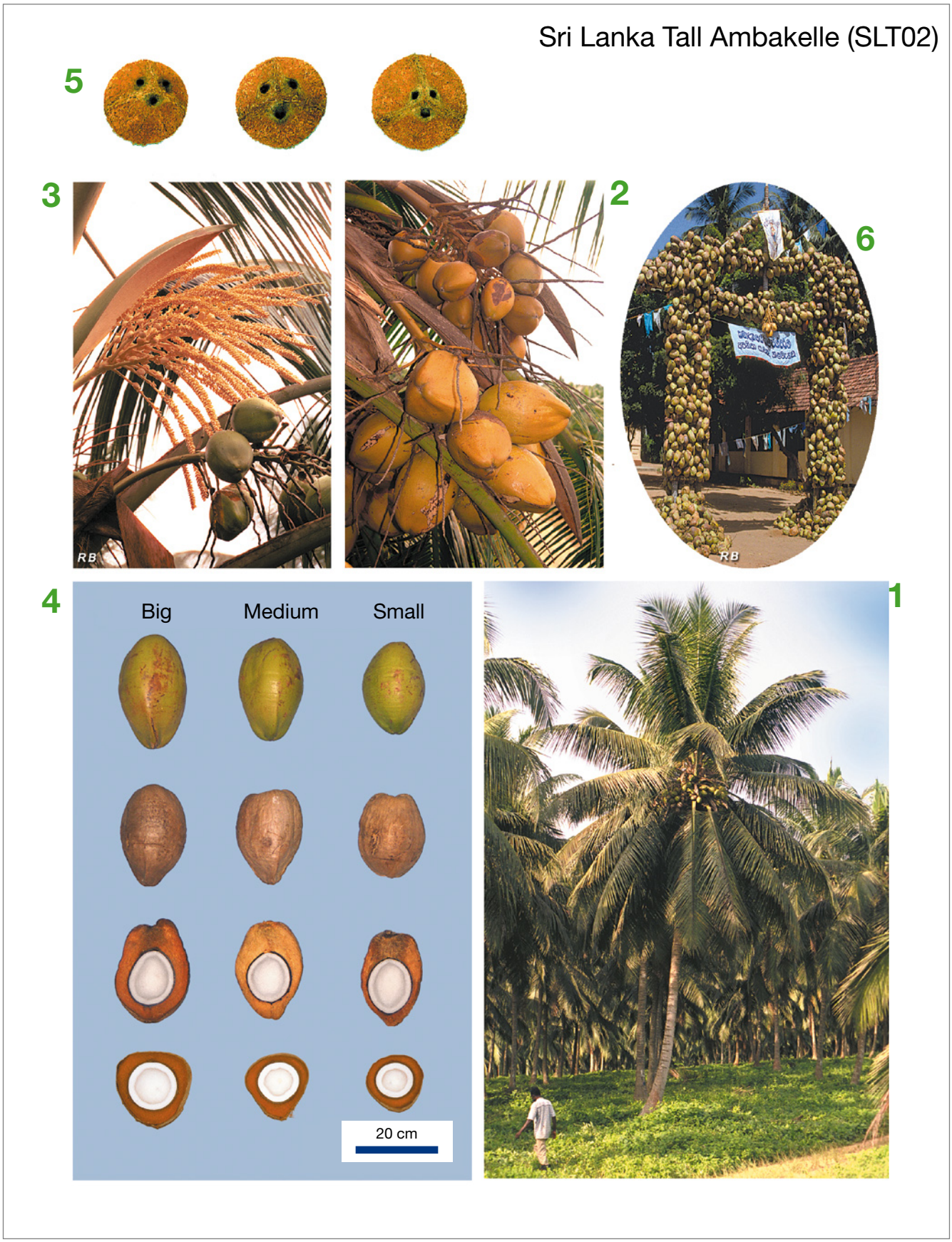
In most cases, each coconut cultivar or population is described in a one-page picture plate and a one-page text. The textual description of each accession contains the following information: international name and abbreviation; authors; conservation sites; history; morphological description and other traits; yield and production; other topics such as susceptibility to pests and diseases, uses in breeding, if any; and a list of references for further information about the accession.

The international name and abbreviation of the variety are printed at the top right of the picture plate. The abbreviated names of the photographer, when available, appear in white letters at bottom left side of each picture. A list of photographer's names is included on the acknowledgements page.

Figure 1 presents the general pattern of the picture plates. Each plate presents six photographs of at least three good-looking and true-to-type coconut palms.

- *Photo 1*: ***in situ*** **whole coconut palm** (best 10 to 12-years old) showing the whole stem and the top of the leaves bearing fruit, preferably also showing workers, farmers or researchers.
- *Photo 2*: a picture of ***in situ*** **fruit bunches**- a single bunch before all the fruits turn completely brown-grey. When possible, there is one mature bunch and one younger bunch on the same image, as young bunches may have traits that are useful for varietal identification.
- *Photo 3*: a picture of ***in situ*** **fully opened inflorescence**, preferably with one-third to half of the male flowers already fallen, and with a representative number of female flowers.
- *Photo 4*: a composite picture showing **twelve fruits**: three young fruits (9-10 months old), three fully mature fruits with crumpled brown-grey epidermis, three nuts split longitudinally and three nuts split equatorially. For each stage, a big, a medium and a small fruit is presented in order to give an idea of both genetic and environmental variation. The three immature fruits are also chosen for their different colours if available, especially for the Talls.
- *Photo 5*: a picture of **three husked nuts** located at the top left of the page. Inclusion of such a picture was mainly because most people from the Northern hemisphere would recognize coconuts without their husk. In addition, there is genetic variation in the size, the shape and the position of the 3 coconut "eyes", although this is not included in the Coconut Standard Descriptors. Small, Medium and Big coconuts are presented from left to right.
- *Photo 6*: any **additional illustration of interest** (photo, map, figure or drawing) related to the coconut variety, such as a special trait not visible in other pictures (e.g. pink colour inside the husk, detail of inflorescence, and aspect of the young palm) or any special use or ethnobotanical information about the variety.

Figure 1. Basic format of the plates.



List of Coconut germplasm

Baudouin L, Hamelin C, Bourdeix R

This book describes part of the coconut germplasm conserved by COGENT member countries in their national and international collections. A list of the germplasm described in this book is provided below. This list mainly comes from the list of accessions registered in the Coconut Genetic Resources Database (CGRD) (Hamelin et al. 2006). Its completion has benefited from a separate work aiming to publish an international list of Coconut cultivars names (Baudouin L. et al., *in preparation*). The 121 cultivars and populations described in this book are identified by a page number in the last column of table 1.

In annexe 1 to this book, more complete lists of germplasm conserved in COGENT countries are presented. Compared to the accessions recorded in the CGRD, less than ten accessions have been added to these lists, mainly concerning populations of Brazilian Tall and the Mayotte Tall. The accessions conserved at the Bone-Bone research station in Indonesia have been removed from this list, because these accessions were lost without being duplicated.

When compared to the data in the CGRD, some names have also been modified, such as populations originating from Bangladesh (modifications made by the researchers from this country); a few dwarf varieties have also had their names changed: for instance the cultivar "Ghana Yellow Dwarf" was renamed as a population of Malayan Yellow Dwarf, as both historical and molecular data confirms its Malayan origin. Duplicates accession within the same country have been removed from these lists. For instance, in Côte d'Ivoire international genebank, three accessions of Malayan Yellow Dwarf are registered in the CGRD Database. Only one of them was kept in these lists.

The lists given in annex 1 contain 735 populations, originating from 42 countries and conserved in 24 countries. At the population level, 74% of the 735 populations are conserved through a unique accession worldwide; 15% are duplicated (2 accessions), 4% are conserved through 3 accessions worldwide and the remaining 8% by 4 accessions or more. Only four populations are conserved in more than ten countries: Cameroon Red Dwarf, Rennell Island Tall, Malayan Red Dwarf and Malayan Yellow Dwarf.

They are 360 cultivars; most of which (81%) are represented by a unique population. The cultivars with the highest number of populations are the Sri Lanka Tall (49 populations), the Bangladesh Tall (38) and the Malayan Tall (36). Of the 360 cultivars, 46% are conserved worldwide by a unique accession. Only 19 cultivars are conserved worldwide by more than 10 accessions; but their conservation patterns are quite variable: for instance, the cultivar Bangladesh Tall comprises 39 different populations, all conserved only in Bangladesh. The cultivar Malayan Yellow Dwarf counts only 5 different populations but it is conserved in 18 different countries.

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Hamelin C, Bourdeix R, Baudouin L. 2005. The international coconut genetic resources database. In: Batugal P, Ramanatha Rao V Oliver J, editors. Coconut Genetic Resources. International Plant Genetic Resources Institute – Regional Office for Asia, the Pacific and Oceania (IPGRI-APO), Serdang, Selangor DE, Malaysia. pp. 427-438.

Table 1. List of cultivars and population described in this book, ordered by country of origin.

Country of origin	International cultivar name	Population within the cultivar	International abbreviation	Synonyms and other names	Page
Benin	West African Tall	Ouidah	WAT06	Grand Ouest Africain Ouidah, GOA6	12
Brazil	Brazilian Green Dwarf in Brazil and Côte d'Ivoire		BGD	Anao verde do Brasil, Anao verde de Jiqui, AVEJ	16
	Brazilian Green Dwarf in the Philippines		BGD	Anao verde do Brasil, Anao verde de Jiqui, AVEJ	18
Cambodia	Cambodia Tall	Koh Rong	KAT10	Grand Cambodge Koh Rong, GCB10, KAT	22
	Cambodian Green Dwarf		KGD	Nain Vert Cambodge Kolke, NVC, CGD	24
Cameroon	Cameroon Kribi Tall		CKT	Grand Cameroun Kribi, GCA	28
	Cameroon Red Dwarf in Côte d'Ivoire		CRD	Nain Rouge Cameroun, NRC, COD	30
	Cameroon Red Dwarf in India		CRD	Nain Rouge Cameroun, NRC, COD	32
Comoros	Comoro Moheli Tall		CMT	Grand Comores Moheli, GCO, COT	36
Côte d'Ivoire	West African Tall in Côte d'Ivoire		WAT	Grand Ouest Africain	40
	West African Tall in India		WAT	Grand Ouest Africain	42
	West African Tall	Akabo	WAT03	Grand Ouest Africain Akabo, GOA3, WAT3	44
	West African Tall	Mensah	WAT04	Grand Ouest Africain Mensah, GOA4, WAT4	46
Fiji	Niu Leka Dwarf		NLAD	Nain Niu Leka, NNL, NLD	50
	Rotuman Tall		RTMT	Grand Rotuma, GRT, RTT	52
France French Polynesia	Rangiroa Tall		RGT	Grand Polynésie Rangiroa, GPY2, PYT2	68
	Tahitian Red Dwarf		TRD	Nain Rouge Tahiti, NRY, RYT	70
	Tahitian Tall		TAT	Grand Polynésie Tahiti, GPY1, PYT1	72
France Mayottte	Mayotte Tall		MYOT		62
France	Lifou Tall		LFT		58
New Caledonia	New Caledonia Tall		NCT	Grand Nouvelle Caledonie, GNC, Grand Ouvéa	56
	Nu Fella Tall		NUFT	Nu Fella, NUF	60
	Nu Quawen Tall		NUQT	Nu Quawen, NUQ	64
	Nu Wehung Tall		NWHT	Nu Wehung, NWH	66
India	Andaman Giant Tall in Côte d'Ivoire		AGT	Andaman Giant, AG	76
	Andaman Giant Tall in India		AGT	Andaman Giant, AG	78

Country of origin	International cultivar name	Population within the cultivar	International abbreviation	Synonyms and other names	Page
India	Andaman Ordinary Tall in Côte d'Ivoire		ADOT	Andaman Ordinary, AO, ADO	80
	Andaman Ordinary Tall in India		ADOT	Andaman Ordinary, AO, ADO	82
	Ayiramkachi Tall		AYRT	AYK	82
	Chowghat Green Dwarf		CGD		86
	Chowghat Orange Dwarf		COD		88
	Gangabondam Green Dwarf		GBGD	Gangabondam, GB	90
	Indian West Coast Tall		WCT	INDIAN TALL	92
	Indian West Coast Tall	Spicata	WCT01	Spicata, SPI	94
	Kappadam Tall		KPDT	Kappadam, KAP	96
	Laccadive Micro Tall in Côte d'Ivoire		LMT	Grand Laccadive Micro, GND7, Lakshadweep Micro	98
	Laccadive Micro Tall in India		LMT	Grand Laccadive Micro, GND7, Lakshadweep Micro	100
	Laccadive Ordinary Tall in Côte d'Ivoire		LCT	Grand Laccadive Ordinaire, GND8, Lakshadweep Ordinary	102
	Laccadive Ordinary Tall in India		LCT	Grand Laccadive Ordinaire, GND8, Lakshadweep Ordinary	104
	Nadora Tall		NDRT	Nadora, NDR	106
	Rangoon Kobbari Tall		RKBT	Rangoon Kobbari, RKB,	108
	Sakhi Gopal Tall		SKGT	SKG	110
	Tiptur Tall		TPT		112
Indonesia	Borneo Tall		BONT	BRT	116
	Java Tall		JVT		118
	Kinabuhutan Tall		KNT	DKN Dalam Kinabuhutan	120
	Mamuaya Tall		MAMT		122
	Mapanget Tall		MPT	DMT Dalam Mapanget	124
	Mapanget Tall	2	MPT02	DMT Dalam Mapanget	126
	Mapanget Tall	10	MPT10	DMT Dalam Mapanget	128
	Mapanget Tall	99	MPT99	DMT Dalam Mapanget	130
	Marinsow Tall		MWT	DMW Dalam Marinsow	132
	Palu Tall		PUT	Grand Indonésie Palu, GDO3	134
	Pandu Tall		PDT	DPD Dalam Pandu	136
	Pungkol Tall		PGLT	DPL Dalam Pungkol	138
	Raja Brown Dwarf	Ternate	RBD01	Nain Brun Indonésie, NBOIBD	140
	Santongbolan Tall		SNTT		142
	Sea Tall		SET	DES Dalam Sea	144
	Tenga Tall		TGT	Grand Indonésie Tenga, GDO2, DOT2	146
Malaysia	Malayan Green Dwarf		MGD	Nain Vert Malaisie, NVM	150
	Malayan Red Dwarf		MRD	Nain Rouge Malaisie, NRM	152

Country of origin	International cultivar name	Population within the cultivar	International abbreviation	Synonyms and other names	Page
Malaysia	Malayan SS Apricot Tall		SSAT	Strait Settlement Apricot, SSA	154
	Malayan SS Green Tall		SSGT	Strait Settlement Green, SSG	156
	Malayan Tall	3 Heads	MLT36	Grand Malaisie, GML	158
	Malayan Yellow Dwarf		MYD	Nain Jaune Malaisie, NJM	160
Marshall Islands	Marshall Islands Green Dwarf		MIGD	Nain Vert Kiribati, NVK, KIGD	164
Mozambique	Mozambique Tall		MZT	Grand Mozambique, GMZ	168
Nigeria	Nigerian Tall		NIT	NGT, Mapio Pong	172
Panama	Panama Tall		PNT		176
	Panama Tall	Aguadulce	PNT01	Grand Panama 1 Aguadulce,	178
	Panama Tall	Monagre	PNT02	Grand Panama 2 Monagre, GPA2, PAT2	180
Papua New Guinea	Karkar Tall		KKT	Grand Kar-Kar, GNG1, NGT1	184
	Madang Brown Dwarf in Côte d'Ivoire		MBD		186
	Madang Brown Dwarf in PNG and Vanuatu		MBD		188
	Markham Valley Tall in Côte d'Ivoire		MVT	Grand Markham Valley, GNG3 GMV, NGT3	190
	Markham Valley Tall in India		MVT	Grand Markham Valley, GNG3 GMV, NGT3	192
Philippines	Aguinaldo Tall		AGDT	AGD	196
	Antique Tall	Mapatag	ANTT01		198
	Bago-Oshiro Tall		BAOT	BAO	200
	Baguer Green Dwarf		BAGD	BAG	202
	Ballesteros Tall	Cagayan	BALT01	Ac 27	204
	Ballesteros Tall	Tarraq	BALT02	Ac 27	204
	Bataan Tall	Tenejero	BAAT01		206
	Bataan Tall	Mianay	BAAT02		208
	Bataan Tall	Kitaotao	BAAT03		209
	Baybay Tall in Côte d'Ivoire		BAYT	Grand Bay-Bay, GPH4, PHT4	210
	Baybay Tall in the Philippines		BAYT	Grand Bay-Bay, GPH4, PHT4	212
	Catigan Green Dwarf		CATD	Nain Vert Philippines Catigan, NVP2, PGD2	214
	Kinabalan Green Dwarf		KIND	KIN	216
	Philippines Lono Tall		PLNT	PHL	218
	Philippines Ordinary Tall		PHOT	Philippines Ordinary	220
	Pilipog Green Dwarf in Côte d'Ivoire		PILD	Nain Vert Philippines Pilipog, NVP5, PGD5	222
	Pilipog Green Dwarf in the Philippines		PILD	Nain Vert Philippines Pilipog, NVP5, PGD5	224
	San Ramon Tall		SNRT	SNR	226

Country of origin	International cultivar name	Population within the cultivar	International abbreviation	Synonyms and other names	Page
Philippines	Tacunan Green Dwarf		TACD	Nain Vert Philippines Tacunan, NVP3, PGD3	228
	Tagnanan Tall		TAGT	Grand Tagnanan, GTN, TNT	230
Samoa	Samoan Tall	Spicata	SMOT03	Spicata, SPIT	234
	Samoan Yellow Dwarf		SYD	Nain Jaune Apia, NJA, Nain Jaune Samoa	236
Seychelles	Seychelles Tall		SCT	SYC	240
Solomon Islands	Rennell Island Tall		RIT	Grand Rennell, GRL, RLT	244
	Solomon Island Tall		SIT	Local tall, LT	246
Sri Lanka	King Coconut		RTB	KCD, Rath Tembili	250
	Sri Lanka Green Dwarf		PGD	Nain Vert Sri Lanka, NVS,SGD, Pumilla Green Dwarf	252
	Sri Lanka Tall		SLT	Ceylon Tall	254
	Sri Lanka Tall	Ambakelle	SLT02	Grand Sri Lanka Amélioré, GSL	256
Surinam	Surinam Brown Dwarf		SUBD	Surinam Dwarf, SRD	260
Tanzania	East African Tall		EAT		264
	East African Tall	Zanzibar	EAT33	Zanzibar Tall, ZNT	266
	Pemba Red Dwarf	Tanga	PRD01	Kitamli, PRDTAN	268
Thailand	Aromatic Green Dwarf		AROD	Pandan	272
	Thailand Green Dwarf		THD	Nain Vert Thaïlande, NVT, TGD	274
	Thailand Tall	Sawi	THT01	Grand Thaïlande Sawi, GTH1	276
Tonga	Niu Kafa Tall	Tonga	NKFT03	Niu Afa	280
	Tonga Tall		TONT	Grand Tonga, GTG, TGT	282
Trinidad and Tobago	Saint Vincent Tall		STVT	ST. Vincent, STV	286
Vanuatu	Vanuatu Red Dwarf		VRD	Nain Rouge Vanuatu, NRV	290
	Vanuatu Tall		VTT	Gigante de Vanuatu, Gigante de Novas Hebridas, GVT GNH	292
Viet Nam	Cochin China Tall		CCNT	CC	296

Coconut conserved germplasm from

Benin

Genebank	Contact
Institut National de Recherche Agricole du Benin (INRAB) Seme Podji research station Cotonou Benin Phone: (229) -240101 Fax: (229) -250266	Country member of COGENT Mr. Bernadin Lokossou Director Phone: 229-240101 Fax: 229-250266 e-mail: lokaldo@yahoo.fr e-mail: Inrabdg4@bow.intnet.bj

Benin, officially the Republic of Benin, is a country of western Africa. It borders Togo to the west, Nigeria to the east and Burkina Faso and Niger to the north. The economy of Benin remains dependent on subsistence agriculture, cotton production, and regional trade.

As with other countries in the West African region, coconut is considered the second most economically important perennial oil crop in Benin. The most common variety planted is the West African Tall (WAT). The WAT was most probably introduced from Mozambique. Additionally, the variety was first planted in the country at Ouidah around the 17th century (Sanoussi, 1998). Aside from WAT, other varieties grown in Benin include the hybrid PB 121, which is a cross between the Malayan Yellow Dwarf and the West African Tall (MYD x WAT), and, less extensively, PB 111 which is a cross between the Cameroon Red Dwarf and the West African Tall (CRD x WAT). The total area planted with coconut in the country is estimated at 15 000 ha, about 90% of which is tended by smallholder farmers with average farm sizes ranging from 0.5 to 1.0 ha, although some large scale plantations or estates also exist varying in sizes from 5 to 50 ha each (Sanoussi 2005). Some of these smallholder farmers also rear cattle on their coconut farms, while others grow intercrops like cassava, maize, bean and groundnut as staple food, while their coconut palms are still young.

Located 20 km from Cotonou on the Porto-Novo Road, the Seme Podji research station was created in 1949 by the *Institut de Recherches sur les Huiles et Oléagineux* (IRHO) one of the research institutes now merged into CIRAD. Today, the station is part of a research facility belonging to the National Institute of Agricultural Research of Benin. The main research areas are: the creation of high yielding coconut varieties, the release of technological package for plantation management of hybrid coconut varieties, and the regeneration of soils under old coconut groves. Only four coconut varieties are conserved there, namely the West African Tall, Malayan Yellow, Brazilian Green and Cameroon Red Dwarf.

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West African Tall Ouidah (WAT06)

Konan JL, Koffi B, Bourdeix R

Conservation

Selected West African Tall Ouidah (WAT06) palms are only conserved in Benin and Côte d'Ivoire. Twenty-two WAT accessions totalling more than 3000 palms are registered in the CGRD. Since 1960, West African Tall seednuts – resulting from a mix of Akabo, Mensah and Ouidah origins – have been exported to at least eight germplasm banks worldwide, which include Brazil, India, Indonesia, Papua New Guinea, Philippines, Tanzania and Vanuatu.

History

According to Harries (1978), coconut was introduced from Mozambique to West Africa by Portuguese navigators at the beginning of the 16th century. From the Cape Verde Islands, it would have moved to the coasts of West Africa and Latin America. In Benin, the first introduction would have taken place in Ouidah city during the 17th century. From 1951 to 1954, three accessions of WAT were identified from two plantations located in Côte d'Ivoire (Mensah and Akabo) and from one located in Benin. The three accessions are kept separately in the collections and a mixture of these three accessions is used for the creation of hybrids under the name of West African Tall. Since 1951, around 1307 West African Tall palms were used in controlled crossings. Post analysis shows that 62% are originating from the Mensah Plantation, 23% were introduced from Benin and 15% come from the Akabo Plantation. This distribution is not really random; it results from successive selections carried out independently for about 30 years.

Identification

It is difficult to distinguish the three populations Akabo, Mensah and Ouidah of the WAT variety. Fruits of the WAT from Benin are a little heavier than those of the WAT found in Côte d'Ivoire (1170g compared to 1040g in the Côte d'Ivoire germplasm bank). They also have a higher husk weight ratio (43% compared to 38%). The weight of copra per fruit of the two populations is similar, ranging from 190g to 245g depending on environmental factors.

Yield and production

Fruit production generally begins 6-7 years after field planting. The number of bunches ranges from 11 to 14 per palm per year with a number of fruits ranging from 40 to 90 per palm per year. Data from Côte d'Ivoire allowed the comparison of 4000 ha of WAT with 12 500 ha of hybrids (mainly MYD x WAT or PB121). From 1985 to 1990, the hybrids have produced 2.4 t of copra per ha per year compared to the WAT which yielded only 1.5 t.

Other information

WAT is widely used as a parent material in coconut breeding programmes. Its hybrids with the Malayan Yellow Dwarf (known as PB121 or MAWA) and the Cameroon Red Dwarf (CAMWA) have been distributed worldwide. WAT is more sensitive to drought than the hybrid PB121. WAT is also sensitive to the lethal yellowing diseases in Jamaica, Tanzania and Ghana. It was also sensitive to the coconut foliar decay disease in Vanuatu. It is susceptible to the *Phytophthora* disease in Côte d'Ivoire and Indonesia.

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West African Tall Ouidah (WAT06)













Conserved coconut germplasm from

Brazil

Genebank	Contact
Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA) Parque Estacao Biologica, W3 Norte Brasilia-DF 70770-901 Brazil	Country member of COGENT Dr Alexandre Nunes Cardoso Coordinator, International Cooperation Phone: (55) (61) 448 4256 Fax: (55) (61) 2724656 Email: Alexandre.cardoso@embrapa.br

Brazil is the largest and most populous country in South America. Bounded by the Atlantic Ocean on the east, Brazil has a coastline of over 7491 km. It is bordered on the north by Venezuela, Suriname, Guyana and the overseas department of French Guiana; on the northwest by Colombia; on the west by Bolivia and Peru; on the southwest by Argentina and Paraguay and on the south by Uruguay. Numerous archipelagos in the Atlantic Ocean are part of the Brazilian territory.

Coconut growing is important for the economies of north-eastern and northern Brazil, accounting for approximately 82% of the country's production. Brazil ranks fifth among the coconut producing countries in the world (FAO 2002). Coconuts are planted from the northern State of Roraima to the State of Paraná in the south, with high concentrations in the coastal line from Pará to Rio de Janeiro. Coconuts are cultivated in the most `diverse soil, climate and management conditions. The most utilized coconut parts are water from the green coconut (tendernut) and the fresh meat from the mature nut. The use of coconut by-products in Brazil is still very limited.

Populations of Tall coconut palms introduced by the Portuguese in the 16th century spread through the north-eastern coastal zone, adapting themselves to various environmental conditions to create different ecotypes (Ribeiro et al. 1995). The Brazilian Agricultural Research Corporation (EMBRAPA) collected, characterized and conserved the genetic variability of these populations, and used them for developing superior hybrids with better production traits and quality, adapted to different Brazilian agroecological zones. Brazil has established a coconut genebank in the State of Sergipe to serve EMBRAPA´s coconut improvement programme. There is now a commitment to upgrade this genebank to become an International Coconut Genebank for Latin America and the Caribbean (ICG-LAC) with the support of the Bioversity International and the International Coconut Genetic Resources Network (COGENT).

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Brazilian Green Dwarf (BGD) in Brazil and Côte d'Ivoire

Bourdeix R, Tupinamba E, Konan JL

Conservation

Brazilian Green Dwarf (BGD) is conserved in Brazil and in the coconut germplasm centres of at least eight countries. It is represented by 17 accessions totaling more than 3000 palms. It was introduced into the collections of Benin, Ghana, Philippines, Sri Lanka, Vietnam and Tanzania from Côte d'Ivoire. Seednuts were also sent to Guyana and Tahiti in the 1980s.

History

BGD is a legendary coconut variety. Its sweet young nuts are sold for drinking along the tropical beaches of Brazil. It is difficult to trace the history of the Green Dwarfs around the world. The BGD now conserved in Côte d'Ivoire was collected in African Equatorial Guinea around 1960. Originally, this Dwarf was introduced into Africa from the city of Recife, Pernambuco, Brazil, by the agronomist Don Osman Silveira in June 1950. It is said that BGD was introduced into Brazil in 1920 from the Bogor botanical garden in Indonesia. However, recent DNA molecular studies point out that BGD originated from the Philippines.

Identification

More than 45 Green Dwarf coconut varieties are referenced worldwide. Some of them can be easily distinguished from the BGD. The Pilipog, Catigan, Tacunan, Sri Lanka and Thailand Green Dwarfs have all special fruit features that make them quite different. Different names from different locations have been given to the same variety. For instance, BGD is also known as Equatorial Guinea Green Dwarf (EGD) in Africa. It is very difficult to compare the coconut palms planted on other continents and diverse environments. DNA molecular techniques will probably help to reduce the number of varieties that are today considered distinct. The palm generally has a thin stem, about 20-25 cm in diameter, with little or no bole. The youngest leaves at the top of the palm are quite erect, more than those of the Malaysian Dwarfs. Due to its short peduncle, the bunch is well supported by the leaf petioles. Fruits are oblong-shaped, with an intense green colour. The average fruit weight ranges from 556g in the dry zone of Tanzania to 1090g in the rich volcanic soils of the Vanuatu islands. Inside the fruits, the nuts are almost spherical and weigh from 353 to 556g.

Yield and production

BGD generally starts to flower 2-3 years after planting. It may produce 50-100 fruits per palm per year under good conditions. With irrigation and fertilization, BGD produces around 150 nuts per palm per ha, at a planting density of 200 palms per ha. Water from young nuts is very sweet and tasty. Currently, about 59 000 ha of this cultivar are planted in Brazil. Some Brazilian farmers have become rich by planting BGD and selling young nuts to drink.

Other information

BGD was used as female parent in producing many coconut hybrids. However, in Côte d'Ivoire, none of these hybrids were released to farmers. The progenies from BGD were more heterogeneous than those obtained with other Dwarfs, such as Malayan Yellow Dwarf (MYD) or Cameroon Red Dwarf (CRD). In Africa, hybrids with BGD were also quite sensitive to nut fall caused by the fungus of *Phytophthora* sp. Nevertheless, the hybrid from BGD and the Rangiroa Tall (RGT) was recommended for the corral soils of Polynesian islands in the Pacific region. Hybrids from BGD and local Tall coconuts are also being tested in Brazil.

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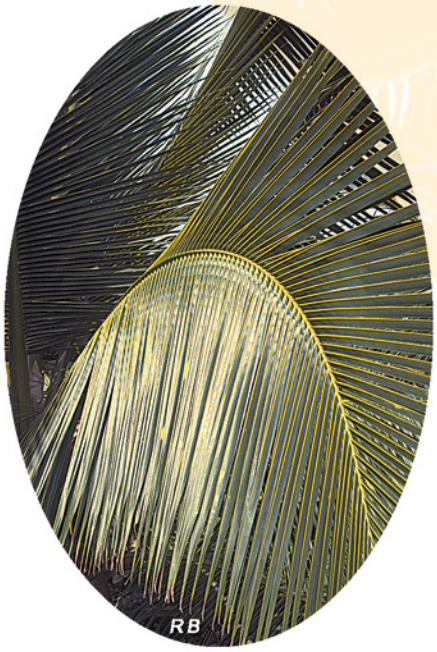
RB


RB


RB


Big
Medium
Small
20 cm
RB


RB

Brazilian Green Dwarf (BGD) in the Philippines

Rivera RL, Santos GA, Emmanuel EE, Rivera SM

Conservation

Brazilian Green Dwarf (BGD) is represented by 73 palms at the field genebanks of the Philippine Coconut Authority–Zamboanga Research Centre (PCA-ZRC) field and in the Coconut Breeding Trials Unit in Mambusao, Capiz, Philippines.

History

The Brazilian or Equatorial Green Dwarf was imported from Côte d'Ivoire in 1978. The BGD conserved in Côte d'Ivoire was collected in the African country of Equatorial Guinea around 1960. But this Dwarf was introduced to Africa from the city of Recife, Pernambuco, Brazil, by the agronomist Don Osman Silveira in June 1950. It is said that BGD was introduced to Brazil in 1920 from the Bogor botanical garden of Indonesia. However, recent DNA molecular studies point out that BGD originated from the Philippines.

Identification

This variety is characterized by very marked dwarfism, good fruit composition, semi-autogamous, fruits smaller than those of Catigan Green Dwarf or Tacunan Green Dwarf. It is also known as Equatorial Guinea Green Dwarf (EGD).

Yield and production

EGD could easily reach its reproductive stage in 24 to 36 months given good cultural management. For a Dwarf variety, the copra content of the nuts is rather high at about 200g. Whole fruit weight is 878g, consisting of 269g husk, 149g shell, 302g meat. At 10-26 years of age, a palm bears 106 nuts. Copra production is 3 t per ha.

Other information

Toddy (the sweet sap extracted by incising the young inflorescence of the palm) from EGD ferments vigorously like the toddy gathered from Tall palms. PCA-ZRC records showed that initial toddy production of almost one liter per plam per day could be attained, increasing up to more than four liters per palm per day. Another promising product from the sap of EGD is coconut sugar because of its high total soluble solids. When toddy is intended for sugar production, the preferable harvest time for higher yield is in the afternoon. The average total soluble solids of toddy is around 14% and could even reach 20% with appropriate maintenance and cleaning of receiving receptacles. The coconut sugar is mainly used in cooking and desserts and cannot be replaced by other types of sugar due to its unique flavour. The demand for this product is expected to increase significantly in the future.

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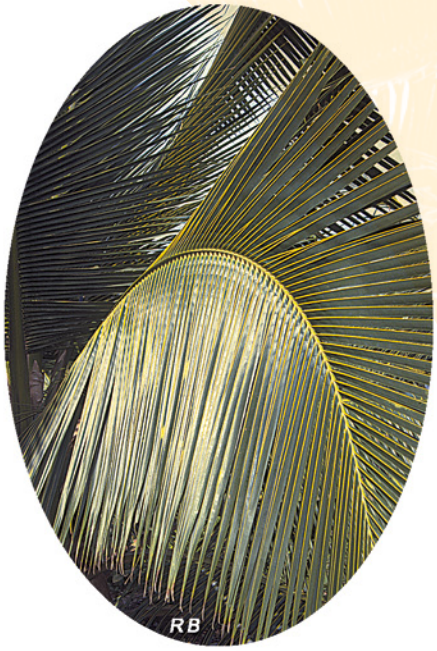
Brazilian Green Dwarf (BGD)

photographed in Côte d'Ivoire













Conserved coconut germplasm from

Cambodia

Genebank	Contact
No genebank affiliated to COGENT	Country not member of COGENT Dr H Vanhan Deputy Director, Department of Agronomy and Agricultural Land Improvement, Ministry of Agriculture Forestry and Fisheries. Cambodia e-mail: vanhan@mobitel.com.kh; tel: (855) 12818216; fax: (855)23 216655

Cambodia is located in Southern Asia, bordering the Gulf of Thailand, between Thailand, VietNam and Laos. In Cambodia, there is no large-scale commercial cultivation of coconut palms or coconut industry. Cambodia is not a country member of COGENT, although Coconut varieties from Cambodia are conserved in COGENT member countries.

In Cambodia, coconut palms are the main feature of family gardens, where both green and mature coconuts provide regular income. A preliminary survey conducted in 2004 showed that there were at least 12 million coconut palms in Cambodia (Vanhan 2007). In late 2001, coconut beetle (*B. longissima*) was recorded as a new pest in Cambodia. The first infestations were recorded in an area near the Vietnamese border, especially in young coconut plantations. Within two years it had spread over the whole country. This new threat caused significant damage to coconut trees (on average 74% of coconut palms were attacked, resulting in 21% mortality). To combat this problem, the Department of Agronomy and Agricultural Land Improvement (DAALI) of the Ministry of Agriculture Forestry and Fisheries took actions (phytosanitary measures, pest outbreak intervention via insecticide application and extension work on control measures) to control the spread of the pest. Unfortunately, the beetle is still established and inflicting significant damage in Cambodia.

In 1969, just before the outbreak of the Cambodian civil war, almost 1300 seednuts were collected and imported into Côte d'Ivoire by a French agronomist, CE Briolle. Four closely related coconut varieties of 'Cambodia Tall' from the localities of Ream, Sre Cham, Battambang and Koh Rong were collected either from plantations or directly from local markets.

Reference

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Cambodia Tall Koh Rong (KAT10)

Bourdeix R, Konan JL, Ballo K

Conservation

Cambodia Tall Koh Rong (KAT10), which originates from the island of Koh Rong, is only conserved in Côte d'Ivoire, where the 184 palms planted in 1969 and 1987 are still alive.

History

Koh Rong is one of four large islands off the coast of Cambodia that extends over more than 400 km between the Thai and Vietnamese borders. The word 'Kho' means 'island' in Thai. In 1969, just before the outbreak of the Cambodian civil war, almost 1300 seednuts were collected and imported into Côte d'Ivoire by the French agronomist, CE Briolle. Four closely related coconut varieties of 'Cambodia Tall' from the localities of Ream, Sre Cham, Battambang and Koh Rong were collected either from plantations or directly from local markets.

Identification

The Cambodia Tall Koh Rong is typical of the Southeast Asian varieties. It has rapid growth, and possesses a thick straight stem, long fronds and large fruits. It is not easy to differentiate it from the Tagnanan Tall (Philippines) or from the Malayan Tall. Compared to the latter varieties, the Cambodian palms are of a more uniform green colour, and far fewer palms bear brown or red fruits. The fruits are also more oval than those of the Malayan or Tagnanan Talls. The inner nut is rounded, often wider than long, and rarely has the ligneous point found at the tip of the shell in other Talls with large fruits, such as the Malayan, Panama, and especially Rennell Island Talls. The fruits weigh an average of 1762g and are rich in meat (545g) and free water (450ml). Fruit germination is particularly rapid, and is complete around 12 weeks after sowing, when African Tall palms are only just beginning to germinate.

Yield and production

The Cambodian Tall Koh Rong starts bearing slowly. From 6 to 8 years after planting, it only produces 26 fruits per palm per year on average under Ivorian conditions. Thereafter, yields fluctuate from around 31 fruits per palm per year up to 13 years. They exceed 40 fruits on the 14th and 15th year. It is likely that production will continue to increase up to 20-25 years, but the slow bearing quality of this variety means that it cannot be recommended for commercial production.

Other information

Observation and analysis of four Cambodian varieties from Ream, Sre Cham, Battambang and Koh Rong showed them to be similar, or even identical. Little use has been made of Cambodian Talls in breeding programmes. In Côte d'Ivoire, the 'Ream' origin was crossed with the West African Tall and Mozambique Tall in the first genetic trial planted in 1965. The performance of the resulting hybrids was average, with adult palm yields producing around 3 t of copra per ha per year, 7 to 15% more than the West African Tall (WAT) control. The high kernel or copra content of their fruits does not compensate for their low fruit production.

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Bourdeix R, Konan JL, N'Cho YP. 2005. Coconut. A guide to traditional and improved varieties. Editions Diversiflora, Montpellier, France.

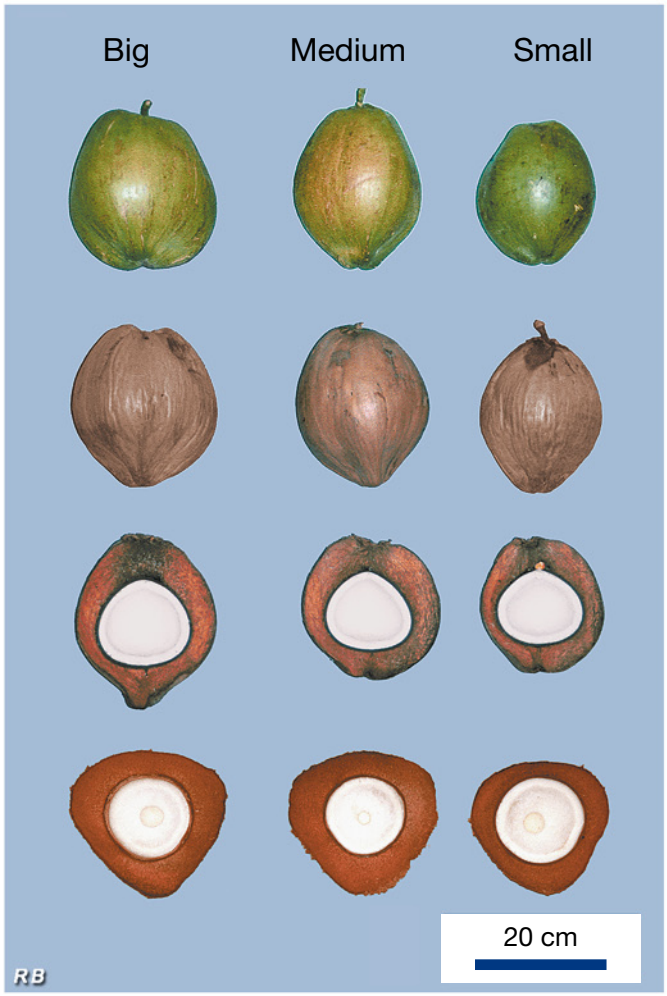
Cambodia Tall Koh Rong (KAT10)













Cambodia Green Dwarf (KGD)

Bourdeix R, Konan JL, Ballo K

Conservation

Cambodia Green Dwarf (KGD) is conserved only in Côte d'Ivoire, where 92 true-to-type palms planted in 1970 are still alive. The material has not been rejuvenated to date.

History

Old papers from the Marc Delorme Research Centre indicate that 420 coconuts of the variety 'Cambodia Green Dwarf' were sent to Africa from Sihanouk City (now Sihanoukville) in 1969 by CE Briolle, a French agronomist. The origin of these seednuts is encoded as Battambang Kolke. Battambang is the second city of Cambodia, a pleasant provincial town spanning the Sangker River. Surrounded by the town's main shops, there is a big central market where, most likely, the coconuts were very probably bought for collection. This is no longer being practised as collectors acquire seednuts from homogeneous and isolated plantations, instead of buying them from the market. Kolke is the name for a little lizard which usually lives inside the palm crown. This variety is said by CE Briolle to be typically Cambodian. In Côte d'Ivoire, 144 palms were initially planted in an experimental plot in 1970. Because of the great heterogeneity of the original introduction, KGD has been discarded from the coconut breeding programme in Côte d'Ivoire. This variety has never been tested as a parent palm for hybridization.

Identification

In Africa, field observations showed that the KGD population is very heterogeneous. Some of the palms look like true Dwarf types, with a thin stem, about 20 to 25cm in diameter, and with little or no bole at the base. But other palms look like Tall types, hybrids or intermediate forms. Because of this great heterogeneity, only 54% of the original palms were finally considered as true Dwarf types. The fruits are oblong in shape and intermediate green colour. When the fruits begin to dry, the green colour becomes darker at the top of fruits than in the middle (see bunch picture).

Yield and production

The average fruit weight of KGD in Côte d'Ivoire is 771g. The nuts without husk are spherical and weigh 551g. In Côte d'Ivoire, MGD starts to flower on average four years after field planting. KGD produces 38 fruits per palm per year when immature (mean 6-8 years) and 48 fruits per palm per year when mature (mean of 9-17 years).

Other information

In Cambodia, coconut, including the Cambodia Green Dwarf, has been used for sugar production. It was reported that, in the context of harvestable energy from the coconut palm, the amount of energy harvested in the sap (through production of ethanol) could be five to seven times higher than from the oil of the nuts. The coconut palm yields 19 t per ha per year compared to sugarcane production (5-15 t per ha per year).

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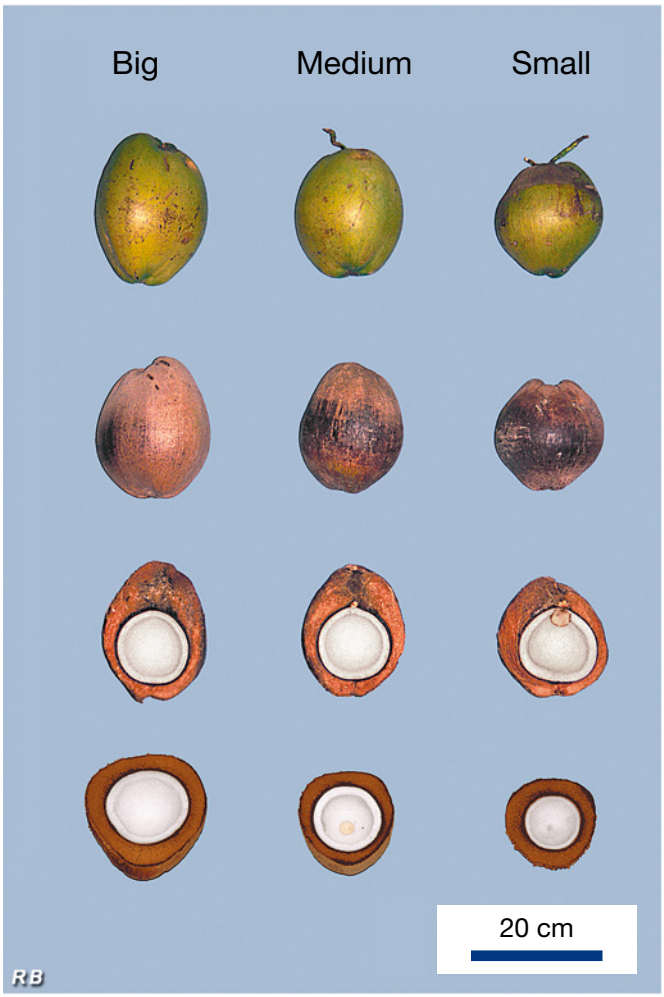
Big
Medium
Small
20 cm
RB


RB

Conserved coconut germplasm from

Cameroon

Genebank	Contact
No genebank affiliated to COGENT	Country not member of COGENT Institute of Agricultural Research for Development PO Box : 2067 / 2123 – Yaoundé – Cameroon Tel/Fax : (237) 223 35 38 / 222 33 62 / 223 26 44 http//www.irad-cameroun.org E-mail : contact@irad-cameroun.org

Cameroon is a country of central western Africa. It is bordered by Nigeria to the west; Chad to the northeast; the Central African Republic to the east; and Equatorial Guinea, Gabon, and the Republic of the Congo to the south. Cameroon's coastline lies on the Gulf of Guinea in the Atlantic Ocean.

Agriculture was the main source of growth and foreign exchange until 1978 when oil production replaced it as the cornerstone of growth for the formal economy. Agricultural development and productivity declined from neglect during the oil boom years of the early 1980s. Agriculture was the principal occupation of 56% of the economically active population in 2003, although only about 15.4% of the land was arable. The most important cash crops are cocoa, coffee, cotton, bananas, rubber, palm oil and kernels, and peanuts. The main food crops are plantain, cassava, corn, millet, and sugarcane. Palm oil production has shown signs of greater vigour, but the product is not marketed internationally. Cameroon bananas are sold internationally, and the sector was reorganized and privatized in 1987. Similarly, rubber output has grown in spite of Asian competition. Cameroon is now among the world's largest cocoa producers.

Although Cameroon is not a country member of COGENT, coconut varieties from Cameroon are conserved and used to produce coconut hybrids in COGENT member countries such as Benin (Sanoussi 2005) and Côte d'Ivoire (Bourdeix et al. 2005). Research in Agriculture is conducted in Cameroon by IRAD (Institute of Agricultural Research for Development), the University of Yaoundé and various international institutions such as CARBAP (Centre africain de recherche sur bananiers et plantains), PRASAC (Pôle régional de recherche appliquée au développement des savanes d'Afrique centrale) and IITA (International Institute of Tropical Agriculture).

No research is currently undertaken on the Coconut palm in Cameroon, although the lethal yellowing disease of the coconut palm remains active in the southern coastal region (Dollet et al. 1977).

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Cameroon Kribi Tall (CKT)

Konan JL, Bourdeix R, N'Cho YP

Conservation

Cameroon Kribi Tall (CKT) can be found in Cameroon, but until 2002, there was no recorded coconut germplasm bank in Cameroon where the lethal yellowing disease is active. The only other country where CKT can be found is Côte d'Ivoire, where 147 palms from rejuvenation were planted in 1982.

History

Cameroon is a country on the Gulf of Guinea, on the western coast of Africa. The town of Kribi is in southern Cameroon, less than two hours by road from Douala, the economic capital. The coconut palms bordering the beaches were introduced around 1890 by Presbyterian ministers from the island of Sao Tomé.

Identification

The CKT variety is typical of coconut palms on the coasts of West Africa. CKT has quite a slender stem, which begins with a discreet bole at the base. Often, the base of the stem is not rectilinear, curving slightly. The fronds are of average size with relatively broad leaflets. The palm reaches 5.5 m in height (from the ground to the base of the oldest living frond) ten years after planting. The fruits are green to brown and morphologically very similar to those of coconut palms in Côte d'Ivoire and Benin. They are elongated with distinct longitudinal ridges and quite frequently have a crease around the equator. They are poor in water and rich in husk. The fruit contains an ovoid nut with thick meat. However, the fruits of the Cameroon variety are around 9% lighter than those produced by Tall coconut palms originating from Côte d'Ivoire and Benin. Whole fruits weigh 895g on average, almost 42% of which is husk fibre. Inside, the oblong nut is small and weighs 417g, with 277g of kernel.

Yield and production

This variety is quite precocious and high yielding for a Tall type material, with a 9-10 year average of 1.8 t of copra per ha per year, while the other West African Tall coconuts from Côte d'Ivoire and Benin planted at the same time in the same plot do not exceed 1.4 t. Each palm produces an average of 12.8 bunches and 78 fruits per year at a planting density of 143 palms per ha.

Other information

In Cameroon, CKT proved susceptible to the so-called Kribi disease, a form of lethal yellowing. According to growers, the original disease focus was Equatorial Guinea. The disease occurred for the first time in 1937 at Ebodié, sparing a few palms, and then it spread by successive leaps, leaving zones of coconut palms several kilometres long free of the disease, but killing almost 90% of palms in the disease foci within two to three years. Following the losses caused by this disease, major replanting operations were implemented between 1945 and 1954. Given its resemblance to the varieties from Côte d'Ivoire and Benin, the Cameroon Kribi Tall has only undergone limited testing in varietal improvement programmes.

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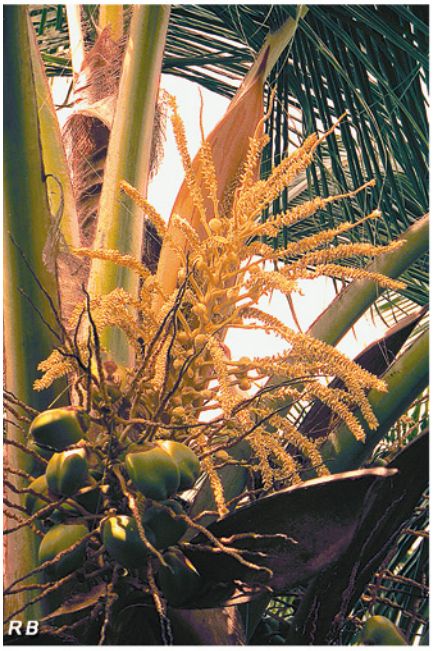
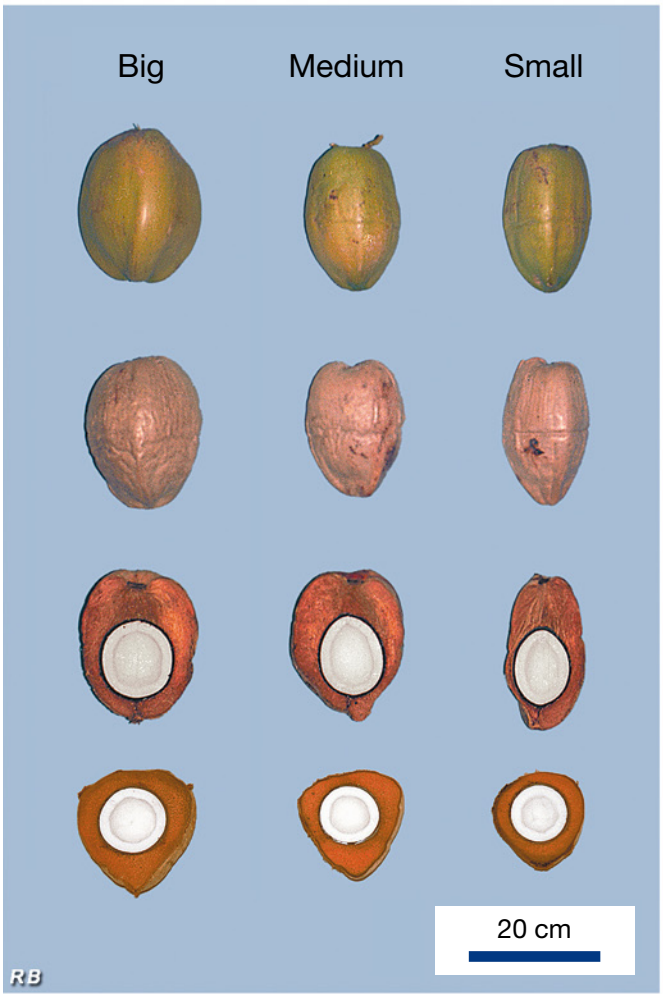
Cameroon Kribi Tall (CKT)













Cameroon Red Dwarf (CRD) in Côte d'Ivoire

Bourdeix R, Konan JL, Ballo K

Conservation

Cameroon Red Dwarf (CRD) is conserved in the germplasm centres of at least 12 countries, from Brazil to Vanuatu, representing 22 accessions and totalling more than 5000 palms.

History

CRD was collected in the region of Kribi, Cameroon in 1955. People remember that it was introduced in Africa by American priests, but nobody knows from which country. Its origin is probably the Pacific Ocean region, based on recent molecular biology studies.

Identification

CRD palms generally have a very thin stem, about 20 cm diameter in Côte d'Ivoire, with no bole. Quite often, the stem is narrower at the base than at the upper part. But when the growing conditions are ideal, it may develop a little bole (about 30 cm diameter in the rich soil of Vanuatu islands). The youngest leaves at the top of the palm are erect and straight, very different from those of the Malayan Dwarf types. The peduncles of the bunch are quite long, and sometimes very heavy bunches may abort before full maturity. The reproductive system has been described as direct autogamy. Characterization data can be found for at least seven countries: Brazil, Côte d'Ivoire, India, Malaysia, Philippines, Tanzania, and Vanuatu. CRD is the palest of all the Red Dwarfs described in this catalogue. Its colour is generally closer to yellow-orange than a true red. This colour, however, is not very stable. It may change according to mineral nutrition or light intensity. Sometimes, within the same palm, colours of fruits from different bunches can range from intense orange to almost yellow. It is quite easy to distinguish the CRD from the Malayan Red Dwarf and other related Dwarfs. Its colour is paler, its fruits are pear-shaped, its bunches have longer peduncles, and its top leaves are more erect. Most of the other Red Dwarfs from Papua New Guinea and the Pacific Ocean region show a darker orange-red colour. DNA molecular studies have shown that the CRD and the Pemba Red Dwarf from Tanzania are probably identical. In the Comoro archipelago near Madagascar, the Red Dwarfs locally called 'mrasi' look also very similar to the CRD.

Yield and production

CRD produces medium-sized fruits of excellent composition and thin husk. The average fruit weight ranges from 447g (in Malaysia, dry zone) to 945g (in India). Inside the fruits, the nuts are spherical and weigh from 283-657g depending upon the country. In good field conditions, CRD starts to flower 2-3 years after field planting. It produces 50-90 fruits per palm per year without irrigation. CRD is mainly an ornamental palm, planted in gardens and cities. Water from young nuts is sweet and tasty. As with most of the Dwarfs, CRD is sensitive to drought and is subject to alternate bearing.

Other information

CRD is sensitive to the fruit attacks by weevil of the genus *Pseudotheraptus*. CRD was used in breeding as female parent for testing and producing hybrids in Africa. The hybrid between CRD and the West African Tall is very productive but quite sensitive to weevil attacks. The cross between CRD and the improved Rennell Island Tall (RIT) has been released to farmers by the Marc Delorme Research Station in Côte d'Ivoire.

Reference

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Cameroon Red Dwarf (CRD)

photographed in Côte d'Ivoire











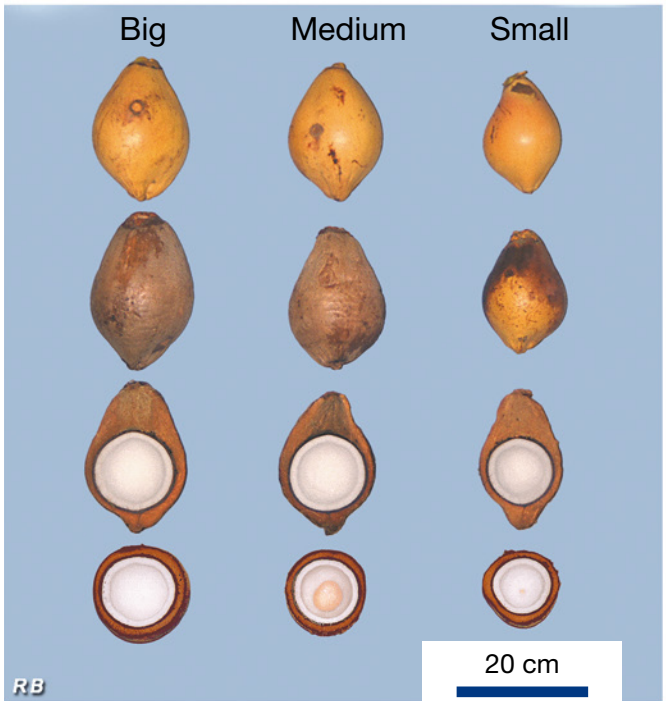



Cameroon Red Dwarf (CRD) in India

Ratnambal MJ, Niral V, Krishnan M

Conservation

Cameroon Red Dwarf (CRD) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala), India. It is available in 13 different germplasm banks and is represented by 22 accessions in the Coconut Genetic Resources Database.

History

CRD was introduced to the germplasm collection at CPCRI from Côte d'Ivoire in 1977. This variety was described as a Dwarf characterized by a slender stem, long leaves and long rachis and pear-shaped, pyriform nuts. The nuts contain about 180g of copra with an oil content of 68.5%. There are similarities between CRD in Côte d'Ivoire and the Pemba Red Dwarf in Tanzania.

Identification

CRD is a short-statured cultivar attaining a height of 4.4 m 18 years after planting. The palm does not possess a bole and the stem is not very slender with a girth of about 76 cm. The crown is circular in appearance and contains about 34 leaves. The internodal length is very short and the length of 10 internodes is 25.3 cm. The leaves are medium-sized, with short and broad leaflets. The palm starts flowering after six years of age. The inflorescences are short with strong peduncles and a longer spikelet-bearing portion. The inflorescence contains about 35 spikelets. The spikelets are medium–sized and contain an average of 0.9 female flowers per spikelet. The number of female flowers in an inflorescence is about 29. Fruit setting is around 26.7%. Pollination is by direct autogamy, as complete overlapping of the male and female phases is observed in a spadix. The yellowish red, medium-sized fruits are oval in shape with a pointed apical end. The nut inside is also oval and medium-sized with a strong shell and thick kernel.

Yield and production

This variety starts fruiting at about seven and half years of age. The palm is not a regular bearer and produces good yields in alternate years. Generally, about 10 bunches are produced in a year. The average nut yield is 80 fruits per palm per year. The fruit weighs about 945g, with a smaller percentage of husk to whole fruit weight (27.8%). The nut without the husk weighs about 657g and produces nearly 220g copra per nut. The oil yield is 64%. The estimated yield of copra and oil under rain-fed conditions is 3.1 t per ha per year and 2 t per ha per year, respectively.

Other information

This variety is susceptible to drought, although the hybrid CRD x WAT (PB111) is slightly better adapted than the parents. It has been evaluated in the germplasm trials at CPCRI. CRD is being used in the CPCRI breeding programme for evaluation of new Dwarf x Dwarf hybrids for high yield, precocity and tender nut quality.

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Cameroon Red Dwarf (CRD)

photographed in Côte d'Ivoire











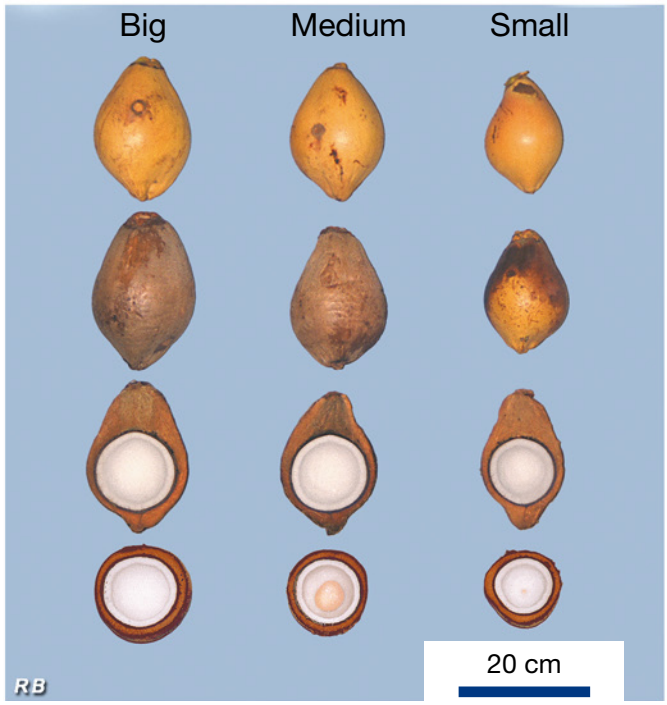



Conserved coconut germplasm from

Comoro Islands

Genebank	Contact
No genebank affiliated to COGENT. A seed garden conserving two Dwarf varieties exists in Moheli Island.	Country not member of COGENT Dr Youssoufa Mohamed Ali Directeur national du Projet développement des cultures vivrières et appui semencier (DECVAS) Ministère de la production, de la pêche et de l'environnement BP 1406 Moroni, Comoro Islands Tel: +269-736688 Fax: +269-730500

The Comoro archipelago lies between Madagascar and the African continent. It is divided into an independent nation, the Union of the Comoros (including Grande Comore, Anjouan and Mohéli), and the island of Mayotte, a *de facto* French Overseas Community. Comoros islands are located in the Mozambique Channel, north-west of Madagascar and face Mozambique. The four volcanic islands cover a total area of 2236 km².

In 1971, across the whole archipelago, a coconut produced on average 46 fruits per year distributed as follows: 15 were locally consumed by people, 17 were eaten by the rats, 14 were exported in the form of copra (Delorme 1973). In the Comoros, rats live at the top of the coconut palms. Their control consists of ringing the coconuts with a plastic or sheet cylinder fixed around the trunk so that rats slip on this surface and are unable to climb the tree. Poisoned soft foods are also used. Nowadays, coconut products are no longer exported but are locally consumed.

Although there is no coconut collection in the Comoros, a seed garden was planted in the 80's in Moheli Island, with Malayan Red and Yellow Dwarfs. This seed garden was used to produce hybrids PB121 and PB123 with the West African Tall as male parent (Bourdeix et al. 2005). In the 80's, development projects tried to popularize hybrid varieties but their success was compromised by farmers being wary of these new varieties. Experimental field studies comparing Comoro Moheli Tall (CMT) and hybrids started gathering data only at the end of the project. Thus, on the experimental field in Moheli, CMT produced only 24 nuts per tree whereas the hybrid PB121 produced a cumulative yield of 154 nuts per tree, both at 6 years old.

The agricultural sector consists of subsistence micro-farming, with a high level of domestic consumption and farming for export. One of the main challenges for Comorian agriculture is to increase the competitiveness of its products at the consumer level, notably through an intensification of production and a rationalization of distribution channels. This has been one of the objectives of many agricultural development projects and plans, among them the more recent EU project for staple food development and seed support (DECVAS—Développement des cultures vivières et appui semencier) and the World Bank's pilot programme for agricultural services (Salmon 2003).

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Bourdeix R, Konan JL, N'Cho YP. 2005. Coconut. A guide to traditional and improved varieties. Editions Diversiflora, Montpellier, France.

Comoro Moheli Tall (CMT)

Bourdeix R, Youssoufa MA, Roumain de la Touche YR

Conservation

Comoro Moheli Tall (CMT) coconuts are mainly found in the Comoros Islands but, until 2002, there was no recorded coconut germplasm bank in this archipelago. The only other country where CMT can be found is Côte d'Ivoire, where 350 CMT palms planted in 1972 still thrive.

History

The Comoros archipelago is located in the Indian Ocean, between the African coast and Madagascar. Moheli, from which the CMT was collected, has an area of 290 km² and is the smallest of the four islands. Molecular studies show that CMT is distinguished from Indian and African coconuts by its greater diversity due to genes originating from another region. Towards the sixth century, sailors coming from Southeast Asia probably arrived in the area with coconut seeds in their boats.

Identification

The main characteristic of CMT is its widened stem, forming a broad bulb at the base. The stems of the bigger palms exceed 80 cm in diameter at 20 cm from the ground, so a circumference of more than 250 cm. In average, the Tall varieties recorded in the Coconut Genetic Resources Database have a diameter of 53 cm at 20 cm from the ground level.

Yield and production

In Côte d'Ivoire, CMT starts flowering about 75 months or more than six years after field planting. Fruits of the CMT are very variable in shape and composition. In Moheli, there is a great diversity inside each farmer's field, but relatively few differences from one field to another. On average, the total weight of the mature fruit is 1283g, and the nut weighs 796g including 402g of meat.

Other information

In the 1980s, CMT was evaluated with hybrid varieties in experimental fields in Moheli. The hybrid PB121 produced a cumulative yield of 154 nuts per tree on the sixth year, while CMT produced only 24 nuts. However, hybrid PB121 had some deficiencies. According to farmers, the roofs made from the hybrid's braided palms are less durable than those made with CMT leaves. The hybrid is also less resistant to the cyclonic winds. Four varieties are now proposed to the farmers: the selected CMT, the hybrid between the Malayan Yellow Dwarf and CMT, the hybrid PB121 and Dwarf coconut palms for the gardens.

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RB


RB


RB


Big
Medium
Small
20 cm
RB


RB

Conserved coconut germplasm from

Côte d'Ivoire

Genebank	Contact
Station de recherche "Marc Delorme" Centre national de recherche agronomique (CNRA) 07 BP 13, Abidjan Phone: (225) 05 17 41 83 / (225) 21 24 88 72 Fax: (225) 23 47 24 11	Country member of COGENT Dr Jean Louis Konan Head, Coconut Research Programme Station Cocotier Marc Delorme Phone: (225) 05 17 41 83 / (225) 21 24 88 72 Fax: (225) 23 47 24 11 Email: jeanlouiskonan@yahoo.fr

The Republic of Côte d'Ivoire is a country in West Africa with an area of 322,462 km^2. Côte d'Ivoire borders Liberia and Guinea to the west, Mali and Burkina Faso to the north, Ghana to the east, and the Gulf of Guinea and the Atlantic Ocean to the south.

The Marc Delorme coconut research station was founded in 1949 by the *Institut de Recherches sur les Huiles et Oléagineux* (IRHO), one of the research institutes now merged into CIRAD. Today, the station is part of a research facility belonging to the Ivorian *Centre National de Recherche Agronomique* (CNRA). It took this name after Marc Delorme, the sixth Director was killed in an accident (Bourdeix et al. 2005). The Memorandum of Agreement for the establishment of the International Coconut Genebank for Africa and Indian Ocean (ICG-AIO) was signed in October 1999 by the Government of Côte d'Ivoire, IPGRI on behalf of COGENT and FAO as trustee. At the time of signing the MOA, the coconut genebank of the Marc Delorme Coconut Research Station was converted into the ICG-AIO. To date, ICG-AIO has a total of 99 accessions. It is located around 30 km from the centre of Abidjan, not far from the airport, on the edge of the lagoon. It is pleasant and easy to reach. Its guesthouse regularly houses students, trainees and researchers. It has four laboratories conducting research on the different aspects of coconut growing: agronomy, crop protection, breeding and technology. Its experimental plantations occupy an area of more than 1000 hectares.

By virtue of its germplasm collection, the Marc Delorme station has been able to satisfy the requests of numerous countries. Many partners, including India, Sri Lanka, Indonesia, Malaysia, China, Brazil and Costa Rica have received seednuts from coconut palms conserved in Côte d'Ivoire. One of the most recent operations consisted in planting performance trials involving a large number of varieties in Brazil, Benin, Ghana, Jamaica, Mexico, Mozambique and Tanzania. These experiments are designed to identify sources of resistance to a serious disease, Lethal Yellowing, which is killing many coconut palms in some of those countries.

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Konan JL. 2005. Status of coconut genetic resources research in Côte d'Ivoire. In: Batugal P, Ramanatha Rao V, Oliver J, editors. Coconut Genetic Resources. International Plant Genetic Resources Institute – Regional Office for Asia, the Pacific and Oceania (IPGRI-APO), Serdang, Selangor DE, Malaysia. pp 654-660. Available from: URL: http://www.cogentnetwork.org/index.php?page=books

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West African Tall (WAT) in Côte d'Ivoire

N'Cho YP, Konan JL, Kullaya A, Batugal P, Bourdeix R.

Conservation Sites

Selected West African Tall (WAT) palms are conserved at the Marc Delorme Coconut Research Centre in Côte d'Ivoire. Since 1960, WAT seednuts – resulting from the mix of Akabo, Mensah and Ouidah origins – have been exported to at least 10 germplasm banks worldwide, including genebanks in Brazil, India, Indonesia, Papua New Guinea, the Philippines, Tanzania and Vanuatu. Twenty-two WAT accessions totalling more than 3000 palms are now registered in the Coconut Genetic Resources Database.

History

WAT has gone a long way to becoming a part of the West African landscape since it was introduced by Portuguese travellers from Mozambique at the beginning of the l6th century. At the end of the l9th century, it was introduced to Côte d'Ivoire from Benin. From 1951 to 1954, three main accessions of WAT were surveyed from two plantations in Côte d'Ivoire and one in Benin.

Identification

The stem of WAT is rather thin for a Tall cultivar and it has a thin but sometimes curved bole. It is difficult to make a visual distinction between the three populations Akabo, Mensah and Ouidah of the WAT variety. Their fruit shapes are all long, angulated and medium-pointed to oblong. The husk ratio is high at around 40%. The fruit epidermis often bears folds or puckers, creating a kind of typical equatorial belt around the fruit. The nut inside is oblong, with a solid shell and thick kernel.

Yield and production

Fruit production generally begins six to seven years after planting. The number of bunches on average ranges from 11 to 14 per palm per year with 40 to 90 fruits per palm per year depending on the environmental factors and cultural practices. Fruits of the WAT in Benin are heavier than those found in Côte d'Ivoire (1169g and 1040g respectively). They also have a higher husk weight ratio (43% and 38% respectively). The weight of copra per fruit, which ranges from 190g to 245g, is similar in the two countries. The meat is thick and has high dry matter content (55 to 59%).

Other information

WAT is widely used as parent material in coconut breeding programmes. The hybrid between WAT and the Malayan Yellow Dwarf, known as PB121 or MAWA, has been disseminated worldwide. In Côte d'Ivoire, the new Tall cultivars have been systematically crossed with WAT and the Rennell Island Tall. Hybrids from WAT have been disseminated in Thailand. In the Philippines, WAT was included as a parental material for their coconut synthetic variety project. WAT is more sensitive to drought than the hybrid PB121. WAT is also sensitive to the lethal yellowing diseases in Jamaica, Tanzania and Ghana. The WAT fruits are preferred by the coconut exporters for export to the European market. The slow germination of the fruits and the thick and solid shell reduce the losses caused by packaging and shipment.

References

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West African Tall (WAT)

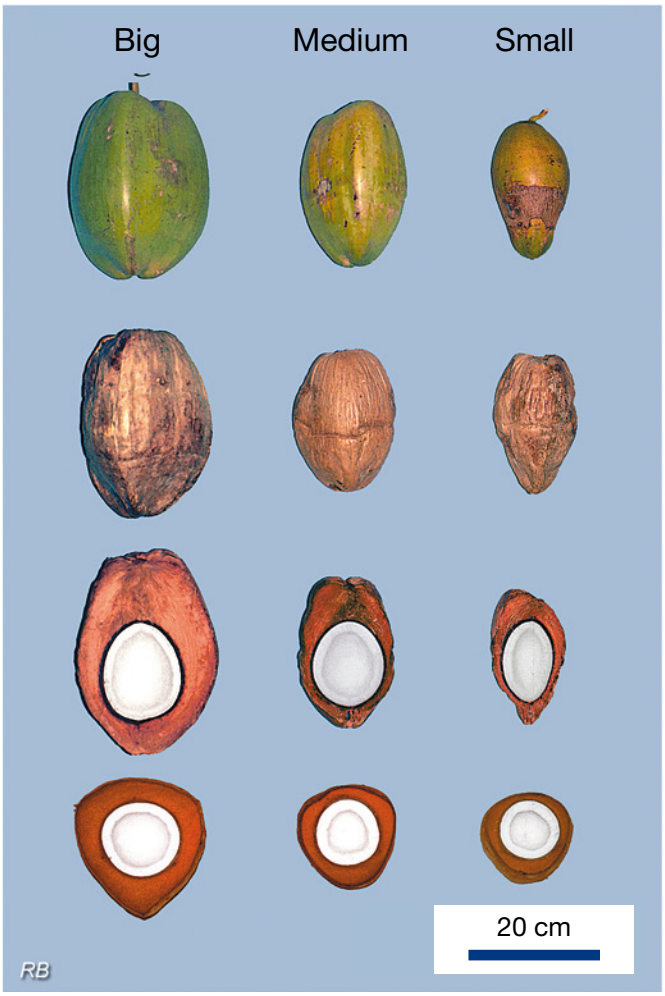
photographed in Côte d'Ivoire













West African Tall (WAT) in India

Ratnambal MJ, Niral V, Krishnan M

Conservation

West African Tall (WAT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala), India. West African Tall is widely available and is conserved at 13 genebanks. It is represented by about 20 accessions in the Coconut Genetic Resources Database.

History

WAT was introduced from the Côte d'Ivoire to the germplasm collection at CPCRI in 1977. It is a slow grower, precocious in flowering and produces copra of good quality. The palm produces a fairly large number of oblong fruits with thick husk and thick endosperm. This variety is considered to be similar to Jamaica Tall.

Identification

WAT has a medium-sized bole and the stem is medium in girth (79.4 cm). The length of 10 internodes is 47.9 cm. The palm produces about 13-14 leaves annually. The leaves are long with strong petioles. The leaflets are also long and very broad. The palm starts flowering at about 6-8 years old. The inflorescences are medium-sized and contain about 30-38 spikelets. The spikelets are also medium in length, with an average length of 34 cm. The average number of female flowers in a spikelet is around 0.9 and the total number of female flowers in an inflorescence is around 30 of which 30% gives fruits. Pollination is generally through cross-pollination. The fruits are large, greenish-yellow in colour and oblong in shape. The nut inside is medium-sized with a thick shell and a thick layer of solid endosperm.

Yield and production

In India, WAT starts fruiting 89-115 months after planting. This variety is a regular bearer and produces 9-11 bunches annually. The annual average nut yield is 67 fruits per palm. The fruits are heavy, weighing around 1239g, including the 40% of husk. The nut without the husk weighs around 736g and produces 219g copra. The average oil composition in the copra is 68%. The estimated annual copra and oil yield of WAT variety, under rain-fed conditions, is 2.6 t per ha and 1.7 t per ha, respectively.

Other information

WAT is very drought susceptible. But the hybrid MYD x WAT is comparatively drought tolerant. WAT and its hybrids are highly susceptible to lethal yellowing in Ghana, and susceptible to bud rot caused by *Phytophthora heveae* and lethal yellowing in Tanzania, to 'Lixas' and leaf blight in Brazil, to 'heart-rot' and to fruit damage by *Eriophyes guerreronis*. It is resistant to *Helminthosporium halodes.* The quality of the tender nut water is good and has been recommended for consumption as tender nut. The MAWA hybrid, MYD x WAT, is also being evaluated in hybrid trials at CPCRI.

References

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West African Tall (WAT)

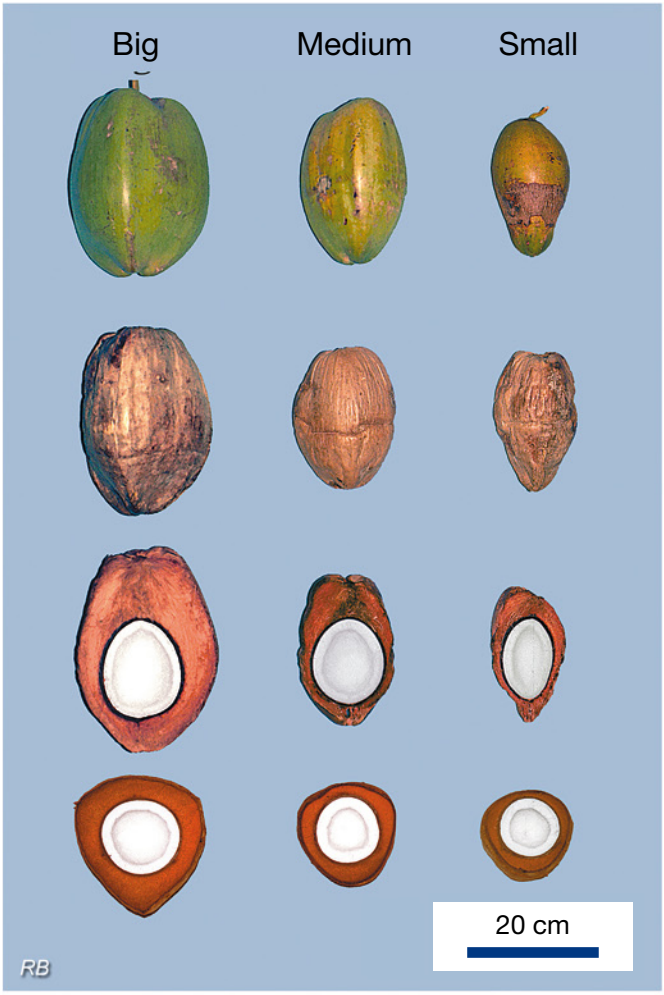
photographed in Côte d'Ivoire













West African Tall Akabo (WAT03)

Konan JL, Ballo K, Bourdeix R

Conservation

Selected West African Tall Akabo (WAT03) palms are conserved only in Côte d'Ivoire. Since 1960, West African Tall seednuts – resulting from the mix of Akabo, Mensah and Ouidah origins – have been exported to at least 10 germplasm banks worldwide, including Brazil, India, Indonesia, Papua New Guinea, the Philippines, Tanzania and Vanuatu.

History

WAT was probably introduced in West Africa by Portuguese travellers coming from east Africa at the beginning of the l6th century. At the end of the l9th century, it was moved from Benin to Côte d'Ivoire. From 1951 to 1954, three accessions of WAT were surveyed from two plantations located in Côte d'Ivoire (Mensah and Akabo) and from one plantation located in Benin at Ouidah City. The Jacques Akabo plantation is located between Abidjan and Grand Bassam, close to the village of Azuretti, on a narrow band of land between the sea and a lagoon. It was planted in 1930 from second generation palms imported from Benin. In 1951, about 97 palms were pre-selected among several thousand. The selection criteria were the presence of at least 90 formed fruits and a visually acceptable meat thickness. Then these trees were individually preserved for four years. Only the best 20 palms were finally retained to constitute, by open pollination, the accession described here.

Identification

It is difficult to make a visual distinction among the three populations Akabo, Mensah and Ouidah of the WAT variety. Their fruit shape is long, angulated and medium-pointed to oblong. The husk ratio is high at about 40%. The fruit epidermis often bears folds or puckers, creating a kind of typical equatorial belt around the fruit. The nut inside is oblong with a solid shell and thick kernel. Breeders classified three populations from WAT mainly because they originate from different locations and because they selected using different criteria.

Yield and production

Fruit production generally begins 6-7 years after field planting. The number of bunches ranges from 11 to 14 per palm per year with the number of fruits ranging from 40-90 per palm per year, depending on the environmental factors. Fruits of the WAT from Benin are heavier than those found in Côte d'Ivoire (1170g and 1040g, respectively). They also have a higher husk weight ratio (43% and 38%, respectively). The weight of copra per fruit is similar in both countries and ranges from 190-245g.

Other information

WAT is widely used as a parent material in coconut breeding programmes. The hybrid between WAT and the Malayan Yellow Dwarf, known as PB121 or MAWA, and the hybrid between WAT and Cameroon Red Dwarf (CAMWA) have been distributed worldwide. In Côte d'Ivoire, all the newly introduced Tall cultivars have been systematically crossed with WAT and the Rennell Island Tall. The hybrids from WAT crossed with Malayan Red Dwarf and Maphrao Thailand Tall have been distributed in Thailand. In the Philippines, WAT was included as a parent material for their coconut synthetic variety project.

References

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Bourdeix R, N'Cho YP, Sangare A, Baudouin L, de Nucé de Lamothe M. 1992. L'hybride de cocotier PB121 amélioré, croisement de Nain Jaune Malaisie et de géniteurs Grand Ouest-Africain améliorés. Oléagineux 47:619-633.

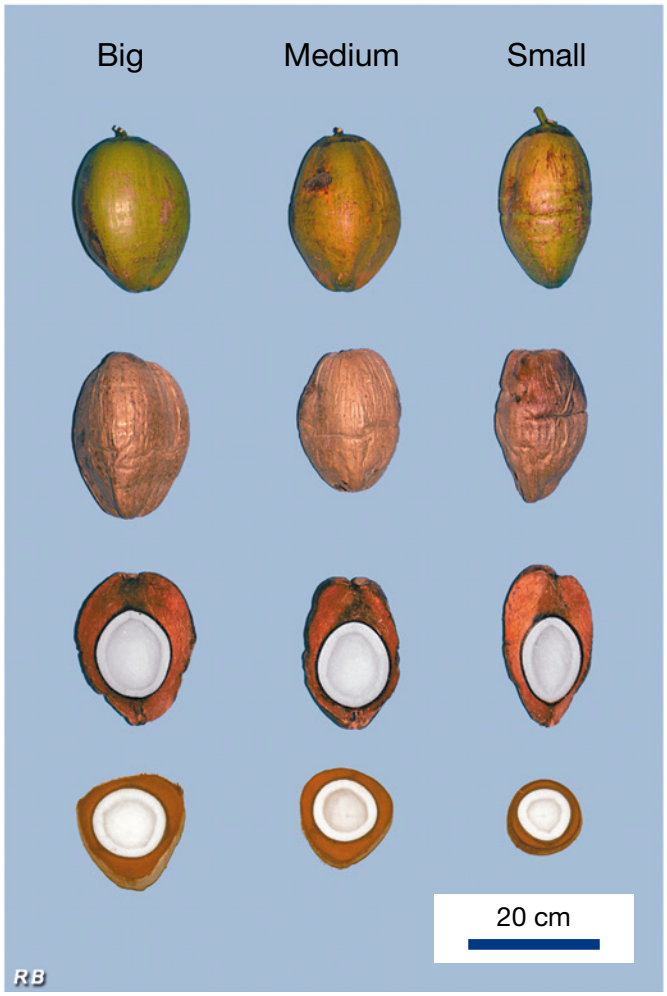
West African Tall Akabo (WAT03)













West African Tall Mensah (WAT04)

Bourdeix R, Konan JL, Ballo K

Conservation

Selected West African Tall Mensah (WAT04) palms are conserved only in Côte d'Ivoire. Since 1960, West African Tall seednuts – resulting from a mix of Akabo, Mensah and Ouidah origins – have been exported to at least 10 coconut germplasm banks worldwide.

History

From 1951 to 1954, three accessions of West African Tall were identified from two plantations located in Côte d'Ivoire (Mensah and Akabo) and from one plantation located in Benin. The Mensah plantation is located 1500 m east of the old site of the Marc Delorme Coconut Research Centre. In 1951, 600 palms were randomly selected between the main coastal road and the sea. These palms were individually observed for three years for fruit and bunch production and other morphological traits. Several successive selections of parent palms were carried out. The catalogue of the parent palms at the Marc Delorme Centre makes it possible to establish a precise assessment. A total of 1812 palms resulting from 92 original palms from the Mensah plantation were used to carry out crossings. The 92 original parents were exploited unequally (31 of them correspond to 90% of the materials used in the breeding programme conducted in Côte d'Ivoire).

Identification

WAT04 morphological characteristics are very similar to those of the West African Tall Akabo (WAT03). The production and weight of WAT04 fruits are slightly lower than those observed for the WAT03, and plant growth is a little faster. However, these observed differences are not statistically significant. The stem of WAT populations, rather thin for a Tall type, is quite often curved. The stem height varies from 4.5 to 6.5 m on the 10th year. The leaves are quite short but have a high number of broad leaflets. Inflorescences are medium-sized, with a short female phase beginning after all the male flowers have already dropped. The mode of reproduction is predominantly allogamous. Fruits are usually green to yellowish green, with the occasional greenish brown to brown.

Yield and production

Fruit production generally begins six to seven years after field planting. The number of bunches ranges from 11 to 14 per palm per year with the number of fruits ranging from 40 to 90 per palm per year depending on the environmental factors. The weight of copra per fruit ranges from 190g to 245g. Data from Côte d'Ivoire allowed the comparison of 4000 ha of WAT with 12 500 ha of hybrids (MYD x WAT or PB121). From 1985 to 1990, the hybrids have produced 2.4 t of copra per ha per year whereas the WAT yielded only 1.5 t.

Other information

WAT coconuts are preferred by the exporters for the European fruit markets. The slow germination of the fruits and the thick and solid shell reduce the losses caused by packaging and shipment. WAT is widely used as parent material in coconut breeding programmes.

References

de Nucé de Lamothe M, Wuidart W. 1979. Coconut varieties of Tall type at Port Bouët (Côte d'Ivoire). I. West African Tall, Mozambique Tall, Polynesia Tall, Malayan Tall. **Oléagineux 34:339-349.**

Bourdeix R, N'Cho YP, Sangare A, Baudouin L, de Nucé de Lamothe M. 1992. L'hybride de cocotier PB121 amélioré, croisement de Nain Jaune Malaisie et de géniteurs Grand Ouest-Africain améliorés. **Oléagineux 47:619-633.**

West African Tall Mensah (WAT04)













Conserved coconut germplasm from



Genebank	Contact
Taveuni Coconut Centre PO Box 84 Waiyevo, Taveuni Fijo Islands Phone:(679) 880003 Fax: (679) 880265 Email: tcc@is.com.fj	Country member of COGENT Mr Tevita Kete Director Coconut Industry Development Authority (CIDA) P O Box 5160, Raiwaqa, Fiji Phone: (679) 327 5030 Fax: (679) 3275035 Email: tkete@yahoo.com

Fiji is an island nation in the South Pacific Ocean east of Vanuatu, west of Tonga and south of Tuvalu. The country occupies an archipelago of about 322 islands, of which 106 are permanently inhabited, and 522 islets. The two major islands are Viti Levu and Vanua Levu which account for 87% of the population.

Whilst the first hand pollinations were done in India in 1920, the first hybridization between ecotypes has been attributed to Marechal, who in 1926 crossed the Malayan Red Dwarf with the Niu Leka Dwarf in the Fiji islands. Unfortunately, his work did not survive the 1929 economic crisis and the pedigree of the hybrids was lost.

Although coconut does not belong to the nation's top-ten crops according to FAO 2007 statistics, there are around 50 000 hectares of coconut palms growing in Fiji. Germplasm collecting, conservation and varietal description has been an ongoing collaboration between the Ministry of Agriculture, Sugar and Land Resettlement (MASLR) and COGENT since 1994. Fiji has an established germplasm collection consisting of an initial eight accessions at the Taveuni Coconut Center (Kumar and Kete 2005). These accessions have not been fully characterized. The Taveuni Coconut Center was established in 1987 to look into Fiji's ailing coconut industry. To set up this station, the government purchased 384 ha of land for the construction of infrastructure and establishment of seedgardens and trials. The programme was initiated to address the declining coconut production through production of high yielding hybrids seednuts and seedlings for rehabilitation.

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Niu Leka Dwarf (NLAD)

Bourdeix R, Kumar V, Kete T

Conservation

Niu Leka Dwarf (NLAD) is represented by 16 accessions totalling 1175 palms, according to the 2002 Coconut Genetic Resources Database. It is found in the Fiji Islands, its place of origin, and also in India, Côte d'Ivoire, Malaysia, Tanzania, Tonga, Vanuatu and the Solomon Islands, Jamaica and Florida.

History

The island of Taveuni in the Fiji Islands is located in the middle of the Pacific Ocean, not far from the international dateline. Visitors, on seeing the coconut palm known as the Niu Leka for the first time, often ask if it is really a coconut palm. In fact, its particularly bulky appearance suggests that it might be another species of palm. However, the Niu Leka Dwarf can easily be crossed with the other coconut varieties; it therefore belongs to the same species. Its existence was reported more than a hundred years ago. It is also found under the name of Niu Le'a in Tonga and in Samoa.

Identification

NLAD easily stands out from most other coconut palms, be they Dwarfs or Talls (see above). It has a bulky stem, with a very marked bole for a Dwarf, and extremely tightly packed leaf scars. The short, stiff fronds bear broad, dark green leaflets which overlap, allowing little light to pass. It is difficult to see the fruits on a palm from which no fronds have been cut. As vertical growth is very slow, the stem remains masked by the fronds for at least eight years. The inflorescence is compact, with a thick peduncle and numerous short spikelets. The male and female flowers on the same inflorescence do not mature at the same time. Molecular analysis has confirmed that NLAD had much more affinity with the Talls of the region (Cook, Tonga, Fiji and Tahiti) than with the other Dwarfs originating from Southeast Asia. It should be noted that there are Dwarfs in the Polynesian islands of the Cook archipelago whose stature and appearance strongly resemble the Niu Leka type, but which seem to be even more variable. In particular, there are coconut palms displaying the same short fronds with broad leaflets, but which do not have the marked bole typical of NLAD. The fruits, which are voluminous for a Dwarf, are oblong to round in shape, with a fairly large proportion of husk (43%). The colour varies from green to brown depending on the palms, which is why the variety name does not refer to a specific colour.

Yield and production

NLAD starts flowering 5-8 years after planting, whereas most other Dwarfs flower before that age. Production does not exceed 30 nuts per palm per year in Côte d'Ivoire.

Other information

NLAD has enthralled many researchers. Its short fronds meant that high planting densities could be envisaged; its robust stem and slow growth seemed to be worthwhile for zones subject to cyclones. The first coconut hybrid was created in 1926 by M Marechal, who crossed Niu Leka and Malayan Red Dwarfs. Since then, numerous other Niu Leka hybrids have been created in Côte d'Ivoire, Jamaica and Vanuatu. Most of these hybrids conserve the unfavourable characteristics of NLAD: a late start to production and mediocre yields. However, in the Fiji Islands, a few natural hybrids between the Niu Leka Dwarf and the Rotuma Tall are reported to perform better.

Reference

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RB


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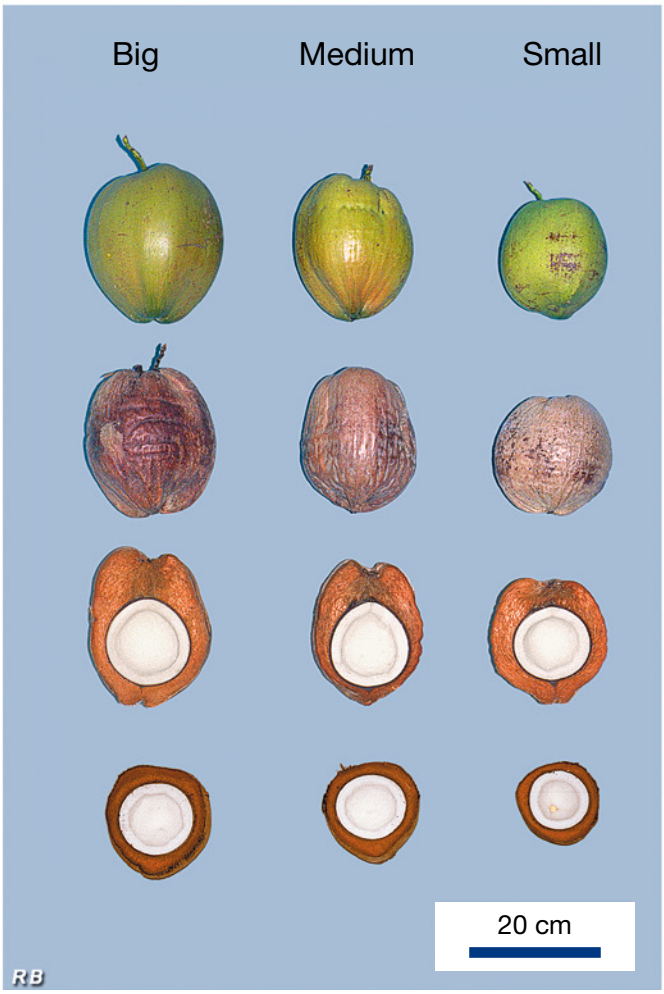
Big
Medium
Small
20 cm
RB



Rotuman Tall (RTMT)

Bourdeix R, Kumar V, Kete T, Labouisse JP

Conservation

According to the 2002 Coconut Genetic Resources Database, 12 accessions of the Rotuman Tall (RTMT), totaling 773 living palms, are conserved in the collections in Brazil, Côte d'Ivoire, Fiji, India, Jamaica, Malaysia, the Solomon Islands, Tanzania and Vanuatu. It was sent from the Solomon Islands to Malaysia in the 1970s. It was sent later from Côte d'Ivoire to Brazil and Tanzania. Marechal (1928) crossed selections of heavy fruited Rotuman Talls and the progenies were planted at Navuso (Viti Levu Island) and started to flower in 1936. Open pollinated seednuts from these progenies were later widely distributed throughout Fiji. In 1987, 5028 seednuts were moved from Rotuma Island to the seed garden at the Taveuni Coconut Centre.

History

Rotuma, a small volcanic island, is populated by people of Polynesian origin, whereas the other islands in the Fiji archipelago are populated by people of Melanesian origin. According to Whitehead (1964), the presence of large-fruited coconuts on some of the more isolated Pacific Islands, such as Rennell, Rotuma and Wallis, may be a result of Polynesian travellers who selected and carried large coconuts as source of water for their journeys.

Identification

The large fruits, with a good composition, have some similarities with those of the Rennell Island Tall, notably the frequent occurrence of a distal nipple. However, they do not display the pear shape often seen in the Rennell Talls. Certain Rotuman Talls produce somewhat more drop shaped fruits, on which the pointed part is at the distal end of the fruit.

Yield and production

Depending on the countries, RTMT produces 18 to 45 fruits per palm per year. It is in Côte d'Ivoire that the yields are the highest. The palms start bearing during the sixth year, with 25 fruits per palm per year. From 8-13 years, yields fluctuate between 40 and 62 fruits. They then increase, giving 85 fruits per palm per year in the best years. The fruits weigh 1340g and 1560g in India and Fiji, respectively. The inner nuts weigh 930-1020g. The 500-550g kernel is heaviest in India and gives 230-300g of copra when dried. In Fiji, the fruit is heavier but contains more husk than in India. The nuts in India, with a kernel of 550g, only give 230g of copra. These surprising figures need further verification.

Other information

Gigantic coconut shells are reportedly shown to visitors by Rotuman people. The islanders say that very large nuts are induced by pruning bunches and leaving only two or three fruits on the whole palm. Two special variants of RTMT were identified (sweet husk and yellow-green striped fruits). They were collected and transferred to the Taveuni Coconut Centre. Pollen from the Rotuman Tall is now used at that centre to produce commercial seednuts of the Malayan Red Dwarf x Rotuman Tall hybrid. RTMT has been crossed in Vanuatu with the Malayan Yellow Dwarf (MYD), Malayan Red Dwarf (MRD), Cameroon Red Dwarf (CRD) and Madang Brown Dwarf (MBD). The hybrid MBD x RTMT gives fruits with very high copra content (336g) compared to MRD x Rennell Island Tall (RIT), with a copra content of 261g.

Reference

Marechal H. 1928. Observation and preliminary experiments on the coconut palm with a view to developing improved seed for Fiji. Fiji Agricultural Journal 1:16-45.

Rotuman Tall (RTMT)













Conserved coconut germplasm from

France
(French Polynesia, Mayotte and New Caledonia)

Genebank	Contact
No coconut genebank in French overseas territories, although some coconut varieties are conserved in seed gardens located in French Polynesia, Mayotte, New Caledonia, Guadeloupe and Guyane. A new project is starting in French Polynesia in order to create a new coconut genebank located on numerous small islands.	Country not member of COGENT, but French international experts are frequently involved in COGENT activities Dr Roland Bourdeix & Dr Luc Baudouin Address: Campus CNRS / CEFE / 2ème étage /C - 1919 Route de Mende - 34293 Montpellier Cedex 5, France Tél : +33 4 67 61 32 85 - Secr. : +33 4 67 61 22 56 - Fax : +33 4 67 41 21 38 - E-mail: roland.bourdeix@cirad.fr; luc.baudouin@cirad.fr

Although coconut palms are not growing naturally on the French mainland, France has been involved in coconut research for more than 60 years. The numerous coconut germplasm collected by French researchers, both in French territories and in the rest of the world, has been given to the International Genebank for Africa and Indian Ocean in Côte d'Ivoire (Bourdeix et al. 2005).

French tropical agricultural research was born over a hundred years ago, and really took off once the importance for the national economy of expanding tropical agriculture was acknowledged, some time during the second half of the 20th century.

The *Institut de recherches pour les huiles et oléagineux* (IRHO) was founded in 1941 to cover all the oilseed commodity chains, from planting to processing. IRHO worked on Coconut research in numerous African countries, but also in Asia, Polynesia and South America. In 1958, nine tropical agricultural research institutes, including IRHO, were brought together under an umbrella committee, the *Comité de liaison des organismes de recherches agricoles spécialisés outre-mer*. The creation of the *Groupement d'étude et de recherche pour le développement de l'agronomie tropicale* (GERDAT), an economic interests group, marked a turning point in their relations.

They were finally grouped together under the CIRAD umbrella in 1984 to form a public-sector industrial and commercial enterprise (EPIC). CIRAD is a French public establishment, placed under the joint authority of the Ministry of Higher Education and Research and the Ministry of Foreign and European Affairs. It is a cooperative research centre specializing in tropical and mediterranean agriculture. CIRAD has a staff of 1800, including 800 researchers. It works with more than 90 countries worldwide, and has regional scientific platforms in the French overseas regions.

References

Cirad 2009. History of Cirad. Available on line at: http://www.cirad.fr/en/who-are-we/in-a-nutshell/our-history

Bourdeix R, Konan JL, N'Cho YP. 2005. Coconut. A guide to traditional and improved varieties. Editions Diversiflora, Montpellier, France.

New Caledonia Tall (NCT)

Labouisse JP, Bourdeix R

Conservation

Around 113 palms of New Caledonia Tall (NCT) are currently being maintained at Vanuatu Agricultural Research and Training Centre, Vanuatu.

History

New Caledonia, an overseas territory of France in the southeast part of the Pacific Ocean, consists of a large island (400 km long, 50 km wide) called "La Grande Terre" and a number of smaller islands. The Loyalty Islands Province has three large islands – Maré, Lifou and Ouvéa – and numerous small islands. The population of New Caledonia Tall was collected in the island of Ouvéa (20°36'S, 166°34'E). Nuts coming from 29 farmers' fields located in 10 villages spread on a distance of 40 km were collected in December 1986 and sent to the Saraoutou Research Station (now Vanuatu Agricultural Research and Training Centre or VARTC) for planting in the genebank.

Identification

NCT is very similar to Vanuatu Tall with numerous fruits with a wide variability in shape and size. NCT has a thin and slender trunk with a medium-sized bole. It produces small to medium-sized fruits which are oblong and weighing 1012g on average but the weigh is very variable. At the VARTC genebank, the fruit component analysis gives the following results: husk 346g, shell 190g, water 159g, meat 316g. These figures are not significantly different from those of Vanuatu Tall.

Yield and production

At the VARTC genebank, NCT produces less fruits than the ordinary Vanuatu Tall (respectively 58 and 80 fruits per palm per year). The yield is rather low at around 1.3 t copra per year.

Other information

In Vanuatu, 3 of 120 palms of NCT have shown slight symptoms of susceptibility to Coconut Foliar Decay (yellowish palms) but they recovered. NCT is well adapted to dry conditions and relatively low temperatures, which are common in Ouvéa Island. In Vanuatu, this variety has never been used in breeding programmes. In New Caledonia, a seed garden of Malayan Red Dwarf and Malayan Yellow Dwarf was established in the island of Lifou in order to produce hybrids with NCT starting in 2002.

Reference

Labouisse JP. 1997. Expertise agronomique du champ semencier de cocotiers de Lifou. Rapport de mission 26 Septembre - 2 Octobre 1997, CP SIC 906, CIRAD, France.




RB


RB


RB


Big
Medium
Small
20 cm
RB


RB

Lifou Tall (LFT)

Ratnambal MJ, Niral V, Krishnan M

Conservation

Lifou Tall (LFT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala), India.

History

LFT was introduced to the germplasm collection at CPCRI from Lifou Island in 1972.

Identification

LFT attains a height of 7 m at 23 years of age. The palm has a medium-sized bole and the girth of the trunk averages 82.3 cm. The crown bears about 32-34 leaves and is circular in appearance. The leaves are large with a long petiole. The petiole is not very thick. The leaflets are medium-sized and rather thin. This cultivar starts flowering 78.5 months after planting. However, certain palms were found to flower as early as 61 months and some as late as 96 months after planting. The inflorescences are medium-sized to long and bear about 33-53 spikelets. The spikelets are not very long (35-38 cm). The average number of female flowers per spikelet is around 0.6 and therefore, the total number of female flowers in an inflorescence is only 22.5. Fruit set is also low at less than 20%. The palm is cross-pollinated as the male and female phases in a spadix are distinct. The male phase persists for 18 days, while the female phase lasts for about 4 days and starts 1-2 days after the end of the male phase. However, some self-pollination is possible due to overlapping of male and female phases of successive spadices (inter-spadix overlapping). The fruits of this cultivar are big in size, greenish-yellow in colour and oblong in shape. The nut inside is also oblong with a thick kernel.

Yield and production

LFT starts yielding at 74-110 months of age. The palms are regular bearers and produce 10-11 bunches per year. The nut yield averages 61 fruits per palm per year, ranging from 45-76 fruits per palm per year. The fruits are large in size with about 35.5% husk. The nut inside weighs 641.4g with a copra content of 208g. The oil content of the copra is 68.3%. The estimated copra and oil yield under rain-fed conditions is 2.2 t and 1.5 t per ha per year, respectively.

Other information

The quality of the nut water is poor and therefore, this cultivar is not suitable for commercial exploitation as a tender nut variety. Lifou Tall has been evaluated for yield in germplasm trials. However, this cultivar has not been used in hybridization programme.

Reference

Ratnambal MJ, Niral V, Krishnan M, Ravi Kumar N. 2000. Coconut Descriptors-II, Central Plantation Crops Research Institute, Kasaragod, India.




JTO


JTO


JTO


Big
Medium
Small
20 cm
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Niu Fella Tall (NUFT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Nu Fella Tall (NUFT) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala), India.

History

The variety was introduced to India from New Caledonia in 1968.

Identification

The palm grows up to 6.5 m with 32 leaves on the crown. The leaves are long (4.9 m) with about 180 leaflets. The leaflets are 111 cm long and 5.4 cm wide. The palm flowers eight years after planting. There is inter-spadix overlapping. Fruits are medium-sized, oval-shaped and green-collared. The husk is concentrated towards the posterior end. The husked nut is almost round.

Yield and production

The palm starts fruiting nine years after planting. It produces 40 nuts per year. The fruit weighs 613g with 378g nut. The husk is 38% per cent of fruit weight. The kernel is thick. The copra content per nut is 98g with 64% oil.

Other information

NUFT is a poor yielder but may be tried for toddy tapping to produce coconut water. It is not being used in breeding work in India.

Reference

Ratnambal MJ, Nair MK, Muralidharan K, Kumaran PM, Bhaskara Rao EVV, Pillai RV. 1995. Coconut Descriptor, Part I, CPCRI, Kasaragod, Kerala, India.




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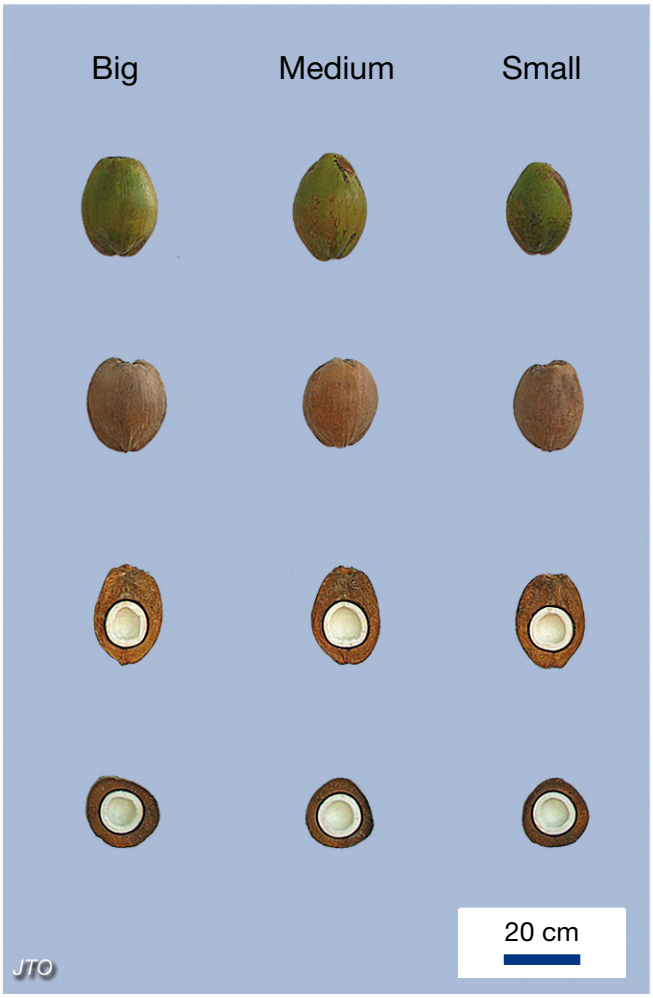
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20 cm
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Mayotte Tall (MYOT)

Bourdeix R, Vallée G, Manguin G, Dader O.A.

Conservation

In 2002, the Mayotte Tall (MYOT) was only conserved at the Lycée Agricole in Coconi, in the center of its island of origin. Around 150 palms are planted in a design intended for local Tall or hybrid seednut production, under a project funded by France.

History

The Comoro Islands are located in the middle of the Mozambique Channel between the African coast and Madagascar. The archipelago comprises four islands and covers an area of 2236 km². Three independent islands form the Comoros Federation; the fourth, Mayotte, is attached to France. It covers an area of 376 km² and comprises two principal islands: the isle of Pamandzi and the main island of Mayotte, in the form of a seahorse separated by a 2-km wide stretch of sea.

Identification

The Mayotte Tall resembles the Comoro Moheli Tall. Its main characteristic is its spreading stem that forms a broad bole at the base. The stem of some palms exceeds 80 cm in diameter 20 cm from the ground; in average, all the Tall varieties recorded in the Coconut Genetic Resources Database have a diameter of 53 cm at 20 cm from the ground level. It has strong vertical growth and starts bearing late six to seven years after planting. The fruits vary considerably in shape and composition. There is great diversity within each farmer's field, although little difference from one location to the next. Molecular biology studies show that, while the Comoro Moheli Tall is similar to Indian and African coconut palms, it stands out from those of East Africa through its greater diversity, due to an input of genes from Southeast Asia. It is known that seafarers in this region reached the island of Madagascar, probably around the sixth century AD, and settled there. Some probably imported coconut seednuts with them, like the ancestors of the Polynesians who come from the same region. In the following centuries, Arab trading between India and East Africa facilitated the introduction of coconuts from India, giving the palms in the region their current genetic structure.

Yield and production

An exhaustive study of Comoro coconut plantings in 1971 (Delorme 1973) estimated the nut production of each island of the Federation. On Mayotte, analyses carried out in 2002 by the Directorate of Agriculture and Forestry showed that a fruit weighs 1169g on average, and a nut 645g with 321g of kernel.

Other information

In Mayotte Island, MYOT is always intercropped with banana, citrus fruits, and aromatic plants. The photo at the bottom right in the opposite page was taken in an ylang-ylang plantation, a typical landscape from which Mayotte derives its name as the island of perfumes. In 1971, Mayotte had around 358 000 coconut palms. Over the entire archipelago of the Comoro Islands, coconut accounted for 28% of the total food energy value of the local diet. Today, the diet of the inhabitants of Mayotte has changed and the share provided by coconut has decreased.

References

Delorme M. 1973. The Coconut palm in the Comoro Islands. Oléagineux 28:341-346.

Bourdeix R. 2002. Rapport de mission à Mayotte du 16 au 29 mai 2002. CIRAD report No.CP_SIC 1502, Montpellier, France. 35p.




RB


RB


RB


Big
Medium
Small
20 cm
RB


RB

Nu Quawen Tall (NUQT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Nu Quawen Tall (NUQT) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala), India.

History

Nu Quawen Tall was introduced to India from New Caledonia in 1968.

Identification

A semi-Tall palm, it grows to a height of about 6.8 m with 36 leaves on the crown. Leaves are 5.4 m long with 203 leaflets. The leaflets are 122 cm long and 5.6 cm wide. The palm flowers seven years after planting and produces 9-10 inflorescences per year. The inflorescence is 101 cm long with strong, short peduncle of 56 cm length. This variety is said to be semi-direct self-pollinating type as there is an overlap of the male and female phases (5.6 days duration) between the inflorescences. The fruits are green and medium-sized with oval shape. The fruits have medium husk content. The nut without the husk is oval in shape with some projection towards the bottom.

Yield and production

Fruiting starts about 8.5 years after planting and the palm produces 52 nuts per year. The fruit weight is about 634g with nut weight of 400g. The proportion of husk to whole fruit weight is 37%. The copra content is 135g per nut with 65% oil. The palms give 1.2 t of copra and 0.8 t of oil per ha.

Other information

This variety may be planted for toddy tapping. It is not being used in any of the breeding programme.

Reference

Ratnambal MJ, Nair MK, Muralidharan K, Kumaran PM, Bhaskara Rao EVV, Pillai RV. 1995. Coconut Descriptor Part I, CPCRI, Kasaragod, Kerala, India.




JTO


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Big
Medium
Small
20 cm
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Nu Wehung Tall (NWHT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Nu Wehung Tall (NWHT) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala), India.

History

Nu Wehung Tall was introduced to India from New Caledonia in 1968.

Identification

Like other Caledonian Talls, this variety is also a semi-Tall type. It grows up to 5.9 m with about 40 leaves. The stem girth at 1 m from the ground level is 86 cm. The number of leaf scars, measured from 1 to 2 m above ground level, is 28. The palm flowers 8 years after planting and produces 11-12 inflorescences per year. The inflorescence is medium-sized, 99 cm long with a short, but strong petiole of 39 cm. This variety is a semi-direct self-pollinating type because of the presence of inter-spadix overlapping (nearly 5-days duration) in about 60% of inflorescences. Fruits are oval to oblong in shape with high husk content. The husk is more towards the posterior end. The husked nut is flat at the posterior but pointed towards the bottom.

Yield and production

Fruiting starts nine years after planting. The palm produces about 49 fruits per year. Fruits are of medium-sized, weighing 667g. The nut without the husk weighs 388g. The kernel and shell are thin. The copra content is 133g per nut with 67% oil. The copra and oil yield in 1 ha are 1.1 t and 0.75 t, respectively.

Other information

This variety may be planted for toddy tapping. It is presently not being used in breeding work in India.

Reference

Ratnambal MJ, Nair MK, Muralidharan K, Kumaran PM, Bhaskara Rao EVV, Pillai RV. 1995. Coconut Descriptor Part I, CPCRI, Kasaragod, Kerala, India.




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Small
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Rangiroa Tall (RGT)

Bourdeix R, Konan JL, Labouisse JP

Conservation

According to the 2002 Coconut Genetic Resources Database, Rangiroa Tall (RGT) is represented by 8 accessions totalling 466 living palms in the collections of Côte d'Ivoire, Jamaica, Malaysia, the Solomon Islands and Vanuatu. It was sent from the Solomon Islands to Malaysia in the 1970s. In Vanuatu, the first introduction was decimated by *Helminthosporium* leaf spot. The two surviving palms have been crossed to maintain the variety.

History

Rangiroa is located in the Pacific Ocean, 355 km northwest of Tahiti, and is the largest atoll in the Tuamotu islands. It was discovered in 1616 by Le Maire and Schouten, and visited by Roggeven in 1722, but Rangiroa did not see its first European settlers, catholic missionaries, until 1851. It had slumbered for many years, but has now come back to life through the establishment of pearl farms and tourism.

Identification

Two populations have been introduced into Côte d'Ivoire from French Polynesia. The Tahitian Tall from the main island and the Rangiroa Tall, which were initially called Polynesia Tall No. 1 and No. 2. The main difference between the Tahitian Tall and the Rangiroa Tall lies in the greater susceptibility of the latter to *Helminthosporium* leaf spot. This leaf disease, caused by the fungus *Dreschlera incurvata*, leads to thousands of small dry, brownish spots on the leaflets. The fruits of the Rangiroa Tall also seem to vary more in shape. The final difference is not very visible: it involves the adaptation of these two varieties to very different soils, coral for the Rangiroa and volcanic on the high islands of Tahiti for the Tahitian Tall.

Yield and production

On the Rangiroa atoll in the 1960s, average yields of RGT were very low at 10 to 15 nuts per palm and around 200 to 250 kg of copra per ha. Yields of up to 1.6 t of copra per ha have been achieved with the same local Tall palms by correcting soil mineral deficiencies. In Côte d'Ivoire, this variety has been tested on sandy soils. The palms start bearing during their 6th year, with 13 fruits per palm per year; yields fluctuate between 24 and 62 fruits per palm per year (1 to 2.7 t of copra) up to 18 years. The Tahitian Tall planted in the same plot has produced up to 86 fruits in the same year, giving an average of 640 kg of copra more per ha. The fruits weigh 1240-1430g on average in Côte d'Ivoire depending on the planting year. The inner nuts weigh 890-940g. The 470-500g kernel gives 270-300g of copra when dried. In Rangiroa, the copra content of the nuts is 250g, on average, but large variations occur among the palms (150-400g). A record weight of 6.250kg has been recorded for a fruit in Vanuatu.

Other information

Experimental plots set up in 1959 on Rangiroa resulted in agronomic recommendations for good development of coconuts on an atoll. Little use has been made of RGT in breeding programmes worldwide. The Tahitian Tall is preferred as it is more resistant to diseases. Nevertheless, the hybrid between the Brazilian Green Dwarf and RGT was recommended on the coral soils of Polynesian islands. This hybrid is being tested at the Saraoutou Station in Vanuatu.

References

Pomier M. 1967. Coconut research at Rangiroa. South Pacific Commission Technical Paper 153.

Reboul JL. 1980. Coconut growing on coral soil. Regional technical meeting on atoll cultivation, Papeete, Tahiti. South Pacific Commission, Nouméa.




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Big
Medium
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20 cm
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Tahitian Red Dwarf (TRD)

Bourdeix R, Konan JL, Ballo K

Conservation

The Tahitian Red Dwarf (TRD) is quite widespread in the Pacific islands (Cook, Tahiti, Tonga and Samoa). However, it is not particularly well represented in international collections. Only one accession of this variety, comprising 73 living palms, according to the 2002 Coconut Genetic Resources Database, is conserved in the Ivorian collection in Africa.

History

This Red Dwarf comes from Tahiti and was introduced into Africa in the 1970s. In Tahiti, it is known as the 'Haari Papua' (literally 'Papuan coconut'). Yet, Papua New Guinea is almost 6000 km from Tahiti on the other side of the Pacific Ocean. For several centuries, Polynesian or Melanesian sailors travelled across the Pacific Ocean bringing plants with them. This has contributed to considerable confusion on the exact origin of certain coconut varieties.

In Côte d'Ivoire, this Dwarf is the frailest of all coconut palms. Eight years after planting, its slender stem does not exceed a metre in height on average. Its growth is slower than the Brazilian Green Dwarf. Its very supple fronds with long leaflets give it a particular silhouette, by which this variety can be distinguished from the Malayan Dwarfs. TRD bunches are clusters of small fruits suspended at the end of a long peduncle. When young, these oval fruits are a deep orange red. When completely ripe, they have a small but clearly defined nipple. Inside the fruit, the nut is round; it sometimes becomes pointed at the distal end if the palm has suffered from drought. Ripe nuts contain little water. In Côte d'Ivoire, a ripe nut weighing an average of 200g contains 70g of meat and only 7g of water on the 6th to 7th year. However, the meat is rich in oil. Seednut germination is rather slow for a Dwarf.

Identification

The Tahitian Red Dwarf stands out among other Red Dwarfs; its colour is more intense than that of the Malayan or Cameroon Red Dwarfs. Moreover, it is the only coconut palm with red fruits, whose flowers, young fruits and root tips reveal a pink coloration of internal tissues (see oval photograph). The other Dwarf coconut displaying such a pink coloration is the Pilipog Green Dwarf from the Philippines. In Papua New Guinea and Vanuatu, Dwarf varieties exist that are just as red as the Tahiti, but they can be distinguished from the latter by their pointed fruits, which have a very prominent nipple, and no pink coloration of internal tissues.

Yield and production

In Côte d'Ivoire, the TRD starts flowering 53 months after planting, more than two years later than the Malayan Yellow Dwarf. When mature, its production remains low and does not exceed around 60 fruits per palm per year (30 fruits less than the Yellow Dwarf).

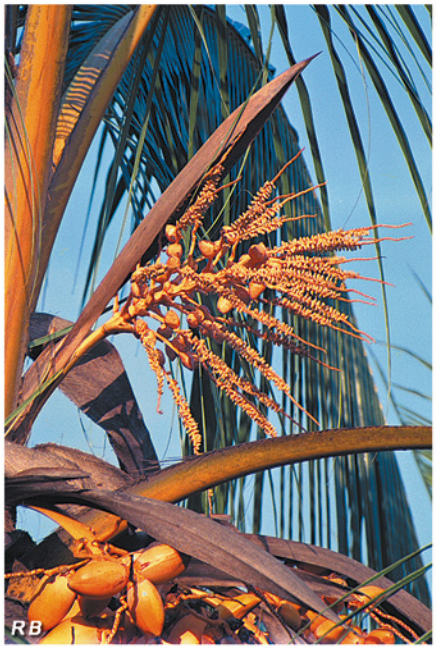
Other information

In Polynesia, this Dwarf is mostly used for decoration in gardens. Perhaps the function of the TRD resembles that of so-called 'wedding' coconut palms in the Tuvalu islands. When there are too many guests and not enough good big drinking nuts, these pretty little fruits available in large numbers are offered to the guests. As it flowers late and produces small yields, researchers have shown little interest in the TRD. Very little use has been made of it in varietal development programmes. However, in Côte d'Ivoire, it was crossed with four other varieties in 1993.

Reference

N'Cho YP, Le Saint JP, Sangare A. 1988. Les cocotiers Nains à Port Bouët (Côte d'Ivoire). III. Nain Brun Nouvelle-Guinée, Nain Vert Thaïlande, Nain Rouge Polynésie. **Oléagineux 43:55-66.**

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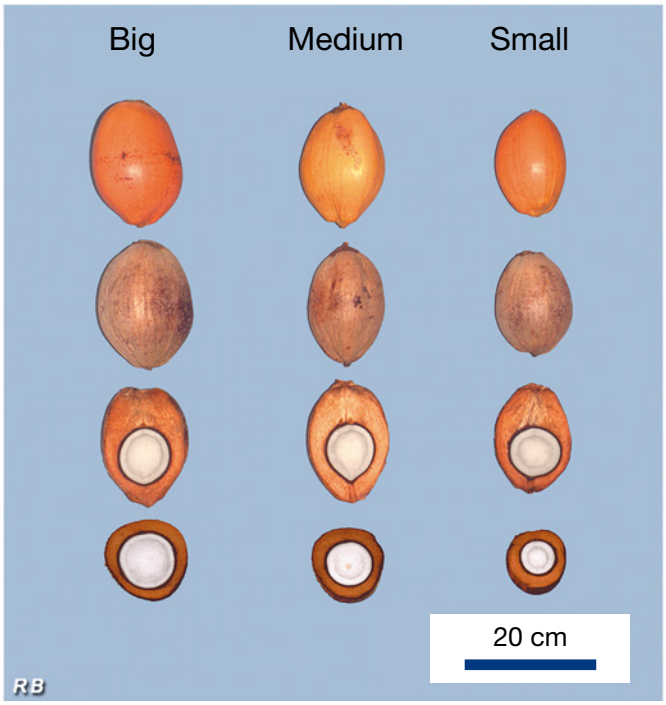
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Tahitian Tall (TAT)

Bourdeix R, Konan JL, Ballo K

Conservation

The Tahitian Tall (TAT) is also known as 'Polynesia Tall No. 1'. According to the 2002 Coconut Genetic Resources Database, 11 accessions totalling more than 2200 living palms are conserved in eight countries. TAT was introduced into Côte d'Ivoire on several occasions in the 1960s, where it was reproduced and exported to Brazil, Indonesia, the Philippines and Tanzania. It is also present in India, Jamaica and Malaysia.

History

French Polynesia is made up of 118 islands and atolls strewn across more than 4 million km² of the eastern Pacific Ocean. It includes five archipelagos: the Austral Islands, the Marquesas Islands, the Tuamotu atolls, the Mangareva Islands and the Society Islands. It is in the last island group, on Tahiti, that this variety was collected. The Polynesians, who were great voyagers, took coconuts with them in their boats. Discoveries such as Lapita pottery, show that they were in Fiji around 2500 BC, in Tonga (1100 BC) and Samoa (1000 BC), then settled in the Marquesas (300 BC), in the Society Islands of which Tahiti is a member (600 AD), and lastly in New Zealand (800 AD). During his voyage on the Beagle, which led him as far as Tahiti in 1839, Charles Darwin wrote: *"After walking under a burning sun, I do not know anything more delicious than the milk of a young cocoa-nut"*.

Identification

When planted under good conditions, the Tahitian Tall becomes a large palm. It produces numerous fronds that are longer than those of African varieties, although they have the same number of narrower leaflets. The fruits vary in shape and colour, and sometimes have a distal nipple. Their weight varies from 1165g in the Philippines to 1291g in Côte d'Ivoire. The inner nut also varies in shape: slightly pointed at the end with the germination 'eyes' or oblong or virtually round. The meat is generally thick and weighs 429-460g. In Côte d'Ivoire, only the varieties originating from the Rennell islands and the Comoro islands produce a bole at the base as wide as that of the Polynesia Tall. Some fruits, of average size and excellent composition, have a surprisingly thin husk, less than 1 cm thick in some places.

Yield and production

In Côte d'Ivoire, TAT starts bearing early and well. On average, it flowers 62 months after planting and the adult palms produce 60 to 70 fruits per palm per year. Yields are better in the Philippines, with 84 fruits per palm.

Other information

TAT is susceptible to *Helminthosporium* leaf spot, a fungus that causes numerous small gray, dry spots on fronds. TAT is widely used in varietal development programmes worldwide. In Côte d'Ivoire, it has been crossed with 16 other varieties, of which 8 were Dwarfs and 8 were Talls. Crosses with Red and Yellow Malayan Dwarfs have given good yields, but have not been distributed to growers. However, in the Philippines, hybrids with Catigan Green and Malayan Red Dwarfs are currently recommended under the names PCA 15/6 and PCA 15/7.

Reference

de Nucé de Lamothe M, Wuidart W. 1979. Coconut varieties of Tall type at Port Bouët (Côte d'Ivoire). I. West African Tall, Mozambique Tall, Polynesia Tall, Malayan Tall. Oléagineux 34:339-349.




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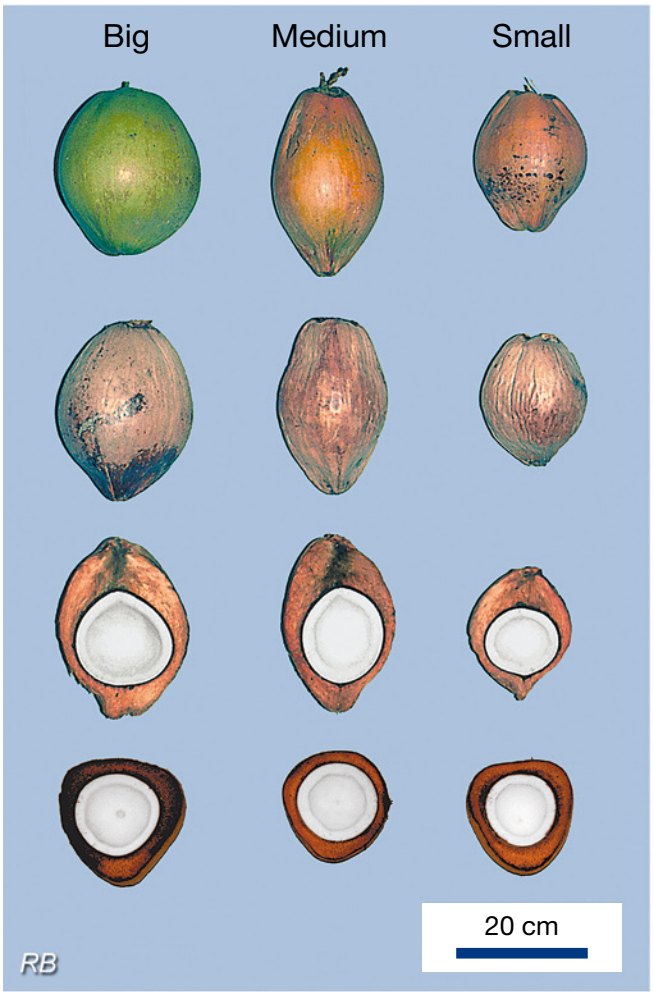
Big
Medium
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20 cm
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RB

Conserved coconut germplasm from

India

Genebank	Contact
Central Plantation Crops Research Institute (CPCRI) PO Kudlu Kasaragod - 671 124, Kerala, India Phone : 91-499.430333 Fax : 91-499-430322 Email : cpcri@x400.niegw.nie.in	Country member of COGENT Dr George V. Thomas Director Central Plantation Crops Research Institute (CPCRI) Indian Council of Agricultural Research (ICAR) Kasaragod, Kerala, 671 124 India Phone: 91-4994 232893/ 232894/ 232895 / 232996 Fax: 91-4994-232322 Email: directorcpcri@gmail.com

India is the seventh-largest country by geographical area and the second-most populous. Bounded by the Indian Ocean on the south, the Arabian Sea on the west, and the Bay of Bengal on the east, India has a coastline of 7517 kilometers. It is bordered by Pakistan to the west, China, Nepal, and Bhutan to the north; and Bangladesh and Myanmar to the east.

With a crop area of almost 1.9 million hectares, India is the world's third largest coconut producer, growing the crop in 4 of its southern states: Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. Crop management varies from monocropping with sophisticated drip irrigation, to mixed gardening in home gardens to wild stands in uninhabited islands. Planting densities vary from wide spacing of 150 palms per ha in some parts of Karnataka to high-density stands of nearly 400 palms per ha in the Lakshadweep islands.

The country's coconut industry suffers from two main problems: Root (wilt) disease (in Kerala) and drought, as the crop is mainly grown as a rain-fed crop or with limited irrigation. In addition, Eriophyid mite has become a serious threat to coconut cultivation in recent years. Price fluctuation for coconut and its products is also another threat to coconut farmers.

India has a relatively well-developed coconut Research and Development network (Rajagopal et al. 2005). The Central Plantations Crops Research Institute (CPCRI) and many state agricultural universities concentrate on research at the national and regional levels. An All India Coordinated Research Project on Palms (AICRPP) plays a crucial role in networking these organizations. The Coconut Development Coir Board helps in implementing developmental programmes on coconut and coir, in collaboration with the state departments of agriculture, horticulture and oilseeds. Genetic enhancement for crop productivity is an important activity of the concerned research organizations, particularly by the CPCRI, which spearheads coconut research and development in the country. The new field genebank in Kidu Farm, Karnataka, which became the International Coconut Genebank for South Asia, is supported technically by the laboratory facilities at CPCRI, Kasaragod (Rajagopal et al. 2005).

Reference

Rajagopal V, Kumaran PM, Arulraj S, Arunachalam V. 2005. Status of coconut genetic resources research in India. . In: Batugal P, Ramanatha Rao V, Oliver J, editors. Coconut Genetic Resources. International Plant Genetic Resources Institute – Regional Office for Asia, the Pacific and Oceania (IPGRI-APO), Serdang, Selangor DE, Malaysia. pp. 573-580. Available from: URL: http://www.cogentnetwork.org/index.php?page=books

Rajagopal V. 2005. The International Coconut Genebank for South Asia (India). In: Batugal P, Ramanatha Rao V, Oliver J, editors. Coconut Genetic Resources. International Plant Genetic Resources Institute – Regional Office for Asia, the Pacific and Oceania (IPGRI-APO), Serdang, Selangor DE, Malaysia. pp. 117-118. Available from: URL: http://www.cogentnetwork.org/index.php?page=books

Andaman Giant Tall (AGT) in Côte d'Ivoire

Bourdeix R, Konan JL

Conservation

According to the 2002 Coconut Genetic Resources Database, Andaman Giant Tall (AGT) is represented worldwide by four accessions with 171 living palms in the field. It was introduced into the state of Kerala, on the Indian mainland, in the 1940s. Seeds were then disseminated from the Kasaragod Research Station throughout India, and then to Africa. The 25 coconut palms planted in Côte d'Ivoire were used to establish a population of 150 palms by controlled crossing in 1982.

History

The Indian archipelago of the Andaman Islands is a cluster of around 200 islands, the summits of an underwater mountain range crossing the Bay of Bengal. Only 32 of the islands are inhabited on a permanent basis. Most of the islanders are settlers from India, Burma, Malaysia, and more recently, from Sri Lanka. This variety was originally named 'Gigantea' by the Indian researchers who discovered palms with considerable dimensions at the survey site. The dominant green fruits are voluminous but contain a large proportion of husk (37% to 41%). Their weight varies from 1194g to 1478g, depending on the country. The inner nut is round and weighs from 693 to 877g.

Identification

The Andaman Islands are nearer to Thailand and Burma than they are to the Indian subcontinent. Their geographical position provides a possible point of contact between two major coconut groups: the Indo-Atlantic type varieties, bearing small elongated husk-rich fruits with a triangular cross-section, and the Asian type varieties, bearing large round fruits with a thin husk. The fruits of the Andaman Giant Tall (AGT) are intermediate: seen from the side, the fruits are large and almost round, but from above they are triangular with thick husk. Some Cambodian varieties bear fruits of similar shape. As in some Asian varieties, the fruits of the AGT germinate very rapidly.

Yield and production

In Côte d'Ivoire, this variety starts bearing six years after planting and does not exceed 30 fruits per palm before the 9th year. Yields fluctuate between 32 to 51 fruits per palm per year up to the 15th year. In India, flowering occurs about 8 years after planting; yields vary from 58 to 110 fruits (80 on average) per palm per year, although this estimate was probably made on older palms.

Other information

A comparison of AGT measurements with those of other varieties holds a few surprises. For instance, in the Indian collections, AGT fronds measure 5.1 m in length and have 235 leaflets measuring 121 cm in length. In Côte d'Ivoire, they are 6.1 m long with 240 leaflets measuring 127 cm in length. Yet other palms produce fronds that are more than 7 m long, or have more than 250 leaflets; the longest leaflets exceed 140 cm. These figures show that the AGT is not particularly gigantic. Neither the stem, nor the fronds, nor the fruits have particularly extra-sized measurements compared to the other varieties existing elsewhere in the world.

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Andaman Giant Tall (AGT)













Andaman Giant Tall (AGT) in India

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Andaman Giant Tall (AGT) is present at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala); at the Seed Farm in Kidu (Karnataka); at the National Research Centre for Cashew in Puttur (Karnataka); and in different states under the All India Coordinated Research Project on Palms (AICRPP).

History

Andaman Giant Tall is extensively grown in the Andaman and Nicobar Islands in the Bay of Bengal about 1200 km from the mainland of India. This cultivar is also called 'gigantea'. This cultivar was introduced to the mainland in 1940. Open-pollinated as well as selfed progenies were planted in CPCRI, Kasaragod, at the CPCRI Seed Farm in Kidu, the National Research Centre for Cashew at Puttur (Karnataka) and at various centres in different states under the AICRPP.

Identification

The palm is very robust and exhibits gigantic morphological features. The palm grows to 12 m with about 34 leaves on the crown. The leaves are 5.1 m long. The leaf has 235 leaflets, which are 121 cm long and 6.4 cm wide. The stem girth is 95 cm and has a distinct bole. The palm produces 8-13 inflorescences per year. The palms are highly heterozygous due to their cross-pollinating nature. The fruit is very large, oval in shape and green in colour. Due to its large nut size, the variety is referred to as Andaman Giant.

Yield and production

Stable yield is achieved on the 12th year when the palm becomes a regular bearer. The fruit weighs around 1200g; the nut around 693g. Copra content is 194g per nut with 66% oil. Annual yield varies from 58 to 110 nuts per palm under rain-fed conditions with an average of 80 nuts per palm. The average copra yield is 2.8 t per ha and oil yield is 1.8 t per ha. In Ratnagiri (Maharashtra), this cultivar produced 61 nuts per palm; in Veppangulam, 72 nuts with 7.5 kg of copra. This cultivar is tolerant to drought and highly susceptible to stem bleeding caused by the fungus *Thielaviopsis paradoxa*. Due to its high copra content, this variety is popular among farmers. Currently, it is used for the production of Tall x Tall hybrids.

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Andaman Giant Tall (AGT)

photographed in Côte d'Ivoire













Andaman Ordinary Tall (ADOT) in Côte d'Ivoire

Bourdeix R, Konan J.L

Conservation

According to the 2002 Coconut Genetic Resources Database, Andaman Ordinary Tall (ADOT) is represented by 5 accessions totaling 574 living palms in the germplasm collections of Côte d'Ivoire, India and Ghana.

History

The Indian archipelago of the Andaman Islands is a cluster of around 200 islands, the summits of an underwater mountain range crossing the Bay of Bengal. Only 32 of the islands are inhabited on a permanent basis. ADOT was sent from the Andaman Island to Côte d'Ivoire in 1967 by the Central Plantation Crop Research Institute of India. It was then sent from Côte d'Ivoire to Ghana in 1994. In India, the Andaman Giant Tall is also maintained at Aliyarnagar, Veppankulam (Tamil Nadu), Ambajipetta (Andra Pradesh) and Ratnagiri (Maharashtra) under the All India Coordinated Research Projects on Palms.

Identification

The Andaman Ordinary Tall is clearly distinct from Andaman Giant Tall (AGT), another variety collected in the same archipelago. The predominantly green fruits are more oblong than those of the AGT, with more pronounced longitudinal ridges. The inner nut is often off-centre and is found more in the distal section. The fruits are lighter in weight than those of the AGT and have higher kernel content. The stem of the ADOT is slender for a Tall ecotype and has a discreet bole. Vertical growth is quite slow. In India, on the 34th year, the stem measured from the ground to the base of the first green frond does not exceed 11 m. In Côte d'Ivoire, the stem measures 4.1 m, on average, on the 10th year.

Yield and production

In Côte d'Ivoire, flowering begins 55 months after planting. From the 5th year onwards, 25 fruits are produced per palm per year. In India, bearing starts at about nine years after planting. The fruits weigh 878 to 1182g in Côte d'Ivoire and in Kasaragod (India), respectively. In Côte d'Ivoire, the original introduction gave fruits weighing 1004g but the succeeding plantings, which were planted on poor soil, gave fruits weighing only 878g. The inner nuts weigh 564 to 620g. The 300 to 321g kernel is heavier in Africa than in India, and gives 160 to 190g of very oil-rich copra. In India, the palm gives an average of 94 fruits, ranging from 40 to 133. In Ratnagiri, ADOT produced 59 fruits per palm (11th year average). In Veppamkulam, a 30-year-old palm produced 74 fruits per year. In Arsikere, this variety produced 86 fruits per palm, with 12.3 kg of copra per palm per year (the weight of copra per nut is smaller, at around 140g only). In Côte d'Ivoire, mature palms give very good yields for a Tall type, reaching 2.4 t of copra per ha per year, i.e. 0.8 t more than the West African Tall (WAT) planted under the same conditions.

Other information

In India, ADOT has been classified as moderately susceptible to the root wilt disease, with a disease index between 31 and 40%. Little use has been made of the variety in breeding programmes, except in India where it has been crossed with various Dwarfs and Talls. In Kerala, the hybrid between ADOT and the Gangabondam Green Dwarf (GGBD) has been disseminated under the name 'Anandaganga'. In Côte d'Ivoire, ADOT was crossed with MYD in 1996.

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Andaman Ordinary Tall (ADOT)













Andaman Ordinary Tall (ADOT) in India

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Andaman Ordinary Tall (ADOT) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala), India.

History

Extensively grown in the Andaman and Nicobar Islands, this cultivar was introduced to the Indian mainland in 1941. The *inter se*/selfed population was planted in 1972 in a replicated trial at Kasaragod. This cultivar is also maintained at Aliyarnagar, Veppankulam (Tamil Nadu); Ambajipetta (Andra Pradesh) and Ratnagiri (Maharashtra) under the All India Coordinated Research Project on Palms.

Identification

Palms of the Andaman Ordinary Tall are more vigorous than those of the local Talls. The height of the palm is about 10 m with a distinct bole. The leaves are about 5 m long with a strong petiole. The leaf has 223 leaflets, which are 12 cm long and 6.5 cm wide. It is predominantly allogamous as there is a distinct gap between the male and female phases. The fruit is oval with yellowish green or brown colour. The nut inside has a thick kernel and a thin shell.

Yield and production

Fruiting starts nine years after planting. The fruit weighs 1182g; the husk makes up 47.6% of the whole fruit weight. The copra content is 160g per nut with 66% oil. Yield ranges from 40 to 133 fruits per palm per year, yielding 59 fruits and 74 nuts per palm per year in Ratnagiri and in Veppamkulam respectively. It produces 3.4 t copra and 2.2 t oil per ha. In Arsikere (Karnataka), 86 fruits per palm produce 12.3 kg of copra per year.

Other information

Andaman Ordinary Tall is sensitive to drought; sensitive to the burrowing nematode, *Radopholus similis*; moderately tolerant to root (wilt) disease; and resistant to stem bleeding disease caused by *Thielaviopsis paradoxa*. ADOT is a popular cultivar in Andaman and Nicobar Islands because of its high yield and high copra content even under rain-fed conditions. Indian farmers plant this variety in large numbers, especially in the Maidan region of Karnataka. The palm is also a good yielder of toddy. ADOT was used as a female parent in the production of Anandaganga (ADOT x GBGD) hybrid. This variety has been recommended in different states of the country, such as Kerala, Andhra Pradesh, Tamil Nadu, Assam, Bihar, Madhya Pradesh, Maharashtra, Goa and Orissa as parent for the production of Dwarf x Tall and Tall x Dwarf hybrids and also as a Tall cultivar for cultivation.

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Andaman Ordinary Tall (ADOT)













Ayiramkachi Tall (AYRT)

Ratnambal MJ, Niral V, Krishnan M

Conservation

Ayiramkachi Tall (AYRT) is conserved at the Central Plantation Crops Research Institute (CPCRI), in Kasaragod (Kerala) and at the centres under the All India Coordinated Research Project on Palms.

History

This cultivar was collected from Tamil Nadu state and introduced into the germplasm collection at CPCRI in 1972. The local name is based on the fact that the inflorescence bears thousands of female flowers ('ayiram' meaning thousand in the Tamil language).

Identification

AYRT is a medium-sized coconut palm; the tree attains a height of 6.1 to 7.3 m at 25 years old. The stem is rather thin for a Tall cultivar, with a girth of about 73 cm and a medium-sized bole. This variety is intermediate between Talls and Dwarfs for most characters. The leaves are medium-sized with broad leaflets and strong petioles. The palm starts flowering about six years after planting. The inflorescences are not very long but have more spikelets per inflorescence. Spikelets bear at least one female flower and therefore, the number of female flowers per inflorescence is high (24-46). Fruit set is around 41%. The length of the female phase is short and starts after the end of the male phase. Reproduction is allogamous, but some amount of inter-spadix overlapping (12%) of male and female phases is observed. The colour of the fruits varies from green to greenish yellow. However, greenish brown to brown shades are also found. The fruits are small and oblong with thick kernel and shell.

Yield and production

The palm begins bearing fruit about eight years after planting. The palm produces about 10-12 bunches per year, and the yield varies from 110-176 nuts under rain-fed conditions. However, high yields of 347 fruits per palm per year have been obtained occasionally. Such high yields are followed by poor yields in the subsequent years. The average fruit weighs about 560g with a 39% husk. The average kernel content is around 201g per nut. The meat is rather thick with an oil content of 69.2%. Average annual copra yield is about 2.9 t per ha under rain-fed conditions.

Other information

This variety and its hybrid with East Coast Tall (ECT x AYRT) are susceptible to damage by rodents (*Rattus rattus wroughtoni* and *Funambulus palmarum*). It is also susceptible to nut damage caused by the Eriophyid mite *Aceria guerreronis* and to leaf blight caused by *Pestalosphaeria elaeidis* (Booth and Robertson) Van der Aa. The potassium content in the nut water of mature nuts is very high, hence this variety can be utilized by the beverage industry. This cultivar is utilized in breeding to develop hybrids/varieties with high yield, tolerance/resistance to drought, pest and diseases. It has been used as both male and female parent in crosses with ECT. The hybrid ECT x AYRT is high yielding. Ayiramkachi Tall has been evaluated in germplasm evaluation trials at CPCRI.

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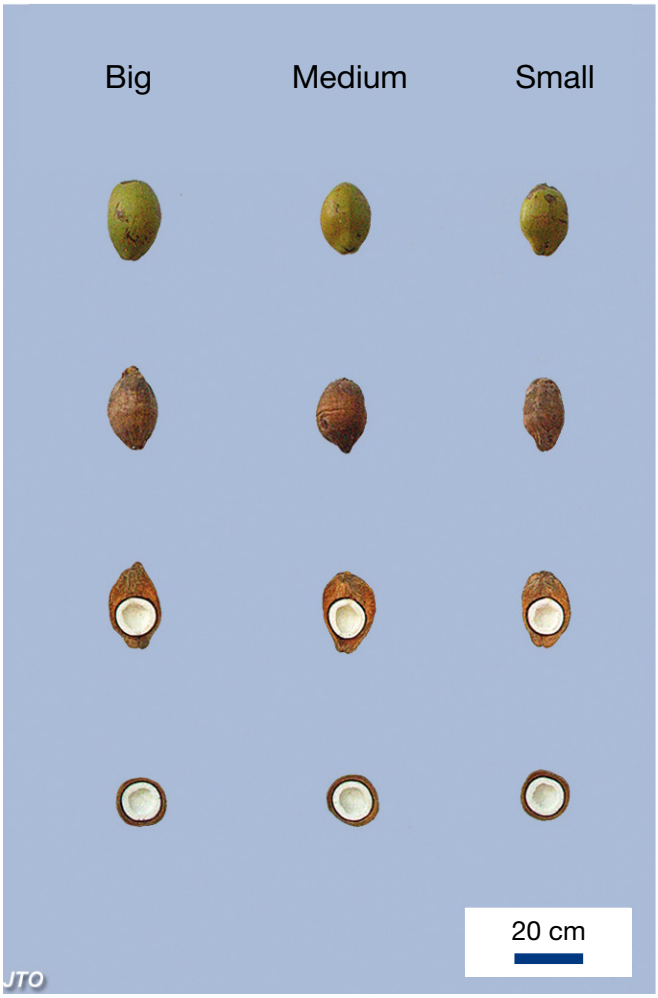
Ayiramkachi Tall (AYRT)











Chowghat Green Dwarf (CGD)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Chowghat Green Dwarf (CGD) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala) and at research stations in Veppankulam (Tamil Nadu), Pilicode (Kerala) and Arsikere (Karnataka), India.

History

Chowghat Green Dwarf was first observed in the Chavakkad area of Trichur District of Kerala. It is known as 'Pathinettampatti' in Tamil Nadu as well as in Kerala, because the inflorescence emergence is generally from the 18th leaf axil. CGD is identical to the Sri Lanka Green Dwarf (Pumilla Green Dwarf). However, there are indications that their fruit characters are different, especially the proportion of husk.

Identification

CGD grows to about 4.5 m. The stem has a bole and there are 56 scars measured from 1 to 2 m above ground level. The leaves are 4 m long, with about 196 leaflets. The palms are self-pollinating; they start flowering in 3-4 years after planting. The inflorescence is short, 87 cm long. The nuts are green and oblong with a characteristic beak when they are fully matured. The shell and kernel are thin.

Yield and production

The palm produces 30 to 100 nuts per year in Kasaragod, 35 nuts with 2 kg of copra in Veppankulam (Tamil Nadu) and 3.6 kg of copra per palm in Arsikere (Karnataka). The fruits are small, weighing about 450g. The husked nut is about 190g. The husk proportion is high, making up 58% to the whole fruit weight. The copra content is low, ranging from 38 to 100g. Oil content in copra is 66%.

Other information

This variety is sensitive to drought. It has tolerance (over 90%) to root (wilt) disease. It is sensitive to stem bleeding, highly resistant to lethal yellowing and tolerant to the rhinoceros beetle. Due to its relative tolerance to root (wilt) and lethal yellowing diseases, CGD can be used extensively for the production of disease tolerant hybrids. CGD was used as a male parent for the production of WCT x WCT, WCT x CGD and CGD x WCT hybrids for distribution to farmers in the disease-endemic districts in Kerala.

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JTO


JTO


JTO


Big
Medium
Small
20 cm
JTO


JTO

Chowghat Orange Dwarf (COD)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Chowghat Orange Dwarf (COD) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala); at the Regional Agricultural Research Station in Pilicode (Kerala); at the research stations in Aliyarnagar and Veppankulam (Tamil Nadu), Konark (Orissa) and Ratnagiri (Maharashtra); and at the International Coconut Genebank for South Asia at the Seed Farm in Kidu (Karnataka).

History

Chowghat Orange Dwarf seed nuts were collected from Trichur District, Kerala in 1940 and planted at CPCRI. In the west coast of India, each household plants one of two palms of this variety as an ornamental plant and for sweet tender nut water. COD is known as 'Gowrigathram' or 'Chenthengu' in some parts of Kerala and Kendali in Karnataka.

Identification

The palm grows up to 5 m. The stem girth at 1 m from the ground level is 60 cm. There are 45 leaf scars measured from 1 to 2 m above ground level. The leaves are short, about 4 m, with 200 leaflets which are 102 cm long and 4.8 cm wide. It flowers in 3.5 to 4 years after planting. Although Dwarf, it is not strictly self-pollinating as cross pollination also takes place. Fruits are mostly orange and rarely yellow in colour. The fruit is round/oval with a thin husk. It has a thin shell and a thick kernel.

Yield and production

The palm starts fruiting on its 5th year. The 7-month old tender nut water is sweet. The mean copra content ranges from 112 to 195g with 66% oil content. It produces 43 nuts with 134g copra per nut in Konark and 42 nuts with 9.3 kg of copra per palm in Veppankulam.

Other information

COD is sensitive to drought and water logging. It is also susceptible to leaf spot (gray blight) and stem bleeding disease but less susceptible to root wilt disease. Released by CPCRI for tender coconut production, it is now cultivated in large areas. The high-yielding hybrid COD x WCT (hybrid Chandrasankara) and its reciprocal (hybrid Kerasangkara) and LCT x COD (hybrid Chandralaksha) were produced and released by CPCRI. COD is recommended for use in most states of India as female parent in Dwarf x Tall hybrids as well as serving as pollen parents in Tall x Dwarf seed production.

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Chowghat Orange Dwarf (COD)













Gangabondam Green Dwarf (GBGD)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Gangabondam Green Dwarf (GBGD) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala) and at research stations in Veppankulam and Aliyarnagar (Tamil Nadu), Konark (Orissa), Ratnagiri (Maharashtra) and Arsikere (Karnataka), India.

History

GBGD is extensively cultivated in east Godhavari district of Andhra Pradesh where it is mainly used for tender nuts.

Identification

Palm height is 405 to 538 cm with a thin stem, closely arranged leaflets and compressed internodes, producing 46 leaves per meter of stem. The palms start flowering on the 4th or 5th year after planting. The inflorescence is short, about 65 cm long. The palms are predominantly self-pollinating. The palm breeds 95% true-to-type.

Yield and production

Fruit production begins on the 6th year after planting. At Arsikere (Karnataka) the palm yields 71 nuts per year; at Ratnagiri, 112 nuts; at Kasaragod, 67 nuts; at Aliyarnagar, 46 nuts; at Konark and Veppankulam, 68 nuts. The fruits of GBGD are heavy (804g) with high nut weight (511g). The kernel is thick and on drying, it gives 184g of copra per nut and 1.6 t of copra per ha, with oil content of 64% at Kasaragod.

Other information

Gangabondam Green Dwarf is sensitive to drought, but when it is used as pollen parent with WCT, the hybrid created is tolerant to drought. GBGD is susceptible to root wilt disease of Kerala; less susceptible to stem bleeding disease; and tolerant to Tatipaka disease. The hybrid WCT x GBGD was found to be tolerant to rhinoceros beetle attack. This variety is extensively used in Andhra Pradesh for its tender nut water and can be popularized in other states of the country. GBGD is widely used as female and male parent for the production of hybrids such as Lakshaganga (LCT x GBGD), Keraganga (WCT x GBGD) and Anandaganga (ADOT x GBGD) which produced 19 to 35% more nut yield and 40 to 44% more copra yield. GBGD is recommended for use in the states of Kerala, Andhra Pradesh, Bihar, Goa, Maharashtra, Orissa, Tamil Nadu and West Bengal.

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Gangabondam Green Dwarf (GBGD)













Indian West Coast Tall (WCT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Indian West Coast Tall (WCT) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala), India.

History

Known in India as the ordinary Tall variety, WCT has been extensively cultivated since ancient times and thus, may be considered indigenous to the country.

Identification

The Indian West Coast Tall grows to 15-18 m with a stem girth of 75-79 cm and a distinct bole. The leaves are long with medium-sized strong petioles. The inflorescences have distinct male and female phases. The palm is allogamous. The fruits vary in colour from green to greenish yellow to different shades of brown. The shape of the fruit varies from oval to oblong. The husk is 52% of total fruit weight. The husked nut is 566g with 283g of kernel.

Yield and production

Fruiting starts 6-8 years after planting, producing 8-13 bunches per palm per year with yields of 80 fruits per palm at Kasaragod. In mature palms, the fruits weigh over 1 kg (1195g), producing 160g copra per nut with 68% oil content. The palm yields 3 t copra per ha and 2 t of oil per ha. The variety yields 74 fruits per palm with 180g of copra per nut in Karnataka; 90 fruits per palm with a copra yield of 2.4 t per ha and oil yield of 1.7 t per ha in Ratnagiri (Maharashtra); and 34 fruits per palm with 5.8 kg of copra per palm in Veppankulam (Tamil Nadu). Some palms yield up to 471 fruits per palm per year.

Other information

West Coast Tall is popular along the west coast of India. It is a high yielder under good management conditions and the husk, being of good quality, is extensively used in making coir and coir products. The palm also yields good quality and quantity of coconut sap or toddy which can be made into jaggery or sugar. It is tolerant to drought. It is sensitive to root wilt in Kerala, bleeding disease, leaf blight disease and basal stem rot. It is moderately tolerant to the burrowing nematode. West Coast Tall is one of the cultivars recommended for planting in Kerala, Karnataka, Gujarat, Orissa, Maharashtra, Goa and Lakshadweep and as parent for the production of Dwarf x Tall and Tall x Dwarf hybrids. It was used as the male or female parent for the following released varieties: Chandrasankara (COD x WCT), Kerasankara (WCT x COD), Keraganga (WCT x GBGD) and Kerasree (WCT x MYD). These hybrids gave 20-35% more nut and copra yield than the parents.

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JTO


JTO


JTO


Big
Medium
Small
20 cm
JTO


JTO

Indian West Coast Tall Spicata (WCT01)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Indian West Coast Tall Spicata (WCT01) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala), India.

History

This type of palm was named 'Spicata' by Jacob (1941), although such palm may have been described earlier. Unbranched inflorescences appear very rarely. Davis (1959) also reported a Tall palm with a massive spadix bearing 416 female flowers. '*Spicata*' palms occur in different varieties; Thampan (1981) reported that different palms of '*Spicata'* in Indonesia were similarly named.

Identification

The palms grow up to 8 m with about 32 leaves on the crown of a 35-year old tree. The leaf length is 527 cm, with 223 leaflets which are 129 cm long and 5.7 cm wide. Inflorescences are long with large and stout petiole. '*Spicata'* palms cross freely with other coconut varieties. In Kasaragod, 50% of the natural progeny breed true-to-type of the mother palm. Ratnambal *et al*. (2000) reported the occurrence of 1:1 *Spicata*: typical ratio in a trial in Kasaragod. The palms start flowering about eight years after planting. The inflorescence is without spikelets and the number of female flowers is very high, which range from 170-560. The branches are heavily packed with medium-sized nuts. The fruit is oblong in shape with a beak. The fruit is either green or greenish yellow with a thin husk (25.4%). The nut is round with a thin shell and thick kernel.

Yield and production

The palm starts fruiting 10 years after planting and yields 80 to 150 nuts per palm, with a copra content of 208g and 66% oil. In Veppankulam, under the trials in the All India Coordinated Research Project on Palms, the yield was 86 fruits per palm with a copra yield of 10.8 kg per palm. In Arsikere, the average yield of nuts per tree was 73 with 117g of copra per nut, giving 8.5 kg of copra per palm.

Other information

The large number of female flowers in this variety can be exploited in breeding programmes.

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Indian West Coast Tall Spicata (WCT01)













Kappadam Tall (KPDT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Bourdeix R.

Conservation

According to the 2002 CGRD database, the Kappadam Tall is represented by 4 accessions totalling 173 living palms. The seednuts of this variety were brought to Kasaragod Research Centre, India, in 1935, and sent to Côte d'Ivoire in 1966. In the latter country, due to poor transportation conditions, only 13 seednuts could be saved and finally gave plants; when the accession was renewed, ten parents were used to reconstitute a population of 50 palms. This population may differ substantially from the original accession.

History

Kappadam Tall, also known as 'Chappadan' in some parts of Kerala, is a robust palm from the southwest coast of India. This cultivar was brought to Kasaragod in 1935. Open-pollinated progenies were planted in 1972 in a replicated trial. An *inter se* population of this cultivar was planted in the International Coconut Genebank for South Asia in Kidu, Karnataka. KPDT is also being maintained at the experimental stations in Aliyarnagar and Veppankulam (Tamil Nadu) and Ratnagiri (Maharashtra). This cultivar was exported to the Marc Delorme Station, Côte d'Ivoire in 1968.

Identification

Compared to other Indian varieties, the Kappadam gives the heaviest fruits with relatively low husk content (30%). Of course, some varieties from Southeast Asia bear heavier fruits with thinner husk. Kappadam fruits, which are predominantly green and oblong to round in shape, end in quite a pronounced point, but without a nipple. The palm grows to a height of 13 m. The stem girth at 1 m height is 86 cm. There are 25 leaf scars on the stem between 1 and 2 m from the ground. The leaf is 3.7 m long with 194 leaflets. The leaflets are long and broad measuring 133 cm and 5.1 cm, respectively. The palms are strictly cross-pollinating since there is no intra- or inter-spadix overlapping between male and female phases. The palm produces 12-13 inflorescences annually with about 24% fruiting.

Yield and production

Kappadam flowers seven years after planting, yielding 58-80 fruits per palm per year. The average annual nut yield is 58 fruits per palm in Veppamkulam and 83 fruits per palm with 15.2 kg of copra at Arsikere (Karnataka). KPDT is a regular bearer and the nuts are large. On average, the fruits weigh 1200g to 1510g in Côte d'Ivoire, and 1200g in India. The inner nuts weigh 740 to 870g. The kernel weighs 370g in Côte d'Ivoire and 510g in India, and gives 215 to 280g of copra when dried. In Côte d'Ivoire, the second generation was planted on poorer soil and the fruits were smaller.

In Côte d'Ivoire, yields are lower, at around 1.6 t of copra per hectare on average from 9-10 years, i.e. slightly less than the West African Tall (WAT).

Other information

This variety is moderately tolerant to *Radopholus similis*, but is not popular with many farmers due to its low nut yield. However, due to its large nut size and high yield of copra, this variety is attractive to some farmers. KPD has yet to be widely used in breeding programmes. In India, it has been crossed with the West Coast Tall (WCT). In Côte d'Ivoire, it has been crossed with improved WAT and RIT Tall testers.

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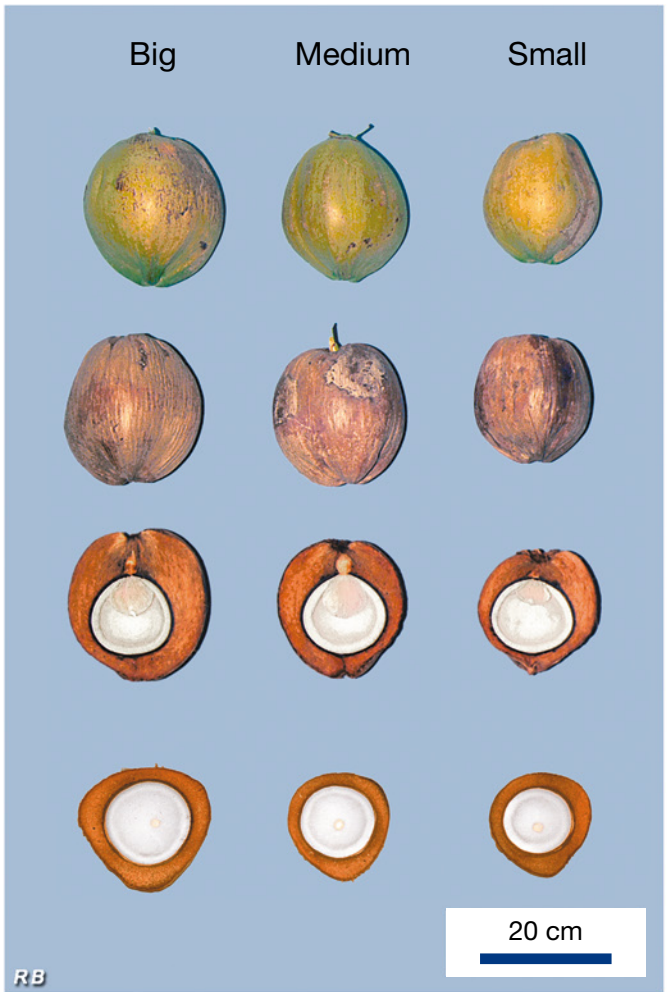
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Laccadive Micro Tall (LMT) in Côte d'Ivoire

Bourdeix R, Kumaran PM, Bhaskara Rao EVV, Pillai RV

Conservation

Laccadive Micro Tall (LMT) is represented by 4 accessions totalling 332 living palms in the collections of Côte d'Ivoire, India and Tanzania. It was sent from India to Côte d'Ivoire in 1977, then from Côte d'Ivoire to Tanzania in 1989.

History

The terms 'Laccadives', 'Laquedive' and 'Lakshadweep' refer to the same Indian archipelago. It is located in the Sea of Oman, about 100 km west of the mainland, and comprises 27 coral islands. The Laccadive Micro Tall is one of a few Tall coconut varieties that produce a large number of tiny fruits. Palms of this type seem to be very infrequent in the archipelago, and dispersed among 'ordinary' coconut plantations with fewer, larger fruits. All these 'micro' and 'ordinary' palms cross with each other naturally. An Indian researcher suggested that there might be possible intermediate stages between the 'micro' and 'ordinary' types within the natural population. Observations in Africa suggest a different explanation. In fact, some previously 'ordinary' palms start producing many tiny fruits for a few months, and then resume their normal behaviour. For instance, in Côte d'Ivoire, a coconut palm of this variety produced fruits weighing from 203-1100g, depending on the period. The fewer the fruits, the larger they are. The same coconut palm could therefore be successively of the 'micro' and 'ordinary' type.

Identification

The abundance and small size of the fruits are the main criteria for recognizing this Indian variety. The inflorescences are also special: they bear a large number of thin spikelets, which bend substantially on opening, whilst the petiole remains straight. In the Pacific Ocean, particularly in the Fiji and Tuvalu islands, other Tall varieties also give a large number of small fruits. The elongated fruits vary in colour and have a tough epidermis. They vary considerably in weight, reaching 562g on average, in both India and Côte d'Ivoire. The bigger the fruit, the more oval the inner nut becomes; in the smallest fruits it is perfectly round. The nut contains small amount of water and weighs 156 to 184g on average. The kernel gives thick, oil-rich copra.

Yield and production

This variety produced flowers 5.5 years after planting in Côte d'Ivoire and 2.5 years later in its country of origin. In India, production only began at nine years; depending on the years, LMT produces 90-320 fruits per palm per year. In Côte d'Ivoire, production begins at six years, with 42 fruits per palm per year; it reaches 120 fruits per palm by the seventh year, fluctuating between those limits thereafter.

Other information

The small fruits of this variety are traditionally used to make 'ball copra'. Once the husk has been removed, the nuts are placed to dry, usually on the roofs of houses. A year later, the kernel has dried without rotting. The white meat takes on a slightly translucent appearance and becomes rubbery, sweet and scented.

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Laccadive Micro Tall (LMT) in India

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Laccadive Micro Tall (LMT) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala), India.

History

Laccadive Micro Tall was introduced from the Laccadive Islands to the Indian mainland in 1940. This cultivar was planted in a replicated trial in 1972 at Kasaragod. About 90 seedlings were planted in 1997 at the International Coconut Genebank for South Asia. It was exported to Marc Delorme Station, Côte d'Ivoire in 1978. LMT is found, though sparsely distributed, in Androth, Amini, Agathi, Kadmat, Kavaratty, Kiltau, Kalpeni and Minicot Islands of Lakshadweep. LMT palms are distributed among the dominant Laccadive Ordinary palms, which are also freely outcrossing, resulting in intermixed forms.

Identification

This is a profusely bearing Tall cultivar. The stem girth at 1 m height is 8.3 cm. The palm has a distinct bole. The leaf petiole is long with 232 leaflets, which are 121cm long and 6 cm wide. The palm produces 12 inflorescences in a year. The bunches are heavy with a large number of small and closely packed nuts. The nut is oblong in shape; its colour varies from green to different shades of brown. The occurrence of barren nuts is a character usually associated with this cultivar.

Yield and production

Fruit production generally begins 9 to 10 years after planting. The mean annual bunch production is 11, with a range of 8-12. The average annual yield varies from 100 to 320 fruits per palm in Kasaragod; an average of 106 nuts in Ratnagiri (Maharashtra) and 93 fruits per palm in Veppamkulam (Tamil Nadu). Although the nuts are small, the kernel is thick with an average copra content of 90g, with a range of 80-100g per nut. The oil content in copra is 75%, the highest recorded among the cultivars studied so far.

Other information

This variety is sensitive to drought, root (wilt) disease of Kerala and to stem bleeding disease caused by *Thielaviopsis paradoxa*. The nuts of Laccadive Micro Tall are ideally suited for the production of ball copra which is considered a special grade of copra and fetches a high price in the market. The kernel is mainly used for sweets and confectionary. Due to its high oil content, LMT can be exploited in breeding programmes. This cultivar is being used for the production of Tall x Tall crosses at CPCRI, Kasaragod. At Marc Delorme Station, Côte d'Ivoire, LMT is also crossed with MYD, MRD and CRD, EGD and TAC for the production of Tall x Dwarf hybrids.

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Laccadive Ordinary Tall (LCT) in Côte d'Ivoire

R. Bourdeix, Konan JL, N'Cho YP

Conservation

Laccadive Ordinary Tall (LCT) is represented by 5 accessions totalling 3770 living palms in the collections of 4 countries. It was sent from the Laccadive Islands to Côte d'Ivoire in 1976, and then it was reproduced and sent from Côte d'Ivoire to Tanzania and Ghana.

History

According to John and Satyabalan (1955), a collection of the main coconut varieties of the Laccadive Islands was established in the 1930s and the seedlings were planted at the Coconut Research Station at Pilicode in South Kanara District of Madras State, India. Progenies of these palms were subsequently planted in 1940 at the Central Coconut Research Station, Kasaragod. The terms 'Laccadives', 'Laquedives' and 'Lakshadweep' refer to the same Indian archipelago, located in the Sea of Oman, about 100 km from the mainland.

Identification

Within Laccadive Ordinary Tall plantations, some palms bearing many tiny fruits are known as Laccadive Micro Tall. These Ordinary and Micro palms naturally cross with each other. In fact, it seems that previously ordinary palms sometimes start producing a multitude of tiny fruits for a few months, and then resume their normal behaviour. The same coconut palm may therefore be successively of the micro and ordinary type. However, not all the coconut palms in the Laccadive Islands may behave in such a strange manner. The palm reaches around 11.6 m in height on the 30th year. The girth of the stem 1 m above the ground measures 80 cm. There are around 32 leaf scars over a 1 m length of stem. The palm produces an average of 14 fronds per year with a short, strong petiole 94 cm in length. There are about 208 leaflets per frond. Fruit colour varies from greenish yellow to brown. The fruits are oblong in shape, medium-sized, with three prominent ridges on the triangular nut. They weigh 670 to 720g in Côte d'Ivoire and India, respectively. Inside, the oval-shaped nuts weigh 370-440g. The 210-270g kernel gives 130-180g of thick, oil–rich copra.

Yield and production

Flowering starts about 4-5 years after planting. The average annual yield at Kasaragod is 100 fruits, ranging from 82 to 178 fruits per palm. Palms produce 3 t of copra annually, and 2.1 t of oil per ha. In Ratnagiri (Maharashtra), the average yield is 147 fruits per palm with 20.5 kg of copra (63.6% more than the local Tall variety); Under irrigated conditions, yields may exceed 200 fruits, depending on soil fertility. In Côte d'Ivoire, it produces 74 fruits per palm per year and around 1.3 t of copra per ha.

Other information

In 1976, a new Coconut Research Station was established in the centre of Minicoy Island, the second largest island in Lakshadweep. The Laccadive Ordinary Tall is also known as 'chandrakalpa' by Indian farmers. LCT is widely used in breeding work as a Tall parent. It is used for the production of hybrids, namely the 'Chandralaksha' (crossed with Chowgat Orange Dwarf). These hybrids yield better than either of the parents. Moreover, these hybrids are also found to be drought-tolerant.

Reference

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Laccadive Ordinary Tall (LCT) in India

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Laccadive Ordinary Tall (LCT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala) and at the Seed Farmin Kidu (Karnataka), India.

History

LCT was introduced to the Indian mainland in 1940. The *inter se* population of this cultivar was planted at CPCRI in Kasaragod and in the Kidu Seed Farm in 1993. It is also maintained at the coordinating centres and different states under the All India Coordinated Research Project on Palms.

Identification

The palm grows to about 11.6 m with a stem girth of 80 cm. It starts flowering 4-5 years after planting. The inflorescence has a long male phase (19 days) and a short female phase (4 days) with a 3-day overlap. The fruit, whose colour varies from greenish yellow to brown, is medium-sized. The oval de-husked nut has thick kernel and shell.

Yield and production

The palm starts fruiting about six years after planting and produces about 12 bunches a year. Under rain-fed conditions, the yield in Kasaragod ranges from 82 to 178 fruits per palm while under irrigated conditions, the yield may exceed 200 nuts depending on the soil fertility. The percentage of husk is more than 39% and the copra content is 176g per nut with 70% oil. The palm gives 3 t of copra and 2.1 t of oil per ha.

Other information

Laccadive Ordinary Tall is popular among the farmers due to its stress tolerance. It is tolerant to drought but susceptible to root (wilt) disease of Kerala. It is moderately tolerant to gray blight caused by *Pestalotiopsis palmarum* (Cooke) Steyaert. The palms are considered very good for tapping sweet toddy as the yield of toddy is nearly twice the one obtained from West Coast Tall.

LCT is widely used in breeding as it has the best combining ability among cultivars tested. It is also used for the production of hybrids such as 'Chandralaksha' (LCT x COD) which gave yields higher than either of the parents.

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Laccadive Ordinary Tall (LCT)

photographed in Côte d'Ivoire













Nadora Tall (NDRT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Nadora Tall (NDRT) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala), India.

History

Nadora Tall is one of three cultivars in India that are unique to Goa State. It is confined to the northern districts of Goa and is more adapted to the coastal region. The name of the cultivar is derived from Nadora, the village where it is cultivated. This cultivar was introduced to Kasaragod in 1965. The *inter se* seedlings were planted in Aliyarnagar (Tamil Nadu) in 1990. In addition, 90 seedlings were planted in 1998 in the International Genebank for South Asia in Kidu, Karnataka.

Identification

The palm grows up to 9-10 m. At Aliyarnagar, the palm produced 12 leaves per year. There are 17 leaf scars on the stem between 1 and 2 m from ground level. The leaf is long (6 m) with 225 leaflets which are 124 cm long and 6 cm wide. The oval shaped fruits are generally greenish yellow. The palms are cross-pollinated as there is no overlapping of male and female phases. This cultivar exhibits intermediate husk value at 36% of whole fruit weight. The nut inside is almost round in shape.

Yield and production

The palm flowers nine years after planting. It produces around 8 bunches, ranging from 7-10 per palm per year. In mature palms, the yield range is 50-150 nuts. Some of the high yielding palms gave as many as 193 fruits per palm. The copra content is 191g per nut which produce 22.8 kg copra per palm, with an oil content of 64.5% which is lower than that of the local Tall variety.

Other information

Although Nadora Tall produces bigger fruits than the Benaulim Tall cultivar, it has not become popular among farmers due to its long pre-bearing period.

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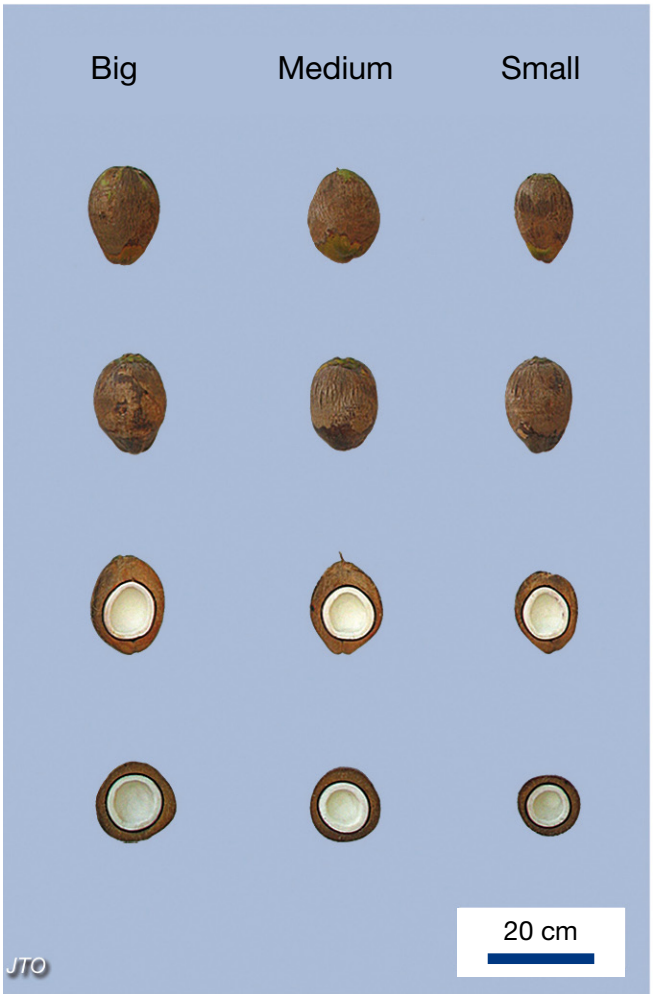
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Rangoon Kobbari Tall (RKBT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Rangoon Kobbari Tall (RKBT) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala), India.

History

Rangoon Kobbari Tall was introduced to CPCRI, Kasaragod in 1956 from Andhra Pradesh. Rangoon refers to Burma (present Myanmar) and Kobbari in Telugu (local language of Andhra Pradesh) means coconut (literally, coconut variety from Rangoon). Menon and Pandalai (1958) mentioned that this variety from Andhra Pradesh appears similar to Andaman Giant Tall with large nuts and high copra. Nuts of this variety might have been brought from the Andaman and Nicobar Islands, cultivated in Andhra Pradesh and subsequently brought to Kasaragod.

Identification

The variety grows to a height of about 7 m, with about 33 leaves on the crown. The leaves are long (5.6 m) with a strong petiole which is about 129 cm long. The leaflets are long (118 cm) and broad (5.8 cm). There are about 236 leaflets on a leaf. The stem is stout with a distinct bole and the girth of the stem at 1 m height is 90 cm. There are 25 leaf scars measured from 1 to 2 m above ground level. The palm starts flowering seven years after planting. The inflorescence is long with a female phase of 17.6 days and male phase of 5.5 days. The palms are both cross and self-pollinating as there is an inter-spadix overlapping of about 3.8 days in 69.6% of the palms.

Yield and production

Fruiting starts nine years after planting. The palm produces 42 to 107 nuts per year. The fruit is heavy (1502g) with a large nut (890g). It has medium husk content, making up 41% of whole fruit weight. The kernel yields 264g copra per nut, giving 3.4 t of copra and 2.4 t of oil per ha. The oil content in copra is 70%.

Other information

Although the variety is not popular among farmers it can be popularized among farmers who prefer big nuts for various reasons.

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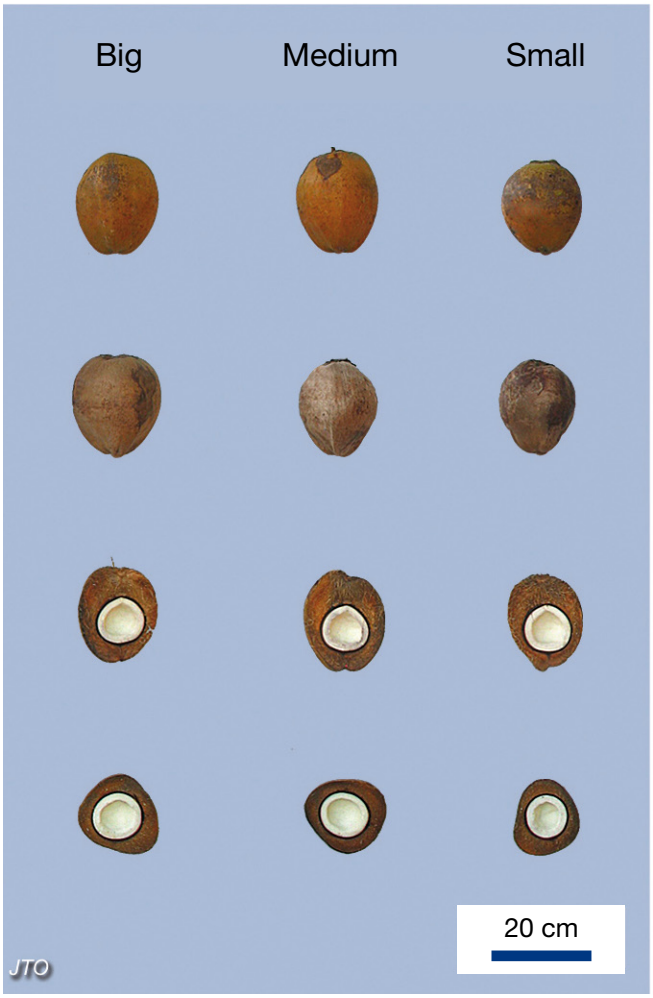
Rangoon Kobbari Tall (RKBT)













Sakhi Gopal Tall (SKGT02)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Sakhi Gopal Tall (SKGT02) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala); at the experiment station in Kornark (Orissa); and at the International Coconut Genebank for South Asia (ICG-SA) in Kidu (Karnataka), India.

History

Sakhi Gopal Tall, popularly known as Orissa Tall, is indigenous to Orissa. Seednuts were collected from Orissa and the seedlings were planted at CPCRI, Kasaragod in 1956. This variety is also being maintained in Konark. In 1994, seednuts of this variety were collected from the College of Agriculture, Bhubaneshwar, Orissa. Sixty seedlings were later planted at the ICG-SA at the CPCRI Seed Farm in Kidu in 1997.

Identification

Palms grow to about 8-9 m, with a stem girth of 77 cm at 1 m from the ground level. The number of leaf scars measured from 1 to 2 m above ground level is 32. The leaves are long with a strong petiole which is about 113 cm long. The number of leaflets (120 cm long and 5.2 cm wide) per leaf is 223. The inflorescence is short, about 88 cm long. Fruits are oval in shape and mostly yellowish red in colour. The husk is thick, constituting 40% of the whole fruit. The husked nut is oval in shape. The kernel is thick.

Yield and production

The palms start fruiting nine years after planting. The palm produces 11 inflorescences per year with a range of 8 to 12. The fruits are medium-sized, weighing 880g. The copra content per nut is 163g in Kasaragod. In Konark, the palm yields 88 fruits per palm and the fruits are big, yielding 234g of copra.

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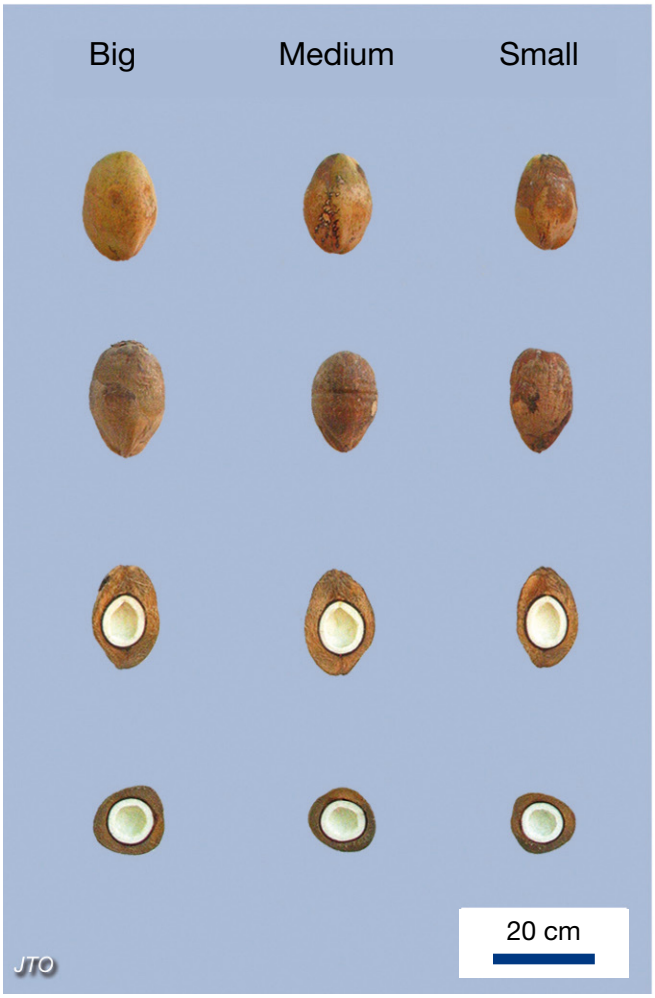
Sakhi Gopal Tall (SKGT02)













Tiptur Tall (TPT)

Ratnambal MJ, Niral V, Krishnan M

Conservation

Tiptur Tall (TPT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala) and at the centres under the All India Coordinated Research Project on Palms, India.

History

This cultivar was collected from Karnataka and planted in the genebank at CPCRI in 1964. This is a popular cultivar in Karnataka state. It grows well in the inland areas, located about 320 km from the sea coast, which have a low annual average rainfall of about 50-64cm.

Identification

Tiptur Tall is a Tall palm attaining a height of 8.8-10.8 m 32 years after planting. It resembles Indian West Coast Tall (WCT) in most of the morphological characters. The trunk is not very thick (71-87 cm girth). It has a medium-sized bole. The crown is circular with about 35 leaves on the crown. Leaves are long, on average 4.8 m, with strong petioles. The petiole is very broad and thick. The leaves have a large number (108-120) of broad (6.4 cm in breadth) leaflets. The inflorescence is not very long but with a strong stalk. There are about 31-39 spikelets and 16-28 female flowers. The fruit setting percentage is quite high, nearly 42%. The male phase is long and lasts for nearly 21 days. The female phase is very short (about 3 days) and begins 1-2 days after the end of the male phase. Although cross-pollination is the rule, some self-pollination is possible due to inter-spadix overlapping of male and female phases. The palm begins to flower 6-7 years from planting. The fruits are large, oval, and brown. However, green to greenish yellow nuts are also common. The nut inside is round with thick endosperm and a strong shell.

Yield and production

The palm starts fruiting from the 8th year. It is a regular bearer, producing about 9-11 bunches per year. The fruit is big and weighs around 1122g with a nut weight of 586g. The percentage of husk to whole fruit weight is rather high (47.4%). The copra content is 187.3g per nut with 68.4% of oil. The annual nut yield of this palm varies from 73-99 nuts with an average of 85 under rain-fed conditions. The average annual copra yield per ha is 2.8 t and the oil yield is 1.9 t.

Other information

This variety performs well in the low-rainfall areas (50-64cm) of Karnataka. The palm is a good yielder even under rain-fed conditions and can be used for commercial planting. This cultivar is suitable for consumption as tender nut. The water of the tender coconut is tasty and sweet. The tender nut water contains a total sugar content of 5g/100 ml and also high content of free amino acids. The performance of this cultivar has been evaluated in germplasm trials and has been utilized in the breeding programme at CPCRI to obtain Tall x Tall hybrids.

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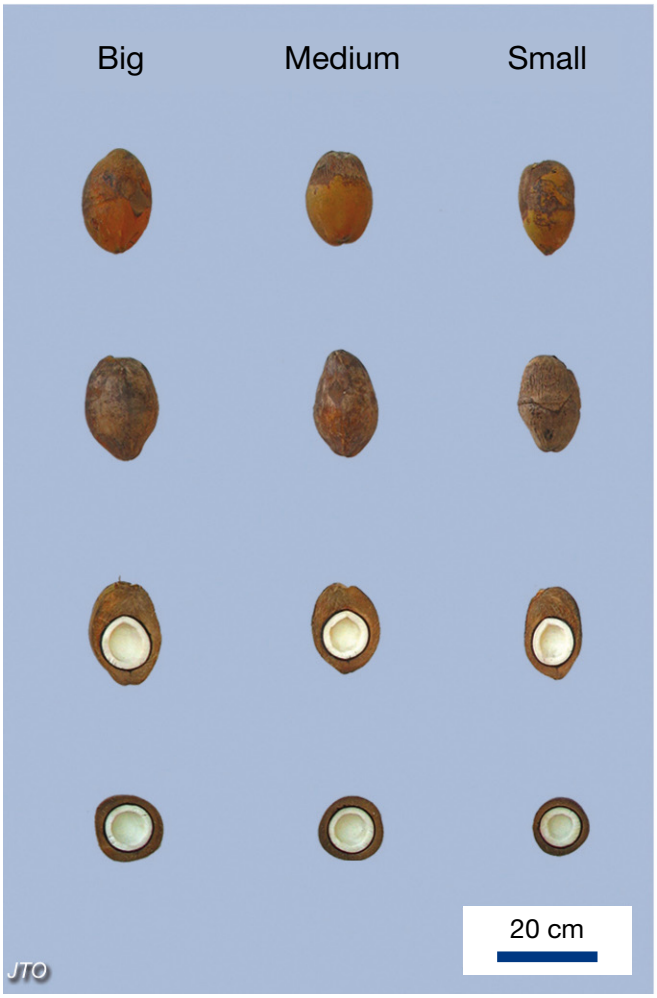
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Conserved coconut germplasm from

Indonesia

Genebank	Contact
Indonesian Coconut and Palm Research Institute (ICOPRI) Jl. Bethesda II, Mapanget Estate Crops Research and Development Kotak Pos 1004 Manado 65001 North Sulawesi, Indonesia Tel: (62) 431 - 812430 Fax: (62) 431 - 812017 E-mail: balitka05@yahoo.com, balitka@litbang.deptan.go.id	Country member of COGENT Dr Bambang Prastowo Indonesian Center for (ICECRD) Jl. Tentara Pelajar No. 1 Bogor, Indonesia Phone: (62) 251 313083/ 329 205 Fax: (62) 251 336194 Email: criec@indo.net.id bprastowo@gmail.com

Indonesia comprises 17,508 islands with an estimated population of around 237 million people. The country shares land borders with Papua New Guinea, East Timor and Malaysia. Indonesia is the world's largest producer of coconut (producing 17 million tons (FAOSTATS 2007) and thus considers the crop as a national strategic commodity.

Research on coconut palms was initiated during the Dutch colonial period and formal research institutionally started in 1911. This involved collecting some coconut ecotypes in the surrounding areas of Java. From 1926 to 1927, Dr Tammes, a coconut scientist, identified and selected 100 high-yielding Tall palms from populations in the Mapanget District of North Sulawesi. These palms were planted at the Mapanget Experimental Garden of the Indonesia Coconut and Other Palmae Research Institute (ICOPRI). After Indonesia gained independence in 1945, coconut research activities were maintained by the government.

The International Coconut Genebank for Southeast and East Asia (ICG-SEEA) is hosted by the Indonesian Agency for Agricultural Research and Development (AARD) using the field genebank in Pekanbaru, Riau Province and experimental gardens in Manado, North Sulawesi. In July 1995, a COGENT Task Force evaluated the proposed site at Sikijang Mati, Pekanbaru, Riau Province in Central Sumatra. The Task Force found it generally suitable and made some suggestions for its improvement. Due to the financial crisis in 1997 and the resulting lack of government budget, the Sikijang area was developed too slowly and the remaining areas were squatted by surrounding inhabitants and migrants. Two extension ICG areas have therefore been identified: the Paniki Experimental Garden (100 ha) located beside ICOPRI office in Manado, and the Pandu Experimental Garden (80 ha) which is about 18 km from the ICOPRI office and belongs to the Balai Pengkajian Teknologi Pertanian (BPTP).

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Borneo Tall (BONT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Borneo Tall (BONT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala) and at research stations in Konark (Orissa), Ratnagiri (Maharashtra) and Mondouri (West Bengal), India.

History

The variety Borneo Tall was introduced to India in 1955 from Indonesia. Borneo Island is now known as Kalimantan Island. Open pollinated progenies from these palms were planted in 1974. Sub-samples of this variety are being maintained in Konark, Ratnagiri and Mondouri. *Inter se* population was planted in CPCRI in 1997. The fruits of this palm are large and round, the unhusked nut predominantly flat bottomed with a pointed posterior, characteristic of Bali Coconut. The best nuts were reported to have extremely high copra content (450g), whereas other sources mention copra content varying from 200 to 300g.

Identification

The palms are very tall, reaching 11.4 m height. It has a large number of leaves - nearly 40 at 40-45 years of age. The girth of the stem at 1 m height is 94 cm, much more than the local West Coast Tall which has 79 cm girth. There are 21 leaves produced in 1 m length of the stem; leaves are about 5.7 m long with 228 leaflets. The leaflets are long (125 cm) and are very broad (6.3 cm). Flowering starts 9-9.5 years after planting. The inflorescence is long (127 cm) with about 43 spikelets. The palms are mostly cross-pollinating as there is inter-spadix overlapping of about two days. The fruits are large and round to oval in shape with greenish yellow colour. The husked nut is flat bottomed with a pointed posterior. The kernel and shell are thick.

Yield and production

The palm starts fruiting 11 months after planting and produces 8-11 bunches per year. In Kasaragod, the average number of nuts produced is 34-65 per palm per year; in Konark, 29; in Mondouri, 58; and in Ratnagiri, 43 nuts. The fruits are heavy, averaging 1450g. The husked nut is also heavy (987g). The proportion of husk to whole fruit is 32% of total weight and copra yield is 243.8g with 63.8% oil. The palms yield 2.2 t of copra and 1.4 t of oil per ha.

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Borneo Tall (BONT)













Java Tall (JVT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Java Tall (JVT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala) and at the research stations in Aliyarnagar and Vappankulam (Tamil Nadu), Ambajipeta (Andhra Pradesh), Jagadalpur (Madhya Pradesh), Konark (Orissa) and Mondouri (West Bengal) under the All India Coordinated Research Project on Palms.

History

Java Tall was introduced to India from Indonesia in 1947 and planted at Pilicode (Kerala). Open-pollinated progenies of this variety were planted at CPCRI, Kasaragod in 1956 and again in 1967. Java Tall subpopulations are being maintained at Aliyarnagar and Vappankulam, Ambajipeta, Jagadalpur, Konark and Mondouri.

Identification

The JVT palm grows up to 12-13 m in height, with 42 leaves on the crown and stem girth of 92 cm at 1 meter height of the stem. Leaves are long, about 5.7 m, with 220 leaflets. Leaflets are long (129 cm) and very broad (6 cm). Fruits are oval in shape and yellowish green in colour. The husked nuts are somewhat flat at the posterior end and pointed at the bottom. The husk is more towards the posterior. The fruits have a thick kernel.

Yield and production

The palm starts bearing 9-10 years after planting. It produces 103 fruits per year in Kasaragod; 77 nuts in Aliyarnagar; 54 nuts in Veppankulam and 54 nuts in Mondouri. In Kasaragod, the fruit weighs 1154g with 388g kernel weight. The copra content per nut is 216g with 66.5% oil. This accession yields 4.2 t copra and 2.8 t oil per ha.

Other information

JVT is tolerant to drought; sensitive to root (wilt) disease; susceptible to stem bleeding; tolerant to burrowing nematodes; and sensitive to Ganoderma/Tanjavur wilt. Due to its relative tolerance to stresses, this variety is being used for the production of Dwarf x Tall (MYD x JVT, COD x JVT, GBGD x JVT) hybrids.

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Kinabuhutan Tall (KNT)

Lengkey HG, Mangindaan HF

Conservation

Kinabuhutan Tall (KNT) is conserved at the Mapanget Experimental Garden of the Research Institute for Coconut and Palmae in North Sulawesi, Indonesia. The accession has a total of 55 palms.

History

This variety was collected from the Kinabuhutan Estate in Talise Island, North Sulawesi.

Identification

The Kinabuhutan Tall stem has a girth of 174 cm at 20 cm above the ground and 114 cm at 1.5 m above the ground. The palm has a large-sized bole. The length of the stem with 11 leaf scars is 130 cm. The crown is spherical. The leaves have a petiole length of 164.2 cm and petiole width of 7.7 cm; the petiole thickness is 3.1 cm. The rachis is 482 cm long, with 111.3 leaflets (counted on one side of the leaf) which are 134 cm long. The inflorescence has the following features: length of central axis: 35.9 cm; length of stalk: 42.5 cm; number of female flowers per inflorescence: 16; number of spikelets: 44. The fruits are predominantly green in colour although a small number may be yellowish green or red in colour. Kinabuhutan Tall has a medium-sized fruit that is oblong in shape.

Yield and production

Flowering begins five to seven years after planting. Adult palms produce 12-14 bunches per palm per year, with the number of fruit varying from 5 to 8 fruits per bunch. The potential yield of Kinabuhutan Tall may reach 2.5 tons of copra per hectare per year. Whole fruit weight is 1600g, weight of meat, 451g; weight of husk, 334g; and weight of shell, 384g.

Other information

Kinabuhutan Tall fruit production is adversely affected by drought. However, it is tolerant to *Phytophthora* sp. Like other Talls, this variety has a good potential as source of planting materials. Its potential for use in breeding programme is currently being evaluated.

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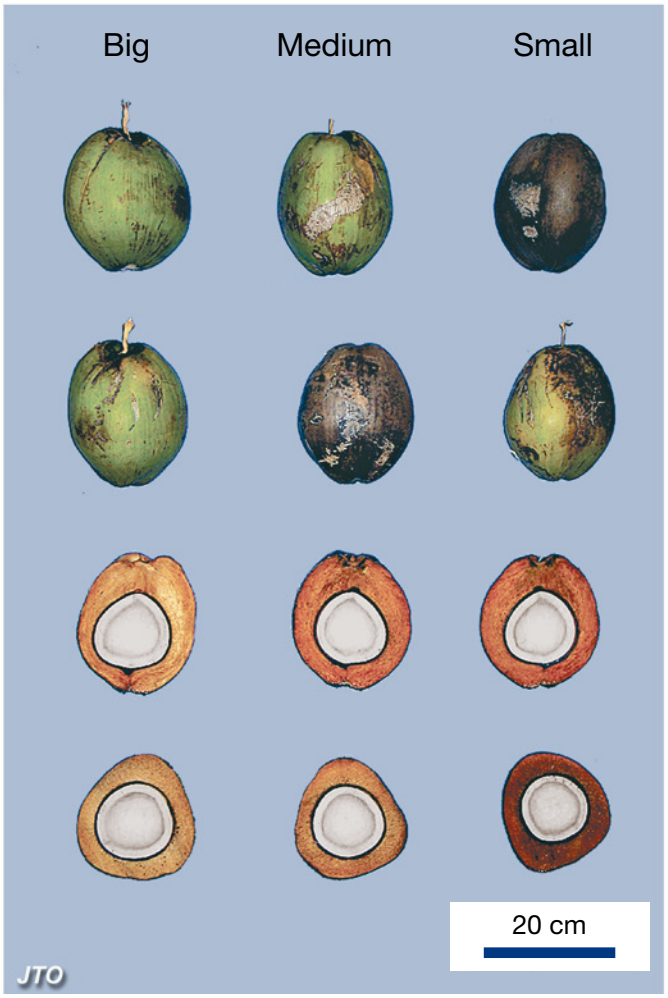
Kinabuhutan Tall (KNT)













Mamuaya Tall (MAMT)

Mangindaan HF, Miftahorrachman

Conservation

Mamuaya Tall (MAMT) is only conserved at the Research Institute for Coconut and Palmae (RICP) in Mapanget, North Sulawesi, Indonesia.

History

Mamuaya Tall was collected from a small farm in Wasian Bahasa, Dimembe District, Minahasa Regency, North Sulawesi in 1997. Mamuaya, the family name of the owner was given to the cultivar to honour local people. About 100 seednuts were planted in Coconut Research Station at Mapanget, North Sulawesi, which is situated 80 m above sea level, with alluvial soil and annual rainfall of 3500 mm.

Identification

Mamuaya Tall is typical of the local Tall coconut varieties. The stem is rather thick and begins with a bole that is thinner. The leaves are normal-sized with a high number of leaflets. Inflorescences are medium-sized. Mamuaya Tall is similar to Mapanget Tall in fruit shape and colour, but this cultivar is unique in the pointed shape of its fruit Mamuaya Tall produces medium-sized, round-shaped fruits. The nuts inside the fruits are almost round and quite big. Water from young nuts is sweet, but not as sweet as the water of Sagerat Orange Dwarf or Raja Brown Dwarf. The endosperm is thick with a thin husk.

Yield and production

Flowering generally begins in this variety from five to six years after planting. Mature palms produce 16-18 bunches per palm with 10 to 14 fruits per bunch. This variety may produce 100-140 fruits per palm year. Whole fruit weight is 1515g; weight of nut, 1190g; weight of split nut, 841g; weight of shell, 240g; weight of meat, 600g; and copra weight, 300g. The endosperm is 1.4 cm thick. The Mamuaya Tall, whose yield may reach 5.8 t of copra per hectare per year, is one of the cultivars recommended by RICP.

Other information

Mamuaya Tall has good production potential. Mamuaya Tall has not yet been used as a breeding material, but in the future, it will be used as parent material in the Indonesian hybridization programme.

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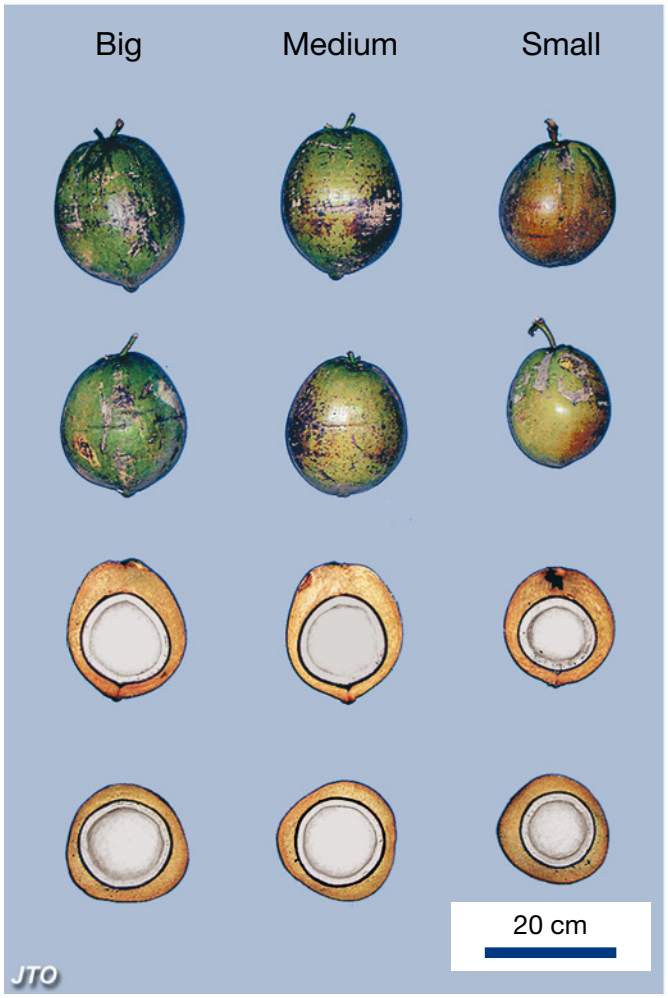
Mamuaya Tall (MAMT)













Mapanget Tall (MPT)

Tampake H, Tenda E

Conservation

At least 5 accessions of various strains of Mapanget Tall are conserved at the Mapanget Experimental Garden of the Research Institute for Coconut and Palmae in North Sulawesi, Indonesia, for a total of more than 200 palms. As a commercial variety, MPT has been planted in almost all coconut areas of the central region in Indonesia.

History

In the 1930s, open-pollinated seeds from high producing palms were collected and the resulting seedlings planted in a 48.4-ha farm at Mapanget which was used by the Department of Agriculture as a demonstration centre. Earlier, the Department selected 100 high-yielding Tall variety palms around Mapanget. Open pollinated seeds from 43 out of the 100 selected palms were planted at Mapanget. These palms were subjected to two trials: a planting distance trial and a performance trial.

Identification

The leaf crown of Mapanget Tall varies from almost spherical to semi-spherical. The stem is normal for a Tall with a girth of 179 cm at 20 cm above ground level and 117 cm at 1.5 m above the ground. MPT also has normal leaf with rachis length of 493 cm and 115 leaflets counted on one side of the leaf. The inflorescence length is 79 cm with about 25 flowers depending on environmental factors and cultural practices. MPT can be recognized by its reddish-brown coloured fruits. Fruit colour is mostly reddish-brown but can be greenish-yellow and green. The shape of fruits in polar view ranges from almost round to egg-shaped. The shape of fruits in equatorial view is almost round to angular. The coconut inside is flat with a thick kernel.

Yield and production

Fruit production generally begins 5-7 years after planting. At the adult stage, Mapanget Tall produces bunches numbers ranging from 12 to 16 per palm per year and fruit numbers ranging from 70 to 100 per palm per year depending on environmental factors and cultural practices. The fruit weight is 1740g; meat weight: 552g (32%); husk weight: 454g (26%); water weight: 461g (26%); and shell weight: 274g (16%). The dry matter content is high (around 55-62%).

Other information

Mapanget Tall is tolerant to drought and to *Phytophthora* diseases. MPT has a high yield of fruit and good quality copra that is suitable for cooking oil or for the oleochemical industry. MPT also has sweet water that is good for making 'nata de coco' or coconut water drink. MPT is used as a parental material in Indonesia's coconut breeding programme. Its hybrid with Raja Dwarf showed good yield performance and is tolerant to bud rot and nut fall diseases. The hybrid is now under further multilocation tests before it is recommended as a superior coconut hybrid.

References

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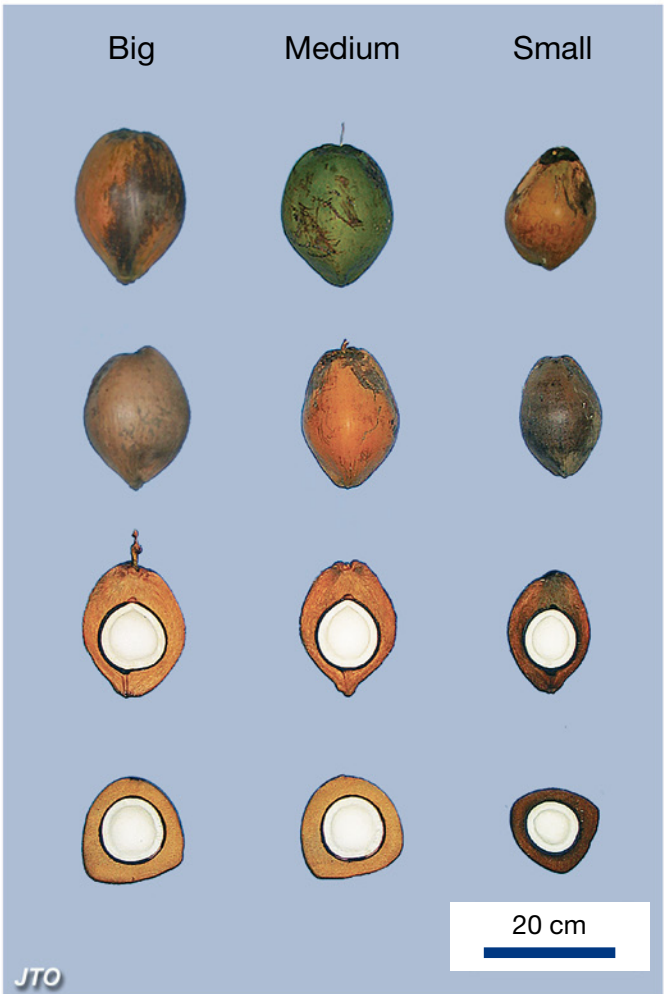
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Mapanget Tall-2 (MPT02)

Tampake H, Tenda ET

Conservation

Mapanget Tall-2 (MPT02) is conserved at the Mapanget Experimental Garden of the Research Institute for Coconut and Palmae in North Sulawesi, Indonesia.

History

Mapanget Tall-2 comes from one of 100 palms of Mapanget Tall that were selected in Bahasas around Mapanget which were numbered serially. The MPT-2 was planted in Mapanget in 1930 and was rejuvenated in 1983.

Identification

Mapanget Tall-2 has a spherical crown and a thick stem. At 17 years of age, the stem height from the ground to the base of the first green leaf is about 8-10 meters. The number and length of the MPT02 leaf is almost the same as that of Mapanget Tall. MPT02 has bigger fruits compared to other Mapanget Talls. The reddish yellow fruits have an almost round to angular shape from a polar view. The coconut inside is flat and has a thick kernel (12-13 mm). The inflorescence length varies from 65 to 80 cm while the number of female flowers per inflorescence is 20 to 35, depending on environmental factors.

Yield and production

Fruit production generally begins 5-7 years after planting. At the adult stage, bunch production ranges from 12 to 14 per palm per year. The number of fruits ranges from 70 to 100 per palm per year depending on environmental conditions and cultural practices. Fruit component analysis of MPT02 showed that weight of fruit is 1690g, with 567g meat and 281g shell.

Other information

Mapanget Tall-2 is sensitive to drought. It is tolerant to *Phytophthora* diseases; in a period of 17 years there were no dead palms caused by *Phytophthora* while other palms nearby were affected by the disease. MPT02 has a high ratio of endosperm and oil content, so it is good for the production of copra, cooking oil and desiccated coconut. MPT02 is being used as parental material in the Indonesian coconut breeding programme to produce a Tall x Tall hybrid with Mapanget-32. This hybrid was released in 1984 as 'Kelapa Baru-2' (KB-2); it produces more than 3.5 tons of copra per ha per year with low input. In the future, the MPT-2 will be used as parent material to cross with selected Dwarfs and as seed source for coconut Tall development programme in Indonesia.

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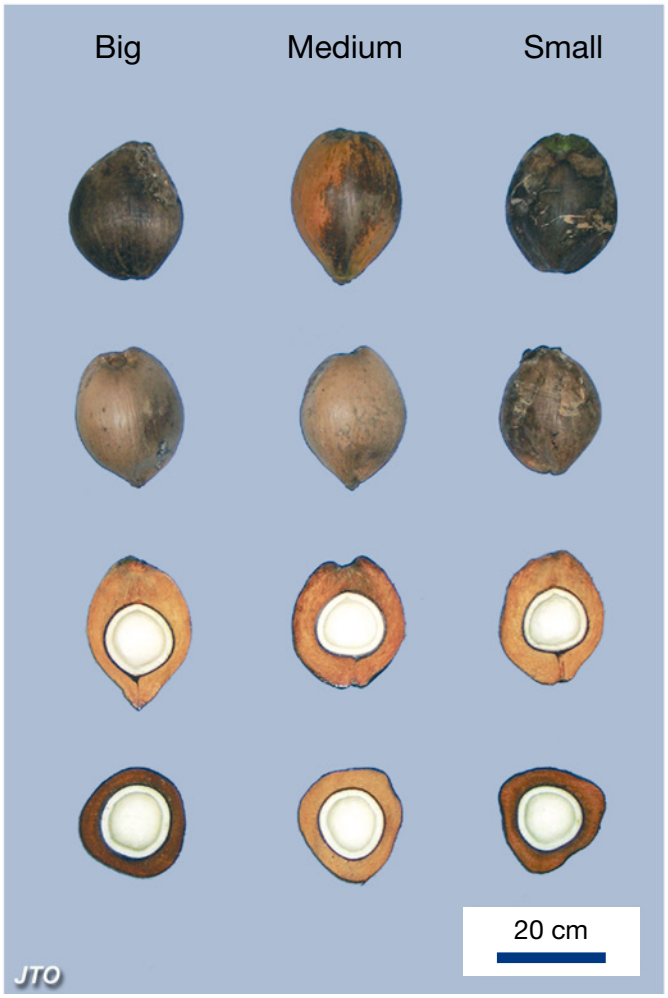
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Mapanget Tall-10 (MPT10)

Tenda ET, Novarianto H

Conservation

Mapanget Tall-10 (MPT10) is conserved at the Mapanget Experimental Garden of the Research Institute for Coconut and Palmae in North Sulawesi, Indonesia.

History

Mapanget Tall-10 is one of 100 selected palms gathered in Bahasas around Mapanget, North Sulawesi which were numbered serially. The MPT10 palms were planted at the germplasm collection in 1930 and replanted in 1983.

Identification

MPT10 has a spherical crown with a thick stem. The stem height from the ground to the base of the first green leaf is around 8-10 meters when the palm is 17 years old. The leaf length and number of leaves are almost the same as those of Mapanget Tall. The inflorescence varies in length from 50 to 75 cm with 15-25 female flowers per inflorescence depending on environmental factors. The green to greenish yellow fruit is round from a polar view and is angular from an equatorial view. The nut inside is flat and the kernel is thick (12-13 mm).

Yield and production

Fruit production generally begins 5-7 years after planting. Mapanget Tall-10 produces 12-14 bunches per palm per year. The number of fruits ranges from 70 to 100 per palm per year depending on environmental conditions and cultural practices. The fruit weighs 1425g and the meat weighs 445g (31%). MPT10 has high dry matter content (56-60%).

Other information

Mapanget Tall-10 is tolerant to drought. It is also tolerant to *Phytophthora* diseases; none of the palms succumbed to the *Phytophthora* (17-year observation). MPT10 has high endosperm content, making it suitable for producing desiccated coconut and cooking oil. MPT10 is being selfed; the fourth generation of self-pollinated MPT10 was planted in 1999 at the Mapanget Experimental Garden.

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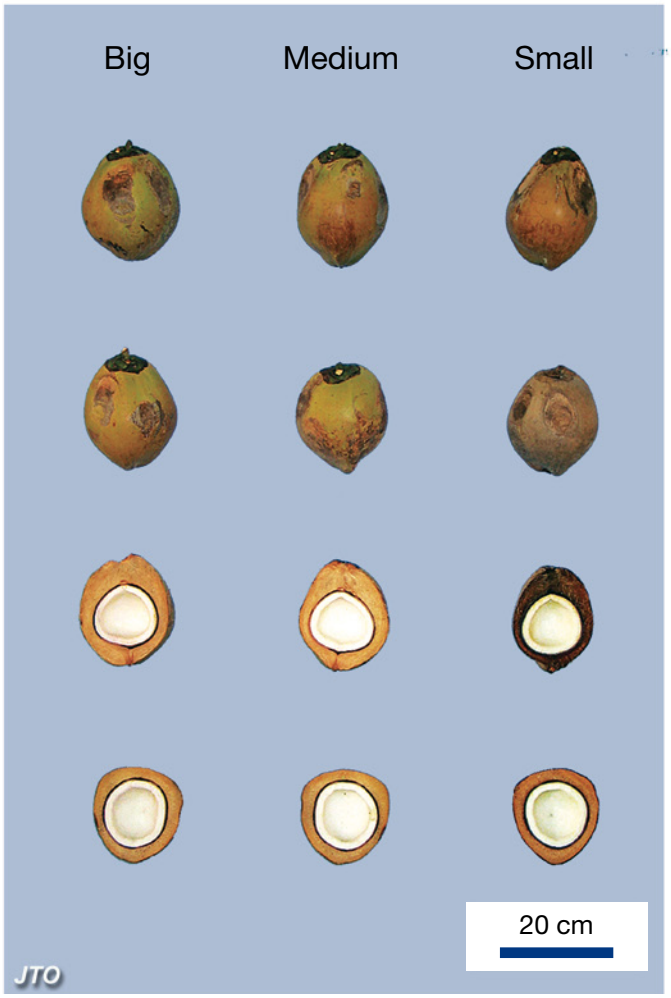
Mapanget Tall-10 (MPT10)













Mapanget Tall-99 (MPT99)

Tenda ET, Mangindaan HF

Conservation

Mapanget Tall-99 (MPT99) is conserved at the Mapanget Experimental Garden of the Research Institute for Coconut and Palmae in North Sulawesi, Indonesia. One accession of MPT99, totalling 50 palms, is referenced in the Coconut Genetic Resources Database.

History

Mapanget-99 Tall is the one of 100 selected Mapanget Tall palms from Bahasas around Mapanget, North Sulawesi. Mapanget Tall-99 was planted in 1930 together with other Mapanget Tall, and then replanted in 1983.

Identification

Mapanget Tall-99 has a spherical crown and a thick stem. The height from the ground to the base of the first green leaf varies from 10 to 11 m at the age of 17 years. The leaves and number of leaflets is similar to the Mapanget Tall. The fruit is medium in size and is greenish-yellow in colour, but green ones can also found. Fruit shape is mostly round, both in polar and equatorial views. The husked nut is almost round.

Yield and production

Fruit production generally begins 5-7 years after planting. MPT99 palms produce 12-16 bunches per palm per year. The number of fruits ranges from 70 to 100 per palm per year depending on environmental factors and cultural practices. At 12 years of age, fruit weight is 1476g; meat weight, 491g (33%); husk weight, 352g (24%); shell weight, 192g (13%) and water weight, 442g (30%).

Other information

Mapanget Tall-99 is tolerant to drought and *Phytophthora* disease. No palms died due to the disease in the Mapanget Experimental Garden up to 17 years of age. MPT99 palms produce heavy and good quality endosperm with high oil content. This variety is good for producing cooking oil, desiccated coconut and coconut milk. In addition, MPT99 has high water content for the production of 'nata de coco' and coconut water drink. The Mapanget-99 Tall was used as parental material in the coconut breeding programme in Indonesia to produce a hybrid with Mapanget Tall-32 (MPT32 x MPT99). This cross was released to farmers in 1984 as 'Kelapa Baru-4' (KB-4).

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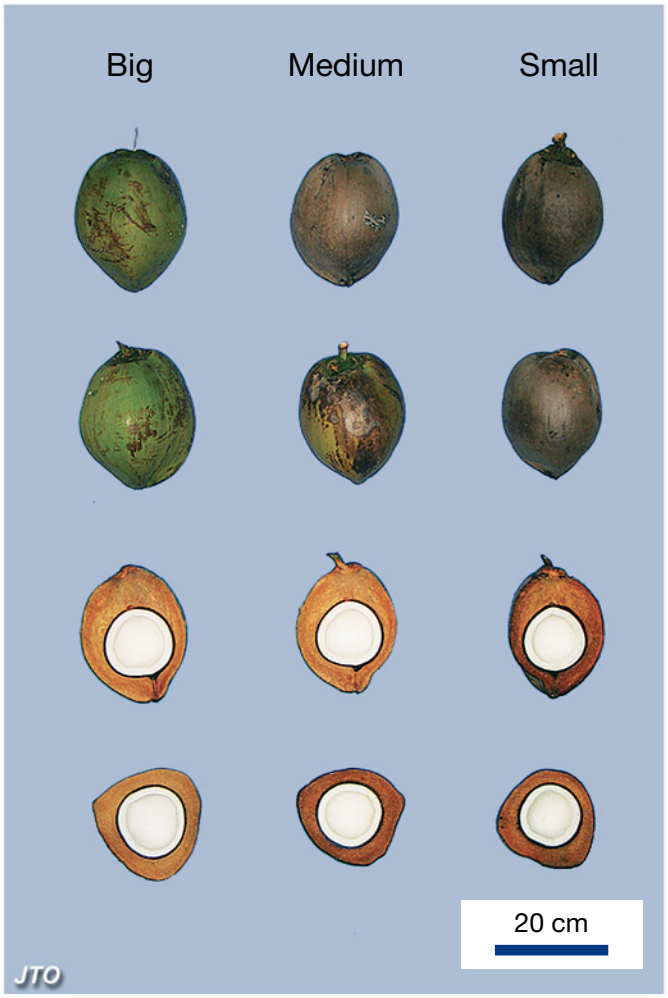
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Marinsow Tall (MWT)

Kumaunang J, Mangindaan HF

Conservation

Marinsow Tall (MWT) is conserved at the Mapanget Experimental Garden of the Research Institute for Coconut and Palmae in North Sulawesi, Indonesia. The accession is represented by 35 palms.

History

This variety was first found in Marinsow Estate, Likupang District, Minahasa in North Sulawesi.

Identification

Palms of Marinsow Tall have a stem girth of 159 cm at 20 cm above the ground and 118 cm at 1.5 m above the ground. The length of stem containing 11 leaf scars is 127 cm. This variety has a big-sized bole. The leaf crown is spherical. The leaf has the following characters: petiole length, 161 cm; petiole width, 13.6 cm, which is wider than that of other Talls; and petiole thickness, 3.2 cm. The length of the rachis is 476 cm with 112 leaflets (counted on one side of the leaf) which are 136 cm long. The inflorescence has a central axis that is 40 cm long and a stalk that is 42 cm long. There are 23 female flowers per inflorescence on average. The fruit is predominantly green although a small number may be yellowish-green or red.

Yield and production

Marinsow Tall begins to flower six to seven years after planting. It produces 12 to 14 bunches per palm per year, with fruits varying in number from 5 to 8 per bunch. The potential production of the variety may reach two tons of copra per hectare per year. Whole fruit weight is 1183g; weight of meat is 428g; weight of husk is 286g; and weight of shell, 207g.

Other information

Marinsow Tall is adapted to drought, water-logging and low temperature and is tolerant to *Phytophthora* sp. Like other Talls that are already adapted to their habitat, MWT has good potential as source of planting material. Observations are being done periodically to assess its potential for use in future breeding programme in Indonesia.

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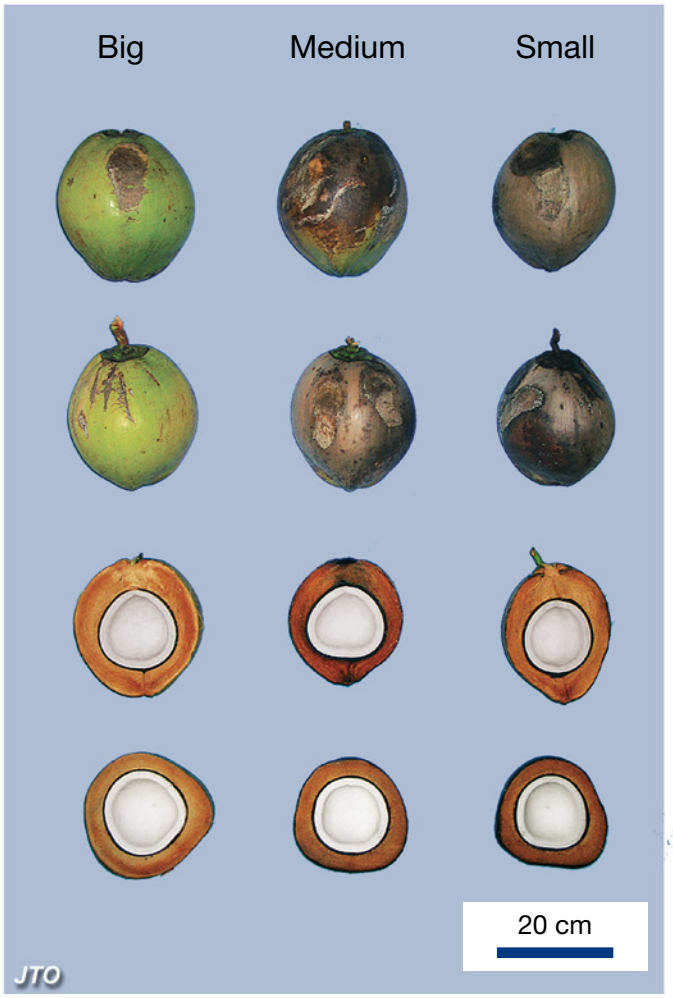
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Palu Tall (PUT)

Tulalo MA, Novarianto H, Bourdeix R

Conservation

Palu Tall (PUT) is conserved at four coconut germplasm centres, three in Indonesia and one in Côte d'Ivoire, Africa. In Indonesia, it is located at Mapanget, Pakuwon, and Sikijang, in Sulawesi, Java and Sumatra islands. A total of 262 palms are conserved in the germplasm centres according to the 2002 Coconut Genetic Resources Database.

History

From 1973 to 1975, vast surveys of coconut germplasm were carried out in selected areas of 11 provinces of Indonesia. Palu Tall was collected at Bangga-Palu District, in the central part of Sulawesi Island. This variety was described as high yielding by the local farmers.

Identification

Palu Tall is one of the Tall varieties from Southeast Asia producing big round fruits and having a thick straight stem with large bole at the base. It is difficult to differentiate the related varieties coming from the same region such as, for instance, the Tenga Tall (TGT) or Tagnanan Tall (TAGT) from the Philippines. The stem is thick and begins with a well developed bole (girth of 179 cm and 171 cm in Indonesia and Africa, respectively). The leaf is very long (7.3 m) with large and thick petiole at Mapanget Experimental Station in Indonesia. PUT big round fruits have very low husk content. The colour of the fruit is mainly green but brown to yellow-brown tints can also be found.

Yield and production

In Indonesia, the first inflorescences open five years after planting and first fruits are harvested on the sixth year. Normally, at an adult age, production of fruit ranges from 80 to 100 per palm per year depending on environmental factors and cultural practices. The fruit weighs 1703g and the nut 1334g. Meat weight is 537g, with 303g copra per nut having an oil content of 69%.

Other information

Palu Tall is resistant to drought because of its high content of epicuticular wax and leaf oil. It is also resistant to bud-rot diseases. PUT was recommended as a high yielding Tall variety. It has been planted in some provinces by smallholders and private and government estates. Based on the chemical characteristics of its meat and water, PUT can be used to produce coconut milk, copra and oil. PUT has a low phospholipid content, high carbohydrate, protein, reduced sugar and low galactomanan content. PUT has been used as a male parent in hybridization with Nias Yellow Dwarf to produce the coconut hybrid Khina-3.

References

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Anonymous. 1992. Survey on bud rot diseases (*Phytophthora* sp.) on several coconut varieties in Indonesia. Estate Crop Extension, Jakarta, Indonesia.

Novarianto H, Palilu M, Rompas T. 1990. Collection of important cultivars. Annual Report 1989/1990. Research Institute for Coconut and Palmae. Manado, Indonesia.

Liyanage DV. 1974. Survey of coconut germplasm in Indonesia.

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Pandu Tall (PDT)

Miftahorrachman, Lengkey HG

Conservation

Pandu Tall (PDT) is conserved at the Research Institute for Coconut and Palmae in Mapanget, North Sulawesi, Indonesia.

History

In September 1980, the National Germplasm Commission gave the mandate for the exploration of coconut in North Sulawesi to the then Industrial Crops Research Institute (now the Research Institute for Coconut and Palmae). This variety was collected in 1983.

Identification

Pandu Tall is a full-sized Tall coconut. Its stem has a large bole, with a girth of 180 cm at 20 cm above the ground and 109 cm at 1.5 m above the ground. The length of the stem with 11 leaf scars is 116 cm. The leaves are medium-sized, with a petiole length of 169 cm; petiole width of 8.3 cm; and petiole thickness of 3.5 cm. The rachis is 456 cm, with the number of leaflets reaching 114 (counted on one side of the leaf). Leaflets have a length of 140 cm. Inflorescences are medium-sized. The length of the central axis is 36.5 cm on average but may range from 25 cm to 49 cm. The length of the stalk (peduncle) also varies from 31 to 52 cm with an average of 42 cm. Pandu Tall has a short female phase which begins after all the male flowers had fallen down. The number of female flowers per inflorescence is quite variable within the population. Observation on 12 palms showed that the number of female flowers per inflorescence varies from 2 to 18 (mean=7.4). The fruits are mostly green to yellowish green with a few that are brown coloured. Pandu Tall has medium- to big-sized fruits with almost round shape. The husked nuts are large and round-shaped.

Yield and production

Flowering begins five to six years after planting. This variety produces 12 to 14 bunches per palm per year, with fruits that vary in number from 5 to 8 fruits per bunch.

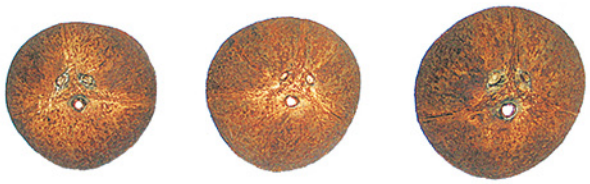
Other information

Based on observations from 1982 to 1996, there were no adverse effects of drought on the growth of Pandu Tall. Also, there is not record of any serious infestation or disease of the palms of this variety. This variety, being adapted to its habitat, has good potential as source of planting materials.

Pandu Tall, together with 16 Talls from North Sulawesi, was analyzed with molecular markers in a diversity study. The results showed that PDT, MPT-32, MPT-99, Aertembaga Tall and Tontalete Tall belong to the same group.

Reference

Miftahorrachman, Mangindaan H, Novarianto H. 1996. Genetic diversity for fruit components of Tall coconuts of North Sulawesi. Zuriat 7:7-16 (Bahasa Indonesia).

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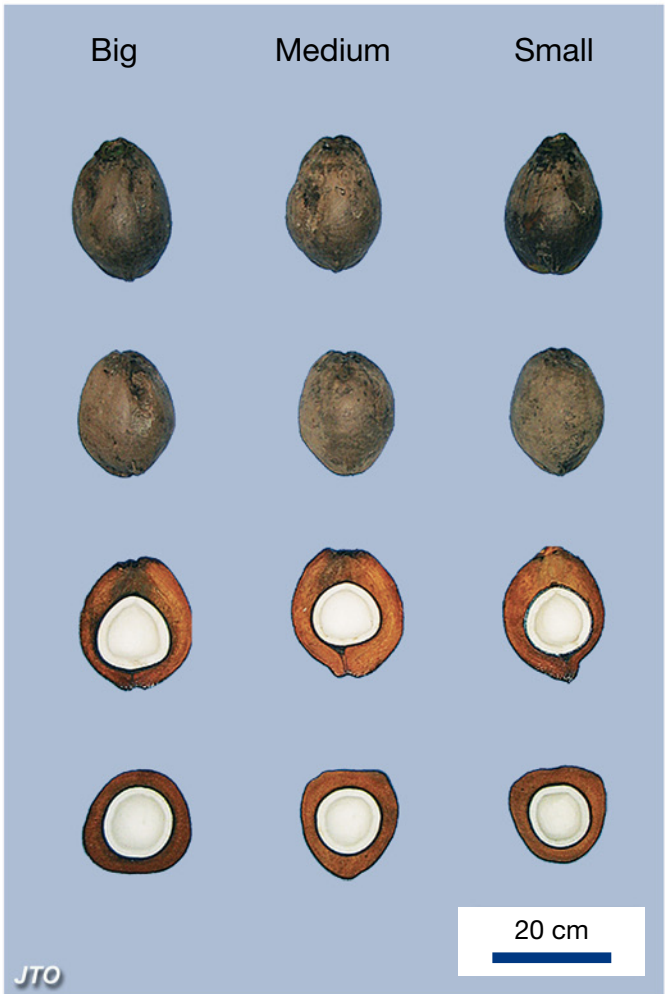
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Pungkol Tall (PGLT)

Kumaunang J, Mangindaan HF

Conservation

Pungkol Tall (PGLT) is conserved at the Mapanget Experimental Garden of the Research Institute for Coconut and Palmae, North Sulawesi, Indonesia. The accession is composed of 53 palms.

History

Pungkol Tall was first found in a plantation in Wawontulap Bahasa, Tumpaan District, Minahasa in North Sulawesi, Indonesia.

Identification

Pungkol Tall has a girth of 173 cm at 20 cm above the ground and 111 cm at 1.5 m above the ground. The length of the stem with 11 leaf scars is 129 cm. Pungkol Tall has a big-sized bole. The leaf crown is spherical. The length of the rachis is 465 cm; the number of leaflets counted on one side of the leaf reaches 115; and length of the leaflets is 144 cm. Petiole length is 170 cm, petiole width is 8.2 cm and the petiole thickness is 3.3 cm. The inflorescence has the following characteristics: length of central axis is 39 cm; the length of stalk is 40 cm and the number of female flowers per inflorescence is 16. Green is the dominant colour of the fruits, although there are a few yellowish-green and red coloured fruits.

Yield and production

The flowering of Pungkol Tall begins six to seven years after planting. Palms produce 12 to 14 bunches per palm per year. There is a range of 5 to 10 fruits per bunch. The potential of production of Pungkol Tall reaches 2.5 tons of copra per hectare per year. Whole fruit weight is 1440g; weight of meat, 455g; weight of husk, 356g; and weight of shell, 272 g.

Other information

Pungkol Tall is well adapted to its habitat, is tolerant to *Phytophthora* and has good potential to be a source of seednuts for planting. Observations are being done periodically to determine its suitability for use in the Indonesian breeding programme.

References

Miftahorrachman, Mangindaan H, Novarianto H. 1996. Genetic diversity for fruit components of Tall coconuts of North Sulawesi. Zuriat 7:7-16 (Bahasa Indonesia).

Novarianto H, Kumaunang J, Maskromo I. 1999. Morphological variance of coconut germplasm. Bulletin Palma 25:31-38 (Bahasa Indonesia).




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Raja Brown Dwarf Ternate (RBD01)

Bourdeix R, Konan JL, Ballo K

Conservation

Raja Brown Dwarf (RBD) is conserved in Côte d'Ivoire, with 70 living palms, and in Indonesia, with 84 living palms. This variety is probably closely related to the Madang Brown Dwarf, which is much more widespread, with more than 500 living palms collections in 5 countries.

History

The Moluccas is an archipelago in eastern Indonesia, north of Australia, totaling 1208 islands. This cultivar comes from Ternate, which is known for its still-active three-cratered volcano, Mount Gamalama. Worldwide, Brown Dwarf coconut palms are rarer than their Green, Yellow and Red counterparts. Genetically, the Raja Brown Dwarf is very similar to the Madang Brown Dwarf, introduced earlier from Côte d'Ivoire.

Identification

Raja Brown Dwarf is a small palm with a slender stem, and without a bole under Ivorian growing conditions. The fronds have a very long petiole and an average size rachis. It has quite a large number of leaflets for a Dwarf. The long peduncle gives the impression of a very precocious palm; the first fruits produced quite often rest on the ground. On average, flowering begins 32 months after planting (i.e., around 3 months later than the Malayan Yellow Dwarf) when planted under the same conditions. The fruits are ovoid, deep brown in colour, without prominent ridges, and clearly rounder than those of the Madang Brown Dwarf. They weigh 741g in average. In Côte d'Ivoire, the fruits have a better composition than those grown in Indonesia, with more meat (272g) and less husk content. The copra weighs 154g on average and is very rich in oil. Brown Dwarfs are susceptible to environmental variations. Caution is therefore called for when using morphological criteria for varietal recognition. In Côte d'Ivoire, the Raja Brown Dwarf Ternate produces larger, rounder and fuller fruits than those of the Madang Brown Dwarf from Papua New Guinea (but these two Dwarfs are planted in different plots, which limit the precision of the comparison). Recent molecular biology studies show that the RBD is very uniform, and very similar to the Madang Brown Dwarf from Papua New Guinea, and the so-called Raja Brown Dwarf also collected in the Moluccas.

Yield and production

In Côte d'Ivoire, RBD currently produces low yields of around 27 fruits per palm per year. This low productivity is linked to its susceptibility to attacks by a bug of the genus *Pseudotheraptus*. The plot in which it has been planted is next to a forest, from which these bugs arrive in large numbers, causing fruits abortion. However, fruit set observations suggest that this Dwarf would produce from 60 to 80 fruits per palm per year under more normal conditions.

Other information

In Côte d'Ivoire, RBD was crossed in 2000 with ten other varieties, two Talls and eight Dwarfs. The hybrid progenies are currently being assessed for their agronomic and yield performance.

Reference

Konan JL. 2005. The International Coconut Genebank for Africa and Indian Ocean (Côte d'Ivoire). In: Status of coconut genetic resources. Batugal P, Ramanatha Rao V, editors. IPGRI-APO, Serdang, Malaysia. pp 111-112.

Raja Brown Dwarf Ternate (RBD01)











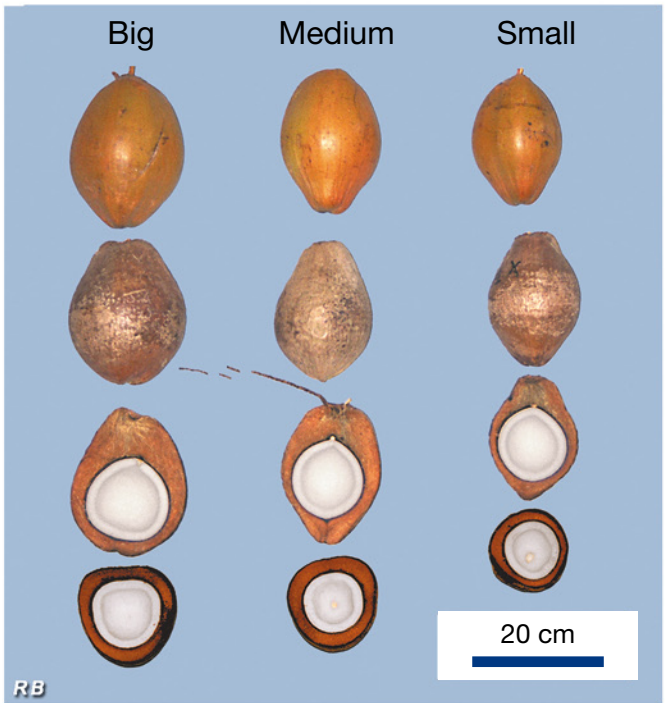



Santongbolang Tall (SNTT)

Tenda ET, Kumaunang J

Conservation

Santongbolang Tall (SNTT) is conserved at the Research Institute of Coconut and Palmae (RICP) in Mapanget, North Sulawesi, Indonesia. The site located at 80 m above sea level and receives 3500 mm of annual rainfall.

History

This variety is named after Santongbolang village, located about 125 km from Manado. Santongbolang Tall was found only in a very small farm; a hundred SAGT palms were planted in RICP.

Identification

Santongbolang Tall has a stem that is rather thin for a Tall coconut. The inflorescences have long stalks and central axis. The spikelets are large and bear a high number of female flowers. The number of female flowers per inflorescence varies from 60 to 110. Fruits are mostly green colour; they are small to medium in size with a round shape.

Yield and production

Flowering generally begins at six years after planting. The palms produce 12 to 14 bunches per year. The number of fruits varies from 50 to 64 fruits per palm per year, and may reach up to a hundred or more. Santongbolang Tall has a potential annual production of 2.5 tons of copra.

Other information

Santongbolang Tall, with its small to medium size but large number of fruits, has potential as parent material in a hybridization programme to increase productivity. Medium-sized fruits are ideal for tender coconuts which are preferred by consumers. This variety is not yet used in the breeding programme in Indonesia.

References

Miftahorrachman, Mangindaan H, Novarianto H. 1996. Genetic diversity for fruit components of Tall coconuts of North Sulawesi. Zuriat 7:7-16 (Bahasa Indonesia).

Novarianto H, Kumaunang J, Maskromo I. 1999. Morphological variance of coconut germplasm. Bulletin Palma 25:31-38 (Bahasa Indonesia).




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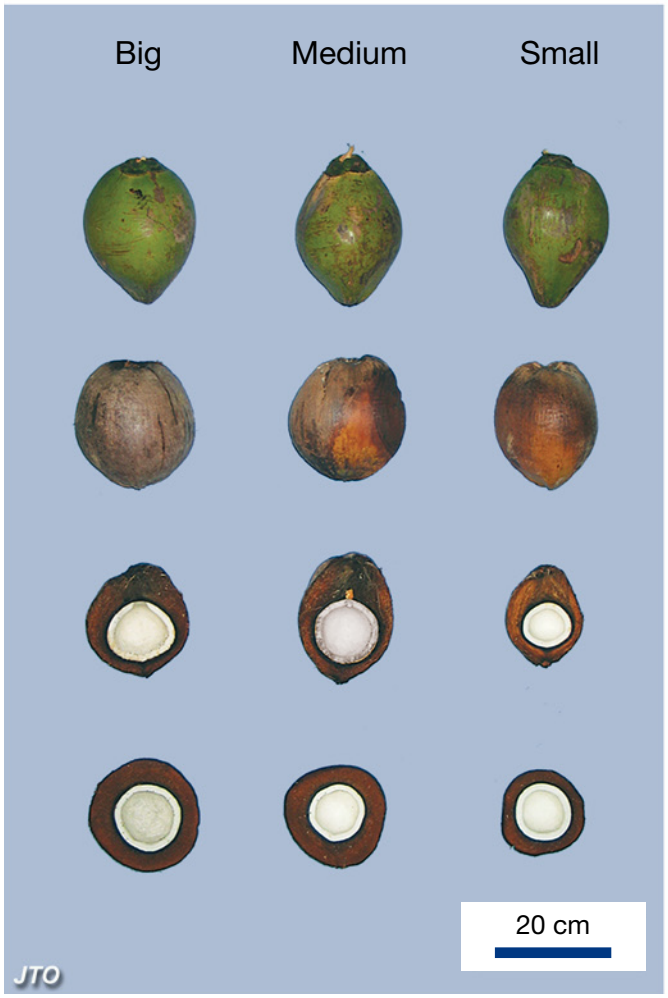
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Sea Tall (SET)

Mangindaan HF, Kumaunang J

Conservation

Sea Tall (SET) is conserved at the Mapanget Experimental Garden of the Research Institute for Coconut and Palmae in North Sulawesi, Indonesia. The accession has a total of 46 palms.

History

Sea Tall was found in Sea Bahasa, Pineleng District, Minahasa in North Sulawesi and seednuts were collected during the period 1980-1981. Sea is a word in Bahasa language (not the English word for 'ocean').

Identification

Sea Tall has a stem girth of 184 cm at 20 cm above ground level and 115 cm at 1.5 m above ground level. This variety has a big size bole with rather thick stem at 2 m above ground level. The leaf crown is spherical, with the following leaf characters: petiole length, 170 cm; petiole width, 8.3 cm; and petiole thickness, 3.3 cm. The rachis has a length of 469 cm and has 119 leaflets (counted on one side of the leaf), each one being 140 cm long. The inflorescence has a central axis that is 44 cm long; a stalk that is 46 cm long and on average, 24 female flowers. The fruit is predominantly green although a small number may be yellowish green or red in colour.

Yield and production

Flowering begins five to six years after planting. Sea Tall produces 12 to 14 bunches per palm per year, with 5 to 8 fruits per bunch.

The potential production of SET may reach 2.5 tons of copra per hectare per year. Whole fruit weight is 1248g; weight of nut is 910g; weight of meat is 394g; weight of husk is 322g and weight of shell, 173g.

Other information

Drought affects the yield performance of this variety. Sea Tall has potential for use as planting material for Indonesia's coconut intensification/rehabilitation programme. Observations are still ongoing to determine this variety's potential use in the breeding programme in Indonesia.

References

Miftahorrachman, Mangindaan H, Novarianto H. 1996. Genetic diversity for fruit components of Tall coconuts of North Sulawesi. Zuriat 7:7-16 (Bahasa Indonesia).

Novarianto H, Kumaunang J, Maskromo I. 1999. Morphological variance of coconut germplasm. Bulletin Palma 25:31-38 (Bahasa Indonesia).




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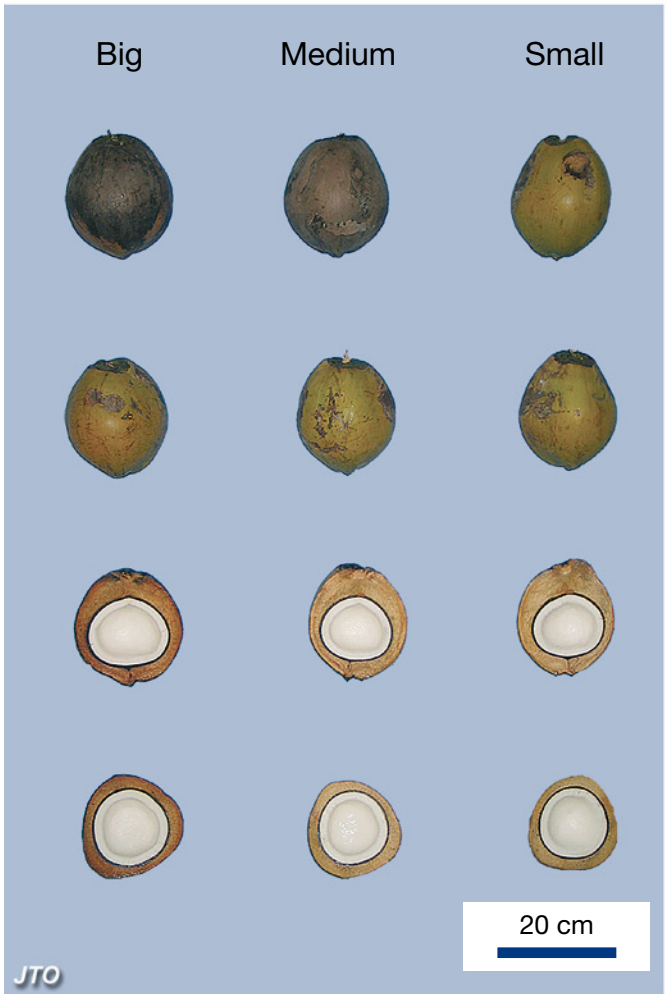
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Tenga Tall (TGT)

Novarianto H, Bourdeix R

Conservation

Tenga Tall (TGT) is conserved in four coconut germplasm centres, three located in Indonesia at Mapanget in North Sulawesi; in Pakuwon in Java and in Sikijang in Sumatra islands, and one located in Côte d'Ivoire. The total number of palms conserved is 340. Most of the coconut seed gardens in Indonesia have also planted TGT as male parent for the production of the hybrid Khina-1.

History

Tenga is the name of a village located in Minahasa district, in the northern part of Sulawesi Island of Indonesia. Tenga Tall is one of the varieties collected during the first survey of Indonesia coconut germplasm in the early 1970s. This survey, conducted by DV Liyanage with the Research Institute for Coconut and Palmae staff, was carried out in 11 provinces. They selected TGT because of its high copra yield per palm. When the survey was conducted, the original TGT population was already about 70 years old.

Identification

Tenga Tall is one of the Tall varieties from Southeast Asia producing big round fruits and having a thick straight stem with a large bole at the base. It is difficult to differentiate all the related varieties coming from the region, such as TGT and the Palu Tall (PUT). The stem grows fast, its height reaching about 11.4 m by the 18th year in Indonesia. In Africa, it only reaches 3.9 m during the 10th year. It has a big bole at the base of the stem; girth of about 190 cm (in Indonesia) and 186 cm (in Africa). The leaves are quite long, up to 6.3 m in Indonesia. The colour of the petiole is mostly green as well as the bunches. The inflorescence is long. Reproduction is predominantly allogamous. Fruits are mostly green, but some palms are greenish brown in colour. The TGT palms carry very round fruits with low husk content. Sometimes the equatorial diameter of the fruit is even bigger than the polar area, giving a very special flat effect.

Yield and production

In Indonesia, Tenga Tall starts flowering four years after planting. In Africa, flowering begins only after six years and production after seven years. TGT produces about 16 leaves and 14-16 bunches per year at maturity. Fruit production is about 90-100 nuts per palm per year in Indonesia but less than 40 in Africa. The fruit weighs 1843g, the nut without husk 1209g, the kernel 538g, and the copra content is 250-275g per nut. The oil content of copra is 64%. In Indonesia, TGT is known as a high-yielding variety which is able to produce about 3.5 t of copra per ha per year.

Other information

Tenga Tall is tolerant to drought and bud-rot disease. Its hybrid with Nias Yellow Dwarf, known as Khina-1, is also resistant to bud-rot. TGT fruits are very suitable for copra, cooking oil and desiccated coconut production. The shell is good for charcoal production. Since 1974, the TGT has been used as a pollen source for Nias Yellow Dwarf in producing the Khina-1 hybrid. This hybrid was released in 1984, and until 2000, there are about 20,000 ha planted with Khina-1 hybrid in Indonesia.

References

Liyanage DV. 1974. Survey of coconut germplasm in Indonesia. UNDP/FAO Coconut Industry Development Project Document No. 1. LPTI, Bogor, Indonesia.

Novarianto H. 1992. Estate Crops. Survai penyakit busuk pucuk *(Phytophthora* sp.) pada beberapa varietas kelapa di Indonesia. Jakarta, Indonesia.










Big
Medium
Small
20 cm



Conserved coconut germplasm from

Malaysia

Genebank	Contact
Stesen MARDI Kemaman Batu 11, Jalan Air Putik PO Box 44, 24007 Kemaman Terengganu Malaysia Phone: (60) 09-8646361/148 Fax:(60) 09-8646361 Email: abo@mardi.my	Country member of COGENT Dr Abd. Shukor Abd. Rahman Director General Rice and Industrial Crop Research Center (RICRC) Malaysian Agricultural Research and Development Institute (MARDI) PO Box 12301, General Post Office 50774 Malaysia Phone: (60) 38 9437427 Fax: (60) 38 9425786 Email: arshukor@mardi.my

Malaysia is a country in South-East Asia, located partly on a peninsula of the Asian mainland and partly on the northern third of the island of Borneo. West (peninsular) Malaysia shares a border with Thailand, is connected by a causeway and a bridge to the island state of Singapore, and has coastlines on the South China Sea and the Straits of Malacca. East Malaysia (Borneo) shares borders with Brunei and Indonesia.

In Malaysia, coconut ranks the fourth most important crop in terms of area planted, after oil palm, rubber and rice. In 1981, the total area planted to coconut was 409,348 ha, but by 1995 it drastically declined to 248,380 ha, which represents about 5% of the country's total agricultural land area. By 2007 the area further declined to around 172,000 ha (FAO 2007). As in the rest of the countries in the Asia and Pacific region, smallholders dominate coconut production, with an average farm size of 2.8 ha and producing about 93% of the total coconuts in the country. It is estimated that a 90,000 farm families are involved in coconut production.

Therefore, the coconut genetic resources of the country are endangered. To improve this situation, the Malaysian Government, primarily through MARDI, collaborated with a number of international coconut R&D organizations, particularly COGENT to undertake research and development activities.

In Malaysian various research stations are involved in coconut conservation (Fong et al., 2005). In the 2000s, seednuts of new varieties namely 'kelapa ringan', 'kelapa hijau', sweet husk and spicata were collected in Kelantan and Terengganu States and sown in MARDI's Research Station in Jerangau. Seven populations of drought-tolerant Tall cultivars were also collected from Sabah, the seednuts of which were sown in polybags at the nursery in Ulu Dusun Agriculture Research Station. Characterization data of 26 accessions from MARDI-Hilir Perak and 47 accessions from Department of Agriculture in Sabah have been submitted to the COGENT's CGRD.

Reference

Fong AW, Kalitu N, Jayashree K. 2005. Status of coconut genetic resources research in Malaysia. In: Batugal P, Ramanatha Rao V, Oliver J, editors. 2005. Coconut Genetic Resources. International Plant Genetic Resources Institute – Regional Office for Asia, the Pacific and Oceania (IPGRI-APO), Serdang, Selangor DE, Malaysia. pp 634-638. Available from: URL: http://www.cogentnetwork.org/index.php?page=books

Malayan Green Dwarf (MGD)

Bourdeix R, Othman A, Au WF

Conservation

Malayan Green Dwarf (MGD) is conserved in the Coconut germplasm centres of at least 5 countries through 11 accessions, totalling more than 600 palms. They are conserved at the Ulu Dusun Agriculture Research Station, Sandakan (Sabah) in Malaysia, in India and in the Solomon Islands. The round-fruited form can only be found in the collections of Côte d'Ivoire and Tanzania.

History

The green form of the Malayan Dwarfs is less widespread compared to the yellow and red forms. It is theorized that the Dwarf palms of Malaysia – red, green and yellow forms – were introduced between 1890 and 1900 from Indonesia. The oldest accessions registered in germplasm banks, as early as 1959, are found in India and in Côte d'Ivoire. Open pollinated seednuts were imported to Côte d'Ivoire from Teluk Anson (now Teluk Intan), Malaysia.

Identification

The Malayan Green Dwarf has generally a thin stem, about 20 to 25 cm in diameter, with no or little bole. Because of its short peduncle, the bunch is well supported by the leaf petioles. Compared with the Malayan Yellow Dwarf (MYD) and Malayan Red Dwarf (MRD), the MGD conserved in Côte d'Ivoire is much more heterogeneous. The fruits are bigger, rounder and with a higher kernel content. Some other Green Dwarf varieties can be distinguished from the MGD or MGD01. The Philippines' Pilipog, Catigan, Tacunan and Sri Lanka's Green Dwarf all have special fruit features that differentiate them from one another. It is difficult to differentiate the Green Dwarf of Thailand, which is also round-fruited, from the so-called MGD in the Caribbean (Jamaica, Cuba) which produces oblong fruits.

Yield and production

The average fruit weight of MGD ranges from 724g (in India) to 890g (in Malaysia). Inside the fruits, the nuts are spherical and weigh from 396g to 641g on average. Under good field conditions, MGD starts to flower 2-3 years after field planting and it may produce 30-80 fruits per palm per year (without irrigation). MGD, mainly used as an ornamental palm, is planted in gardens. Water from young nuts is tasty, but not as sweet as that from the Brazilian Green Dwarf. MGD is sensitive to drought and is highly prone to alternate bearing.

Other information

The population introduced in Africa was a mix of pure Dwarf, and natural Dwarf x Tall hybrids. Within the 52 palms initially planted, only 25, selected as putative true-to-type MGD, were used to reproduce the accession. The progenies obtained were again rather heterogeneous. Most of the palms have a thin stem (girth of 65 to 70 cm) without basal bole, and began to flower 25 to 35 months after planting. However, some of the palms have thick stem (girth about 80 cm) with a large bole (girth up to 130 cm) and only flower 60 to 70 months after planting. These last ones do not show Dwarf characteristics. The exact pedigree of each palm was studied and it appeared that 3 of the 25 putative Dwarf parents do not transmit Dwarf characteristics to their progenies. MGD has been crossed with improved West African Tall (WAT) and Rennell Island Tall (RIT) in Côte d'Ivoire.

Reference

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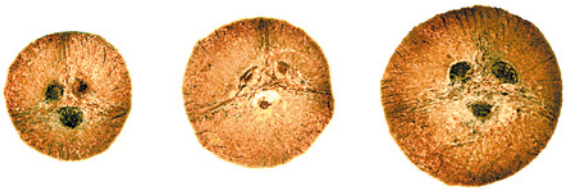


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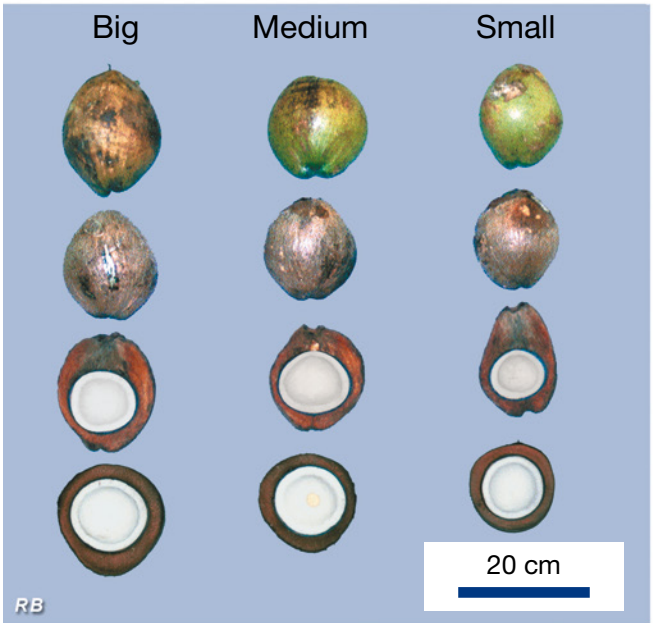
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Malayan Red Dwarf (MRD)

Bourdeix R, Ohtman A, Konan JL

Conservation

Malayan Red Dwarf (MRD) is conserved in the coconut germplasm centres of at least 17 countries by 32 accessions, totalling more than 7000 palms.

History

The Malayan Red Dwarf is one of the most common coconut varieties. In many islands in the Pacific region, this red Dwarf is more frequently planted than the yellow form. The prevailing idea is that the Dwarf palms of Malaysia – red, green and yellow forms - were introduced between 1890 and 1900 from Indonesia.

Identification

The colour of the seedling sprouts, the leaf stalks, the inflorescence, and the immature fruits of the Malayan Red Dwarf are not really red but some kind of bright orange. The MRD has generally a thin stem, about 22 to 25 cm in diameter, with no bole. When the growing conditions are ideal, it may have a little bole (35 to 40 cm of diameter). This can be seen in the oval picture, showing an MRD palm planted on the volcanic soil of Vanuatu islands. The upper canopy appears a little like untidy hair. The top leaves of the Cameroon Red Dwarf, for instance, are much more straight and erect. Due to its short peduncle, the MRD's bunch is well supported by the leaf petioles. The reproductive system has been described as direct autogamy. More than 30 types of Red Dwarfs are referenced worldwide. Some of them look very similar to the Malayan type: Red Dwarfs from Sri Lanka, Chowgat in India, Nias in Indonesia, Chumphon in Thailand, and even Cuba. Molecular analysis techniques will help determine if these Red Dwarfs are identical or not. Some other Red Dwarfs can be easily distinguished from the Malayan type. The Cameroon Red Dwarf bears pear-shaped fruits of paler orange colour. Some Red Dwarfs from the Pacific region produce bunches with a long peduncle and numerous smaller fruits having a more intense red-orange colour (such as the Tahiti Red Dwarf). The fruits of other Red Dwarfs, such as those from Papua New Guinea, have a nipple at the bottom.

Yield and production

Malayan Red Dwarf produces medium-sized, oblong fruits that are generally a little bigger than those of the Malayan Yellow Dwarf. The average fruit weight ranges from 668g (in Brazil) to 1080g (in Vanuatu). Inside the fruits, the nuts are almost spherical and weigh from 443g to 755g.

Under good field conditions, MRD starts to flower 2 to 3 years after field planting and it may produce 70-90 fruits per palm per year (without irrigation). MRD is mainly an ornamental palm that is planted in gardens. Water from young nuts is sweet and tasty, but not as sweet as some Green Dwarfs. The kernel is thin and gives rubbery copra. MRD is sensitive to drought and is subject to alternate bearing.

Other information

The MRD is tolerant to the lethal yellowing disease (LYD) of Jamaica (Romney 1980) but sensitive to the LYD found in Tanzania and Ghana. MRD is used as a parent of many coconut hybrids. The crosses with the Rennell Island Tall (RIT) and the Tagnanan Tall (TAGT) have been widely released to farmers. In Malaysia, MRD is also used as a mother plant in Menumbok Coconut Station for hybrid seed production.

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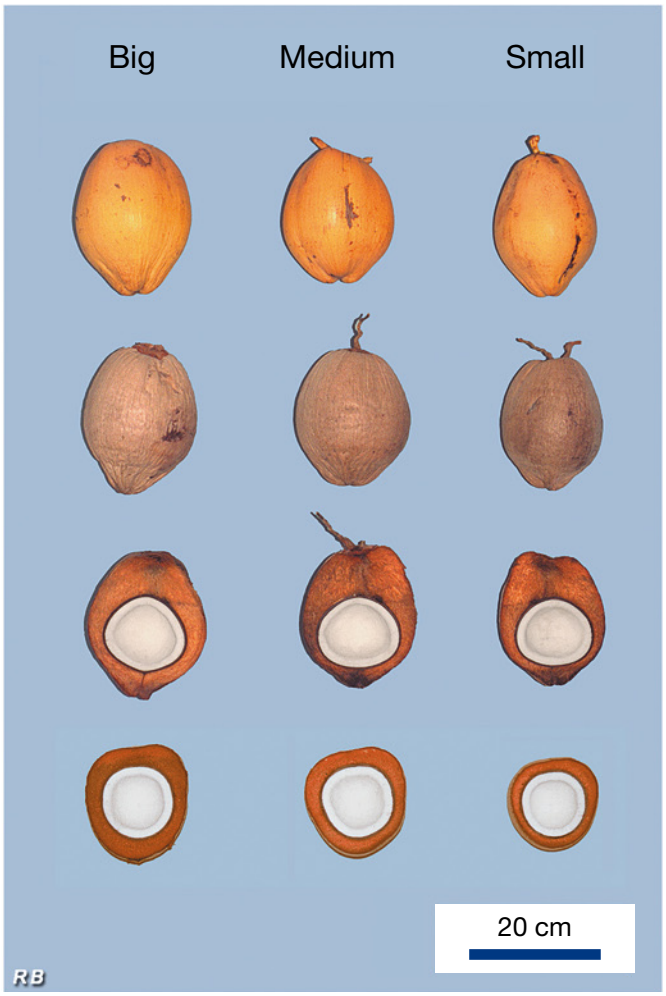
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Malayan Straits Settlement Apricot Tall (SSAT)

Ratnambal MJ, Niral V, Krishnan M

Conservation

Malayan Straits Settlement Apricot Tall (SSAT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala) and at the research centres under the Kerala Agricultural University, India.

History

This cultivar was introduced into the germplasm collection at CPCRI in 1941. It was first reported by Oman (1919) as a semi-Tall type from Straits Settlements.

Identification

Malayan Straits Settlement Apricot Tall is classified as a semi-Tall variety and attains a height of about 5.7 m 25 years after planting. The trunk is slender with an average girth of 70 cm and a medium-sized bole. The circular crown has about 33 leaves which are medium in length with about 109 leaflets per leaf. The leaflets are not very long but slightly broad. The palm starts flowering about 80 months (65-96 months) after planting. The inflorescence is not very long, about 104-123 cm in length and bears about 25-38 spikelets. The inflorescence stalk is not very strong. The spikelets are short and contain less than one female flower per spikelet (0.6) on average. The number of female flowers/inflorescence is very low, ranging from 12-19. However, a higher setting percentage of 43% is observed. The palm is generally self-pollinated as there is complete overlapping of the male and female phases in a spadix. In addition, inter-spadix overlapping of male and female phases occurs. Within an inflorescence, the male phase lasts for about 20 days while the female phase lasts for 5 days. The fruits are yellowish red in colour, large in size and oval in shape. The nut inside is also large and oval with a large cavity.

Yield and production

The cultivar starts fruiting about 107 months after planting. However, within this cultivar, there is a wide variation in the age at first harvest, from as early as 82 months to 132 months after planting. The palm is a regular bearer, varying in annual nut yield from 21-99 fruits per palm. It produces about 11 bunches (9-14 bunches) per year. The fruits are big (788-113g in weight) with 27% husk. The husked nut weighs 697g on average and produces 189g copra. The oil content in the copra is 65%. The annual copra yield and oil yield for this variety is 2 t per ha and 1.3 t per ha, respectively, under rain-fed conditions.

Other information

This cultivar is highly susceptible to coconut root (wilt) disease. The quality of tender nut water is regular. Since the nut and copra yield is also less, it is not suitable for commercial planting. SSAT has been evaluated for yield and yield components in trials at CPCRI. It has also been used in breeding studies and in crop improvement programmes. In India, the Kerala Agricultural University released a hybrid named Kera Sowbhagya (WCT x SSAT) for commercial cultivation in Kerala state. This hybrid produces 130 fruits per palm per year with an average copra content of 195g per nut (4.3 t per ha per year) having 65% oil.

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Malayan Straits Settlement
Apricot Tall (SSAT)













Malayan Straight Settlement Green Tall (SSGT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Malayan Straight Settlement Green Tall (SSGT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala) and at the experiment stations in Sakhigopal (Orissa) and in Arsikere (Karnataka), India.

History

The first introduction of this variety was from Malaysia in 1940 and planted in Pilicode (Kerala). Open pollinated/ selfed progenies of this material were later planted at CPCRI, Kasaragod. Direct introduction was made again in 1958. Later, *inter se* population was planted in 1972 and 1989 at Kasaragod.

Identification

The palms grow to 9.8 m with about 35 leaves on the crown. The stem girth at 1 m height from the ground is 79 cm. There are 29 leaf scars measured from 1 to 2 m above ground level. The palm flowers in 4-5 years after planting. The inflorescence is short, about 111 cm long, with short but strong peduncle. The mean number of inflorescences produced per year is 13 with a range of 7-14. The palm is of the indirect autogamous type, with about 46.5% of the inflorescences showing inter-spadix overlapping. The duration of overlap period is about 4.4 days. Fruits are oval to oblong. The husk, which makes up 32.8% of the whole fruit is oriented more towards the posterior. The husked nut is slightly angular in shape. The kernel is thick with a solid shell.

Yield and production

Fruiting starts 6-6.5 years after planting. It produces 114 nuts per palm; fruits are medium-sized and greenish yellow in colour. The fruit weighs about 1130g with 186g of copra per nut. In Arsikere, Karnataka, it yields 63 nuts and 130g copra per nut; and in Orissa, 70 nuts. The oil content of the copra in Kasaragod is 67%. The variety gives 3.7 t of copra and 2.5 t of oil per ha.

Other information

Malayan Straight Settlement Green Tall is sensitive to drought; comparatively tolerant to root (wilt) diseases of Kerala and sensitive to stem bleeding disease caused by *Thielaviopsis paradoxa*. This variety gives 43% more nut yield and 45% more copra yield than the local Tall. Hence, SSGT may be planted in large scale. Although this variety is no longer being used for breeding, in the past, this variety was crossed with Straight Settlement Apricot Tall (SSAT).

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Malayan Straight Settlement Green Tall (SSGT)













Malayan Tall 3 Heads (MLT36)

Bourdeix R, Konan JL, Ballo K

Conservation

The Malayan Tall '3 heads' (MLT) is a botanical curiosity. Visitors at the Marc Delorme Research Centre often ask to see this unusual palm. Coconut palms of this type may be of interest to botanical gardens or tourist sites. It has thus been decided in 2003 to harvest seednuts from the 'three heads' and rear them in the research centre nursery. However, it will take several years to know whether the extraordinary characteristic of the parent will be passed on to its progenies.

History

The Malayan Tall '3 heads', found on a plantation of around a thousand hectares with 150,000 palms, has a stem which has branched on two occasions. Normally, the coconut palm only has a single terminal bud which emits all the organs – bunches, fronds and stem. This single bud, which is well protected, functions continually in a system of vertical spirals. In general, 12-18 bunches and fronds are emitted each year. Over the same period, the coconut palm also produces from 20 to 160 cm of stem, depending on the age and variety.

Identification

It is very rare to find coconut palms with more than single leaf crowns. Such abnormalities are usually caused by boring insect attacks, or by large branches falling off and damaging the terminal bud of the coconut palm. In a few rare cases, the damaged bud is not totally destroyed, but its growth is disrupted. This sometimes leads to stem branching. In the case of the MLT, there are no scarring indicating insect attacks, or an accident that might have disrupted the bud and caused branching. Moreover, this branching has occurred twice and at least a year apart. It is likely that the cause of branching was accidental, even though signs of the accident are not visible. However, the fact that the palm has branched twice indicates that it possesses at least a genetic predisposition to branching.

Yield and production

In Côte d'Ivoire, Malayan Talls, on average, flower 5.5 years after planting. Fruit production varies from 30-80 fruits per palm per year when mature, depending on the area. In this respect, it is clear that the palm with three heads has somewhat of an advantage - a rapid count revealed that this palm was carrying a total of more than 150 fruits, each measuring larger than a fist. The large inflorescence is long with numerous spikelets. The fruits in the photograph did not come only from the three headed palm, but from the entire Malayan Tall population preserved in Côte d'Ivoire. These fruits are large, round to slightly oblong, and are sometimes wider than tall, with thin husk and a heavy but quite thin kernel. On the average, these fruits weigh 1550 to 1650g depending on the location, with a nut weighing around 1070g and a kernel of around 485g. Some fruits may germinate while still on the palm. The fruits on the three headed palm are all green, round and relatively small compared to the average fruits of the MLT.

Other information

Malayan Talls were introduced from various countries, notably to test their resistance to coconut diseases. They are susceptible to foliar decay in Vanuatu, and to lethal yellowing in Jamaica, Tanzania and Ghana. However, in Côte d'Ivoire, they are tolerant to bud rot caused by the fungi of the genus *Phytophthora*.

Reference

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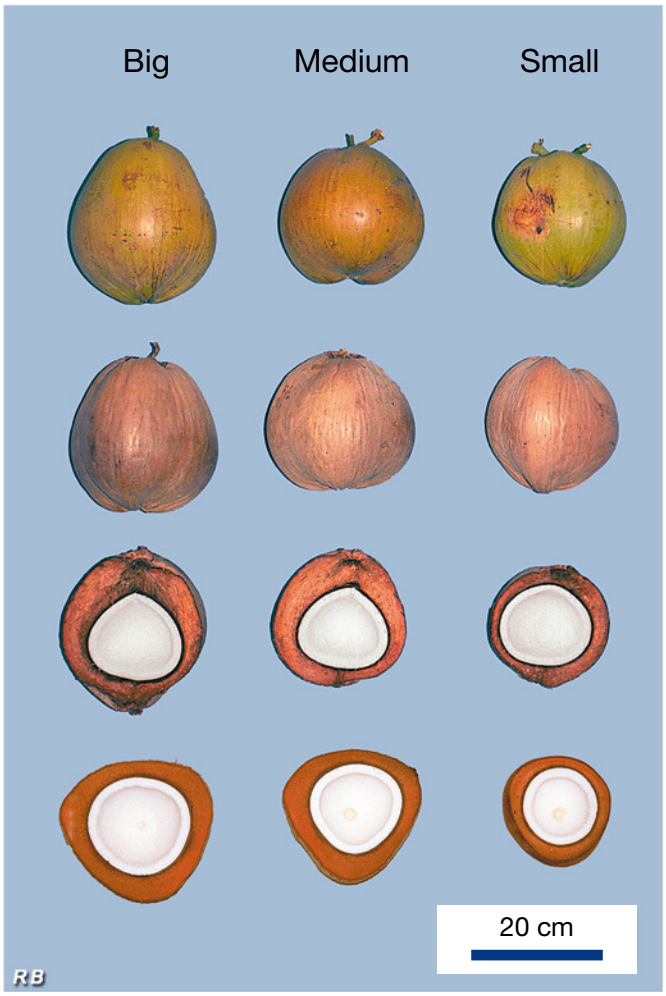
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Malayan Yellow Dwarf (MYD)

Bourdeix R., A. Othman

Conservation

Malayan Yellow Dwarf (MYD) is conserved in the coconut germplasm centres represented by at least 28 accessions, totalling more than 16 000 palms. MYD can be found in 15 countries: Benin, Brazil, Côte d'Ivoire, Fiji, India, Indonesia, Jamaica, Mexico, Papua New Guinea, Philippines, Tanzania, Thailand, Vanuatu, VietNam and Malaysia.

History

The Malayan Yellow Dwarf is probably the most widely diffused Dwarf coconut in the world. According to Gangolly et al. (1957), the Dwarf palms were introduced into Malaysia between 1890 and 1900 by planters from a place called Kryon or Krion, said to be in Indonesia.

Identification

Pale yellow is the colour of the seedling sprouts, the leaf stalks, the inflorescence and the immature fruits. When the fruits are young (6 to 9 months), their colour is often a pale yellow-green. Many other Yellow Dwarfs (YD) look similar to the MYD, such as the Sri Lanka YD, Nias YD in Indonesia, Chowgat YD in India, Pemba YD in Tanzania, and others. The Samoa YD produces fruits of paler yellow colour and is more tolerant to cyclonic winds in Vanuatu. Using RFLP DNA molecular techniques, Lebrun et al. (1998) confirmed that the Malayan YD and the Ghana YD are identical. On the other hand, all the 'Malayan Yellow Dwarfs' in the world may not be exactly of the same genotype. The youngest leaves at the top of the palm are not erect but are slightly bending downwards. The upper canopy appears like an untidy hair, which can be observed more clearly in MYD than in the Malayan Red or Green Dwarf. Because of its short peduncle, the bunch is well supported by the leaf petioles. MYD produces generally medium-sized, oblong fruits weighting 700 to 800g. But the fruit weight is very variable, with the mean value ranging from 370g (in India) to 1752g (in Vanuatu) depending on environmental factors. Inside the fruits, the nuts are almost spherical and generally weigh 350-450g each.

Yield and production

Under good field conditions, the Malayan Yellow Dwarf starts flowering two years after planting and it may produce 80-100 fruits per year per palm (at a planting density of 205 palms per ha and without irrigation). Water from young nuts is sweet, but not as sweet and tasty as some of the other Green Dwarf cultivars. The kernel is thin and gives rubbery copra, but has a good final oil content of about 69%. MYD is sensitive to dry and unfavourable environmental conditions. It is subject to alternate bearing.

Other information

The Malayan Yellow Dwarf is tolerant to the lethal yellowing disease (LYD) of Jamaica but sensitive to the LYD found in Tanzania and Ghana. MYD is the most utilized cultivar worldwide in coconut breeding. COGENT recommends systematically its use as a genetic control for field experimentation when comparing Dwarf cultivars. MYD is also quite often chosen for developing new technologies such as in vitro culture of zygotic embryos.

References

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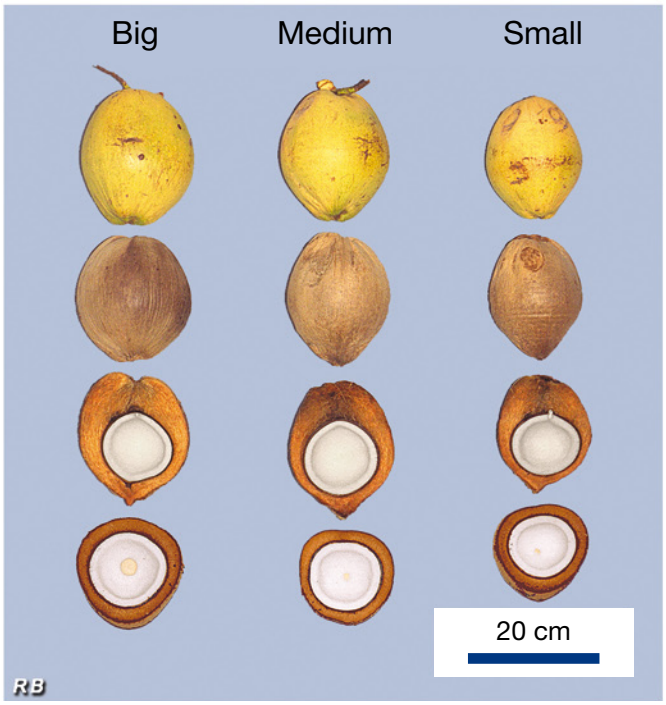
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Conserved coconut germplasm from

Marshall Islands

Genebank	Contact
No registered coconut genebank	Country not member of COGENT Mr Henry Capelle, Agro-forestry Officer Ministry of Resources and Development Majuro, Marshall Island Phone: (692) 625 3206 Fax: (692) 625 3005/3821 E-mail: agridiv@ntamar.com

The Republic of the Marshall Islands (RMI) is a Micronesian nation consisting of 29 atolls each made up of many islets and 5 islands in the central Pacific located 4 to 14°N and 160 to 173°E. The atolls and islands are situated in two parallel chain-like formations known as the Ratak (Sunrise or eastern) group and the Ralik (Sunset or western) group. The total number of islands and islets in the whole Republic is approximately 1225 spreading across a sea area of over 2 million km². The total land area is about 181 km². The mean height of land is about 2 m above sea level. In 2003, the population of RMI was estimated at 56,429 inhabitants.

In RMI, there are no commercial coconut plantations and all coconut land is managed by smallholders, whose land areas vary from 0.8 to 6 ha. Various consultants estimate that 90% of land is under coconut in the outer islands and about 25% for the Majuro and Kwajalein atolls. The coconut is primarily a subsistence crop managed by family members. After meeting the domestic needs, the surplus is converted to copra and marketed for cash income. The other significant crops are breadfruit, pandanus, pumpkins and cabbages and small amounts of bananas. Coconut is very much a part of Marshallese culture and has several uses, of which the main ones are drinking nuts, cooking nuts, domestic fuel, toddy/sap of the unopened spathe (flower), syrup, sugar, vinegar, roof-thatching, baskets, and handicraft material.

The varieties of coconuts in RMI are mainly Tall with few Dwarfs planted close to dwellings. In 1960's a Tall variety with large nuts from Yap State was introduced into a few areas. The Dwarf is used for drinking and for tapping sap/toddy (locally called *jekaro*). The Dwarf variety is not suitable for copra.

Coconuts are by far the most important cash crop and have sustained the economy for more than a century. The contribution of copra, however, varied enormously from atoll to atoll. The average production is 6698 tons of copra which is 47% of the potential of 14 287 tons. Copra production fluctuates due to variations in weather as well as copra prices.

From 1885 to 1979 when Tobolar Copra Processing Company was set up, copra continued to be the major export earner. Since 1979, coconut oil and copra cake resulting from copra processing became the major export earner.

Reference

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Marshall Islands Green Dwarf (MIGD)

Labouisse JP., Bourdeix R Sileye T

Conservation

Marshall Islands Green Dwarf (MIGD) is conserved in the Vanuatu Agricultural Research and Training Centre (VARTC) genebank (87 trees) and in a plot of the Agriculture Department near the capital of the Republic of Kiribati on Tarawa atoll.

History

Although originating from the Marshall Islands, this variety was collected in Kiribati. The Republic of Kiribati is made up of 33 islands divided in 3 main groups (Gilbert, Phœnix and Line Islands) scattered over more than 5 million km² in the Central Pacific Ocean. The Gilbert archipelago consists of a group of 16 islands scattered on both side of equator between the 172nd and the 176th parallels. Butaritari is an atoll, made up of a number of islets totalling 12 km² of land, located in the north of Gilbert Group. In Butaritari, this Green Dwarf is called "te nii ni Matiare" which means "coconut of Marshall Islands". This coconut originates from the Marshall Islands, located 400 km north of Butaritari where it is often found in backyards. In this country it is called "ni maroro kadru". From the Marshall Islands, this cultivar has been widely spread in other Micronesian countries such as Tuvalu where it is called "niu masela".

Thirty fruits of Kiribati Green Dwarf were collected in 1990 in Butaritari and sent to Saraoutou Research Station, Vanuatu. The seedlings were planted in May 1991. After flowering, they were crossed in 1995 and the progeny established in the genebank in October 1997.

Identification

In the rich volcanic soils of Vanuatu, the shiny green fruits are elongated and often with one or two constrictions up or down the middle of the fruit. Nuts are round or sometimes elongated. In Vanuatu, the whole fruit weighs 828g. The weight of the fruit components are: husk (249g), water (151g), shell (129g) and meat (299g). In the coral soils of Tuvalu, fruits are smaller and more elongated (see the oval picture taken in Tuvalu); they look like the fruits of the Sri Lanka Green Dwarf (PGD) planted in poor sandy soils of Côte d'Ivoire. Molecular analysis with 14 SSR markers showed no genetic difference between MIGD and PGD. An introduction from Sri Lanka to Marshall Islands or from Marshall Island to Sri Lanka during the colonial time is possible but not proven.

Yield and production

In Vanuatu genebank, MIGD starts to bear flowers 30 months after planting. Production is 61 fruits per palm per year with 238g of copra per nut i.e 14.5 kg copra per palm per year.

Other information

The water of the nut is particularly sweet and Marshall Islands Green Dwarf is mainly cultivated near the houses for use as tender coconut or for making toddy that is the fermented sap collected from immature inflorescence. In Tuvalu, people say: "Using this variety even an old man can make its own toddy" (no need for him to climb the coconut).

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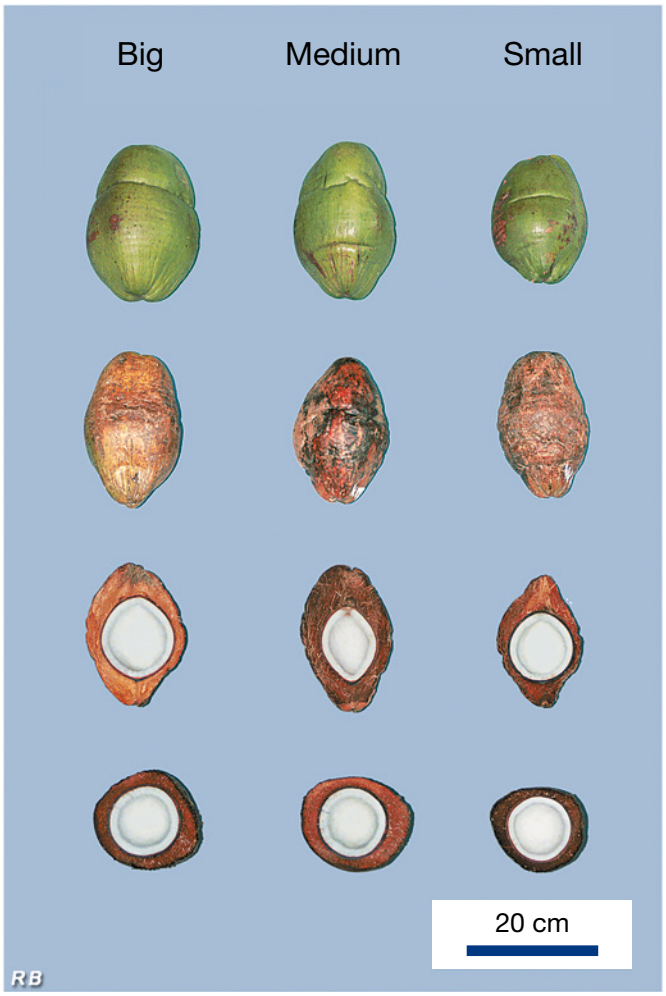
Marshall Islands Green Dwarf (MIGD)













Conserved coconut germplasm from

Mozambique

Genebank	Contact
No Coconut genebank in Mozambique	Country not member of COGENT Mr Jose Sancho Cumbi Research Assistant, Entomology National Agricultural Research Institute PO Box 3658 - AV. Das FPLM, Maputo, Mozambique Phone: (258) 1 460097 - Fax: (258) 1 460074

The Republic of Mozambique is a country in southeastern Africa bordered by the Indian Ocean to the east, Tanzania to the north, Malawi and Zambia to the northwest, Zimbabwe to the west and Swaziland and South Africa to the southwest.

Coconut in Mozambique is mostly grown along the coast. Coconut production is mainly a family based enterprise with more than 60% of the stands located in small landholdings. It is estimated that about 14% of the Mozambican population depends on the crop as their main source of income and nutrition or food. The country's total production is about 60 000 tonnes of copra-equivalent, of which 50% is consumed locally. Revenue from coconut exports was about US$ 10 million annually in 2004 (Cumbi 2005). Coconut production in Mozambique is mainly affected by the following: lack of improved germplasm; high incidence of pests and disease, particularly the lethal yellowing disease (LYD). Outbreaks of this disease now threaten the industry and the livelihood of over 1.7 million people in Zambézia and Nampula Provinces.

The extent of coconut germplasm diversity in Mozambique has not yet been fully investigated. Most of the local cultivars are of Tall types that fall under the general category of Mozambican Tall. Therefore, there is an urgent need to characterize and conserve the country's local germplasm. Some germplasm was introduced into the country in the early 1980's by the Madal Company in Zambezia Province. Some of the introduced varieties included Brazilian Green Dwarf, Brazilian Yellow Dwarf, Malaysian Red Dwarf and Malaysian Yellow Dwarf. These materials were used in the production of hybrids by the Madal Company, primarily for new plantings and rehabilitation of old stands. Mozambique has yet to have a national coconut research programme.

In the framework of the Millennium Challenge Corporation, the « Farmer Income Support Project » with a budget of US$17.4 millions, was developed in order to reduce the spread of LYD, to improve productivity of coconut products, and to encourage diversification into other cash crop production. This project will eliminate biological and technical barriers that hinder economic growth among farms and targeted enterprises while supporting diversification into other cash crops and improved farming practices to assist smallholders and producers recover lost income. In conjunction with tree removal and replacement, this activity will assist farmers in adopting new cropping systems and developing alternative sources of cash income during the time required for new coconut trees to reach productive age. This component will also provide technical support to introduce better practices aimed at increasing crop yields.

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Mozambique Tall (MZT)

Bourdeix R, Correia AM, Tomo L, Mangana S, Konan JL

Conservation

Mozambique Tall (MZT) can be found in Mozambique, but up to 2009, there was no recorded coconut germplasm bank in this country, where the lethal yellowing disease is quite active. The only other country where MTZ can be found is Côte d'Ivoire, where 147 palms have been planted in 1981 from the rejuvenation of an older accession surveyed in Mozambique.

History

Coconut contributes directly or indirectly to the subsistence of a great number of smallholders in Mozambique. The coconuts grow along the coastal areas but the main area dedicated to this crop is between the river Zambeze and Lighonha. In the 1950s, the organization of coconut groves was based on four plantations which occupied about 50 000 ha. In 1958, Carvalho Mendez reported for the first time the occurrence of an unknown disease of coconut in northern Mozambique. In 1999, this disease, identified as lethal yellowing, was confined in the Cabo Delgado province. In 2002, it remains only in one big plantation, the Sociedad Agricola da Madal, which has about 23 000 ha.

Identification

According to Harries (1978), the coconut palm was introduced from Mozambique to Cape Verde Islands and West Africa by Portuguese sailors, at the beginning of the 16th century. However, the MZT conserved in the Côte d'Ivoire germplasm bank is significantly different from the West African Tall type. Its stem is more bulky, its flowering is slower, its fruits are more round-shaped. The MZT looks quite similar to some Asian coconuts, while the West African Tall seems closely related to Indian types. Anyway, there exist various types of coconut in Mozambique. A systematic survey of coconut cultivars needs to be conducted in this country. Fruits are oblong to round-shaped, quite variable in shape and size, and weigh 1000-1200g. The equatorial section is often triangular. Fruits have a high husk ratio (37 to 44%) and low free water content. The nuts are almost round, sometimes wider than longer, and weigh 600 to 650g. Copra is very rich in oil (69%).

Yield and production

In the Côte d'Ivoire germplasm bank, Mozambique Tall flowers 63 months after field planting, which is 5 months later than the West African Tall. MZT produces 60 to 70 fruits per palm per year, and about 1.7 t of copra per ha per year.

Other information

Despite the recent decrease in production, Mozambique remains the largest producer of copra in Africa. Coconut palms cover a surface of about 100 000 ha, which produce an average of 600-700 kg of copra per ha. Almost all the planting material is Mozambique Tall. With the support of CIRAD, hybrids between Malayan Dwarfs and MZT have been planted, representing 4 to 6% of the total area of coconut plantations. In Côte d'Ivoire, MZT was crossed with seven other Tall varieties. The performances of these crosses are generally lower than the equivalent progenies using the West African Tall as parental material. In Jamaica, the pollen of MZT has been crossed with the Malayan Yellow Dwarf and six other Tall varieties as female parents. These experimental hybrids are all quite sensitive to lethal yellowing disease with mortality ranging from 30 to 53%.

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Conserved coconut germplasm from

Nigeria

Genebank	Contact
Nigerian Institute for Oil Palm Research Benin-Akure Road. PMB 1030 Benin City Nigeria	Country member of COGENT Dr U Omoti, Director Nigerian Institute for Oil Palm Research (NIFOR) Benin-Akure Road. PMB 1030, Benin City Nigeria Phone: (234) 52 602485 Fax: (234) 52 602486 Email: info@nifor.org; nifor@infoweb.com.ng

The Federal Republic of Nigeria is located in West Africa and shares land borders with the Republic of Benin in the west, Chad and Cameroon in the east, and Niger in the north. Its coast lies on the Gulf of Guinea, a part of the Atlantic Ocean, in the south.

Although the coconut palm is not indigenous to Nigeria, 15,000 ha of land are estimated to be under coconut cultivation in the country, mostly in the coastal areas of Lagos State and the delta areas of Rivers State (Akpan 1994). Another estimated 1.2 million hectares have been identified as suitable for coconut cultivation. The Nigerian Institute for Oil Palm Research (NIFOR) is mandated to carry out national research on coconut. NIFOR has identified the spread of Awka wilt lethal yellowing-like disease as the major threat in the development of the coconut industry in Nigeria. The incidence of the disease is estimated at 8-10% in the inland areas and about 5% in the coastal areas of Lagos State. To this end research has been carried out on the following:

- The control of Awka wilt disease through the development of high-yielding, disease-resistant hybrid varieties.
- Studies on the aetiology of the Awka wilt disease and the development of efficient screening techniques.
- Studies of the fertility management on the coastal and inland soils.
- Development of sustainable coconut-based intercropping systems.
- Development of efficient postharvest technologies.

Despite limited research funding, the NIFOR's coconut research programme has recorded major achievements (Okwuagwu 2005). However, future progress will depend to a great extent on the Institute's present effort to combat the spread of the Awka wilt lethal yellowing-like disease.

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Nigerian Tall (NIT)

Ratnambal MJ, Niral V, Krishnan M

Conservation

Nigerian Tall (NIT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala) and at the centres under the All India Coordinated Research Project on Palms (AICRPP).

History

Nigerian Tall, a local Tall cultivar of Nigeria, was introduced to the germplasm collection at CPCRI, Kasaragod in 1963.

Identification

Nigerian Tall is a medium-statured palm attaining a height of 5.4-7.1 m at 22 years of age. It has a medium-sized bole and the stem has a girth of 82 cm. The crown is circular in shape and carries about 30-32 leaves. The leaves are long with thick and strong petioles. The leaves contain a large number of long leaflets. This variety starts flowering in about 79 months (70-89 months) after planting. The inflorescences are long with a large number (40) of long spikelets. The peduncle is short, but not very broad. The number of female flowers/inflorescence varies from 13-35, with an average of 0.6 female flowers per spikelet. The fruit setting percentage is also low, around 26%. The palm is generally cross-pollinated. The male and female phases in a spadix do not overlap. The male phase extends for 18 days, while the female phase lasts for 4 days and begins 2 days after the end of the male phase. However, inter-spadix overlapping of male and female phases occurs. The fruits of this cultivar are large and oval in shape. The colour of the fruit varies from brown to greenish yellow. The nut inside is also large with a thick layer of solid endosperm and a very strong shell.

Yield and production

The palms of the Nigerian Tall cultivar start yielding 101-119 months after planting. The palms are regular bearers, producing about 9-10 bunches annually. The nut yield varies from 62-76 fruits per palm per year. The fruit is large-sized which is about 26-33% husk. The husked nut on average weighs 791g, with a copra content of 185g per nut. The oil content of the copra is 67.8%. Therefore, the estimated annual copra and oil yield, under rain-fed conditions, is 2.5 t per ha and 1.7 t per ha, respectively. However, studies on NIT populations at the Nigerian Institute of Oil Palm Research, have recorded low copra yield of 0.34-1.7 t per ha.

Other information

Nigerian Tall is highly susceptible to nut damage caused by the Eriophyid mite *Aceria guerreronis*. The quality of the tender nut water is not very good, and therefore this cultivar is not suitable for commercial cultivation for tender nut purpose. NIT has been evaluated for yield and performance in germplasm trials. However, in India this cultivar has not been utilized in any systematic breeding/crop improvement programmes.

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JTO


JTO


JTO


Big
Medium
Small
20 cm
JTO


JTO

Conserved coconut germplasm from

Panama

Genebank	Contact
No registered Coconut genebank	Country not member of COGENT Sr Roberto Enrique Mancilla Conte Consejo para la Protección de las Obtenciones Vegetales Ministerio de Desarrollo Agropecuario Vía aeropuerto Internacional de Tocumen Río Tapia Panama city, Panama Tel: (507) 2207079 Fax: (507) 2662943 E-mail: rmancilla@mida.gob.pa

The Republic of Panama is the southernmost country of Central America. Situated on the isthmus connecting North and South America, it is bordered by Costa Rica to the northwest, Colombia to the southeast, the Caribbean Sea to the north and the Pacific Ocean to the south.

Coconut was present in Panama from pre-Columbian times but its origin and introduction date is unknown (Zizumbo and Quero 1998). For centuries, agriculture was the dominant economic activity for most of Panama's population. After the construction of the canal, agriculture declined and the proportion of the labour force in agriculture dropped. As far as we know, there is no research conducted by national researchers on the coconut palm. Furthermore, the popularity of Panama Talls peaked in the 1980s, when studies conducted in Jamaica concluded that, along with their hybrids, they were among the varieties with greatest tolerance to lethal yellowing. In Jamaica, following periods of severe hurricane activity in 1903, 1904, 1912-1917, large numbers of nuts of the Panama Tall variety were imported from the San Blas Islands of Panama. Again, in 1922, there was further importation of nuts from Panama. Over the years, multipurpose variety trials have yielded useful data on windstorm damage. Following a hurricane in 1944, it was reported that 60% of 30,560 Jamaica Talls were destroyed compared with only 6% of 5120 Panama Talls (Harries 1975). In Panama, a Coconut disease of great concern is Porroca or little leaf disease. The disease recently entered an epidemic phase, spreading along the Caribbean coast and extending inland 40 km west of the Panama Canal (Gilbert and Parker 2001).

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Panama Tall (PNT)

Ratnambal MJ, Niral V, Krishnan M

Conservation

Panama Tall (PNT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala), India. There are seven recorded accessions of this variety, located at five conservation sites in India, Brazil, Tanzania, Nigeria and the Côte d'Ivoire.

History

Panama Tall was introduced to the germplasm collection at CPCRI from Panama in 1956. It is one of two distinct Tall cultivars observed in Panama. PNT is present on the Pacific coast of Central and South American countries. PNT resembles varieties of South East Asia regarding fruit appearance and composition. Based on historical evidence, it is possible that PNT was introduced into the Caribbean Islands from the Philippines in the 16th century. Recent studies, using RFLP markers, also indicate the possibility of PNT being derived from Southeast Asian Talls.

Identification

Panama Tall is a robust and medium-statured palm attaining a height of 6 m at 22 years. The average stem girth is 93 cm. It has a medium-sized bole. The palm carries about 34 leaves on the circular crown. The leaves are long with strong petioles; the 122 leaflets closely arranged in the leaf. The leaflets are medium-sized and rather broad. The palm starts flowering seven years after planting. Inflorescences are long with very strong and thick peduncles. The inflorescence bears about 34-42 long spikelets. The average number of female flowers in an inflorescence is around 29, with 31% fruit set. Cross-pollination is observed due to non-overlapping of male and female phases in a spadix. The male phase lasts for 19 days and the female phase, four days. However, inter-spadix overlapping of male and female phases is observed to some extent. The fruits are large, spherical and greenish-yellow. The nut with a thick shell is almost round, flatter at the base and contains a thick kernel.

Yield and production

Panama Tall starts yielding at the age of 8.5 years. The palm is a regular bearer and produces 8-10 bunches per year, yielding 82 fruits per palm annually. The fruits are large with 32% husk to whole fruit weight. The average weight of the nut without husk is 787g. The average copra content is 238g per nut with 64% oil content. The estimated annual yield of copra and oil under rain-fed conditions is 3.4 t per ha and 2.2 t per ha, respectively. A wide variation in the annual nut yield, from 26-144 fruits per palm, has been recorded, with the average husked nut weighing 912g (42% husk). Harries (1971) reported the average fruit weight in Jamaica to be 2.1 kg.

Other information

Panama Tall cultivar is moderately resistant to lethal yellowing in Florida. Its hybrid MAYPAN (MYD x PNT) is 86% resistant to the disease. Natural symptom remission of lethal yellowing disease was observed in some trees of the Panama Tall and Jamaica Tall hybrid. The quality of tender nut water is good, making the variety suitable for commercial exploitation for tender nuts. It is also a good copra yielder and can be used for commercial production. In India, PNT has been evaluated for yield and fruit characteristics in germplasm trials at CPCRI, but has not been included in the crop improvement programme.

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JTO


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Big
Medium
Small
20 cm
JTO


JTO

Panama Tall Aguadulce (PNT01)

Bourdeix R, Konan JL, Lebrun P

Conservation

Panama Tall Aguadulce (PNT01) palms are found in Panama but until 2002 there was no coconut germplasm conservation centre in the country. The two populations from Aguadulce and Monagre were introduced into Côte d'Ivoire in 1978. According to the 2002 Coconut Genetic Resources Database, the population from Aguadulce is represented by 3 accessions with 232 living palms in the field.

History

Panama Tall Aguadulce was collected from the town of Aguadulce, in the west of the country, near the Pacific Ocean. Throughout tropical America, coconut varieties are different in the east, on the Atlantic Ocean side, and in the west along the Pacific Ocean. In the east, the so-called 'Tres Picos' Talls, literally meaning 'three points' are found. These Talls produce elongated fruits with a triangular cross-section, and contain a high percentage of husk. They resemble the coconut palms of Africa and India. However, on the Pacific side, the coconut palms produce large round fruits with quite a thin husk. It has been possible to reconstruct their history with the help of molecular biology and botany, and also of archaeological discoveries and the accounts of Spanish discoverers. The coconut palms from Panama form a genetic group with little diversification, which existed before the Spanish arrived. These pre-Columbian coconut palms descended from a very small number of palms and have far more traits in common with those from Southeast Asia than with those from Polynesia. Although the coconut palm lends itself well to dissemination by ocean currents, any possibility that seednuts could have survived a journey going virtually half way around the world has been ruled out. These 'Pacific' coconut palms were therefore, possibly brought by seafarers, although such a journey made 2500 years ago, may seem incredible. This is still a subject of bitter controversy.

Identification

The stem, which is massive and straight, begins with a marked bole. Roots sometimes emerge from the stem above the ground, and up to around on meter in height. Although the fronds are long, they bear quite a small number of leaflets. The fruits are round to ovoid, sometimes broader than they are long, and weigh an average of 1543g in Côte d'Ivoire. The inner nut is almost round and sometimes broader than long, and weighs 1056g on average. The kernel weighs an average of 482g and gives 263g of oil-rich copra after drying.

Yield and production

Production starts late. Flowering begins on average 6.5 years after planting. Production remains mediocre in Côte d'Ivoire with about 11 bunches and 30 fruits per palm per year on adult palms. However, production probably continues to increase up to 20 or 25 years. PNT01 produces erratically. Rapid emission of several inflorescences is followed by long rest periods without flowering.

Other information

In Côte d'Ivoire, the Panama Tall Aguadulce has been crossed with three other varieties. These new crosses are inferior to the reference hybrids, notably for immature production levels. However, they do produce larger nuts, which may be an advantage since for the same tonnage, nut processing costs may possibly be reduced.

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Panama Tall Aguadulce (PNT01)













Panama Tall Monagre (PNT02)

Bourdeix R, Baudouin L, Konan JL

Conservation

Up to 2002, there was no coconut germplasm conservation centre in Panama in which the Panama Tall (PNT02) was planted. The Panama Tall has been conserved in Jamaica since 1954 and in India since 1956. The two Panama Tall populations from Aguadulce and Monagre were introduced into Côte d'Ivoire in 1978. According to the 2002 Coconut Genetic Resources Database, the population from Monagre is represented by 3 accessions with 271 living palms in the field.

History

The coastal resort of Monagre lies on the Pacific coast. In 1977, coconut seednuts and pollen were collected there, and then sent to Côte d'Ivoire. From Côte d'Ivoire, they were sent to Tanzania (1988) and Ghana (1994), but many palms in these two countries were destroyed by the lethal yellowing disease.

Identification

Two types of the Panama Tall are conserved in Côte d'Ivoire: Aguadulce and Monagre. The vertical growth of the Aguadulce origin is slightly more rapid, but morphological differences remain only slight. However, molecular biology analyses have revealed that the Monagre origin is more closely related to the famous Panama Tall coconut palms from the Agualta Vale plantation in Jamaica (shown in the oval photograph). The variety known as the 'Jamaica San Blas' in India is also a Panama Tall. The fruits are almost round, both in longitudinal and cross section, and weigh 1483g on average. They contain a nut that is also round, sometimes slightly conical at the end with the germination 'eyes', and weighs 1020g. The kernel weighs 473g and gives only 263g of oil-rich copra. The husk of immature fruits sometimes display the intense pink colouring also found in the Pilipog Green Dwarf from the Philippines.

Yield and production

The palms start bearing late. On average, flowering begins 76 months after planting. Production remains mediocre in Côte d'Ivoire at 12 bunches and 31 fruits per palm per year on adult palms (9-12 year average).

Other information

Panama Talls had their moment of glory in the 1980s, when studies conducted in Jamaica concluded that, along with their hybrids, they were among the varieties with greatest tolerance to lethal yellowing. Despite initial tolerance to the disease, the hybrids started dying by thousands in the mid-1990s. The experts are still not sure of the reasons for this new catastrophe: was the tolerance observed in field trials really of genetic origin? Was the planting material supplied to farmers really true-to-type? Was a new pathogen strain (a phytoplasma) accidentally introduced? Or did the pathogen strain mutate? What is certain is that it has become particularly adventurous to talk about a lethal yellowing 'resistant' variety. Panama Talls have also proven to be susceptible to other types of lethal yellowing, such as that in Tanzania.

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Panama Tall Monagre (PNT02)













Conserved coconut germplasm from

Papua New Guinea

Genebank

Papua New Guinea Cocoa
and Coconut Research Institute
PO Box 642
Rabaul
Papua New Guinea
Phone: (675) 8521651/8521653
Fax: (675) 8521657
Email: srs.ccri@global.net.pg

Contact

Country member of COGENT
Mr Tore Ovasuru
Chief Executive Officer
Kokonas Industri Koporisin (KIK)
PO Box 81
Port Moresby, NCD
Papua New Guinea
Phone: (675) 3211133 / 3211513 / 3212798
Fax: (675) 3214257
Email: tovasuru@kik.com.pg

Papua New Guinea is a country in Oceania, occupying the eastern half of the island of New Guinea and numerous offshore islands (the western portion of the island is part of Indonesian provinces of Papua and West Papua). It is located in the southwestern Pacific Ocean, in a region defined since the early 19th century as Melanesia. It is one of the most diverse countries on Earth, with over 850 indigenous languages and at least as many traditional societies, out of a population just under 6 millions.

The PNG Cocoa and Coconut Research Institute established in 1986 is the research arm of the cocoa and coconut industries in the country. The Stewart Research Station of CCRI, located at Murunas in Madang Province, conducts breeding and evaluation studies, as well as agronomy and entomology research. CIRAD has played an important role in the establishment of this research centre providing staff, training, technical assistance and funding. In the 1970s, a number of exotic coconut populations were brought into PNG, initially as planting material. Local populations believe that large but fewer nuts involve less labour while still giving similar copra yield to that from palms with smaller but more numerous nuts.

In 1998, the Memorandum of Understanding (MoU) establishing the International Coconut Genebank for the South Pacific (ICG-SP) in Papua New Guinea was signed between PNG and IPGRI/COGENT, with the FAO as trustee. The Stewart Research Station hosts the ICG-SP for the conservation, evaluation and use of important germplasm from the South Pacific region. Substantial progress has been made on the establishment of the ICG including land clearing, renovation of the embryo culture laboratory, training local staff, establishment of local and Dwarf accessions. There are currently 41 local Tall, six local Dwarfs and five exotic Dwarf populations in the ICG that are being characterized.

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Karkar Tall (KKT)

Ratnambal MJ, Niral V, Krishnan M

Conservation

Karkar Tall (KKT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala), India. This variety is represented by 12 accessions in 10 different conservation sites around the world.

History

Karkar Tall is a cultivar of Papua New Guinea, growing on soils dominated by volcanic ash deposits with high base and organic matter. It was introduced to the germplasm collection at CPCRI in 1972. This cultivar from the Karkar Island of Madang on the north coast of Papua New Guinea is described by Ohler (1984) to be high yielding and precocious with large nuts.

Identification

Karkar Tall attains a height of 6.8-9.8 m 24 years after planting. The palm is robust in appearance, with an average girth of 92 cm. The palm has a medium-sized bole. The average length of 10 internodes is 45 cm. The circular crown has 32 leaves which are long with strong petioles. The leaflets are also long and broad. The palm comes to flowering 6.5 years after planting. The inflorescences are long with strong peduncles. The inflorescence carries about 28-37 spikelets which are also long. The average number of female flowers in an inflorescence is 22, ranging from 12-32 flowers. Fruit set is about 36%. The palm is generally cross-pollinated. The fruits are very large with a thick strong shell and a thick layer of endosperm. The fruits are oval-shaped and greenish yellow in colour.

Yield and production

Karkar Tall generally starts fruiting 95 months after planting. The palm is a regular bearer producing 9-10 bunches per year. The annual nut yield is 51 fruits per palm, varying from 32 to 74 fruits per palm. The fruits are large-sized with 26-36% husk to whole fruit weight. The husked nut weighs around 1000g and produces 220g copra per nut. The oil content of copra is 64.3%. The estimated copra and oil yield, under rain-fed conditions, is 2 t per ha per year and 1.3 t per ha per year, respectively. In Madang Province, Karkar Tall gave an average yield of 86 fruits per palm per year. The fruits were large with 38% of husk. The average weight of the husked nut was about 1407g, with a range of 994-2080g.

Other information

This cultivar is susceptible to leaf spot damage caused by *Drechslera incurvata*. Among cultivars tested in Jamaica, Karkar Tall was found less resistant to lethal yellowing. This cultivar can be exploited for tender nut production on a commercial scale as the quantity (795 ml per nut) and quality of the tender nut water are high (sugar content of 6.9g/100 ml). In India and Fiji, Karkar Tall has been evaluated for yield performance. In Papua New Guinea, it is being characterized and utilized for developing superior Dwarf x Tall and Tall x Tall hybrids.

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JTO


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JTO


Big
Medium
Small
20 cm
JTO


JTO

Madang Brown Dwarf (MBD) in Côte d'Ivoire

Bourdeix R, Ovasuru T, Konan JL

Conservation

Madang Brown Dwarf (MBD) is conserved in 5 countries with 11 accessions totaling 520 palms. It was sent from Papua New Guinea to Côte d'Ivoire in 1977, and then reproduced and sent to Vanuatu, Thailand, Tanzania and Ghana. The introductions from Côte d'Ivoire to Thailand were made using coconut embryos extracted from fruits and cultured in vitro. It was the first time that this technique was used for the international exchange of a coconut variety.

History

Madang Brown Dwarf, from the town of Madang in Papua New Guinea, is the first brown Dwarf to be introduced into Africa. Because of its polymorphic habits, it is also described in its native country in the previous pages. Although the fronds are long and supple, they do not display the dishevelled appearance seen, for example, in Malayan Dwarfs. They bear quite a large number of leaflets for a Dwarf. The inflorescence peduncle is highly developed. Along with the Tahitian Red Dwarf, MBD is the only one with the smallest number of spikelets per inflorescence in Côte d'Ivoire. Occasionally, inflorescences producing a very large number of female flowers (almost 200) are emitted, but they almost all abort and only give a few fruits per bunch. Very young fruits are almost green when eventually turn dark brown.

Identification

No coconut palm is as polymorphic as the Madang Brown Dwarf. It is almost enough to discourage anyone from attempting to identify coconut varieties. The first seednuts were collected in Papua New Guinea and sent to Côte d'Ivoire in 1977. They were planted there and started bearing three years later. In Papua New Guinea and Vanuatu, the MBD produces large, almost round fruits with a thin husk on rich volcanic soils. In Vanuatu, the meat weighs 407g which amounts to 40% of total fruit weight without free water. In Côte d'Ivoire, on sandy soils, the same Dwarf produces small elongated fruits with a thick husk. Their meat only weighs 152g on average and accounts for 33% of total fruit weight without free water. It is quite surprising that, in Côte d'Ivoire, although the fruits are small in size, the number of fruits produced remains high. This looks like an adaptive behaviour. It seems that this variety changes its fruit shape and weight according to environmental factors.

Yield and production

In Africa, flowering began 28 months after planting, on average, which is very early even for a Dwarf. The Malayan Yellow Dwarf which serves as control in the observation plot only flowered five months later. In Côte d'Ivoire, the MBD produces from 50 to 120 fruits per palm per year, with an average of 94 fruits on mature palms.

Other information

Although the MBD was only introduced quite recently in genetic improvement programmes, it has attracted the attention of researchers. In Côte d'Ivoire and Vanuatu, it has been crossed with numerous Dwarf and Tall types. It has been introduced into Ghana and Tanzania to assess its tolerance to lethal yellowing disease.

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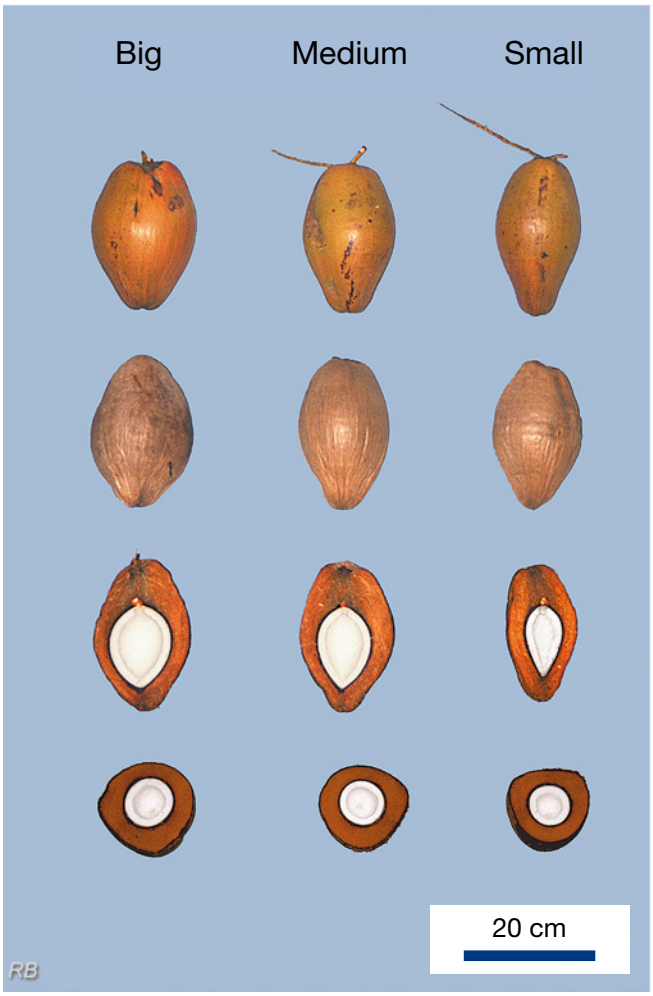
Big
Medium
Small
20 cm
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Madang Brown Dwarf (MBD) in Papua New Guinea and Vanuatu

Ovasuru T, Faure M, Bourdeix R, Labouisse JP

Conservation

Madang Brown Dwarf (MBD) is conserved in the coconut germplasm centres of 5 countries with 11 accessions, totaling 520 palms. It was sent from Papua New Guinea to Côte d'Ivoire in 1977, and then reproduced and sent to Vanuatu, Thailand, Tanzania and Ghana.

History

The MBD was first collected in the city of Madang, northeast of New Guinea Island, a seaport on Astrolabe Bay exporting copra and gold.

Identification

Compared to their green, yellow and red counterparts, brown Dwarfs are less common worldwide. The Madang Brown Dwarf palms are so polymorphic and have a so strange behaviour that it was decided to make two different descriptions, one from Papua New Guinea and Vanuatu, the other from Côte d'Ivoire in Africa. MBD is a small palm, with a slender stem and no bole. On the rich volcanic soils of Papua New Guinea and Vanuatu, MBD produces large, almost round fruits with a thin husk. In Vanuatu, the meat weighs 411g which is 43% of fruit weight without water. The accompanying pictures were taken in Vanuatu and PNG but another plate on following page presents pictures made in Côte d'Ivoire. On fertilized sandy soils in Côte d'Ivoire, MBD produces small elongated fruits with thick husk. Their meat weighs only 152g on average which accounts for 33% of total fruit weight without free water. Under these conditions, it is difficult to identify various brown Dwarf varieties without comparing them in the same experimental plot with a good statistical design. Molecular biology techniques will be useful in distinguishing them. Some other brown Dwarfs from Indonesia, known as 'Ternate' or 'Raja' are closely related and may be identical but this must be confirmed by additional studies.

Yield and production

In Papua New Guinea and Vanuatu, MBD starts beraing 3-4 years after planting, producing 70-100 fruits per palm per year depending on growing conditions and exposure to cyclones.

Other information

Although the Madang Brown Dwarf was only introduced quite recently in genetic improvement programmes, it has attracted the attention of many researchers. In Papua New Guinea in the 1990s, MBD was systematically crossed with all the Tall coconuts being tested in the national breeding programme. In Vanuatu, MBD was crossed with Rennell Island Tall, Kiribati Tall, Rotuman Tall, Markham Valley Tall and Gazelle Peninsula Tall. These hybrids are remarkable for their high meat content (570g for MBD x Rennel Island Tall, 612g for MBD x Rotuman Tall and 642g for MBD x Markham Valley Tall). A yield of 4.4 t of copra per ha has been recorded for MBD x Rennell Island Tall six years after planting. MBD is very susceptible to coconut foliar decay, a viral disease which is endemic to Vanuatu. It is also highly susceptible to cyclones.

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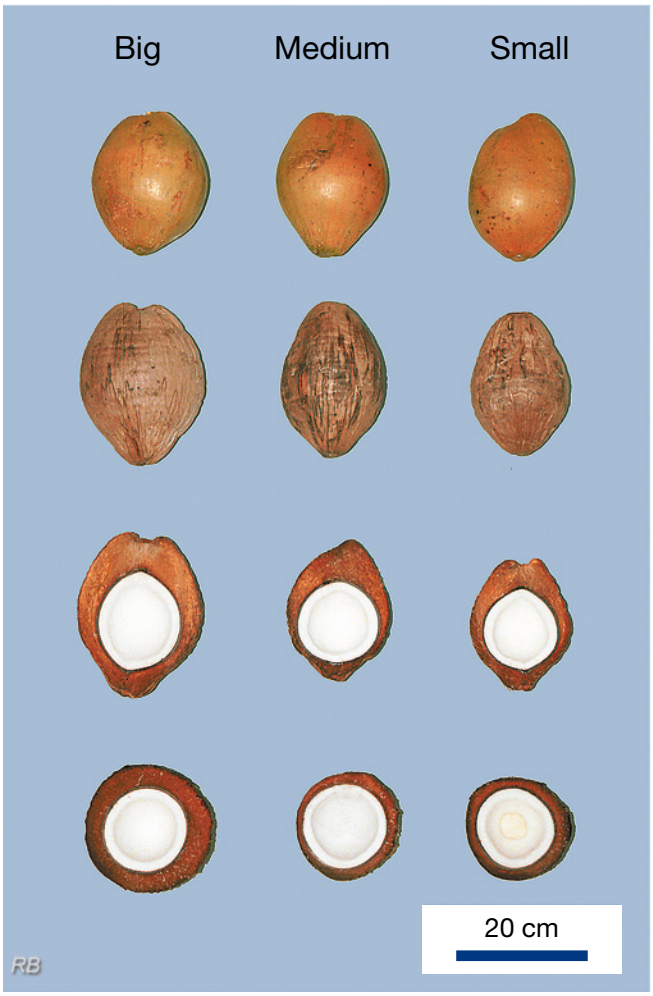
Madang Brown Dwarf (MBD)













Markham Valley Tall (MVT) in Côte d'Ivoire

Bourdeix R, Ovasuru T, Labouisse JP, Konan J.L.

Conservation

Markham Valley Tall (MVT) is conserved in 11 accessions totalling 438 living palms in 7 countries: Papua New Guinea, Côte d'Ivoire, India, Jamaica, Malaysia, Philippines and the Solomon Islands.

History

In 1960, the biologist Parham carried out one of the first scientific surveys to collect coconut palms and breadfruit trees. One of the results of his travels was the dissemination of a coconut variety with large fruits, notably the Markham Valley Tall. This variety, which is famous for its enormous round fruits, comes from New Guinea, the largest island in the world after Greenland. The Markham Valley Tall comes from the east of the island, in the province of Morobe in Papua New Guinea.

Identification

The main characteristic of the Markham Valley Tall is its enormous round fruits, considered by some to be the heaviest in the world. Other varieties also give very large fruits, but they often have different shapes. The fruits of the Rennell Island and Rotuma Talls often terminate in a pronounced nipple. The fruits of the 'Niu Kafa' Talls from Tonga and Samoa have a very elongated shape. For the other features, the MVT is quite similar to certain Asian varieties; its fronds are very long and its inflorescences are large. The MVT stem is quite thick, but begins with an average-sized bole. The fronds are particularly large with an immense peduncle (some exceed two meters). The fronds have very long leaflets (record of 114 cm on average in the Philippines). The fruits are large and round to slightly ovoid, sometimes wider than long. They vary in colour from green to brown. With their thin husk, their composition is excellent. The inner nut is wider than long, forming a point at the end with the three germination 'eyes'. On fertile volcanic soils in Papua New Guinea, the fruits can be very heavy (3371g) and contain a lot of meat (739g). However, in other countries, the average fruit weight fluctuates between 1490g in Malaysia and a little over 2000g in Côte d'Ivoire. The nut weight of MVT in Papua New Guinea just exceeds 1000g with the kernel weight varying from 450 to 600g.

Yield and production

On average, flowering begins 6 to 6.5 years after planting. In Côte d'Ivoire, production levels have so far remained mediocre, at around 10 to 20 fruits per palm per year up to the 15th year. In India, the same variety has produced 68 fruits per palm per year, but this was observed among palms which planted more than 20 years ago.

Other information

This variety was first brought to Côte d'Ivoire from the Solomon Islands in pollen form for experimental crosses. The first attempt to introduce seednuts ended in costly failure. Five hundred seednuts were loaded at Lae, a Papuan town, in October 1972. The ship was delayed and passed through cold zones. The seednuts did not arrive in Africa until March 1973, totally rotten. The second introduction took place in 1983, and only just slightly succeeded; when the bags were opened, almost a fifth of the seednuts had already germinated. In Vanuatu, MVT pollen was also imported in the 1990s to produce several experimental hybrids in connection with a project involving several Pacific island groups.

Reference

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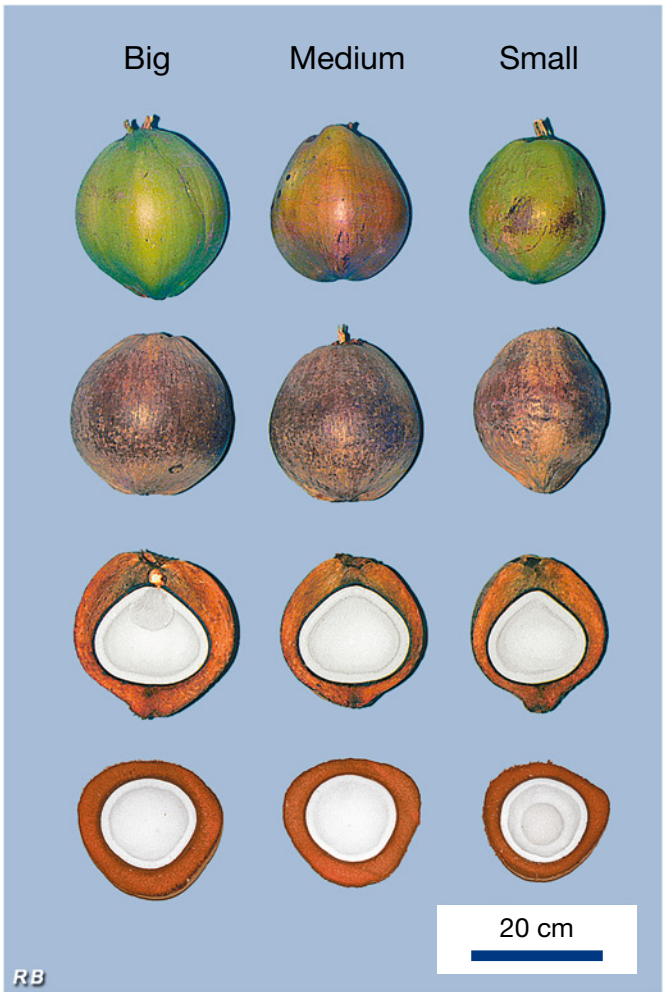
Markham Valley Tall (MVT)













Markham Valley Tall (MVT) in India

Ratnambal MJ, Niral V, Krishnan M

Conservation

Markham Valley Tall (MVT) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala), India. It is represented by about 11 accessions, distributed in 9 different Conservation sites in the world.

History

MVT was introduced to the germplasm collection at CPCRI in 1972. The variety from Markham Valley, Papua New Guinea was noted by Ohler (1984) for its short stem and large thick husked fruits which are round to angular in shape.

Identification

Markham Valley Tall is a robust and tall-statured palm, attaining a height of 9.6-12 m 23 years after planting. The stem has a medium-sized bole and has an average girth of 91.7 cm. The crown is circular and carries 36-38 leaves. The annual rate of leaf production is 13-15 leaves per palm and the length of ten internodes is rather long, averaging 54.1 cm. The leaves are long with strong petioles and the leaflets are long and broad. The palm starts flowering 74-78 months after planting. The inflorescences are long with strong peduncles have 37-49 long spikelets. However, the average number of female flowers per spikelet is low. There are 14-28 female flowers in an inflorescence. Fruit set is about 38%. Pollination is through forced allogamy as there is a distinct gap of 2.5 days between the male and female phases. MVT has very large, round and greenish-yellow fruits with nuts that have a thick endosperm.

Yield and production

MVT starts fruiting at the age of 91 months. It is a regular bearer; producing 10-12 bunches per year. The average nut yield is 68 fruits per palm per year although there is a wide variation in the yield between palms, ranging from 41 to 95 fruits per palm per year. The fruits are very large in size and have about 28% husk. The nut without the husk weighs 1282g and can produce 307g copra which contains about 67.3% oil. Under rain-fed conditions, MVT cultivar can produce about 3.6 t copra per ha per year and 2.4 t oil per ha per year.

Other information

Markham Valley Tall is susceptible to coconut root (wilt) disease and to foliar decay caused by *Mindus taffini* (FDMT). It is comparatively less susceptible to *Drechslera incurvata* leaf spot and moderately resistant to lethal yellowing in Jamaica. This cultivar is suitable for commercial copra/oil production as it gives good copra yield along with high percentage of oil. Tender nut water quality is mediocre. MVT has been evaluated for yield and performance in hybrid trials in India, Vanuatu and Papua New Guinea. In Fiji, this variety has been crossed with Malayan Red Dwarf (MRD x MVT) and evaluated in hybrid trials.

References

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Conserved coconut germplasm from

Philippines

Genebank	Contact
Zamboanga Research Center PO Box 356 San Ramon, 7000 Zamboanga City Philippines Phone: (63) 62 991 5087 Fax: (63) 62 992 1031 Email:wesmarrdec@wmsu.edu.ph	Country member of COGENT Mr Carlos B. Carpio Deputy Administrator Agriculture Research & Development Branch Philippine Coconut Authority (PCA) Elliptical Road, Diliman, Quezon City Philippines Phone: (63) 2 9284501-10 Fax: (63) 2 9267631 Email: cbcarpio@mozcom.com

The Philippines are a country in Southeast Asia comprising 7107 islands in the western Pacific Ocean. It is the world's 12th most populous country, with a population of about 90 million people. There are more than 11 million overseas Filipinos worldwide, about 11% of the population. The Philippine's coconut area is estimated at 4.09 million ha, with most areas comprised of small landholdings with an average farm size of 3.6 ha.

Like other countries, Tall varieties dominate the areas planted to coconut (Carpio et al. 2005). The Philippine Coconut Authority (PCA) genebank in Zamboanga is considered to be one of the most important germplasm repositories of local and foreign coconut ecotypes in the world.

Currently, the Philippines have 224 coconut accessions listed in the CGRD of COGENT. The Research, Development and Extension Branch of the Philippine Coconut Authority (RDEB-PCA) reported that there are 16 coconut varieties registered with the Philippine National Seed Industry Council (NSIC), while there are 15 registered coconut hybrids. Eleven accessions are of foreign origin, such as the West African Tall (WAT), Rennel Island Tall (RIT), Gazelle Peninsula Tall (GPT), Markham Valley Tall (MVT), Vanuatu Tall (VTT), Karkar Tall (KKT), Malayan Red Dwarf (MRD), Malayan Yellow Dwarf (MYD), Equatorial Guinea Green Dwarf (EGD), Sri Lanka Green Dwarf (SGD) and Aromatic Green Dwarf (AROD). A recent addition to the PCA genebank is a rare coconut called 'Tutupaen' or 'Tupa', whose shell is so thick that it's almost as thick as its meat. Nuts from the 'Tutupaen' are not consumed due to superstitious belief that once eaten, the shell will become brittle. Debris from the 'Tupa' tree is also buried for the same reason (Calub 2002). *Cadang-cadang* is a fatal disease of coconut caused by a viroid and found mainly in the Bicol Peninsula, Masbate, Catanduanes, Samar and in isolated areas in Quezon. Economic losses arise from the cessation of nut production on diseased palms. The presence of the disease has also caused problems in international trade of coconut products from the Philippines

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Aguinaldo Tall (AGDT)

Rivera RL, Santos GA, Emmanuel EE, Rivera SM

Conservation

Aguinaldo Tall (AGDT) is conserved at the field genebanks at the Philippine Coconut Authority Zamboanga Research Centre in San Ramon, Zamboanga City where 99 seedlings were planted in 1983. A duplicate collection was also established in the Coconut Breeding Trials Unit in Mambusao, Capiz in Panay Island.

History

Aguinaldo Tall was collected from a farm in Aguinaldo, Naga, Zamboanga del Sur (now Zamboanga Sibugay). The progenitor palms have relatively close leaf scars and elongated fruit configuration. The palms were interplanted with rubber trees.

Identification

Considered a good nut yielder, the fruit of Aguinaldo Tall is characterized by multiple ridges encircling the nut which are more prominent towards the stem end. Fruit colour may be brown or green. The husked nut is almost round in shape. Spikelets range from 43 to 61 cm long. The long fronds with numerous leaflets (115 counted on one side of the leaf), contribute to the overall spherical appearance of the crown. The fronds have yellow/green petioles.

Yield and production

At 10-21 years this variety has an average whole fruit weight of 1428g of which the husk weighs 383g, the shell 276g and the meat 459g. It produces 87 fruits per palm per year and 276g copra per nut. It yields 3.3 t of copra per ha per year under suitable environmental conditions. The average number of bunches per year is 14. It has an average number of 51 female flowers in an inflorescence and a fruit set of 50 to 80 fruits per palm counting from fist-sized to mature fruits. Fruit length average is 24.4 cm while fruit width is 18.8 cm.

Other information

Aguinaldo Tall cultivar has shown good adaptability to the distinct wet and dry climatic condition of the Zamboanga Peninsula. This cultivar could be utilized as an alternative planting material for the current replanting programme in the Philippines considering its high copra yield and nut production as well as its adaptability to adverse climatic conditions. The potential of this cultivar as possible breeding material in the future is still being evaluated.

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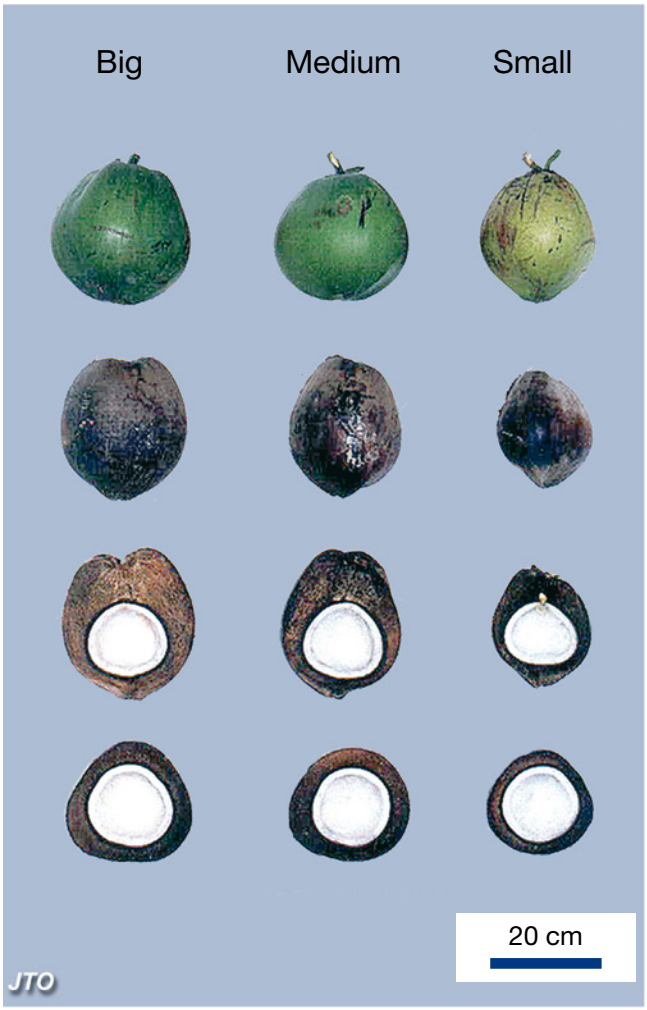
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Antique Tall Mapatag (ANTT01)

Rivera RL, Santos GA, Emmanuel EE, Rivera SM

Conservation

Antique Tall Mapatag (ANTT01) is conserved at the field genebanks of the Philippine Coconut Authority (PCA) Zamboanga Research (ZRC) in San Ramon, Zamboanga City, at the Coconut Breeding Trials Unit in Mambusao, Capiz in Panay Island; and in farms in Mapatag, Hamtic, Antique, Philippines. The materials were planted at the field genebank at the PCA Zamboanga Research Centre in 1987.

History

Antique Tall Mapatag was collected in April 1983 from a 20-ha plantation in Mapatag, Hamtic, Antique. The palms were estimated to be 33 years old at the time of collection. The palms were located in areas at the foot of a hill and partly in the shoreline. Zero tillage was practiced for coconuts grown in the hilly portion while those planted in the shoreline are occasionally tilled. The water table within the plantation ranged from 3 to 6 m.

Identification

The crown shape is spherical to semi-spherical. The average girth at 20 cm above the ground is 200 cm and is 106 cm at 1.5 m above the ground. The average length of 11 leaf scars is 98 cm. The number of female flowers in an inflorescence is 36 on 46 spikelets in average. The petiole colour is green, while the fruit colour is either green or brown. Fruit shape in polar view is round to oblong while in equatorial view is either round or egg-shaped. Husked nut shape is almost round. Fruit set from fist-sized to mature fruits numbered from 20 to 80 fruits per palm.

Yield and production

Antique Tall Mapatag palms are estimated to start bearing at the age of six years. ANTT01 cultivar produces 11 bunches per palm per year and an average of 69 fruits per palm per year. Whole fruit weight is 1367g, with the husk weighing 386g; the shell, 253g; and the meat, 438g. The palms produce 9266 nuts per ha. The cultivar produced an average copra per nut weight of 277g and 2.6 t of copra per ha per year under fairly suitable environmental conditions.

References

Rivera RL, Rivera SM, Emmanuel EE. 2005. Compilation of fruit component characters and fruit and bunch return of coconut accessions at PCA ZRC field genebank II. Tall coconut accessions. Breeding and Genetics Division. PCA Zamboanga Research Centre, San Ramon, Zamboanga City, Philippines (Monographs).

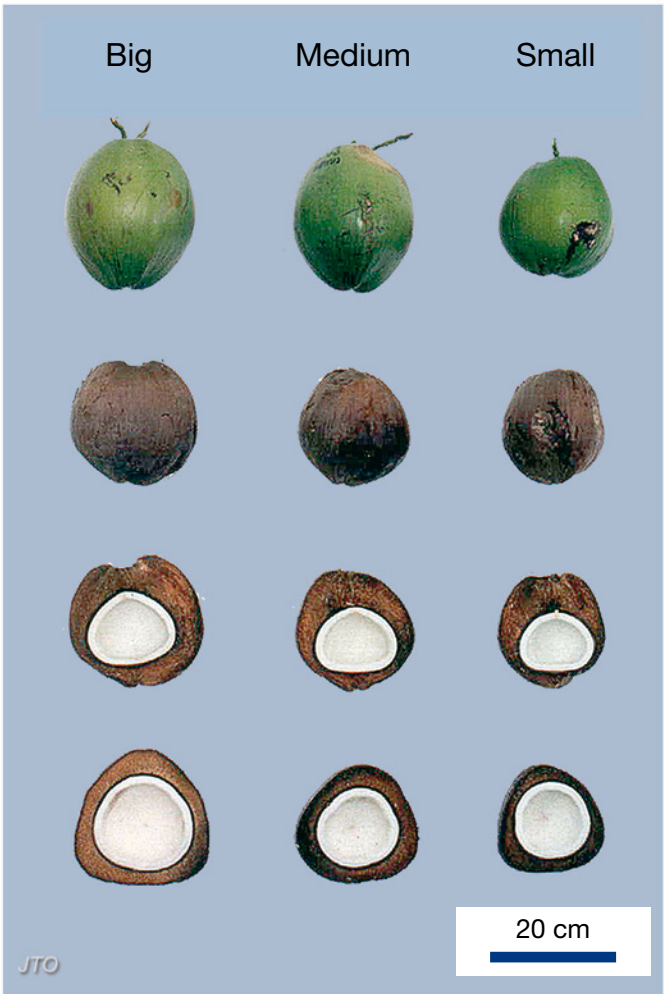
Antique Tall Mapatag (ANTT01)













Bago Oshiro Tall (BAOT)

Rivera RL, Santos GA, Emmanuel EE, Rivera SM

Conservation

The variety Bago Oshiro Tall (BAOT) is conserved at the PCA-Zamboanga Research Centre, San Ramon, Zamboanga City and Coconut Breeding Trials Unit, Mambusao, Capiz in Panay Island, Philippines.

History

The earliest study made on this local Tall variety was with the establishment of the Philippine Coconut Research Institute in 1967 in Bago Oshiro, Davao City. During that time, the variety was called Local Tall or Ordinary Tall, after which it was named Bago Oshiro referring to the place where the variety is found. Other known names are Hijo Tall, Romano and Giant Bunawan.

Identification

Bago Oshiro Tall is a large-sized coconut palm, generally allogamous, heterogeneous and bears fruit in 4-5 years. The nuts are medium to large, and comparable in copra content, around 210g per nut, with San Ramon Tall (SNRT). The stem height varies mostly from 10 to 14 m at 20 years old.

Yield and production

Fruit composition is fairly good. .On average, whole nut weight is 1469g; husk weight 351g, shell weight 264g, and meat weight 502g. Under good cultural management conditions, BAOT palm yields an average of 89 fruits per palm per year; 12,014 nuts per ha, 28.2 kg copra per palm, which converts into a yield of 3.8 t copra per ha.

Other information

Bago Oshiro Tall has shown resistance to leaf spot diseases caused by *Pestalozzia palmarum* and *Helminthosporium* sp. and moderate tolerance to mites *Oligonychus velascoi* Rimando. Like the Laguna Tall (LAGT), BAOT is a genetically ambiguous population, which resembles the typical commercial Tall coconut variety. When crossed with Tacunan Green Dwarf (TACD), the F1 hybrid TACD x BAOT progeny (also known as PCA 15-8) is resistant to bud rot and relatively tolerant to adverse environmental conditions such as strong winds. The Bago Oshiro Tall populations at the Davao and Zamboanga Research Centres have been used in developing several important hybrids. It has been used to produce PCA 15-5 (CATD x BAOT); PCA 15-7 (TACD x BAOT); PCA 15-14 (MRD x BAOT) and MYD x BAOT.

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Bago Oshiro Tall (BAOT)













Baguer Green Dwarf (BAGD)

Rivera RL, Santos GA, Emmanuel EE, Rivera SM

Conservation

Baguer Green Dwarf (BAGD) is conserved at the Philippine Coconut Authority (PCA) Zamboanga Research Centre in San Ramon, Zamboanga City where 154 seedlings were planted in 1982. A duplicate collection was established from these palms, at the Coconut Breeding Trials Unit in Mambusao, Capiz, Philippines.

History

This cultivar was discovered in Baguer, Libungan, North Cotabato by PCA researchers who made the collection in 1981.

Identification

The average girth of Baguer Green Dwarf is around 116 cm at 20 cm above the ground and 82 cm at 1.5 m above the ground. The length of its 11 leaf scars ranges from 53 to 82 cm with an average of 66 cm which is a typical measurement of a Dwarf population. The overall shape of the crown is mostly spherical to semi-spherical. The petiole colour is yellowish green but the fruit colour is green. Fruit shape both in polar and equatorial views is pear-shaped to round. The shape of the nut without the husk is flat to almost round. Fruit set from fist-sized to mature fruit ranged from 20 to 80 fruits per palm.

Yield and production

Yield evaluation of Baguer Green Dwarf cultivar at 10-22 years from planting showed an average of 109 fruits per palm per year with 249g copra per nut which enables this cultivar to produce 4.7 t of copra per ha per year under fairly suitable environmental conditions. Whole fruit weight is 1029g, consisting of 214g husk, 55g shell and 429g meat. A palm produces an average 14 bunches per year and 109 nuts per palm. It has an average of 71 female flowers per inflorescence.

Other information

This variety appears to grow well in areas with distinct dry and wet conditions. Majority of the palms survived the El Niño phenomenon without irrigation, indicating the possibility of possessing genes for drought tolerance. No observations have been made on the performance of this cultivar in areas with low temperature and water logged conditions.

References

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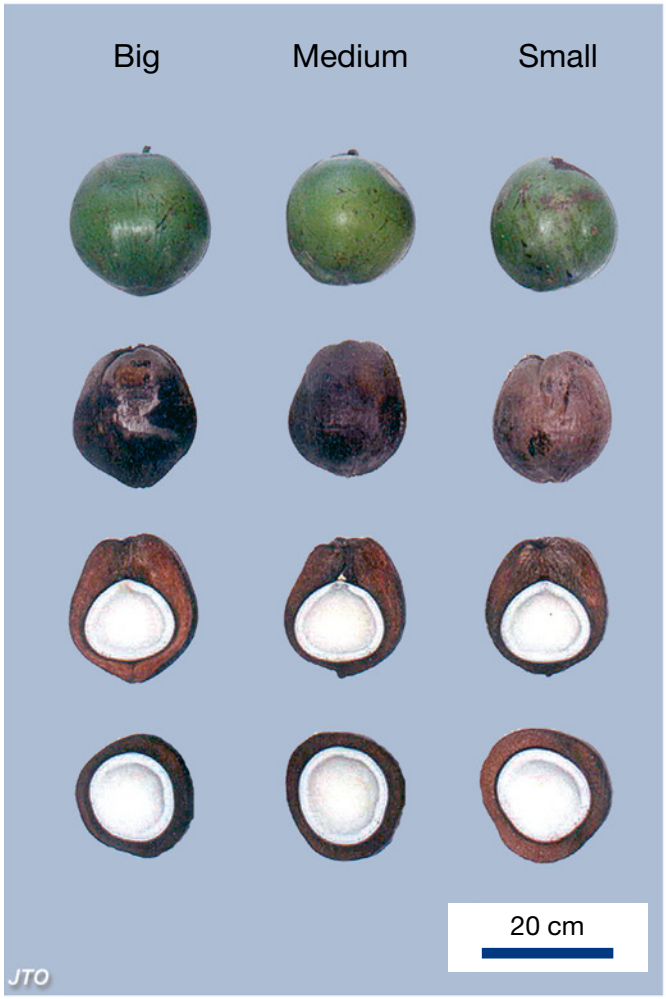
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Ballesteros Tall (BALT01 and BALT02)

Rivera RL, Santos GA, Emmanuel EE, Rivera SM

Conservation

The cultivar Ballesteros Tall (BALT) is conserved at the field genebank of the Philippine Coconut Authority (PCA) Zamboanga Research Centre in San Ramon, Zamboanga City, at the Coconut Breeding Trials Unit in Mambusao, Capiz in Panay Island and in farmers' farms in Cagayan Valley in Northern Luzon.

History

The Cagayan Valley in the north of Luzon Island is not very well known for coconut growing and, judging by the relative ages of the palms, coconut has a very recent history in the area. Most of the palms found in the locality were collected from old plantations, which probably explain the relative homogeneity of the palms as described by the PCA researchers who conducted the first survey in the area in 1983. During that time the fruits produced there were transported as whole fruits to the western part of Northern Luzon (the Ilocos provinces and Pangasinan) where the nuts were used for making candies and other sweet products.

Identification

Two sub-populations of Ballesteros Tall at the PCA ZRC genebank, Ballesteros Tall Cagayan or BALT01 and Ballesteros Tall Tarraq or BALT02, are described. Both populations were planted in 1985. Both show an enlarged base that reaches an average circumference of more than 2 m. The populations show hemispherical crowns and are represented mostly by palms with green fruits, which dangle on long peduncles. The inflorescences are normal and manifest strict allogamy. Fruit shape ranges from ovoid to round.

Yield and production

At 10-19 years of age, BALT01 and BALT02 produce similar number of nuts per palm (49 for BALT01 and 48 for BALT02). BALT01 yielded 2.2 t copra per ha which is lower than BALT02 which gave 2.0 t copra per ha. Its whole fruit weight is 1588g, consisting of 429g husk, 275g shell and 496g meat. BALT02 has a whole fruit weight of 1540g made up of 419g husk, 275g shell and 480g meat.

Reference

Santos GA, Cano SB, Ilagan MC, de La Cruz BV. 1988. Collection and evaluation of coconut cultivars and conservation of genetic resources. Philippine Coconut Authority, Agricultural Research Branch.




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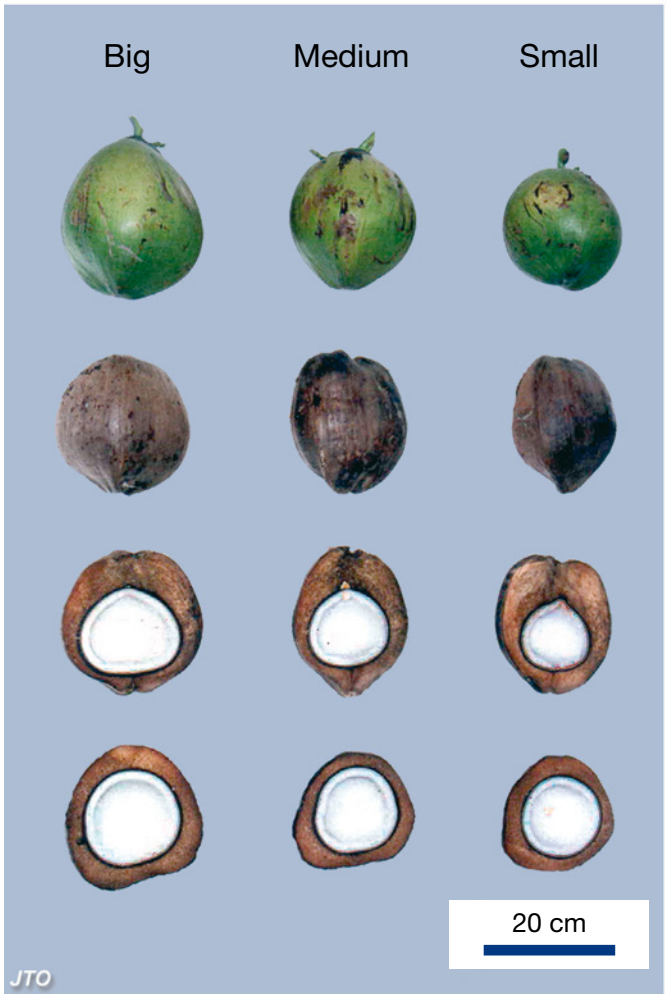
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Bataan Tall (BAAT01, BAAT02, BAAT03)

Rivera RL, Santos GA, Emmanuel EE, Rivera SM

Conservation

Three population of the cultivar Bataan Tall, namely Tenejero (BAAT01), Mianay (BAAT02) and Kitaotao (BAAT03) are conserved at the field genebank of the Philippine Coconut Authority (PCA) Zamboanga Research Centre in San Ramon, Zamboanga City; at the Coconut Breeding Trials Unit in Mambusao, Capiz in Panay Island; and in farms in Tenejero, Balanga, Bataan, Philippines.

History

This cultivar was collected at Sitio Guitol Tenejero, Balanga, Bataan from a 3-ha coconut farm. The farm is about 120 m above sea level with a flat topography and clay loam type of soil. The palms were estimated to be 22 years of age at the time of collection.

Identification

The crown of this variety has a spherical shape. The average girth at 20 cm above the ground is 201 cm and 107 cm at 1.5 m above the ground. The average length of its 11 leaf scars is 90 cm. There are 36 female flowers in an inflorescence which has 41 spikelets. The colour of the petiole and the fruit is green. Fruit shape in both polar and equatorial views is round. The shape of the nut without the husk is almost round. Fruit set from fist-sized to mature fruits numbered from 20 to 50 fruits per palm.

Yield and production

Palms of Bataan Tall are estimated to start bearing five years from field planting. This cultivar has 1460g whole fruit weight, with meat weighing 470g; shell, 270g; and husk, 400g. It produces 11 bunches per palm per year and has an average of 54 fruits per palm per year. This cultivar produced 280g average copra weight per nut, 7220 nuts per ha per year, and 2 t of copra per ha per year.

Other information

Only evaluation of yield and yield components have been done on this collection.

Reference

Rivera RL, Rivera SM, Emmanuel EE. 2005. Compilation of fruit component characters and fruit and bunch return of coconut accessions at PCA ZRC field genebank II. Tall coconut accessions. Breeding and Genetics Division. PCA Zamboanga Research Centre, San Ramon, Zamboanga City, Philippines (Monographs).

Bataan Tall (BAAT01)













Bataan Tall (BAAT02)













Bataan Tall (BAAT03)













Baybay Tall (BAYT) in Côte d'Ivoire

Bourdeix R, Santos GA, Rivera RL, Konan JL

Conservation

Baybay Tall (BAYT) is represented by 9 accessions totalling 1122 living palms in the collections of the Philippines, Côte d'Ivoire and Vanuatu. It was sent to these two last countries by the Philippine Coconut Authority (PCA) in the 1980s.

History

Baybay is a harbour town on the central western coast of Leyte Island in the Philippines, where ships depart for Cebu and other islands. This port mainly exports copra and abaca, a plant similar to banana, whose fibre is used to make ropes and fabrics. The Baybay Tall is an advanced generation of the Laguna coconut variety. It has a powerful growth habit. Its fronds are almost six metres long, but bear the same number of leaflets as West African Tall palms. The inflorescences have a short peduncle and a long axis bearing numerous spikelets.

Identification

The Baybay Tall is one of typical Southeast Asian varieties, with a thick straight stem, rapid growth, long fronds and large fruits. The fruits are rich in water and quite poor in husk. They are predominantly green, often pointed at both ends, and do not have pronounced ridges. There is often a nipple at the tip comprising three protuberances around a small point. The nuts vary somewhat in shape, sometimes elongated and pointed at the top, sometimes also wider than they are long.

Yield and production

The fruits weigh 1300 and 1550g in Côte d'Ivoire and the Philippines, respectively. The nuts weigh 950g to nearly 1000g. The 450-500g kernel gives 260-310g of copra when dried. The second generation of Baybay Talls at the Zamboanga Research Centre (ZRC) of the Philippine Coconut Authority (PCA) has been selected for its early bearing, heavy copra per nut and uniformity. At ZRC, the cultivar produces 53 to 95 fruits annually and 3-4 t of copra per ha when mature. It is said to have a potential production of 5 t copra per ha per year. In Côte d'Ivoire, the first generation of Baybay Talls was introduced in 1980. It is late flowering, beginning just before six years. Production only begins at eight years, with 37 fruits per palm per year. When mature, yields remain moderate, at 46 fruits per palm per year, and 1.7 t of copra per ha per year, on average from 9-10 years (100 kg less than the West African Tall).

Other information

In the Philippines, Baybay Tall has been crossed with at least 10 other coconut varieties. Its hybrid with MRD (MRD x BAYT or PCA 15-3), is one of the more promising hybrids in PCA's list of recommended hybrids. In Vanuatu, Baybay Tall has been crossed with a Tall and four Dwarfs. All these crosses proved susceptible to Foliar Decay disease. In the Philippines, the Genetically Multi-Ancestored coconut farmers' variety is a synthetic variety combining six ancestor coconuts: Laguna, Bago-Oshiro, Baybay, and Tagnanan (all local Tall varieties) and the West African Tall and Rennell Tall (both exotic Tall varieties). The PCA's research initiative on this variety started in 1977.

Reference

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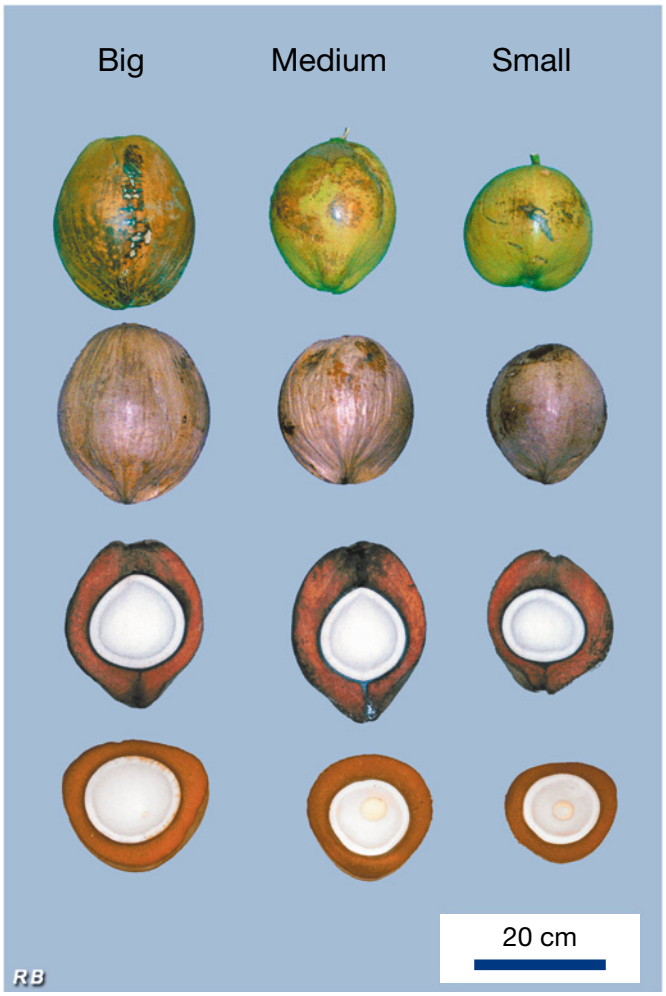
Baybay Tall (BAYT)













Baybay Tall (BAYT) in the Philippines

Rivera RL, Santos GA, Emmanuel EE, Rivera SM

Conservation

Baybay Tall (BAYT) is conserved at the Leyte State University (LSU) in Baybay, Leyte; Philippine Coconut Authority–Zamboanga Research Centre (PCA-ZRC) in San Ramon, Zamboanga City; and at the Coconut Breeding Trials Unit (CBTU) in Mambusao, Capiz in Panay Island, Philippines.

History

The Baybay Tall palms planted at the field genebank at the PCA-ZRC were sourced from a plantation block of Tall palms in Baybay, Leyte in 1975. The original Tall palms, now known as BAYT were introduced to Baybay, Leyte from the Southern Tagalog Region in the mid 1950s.

Identification

Baybay Tall variety is homogeneous and very leafy. It is characterized by high copra weight per nut, thin husk, bunches with short peduncles, fruits often trapped between the petioles of the leaves, and with very robust and thick stem. Its other known name is Laguna Tall (LAGT). The main characteristic of BAYT is its widened stem, forming a broad bulb at the base. The stem is the bigger recorded in the Coconut Genetic Resources Database, with 91 cm in diameter at 20 cm from the ground, so a circumference of 285 cm. In average, the Tall varieties recorded in the CGRD have a diameter of 53 cm at 20 cm from the ground level.

Yield and production

Baybay Tall is known for its relatively high meat weight and uniform stand. On the average, whole nut weight is 1464g; husk weight, 383g; shell weight, 245g and meat weight, 490g. BAYT palms yielded an average of 108 fruits per palm per year, 14 567 fruits per ha, 33.3 kg of copra per palm, and average copra of 4.5 tons per ha.

Other information

BAYT was introduced in Vanuatu and based on field observations, hybrids with BAYT show recognizable tolerance to the viral coconut foliar decay disease. BAYT has also shown resistance to leaf spot diseases caused by *Pestalozzia palmarum* and *Helminthosporium* sp. but is considered as the most suitable host for mites *Oligonychus velascoi* Rimando.

This Tall variety is a class of its own, having the distinction as the most economically productive Tall population with 4.7 tons copra per ha per year. BAYT is highly recommended for the national coconut planting and replanting program of the Philippines. The use of local hybrids and BAYT proved to be a more profitable investment than the use of MAWA and other local Talls. BAYT produced higher and stable nut production and comparable copra recovery, which contributed to its higher profitability. This variety was used as parent for mass production of hybrids, with Malayan Red, and Tacunan and Catigan Green Dwarfs as mother palms, e.g. PCA 15-3 (MRD x BAYT), PCA 15-15 (CATD x BAYT) and TACD x BAYT. BAYT is also one of the progenitors of the first synthetic variety of coconut.

References

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Santos GA, de la Cruz BV, Baylon GB, Rivera SM, Rivera RL. 1993. Collection and evaluation of coconut cultivars and conservation of genetic resources. Annual Report 1993. Philippine Coconut Authority-ARB, Diliman, Quezon City, Philippines.

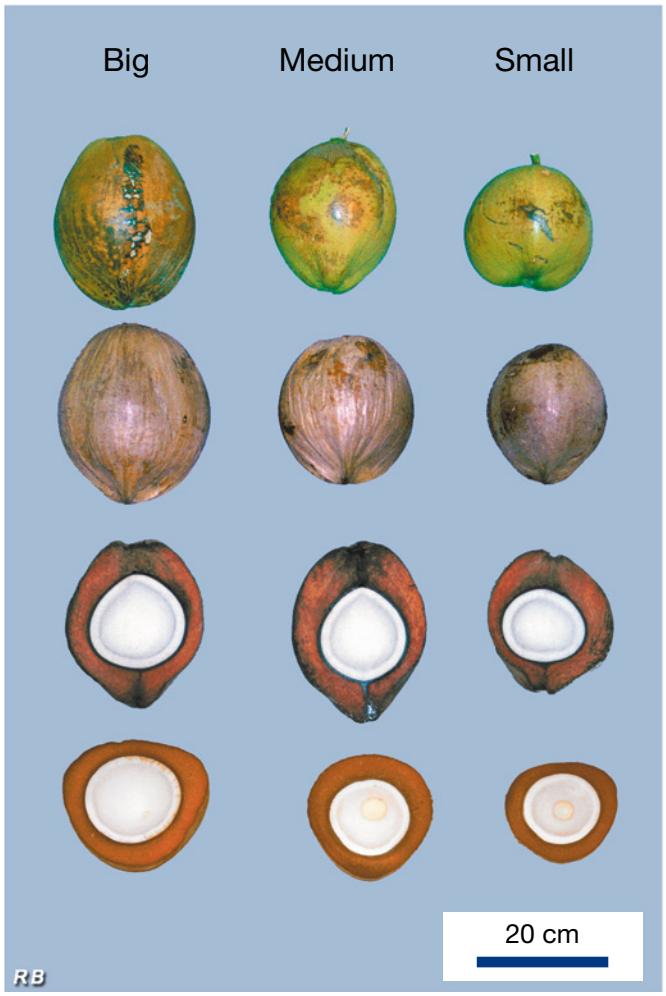
Baybay Tall (BAYT)













Catigan Green Dwarf (CATD)

Bourdeix R, Santos G, Rivera RL

Conservation

Catigan Green Dwarf (CATD) is preserved in 10 accessions (total of 1798 palms) in the coconut collections of Côte d'Ivoire, Ghana, Malaysia, Philippines, Tanzania and VietNam.

History

Catigan Green Dwarf is also known as the 'Rabara' or 'Bilaka' in the Philippines, its country of origin. Its stem, which is quite sturdy for a Dwarf, is slightly wider at the base. It grows quite rapidly for a Dwarf type: in the Philippines, it was over 7 m tall at 18 years of age. In Côte d'Ivoire, growth was slower, exceeding 1.5 m in height (measured from the ground to the base of the first living frond) nine years after planting. In Vanuatu, this Dwarf has proven to be particularly resistant to cyclones.

Identification

The inflorescence has a long peduncle, which can snap before ripeness if the bunches are very heavy. Young fruits are round and bright green and have three ridges at the tip of the fruit. When ripe, the ridges are receded, leaving a pointed nipple that is highly characteristic of the variety. Fruit characteristics vary depending on growing conditions. In Côte d'Ivoire, on sandy soils, the fruit only weighs 820g on average. In the Philippines, Vanuatu and VietNam, the fruit is heavier, at 1127, 1166 and 1236g, respectively. The fruits contain a substantial proportion of husk. Over a hundred Dwarf coconut varieties are conserved in the collections of research organizations. The Catigan Green Dwarf can be easily distinguished from several other Green Dwarf varieties described in this catalogue. It is among the Dwarfs that have a thick stem widening at the base, such as the Tacunan and Niu Leka Green Dwarfs. It can be distinguished from the Tacunan Green Dwarf, which also originates from the Philippines, by the existence of a pointed nipple on the tip of the fruit. Moreover, the inflorescence of the CATD is of a more conventional shape than that of the Tacunan Green Dwarf, which has an unusual cone shape. The CATD produces larger fruits than the Thailand and Pilipog Green Dwarfs. It produces rounder fruits than the Brazilian, Sri Lanka and Niu Leka Green Dwarfs.

Yield and production

The CATD starts bearing four years after planting. A mature palm produces around 14 bunches and 70 fruits per palm per year under the conditions at the Marc Delorme Research Station in Côte d'Ivoire. In the Philippines, it produces 16 bunches and 74 fruits per palm per year.

Other information

With its large fruits and robust stature, the Catigan Green Dwarf has captivated many researchers. In the Philippines, it has been crossed with various Talls and with the Malayan Red Dwarf. The Philippine Coconut Authority has undertaken large-scale production of hybrid seednuts. The hybrid between the CATD and the Laguna Tall has been disseminated under the varietal reference 'PCA 15-1'. In Côte d'Ivoire, this Dwarf has been crossed with various Dwarfs and Talls; the performance of these progenies remains mediocre. The Catigan Green Dwarf displays a degree of heterogeneity in its yields, which is also found in its progenies. Work doubtless remains to be done in fixing the best genotypic characteristics of CATD.

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Kinabalan Green Dwarf (KIND)

Rivera RL, Santos GA, Emmanuel EE, Rivera SM

Conservation

According to the 2002 CGRD database, Kinabalan Green Dwarf (KIND) is preserved in three accessions (total of 1798 palms) in the coconut collections of Côte d'Ivoire and the Philippines.

History

This variety was first discovered by PCA researchers in Malita, Davao del Sur. Outright collection resulted in the field planting in September 1977 of 117 seedlings at Block 11B covering an effective area of 0.65 ha at the PCAs genebank in Zamboanga. A duplicate collection of this variety was established at the Coconut Breeding trials Unit in Mambusao, Capiz, Panay Island. It was sent from the Philippines to Côte d'Ivoire in 1980.

Identification

Kinabalan Green Dwarf has an average girth size of 143 cm at 20 cm above the ground and 83 cm at 1.5 m from the ground. It shows closely spaced leaf scars having an average of 32 cm length of the 11 leaf scars. Crown overall appearance is spherical. The petiole colour maybe yellow-green or yellow-green-brown and fruit colour is green. Fruit shape both in polar and equatorial view maybe oblong or round. Husked nut shape is either flat to almost round.

Yield and production

KIND variety has higher copra per nut (243.6g) but lower nuts per palm (82) than most Dwarf varieties in ZRC. Overall, it produces 3.5 tons average copra per ha at the age of 10-27 years. Number of female flower is 29 with female flower distribution of 38 in an inflorescence. Fruit set ranges from 50 to 80 nuts per palm. In terms of whole nut weight, it has an average weight of 1102g; 323g husk weight, 167g shell weight, 392g meat weight and 0.45 Fruit Quality Value (FQV). Copra per nut sometimes exceeds 300g. It has an average of 1.2 cm endosperm thickness.

Other information

KIND appears to grow well in areas with distinct dry and wet conditions. Majority of the palms survived the El Niño phenomenon without irrigation indicating some possibilities of possessing genes for drought tolerance. No observations have been made on the performance of this variety in areas with low temperature and water logging conditions.

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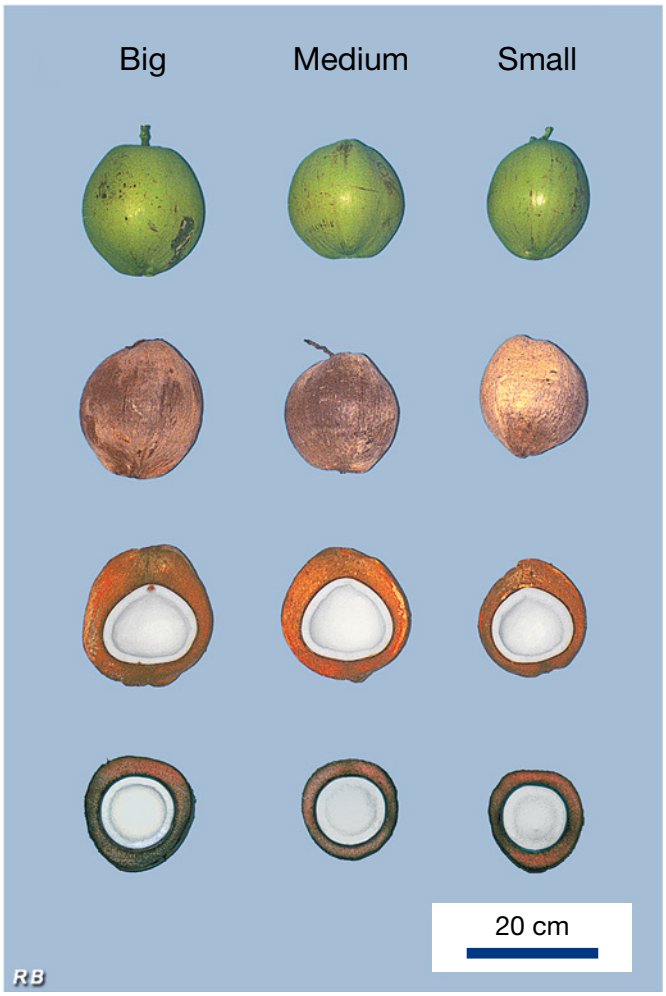
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Philippines Lono Tall (PLNT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Philippines Lono Tall (PLNT) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala) and at the research station in Aliyarnagar (Tamil Nadu), India.

History

This variety was introduced to India in 1960. Philippines Lono Tall is also known as Luno. This is not as popular as the Philippines Ordinary Tall in India. First planting of this variety was done at Kasaragod in 1961. *Inter se* population was planted in 1991. A sub-population of PLNT is maintained in Aliyarnagar.

Identification

The palm grows to 6-6.5 m, with 33 leaves on the crown. The stem girth measures 91 cm at 1 m from the ground level, with 28 leaf scars measured from 1 to 2 m above ground level. Leaves are long with 225 leaflets, each about 125 cm long and 6 cm wide. It flowers 10-11 years after planting. The inflorescence is 109 cm long and 61 cm wide. The palms are of the indirect-self-pollinating type. The fruits, which are yellowish green and oval, are characterized by three distinct ridges, which are prominent at the base. Husked nuts are flattened at the bottom with slight round protuberance at the posterior end. The fruit is big-sized, weighing 1509g. The husked nut weighs 795g. The kernel is thick with a thin shell. The fruits of PLNT are bigger than those of the Philippines Ordinary Tall and the Laguna Tall, but are smaller than that of the San Ramon Tall.

Yield and production

Bearing starts 12 years after planting. The palm yields 55 fruits per year. Copra content per nut is 243g with 64.5% oil. The palms give 2.3 t of copra and 1.5 t of oil per ha.

Other information

This variety is not being used in any of the breeding programmes In India.

Reference

Menon KPV, Pandalai KM 1958. The coconut- A Monograph. Indian Central Coconut Committee, Eranakulam, Kerala, India.




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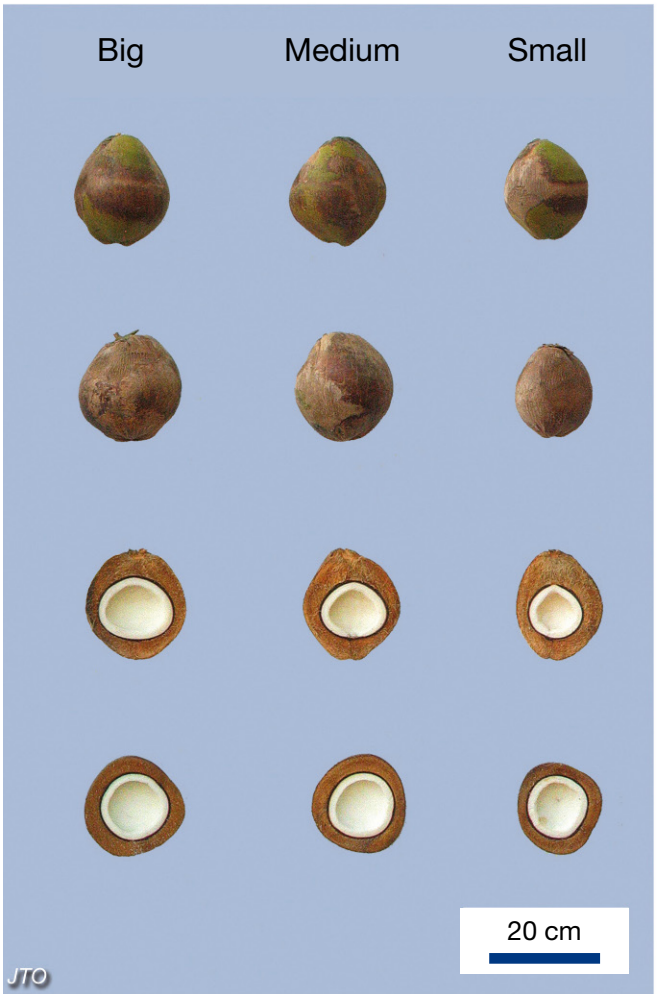
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Philippines Ordinary Tall (PHOT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Philippines Ordinary Tall (PHOT) is conserved at the Kidu Seed farm (Karnataka) and at the research stations of Arsikere (Karnataka), Ambajipetta (Andhra Pradesh), Veppankulam (Tamil Nadu) and Ratnagiri (Maharashtra), India.

History

Philippines Ordinary Tall was introduced to India from the Philippines. It was first planted in 1945 and the second generation in 1961. In 1997, large-scale planting was done at the Kidu Seed Farm. Sub-populations are being maintained in the research stations of Arsikere, Ambajipetta, Veppankulam, and Ratnagiri.

Identification

The palm grows to 10-11 m. The stem is somewhat stout with 85 cm stem girth at 1 m from ground level. It has a distinct bole. There are 30 leaf scars measured from 1 to 2 m above ground level and 39 leaves on the crown. The palm flowers 6-7 years after planting and produces about 12 inflorescences per year. There is inter-spadix overlapping of 4.2 days in 62% of the inflorescences. The fruits are medium-sized, round, and green/greenish yellow in colour. The nut inside the fruit is almost round with a thick kernel.

Yield and production

Fruiting starts 8-9 years after planting, giving 110 nuts per palm in Kasaragod; 93 in Arsikere; 104 in Ratnagiri and 56 in Veppankulam. The fruit is heavy, weighing about 1031g with 36% husk. The copra yield per nut is 198g in Kasaragod; 190g in Arsikere; 214g in Ratnagiri and 169g in Veppankulam.

Other information

Philippines Ordinary Tall is tolerant to drought; relatively tolerant to root (wilt) disease of Kerala; moderately tolerant to the burrowing nematode. It was released by CPCRI in 1995 for commercial cultivation in the west coast of India, including the Konkan region, coastal Andhra Pradesh and West Bengal due to its high nut and copra yield and tolerance to drought and nematode infection. PHOT has been crossed with other Talls like WCT, LCT, JVT and ADOT for the production of Tall x Tall hybrids. Because of its relative tolerance to drought, this variety is being used for the production of Tall x Dwarf and Dwarf x Tall hybrids. The Dwarf cultivars used for this purpose are COD, CGD, MYD and GBGD.

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Sosamma VK, Koshy PK, Bhaskara Rao EVV. 1988. Response of coconut cultivars to burrowing nematode, *Radopholus similis*. Indian Journal of Nematology 18:136-1137.

Philippines Ordinary Tall (PHOT)













Pilipog Green Dwarf (PILD) in Côte d'Ivoire

Bourdeix R, Santos G, Rivera RL, Konan JL

Conservation

Pilipog Green Dwarf (PILD) is represented by six accessions with 301 living palms in 3 countries. Starting from the Philippines, it was sent in the 1980s to Côte d'Ivoire and Vanuatu. In the Fiji islands, a green Dwarf displaying precisely this type of fruits is found in the village of Somo-Somo, not far from the international dateline. This Dwarf was apparently introduced into Fiji from Malaysia at the beginning of the 20th century.

History

The Pilipog Green Dwarf is undoubtely one of the most surprising coconut varieties. Its young fruits are a fairly common yellowish green colour, but an unexpected pink colour is found when they are opened. The internal fibre tissues near the place where the fruit was attached display the most intense colouring. The colouring is unstable; it oxidizes and rapidly turns orange brown as soon as the young fruit is opened. It also disappears naturally as the husk dries out, even before the fruit is completely ripe. The pink colouring is also found in the tips of large roots. This is very useful for identifying PILD in the nursery, well before they start bearing fruits.

Identification

The intense internal pink colouring of young fruits distinguishes the Pilipog from the other Green Dwarfs. However, it is possible to a trained eye to recognize a PILD even without opening the fruits or examining the roots. The young fruits have a milky, yellowish-green colour. They are round, and seem somehow to be under pressure, swollen like balloons. The small, pointed nipple is also a very particular character. When the inflorescence opens, it is greenish-yellow in colour and female flowers display traces of the pink colour at their base. The inflorescence gradually turns a deeper green. The pink colouring is genetically recessive. The fruits are rather oblong in shape, green to yellow in colour, and their composition is good given their thin husk. They vary in weight depending on growing conditions: 542g in Côte d'Ivoire, 711 to 782g in the Philippines and up to 1305g in Vanuatu (under rich, abundantly watered volcanic soils). The nut, which is almost spherical, weighs 337-918g depending on the production site. The stem of the PILD is quite slender, with a diameter less than 20 cm in Côte d'Ivoire. On its tenth year, its height, measured from the ground to the base of the first living frond, does not exceed 113 cm on average.

Yield and production

Under normal growing conditions, harvesting of this Dwarf begins three years after planting. It produces 70 fruits (in Côte d'Ivoire) to 95 fruits (in the Philippines) per palm per year.

Other information

Little use has been made of the PILD in research. In Côte d'Ivoire, it was crossed with eight Dwarfs in 1993. These first generation hybrid progenies did not display the pink colouring of internal tissues. However, in the second generation, it has been possible to select plants whose fruits are outwardly a nice yellow colour, but with internal pink colouring. In addition to its aesthetic value, this colour will help in effectively identifying desired seedlings during mass hybrid production.

Reference

Santos GA. 1990. Activities in coconut genetic resources collection, conservation and genetic improvement in the Philippines. Philippine Journal of Coconut Studies 15:16-20.




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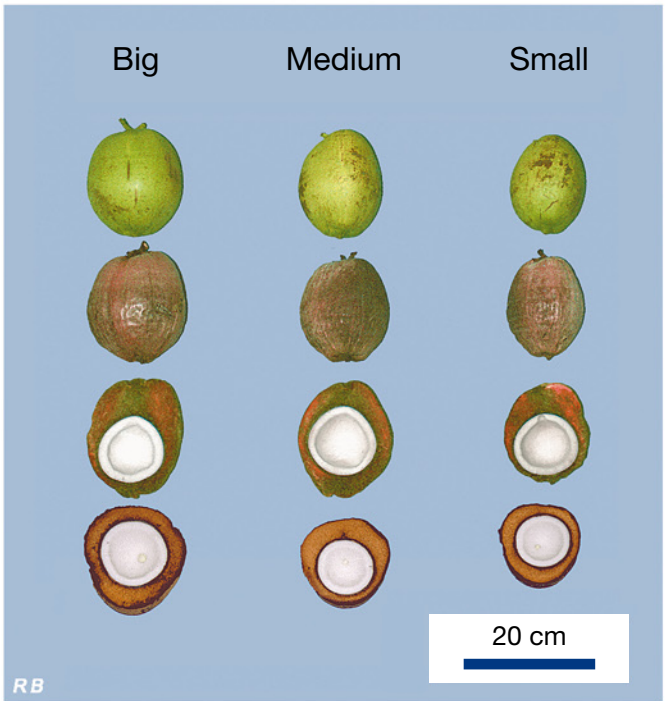
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Pilipog Green Dwarf (PILD) in the Philippines

Rivera RL, Santos GA, Emmanuel EE, Rivera SM

Conservation

Pilipog Green Dwarf (PILD) is conserved at the Philippine Coconut Authority Zamboanga Research Centre (PCA-ZRC) in San Ramon, Zamboanga City and at the Coconut Breeding Trials Unit in Mambusao, Capiz; and in farmers' plantations in Barangay Bitaugan, Antiquiera, Bohol, Philippines.

History

Pilipog Green Dwarf is an age-old farmer's variety that is found sporadically in the many islands of the Philippines. Its exact origin is unknown but it is presumed to have evolved from a local Green Dwarf variety called Coconiño, which by now has probably evolved to a number of geographical variants like Dajili or Dahili (found in the Zamboanga Peninsula, Island of Mindanao), Guimaras Green Dwarf (found in Guimaras Island in Western Visayas), and others.

Identification

Pilipog Green Dwarf is readily recognizable through the pinkish colour of its female flowers, root tips, and the base of shoots of newly germinated fruits. It is strictly autogamous and shows very good uniformity in all morphological traits. Its fruits are characteristically small, round and smooth skinned. The stem is thin with closely spaced leaf scars. Its fronds are short and drooping with thin leaflets that are borne on a spherical crown. Except for its numerous small fruits, PILD appears to be a good variety. However, its small nuts are produce a meagre amount of copra (<150g per nut).

Yield and production

If grown in a suitable environment (good soil and at least 1600 mm of rain), this variety could be an excellent nut yielder, producing more than 130 fruits per palm per year. In addition, due to its shorter fronds and a smaller canopy, planting density could reach up to >200 palms per ha. Hence, it could yield up to 30 000 nuts per ha per year or 2.7 tons copra per ha per year. While the variety is a superior nut producer, it is not a popular planting material for commercial use due to its small fruits. More or less eight fruits are required to make a kilogramme of copra. Whole fruit weight is 747g, consisting of 258g husk, 105g shell and 252g meat.

Other information

PILD has shown moderate tolerance to leaf spot diseases caused by *Pestalozzia palmarum* and *Helminthosporium* sp. as well moderate tolerance to the attack of mites *Oligonychus velascoi* Rimando. Although the variety requires highly suitable environment to express its superior nut yielding trait, it has been observed that it perform fairly well even in drier climate but with a lower nut yield and a more fragile stand. Like most coconut varieties, it cannot withstand long exposure to waterlogged conditions. The uniform, small size and round shaped fruits of this variety could be used in making shell craft novelty and handicrafts.

Reference

Santos GA, de la Cruz BV, Baylon GB, Rivera SM, Rivera RL. 1993. Collection and evaluation of coconut cultivars and conservation of genetic resources. Annual Report 1993. Philippine Coconut Authority-ARB, Diliman, Quezon City, Philippines.




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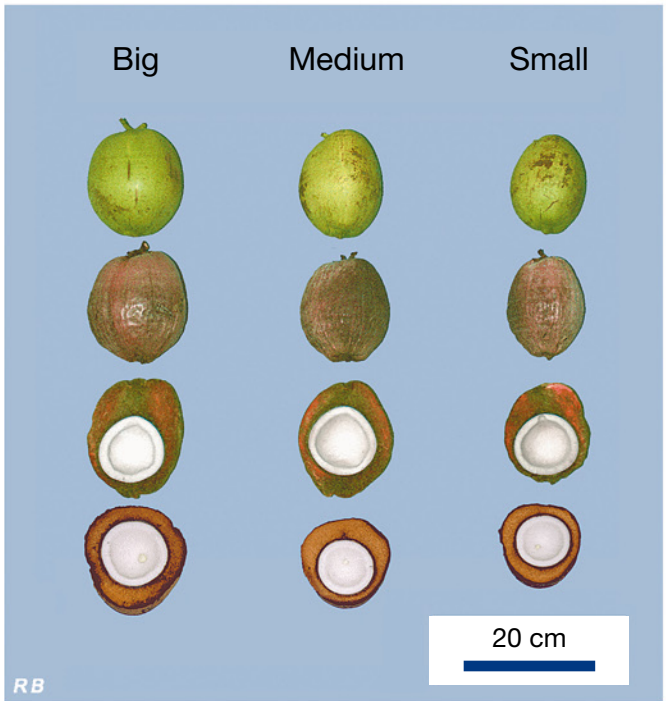
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San Ramon Tall (SNRT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

San Ramon Tall (SNRT) is conserved at the Central Plantation Crops Research Institute at Kasaragod (Kerala) and at the research stations in Aliyarnagar and Veppankulam (Tamil Nadu), Jagadalpur (Madhya Pradesh), Konark (Orissa), Mondouri (West Bengal) and Ratnagiri (Maharashtra), India. It is also conserved at the Zamboanga Research Centre in the Philippines.

History

San Ramon Tall variety was introduced to India in 1955. According to Ohler (1984), SNRT is the second most common variety of the Philippines and it is also found in several countries in the South and Southeast Asia and the Pacific. Copeland (1931) and Alzina (1931) reported San Ramon as a very high yielding type with large nuts nearly twice as large as the ordinary. This variety was exported to Sri Lanka in 1959 and planted in VietNam in 1987.

Identification

The palm grows to about 8-10 m with 40 leaves in the crown. The stem girth at 1 m from the ground level is 91 cm. There are 24 leaf scars measured from 1 to 2 m above ground level. The palm starts flowering 7-8 years after planting and produces 12-13 inflorescences per year. The inflorescence is somewhat long (126 cm) with short strong petiole. The palms are indirectly self-pollinating as there is inter-spadix overlapping even though there is no intra-spadix overlapping. The inter-spadix overlapping lasts for 4 days in about 66% of the inflorescences. Fruits are very big and oval shaped. The colour may be either green or brown. The husk is thin while the kernel is thick. The nut inside is flat bottomed with a pointed posterior.

Yield and production

Fruiting starts 9.5 to 10 years after planting. It produces 54 nuts per palm in Kasaragod; 39 in Aliyarnagar; 31 in Veppankulam and 30 in Konark. In the Philippines, the average number of fruits per palm is 79. The copra content is 285g in Kasaragod; 264g in Konark; 182g in Mondouri; and 225g in Veppankulam. In the Philippines, the copra content as reported by Santos and Rivera (1998) is 298g per nut. In Kasaragod, oil content is 68% while in Philippines, it is 63.5%.

Other information

Due to its high copra and oil yields, San Ramon Tall can be cultivated in large scale. In India, SNRT has been crossed with GBGD (SNRT x GBGD) for Dwarf x Tall hybrids; it has also been crossed with LCT (LCT x SNRT) and SSG (SSG x SNRT) for Tall x Dwarf hybrids. It is tolerant to leaf rot disease and to root (wilt) disease of Kerala.

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Santos GA, Rivera RL. 1998. Coconut breeding programme of the Philippines. In: Batugal PA, Ramanatha Rao V, editors. Coconut Breeding. IPGRI-APO, Serdang, Malaysia. pp. 42-56.




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Tacunan Green Dwarf (TACD)

Bourdeix R, Santos G, Rivera RL

Conservation

According to the 2002 Coconut Genetic Resources Database, 636 Tacunan Green Dwarfs (TACD) are conserved in various collections throughout the world. First collected in the Philippines, this variety was exchanged with Côte d'Ivoire and Vanuatu in the 1980s and was subsequently sent to Malaysia. From Côte d'Ivoire, this Dwarf was then introduced into Ghana and Tanzania to test its resistance to lethal yellowing type diseases.

History

The Tacunan Green Dwarf was introduced into Africa and the Pacific in the 1980s from the Philippines, at the same time as the Pilipog and Catigan Green Dwarfs. It grows slowly. By the 10th year on the sandy soils of Côte d'Ivoire, it does not exceed a height of 1.2 m on average (measured from the ground to the base of the oldest living frond). The stem, which is powerful for a Dwarf, broadens out at the base, where its diameter can exceed 45 cm. In Côte d'Ivoire, it is this Dwarf that has the largest number of leaflets per frond, apart from the very special Niu Leka Dwarf from the Fiji Islands. Very young fruits of the TACD appear more elongated than those of its cousin, the CATD. This difference fades as the fruit ripens.

Identification

The fruits of the Tacunan Green Dwarf are smaller than and not as round as those of the CATD, but they have a better composition, with a thinner husk. The fruits are also heavier. The absence of a nipple at the tip of the fruit is no doubt the best way to distinguish a TACD from a CATD. The inflorescence of the TACD has a very typical cone shape, which makes the variety easier to identify. The spikelets are shorter at the tip of the inflorescence than at its base. Other Green Dwarfs described in this catalogue can hardly be confused with the Tacunan, since they generally have a thinner stem and fruits of a different shape and size.

Yield and production

This Dwarf usually starts bearing four years after planting. It produces 30-50 fruits per palm per year under conditions at the Marc Delorme Station in Côte d'Ivoire. This quite low production can be explained by bug and mite attacks, causing a proportion of the fruits to abort. Yields of more than 70 fruits per palm per year have been obtained in the Philippines. In Côte d'Ivoire, the TACD is the only true Dwarf whose fruit weight reaches a kilogramme. In the Philippines, the fruit weight observed in 2 plots varies from 1124 to 1350g on average. In Vanuatu, on a rich, well watered volcanic soil, the fruit weight even exceeds 1500g. The average nut weight varies from 668g in Côte d'Ivoire to 1028g in Vanuatu.

Other information

In the Philippines, crosses between the TACD and the Bago Oshiro Tall (hybrid PCA15-8) or the Tagnanan Tall (hybrid PCA15-9) are recommended as planting material. These two hybrids are resistant to bud-rot and relatively tolerant to adverse environments. The fronds of the TACD are susceptible to insect attacks.

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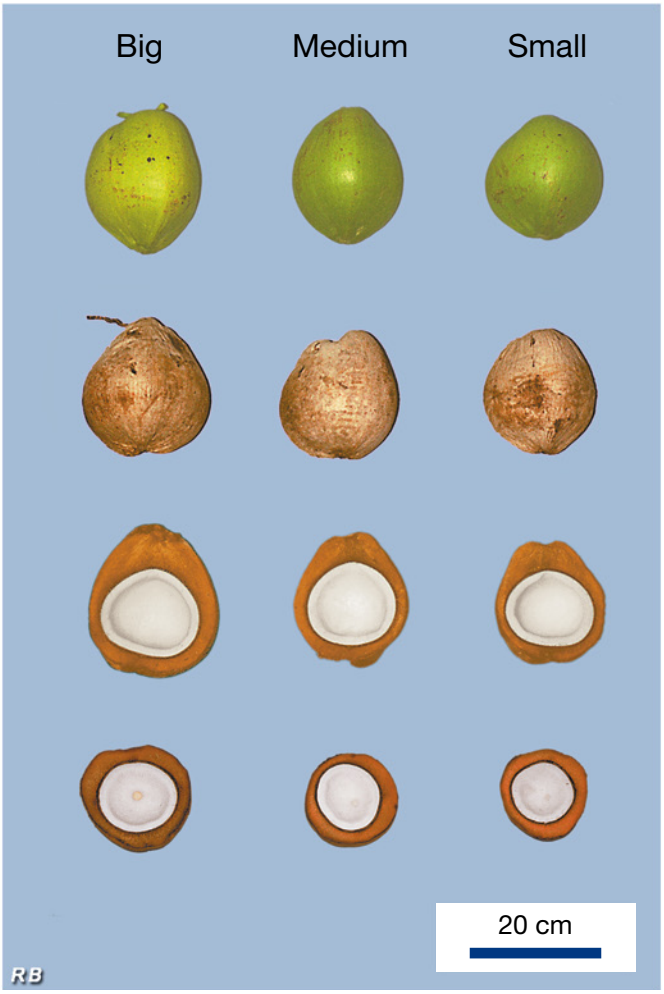
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Tagnanan Tall (TAGT)

Bourdeix R, Santos GA, Rivera RL

Conservation

Tagnanan Tall (TAGT) is conserved in the germplasm collections in the Philippines as well as in Côte d'Ivoire, Ghana, Malaysia, Tanzania and Vanuatu. According to the 2002 Coconut Genetic Resources Database, there are 12 accessions in total with almost 3000 living palms. However, in the Tagnanan Estate, Philippines, more than 10,000 coconut palms were felled and replaced with banana in the 1990s.

History

The coconut plantations of the Philippines owe much to a royal edict from the court of Madrid which, in 1798, required each adult to plant 200 sq ft (18.5 m²) of land with coconut palms. This variety was collected in the 1940s from the Tagnanan Estate Farm, a plantation of abacas, a plant similar to banana whose fibre is used to make ropes and fabrics. At the end of the Second World War, after a virus decimated the abacas, the land was converted into coconut plantation. The seednuts were taken from coconut palms on the seashore next to the plantation. According to some inhabitants, the original palms were brought from Indonesia by an American settler. Later, the plantation was divided among more than 300 farmers.

Identification

Tagnanan Tall is a large palm which starts flowering quite late. Its massive stem rises very straight from a marked bole. The fronds are long and the inflorescences large; the large round fruits contain a large proportion of water and have a thin husk. The vertical growth of TAGT is quite heterogeneous and stronger than that of African Talls. The fruits are rounded, often wider than long, and rich in free water. They vary in colour from green to reddish-brown, but the latter seems to be the most frequent. They often have a short, pointed distal nipple. With a thin husk and quite thick meat, fruit composition is excellent, even more so since parents for reproduction were chosen for that criterion. The inner nut is very rounded and wider than long. It differs from that of the Malayan and Panama Talls, for example, in which the proximal pointed part of the nut forms an angle at the germination 'eyes'.

Yield and production

Measurements of TAGT yield taken in the Tagnanan Estate indicate a fruit weighing 1929g and containing 310g of copra. In the best plots, the number of fruits produced reaches 94 per palm per year. Seednuts harvested at the plantation have been planted at the Zamboanga Research Station in the Philippines and exported to Côte d'Ivoire. In Zamboanga, the palms produce 68 fruits per year, with a fruit weight of 328g. In African soils, this variety performs much less; the 400 palms planted in 1974 produce an average of 46 fruits per adult palm per year. The second introduction was carried out by selecting parents with a high meat weight per fruit.

Other information

Tagnanan Tall has good tolerance of nut fall and bud rot caused by *Phytophthora* fungi. After 15 years of crop improvement research studies at the Zamboanga Research Centre, 9 locally-produced coconut hybrids and 1 local Tall were selected from the collection and a pool of 67 hybrids established in 11 genetic trials by the Philippine Coconut Authority. The hybrid released to farmers under the commercial name PCA 15-2 is a cross between the MRD and TAGT. PCA 15-4 is another hybrid between the CGD and TAGT.

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Conserved coconut germplasm from

Samoa

Genebank	Contact
Olomanu Research Station PO Box 1874 Apia Samoa Tel: (685) 23416-20605 Fax: (685) 20607-23996 Apeters@lesamoa.net	Country member of COGENT Ms. Laisene Samuelu Tuioti-Mariner Asst Chief Executive Officer Crops Division Ministry of Agriculture and Fisheries PO Box 1874, Apia Samoa Phone: (685) 20605/23416/23426 Fax: (685) 23996/20607 Email: lsamuelu@lesamoa.net, ltuioti@samoa.ws

Samoa is a country governing the western part of the Samoan Islands in the South Pacific Ocean. It was admitted to the United Nations on 15 December 1976. The entire island group, inclusive of American Samoa, was known as the Navigators Islands before the 20th century because of the Samoans' seafaring skills.

Coconut is the most predominant crop grown in Samoa. Its traditional value and multipurpose uses make it one of the most important crops in the everyday lives of Samoans as an important source of food and cash. In 1996, Samoa exported coconut food products such as coconut cream, copra, copra meal and coconuts, worth SAT 3.598M (US$ 1.3M). The Agricultural Census (1989) stated that 96% of farmers' holdings grew coconuts, which bring to a total land area of 27,692 ha. In Samoa, one of the most important crop mixtures being identified is coconut intercropped with cocoa, the others being crops like banana and taro (Agricultural Census 1999). However, due to global price fluctuations of coconuts, there is a need to upgrade and improve approaches in coconut farming and encourage adoption of new production and processing technologies to enhance farmers' incomes.

Under a COGENT-supported project, farmers' coconut varieties were characterized, documented and conserved on farm. A farmer participatory survey was conducted in Siufaga Savaii where seven varieties were identified. These varieties include the Samoan Tall (SMOT), Samoan Tall Samatau (SMOT01), Niu Vai Tall (NVIT), Niu Afa Tall Samoa (NAFT), Niu Lea Dwarf Samoa (NLAD02), Samoa Yellow Dwarf (SYD) and Samoan Tall Siufaga Savaii (SMOT03). A 1.22 ha coconut germplasm conservation site containing 11 local coconut varieties has been established at the Olomanu Seed garden (Osborne 2005).

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Samoan Tall Spicata (SMOT03)

Bourdeix R, Tuia V, Peters A

Conservation

The Samoan Tall Spicata (SMOT03) could be found at the Olomanu Coconut Seed Garden, Upolu Island in Western Samoa. The number of living palms at Olomanu has not yet been recorded in the Coconut Genetic Resources Database.

History

In 1931, FBH Brown first described the Samoan Tall Spicata as a new species of palm, called *Diplothemium henryanum*. Later, other botanists such as Jacob (1941) and Ninan et al. (1960) reclassified this palm as a variant of the *Cocos nucifera* L species.

Identification

The botanist Parham described in 1972 the Samoan Spicata coconut palm as follows: "*Palm, 10-15 m high; leaves pinnate, glaucous awn pale beneath; spadix simple, spicate, 100 cm long, spathes 2; only female flowers seen*". In all coconut growing regions, Spicata palms bearing inflorescences with numerous female flowers or fully covered with female flowers are rare. This phenomenon also occurs in Tall and Dwarf palms. Sometimes such inflorescences have one or two spikelets. Nevertheless, male flowers can always be found in Spicata inflorescences although they are less numerous than in a normal inflorescence. There are two hidden adventitious male flowers located at the base of each female flower.

Yield and production

Although gathering of yield data started in 1998, no data is yet recorded in the Coconut Genetic Resources Database.

Other information

Farmers appreciate Spicata varieties because if they throw a stone or a piece of wood on the palm crown, the fruits easily separate from the bunch and fall. Spicata palm has enthralled several generations of researchers. Most countries produce Dwarf x Tall hybrids because of the ease of pollinating the mother palm. This is due to its shorter stature and the relative precocity of the resulting hybrid. However, this requires careful emasculation of the parent to prevent self-pollination. The possibility of finding male-sterile lines among the coconut populations remains a challenge. Spicata palms, with only a few male flowers, were initially seen as a possible way to get male-sterile coconut inflorescences. But inside a Spicata inflorescence, there are adventitious male flowers hidden under the female flowers. As these female flowers are numerous and close to each other, the hidden male flowers are very difficult to remove. In fact, to take off all the male flowers, the only way is to cut and remove about a third of all the available female flowers. This task is harder than the emasculation of a normal coconut inflorescence.

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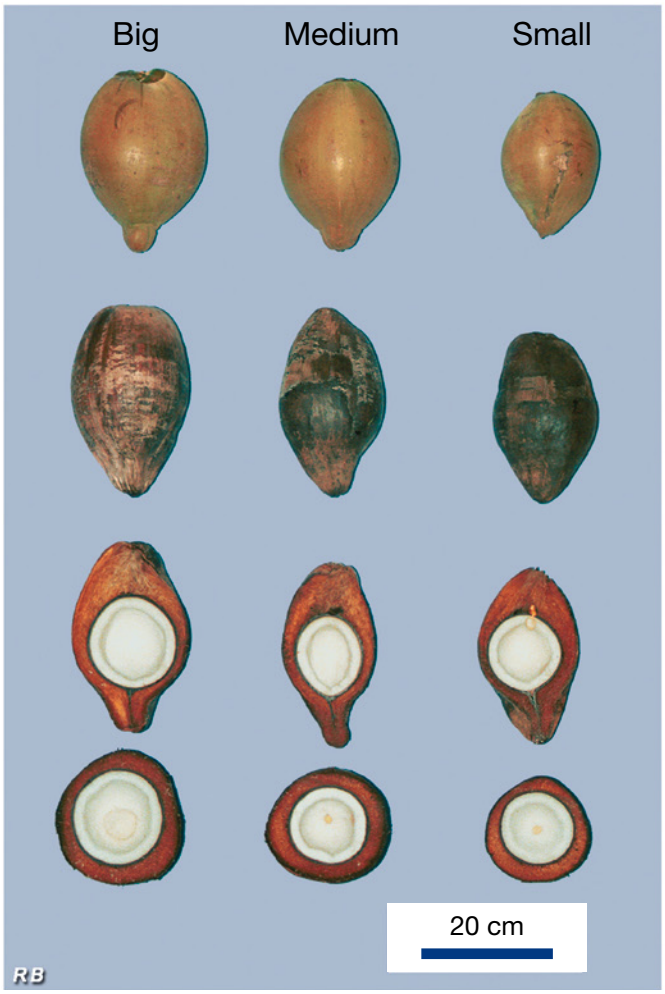
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Samoan Yellow Dwarf (SYD)

Bourdeix R, Labouisse JP, Tuia V

Conservation

According to the 2002 Coconut Genetic Resources Database (CGRD), the Samoan Yellow Dwarf (SYD) is conserved only by 3 accessions totalling 192 palms. Ten of these palms are in India and 182 in Vanuatu. This variety is not conserved in its country of origin.

History

The accession which is conserved in India comes from Vaitogi village in Tutuila Island, American Samoa, and was locally known as 'Niu Oma'. The accession conserved in Vanuatu comes from Apia, the main city of Upolu Island, Western Samoa. A few seednuts with yellow sprout were found within a lot of Red Dwarf seednuts which were supposed to be all red-sprouted. These seednuts with yellow sprout were kept apart. They are the origin of the Samoa Yellow Dwarf variety conserved in Vanuatu. A plot of 100 yellow Dwarfs from Apia was also planted in Tonga in 1992, but this planting is not referenced in the CGRD.

Identification

Compared with the Malayan Yellow Dwarf, the Samoan Yellow Dwarf conserved in Vanuatu produces smaller fruits of a paler yellow colour. Its vertical growth is quite slow. In Vanuatu, at ten years old, the stem measured from the ground to the base of the oldest green frond does not exceed 3.5 m. At the same age and in the same growing conditions, the Malayan Yellow Dwarf is more than one meter taller. The stem is thicker than those of the Malayan Yellow Dwarf. When the growing conditions are excellent, such as in the rich volcanic soil of Vanuatu, the stem starts producing a little bole. The inflorescence stalk is short, like those of the Malayan Dwarf varieties. It should be useful to use molecular techniques to check the relationship between the Samoan Yellow Dwarfs conserved in Vanuatu and India on the one hand and the Malayan Dwarf varieties on the other.

Yield and production

In Vanuatu, the composition of the fruit is as follows: weight of the fruit: 864g, weight of nut: 623g, meat weight: 281g. SYD starts producing 3-4 years after planting and gives 60 to 80 fruits per palm a year on average.

Other information

According to Gangolly et al. (1957), Hamilton and Grange (1937) recorded seven varieties of Dwarf palms in Samoa, which were subsequently planted at Buitenzorg (now Bogor Botanical Garden, in Java, Indonesia). Nowadays, there are less than seven Dwarf varieties recorded in Samoa. SYD is more tolerant to cyclonic winds than the Malayan Yellow Dwarf.

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Conserved coconut germplasm from

Seychelles

Genebank	Contact
No *ex situ* genebank recorded.	Country member of COGENT Mr. Antoine M Moustache Director Crop Development and Promotion Division Ministry of Agriculture and Marine Resources PO Box 166, Grand Anse, Victoria Mahe Seychelles Phone: (248) 378252/378312 Fax: (248) 225425 Email: antmoust@seychelles.net

The Republic of Seychelles is an archipelago nation of 115 islands in the Indian Ocean, some 1500 km east of mainland Africa, and northeast of the island of Madagascar. Seychelles has the smallest population of any state in Africa.

There are hundreds of known and documented uses for the coconut in Seychelles. Although the Tree of Life finds many uses in the everyday life of the Seychellois, there is an urgent need to review some of these products as potential income earners (Moustache 2005). With the rapid rate of social development and competition for land by other economic sectors such as tourism and manufacturing, there is less and less land available for agriculture. Thus, future coconut plantations may have to be of lesser acreage, planted more densely or managed in complementation with another purpose (e.g. lending aesthetic value to ecotourism centres).

Scientific research on coconut had its heyday in Seychelles when the export of copra was the mainstay of the economy before the tourism boom in the early 1970s. Thereafter, research focused on the selection of better performing varieties that were well adapted to the poor granitic soils and showed positive response to fertilizers and other inputs. Most of the coconuts planted in the country are local Talls. These Talls are made up of a number of different varieties characterized by different nut sizes, shapes and productivity but with no apparent differences in tree morphology. Among the common local varieties planted are Coco Raisin, Coco le Haut, Coco le Rein and Coco Bleu. In a bid to boost coconut production, Seychelles imported some 10,000 nuts from Ceylon (now Sri Lanka) during the years 1906-1911. Studies conducted in 1935 found that these imported varieties were inferior to the local Talls as they required far more intensive cultural practices and were more prone to diseases. In 1931, Dwarf coconuts were introduced from the Malay States, particularly the Malayan Yellow and Malayan Red Dwarfs (MYD and MRD). Fruits of these varieties are mostly used for decorative purposes and consumed locally or sold to tourists as tender-nuts for drinking.In 1994, Pakistan, the last remaining importer of coconut and copra from Seychelles at that time, ceased coconut-related transactions with the country. This spelled doom for most coconut farmers and growers in Seychelles who depended solely on the crop and did not have alternative sources of income. Since then, national coconut research priority has shifted to "finding new uses for an old product".

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Seychelles Tall (SCT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Seychelles Tall (SCT) is conserved at the Central Plantation Crops Research Institute (Kerala) and at the research stations at Aliyarnagar and Veppankulam (Tamil Nadu) and Ratnagiri (Maharashtra), India.

History

Seychelles Tall was introduced to India in 1955. Durocher-Yvon (1953) reported that there was one variety extensively cultivated in Seychelles and it was referred as 'Coco Seychelles'. He described this variety as Tall with a curved trunk with oblong fruit and small nuts. Seychelles Tall at the Indian germplasm bank is similar to the one described by Durocher-Yvon (1953). According to Bhaskara Rao and Pillai (1984), Seychelles Tall showed the highest value for percentage of husk (59%) and might have originated from a Niu Kafa parent.

Identification

The palm grows up to 8-9 m with 35 leaves on the crown. The trunk is slightly curved. Leaves are long (5 m) with about 220 leaflets. Leaflets are 119 cm long and about 6 cm wide. The stem girth at 1 m height from the ground level is about 30 cm. It has only 18 leaf scars, measured from 1 to 2 m above ground level. The leaf is long, measuring 5.6 m with 235 leaflets. The palms are indirect self-pollinating, as there is inter-spadix overlapping in 20% of the inflorescences (mean overlapping period of 3.5 days). The fruits are green and oblong with a thick husk which is concentrated more towards the posterior end. The nut is small and angular. The kernel is thick.

Yield and production

Fruiting starts when the palms reach nine years. The mean nut yield per palm per year is 65 in Kasaragod, 22 in Aliyarnagar and 61 in Ratnagiri. Tender nut water of this variety is sweet with 6.1% total sugars. The fruits are oblong with husk contributing 59% to the whole fruit weight. The nut is small and angular, situated at the bottom near the pointed end. The copra content in Kasaragod is 122g per nut with 66% oil; and 171g in Veppankulam.

Other information

Due to its high husk content this variety may be utilized for making coir and coir products. Because of its small nut size, Seychelles Tall is not used in any of the breeding programmes in India.

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Conserved coconut germplasm from

Solomon Islands

Genebank	Contact
Dodo Creek Research Station PO Box G13 Honiara Solomon Islands	Country member of COGENT Dr Jimie Saelea Director, Research Ministry of Agriculture and Primary Industries PO Box G13, Honiara Solomon Islands Phone: (677) 20308 / 31111 / 21327 Fax: (677) 21955 / 31037 Email: j_saelea@yahoo.com

The Solomon Islands is a country in Melanesia, east of Papua New Guinea, consisting of nearly 1000 islands. Together they cover a land mass of 28,400 km². As of 2006, the vast majority of the 552,438 people living on the Solomon Islands are ethnically Melanesian (94.5%) followed by Polynesian (3%) and Micronesian (1.2%).

A history of the coconut industry in Solomon Islands is given by Ilala (1989). Since the ethnic tension in 1998, copra and cocoa have been the focus of most international extension and development projects. Moves to introduce high-yielding hybrids were unsuccessful in most cases because of resistance by farmers, poor husbandry and susceptibility to pest, disease and weed infestation.

Coconut research has been carried out since 1952 in the Solomon Islands. In 1960 a Joint Coconut Research Scheme was established by the Solomon Island Government and the Levers company, Russell Islands Plantation Estates Ltd, based at Yandina, Central Province. A seed garden for the production of Dwarf x Tall hybrids seednuts was producing up to 240,000 seednuts a year. Sixteen coconut varieties were also conserved at Yandina, until the blaze at the Dodo Creek Research Station in 2000. Levers was the largest single producer and buyer of copra and cocoa in the country (and the largest employer), but the company was declared bankrupt in 2001.

The Ministry of Commerce is currently focusing on the creation of production and marketing cooperatives for copra and cocoa production. Targets set by the national government for copra and coconut production in 2005 have been met (Evans 2006). Copra production has reached 20,000 tonnes, despite the closure of Russell Islands Plantation Estates Ltd. This suggests that smallholders are responding to relatively high prices and assistance from the Community Peace and Restoration Fund and others.

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Rennell Island Tall (RIT)

Bourdeix R, Labouisse JP, Batugal P

Conservation

Rennell Island Tall (RIT) is represented worldwide in germplasm banks by 19 accessions and 2695 individual palms. At least 11 germplasm conservation centres are involved, namely: Brazil, Côte d'Ivoire, Fiji, India, Indonesia, Jamaica, Papua New Guinea, Samoa, the Solomon Islands, Tanzania and Vanuatu. The registered accession sizes are highly variable, from only two palms in India to 561 in Côte d'Ivoire.

History

Rennell Island is a little island located in of the Solomon archipelago. Its two main traits are its volcanic lake, now registered as a world heritage, and its Polynesian population. Other Solomon Islands are mainly populated with Melanesians.

Identification

Rennell Island Tall has a bulky stem that starts with a very big bole. The leaf is quite short given its huge stem development. The inflorescence is wide with a long peduncle, and bends quite rapidly after opening.

Controversy remains about the numerous seednuts collected from the Rennell Island and sent to other countries. MA Foale, who visited the Rennell Island in 1964, said that the pure true-to-type RIT with big and pointed fruits is found mainly around the volcanic lake on the eastern part of the island. In other places, such as the coastal area, there is a mix between the RIT and the ordinary type, known as the Solomon Island Tall, which has smaller oblong fruits.

The fruits of RIT are among the biggest coconuts in the world. The fruit shape is quite variable, from oblong to pear-shaped. Some of the fruits have a long nipple at the bottom, which is very specific to the RIT. The colour of the young fruits ranges mainly from green to brown-red, although yellow or orange ones are occasionally found. The fruits have a high content of solid kernel and free water. Inside the husk, the nut is drop-shaped and pointed at the germination side. On the opposite side, the nut is often terminated by a shell point of about 10 mm long that grows inside the husk.

Yield and production

The fruit weight ranges from 1443g in Tanzania to 1707g in Côte d'Ivoire. The fresh kernel weight varies from 491g in Tanzania to 593g in Thailand. In Côte d'Ivoire and the Philippines, the yields are 48 and 78 fruits per palm per year, respectively.

Other information

RIT is tolerant to the *Phytophthora* diseases in Côte d'Ivoire and Indonesia. It is sensitive to the lethal yellowing diseases in Jamaica, Tanzania and Ghana. RIT is widely used as parental material in breeding programmes. The hybrid Malayan Red Dwarf x RIT is distributed in many countries in the Pacific region. In Vanuatu, the hybrid between the Vanuatu Tall and the RIT is currently being improved. In Côte d'Ivoire, all the Tall cultivars introduced are systematically crossed with the RIT. One of the two improved hybrids currently distributed to farmers is a cross between the Cameroon Red Dwarf and RIT. It is recommended to be used only in the most suitable zones.

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Solomon Island Tall (SIT)

Bourdeix R, Konan JL, Labouisse JP

Conservation

Solomon Island Tall (SIT) is conserved in the coconut germplasm centres of at least five countries, represented by eight accessions with more than 850 palms. In addition to the Solomon Islands, it can also be found in Côte d'Ivoire, India, Jamaica and Vanuatu. Two distinct populations of SIT, Nendo and Reef, are conserved in Vanuatu,

History

The Solomon archipelago is made up of almost a thousand islands and Melanesian atolls covering over 28,000 km² of land in 800,000 km² of ocean to the East of Papua New Guinea. Its name comes from the traces of gold discovered in the place, which were assumed to be vestiges of the mines belonging to the legendary king of Israel. Up to World War II, most foreigners kept away for fear of head hunters, cannibals and malaria.

Identification

The fruits of the Solomon Island Tall are predominantly brown, slightly coppery and rarely green. The fruit weighs an average of 1056g, and the round nut weighs 685g. The 352g kernel gives around 200g of copra. The fruits germinate very rapidly, even more quickly than those of the RIT, which comes from the same island group. The shape of SIT fruits is more or less elongated oval, but is never round. On the average, the fruits are a little heavier than those of the Vanuatu Tall (VIT) variety, although some palms of both varieties resemble each other a great deal (Vanuatu and the Solomons are neighbouring island groups). However, the main difference between these two varieties is not visible to the naked eye: the SIT is highly susceptible to the deadly foliar decay virus, which is widespread in Vanuatu, whilst the VTT resists that disease. Fruit composition is generally good, notably with a thin husk and a thick kernel. However, as can be seen in the photograph, not all fruits display that characteristic. Vertical growth is extremely rapid. At 12 years, the palms already measure 8.8 m from the ground to the base of the first green frond. On the 18th year, they exceed 13 m.

Yield and production

Flowering takes place five years after planting. Production is excellent from the 6th to the 9th year, producing 51-97 fruits per palm per year. It then increases further and fluctuates between 91 and 131 fruits up to the 18th year. In terms of copra weight per ha, the SIT is the highest yielding traditional variety observed in Côte d'Ivoire. From the 9th to 18th year, it has produced an average of 2.9 t of copra per ha, i.e. 80% more than the local West African Tall variety. Only hybrids reach or exceed that level of production.

Other information

In 1905, Levers Pacific Plantation Limited arrived in the Solomon Islands and set up large coconut plantations in the Russell Islands and Guadalcanal. From the 1950s to 1980s, coconut research activities, known as the 'Joint Coconut Research Scheme" were implemented by the Levers' Plantation at the Yandina Coconut Research Station. A large coconut collection was established. Breeding work involved crosses between a number of Tall and Dwarf varieties. A fire at the Yandina Station destroyed a large number of documents and research results. A few years later, it was converted into a luxury hotel.

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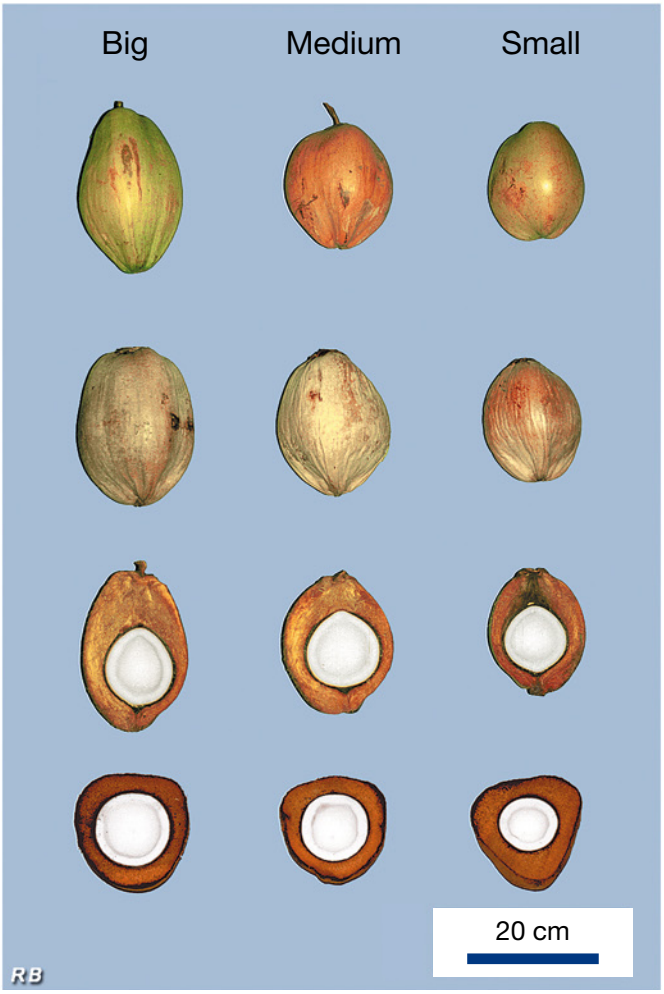
Solomon Island Tall (SIT)













Conserved coconut germplasm from

Sri Lanka

Genebank

Coconut Research Institute (CRISL)
Bandirippuwa Estate
Lunuwila, 61150
Sri Lanka
Phone: (94-31) 2255300 / 2255890
Fax: (94-31) 2257391
Email: director@cri.lk

Contact

Country member of COGENT
Dr C. Jayasekara
Director
Coconut Research Institute (CRISL)
Bandirippuwa Estate
Lunuwila, 61150
Sri Lanka
Phone: (94-31) 2255300 / 2255890
Fax: (94-31) 2257391
Email: director@cri.lk

Sri Lanka is an island country in South Asia, located about 31 km off the southern coast of India. It is home to around 20 million people. Coconut is the most widespread plantation crop in Sri Lanka, occupying 20% of the cultivated land area. The total extent under coconut cultivation is approximately 443,000 ha. Coconut is essentially a smallholder crop, with 80% of smallholdings ranging from 2-4 ha. Coconut is also grown in home gardens. Of the total production, 70% is being consumed locally and the balance available for coconut-based processing industries. Per capita consumption of coconut in Sri Lanka is about 115 nuts per annum, making it one of the highest per capita coconut consuming countries in the world.

The most widely grown coconut cultivar is the ordinary Tall. The coconut breeding programme has been in operation since the inception of the Coconut Research Institute (CRISL) in 1929. Genetic improvement of coconut varieties commenced in early 1940's by crossing selected Sri Lanka Talls to produce the improved cultivars Tall x Tall (CRIC 60). Subsequently, a production programme was also initiated concomitantly which produced the Dwarf x Tall hybrid (CRIC 61), first introduced in 1965. The first isolated seed garden for mass production of the improved cultivar CRIC 60 was established in 1955.

A systematic coconut germplasm conservation programme was initiated in Sri Lanka in 1984 and over a 16-year period, 90 distinct phenotypes and various ecotypes have been collected and conserved *ex situ* in CRISL genebanks. Based on random sampling, seven representative accessions were collected from seven target provinces. In the process of biased sampling, special emphasis was made on drought tolerance. A total of 20 accessions from drought prone areas that withstood severe droughts and three introduced populations were collected. Both materials collected as random and biased samples were established in a third germplasm repository consisting of 16 accessions. Both maintenance and data collection of the duplicate genebanks that were established during 1989-90 were carried out successfully and data submitted for inclusion in COGENT's Coconut Genetic Resources Database was also updated until 2002.

The coconut biotechnology programme was initiated at CRISL in early 1970's. The Tissue Culture Research Programme was also developed as a successful embryo culture technique for germination of Dikiri Coconut, a high-priced soft endosperm coconut.

Reference

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King Coconut (RTB)

Ratnambal MJ, Niral V, Krishnan M

Conservation

King Coconut (RTB) is conserved at the Central Plantation Crops Research Institute (CPCRI) in Kasaragod (Kerala), India. This variety is found in India, Sri Lanka, Tanzania and Jamaica. It is represented by about six accessions in the Coconut Genetic Resources Database.

History

King Coconut was introduced into the germplasm collection at CPCRI in Kasaragod in 1960. This variety is also referred to as Rath Thembili. It is believed to have originated in Sri Lanka and resembles the Malayan Dwarf type 'Puyoh'. The fruit is valued for its sweet nut water and culinary use.

Identification

King Coconut is a comparatively short-statured palm attaining a height of about 3.5 m 22 years after planting. In Sri Lanka, it is referred to as a semi-Tall variety. The stem is slender and has a girth of about 72 cm. There is no bole and the crown is circular. The leaves are short with strong petioles. The leaflets are not long and rather broad. The inflorescence, which is medium-sized with a strong stalk, carries about 20-40 spikelets. The spikelets are moderately long and carry at least one female flower per spikelet. Therefore, the number of female flowers per inflorescence is quite high (36 on average). The palm is highly self-pollinated. No inter-spadix overlapping of male and female phases is observed. The fruits are small with thin husk. The proportion of husk to whole fruit weight is around 32-37%. The fruits are yellow red in colour and oblong in shape with a characteristic button at the distal end of the nut. Inside the fruit, the nut is also small and oblong in shape.

Yield and production

This variety starts flowering 61 months after planting. The palm is a regular bearer and produces 7-10 bunches annually. In Sri Lanka this cultivar is reported to be seasonal in fruiting and produces 18 bunches per palm per year. The average annual nut yield is about 52 nuts per tree under rain-fed conditions. The husked nut weighs around 300g with approximately 125g copra per nut. The oil content of the copra is 66.3%. In Sri Lanka, the husked nut weighs an average of 398g, producing 141g copra per nut with an oil content of 65.6% in the copra.

Other information

King Coconut is generally, susceptible to drought. It is highly resistant to lethal yellowing in Jamaica but susceptible to the disease in Tanzania. It is susceptible to the burrowing nematode, *Radopholus similis*. In Sri Lanka, this variety has been crossed with Sri Lanka Green Dwarf and San Ramon Tall in different combinations. The hybrids appeared to be a failure as the nut water quality was poor. The progeny of the cross between King Coconut and Sri Lanka Green Dwarf was less hardy but flowered early and produced large bunches with medium-sized fruits. In Sri Lanka, a research programme was initiated to identify King Coconut palms with desirable characters in order to develop improved strains of King Coconut.

References

Been BO. 1981. Observations on field resistance to lethal yellowing in coconut varieties and hybrids in Jamaica. Oleagineux 36:9-11.

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Sri Lanka Green Dwarf (PGD)

Bourdeix R, Fernando WMU, Everard JMDT

Conservation

The Sri Lanka Green Dwarf (PGD) is represented by 12 accessions totalling 755 palms according to the 2002 Coconut Genetic Resources Database.

History

From Sri Lanka, PGD was introduced into Côte d'Ivoire, India and Jamaica before the 1980s. From Côte d'Ivoire, it was subsequently sent to Ghana, Tanzania, Philippines and VietNam.

Identification

Along with the Madang Brown Dwarf, the Sri Lanka Green Dwarf is without any doubt one of the most polymorphic. In Africa, the fruits weigh 375 and 461g on average in two neighbouring plots. The small, pointed nuts weigh 172 to 251g in Côte d'Ivoire and 285g in Sri Lanka. It seems that PGD is quite polymorphic. When planted under more favourable conditions, it produces rounder, fuller fruits. For instance, in the Philippines, fruit weight is estimated at between 745 and 796g. In VietNam, the weight could even reach 1240g. There are a few Green Dwarfs that strongly resemble the PGD. In India, the Chowgat Green Dwarf has a very similar appearance; it is probably the same variety, but that hypothesis needs to be confirmed by a molecular DNA analysis. In the Pacific, especially in Micronesia, some Green Dwarfs look like the Sri Lanka Green Dwarf. The islanders use them to produce toddy, sweet sap extracted by incising the young inflorescence of the palm. These Green Dwarfs are appreciated for their slow growth. It is said that even an old man can produce his own toddy without taking the risk of climbing. Sugar, syrup, sauces, vinegar and alcohols are produced from toddy.

Yield and production

At first glance, the Sri Lanka Green Dwarf is not a very attractive variety. When planted on poor soils, it produces small greyish-green fruits, which are narrow and not particularly well filled, are susceptible to insect attacks, and which epidermis becomes creased and wrinkled on ripening. Yet this variety has a characteristic that makes it valuable; it is resistant to one of the most terrible scourges currently devastating the coconut plantations in Ghana, the lethal yellowing. In the 1980s, around 20 coconut varieties were introduced into Ghana from Côte d'Ivoire to test their resistance to the disease. PGD performed the best. Under good conditions, this Dwarf starts bearing three years after planting. It produces 50-100 fruits per palm per year, but fruit size and composition vary considerably depending on growing conditions.

Other information

This variety has attracted the interest of researchers in several countries. In Sri Lanka, it has been crossed with various Tall types. Its hybrid with the Sri Lanka Tall (Ambakelle) is distributed to growers under the reference CRIC65. In Ghana, there are plans to plant its hybrid with the Vanuatu Tall in zones devastated by lethal yellowing. In Côte d'Ivoire, this Dwarf has been crossed with various Tall and Dwarf types.

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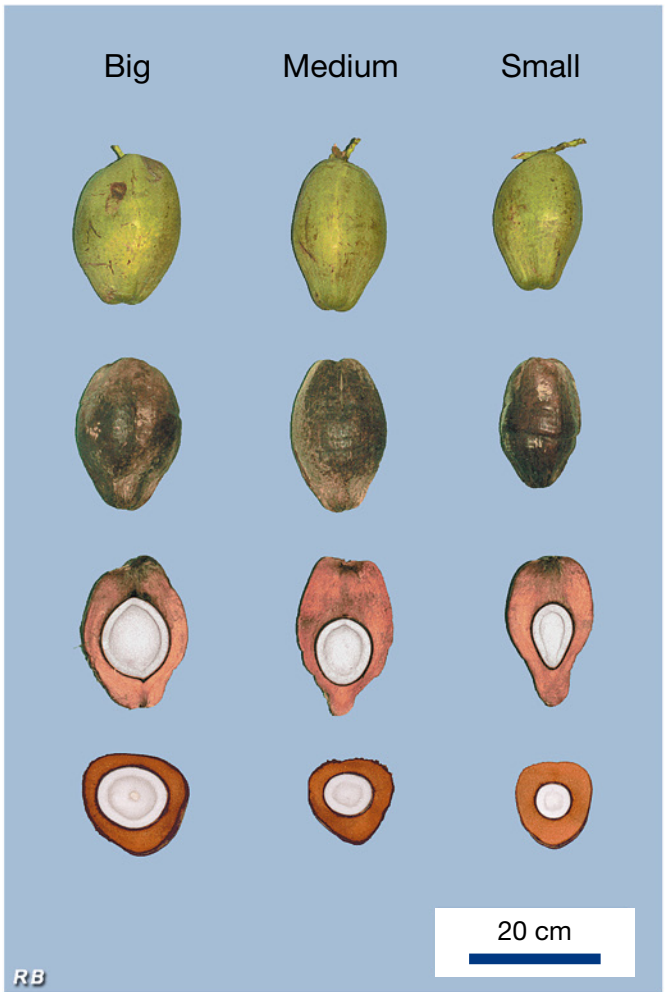
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Sri Lanka Tall (SLT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Sri Lanka Tall (SLT) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala), and at the research stations in Aliyarnagar (Tamil Nadu), Ambajipeta (Andhra Pradesh) and Arsikere (Karnataka), India. Sri Lanka Tall is also maintained in Côte d'Ivoire.

History

Sri Lanka Tall was introduced to India in 1940. Among the six Talls from Sri Lanka, SLT resembles the West Coast Tall (WCT) of India in most morphological characters. However, some differences in fruit characters are noticeable. The weight of the fruit is slightly lower than that of WCT, while the kernel is thicker in the SLT. The husk proportion is higher in WCT (52.3%) than in SLT (40%). Harries (1971) reported that there is a similarity between the coconuts in East Africa, India and Sri Lanka. Based on DNA polymorphism and factorial correspondence analysis), the palms from India, Sri Lanka and West Africa formed a distinct group.

Identification

In Kasaragod, the palm grows up to 8-9 m with 36 leaves on the crown. The stem girth at 1 m from the ground level is 85 cm. Leaves are long with a strong and long petiole. There are about 345 leaflets which measure 128 cm long and 5.8 cm wide. The palms flower 10-12 years after planting. The palms are indirect self-pollinating type as there are intra- and inter-spadix overlappings. The fruits are medium-sized, but heavy. The husk content is slightly high. The kernel and shell are thick.

Yield and production

Fruiting starts 12 years after planting. The palm produces 70 fruits per year in Kasaragod; 68 in Aliyarnagar; and 83 in Arsikere. Fruits weigh about 1090g with nut weight of 648g. The copra content is 198g per nut in Kasaragod, and 120g in Arsikere.

Other information

Sri Lanka Tall is relatively tolerant to root (wilt) disease of Kerala. In Sri Lanka it has been crossed with Sri Lanka Green Dwarf under the name CRIC-65. The popular Tall variety (CRIC-60) of Sri Lanka is a cross between selected Sri Lanka Talls. In India, Sri Lanka Tall has not been used for breeding.

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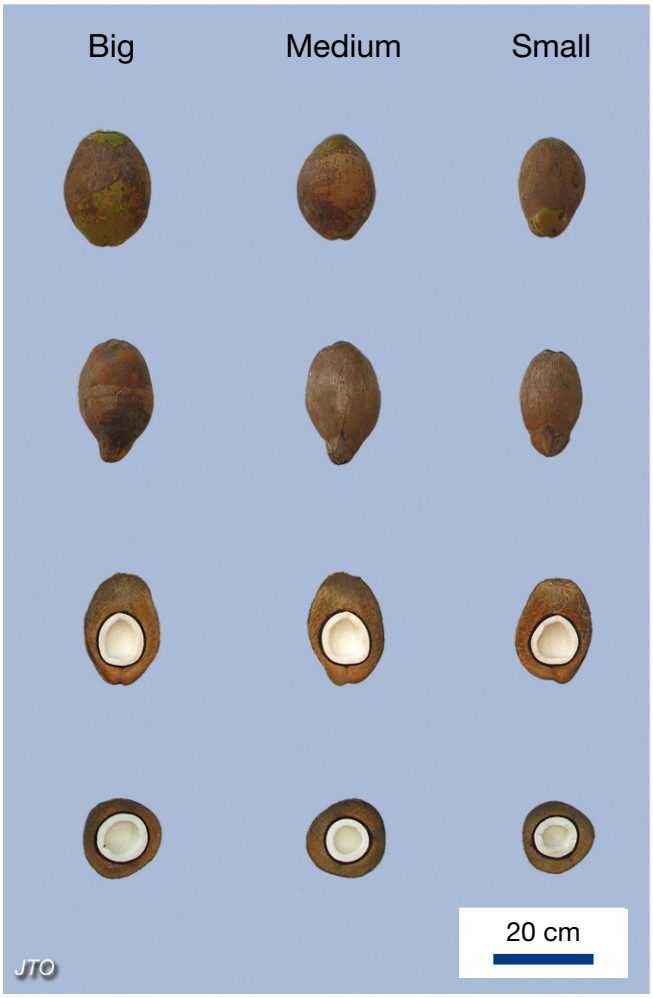
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Sri Lanka Tall Ambakelle (SLT02)

Everard JMDT, Fernando SC, Bourdeix R

Conservation

Ten Sri Lanka Tall Ambakelle (SLT02) accessions representing more than 2500 living palms are conserved in international collections. This variety has been exported from Sri Lanka to Côte d'Ivoire, India, Jamaica, Thailand, Solomon Islands and Papua New Guinea.

History

In Sri Lanka, the coconut palm is known as the "tree of a hundred uses". The oval photograph in the pictures plate shows one of these uses, which is religious, festive and unusual. The Sri Lanka Tall Ambakelle (SLT02) is not a traditional coconut type. It is a variety improved by Sri Lankan researchers, and known in that country as CRIC60. Since the 1960s, CRIC60 has acquired world popularity for its productivity and drought resistance. It is produced in the Ambakelle seed garden.

Identification

The SLT02 belongs to the same group of Talls originating from India and Africa. Compared to West African varieties, it produces fruits that, although oval, are heavier and of better composition, with more meat and less husk. Ripe fruits do not have the equatorial belt, a kind of pleat in the husk epidermis, which is frequently found in West African Talls. The stem is larger in diameter (by 8%) and has tighter leaf scars (by 8%); the leaflets are also narrower (by 9%).

Yield and production

In Côte d'Ivoire, CRIC60 starts flowering, on average, a little under six years after planting. It starts bearing on the 7th year, with 24 fruits per palm per year on average. From the 8th to 12th year, production fluctuates between 40 and 50 fruits per palm per year; it then continues to increase, yielding 76 and 102 fruits on the 16th and 17th year, respectively. The fruits weigh an average of 1349g and contain a nut weighing 827g; once dried, the 436g kernel gives around 270g of fairly oil-rich copra.

Other information

Controversy over the type of variety to be disseminated – hybrid or Tall coconuts – has been at the centre of discussions in Sri Lanka, where a hybrid between the Green Dwarf and the Sri Lanka Tall is distributed as CRIC65. Farmers, who have only cultivated Tall coconut palms for centuries, did not embrace this new hybrid variety. According to them, the husk fibres of the hybrids did not have exactly the same characteristics, the wood was of poorer quality, and the flavour of the meat was less pleasant. However, in terms of yield (number of nuts or meat weight), experimental results showed that hybrid CRIC65 was better than the improved Tall CRIC60. Its superiority is particularly expressed in the first 12 years, and then the difference fades and disappears. However, the first 12 years are clearly decisive for the profitability of a coconut planting. In the 1990s, Sri Lankan researchers designed an original experiment intended to select coconut palms with greater drought resistance. Embryos were removed from seednuts of variety CRIC60 and transferred to test tubes containing culture media with high concentrations of salts supposed to reproduce a kind of artificial drought. The few embryos that survived were grown and removed from the tubes. Some have reached the stage of adult coconut palms, which are currently being assessed for their drought resistance.

Reference

Liyanage DV, Wickramaratne MRT, Jayasekara C. 1988. Coconut breeding in Sri Lanka: A review. Cocos 6:1-26.

Sri Lanka Tall Ambakelle (SLT02)













Conserved coconut germplasm from

Surinam

Genebank	Contact
No genebank registered	Country not member of COGENT Fung Kon Sang, E. Ministry of Agriculture. Agricultural Experiment Station PO Box 160, Paramaribo Surinam

Surinam - officially the Republic of Surinam - is a country in northern South America. Surinam is one of four non-Spanish-speaking states in South America along with Brazil, which is Lusophone, Guyana, which is Anglophone and French Guiana, which is Francophone. Surinam is situated between French Guiana to the east and Guyana to the west. The southern border is shared with Brazil and the northern border is the Atlantic coast.

In the 1980's, trials for resistance to the Heart-rot disease of coconuts was carried out on a number of varieties and hybrids of these varieties. The varieties used were: Malayan Dwarfs; Sri Lanka Green Dwarf; Sri Lanka Red Dwarf, Sri Lanka Yellow Dwarf, a Surinam Dwarf and a Surinam Tall. It was observed that all varieties succumbed to Heart-rot disease, but it seems that some difference exists between varieties in their susceptibility to the disease.

References

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Kastelein P, Sanchit-Bekker ML, Dipotaroeno MS. 1985. Confusion in the recognition of Heart-rot and Red Ring disease in coconut. Surinaamse Landbouw (Surinam) 33(2): 56-61.

Surinam Brown Dwarf (SUBD)

Ratnambal MJ, Niral V, Krishnan M

Conservation

Surinam Brown Dwarf (SUBD) is conserved the Central Plantation Crops Research Institute (CPCRI), India.

History

Surinam Brown Dwarf was introduced to the germplasm collection at CPCRI in 1974.

Identification

Surinam Brown Dwarf is a very short-statured palm, attaining a height of only 2.2-3.6 meters 22 years after planting. The stem is very thin, with a girth of 58-60 cm. It has no bole and the crown is circular. The leaves are short with long, thin petioles. The leaflets are long and thin. The inflorescences are small with thin stalks. The number of female flowers per inflorescence is quite high (average 28), with at least one female flower per spikelet. However, the fruit setting percentage is very low (20%). The palm is highly self-pollinated. The length of the female phase is comparatively long (5 days) and overlaps with the male phase. In addition, the inter-spadix overlapping of male and female phases is quite long (7 days). The fruit is medium-sized with a very high proportion of husk (61.7%). The fruits are yellowish red in colour and oblong in shape. The nut is small with a thin shell and moderately thick kernel.

Yield and production

This variety starts flowering early, about 55-63 months after planting. On average, the palm produces 8-11 bunches per year and yields about 40-53 nuts per year under rain-fed conditions. However, it is not a regular bearer, producing good yields only in alternate years. The husked nut weighs about 215-255g with 62-78g copra per nut. The oil content in the copra is 65.9%. The average estimated annual copra yield per ha is 0.6 t and the oil yield 0.4 t under rain-fed conditions.

Other information

This variety is susceptible to fatal wilt/Heart-rot disease (*Phytomonas* sp.). It is also highly susceptible to wilt disease. At CPCRI, Kasaragod, it has been evaluated for yield and performance in germplasm evaluation trials. At the Surinam Agricultural Experiment Station, this cultivar has been used in the breeding programme, especially for disease resistance breeding. The hybrid Malayan Dwarf x Surinam Dwarf was found to be less susceptible to wilt disease in Surinam.

References

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Ratnambal MJ, Niral V, Krishnan M, Ravi Kumar N. 2000. Coconut Descriptors-II, Central Plantation Crops Research Institute, Kasaragod, India.

Surinam Brown Dwarf (SUBD)













Conserved coconut germplasm from

Tanzania

Genebank	Contact
Chambezi Agricultural Research Station Mikocheni Agricultural Research Institute Ministry of Agriculture Food Security and Co-operatives PO Box 6226, Dar es Salaam Tanzania Phone: (255-22) 2700552 Fax: (255-22) 2775549 Email: mari@mari.or.tz	Country member of COGENT Dr AK Kullaya Director Mikocheni Agricultural Research Institute Ministry of Agriculture Food Security and Cooperatives PO Box 6226, Dar es Salaam Tanzania Phone: (255-22) 2700552 Fax: (255-22) 2775549 Email: akullaya@mari.or.tz, mari@mari.or.tz

Tanzania, officially the United Republic of Tanzania, is a country in East Africa bordered by Kenya and Uganda on the north, Rwanda, Burundi and the Democratic Republic of the Congo on the west, and Zambia, Malawi and Mozambique on the south. To the east it borders the Indian Ocean.

The coconut palm is an important perennial cash and subsistence oil crop along the coastal belt of Tanzania. About 25 million coconut palms are cultivated on approximately 252,000 ha. The crop supports the livelihood of more than 300,000 rural households, with an average farm size of 0.5 to 1 ha.

The Government of Tanzania decided to initiate the National Coconut Development Programme (NCDP) in 1979 with the mandate to promote coconut production and utilization, and to improve the productivity of the coconut sector in the country. The inception of the NCDP marked the beginning of the process of institutionalizing coconut R&D in the country, which led to the establishment of the Mikocheni Agricultural Research Institute (MARI) in 1996.

Some of the major constraints to coconut cultivation in Tanzania include the presence of serious pests and diseases such as the lethal yellowing disease, poor crop husbandry practices as a result of inadequate extension services to growers, lack of improved planting materials, ageing coconut palms and sub-optimal climatic conditions. Twenty-three varieties and 22 hybrids have been tested on 4 different sites with different disease and climatic pressures: Kifumangao, Chambezi, Sotele and Pongwe. All the cultivars tested in Tanzania have been attacked by lethal disease with a lethality varying from 14 to 65% (Schuiling 1992). In an attempt to identify the local sources of resistance, 29 Tall accessions have been collected in Tanzania and Kenya and have been planted in performance fields. Since 1981, 2 seedgardens with an area of 166 ha have been established progressively on the islands of Mafia and Zanzibar, free of diseases at that time. In 1989 about 550,000 hybrid seednuts have been produced, but production ceased a few years later.

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East African Tall (EAT)

Mkumbo KE, Kullaya A.

Conservation

East African Tall (EAT) is conserved *ex situ* in germplasm blocks totalling 58 ha at Chambezi in Tanzania. *In situ* conservation is under farmers' fields all over the coconut growing area. It is also conserved in India.

History

The written reference to coconut in Tanzania dates back to AD 60. This reference has been taken as an evidence of introduction of coconut to Tanzania by Indian merchants. By the year 1890, Tanzania had an estimated the total number of coconut palms at 955,000. During 1888-1916, German administration strongly stimulated coconut growing by distributing seednuts and seedlings to smallholder farmers. This happened along the whole coast of mainland Tanzania. To date coconut palms are found not only along the Indian Ocean coastal belt but deep in the mainland too. The main coconut variety of economic importance grown in Tanzania is the East African Tall.

Identification

East African Tall has a close resemblance to Mozambique Tall (MZT) and probably to other Talls found in the Indian Ocean Islands like Madagascar, Comoros and Mauritius. The distinctive identity of EAT is the fruit shape and fruit components. EAT is heterogeneous because of allogamy. Fruits weigh 750–1450g, the colour of fruits is variable: red, yellow, green and brown; but most of EAT palms bear green or brown fruits. Fruits are generally oval shaped with a thick husk. Nuts are oblong, thick shelled (26-37%) and with meat thickness ranging from 47-58%. The palm normally bears a bole with a very thick stem and can be very tall. Crown shapes are variable: X, V, semi-circle or circular. Youngest leaves are erect; older ones vary with crown shape: erect for V-shaped, reflexed petioles for circular and X-shaped while for semi-circle crowns petioles are straight. Peduncles are long, taking the fruit and petiole colour. Often, the stem is narrower just above the bole and progressively thicker above. EAT has numerous subpopulations.

Yield and production

East African Tall produces medium-sized, oval nuts with excellent composition. The average fruit weight is 1100g. First bearing occurs 6-8 years after field planting. Palm yield per year range between 40-80 nuts under rain-fed conditions. Higher yields can be obtained under more favourable moisture regimes. EAT is mainly grown for copra production and fresh nuts consumption (source of fresh vegetable oil for domestic use). The palm is drought tolerant.

Other information

EAT is moderately tolerant to Lethal yellowing disease (LYD), sensitive to *P. wayi* and mite attacks. It has been extensively used for search of LYD resistant genes through production of breeders' test materials; used as a seed or father palm with Malayan Yellow Dwarf (MYD), Malayan Red Dwarf (MRD), Cameroon Red Dwarf (CRD), Pemba Red Dwarf (PRD), Rennell Island Tall (RIT), Polynesian Tall (PYT), Malayan Green Dwarf (MGD), the hybrid PB121. The resulting progenies are still under field trials at various locations within Tanzania. As a predominant variety in Tanzania and in East Africa, EAT is being improved for yield and disease resistance through selection. Selected materials are then used as seed sources for distribution to farmers.

Reference

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East African Tall Zanzibar (EAT33)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

East African Tall Zanzibar (EAT33) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala) and at the research stations in Aliyarnagar and Veppankulam (Tamil Nadu), Jagadalpur (Madhya Pradesh), Konark (Orissa) and Mondour (West Bengal), India.

History

This variety was introduced to India in 1955. Bourdeix (1977) suggested that Zanzibar Tall of India is a subpopulation of the East African Tall variety which is scattered on a large area in the world. The Indian population is renamed as East African Tall-33 (EAT-33). The original place of collection may have been Tanzania or Kenya.

Identification

The palm grows up to 13-14 m with about 36 leaves on the crown. The stem girth at 1 m height from the ground is 101 cm. The leaves are 5.2 m long with 232 leaflets. The leaflets are 117 cm long and 5.5 cm wide. This variety is a late flowering type, starting to flower 12 years after planting. The palm produces an average of 10 inflorescences per year. The inflorescence is 128 cm long with a long but strong stalk (69.5 cm). Inter-spadix overlapping is observed in 24% of the inflorescences (duration=3.3 days). Fruits are oval-shaped and greenish yellow in colour. The fruits have medium husk content. The husked nut is oval in shape with pointed bottom. The kernel is thick.

Yield and production

Fruiting starts 14 years after planting. The yield in Kasaragod is 86 nuts per palm; in Aliyarnagar, 57 nuts; in Veppankulam, 41 nuts; in Konark, 22 nuts and in Mondouri, 52 nuts. The fruits are medium-sized, weigh about 861g with 569g nut weight. The husk constitutes 34% to the whole fruit weight. Copra content in Kasaragod is 184g per nut; in Konark, 220g; in Mondouri, 176g; and in Veppankulam, 140g. The oil content in copra is 68%. The palms at Kasaragod gave 2.8 t of copra and 1.9 t of oil per ha.

Other information

EAT33 is resistant to lethal yellowing. This variety is not being used in breeding programmes in India.

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Sehuiling M, Mpunami A, Kaiza DA, Harries HC. 1992. Lethal disease of coconut palm in Tanzania. Oleagineux 47:693-697.




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Pemba Red Dwarf Tanga (PRD01)

Mkumbo KE, Kullaya A, Bourdeix R.

Conservation

In Tanzania, Pemba Red Dwarf Tanga (PRD01) is conserved *in situ* and ex situ. *Ex situ* conservation is mainly at Chambezi while in situ, the palm remains in smallholdings along the coconut growing area of Tanzania.

History

In Tanzania, Pemba Red Dwarf, as the name suggests, was collected from Pemba Island. Its historical background and local name Kitamli suggest its introduction by the Tamil traders to East Africa. PRD is present everywhere along the Tanzanian and Kenyan coastal area, as well as in Mozambique, Madagascar, Comoros and Mauritius.

Identification

Pemba Red Dwarf palms have a close resemblance to certain exotic varieties, such as Cameroon Red Dwarf (CRD) from West Africa or Madang Red Dwarf from Papua New Guinea. The trunk is very short and the leaves are comparatively short and erect. The fruits are oval and golden in colour. The bunch stalks are long, holding the fruits of all ages at the same distance. The similarity to other varieties was not noticed until after the Cameroon Red Dwarf (CRD) had been introduced for hybrid seed production purposes. Most Pemba Dwarfs resemble CRD, about 7% show characteristics of another exotic variety, Malayan Red Dwarf (MRD). It is significantly taller than CRD subtype and the leaves are longer and curve down. The fruit are round and fruit colour is more reddish (apricot) and the bunch stalks are shorter.

PRD bears no bole, it has a thin stem measuring 15cm (and 20cm at 20cm and 100cm above ground level respectively) in diameter. Top leaves are erect and straight, peduncles and petioles are straight. Reproductive system is direct autogamy. Within a subtype the colour is stable; differences are due to coexistence with other subtypes. Characterization data can be found in Tanzania. In most parameters PRD is similar to CRD and Mourassi.

Yield and production

Pemba Red Dwarf produce medium size oval shaped fruits. The husk is thin and the average fruit weight is 690g. The nut is oval and weighs about 500g. Under favourable edaphic and climatic conditions, PRD is highly precocious coming to first bearing in 2-3 years after field planting. It produces 30-70 fruits per palm per year under rain-fed conditions. It is mainly grown for its sweet and tasty liquid endosperm. The low oil and sugar content in the solid endosperm makes it of low importance in copra production. It is a very good ornamental palm. PRD is sensitive to drought and this may be the reason that it is mostly found around homesteads. Pemba Island (its primary source in East Africa) provides optimal growing conditions for the Dwarf in Tanzania.

Other information

Molecular DNA studies have shown that the Pemba Red Dwarf and the Cameroon Red Dwarf are closely related. Anyway, according to the observations made in Tanzania, where the two varieties are available, PRD fronds do not droop as much as those of CRD (due to reflexed petioles). Peduncles are longer than other red or yellow Dwarfs but shorter than those of CRD. PRD is sensitive to *Pseudotheraptus wayi* and mite attacks. It is moderately tolerant to lethal disease of coconuts. This variety has been used for production of breeders' test materials aimed at breeding coconut palm materials resistant to lethal disease and drought tolerance mainly as seed parent with Rennell Island Tall (RIT), East African Tall (EAT) and Vanuatu Tall (VTT), as father palms.

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Pemba Red Dwarf Tanga (PRD01)













Conserved coconut germplasm from

Thailand

Genebank	Contact
Chumphon Horticulture Research Center PO Box 3 Amphoe Sawi Chumphon 86130 Thailand Phone: (66-77) 556073 / 556026 Fax: (66-77) 556002 Email: chrcsawi@hotmail.com	Country member of COGENT Dr. Adisak Sreesunpagit Director General Horticulture Research Institute Department of Agriculture Phaholyothin Road Chatuchak, Bangkok, 10900 Thailand Phone: (66-2) 9405484/5 Fax: (66-2) 5614667, 5799545 Email: hort@doa.go.th

The Kingdom of Thailand is a country of Southeast Asia, bordered to the north by Laos and Myanmar, to the east by Laos and Cambodia, to the south by the Gulf of Thailand and Malaysia, and to the west by the Andaman Sea and Myanmar. Thailand has a population of about 63 million people and a surface area of approximately 513,000 km2.

Coconut is an important subsistence crop in Thailand. Over 200,000 farm families are directly or partially dependent on the coconut industry for their livelihood. The total area under coconut is about 376,000 ha, which are predominantly planted with local Talls even though high yielding coconut varieties have been released to farmers since 1982. Coconut research in Thailand started in 1960 with the establishment of the Sawi Horticultural Experiment Station in Amphoe Sawi, Chumphon Province, and later renamed Chumphon Horticultural Research Centre (CHRC). This is the main Thailand's coconut research centre (Carpio et al. 2005) where over 50 coconut accessions are conserved, including local and exotic varieties. The first hybrid experiment was set up in 1975. The hybrids performed very well under local conditions and a coconut seedgarden was established simultaneously to keep pace with the demand for planting materials.

In the 2000's, a survey was conducted in 10 young tender coconut growing provinces with the aim of collecting germplasm with diversified characteristics. During the survey, it was found that two groups of the Green Dwarfs, Aromatic coconut (Nam Hom) and Sweet water coconut (Nam Wan), were widely grown on a commercial scale.

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Aromatic Green Dwarf (AROD)

Rivera RL, Santos GA, Emmanuel EE, Rivera SM, Bourdeix R

Conservation

According to the 2002 Coconut GR Database, the Aromatic Green Dwarf (AROD) is represented by 12 accessions with 1025 living palms in the collections of Thailand, Côte d'Ivoire, Malaysia, Philippines, and Vanuatu.

History

Mr DG Cendaña, a professor of the College of Agriculture at the University of the Philippines at Los Baños (UPLB-CA), Laguna, first introduced the variety from Thailand to the Philippines in 1956. He planted two seedlings of the Aromatic Green Dwarf variety around the family's residence. These two palms became the progenitors of the AROD palms that were established at Davao Research Centre (DRC) in 1973. Out of the 85 seednuts grown, only 48 palms turned true-to-type, i.e. dwarf, small nuts, deep green, narrow-short leaflets. It bears young nuts with uniquely sweet water and the endosperm bears a distinctive nutty flavour. These characters are apparently controlled by recessive genes as they are lost in the hybridized state. These AROD palms became the source of planting materials at the above mentioned conservation sites in the Philippines. Around 385 AROD palms were planted at the field genebank in Zamboanga from January 1979 to July 2005 with 186 trees on various bearing stages.

Identification

The leaves of Aromatic Green Dwarf are short with wide leaflets; male flowers are numerous and small; immature nuts are deep green when immature; with sweet meat and water. The palms have short and thin stem, which grows less than 20 cm per year. The fronds are generally short, erect, and very deep green with equally short, wide overlapping leaflets. The bunch is borne on a short peduncle with small nuts attached on its short spikelets. The inflorescence is also short with the bunch held close to the centre of the crown. The AROD variety comes in two forms; one that smells like "pandan" hence called "pandan" while the other is just basically sweet. The endosperm of the mature nut of the "sweet AROD" is characteristically thin, smooth and endowed with a navel-like protrusion that covers the embryo. AROD is notably a late germinating Dwarf variety, bears fruits in 3-4 years, and with closely spaced leaf scars.

Yield and production

In terms of whole nut, the fruit size of Aromatic Green Dwarf is relatively bigger than the Pilipog Green Dwarf (PILD). Its meat weight (201g) and copra per nut (119g) remains significantly lower than most other Dwarfs. Moreover, average number of nuts per palm is about 93 at the adult age. This character contributed to its average copra per hectare of around two tons, but this cultivar is mainly used for drinking nuts.

Other information

Through the years, AROD has been known, and has become popular for its young tender nuts having sweet water and meat. The development of the variety for this purpose presents tremendous economic opportunities for farmers whose farms are close to urban centres, transit spots and resorts. This variety is registered with the National Seed Industry Council of the Department of Agriculture (DA-NSIC) for commercial young tender coconut production. In the Philippines, AROD is known to withstand infestations of the common coconut pests, e.g. slug caterpillars, Oryctes, and diseases like gray leaf spot caused by *Pestalozzia palmarum*, brown leaf spot caused by *Helminthosporium* sp., bud rot, etc. It is however, moderately susceptible to mites *Oligonychus velascoi* Rimando

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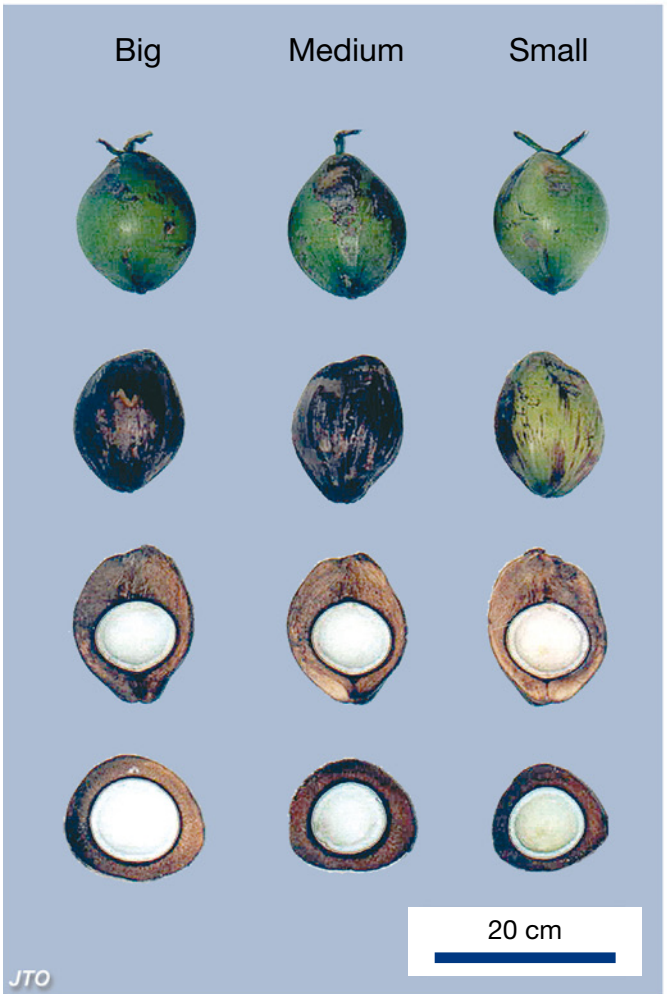
Aromatic Green Dwarf (AROD)













Thailand Green Dwarf (THD)

Bourdeix R, Petchpiroon C, Konan JL

Conservation

The Thailand Green Dwarf (THD) which was collected by the Sawi Research Station in southern Thailand was introduced into Côte d'Ivoire in 1977, then in Vanuatu in 1982. It is conserved only in collections in these 2 countries, with 3 accessions totalling 212 living palms, according to the 2002 Coconut Genetic Resources Database.

History

The Thailand Green Dwarf is greatly appreciated in Asia for the flavour of its drinking nuts. In fact, there are several forms of this Dwarf, the most familiar being known as 'aromatic', due to the pleasant aroma of its water. The variety in the photo comes from the town of Thung Kled, in Muang district. It is not the aromatic form, of which, unfortunately, only few palms exist in Africa. However, the two forms look alike and the main difference is the taste.

Identification

Various other Green Dwarf varieties described in this catalogue easily stand out from the THD. Most other Green Dwarfs do not produce such round small fruits. Some Malayan Green Dwarfs, not described in this catalogue, also have fruits that are as round. It is virtually impossible to tell them apart from the THD. In any case, the two countries of origin (Malaysia and Thailand) have a common border and these two types of Green Dwarf are probably related. Even on a certified 'aromatic' Green Dwarf, not all the fruits have the special flavour. It depends on the type of pollen used to fertilize the female flower from which the fruit develops; pollen should come from an aromatic coconut.

Yield and production

The fruits are of average size, very round and deep green in colour. A fruit weighs approximately 650g on sandy soils in Côte d'Ivoire and in the Philippines; 800g in Thailand; and more than 1200g in Vanuatu. These variations are solely linked to differences in growing conditions. These data provide a good idea of the potential that could be reached with irrigation and regular fertilization. Fruit composition is good, with high meat content when ripe. Under good conditions, this Dwarf starts bearing three years after planting. Its frond and bunch emission is rapid. Yields on adult palms reach around 60 nuts per palm per year under the coastal conditions in Côte d'Ivoire. In other more favourable ecologies, production is probably greater.

Other information

The aromatic forms of the Thailand Green Dwarf have water that stands out because of its unique flavour, having a delayed and long-lasting effect in the mouth. When appreciating tastes, cultural specificities need to be taken into account. For instance, in Vanuatu, a drinking nut tasting-test gave surprising results. The tasters were blindfolded and asked to compare the Thailand Aromatic Green Dwarf, the Brazilian Green Dwarf and the Vanuatu Tall. The tasters easily detected the special aroma of the THD, but almost all of them preferred the taste of the other two varieties. If an Aromatic Green Dwarf is crossed with another non-aromatic variety, the first generation progeny will be non-aromatic. However, in the second generation, this trait will reappear in some of the progenies. In Thailand, the Chumpon Horticultural Centre is studying aromatic Green Dwarfs in order to determine whether there are any qualitative and quantitative differences in the flavour depending on the palms. In Côte d'Ivoire, the THD was also crossed in 1993 with nine other Dwarfs and one Tall variety.

Reference

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RB


RB


Big
Medium
Small
20 cm
RB


RB

Thailand Tall Sawi (THT01)

Thirakul A, Petchpiroon C, Bourdeix R

Conservation

According to the 2002 Coconut Genetic Resources Database, the Thailand Tall Sawi (THT01) is represented by 3 accessions with 1265 living palms in the collections of Thailand and Côte d'Ivoire.

History

This Thailand Tall variety was collected in the 1970s near the Sawi Horticultural Research Centre, located in Chumphon province, southeastern Thailand.

Identification

The Thailand Tall Sawi, also called 'Maphrao Yai', is characterized by palms bearing a small number of large round to oblong fruits, with thin to moderate husk, high water content and a relatively thin kernel. It is like the typical Southeast Asian varieties, with a thick straight stem beginning with a large bole, slowly increasing its fruit yields up to at least the 20th year. From the 3rd to 12th year, it grows about 80 cm per year. On the average, a fruits weighs 1890g (in Thailand) to 1990g (in Côte d'Ivoire). The inner nut is oblate in shape with a somewhat flat bottom weighing 1300-1400g. The 560-610g kernel gives 300-320g of thin copra when dried.

The THT01 is viviparous; fruits begin to germinate high in the palms before falling naturally to the ground. This condition is not commercially desirable. To avoid spoilage of fruits through germination, it is necessary to pick the ripe fruits from the top, often using trained monkeys.

Yield and production

Thailand Tall Sawi does not start bearing until about six years after planting in Thailand. In farmers' fields, average yields are low at 20-25 fruits per palm, although individual palms may give 60 to 90 fruits. Yields at maturity rarely exceed 1.5–2 t copra per ha. Copra oil content is about 60-62%. In Côte d'Ivoire, production has only been recorded at the research centre. It began on the 6th year with 31 fruits per palm. Production then fluctuated between 30 and 60 fruits up to the 12th year. Later production ranged from 78 to 111 fruits per year.

Other information

A genetic improvement programme was launched by the Sawi Horticultural Research Centre in 1960. Thailand's seed gardens produce at least 250,000 hybrid seednuts annually, under the names of SAWI 1 and SAWI 2. These hybrids are PB121 (Malayan Yellow Dwarf x West African Tall) and PB132 (Malayan Red Dwarf x West African Tall) initially created in Côte d'Ivoire. The fruits of these two hybrids are sometimes considered too small by growers. Hence, distribution of a hybrid with large fruits started in 1984. A seed garden was established to supply Thailand Tall Sawi x West African Tall seednuts. This was the first use of a Tall x Tall hybrid in a development programme. In Jamaica, the Thailand Tall Sawi proved to be relatively resistant to lethal yellowing disease, with 32% mortality compared to 89% for the Jamaica Tall variety.

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10 cm
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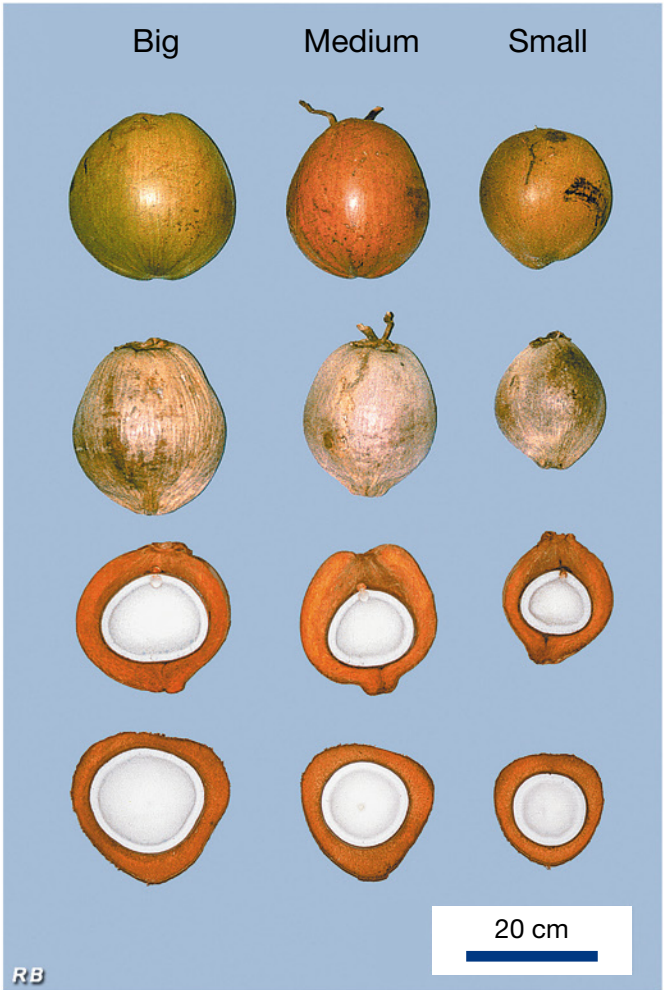
Big
Medium
Small
20 cm
RB


RB

Conserved coconut germplasm from

Tonga

Genebank	Contact
Vaini Research Station PO Box 14 Nuku'alofa Tonga Tel: (676) 32125 / 23038 Fax: (676) 32132 / 24271 / 23093 Email: lolomanaiaf@yahoo.com	Country member of COGENT Dr Viliami Manu Head, Research and Extension Ministry of Agriculture and Food, Forestry and Fisheries PO Box 14, Nuku'alofa Tonga Phone: (676) 32125 / 23038 Fax: 676-32132 / 24271 / 23093 Email: mafsoils@kalianet.to

The Kingdom of Tonga is an archipelago in the South Pacific Ocean comprising 169 islands, 36 of them being inhabited, stretching over a distance of about 800 km (500 miles) in a north-south line. The islands lie south of Samoa, about one-third of the way from New Zealand to Hawaii.

Coconut is an important crop which has supported the livelihoods of the Tongan people for centuries. Lately, Tongan coconut farmers have been suffering from declining productivity and unstable markets of copra and coconut oil, where traditional products are derived from the coconut. Tongan farming systems are basically multi-storied, and agro-forestry based, with root and other crops commonly used as intercrops. The situation in Tonga is dominated by an almost complete disappearance of coconut industry, while coconut remains important in everyday life.

Tonga has a coconut germplasm collection that was started in 1999. Part of the collecting activity was carried out during Phase I of the Asian Development Bank (ADB)-funded project entitled 'Collecting, conserving and characterizing coconut genetic resources in eight Asia Pacific countries'. The accessions collected came mainly from the main island of Tongatapu (Taufatofua and Jayashree 2005). However, there is a need to explore and collect the coconut genetic resources of the other islands, particularly those in the north such as Vava'u, Ha'apai and the Niua Islands. To date, five ecotypes namely Niu Kafa, Niu Vai, Niu 'Utongau, Niu Matakula and Niu Talokave, have been collected and characterized from Vava'u, Utongau and Ha'apai (Osborne 2005). Data collected have been submitted to COGENT and entered into the International Coconut Genetic Resources Database. These varieties have also been planted in the genebank in Vaini Research Station for conservation and further studies.

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Niu Kafa Tall Tonga (NKF03)

Bourdeix R, Fili LM, Hoponoa TH

Conservation

According to the Coconut Genetic Resources Database, the cultivar Niu Kafa Tall (NKFT) is conserved both in Tonga at Vaini Research Station (population Niu Kafa Tall Tonga NKF03) and in Samoa at the Olomanu Coconut Seed Garden (population Niu Kafa Tall Samoa NKF02). A third population exists in Fiji, Niu Kafa Tall Magi Magi (NKFT04) but is not yet registered in the International Coconut Genetic Resources Database.

History

In Samoa, coconut varietal names have been first registered by Christophersen (1935) who described his 'Specimen No. 3612' as Niu 'afa, large, long, relatively narrow fruits the husk of which is favoured for making sennit ('afa).

Identification

As far as we know, the fruits of the Niu Kafa Tall are the longest recorded in the world. The biggest fruits have been found in Samoa; they are around 45 cm long - even bigger than those of similar varieties that are found in Fiji (maximum 38 cm long) and in Tonga (maximum 35 cm). Fruits are green and angular in shape, large, long and narrow. Polar view of the fruit is pear-shaped and the husk epidermis forms equatorial belt around the fruit when mature. Nut cavity is pointed with thick endosperm. The shell is thick and solid and shows very distinctive thick veins.

The stem is very thick (115 cm girth on average at 150 cm from the ground) but do not have a marked bole at its base (120 cm girth on average at 20 cm from the ground while some Tall varieties reach 175 cm). The stalk of the inflorescence is short (56 cm).

All the Niu Kafa palms bear fruits of the same green colour. The normal types of Tall coconuts that typically grow are of mixed colours: brown, green or intermediate. This probably indicates that the Niu Kafa variety reproduces mainly by selfing or that all the sprouts that are not of green colours (intercrosses) are discarded by people to maintain the variety true-to-type.

Yield and production

Niu Kafa Tall generally starts fruiting at five to seven years after planting. Average number of bunch per palm a year ranges from 10-14 and the number of green drinking nuts per bunch is 5-6 under good growing conditions. The composition of the fruit is as follows: weight of the fruit: 2580g, weight of the large husk: 1230g, nut weight: 1350g, meat weight: 675g and free water weight: 450 g.

Other information

Niu Kafa palms are found as isolated individual palms located near the houses. People used its husk for making sennit. Now they appreciate tender nuts for drinking and use the meat of mature nuts for food preparation. Coconuts from India and Africa generally have higher husk content than those of Asia and the Pacific; Niu Kafa types are one of the main exceptions. An important theoretical question to solve is the understanding of links between the Indo-African group of coconut varieties and the Pacific and Asiatic varieties showing a high percentage of husk. Molecular biology techniques will help to answer this question. Up to now, only a few samples of Niu Kafa have reached the laboratories in good order. At least 10 to 20 more samples of high-husked cultivars coming from various origins in Asia and the Pacific Ocean should be analyzed. Such a study should make an important contribution in developing collecting strategies and breeding programs.

Reference

Christophersen E. 1935. Flowering Plants of Samoa, Bernice P. Bishop Museum Bulletin.

Niu Kafa Tall Tonga (NKF03)













Tonga Tall (TONT)

Bourdeix R, Fili LM, Hoponoa TH

Conservation

Tonga Tall (TONT) is represented by 6 accessions totalling 366 living palms in the collections of Tonga as well as of Brazil, Côte d'Ivoire, Jamaica and Vanuatu. It was introduced into Africa in 1969, and was sent from Côte d'Ivoire to Brazil 13 years later. Three more populations from Tonga are also conserved in India under the names Tonga Tall Alaki, Kalanga and Veitgo.

History

This cultivar originated from the Kingdom of Tonga, a nation of 171 islands and islets located in the South Pacific just below the Tropic of Capricorn, west of the International Dateline, south of Samoa and southeast of Fiji. The population of a little more than 100,000 is dispersed over 36 islands, while the other islands remain uninhabited.

Identification

The vertical growth of the Tonga Tall variety is not very fast. The internodes, measured at 150 cm from the ground level, vary from 5-7 cm, whereas it exceeds 12 cm in some varieties such as the Solomon Island Tall. On the 11th year, the Tonga Tall measures less than 6 m (from the ground to the first green frond), whilst the Solomon Island Tall easily exceeds 8 m at the same age. The diameter of the stem and bole is intermediate, greater than that of African varieties, but less than that of the large Southeast Asian varieties and the Rennell Island Tall, for example. The fronds, and especially the leaflets, are rather short for a Tall type.

The elongated fruits, which are about a third longer than they are wide, are average in size and vary in shape. They are usually pointed at the distal end, and sometimes pointed at both ends. The asymmetrical husk is thicker on the peduncle side. The inner nut is rather rounded and sometimes has a slightly conical shape on the side of the germination 'eyes'. The fruits weigh 1220g in Côte d'Ivoire and 1250g in Tonga. The inner nut weighs 830-850g. The kernel weighs about 450g and gives 240 to 260g of copra when dried. Fruit germination, which is quite slow, takes a little less than three months on average.

Yield and production

The Tonga Tall is an early yielder. When well planted, it flowers a little before five years on average, six months before the Rotuman Tall, for example. From the 6th to 8th year, annual yields are around 50 fruits per palm. They then increase, reaching 83 fruits in the best years. On average, on the 9th to 18th year, yields reach 65 fruits per palm (2.4 t of copra per ha), a high figure for a Tall type coconut.

Other information

The situation in Tonga is dominated by an almost complete disappearance of the coconut industry even though coconut remains important in everyday life. It should be noted that the level of replanting barely covers the number of palms used in sawmill operations (it probably means that it is much lower than the number of palms felled, since 'only the best palms' are used in the factories). If seednut production and planting is not increased again, the coconut grove will be severely reduced in the next decade. In Vanuatu, TONT has been crossed with the Malayan Red Dwarf, Malayan Yellow Dwarf, Samoa Yellow Dwarf and Niu Leka Dwarf. The yields of MRD x TONT are comparable to those of MRD x RIT.

Reference

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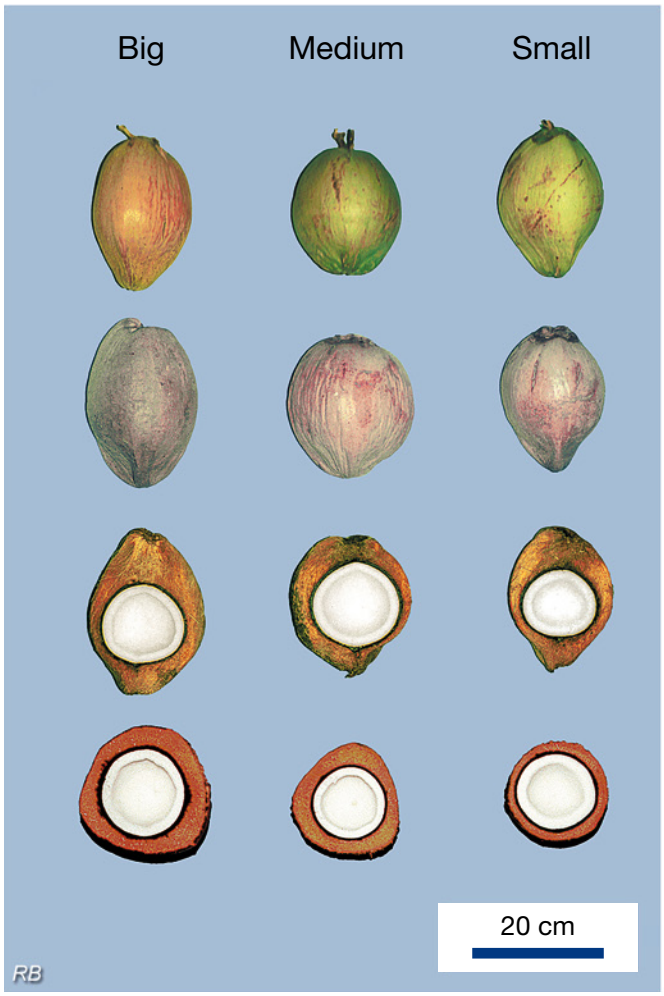
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20 cm
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Conserved coconut germplasm from

Trinidad and Tobago

Genebank	Contact
No genebank recorded.	Cynthra Persad Director of Research Ministry of Agriculture, Land and Marine Resources Central Experimental Station Centeno via Arima PO Trinidad and Tobago Phone: (1-868) 646 7657 Fax: (1-868) 646 1646 Email: minalmrdirresearch@tstt.net.tt

The Republic of Trinidad and Tobago is an archipelago state in the southern Caribbean, lying northeast of Venezuela and south of Grenada in the Lesser Antilles. It shares maritime boundaries with other nations including: Barbados to the northeast, Guyana to the southeast, and Venezuela to the south and west. The country covers an area of 5128 km² and consists of two main islands, Trinidad and Tobago, and numerous smaller landforms. Trinidad is the larger and more populous of the main islands; Tobago is much smaller, comprising about 6% of the total area and 4% of the population.

The economy is largely based on oil and gas, which accounts for 40% of GDP and 80% of exports. As a result, focus has been on this sector and inadequate attention has been paid to the agricultural sector (MALMR 2008). The agriculture sector has declined in importance as a source of employment, despite a 13% national unemployment rate. It also provides the lowest average income in the country. For decades Trinidad and Tobago has been a net importer of food, with the level of food imports being 181% of exports in 1999. Structural transformation of the economy with development, led to primary productivity having an ever reducing share of the GDP with an accompanying parallel reduction in the labour force, partly due to increased competition from new growth sectors (e.g. tourism, manufacturing and services) and loss of essential resources (e.g. land, capital and labour). Developments of international trade have also added to the current agricultural problems of reduced capacity, production, exports, income, profitability and competitiveness.

Under the Ministry of Agriculture, Land and Marine Resources (MALMR), the Fruit Crops Unit undertakes research work on coconut, banana and other tree crops. Regarding coconut, its main current objective is to develop a coconut-water industry for small farmers.

Coconut farmers registered under the Farmers' Registration Programme are eligible for incentives, for the establishment of new fields (25% of the cost up to $1200/ha) as well as for rehabilitation of old fields (25% of the cost up to $1000/ha). Applications for these incentives must be made on the form provided by the MALMR, and submitted with proof of interest in land, and receipts for goods and services.

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Saint Vincent Tall (STVT)

Ratnambal MJ, Kumaran PM, Bashkara Rao EVV, Pillai RV

Conservation

Saint Vincent Tall (STVT) is conserved at the Central Plantation Crops Research Institute at Kasargod (Kerala) and at the research stations at Konark (Orissa), Moundouri (Madhya Pradesh) and Aliyarnagar and Veppankulam (Tamil Nadu), India.

History

This variety was introduced to India in 1960 from Trinidad and Tobago.

Identification

The palm grows up to 7.5 m and has 26 leaves on the crown. Leaves are long (557 cm) with 236 leaflets. Leaflets are 113 cm long and 6.1 cm wide. The palm flowers about eight years after planting. The inflorescence is long with a long and strong petiole. The palms are indirectly self-pollinating as there is inter-spadix overlap in about 24% of the inflorescences. The fruits are greenish yellow in colour and oblong in shape. The husked nut is somewhat angular with thick kernel and thin shell. The husk is thick.

Yield and production

Fruiting starts in 12 years after planting. The yield in Kasaragod is 40 nuts per palm as well in Konark; in Moundouri, 50 nuts; in Veppankulam, 22 nuts and in Aliyarnagar, 70 nuts. Fruits are heavy (1128g weight) with 50g nut weight. Fruits have high husk content. Copra content in Kasargod is 185g per nut; in Veppankulam, 152g and in Mondouri, 182 g.

Other information

Saint Vincent Tall is resistant to root (wilt) disease of Kerala and tolerant to leaf rot disease caused by *Bipolaris halodces*. This variety has not been used in the breeding programmes in India.

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JTO


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Big
Medium
Small
20 cm
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Conserved coconut germplasm from

Vanuatu

Genebank	Contact
Vanuatu Agricultural Research and Training Centre (VARTC) PO Box 231, Santo Vanuatu Phone: (678) 36320 / 36130 Fax: (678) 36355 Email: tiatas@vanuatu.com.vu	Country member of COGENT M. Tiata Sileye Head, Coconut Division Vanuatu Agricultural Research and Training Centre (VARTC) PO Box 231, Santo Vanuatu Phone: (678) 36320 / 36130 Fax: (678) 36355 Email: tiatas@vanuatu.com.vu

Vanuatu, formerly called New Hebrides, is an archipelago located in Southwest Pacific Ocean, between the Solomon Islands and Fiji Islands. It consists of some 80 widely dispersed islands between the Torres Group (13° South) to the uninhabited Matthew and Hunter islets (22° South). As in most of Pacific island countries, coconut is widely used by rural populations for food and for numerous domestic purposes. The production of copra started in the 1870s and was the mainstay of Vanuatu economy during the 20th century. Coconut is grown over an estimated area of 119,000 ha (census 2007) which represents nearly 60% of the cultivated area. Even if its importance has decreased, copra remains the most important commodity of the country with about 30,000 metric tons of copra exported every year, half of this copra being crushed locally into oil.

On the southeast coast of the island of Espiritu Santo, near the village of Saraoutou (167°12E, 15°27S), a coconut research station was established in 1962. Up to 2001, the station was managed by the Institut de recherches pour les huiles et oléagineux (IRHO), a French research organization merged in 1985 into the Centre de coopération internationale en recherche agronomique pour le développement (CIRAD). In 2002, the coconut research station was integrated into the Vanuatu Agricultural Research and Training Centre (VARTC), the national organization for agricultural research.

VARTC coconut genebank covers a surface area of about 55 ha. This field genebank comprises the exotic cultivars collection with 13 Tall and 13 Dwarf varieties and the local cultivars collection with 1 Dwarf (Vanuatu Red Dwarf) and 20 populations of Vanuatu Tall. It is regularly maintained and rejuvenated by hand pollination every 15 years or more frequently in case of cyclones. VARTC coconut genebank is remarkable by the diversity of origins of the coconut varieties introduced from different countries of Africa, America, Asia and Pacific. The diversity of its Vanuatu Tall populations, of which some were collected during the CGRNAP-COGENT project between 1998 and 2000, is unique in the world.

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Vanuatu Red Dwarf (VRD)

Labouisse JP, Sileye T, Bourdeix R.

Conservation

The Vanuatu Red Dwarf (VRD) is only conserved in Vanuatu at the VARTC genebank with 132 palms.

History

Vanuatu Red Dwarf is the only Dwarf identified in Vanuatu. A population of VRD was collected in 1973 on Malo, a small island of 180 km² located to the south of Espiritu Santo (15°40'S, 167°10'E), in the plantation of a French planter. There is no evidence that this cultivar originated from Vanuatu as there are very few populations that can be found in the villages. According to some unpublished documentation, it was introduced from Samoa at the beginning of the 20th century by a Melanesian worker returning from that country. The analysis with molecular markers (microsatellites) showed that it is genetically close to Talasea Red Dwarf of Papua New Guinea even if it differs in morphological characters.

Identification

The Vanuatu Red Dwarf has a rather thin stem and no bole. The leaves are yellowish. Each bunch bears numerous and oblong small-sized bright orange fruits weighting 500-750g. At the VARTC genebank, the fruit component analysis gives the following results: fruit 692 g, husk 162g, shell 137g, water 133g and meat 261g. The copra content is around 117g. The kernel contains a lot of water while the oil content is low (60% of dry matter). The shell is very thick and the husk relatively thin. Unlike Tahiti Red Dwarf, the husk is not pink when immature.

Yield and production

The VRD has one of the lowest germination speed compared to other Dwarfs. In Vanuatu, the germination of VRD starts 70 days after sowing compared to only 30 days for Malayan Yellow Dwarf (MYD). The VRD bears the first flower 26 months after planting (21 months for MYD) and 50% of the palm has flowers after 32 months (25 months for MYD). At the VARTC genebank, the annual number of nuts is over 100 and the yield is around 12 kg of copra per palm per year.

Other information

The Vanuatu Red Dwarf is well adapted to the ecology of Vanuatu and is highly tolerant to Coconut Foliar Decay (CFD), an endemic viral disease transmitted by the insect *Myndus taffini,* even though some slight symptoms have occasionally been observed. It is tolerant to strong winds, when compared to other Dwarfs. At VARTC, in 1999, cyclone Dani toppled only 4% of the VRD palms, as opposed to 100% of the Malayan Yellow Dwarfs.

Due to the small size of the fruit, VRD is never used for making copra or coconut milk. With its numerous bright orange nuts, Vanuatu Red Dwarf is used in Vanuatu as an ornamental tree in parks and gardens. VRD was crossed with Vanuatu Tall in order to obtain a Dwarf x Tall hybrid tolerant to CFD. In experimental trials at VARTC, the hybrid exhibited the following characteristics: resistance to CFD; 154g copra per nut; 145 nuts per palm per year and 3.4 t of copra per ha per year. This hybrid was produced in the 1980s in seed gardens and disseminated to farmers. But the low rate of germination, the small size of the nuts and some problems of adaptation in farmers' fields resulted in stopping the production of this hybrid in the early 1990s.

Reference

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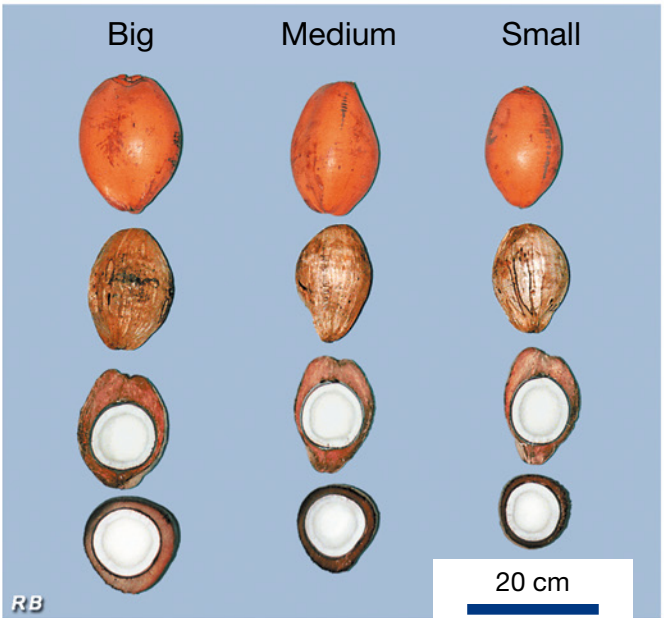
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Vanuatu Tall (VTT)

Bourdeix R, Konan JL, Labouisse JP

Conservation

Nine Vanuatu Tall (VTT) accessions with 787 living palms are spread over 6 countries. The VVT was introduced into Côte d'Ivoire and Jamaica from Vanuatu around 1960, and was then reproduced and sent from Côte d'Ivoire to Brazil, Ghana, the Philippines and Tanzania. This cultivar came from the Leroux estate, not far from the Saraoutou Research Station on the island of Espiritu Santo. More recently, a project implemented throughout the island group led to the collection of around 20 new populations from different islands.

History

Once known as the New Hebrides, Vanuatu is located in the Pacific, southwest of the Solomon Islands and northwest of New Caledonia. It is a chain of around 80 islands and islets extending over 850 km. Coconut palms have been shown to exist in Vanuatu for at least 5000 years (2000 years before the first known sites of human occupation). The coconut groves underwent substantial extension at the beginning of the 20th century. Although the crop is in decline, copra and coconut oil were still the country's main export in 2001.

Identification

The Vanuatu Tall is a heterogeneous population, especially in terms of vertical growth and fruit morphology. The stem is slender but broadens at the base. It bears numerous small fruits, weighing 750-900g, depending on growing conditions. They are slightly oblong and rarely round. The nut, under a usually thin husk, ranges in shape from round, to broader than long, or the opposite. It weighs from 500-650g depending on the site and usually contains thick meat that gives from 140-200g of copra. Nut germination is very rapid, taking only three months on the average.

Tall type coconut palms that produce fruits as small as those of the VTT are rare, apart from the Indo-African varieties. Compared to the latter, the fruits of the VTT are not so oval; seen from above, their cross-section is clearly less triangular. Dry VTT fruits often retain a smooth, regular epidermis, which is very different from the wrinkled appearance of many other varieties.

Yield and production

The Vanuatu Tall starts bearing very early and can flower three years after planting, although it usually takes four to five years. Adult palms produce between 60 and 100 fruits per palm per year under suitable conditions. In Brazil, on poor sandy soil which dries out quickly, annual production has never exceeded ten fruits per palm.

Other information

Until 1965, nobody suspected the existence of a serious coconut disease in Vanuatu. The disease was discovered only when exotic varieties were imported. All the new varieties imported from overseas started to die. Called 'Foliar Decay', the disease is caused by a virus. Only the Vanuatu Tall is resistant to this disease, which has remained confined in the archipelago. This situation has necessitated quarantine measures forbidding the export of planting material from Vanuatu to other coconut growing countries. Research was carried out and now several varieties with Foliar Decay tolerance are proposed: the improved VTT, the Vanuatu Red Dwarf x VTT hybrid and the VTT x Rennell Tall hybrid. The VTT has also performed well with respect to types of Lethal Yellowing that are widespread in Ghana.

References

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Big
Medium
Small
20 cm
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Conserved coconut germplasm from

VietNam

Genebank	Contact
Dong Go Research Station Ben Tre 171-175 Ham Nghi Street District 1 Ho Chi Minh City VietNam Phone : (84-8)-8297336/8243526 Fax : (84-8) 8243528 Email : opi.vn@hcm.vnn.vn	Country member of COGENT Mr Nguyen Trung Phong Director Oil Plant Institute of VietNam 171-175 Ham Nghi St. District 1 Ho Chi Minh City VietNam Phone: (84-8) 829-7336 / 8243526 / 9140694 Fax: (84-8) 8243528 Email: ntphong-opi-vn@hcm.vnn.vn

VietNam is the easternmost country on the Indochina Peninsula in Southeast Asia. It is bordered by China to the north, Laos to the northwest and Cambodia to the southwest, and South China Sea to the east. With a population of over 86 million inhabitants, VietNam is the 13th most populous country in the world.

Coconut is considered the most important perennial oil crop in VietNam, with an estimated total cultivated land area of 250,000 ha. Coconuts provide the primary source of income to the thousands of farmers, especially those living in the Mekong River Delta in the south and along the coastal areas in the Central region where coconut planting started several years back. An average coconut holding in VietNam is relatively small: 0.2 – 0.3 ha. Coconut yields, as well as nut prices, are also quite low. Little attention is given to coconut as most of the coconut farmers prefer intensive farming involving other commodities (i.e. fish, shrimps, swine, fruit crops, etc.) (Long 1994). Coconut is widely used for culinary purposes and some of it is converted into copra and oil for industrial use while the rest is exported.

Coconut research activities in VietNam were officially initiated in 1980 (Carpio et al. 2005) with the establishment of the Institute for Research on Oils and Oil Plants, now known as the Oil Plants Institute of VietNam (OPI). Coconut germplasm were planted in OPI's Dong Go Station, in Ben Tre Province and in Trang Bang Station in Tay Ninh Province. The field genebank in Trang Bang Station was closed in 1994 due to budgetary constraints. Coconut germplasm collecting is a continuous activity of OPI as it aims to collect all possible types of coconut. Wide genetic diversity can be observed in the country. The Tall types consist of Ta, Dau, Giay and Bi or Bung varieties while the Dwarf types include Ea, Xiem and Tam Quan. Cultivars with special characters were also classified according to their distinct feature (Long 2005) such as Sap (Makapuno), Ngot (sweet) Dua (aromatic) and Soc (stripe).

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Cochin China Tall (CCNT)

Ratnambal MJ, Niral V, Krishnan M

Conservation

Cochin China Tall (CCNT) is conserved at the Central Plantation Crops Research Institute in Kasaragod (Kerala), at the centres under the All India Coordinated Research Project on Palms, and at the research stations of Kerala Agricultural University, India.

History

Cochin China Tall, a cultivar from VietNam, was introduced into the germplasm collection at CPCRI, Kasaragod, in 1940.

Identification

Cochin China is a Tall cultivar with medium-sized bole. The crown is circular with about 32-36 leaves. The palm produces about 14 leaves annually. The palm attains a height of approximately 9.3 m at 25 years of age. The leaves are long with strong petioles. It takes around 86 months to produce flowers. The inflorescence is medium-sized with a strong stalk. There are 35 to 44 spikelets per inflorescence; however, the number of female flowers per spikelet is low (0.3-0.5). The fruit set percentage is also not high, just around 25%. The mode of reproduction is predominantly allogamous with distinct male and female phases. The female phase lasts for four days and commences about two days after the end of the male phase. However, a small percentage of inter-spadix overlapping of male and female phases occurs. The fruits are large with thick husk. The colour of the fruit varies from green to brown. The fruit is round to spheroid in shape. The husked nut is round with thick kernel and strong shell.

Yield and production

The palm starts bearing around 7-11 years after planting. It is a regular bearer. However, Balakrishnan et al. (1991) reported biennial bearing in this cultivar. The fruits are large, weighing about 1175g with about 30% of husk. The nut weights about 249g, has a copra content of 220-230g with an oil content of 66-67%. An adult palm, on reaching stabilized bearing, produces about 10-12 bunches annually. Ratnambal et al. (2000), reported an average annual nut yield of 72.4 fruits per palm, with a copra yield of 2.8 t per ha and an oil yield of 1.9 t per ha under rain-fed conditions. However, a wide variation in nut yield, from 17-190 fruits per palm per year, has been observed in this cultivar. John (1952) reported an annual nut yield of 90 fruits per palm.

Other information

This variety is tolerant to drought but slightly susceptible to nut damage caused by the eriophyid mite *Acercia guerreronis*. The variety and its hybrid, CCNT x GBGD (Gangabondam Green Dwarf), are slightly susceptible to stem bleeding caused by *Thelaviopsi*s (Ceratocystis) *paradoxa*. There was less intensity of root (wilt) and leaf rot in root (wilt) disease-affected palms. The tender nut water is sweet and plentiful. Therefore, this cultivar can also be utilized for tender nut purposes. The hybrid CCNT x MGD (Malayan Green Dwarf) was found to be vigorous in early growth performance. Positive heterosis for seedling height and collar girth was reported in this hybrid. CCNT X COD (Chowghat Orange Dwarf) recorded high value for weight of husked nut (851g) and had a thick shell. CCNT has also been crossed with WCT (Indian West Coast Tall).

References

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Big
Medium
Small
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Annexes

Annex 1. List of Coconut germplasm registered in the Coconut Genetic Resources Database

1a. List of Coconut germplasm registered in the Coconut Genetic Resources Database ordered by alphabetic order of international cultivar names

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Adirampatanam Tall	India		ADPT	India	ADP
Aertembaga Tall	Indonesia		AET	Indonesia	DAA, Dalam Aertembaga
Agta Tall	Philippines		AGAT	Philippines	
Aguinaldo Tall	Philippines		AGDT	Philippines	AGD
Aklan Tall	Philippines	Matabana	AKT03	Philippines	
Aklan Tall	Philippines	Pinamuc-an	AKT02	Philippines	
Aklan Tall	Philippines	San Fernando	AKT01	Philippines	
Anda Tall	Philippines		ANDT	Philippines	Ac 46
Anda Tall	Philippines	Binuling	ANDT02	Philippines	
Anda Tall	Philippines	Tondol	ANDT01	Philippines	
Andaman Giant Tall	India		AGT	India	Andaman Giant,AG
Andaman Giant Tall	India		AGT	Côte d'Ivoire	Grand des Indes Andaman Géant, ND3, NDT3
Andaman Green Dwarf	India		ANGD	India	
Andaman Ordinary Tall	India		ADOT	Ghana	Indian Andaman Tall
Andaman Ordinary Tall	India		ADOT	India	Andaman Ordinary, AO, ADO
Andaman Ordinary Tall Ordinary, GND2, NDT2	India		ADOT	Côte d'Ivoire	Grand Indes Andaman
Andaman Ranguchan Tall	India		ADRT	India	Andaman Ranguchan, ADR
Andaman Yellow Dwarf	India		ANYD	India	AD
Antique Tall	Philippines		ANTT	Philippines	Ac 44
Antique Tall	Philippines	Batuan	ANTT02	Philippines	
Antique Tall	Philippines	Tabayon	ANTT03	Philippines	
Antique Tall	Philippines	Mapatag	ANTT01	Philippines	
Aromatic Green Dwarf	Thailand		AROD	Côte d'Ivoire	Nain Vert Aromatic, NVP7, PGD7
Aromatic Green Dwarf	Thailand		AROD	Malaysia	Kelapa Pandan, Kelapa Wangi
Aromatic Green Dwarf	Thailand		AROD	Thailand	Nam Hom, ARO
Aromatic Green Dwarf	Thailand		AROD	Vanuatu	Nain Vert Aromatique, NVP7
Aromatic Green Dwarf	Thailand		AROD	Philippines	PGD7, ARO, Pandan
Ayiramkachi Tall	India		AYRT	India	AYK

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Babang Tall	Indonesia		BBGT	Indonesia	DBB, Dalam babang
Bago-Oshiro Tall	Philippines		BAOT	VietNam	Hijo Tall
Bago-Oshiro Tall	Philippines		BAOT	Philippines	BAO
Baguer Green Dwarf	Philippines		BAGD	Philippines	BAG
Baibara Tall	Papua New Guinea		BBR	Papua New Guinea	BBT
Bali Tall	Indonesia		BAT	Indonesia	DBI, Dalam Bali
Bali Yellow Dwarf	Indonesia		BAYD	Indonesia	GKB, Genjah Kuning Bali
Ballesteros Tall	Philippines	Cagayan	BALT01	Philippines	
Ballesteros Tall	Philippines	Tarraq	BALT02	Philippines	
Ballesteros Tall	Philippines		BALT	Philippines	Ac 27
Banga Green Dwarf	Philippines		BAND	Philippines	Bañga, BAN
Bangladesh Tall	Bangladesh	Agailjhara	BAGT17	Bangladesh	
Bangladesh Tall	Bangladesh	Atkapalia	BAGT27	Bangladesh	
Bangladesh Tall	Bangladesh	Babugonj	BAGT15	Bangladesh	
Bangladesh Tall	Bangladesh	Bagerhat	BAGT39	Bangladesh	
Bangladesh Tall	Bangladesh	Bagharpara	BAGT24	Bangladesh	
Bangladesh Tall	Bangladesh	Bhola	BAGT22	Bangladesh	
Bangladesh Tall	Bangladesh	Bogra	BAGT36	Bangladesh	
Bangladesh Tall	Bangladesh	Buikara	BAGT28	Bangladesh	
Bangladesh Tall	Bangladesh	Chinashukhani	BAGT33	Bangladesh	
Bangladesh Tall	Bangladesh	Gafaragoan	BAGT32	Bangladesh	
Bangladesh Tall	Bangladesh	Hathazari	BAGT07	Bangladesh	
Bangladesh Tall	Bangladesh	Ishurdi	BAGT11	Bangladesh	
Bangladesh Tall	Bangladesh	Jamalpur	BAGT10	Bangladesh	
Bangladesh Tall	Bangladesh	Jhalakathi	BAGT19	Bangladesh	
Bangladesh Tall	Bangladesh	Jhenaidah	BAGT25	Bangladesh	
Bangladesh Tall	Bangladesh	Kalapara	BAGT20	Bangladesh	
Bangladesh Tall	Bangladesh	Kayemkola	BAGT23	Bangladesh	
Bangladesh Tall	Bangladesh	Khagrachari	BAGT14	Bangladesh	
Bangladesh Tall	Bangladesh	Khairtala	BAGT05	Bangladesh	
Bangladesh Tall	Bangladesh	Kisorganj	BAGT37	Bangladesh	
Bangladesh Tall	Bangladesh	Kushtia	BAGT26	Bangladesh	
Bangladesh Tall	Bangladesh	Lebukhali	BAGT21	Bangladesh	
Bangladesh Tall	Bangladesh	Manikgonj	BAGT29	Bangladesh	
Bangladesh Tall	Bangladesh	Muktagacha	BAGT31	Bangladesh	
Bangladesh Tall	Bangladesh	Nator	BAGT35	Bangladesh	
Bangladesh Tall	Bangladesh	Poilanpur	BAGT12	Bangladesh	
Bangladesh Tall	Bangladesh	Puthia	BAGT34	Bangladesh	
Bangladesh Tall	Bangladesh	Ramgorh	BAGT13	Bangladesh	
Bangladesh Tall	Bangladesh	Rathmapur A	BAGT01	Bangladesh	
Bangladesh Tall	Bangladesh	Rathmapur B	BAGT02	Bangladesh	
Bangladesh Tall	Bangladesh	Rathmapur C	BAGT03	Bangladesh	
Bangladesh Tall	Bangladesh	Razbari	BAGT38	Bangladesh	
Bangladesh Tall	Bangladesh	Red Shundhi A	BAGT08	Bangladesh	
Bangladesh Tall	Bangladesh	Red Shundhi B	BAGT09	Bangladesh	

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Bangladesh Tall	Bangladesh	Rhaikhali	BAGT06	Bangladesh	
Bangladesh Tall	Bangladesh	Sherpur	BAGT30	Bangladesh	
Bangladesh Tall	Bangladesh	Swarupkathi	BAGT18	Bangladesh	
Bangladesh Tall	Bangladesh	Uzipur	BAGT16	Bangladesh	
Bani Tall	Philippines		BANT	Philippines	Ac 36
Banigan Tall	Philippines		BNGT	Philippines	BNG
Banyuwangi Tall	Indonesia		BGT	Indonesia	DBG, Dalam Banyuwangi
Basey Tall	Philippines		BAST	Philippines	
Bataan Tall	Philippines		BAAT	Philippines	Ac 33
Bataan Tall	Philippines	Kitaotao	BAAT03	Philippines	
Bataan Tall	Philippines	Mianay	BAAT02	Philippines	
Bataan Tall	Philippines	Tenejero	BAAT01	Philippines	
Bato Bato Tall	Philippines		BATT	Philippines	BAT
Baybay Tall	Philippines		BAYT	Vanuatu	Grand Bay-Bay, GPH4, PHT4
Baybay Tall	Philippines		BAYT	Côte d'Ivoire	Grand Bay-Bay, GPH4, PHT4
Baybay Tall	Philippines		BAYT	Philippines	Grand Bay-Bay, GPH4, PHT4
Beber Tall	Indonesia		BET	Indonesia	DBR, Dalam Beber
Bellona Tall	Solomon Islands		BLT	Solomon Islands	B
Benaulim Tall	India		BENT	India	Benawali Green Round, BEN, Pratap
Bibinoi Tall	Indonesia		BIBT	Indonesia	DBN, Dalam Bibinoi
Bitunuris Tall	Indonesia		BITT	Indonesia	
Blanchisseuse Tall	Trinidad and Tobago		BLIT	India	Blanch Issues, BLN
Bodiri Tall	Sri Lanka		BDRT	Sri Lanka	Maphrao Phuang Bodiri
Bora Bora Tall	France French Polynesia		BBT	India	
Borneo Tall	Indonesia		BONT	India	BRT
Borongan Tall	Philippines		BORT	Philippines	
Botolan Tall	Philippines		BOTT	Philippines	Ac 30
Bougainville Tall	Papua New Guinea		BOT	Jamaica	BLT
Boyolali Tall	Indonesia		BOYT	Indonesia	
Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Sri Lanka	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Vanuatu	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Benin	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Côte d'Ivoire	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Ghana	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazilian Green Dwarf Equatoriale	Brazil	Equatorial Guinea	BGD02	Tanzania	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée
Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Viet Nam	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazilian Green Dwarf	Brazil		BGD	Brazil	Anao verde do Brasil, Anao verde de Jiqui, AVEJ
Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Côte d'Ivoire	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Philippines	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazilian Red Dwarf	Brazil		BRD	Brazil	Anao Vermelho Do Brasil, Anao Vermelho De Gramame, AVG
Brazilian Tall GBRRN1	Brazil	Baia Formosa	BRT08	Brazil	SJM, Gigante de Sao Jose de Mipibu,
Brazilian Tall	Brazil	Luis Correia	BRT07	Brazil	Gigante do Bras.Praia do Forte, GBRPF
Brazilian Tall	Brazil	Merepe	BRT09	Brazil	SJM, Gigante de Sao Jose de Mipibu, GBRRN1
Brazilian Tall	Brazil	Olho de Cravo	BRT02	Brazil	Merepe, Gigante de Merepe, GBRPE1
Brazilian Tall	Brazil	Pacatuba	BRT10	Brazil	Merepe, Gigante de Merepe, GBRPE1
Brazilian Tall	Brazil	Praia do Forte	BRT01	Brazil	Gigante do Bras.Praia do Forte, GBRPF
Brazilian Tall	Brazil	Santa Rita	BRT05	Brazil	SJM, Gigante de Sao Jose de Mipibu, GBRRN1
Brazilian Tall	Brazil	Santo Inácio	BRT04	Brazil	GBRPF
Brazilian Tall	Brazil	São José do Mipibu	BRT06	Brazil	Merepe, Gigante de Merepe, GBRPE1

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Brazilian Tall	Brazil	Senador Georgino Avelino	BRT03	Brazil	SJM, Gigante de Sao Jose de Mipibu, GBRRN1
Brazilian Yellow Dwarf	Brazil		BYD	Brazil	Anao amarelo do brasil, Anao amarelo de gramame, AAG
British Solomon Island Tall	Solomon Islands		BSIT	India	British Solomon Island, BSI
Bukidnon Tall	Philippines		BUKT	Philippines	Ac 32
Bukidnon Tall	Philippines	Damulog	BUKT04	Philippines	
Bukidnon Tall	Philippines	Gutapol	BUKT03	Philippines	
Bukidnon Tall	Philippines	Tambo	BUKT02	Philippines	
Bukidnon Tall	Philippines	Alfonso	BUKT01	Philippines	
Cagayan Tall	Philippines		CAGT	Philippines	Ac 28
Cagayan Tall	Philippines	Bannag	CAGT03	Philippines	
Cagayan Tall	Philippines	Leron	CAGT04	Philippines	
Cagayan Tall	Philippines	Sanchez Mira	CAGT02	Philippines	
Cagayan Tall	Philippines	Saud	CAGT01	Philippines	
Calangute Tall	India		CALT	India	CAL
Cambodia Tall	Cambodia		KAT	Jamaica	CMT
Cambodia Tall	Cambodia	Battambang	KAT09	Côte d'Ivoire	Grand Cambodge Battambang, GCB9, KAT9
Cambodia Tall	Cambodia	Kampot	KAT03	Côte d'Ivoire	Grand Cambodge Kampot, GCB3, KAT3
Cambodia Tall	Cambodia	Kompong Trach	KAT05	Côte d'Ivoire	Grand "Feu" Kompong Trac, GCB5, KAT5
Cambodia Tall	Cambodia	Kopal Tani	KAT04	Côte d'Ivoire	Grand Cambodge "Kopal" Tani, GCB4, KAT4
Cambodia Tall	Cambodia	Ktis Battambang	KAT11	Côte d'Ivoire	Grand Cambodge Ktis Battambang, GCB11, KAT11
Cambodia Tall	Cambodia	Ream	KAT07	Côte d'Ivoire	Grand Cambodge Ream, GCB7
Cambodia Tall	Cambodia	Sre Cham	KAT08	Côte d'Ivoire	Grand Cambodge Sre Cham, GCB8
Cambodia Tall	Cambodia	Tuk Sap	KAT02	Tanzania	GCB2, CBT
Cambodia Tall	Cambodia	Tuk Sap	KAT02	Côte d'Ivoire	Grand Cambodge Tuk Sap, GCB2, KAT2
Cambodia Tall	Cambodia	Koh Rong	KAT10	Côte d'Ivoire	Grand Cambodge Koh Rong, GCB10, KAT10
Cambodian Green Dwarf	Cambodia		KGD	Côte d'Ivoire	Nain Vert Cambodge Kolke, NVC, CGD
Cameroon Kribi Tall	Cameroon		CKT	Côte d'Ivoire	Grand Cameroun Kribi, GCA
Cameroon Red Dwarf	Cameroon		CRD	Benin	Nain Rouge Cameroun, NRC
Cameroon Red Dwarf	Cameroon		CRD	Brazil	Anao vermelho de camaroes, AVC

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Cameroon Red Dwarf	Cameroon		CRD	Ghana	CRD
Cameroon Red Dwarf	Cameroon		CRD	Indonesia	CRD, Genjah Merah Kamerun
Cameroon Red Dwarf	Cameroon		CRD	India	Cameroon Orange Dwarf
Cameroon Red Dwarf	Cameroon		CRD	Sri Lanka	COD
Cameroon Red Dwarf	Cameroon		CRD	Malaysia	
Cameroon Red Dwarf	Cameroon		CRD	Philippines	COD, CRD, NRC
Cameroon Red Dwarf	Cameroon		CRD	Thailand	Cameroon Orange Dwarf, NRC
Cameroon Red Dwarf	Cameroon		CRD	Tanzania	
Cameroon Red Dwarf	Cameroon		CRD	Vanuatu	Nain Rouge Cameroun, NRC
Cameroon Red Dwarf	Cameroon		CRD	Côte d'Ivoire	Nain Rouge Cameroun, NRC, COD
Carnicobar Tall	India		CART	India	CAR
Catbalogan Tall	Philippines		CATT	Philippines	
Catigan Green Dwarf	Philippines		CATD	Ghana	
Catigan Green Dwarf	Philippines		CATD	Malaysia	
Catigan Green Dwarf	Philippines		CATD	Tanzania	CAT
Catigan Green Dwarf	Philippines		CATD	Viet Nam	
Catigan Green Dwarf	Philippines		CATD	Viet Nam	
Catigan Green Dwarf	Philippines		CATD	Vanuatu	NVP2
Catigan Green Dwarf	Philippines		CATD	Côte d'Ivoire	Nain Vert Philippines Catigan, NVP2, PGD2
Catigan Green Dwarf	Philippines		CATD	Philippines	Rabara, Bilaka, CAT
Chinashkhania Dwarf	Bangladesh		CHND	Bangladesh	
Chowghat Green Dwarf	India		CGD	Jamaica	
Chowghat Green Dwarf	India	Pattukottai	CGD01	India	Pattukottai Green Dwarf, PGD
Chowghat Green Dwarf	India		CGD	India	
Chowghat Orange Dwarf	India		COD	India	
Chowghat Orange Dwarf	India	Pattukottai	COD01	India	Pattukottai Red Dwarf, PRD
Chowghat Orange Dwarf	India		COD	Jamaica	
Christmas Island Tall	Kiribati		CIT	Solomon Islands	CI
Christmas Island Tall	Solomon Islands		CIT	Malaysia	
Cochin China Tall	Viet Nam		CCNT	India	CC
Coco Bleu Tall	Seychelles		CBLT	India	
Coco Le Haut Tall	Seychelles		CLHT	India	
Coco Le Rein Tall	Seychelles		CLRT	India	
Coco Raisin Tall	Seychelles		CRST	India	
Comoro Moheli Tall	Comoros		CMT	Côte d'Ivoire	Grand Comores Moheli, GCO, COT
Comoros Tall	Madagascar		CMRT	India	
Cotabato Tall	Philippines		COTT	Philippines	Ac 23
Cotabato Tall	Philippines	Barangiran	COTT02	Philippines	
Cotabato Tall	Philippines	Esperanza	COTT03	Philippines	

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Cotabato Tall	Philippines	Ionas	COTT01	Philippines	
Cotabato Tall	Philippines	Surallah	COTT04	Philippines	
Cuban Orange Dwarf	Cuba		CUD	Jamaica	
Culaman Tall	Philippines		CULT	Philippines	CUL
Dalican Tall	Philippines		DALT	Philippines	Ac 26
Dau Tall Binh An	Viet Nam		DAUT04	Viet Nam	
Dau Tall Cha Va	Viet Nam		DAUT03	Viet Nam	
Dau Tall Giong Trom	Viet Nam		DAUT01	Viet Nam	DAUT, Dau Tall
Dau Tall Phu My	Viet Nam		DAUT02	Viet Nam	
De Guzman Macapuno Tall	Philippines		MACT01	Philippines	MAC-DG, MAC, Macapuno Tall
Dupays Tall	Mauritius		DUPT	India	
East African Tall	Kenya	Faza	EAT13	Tanzania	EATFAZ
East African Tall	Kenya	Kenya	EAT32	India	Kenya Tall KYT
East African Tall	Kenya	Lamu	EAT29	Tanzania	EATLAM
East African Tall	Kenya	Msambweni	EAT27	Tanzania	EATBWE
East African Tall	Tanzania	Bagamoyo	EAT18	Tanzania	EATBAG
East African Tall	Tanzania	Boma	EAT25	Tanzania	EATBOM
East African Tall	Tanzania	Boza	EAT14	Tanzania	EATBOZ
East African Tall	Tanzania	Chambezi	EAT02	Tanzania	EATCHA
East African Tall	Tanzania	Gujarat	EAT31	India	Gujarat Zanzibar, GZB
East African Tall	Tanzania	Jambiani	EAT04	Tanzania	EATJAM
East African Tall	Tanzania	Kiembesamaki	EAT05	Tanzania	EATKIE
East African Tall	Tanzania	Kifumangao	EAT03	Tanzania	EATKIF
East African Tall	Tanzania	Kimanga	EAT15	Tanzania	EATKIM
East African Tall	Tanzania	Kinowe	EAT08	Tanzania	EATKIN
East African Tall	Tanzania	Kiombamvua	EAT06	Tanzania	EATKIO
East African Tall	Tanzania	LBS	EAT12	Tanzania	Kange, LBS
East African Tall	Tanzania	Mafia	EAT01	Tanzania	EATMFA
East African Tall	Tanzania	Mazizini	EAT07	Tanzania	EATMAZ
East African Tall	Tanzania	Mchukwi	EAT17	Tanzania	EATMCH
East African Tall	Tanzania	Mikindani	EAT21	Tanzania	EATMIK
East African Tall	Tanzania	Msanga Mkuu	EAT22	Tanzania	EATMSA
East African Tall	Tanzania	Msuka	EAT09	Tanzania	EATMSU
East African Tall	Tanzania	Mtoni	EAT28	Tanzania	EATMTO
East African Tall	Tanzania	Mwambani	EAT23	Tanzania	EATMWA
East African Tall	Tanzania	Ng'apa	EAT20	Tanzania	EATNGP
East African Tall	Tanzania	Pehepehe	EAT11	Tanzania	EATPEH
East African Tall	Tanzania	Singino	EAT19	Tanzania	EATKLW
East African Tall	Tanzania	Songomnara	EAT30	Tanzania	EATSMR
East African Tall	Tanzania	Songosongo	EAT16	Tanzania	EATSON
East African Tall	Tanzania	Tumaini	EAT24	Tanzania	EATTUM
East African Tall	Tanzania	Vuo	EAT26	Tanzania	EATVUO
East African Tall	Tanzania	Yellow	EAT10	Tanzania	EATYEL
East African Tall	Tanzania		EAT	Tanzania	
East African Tall	Tanzania	Zanzibar	EAT33	India	Zanzibar Tall, ZNT

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
East Sepik Tall	Papua New Guinea	Hawain	ELT02	Papua New Guinea	Hawain, ELT2
East Sepik Tall	Papua New Guinea	Marineberg	ELT05	Papua New Guinea	Marineberg, ELT5
East Sepik Tall	Papua New Guinea	Vokio	ELT04	Papua New Guinea	Vokio, ELT4
East Sepik Tall	Papua New Guinea	Yangoru	ELT03	Papua New Guinea	Yangoru, ELT3
Eo Brown Dwarf	Viet Nam		EOD	Viet Nam	
Fiami Red Dwarf	Solomon Islands		FMD	Solomon Islands	FD
Fiji Niu Bulundrau Tall	Fiji		FJBT	India	Niu Bulundrau, NUB, Niu Drau
Fijian Longtongwan Tall	Fiji		FJLT	India	Longtongwan Tall
Fijian Tall	Fiji		FJT	Fiji	
Fijian Tall	Fiji		FJT	India	
Fijian Tall	Fiji		FJT	Jamaica	
Fijian Tall	Fiji		FJT	Malaysia	
Fijian Tall	Fiji	Lakeba	FJT04	Fiji	
Fijian Tall	Fiji	Ringed	FJT03	India	FRN
Fijian Tall	Fiji	Taveuni	FJT01	Fiji	
Fijian Tall	Fiji	Taveuni	FJT01	India	Niu Balavu, TVT
Fijian Tall	Fiji	Tuvumaca	FJT05	Fiji	
Fijian Tall	Fiji	Ura	FJT06	Fiji	
Fijian Tall	Fiji	Wanigata	FJT02	India	Wanigata Tall
Galas Green Dwarf	Philippines		GALD	Philippines	GAL
Gangabhavani Tall	India		GBVT	India	Gangabhavani, GBV
Gangabondam Green Dwarf	India		GGBD	India	Gangabondam, GB
Gangapani Tall	India		GPNT	India	Gangapani, GPN
Gatusan Tall	Philippines		GAT	Philippines	GAT
Gazelle Peninsula Tall	Papua New Guinea		GPT	Côte d'Ivoire	Grand Gazelle, GNG4, NGT4
Gazelle Peninsula Tall	Papua New Guinea		GPT	India	Natava Tall, Nik Alama
Gazelle Peninsula Tall	Papua New Guinea		GPT	Philippines	NGT, GPT
Gazelle Peninsula Tall	Papua New Guinea		GPT	Vanuatu	Grand Gazelle, GGZ, GNG04
Gazelle Peninsula Tall	Papua New Guinea	Natava	GPT03	Papua New Guinea	Natava, GLT3
Gazelle Peninsula Tall	Papua New Guinea	Natava Many fruited	GPT05	Papua New Guinea	Natava "Many fruited", GLT5
Gazelle Peninsula Tall	Papua New Guinea	New Massava	GPT04	Papua New Guinea	New Massava, GLT4
Gazelle Peninsula Tall	Papua New Guinea	Pellavarua	GPT01	Papua New Guinea	Pellavarua, GLT01
Gazelle Peninsula Tall	Papua New Guinea	Raulawat	GPT02	Papua New Guinea	Raulawat, GLT2
Gon Thembili Tall	Sri Lanka		GTBT	India	Gonthembili, GTB
Gon Thembili Tall	Sri Lanka		GTBT	Sri Lanka	Gonthambili, GT
Gotalamo Tall	Indonesia		GOT	Indonesia	DGO, Dalam Gotalamo
Guam Tall	Guam	Type II	GUBT	India	Guam Type II, GUT-2
Guam Tall	Guam	Type III	GUCT	India	Guam Type III, GUT-3
Guam Tall	Malaysia	Type I	GUAT	India	Guam Type I, GUT-1

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Guangdong Tall	China		GDT	China	
Gudanjali Green Dwarf	India		GDD	India	Gudanjali Dwarf
Guelle Rose Tall	Mauritius		GRT	India	
Guiuan Green Dwarf	Philippines		GUID	Philippines	
Guiuan Tall	Philippines		GUIT	Philippines	
Guntung Tall	Indonesia		GGT	Indonesia	DGG, Dalam Guntung
Hainan Tall	China		HAIT	China	
Hazari Tall	India		HZT	India	
Hihisu Tall	Papua New Guinea		HLT	Papua New Guinea	
Igo Bulan Tall	Indonesia		IBT	Indonesia	DIB, Dalam Igo Bulan
Igo-Duku Tall	Indonesia		IDT	Indonesia	DID, Dalam Igo Duku
Ijobalit Tall	Indonesia		IJT	Indonesia	DIJ, Dalam Ijobalit
Ilocos Sur Tall	Philippines		ILOT	Philippines	Ac 21
Ilocos Sur Tall	Philippines	Aloleng	ILOT01	Philippines	
Ilocos Sur Tall	Philippines	Catarman	ILOT02	Philippines	
Ilo-Ilo Tall	Indonesia		IIT	Indonesia	DII, Dalam Ilo-Ilo
Indian East Coast Tall	India		ECT	India	East Coast Tall
Indian West Coast Tall	India		WCT	Jamaica	INDIAN TALL
Indian West Coast Tall	India		WCT	India	West Coast Tall
Indian West Coast Tall	India	Spicata	WCT01	India	Spicata, SPI
Iokea Red Dwarf	Papua New Guinea		IRD	Papua New Guinea	
Iokea Tall	Papua New Guinea		ILT	Papua New Guinea	
Jahaji Tall	India		JAHT	India	Jahaji
Jamaica Tall	Jamaica		JMT	India	
Jamaica Tall	Jamaica		JMT	Jamaica	
Java Tall	Indonesia		JVT	India	
Jepara Tall	Indonesia		JPT	Indonesia	DJP, Dalam Jepara
Jombang Green Dwarf	Indonesia		JGD	Indonesia	GHJ, Genjah Hijau Jombang
Jombang Red Dwarf	Indonesia		JORD	Indonesia	GMJ, Genjah Merah Jombang
Jombang Yellow Dwarf	Indonesia		JYD	Indonesia	GKJ, Genjah Kuning Jombang
Kaithathali Tall	India		KAIT	India	Kaithathali, KAI
Kalasey Tall	Indonesia		KLYT	Indonesia	DKY, Dalam Kalasey
Kamandala Tall	Sri Lanka		KMT	Sri Lanka	Kamandala
Kambaniru Tall	Indonesia		KAMT	Indonesia	KUT, DKU, Dalam Kambaniru
Kapal Brown Dwarf	Indonesia		KABD	Indonesia	
Kapatagan Green Dwarf	Philippines		KAPD	Philippines	KAP
Kappadam Tall	India		KPDT	India	Kappadam, KAP
Kappadam Tall	India		KPDT	Côte d'Ivoire	Grand Kappadam, GND5, NDT5
Karkar Tall	Papua New Guinea		KKT	Indonesia	
Karkar Tall	Papua New Guinea		KKT	India	KAR
Karkar Tall	Papua New Guinea		KKT	Jamaica	
Karkar Tall	Papua New Guinea		KKT	Malaysia	

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Karkar Tall	Papua New Guinea		KKT	Philippines	NGT, KKT
Karkar Tall	Papua New Guinea		KKT	Papua New Guinea	
Karkar Tall	Papua New Guinea		KKT	Tanzania	
Karkar Tall	Papua New Guinea		KKT	Vanuatu	Grand Karkar, GKK, GNG01
Karkar Tall	Papua New Guinea	Guanaga	KKT01	Papua New Guinea	Guanaga
Karkar Tall	Papua New Guinea	Kinim	KKT02	Papua New Guinea	Kinim
Karkar Tall	Papua New Guinea	Ulatava	KKT03	Papua New Guinea	Ulatava
Karkar Tall	Papua New Guinea		KKT	Côte d'Ivoire	Grand Kar-Kar, GNG1, NGT1
Katangawan Tall	Philippines		KGT	Philippines	NGT, KKT, GNG1
Kelambu Buruk Tall	Indonesia		KBT	Indonesia	
Kenthali Orange Dwarf	India		KTOD	India	Kenthali Dwarf, KTD
Kiamba Green Dwarf	Philippines		KIAD	Philippines	KAP
Kinabalan Green Dwarf	Philippines		KIND	Philippines	PGD6, KIN, NVP6
Kinabalan Green Dwarf	Philippines		KIND	Côte d'Ivoire	Nain Vert Philip. Kinabalan, NVP6, PGD6
Kinabuhutan Tall	Indonesia		KNT	Indonesia	DKN, Dalam Kinabuhutan
King Coconut	Sri Lanka		RTB	Jamaica	Rath Thembili, KC
King Coconut	Sri Lanka		RTB	Tanzania	Rath Thembili, KC
King Coconut	Sri Lanka		RTB01	Sri Lanka	Rath Thembili, KC
King Coconut	Sri Lanka	Nawasi Thambili	RTB02	Sri Lanka	KCNT, KCNT
King Coconut	Sri Lanka	Ratharan Thembili	RTB03	Sri Lanka	KCRT, KCRT
King Coconut	Sri Lanka	India	RTB04	India	KCD, Rath Tembili
Kiribati Tall	Kiribati		KIT	Solomon Islands	Gilbertese Tall
Kiwai Tall	Papua New Guinea	Boze	KWT02	Papua New Guinea	Boze
Kiwai Tall	Papua New Guinea	Severimabau	KWT01	Papua New Guinea	Severimabu
Klapawangi Tall	Malaysia		KWGT	India	
Kongthien Yong Tall	Indonesia		KTYT	India	Kongthien Yong, KTY
Kumo-B Tall	Indonesia		KUOT	Indonesia	DKU, Dalam Kumo-B
Kupal Tall	Indonesia		KLT	Indonesia	DKL, Dalam Kupal
La Union Tall	Philippines		LAUT	Philippines	Ac 20
La Union Tall	Philippines	Bolinao	LAUT01	Philippines	
La Union Tall	Philippines	Tall Sablot	LAUT02	Philippines	
La Victoria Dwarf	Philippines		VICD	Philippines	VIQ-g
La Victoria Dwarf	Philippines	Brown	VICD02	Philippines	La Victoria,VIC-b, VIBD
La Victoria Dwarf	Philippines	Green	VICD01	Philippines	La Victoria, VIQ-g
Laccadive Micro Tall	India		LMT	Tanzania	LACM, LACO
Laccadive Micro Tall	India		LMT	Côte d'Ivoire	Grand Laccadive Micro, GND7, Lakshadweep Micro
Laccadive Micro Tall	India		LMT	India	Lakshadweep Micro, LM, LCM
Laccadive Orange Dwarf	India		LCOD	India	Laccadive Dwarf, LD
Laccadive Ordinary Tall	India		LCT	Ghana	Indian Laccadive Tall, LCT

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Laccadive Ordinary Tall	India		LCT	Tanzania	LACO, LACM
Laccadive Ordinary Tall	India		LCT	Côte d'Ivoire	Grand Laccadive Ordinaire, GND8, Lakshadweep Ordinary
Laccadive Ordinary Tall	India		LCT	India	Lakshadweep Ordinary, LO, LCO
Laguna Tall	Philippines		LAGT	India	LAG
Laguna Tall	Philippines		LAGT	Malaysia	
Laguna Tall	Philippines		LAGT	Philippines	LAG
Laoang Tall	Philippines		LAOT	Philippines	
Lato Lato Tall	Philippines		LAT	Philippines	
Leon Tall	Philippines		LEOT	Philippines	Ac 42
Lifou Tall	France New Caledonia		LFT	India	
Loong Tall	Philippines		LONT	Philippines	LON
Lope De Vega Tall	Philippines		LPVT	Philippines	
Lua Tall	Viet Nam		LUAT	Viet Nam	Do (Red)
Lubuk Pakam Tall	Indonesia		LPT	Indonesia	DLP, Dalam Lubuk Pakam
Lupon Tall	Philippines		LUPT	Philippines	LON
Macapuno Tall Coco Gra	Seychelles		MACT03	India	Coco Gra, CGRT
Macapuno Tall Dikiri Poll	Sri Lanka		MACT04	Sri Lanka	Dikiri Poll, DIT
Macapuno Tall Dua Sap	Viet Nam		MACT02	Viet Nam	Sap Dua kem
Madang Brown Dwarf	Papua New Guinea		MBD	Thailand	Papua New Guinea Brown Dwarf
Madang Brown Dwarf	Papua New Guinea		MBD	Tanzania	Papua New Guinea Brown Dwarf, PGBD
Madang Brown Dwarf	Papua New Guinea		MBD	Papua New Guinea	
Madang Brown Dwarf	Papua New Guinea		MBD	Vanuatu	Nain Brun Nouvelle Guinée, NBN
Madang Brown Dwarf	Papua New Guinea		MBD	Côte d'Ivoire	Nain Brun Nouvelle Guinée, NBN, NBD
Magtuod Green Dwarf	Philippines		MAGD	Philippines	MAG
Maitum Tall	Philippines	Spicata	MAIT01	Philippines	Spicata Tall
Maitum Tall Kuyamis	Philippines		MAIT02	Philippines	
Makilala Green Dwarf	Philippines		MAKD	Philippines	MAK
Malayan Green Dwarf	Malaysia		MGD	India	
Malayan Green Dwarf	Malaysia		MGD	Malaysia	
Malayan Green Dwarf	Malaysia		MGD	Solomon Islands	GMD
Malayan Green Dwarf	Malaysia		MGD	Tanzania	
Malayan Green Dwarf	Malaysia	Kulasekharam	MGD02	India	Kulasekharam Green Dwarf, KGD
Malayan Green Dwarf	Malaysia		MGD	Côte d'Ivoire	Nain Vert Malaisie, NVM
Malayan Red Dwarf	Malaysia		MRD	Brazil	Anao Vermelho da Malasia, AVM
Malayan Red Dwarf	Malaysia		MRD	Fiji	
Malayan Red Dwarf	Malaysia		MRD	Ghana	MRD

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Malayan Red Dwarf Malaysia	Malaysia		MRD	Indonesia	MRD, Genjah Merah
Malayan Red Dwarf	Malaysia		MRD	India	Malayan Orange Dwarf, MOD
Malayan Red Dwarf	Malaysia		MRD	Jamaica	
Malayan Red Dwarf	Malaysia		MRD	Malaysia	
Malayan Red Dwarf	Malaysia		MRD	Philippines	OD, MRD, NRM
Malayan Red Dwarf	Malaysia		MRD	Papua New Guinea	
Malayan Red Dwarf	Malaysia		MRD	Solomon Islands	RMD(M)
Malayan Red Dwarf	Malaysia		MRD	Thailand	NRM
Malayan Red Dwarf	Malaysia		MRD	Tanzania	
Malayan Red Dwarf	Malaysia		MRD	Viet Nam	Orange Dwarf
Malayan Red Dwarf	Malaysia		MRD	Vanuatu	Nain Rouge Malais, NRM, Nain Rouge Fiji
Malayan Red Dwarf	Malaysia	Fiji	MRD04	Solomon Islands	RMD(F)
Malayan Red Dwarf	Malaysia	Kira Kira	MRD03	Solomon Islands	Kira Kira Dwarf, KK
Malayan Red Dwarf	Malaysia	Kukum	MRD02	Solomon Islands	Kukum Dwarf, KKKD
Malayan Red Dwarf	Malaysia		MRD	Côte d'Ivoire	Nain Rouge Malaisie, NRM
Malayan Red Dwarf	Malaysia	Kulasekharam	MRD01	India	Kulasekharam Orange Dwarf, KOD
Malayan SS Apricot Tall	Malaysia		SSAT	India	Strait Settlement ApricotSSA
Malayan SS Green Tall	Malaysia		SSGT	India	Strait Settlement Green, SSG
Malayan Tall	Malaysia		MLT	Brazil	Gigante da Malasia GML
Malayan Tall	Malaysia		MLT	Côte d'Ivoire	Grand Malaisie GML
Malayan Tall	Malaysia		MLT	India	
Malayan Tall	Malaysia		MLT	Jamaica	
Malayan Tall	Malaysia		MLT	Malaysia	
Malayan Tall	Malaysia		MLT	Tanzania	
Malayan Tall	Malaysia		MLT	Vanuatu	Grand de Malaisie, GML
Malayan Tall	Malaysia	Bachok	MLT02	Malaysia	
Malayan Tall	Malaysia	Bagan Datoh	MLT03	Malaysia	
Malayan Tall	Malaysia	Balik Pulau	MLT04	Malaysia	
Malayan Tall	Malaysia	Batu Pahat 1	MLT05	Malaysia	
Malayan Tall	Malaysia	Batu Pahat 2	MLT06	Malaysia	
Malayan Tall	Malaysia	East Johore 1	MLT07	Malaysia	
Malayan Tall	Malaysia	East Johore 2	MLT08	Malaysia	
Malayan Tall	Malaysia	Endau	MLT09	Malaysia	
Malayan Tall	Malaysia	FMS	MLT01	Solomon Islands	FSM
Malayan Tall	Malaysia	FMS	MLT01	India	Federated Malayan States, FMS
Malayan Tall	Malaysia	Hilir Perak	MLT10	Malaysia	
Malayan Tall	Malaysia	Kangar	MLT11	Malaysia	
Malayan Tall	Malaysia	Kapar	MLT12	Malaysia	

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Malayan Tall	Malaysia	Kota Bharu	MLT13	Malaysia	
Malayan Tall	Malaysia	Kuala Muda	MLT14	Malaysia	
Malayan Tall	Malaysia	Kuala Selangor	MLT15	Malaysia	
Malayan Tall	Malaysia	Kuantan	MLT16	Malaysia	
Malayan Tall	Malaysia	Langkawi Island	MLT17	Malaysia	
Malayan Tall	Malaysia	Larut Matang	MLT18	Malaysia	
Malayan Tall	Malaysia	Lekir	MLT19	Malaysia	
Malayan Tall	Malaysia	Melaka Tengah	MLT20	Malaysia	
Malayan Tall	Malaysia	Merlimau	MLT21	Malaysia	
Malayan Tall	Malaysia	Morib	MLT22	Malaysia	
Malayan Tall	Malaysia	Muar	MLT23	Malaysia	
Malayan Tall	Malaysia	Pasir Putih	MLT24	Malaysia	
Malayan Tall	Malaysia	Pontian 1	MLT25	Malaysia	
Malayan Tall	Malaysia	Pontian 2	MLT26	Malaysia	
Malayan Tall	Malaysia	Port Dickson	MLT27	Malaysia	
Malayan Tall	Malaysia	Sabak Bernam	MLT28	Malaysia	
Malayan Tall	Malaysia	Seberang Prai	MLT29	Malaysia	
Malayan Tall	Malaysia	Sepang	MLT30	Malaysia	
Malayan Tall	Malaysia	Sungai Besar	MLT31	Malaysia	
Malayan Tall	Malaysia	Teluk Gong	MLT32	Malaysia	
Malayan Tall	Malaysia	Tioman Island	MLT33	Malaysia	
Malayan Tall	Malaysia	Tuba Island	MLT34	Malaysia	
Malayan Tall	Malaysia	Tumpat	MLT35	Malaysia	
Malayan Tall	Malaysia	3 Heads	MLT36	Côte d'Ivoire	Grand Malaisie, GML
Malayan Yellow Dwarf	Malaysia		MYD	Benin	Nain Jaune Malais, NJM
Malayan Yellow Dwarf	Malaysia		MYD	Brazil	Anao Amarelo Da Malasia, AAM
Malayan Yellow Dwarf	Malaysia		MYD	Fiji	
Malayan Yellow Dwarf	Malaysia		MYD	Ghana	MYD
Malayan Yellow Dwarf	Malaysia		MYD	Indonesia	MYD, Genjah Kuning Malaysia
Malayan Yellow Dwarf	Malaysia		MYD	India	
Malayan Yellow Dwarf	Malaysia		MYD	Mexico	Enano Amarillo de Malasia Coco de la India EAM
Malayan Yellow Dwarf	Malaysia		MYD	Malaysia	
Malayan Yellow Dwarf	Malaysia		MYD	Philippines	Yellow Dwarf, MYD, NJM, GYD
Malayan Yellow Dwarf	Malaysia		MYD	Papua New Guinea	
Malayan Yellow Dwarf	Malaysia		MYD	Solomon Islands	YMD
Malayan Yellow Dwarf Malaysia	Malaysia		MYD	Thailand	Genjah Kuning
Malayan Yellow Dwarf	Malaysia		MYD	Tanzania	MYD, MLI
Malayan Yellow Dwarf	Malaysia		MYD	Viet Nam	
Malayan Yellow Dwarf NJM, Nain Jaune Ghana	Malaysia		MYD	Vanuatu	Nain Jaune Malais,
Malayan Yellow Dwarf	Malaysia	Bangladesh	MYD04	Bangladesh	

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Malayan Yellow Dwarf	Malaysia	Ghana	MYD02	Côte d'Ivoire	Nain Jaune Ghana, NJG
Malayan Yellow Dwarf	Malaysia	Ghana	MYD02	Viet Nam	Malayan Yellow Dwarf, MYD
Malayan Yellow Dwarf	Malaysia	Jamaica	MYD03	Jamaica	
Malayan Yellow Dwarf	Malaysia	Kulasekharam	MYD01	India	Kulasekharam Yellow Dwarf, KYD
Malayan Yellow Dwarf	Malaysia		MYD	Côte d'Ivoire	Nain Jaune Malaisie, NJM
Mamuaya Tall	Indonesia		MAMT	Indonesia	
Mangipod Green Dwarf	Philippines		MGPD	Philippines	MÑD, MND
Manus Tall	Papua New Guinea	Baluan	MAT03	Papua New Guinea	Baluan, MLT03
Manus Tall	Papua New Guinea	Lako	MAT02	Papua New Guinea	Lako, MLT02
Manus Tall	Papua New Guinea	Lawes	MAT01	Papua New Guinea	Lawes, MLT01
Mapanget Tall	Indonesia		MPT	Indonesia	DMT, Dalam Mapanget
Mapanget Tall	Indonesia	2	MPT02	Indonesia	DMT, Dalam Mapanget
Mapanget Tall	Indonesia	10	MPT10	Indonesia	DMT, Dalam Mapanget
Mapanget Tall	Indonesia	99	MPT99	Indonesia	DMT, Dalam Mapanget
Maphraeo Thailand Tall	Thailand		MPET	Jamaica	Thailand Tall, THT
Marinsow Tall	Indonesia		MWT	Indonesia	DMW, Dalam Marinsow
Markham Valley Tall	Papua New Guinea		MVT	Indonesia	
Markham Valley Tall	Papua New Guinea		MVT	Jamaica	
Markham Valley Tall	Papua New Guinea		MVT	Malaysia	
Markham Valley Tall	Papua New Guinea		MVT	Philippines	GNT, MVT
Markham Valley Tall	Papua New Guinea		MVT	Papua New Guinea	
Markham Valley Tall	Papua New Guinea		MVT	Solomon Islands	MV
Markham Valley Tall	Papua New Guinea	ILara Village	MVT02	Papua New Guinea	Liara Village
Markham Valley Tall	Papua New Guinea	Markham Farm Pao	MVT01	Papua New Guinea	Markham Farm
Markham Valley Tall	Papua New Guinea		MVT	Côte d'Ivoire	Grand Markham Valley, GNG3, GMV, NGT3
Markham Valley Tall	Papua New Guinea		MVT	India	Markham Valley
Marshall Islands Green Dwarf	Marshall Islands		MIGD	Vanuatu	Nain Vert Kiribati, NVK, MIGD
Mayotte Tall	France Mayotte		MYOT	France Mayotte	
Melongoane Tall	Indonesia		MELT	Indonesia	
Mestiza Tall	Philippines		MEST	Philippines	GNT, MVT, GNG3, GMV
Mexican Atlantic Tall	Mexico	Champoton	MXAT01	Mexico	Alto Atlantico de Mexico
Mexican Atlantic Tall	Mexico	Ciudad del Carmen	MXAT02	Mexico	Alto Atlantico de Mexico
Mexican Atlantic Tall	Mexico	Sabancui	MXAT03	Mexico	Alto Atlantico de Mexico
Mexican Pacific Tall	Mexico	Callejones 1	MXPT08	Mexico	Alto Pacifico de Mexico
Mexican Pacific Tall EAM	Mexico	Callejones 2	MXPT09	Mexico	Alto Pacifico de Mexico,
Mexican Pacific Tall	Mexico	Cihuatlan 1	MXPT13	Mexico	Alto Pacifico de Mexico
Mexican Pacific Tall	Mexico	Cihuatlan 2	MXPT14	Mexico	Alto Pacifico de Mexico
Mexican Pacific Tall	Mexico	Cuyutlan	MXPT11	Mexico	Alto Pacifico de Mexico

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Mexican Pacific Tall	Mexico	El Carizo	MXPT02	Mexico	Alto Pacifico de Mexico
Mexican Pacific Tall	Mexico	El Centinella	MXPT12	Mexico	Alto Pacifico de Mexico
Mexican Pacific Tall	Mexico	El Ticuiz	MXPT07	Mexico	Alto Pacifico de Mexico
Mexican Pacific Tall	Mexico	Lazaro Cardenas 1	MXPT05	Mexico	Alto Pacifico de Mexico
Mexican Pacific Tall	Mexico	Lazaro Cardenas 2	MXPT06	Mexico	Alto Pacifico de Mexico
Mexican Pacific Tall	Mexico	Marquelia	MXPT01	Mexico	Alto Pacifico de Mexico
Mexican Pacific Tall	Mexico	Matanchan	MXPT16	Mexico	Alto Pacifico de Mexico
Mexican Pacific Tall Guerrero 1	Mexico	Nuxco	MXPT03	Mexico	Alto Pacifico de Mexico,
Mexican Pacific Tall	Mexico	San Blas	MXPT15	Mexico	Alto Pacifico de Mexico, ERM
Mexican Pacific Tall	Mexico	Tecoman	MXPT10	Mexico	Alto Pacifico de Mexico, ERM
Mexican Pacific Tall Mexico,EAM	Mexico	Tecpan	MXPT04	Mexico	Alto Pacifico de
Milne Bay Tall	Papua New Guinea	Bubuleta	MBT04	Papua New Guinea	Bubuleta
Milne Bay Tall	Papua New Guinea	Siagara	MBT03	Papua New Guinea	Siagara
Moorea Tall	France French Polynesia	Haapiti	MRT02	India	Moorea Tall II, MRT, Haepiti
Moorea Tall	France French Polynesia	Pao-Pao	MRT01	India	Moorea Tall I, MRT, Pao-Pao
Mozambique Tall	Mozambique		MZT	Côte d'Ivoire	Grand Mozambique, GMZ
Muwa Tall	Papua New Guinea		MUWT	India	Tall Muwa
Nadora Tall	India		NDRT	India	Nadora, NDR
Namatanai Tall	Papua New Guinea	Etalat	NLT04	Papua New Guinea	Etalat
Namatanai Tall	Papua New Guinea	Karu Village	NLT01	Papua New Guinea	Karu Village
Namatanai Tall	Papua New Guinea	Kenapit	NLT02	Papua New Guinea	Kenapit
Namatanai Tall	Papua New Guinea	Tall Sohu	NLT03	Papua New Guinea	Sohu
Namukon Tall	Philippines		NAMT	Philippines	Ac 35
Navassi Tall	India		NVT	India	Navassi
Nawasi Tall	Sri Lanka		NAWT	Sri Lanka	Nawasi
Nawasi Tall Sugar Thailand Tall	Thailand		NAWT01	Thailand	
New Buswang Green Dwarf	Philippines		BUSD	Philippines	BUS
New Caledonia Tall	France New Caledonia		NCT	Vanuatu	Grand Nouvelle Caledonie, GNC, Grand Ouvéa
New Guinea Kavieng Tall	Papua New Guinea		KVT	India	Kavieng Tall
New Guinea Kiriwana Tall	Papua New Guinea		KRT	India	
New Guinea Orange Dwarf	Papua New Guinea		NGOD	India	Nik Kore, NKD
New Guinea Tall	Papua New Guinea		NGAT	India	NGA
Ngilngof Tall	Indonesia		NFT	Indonesia	DNF, Dalam Ngilngof
Nias Green Dwarf	Indonesia		NGD	Indonesia	GHN, Genjah Hijau Nias
Nias Green Dwarf	Indonesia		NGD	Malaysia	GNH
Nias Green Dwarf	Papua New Guinea		NGD	Papua New Guinea	
Nias Red Dwarf	Papua New Guinea		NRD	Papua New Guinea	

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Nias Yellow Dwarf	Indonesia		NYD	Indonesia	GKN, Genjah Kuning Nias
Nias Yellow Dwarf	Papua New Guinea		NYD	Papua New Guinea	
Nicobar Tall	India	Auck Chung	NICT06	India	NAC
Nicobar Tall	India	Campbell Bay	NICT01	India	NCB
Nicobar Tall	India	Katchal	NICT02	India	NKC
Nicobar Tall	India	Kimmai	NICT03	India	NKI
Nicobar Tall	India	Kimos	NICT04	India	NKS
Nicobar Tall	India	Tamaloo	NICT05	India	NTL
Nigerian Green Dwarf	Nigeria		NIGD	India	Nigerian Dwarf, NGD
Nigerian Tall	Nigeria		NIT	India	NGT, Mapio Pong
Nita Tall	Indonesia		NAT	Indonesia	DNA, Dalam Nita
Niu Damu Tall	Fiji		NDMT	Malaysia	
Niu Kafa Tall	Samoa	Samoa	NKFT02	Samoa	Niu 'Afa Tall, NAF
Niu Kafa Tall	Tonga	Tonga	NKFT03	Tonga	Niu Afa
Niu Leka Dwarf	Fiji		NLAD	Fiji	NLD, Niu Le'a
Niu Leka Dwarf	Fiji		NLAD	India	Niu Leka type I, NLA
Niu Leka Dwarf	Fiji		NLAD	Jamaica	
Niu Leka Dwarf	Fiji		NLAD	Malaysia	
Niu Leka Dwarf	Fiji		NLAD	Solomon Islands	NL
Niu Leka Dwarf	Fiji		NLAD	Tonga	
Niu Leka Dwarf	Fiji		NLAD	Tanzania	Niu Leka Green Dwarf, NLGD
Niu Leka Dwarf	Fiji		NLAD	Vanuatu	Nain Niu Leka, NNL, Fiji Dwarf
Niu Leka Dwarf	Fiji	Niu Le'a Ordinary	NLAD01	Samoa	Niu Le'a Dwarf
Niu Leka Dwarf	Fiji	Niu Le'a Small fruited	NLAD02	Samoa	Niu Le'a Dwarf
Niu Leka Dwarf	Fiji		NLAD	Côte d'Ivoire	Nain Niu Leka, NNL, NLD
Niu Matakula	Tonga		NLLT	Tonga	
Niu Taokave	Tonga		NTAT	Tonga	
Niu Vai Tall	Samoa		NVIT	Samoa	
Niu Vai Tall	Tonga		NVIT	Tonga	
Nok Koom Green Dwarf	Thailand		NKMD	Thailand	Mu Si Khieo (Nok Koom)
North Cotabato Tall	Philippines		NOCT	Philippines	Ac 16
North Cotabato Tall	Philippines	Dagupan	NOCT01	Philippines	
North Cotabato Tall	Philippines	Magpet	NOCT03	Philippines	
North Cotabato Tall	Philippines	Taluntalun	NOCT02	Philippines	
Nu Ati Red Dwarf	Samoa		NATD	Samoa	Niu New Guinea
Nu Fella Tall	France New Caledonia		NUFT	India	Nu Fella, NUF
Nu Gili Tall	France New Caledonia		NUGT	India	Nu Gili, NUG
Nu Himi Kupien Tall	France New Caledonia		NHKT	India	Nu Himi Kupien Tall, NHK
Nu Quawen Tall	France New Caledonia		NUQT	India	Nu Quawen, NUQ
Nu Wallis Tall	France New Caledonia		NUWT	India	Nu Wallis, NUW

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Nu Wehnug Tall	France New Caledonia		NWHT	India	Nu Wehnug, NWH
Oenggauk Tall	Indonesia		OKT	Indonesia	DOK, Dalam Oenggauk
Oro Tall	Papua New Guinea	Ajoa	OLT02	Papua New Guinea	Ajoa
Oro Tall	Papua New Guinea	Kikibator	OLT03	Papua New Guinea	Kikibator
Oro Tall	Papua New Guinea	Saiho	OLT01	Papua New Guinea	Saiho
PagandaranTall	Indonesia		PAGT	Indonesia	
Pak Chok Tall	Thailand	Long fruited	PCKT02	Thailand	
Pak Chok Tall	Thailand	Round fruited	PCKT01	Thailand	
Pakistan Tall	Pakistan		PAKT	Pakistan	
Palakahembing Tall	Indonesia		PKHT	Indonesia	
Palapi Tall	Indonesia		PALT	Indonesia	
Palu Tall	Indonesia		PUT	Côte d'Ivoire	Grand Indonésie Palu, GDO3
Palu Tall	Indonesia		PUT	Indonesia	DPU, Dalam Palu
Panama Tall	Panama		PNT	Jamaica	Redondo, San Blas
Panama Tall	Panama	Aguadulce	PNT01	Ghana	PNT01
Panama Tall	Panama	Aguadulce	PNT01	Tanzania	PNT
Panama Tall	Panama	Monagre	PNT02	Ghana	PNT02
Panama Tall	Panama	Monagre	PNT02	Tanzania	PNT
Panama Tall	Panama		PNT	India	
Panama Tall	Panama	Aguadulce	PNT01	Côte d'Ivoire	Grand Panama 1 Aguadulce, GPA1, PAT1
Panama Tall	Panama	Jamaica	PNT03	India	Jamaica Tall San Blas, JSB, Redondo
Panama Tall	Panama	Monagre	PNT02	Côte d'Ivoire	Grand Panama 2 Monagre, GPA2, PAT2
Pandan Tall	Philippines		PADT	Philippines	
Pandu Tall	Indonesia		PDT	Indonesia	DPD, Dalam Pandu
Pangandaran Tall	Indonesia		PRT	Indonesia	
Pangasinan Tall	Philippines		PANT	Philippines	Ac 18
Pangasinan Tall	Philippines	Galarin	PANT03	Philippines	
Pangasinan Tall	Philippines	Payar	PANT02	Philippines	
Pangasinan Tall	Philippines	Santa Lucia	PANT01	Philippines	
Papua New Guinea Red Dwarf	Papua New Guinea	Type 1	PARD01	Papua New Guinea	
Papua New Guinea Red Dwarf	Papua New Guinea	Type 2	PARD02	Papua New Guinea	
Papua New Guinea Yellow Dwarf	Papua New Guinea		PYD	Papua New Guinea	
Paslaten Tall	Indonesia		PSNT	Indonesia	DPN, Dalam Paslaten
Pathiu Green Dwarf	Thailand		PTID	Thailand	Mu Si Khieo, Pathiu
Pemba Green Dwarf	Mauritius		PEGD	India	PGD
Pemba Red Dwarf	Mauritius	Mauritius	PRD03	India	Pemba Orange Dwarf
Pemba Red Dwarf	Tanzania	Tanga	PRD01	Tanzania	Kitamli, PRDTAN
Pemba Red Dwarf	Tanzania	Zanzibar	PRD02	Tanzania	Kitamli, PRDZNZ
Pemba Red Tall	Mauritius		PERT	India	PRT
Pemba Yellow Dwarf	Mauritius		PEYD	India	

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Peru Tall	Peru		PET	Jamaica	
Philippines Dailig Tall	Philippines		PDLT	India	PHG
Philippines Kalambahim Tall	Philippines		PKBT	India	
Philippines Lono Tall	Philippines		PLNT	India	PHL
Philippines Ordinary Tall	Philippines		PHOT	India	Philippines Ordinary
Philippines Palawan Tall	Philippines		PPWT	India	PHP
Philippines Tall Spicata	Philippines		SPIT01	Philippines	SPI01, Spicata Tall
Pikit Tall	Philippines		PIKT	Philippines	Ac 17
Pikit Tall	Philippines	Calawag	PIKT01	Philippines	
Pikit Tall	Philippines	Magpet	PIKT02	Philippines	
Pilipog Green Dwarf	Philippines		PILD	Vanuatu	Nain Vert Pilipog, NVP5
Pilipog Green Dwarf	Philippines	Fiji	PILD02	Fiji	Malayan Green Dwarf
Pilipog Green Dwarf	Philippines		PILD	Côte d'Ivoire	Nain Vert Philippines Pilipog, NVP5, PGD5
Pilipog Green Dwarf	Philippines		PILD	Philippines	PGD, PIL NVP5
Poligolo Tall	Papua New Guinea		PLT	Papua New Guinea	
Pora Pol Tall	Sri Lanka		PPT	Sri Lanka	Pora Pol
Pugo Tall	Philippines		PUGT	Philippines	Ac 37
Pulau Kelapa Tall	Indonesia		PKT	Indonesia	DPK, Dalam Pulau Kelapa
Pungkol Tall	Indonesia		PGLT	Indonesia	DPL, Dalam Pungkol
Rabaul Red Dwarf	Papua New Guinea		RARD	Papua New Guinea	
Raja Brown Dwarf	Indonesia		RBD	Indonesia	Kelapa Raja, GRA, Genjah Raja
Raja Brown Dwarf	Indonesia	Ternate	RBD01	Côte d'Ivoire	Nain Brun Indonésie, NBOIBD
Ran Thembili Tall	Sri Lanka		CRAT	Sri Lanka	Ran Thembili, RT
Rangiroa Red Dwarf	France French Polynesia		RRD	India	Hari Papua Dwarf, HPD
Rangiroa Red Dwarf	France French Polynesia		RRD	Jamaica	
Rangiroa Tall	France French Polynesia		RGT	Jamaica	
Rangiroa Tall	France French Polynesia		RGT	Malaysia	
Rangiroa Tall	France French Polynesia		RGT	Solomon Islands	RAN
Rangiroa Tall	France French Polynesia		RGT	Vanuatu	Grand Polynesie, GPY2
Rangiroa Tall	France French Polynesia	Avatoru	RGT01	India	Rangiroa Avatoru Tall, RAT
Rangiroa Tall	France French Polynesia	Tiputa	RGT02	India	Rangiroa (Tiputa) Tall, RTT
Rangiroa Tall	France French Polynesia		RGT	Côte d'Ivoire	Grand Polynésie Rangiroa, GPY2, PYT2
Rangoon Kobbari Tall	India		RKBT	India	Rangoon Kobbari, RKB
Rarumis Tall	Indonesia		RART	Indonesia	
Rennell Island Tall	Solomon Islands		RIT	Brazil	Gigante de Rennell, GRL,
Rennell Island Tall	Solomon Islands		RIT	Fiji	RLT
Rennell Island Tall	Solomon Islands		RIT	Indonesia	RLT, Dalam Rennell
Rennell Island Tall	Solomon Islands		RIT	India	Rennell Tall, RLT
Rennell Island Tall	Solomon Islands		RIT	Jamaica	

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Rennell Island Tall	Solomon Islands		RIT	Malaysia	
Rennell Island Tall	Solomon Islands		RIT	Philippines	RIT
Rennell Island Tall	Solomon Islands		RIT	Papua New Guinea	RLT
Rennell Island Tall	Solomon Islands		RIT	Solomon Islands	
Rennell Island Tall	Solomon Islands		RIT	Thailand	RLT, Dalam Rennell
Rennell Island Tall	Solomon Islands		RIT	Tanzania	RLT, RLT
Rennell Island Tall	Solomon Islands		RIT	Vanuatu	Grand Rennel, GR
Rennell Island Tall	Solomon Islands		RIT	Samoa	
Rennell Island Tall	Solomon Islands		RIT	Côte d'Ivoire	Grand Rennell, GRL, RLT
Riau Tall	Indonesia		RUT	Indonesia	
Rote Tall	Indonesia		ROTT	Indonesia	
Rotuman Tall	Fiji		RTMT	Brazil	Gigante de rotuma, GRT
Rotuman Tall	Fiji		RTMT	Fiji	ROT
Rotuman Tall	Fiji		RTMT	India	Fidji Rotuma Tall
Rotuman Tall	Fiji		RTMT	Jamaica	
Rotuman Tall	Fiji		RTMT	Malaysia	
Rotuman Tall	Fiji		RTMT	Solomon Islands	ROT
Rotuman Tall	Fiji		RTMT	Tanzania	ROT
Rotuman Tall Fiji Rotuma	Fiji		RTMT	Vanuatu	Grand Rotuma, GRT,
Rotuman Tall	Fiji		RTMT	Côte d'Ivoire	Grand Rotuma, GRT, RTT
Sabah Tall	Malaysia		SBT	Malaysia	Kudat Tall, Kelapa Kudat
Sabah Tall	Malaysia	Sweet Husk	SBT01	Malaysia	
Sagerat Orange Dwarf	Indonesia		SOD	Indonesia	GOS, Genjah Oranye Sagerat
Saint Vincent Tall	Trinidad and Tobago		STVT	India	ST. Vincent, STV
Sakhi Gopal Tall	India	Accession 1	SKGT01	India	Orissa Tall
Sakhi Gopal Tall	India	Accession 2	SKGT02	India	Orissa Tall
Sakhi Gopal Tall	India		SKGT	India	SKG
Salak Green Dwarf	Indonesia		SKD	Indonesia	GSK, Genjah Salak
Salambuyan Tall	Philippines		SALT	Philippines	SAL
Samal Island Tall	Philippines	Banaba	SAIT05	Philippines	
Samal Island Tall	Philippines	Bautod	SAIT04	Philippines	
Samal Island Tall	Philippines	Damulog	SAIT03	Philippines	
Samal Island Tall	Philippines	Gutapol	SAIT02	Philippines	
Samal Island Tall	Philippines	Tambo	SAIT	Philippines	Ac 31
Samal Island Tall	Philippines	Tambo1	SAIT01	Philippines	
Sambava Green Tall	Madagascar		SBGT	India	
Sambava Tall	Madagascar		SMBT	India	SAMT
Samoan Green Dwarf	Samoa		SGD	Samoa	
Samoan Tall	American Samoa		SMOT	India	Tutiala Niu Tall, TLN
Samoan Tall	Samoa		SMOT	Solomon Islands	
Samoan Tall	Samoa		SMOT	Samoa	

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Samoan Tall	Samoa	Alao	SMOT02	India	Tutiala Local Tall
Samoan Tall	Samoa	Samatau	SMOT01	Jamaica	Western Samoa Tall
Samoan Tall	Samoa	Samatau	SMOT01	Samoa	SMT, Samatau
Samoan Tall	Samoa	Spicata	SMOT03	Samoa	Spicata, SPIT
Samoan Yellow Dwarf	Samoa	American Samoa	SYD02	India	Niu Oma Dwarf, NOD
Samoan Yellow Dwarf	Samoa		SYD	Vanuatu	Nain Jaune Apia, NJA, Nain Jaune Samoa
San Isidro Green Dwarf	Philippines		SNID	Philippines	SNI
San Policarpo Tall	Philippines		SPOT	Philippines	
San Ramon Tall	Philippines		SNRT	India	
San Ramon Tall	Philippines		SNRT	Viet Nam	
San Ramon Tall	Philippines		SNRT	Philippines	SNR
San Ramon Tall	Sri Lanka	Clovis	SNRT01	Sri Lanka	SR
Sanchez Mira Tall	Philippines	Agose	SCHT02	Philippines	
Sanchez Mira Tall	Philippines	Centro Dos	SCHT	Philippines	Ac 29
Sanchez Mira Tall	Philippines	Centro Dos1	SCHT01	Philippines	
Santa Cruz Tall	Philippines		SACT	Philippines	
Santa Margarita Green Dwarf	Philippines		SMAD	Philippines	
Santiago Island Tall	Philippines		SANT	Philippines	Ac 19
Santo Nino Green Dwarf	Philippines		SNOD	Philippines	SÑO, SNO
Santongbolan Tall	Indonesia		SNTT	Indonesia	
Sarawak Tall	Indonesia		SKT	Jamaica	
Sarawak Tall	Malaysia		SKT	Malaysia	
Sawarna Tall	Indonesia		SAT	Indonesia	DSA, Dalam Sawarna
Sea Tall	Indonesia		SET	Indonesia	DES, Dalam Sea
Seychelles Tall	Seychelles		SCT	Jamaica	SYC
Seychelles Tall	Seychelles		SCT	India	SYC
Shinta Red Dwarf	Indonesia		SHRD	Indonesia	
Sibuga Tall	Philippines		SIBT	Philippines	
Soasio Red Dwarf	Indonesia		SORD	Indonesia	GMS, Genjah Merah Soasio
Sokong Tall	Indonesia		SOT	Indonesia	DSK, Dalam Sokong
Solo Tall	Indonesia		SOLT	Indonesia	
Solomon Island Tall	Solomon Islands		SIT	Côte d'Ivoire	Grand Salomon, GSN
Solomon Island Tall	Solomon Islands		SIT	India	Solomon Tall
Solomon Island Tall	Solomon Islands		SIT	Jamaica	
Solomon Island Tall	Solomon Islands		SIT	Solomon Islands	Local Tall, LT
Solomon Islands Tall	Solomon Islands	Nendo	SIT01	Vanuatu	Grand Salomon, GSN1
Solomon Islands Tall	Solomon Islands	Reef	SIT02	Vanuatu	Grand Salomon, GSN2
Spicata Red Dwarf	Jamaica		SRD	Jamaica	
Spicata Red Dwarf	Malaysia	Spicata	SRD	Solomon Islands	RMDsp
Spicata Tall	Jamaica		SPIT	Jamaica	
Spring Taluya Tall	Philippines		SPRT	Philippines	Ac 25
Sri Lanka Brown Dwarf	Sri Lanka		SLBD	Sri Lanka	
Sri Lanka Green Dwarf	Sri Lanka		PGD	Ghana	Pumila Green Dwarf
Sri Lanka Green Dwarf	Sri Lanka		PGD	India	Ceylon Green Dwarf, SGD

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Sri Lanka Green Dwarf	Sri Lanka		PGD	Jamaica	Ceylon Green Dwarf, Pumilla Green Dwarf
Sri Lanka Green Dwarf	Sri Lanka		PGD	Philippines	Sri Lanka Green Dwarf, SGD, CGD
Sri Lanka Green Dwarf	Sri Lanka		PGD	Tanzania	Pumilla Green Dwarf, SGD
Sri Lanka Green Dwarf	Sri Lanka		PGD	Sri Lanka	Sri Lanka Green Dwarf, SLGD
Sri Lanka Green Dwarf	Sri Lanka		PGD	VietNam	Pumilla Green Dwarf, PGD
Sri Lanka Green Dwarf	Sri Lanka	Kundasale	PGD02	Sri Lanka	Sri Lanka Green Dwarf, SLGD
Sri Lanka Green Dwarf	Sri Lanka		PGD	Côte d'Ivoire	Nain Vert Sri Lanka, NVS, SGD, Pumilla Green Dwarf
Sri Lanka Mirishena Semi Tall	Sri Lanka		SLM	Sri Lanka	Mirishena
Sri Lanka Red Dwarf	Sri Lanka		SLRD01	India	Ceylon Orange Dwarf, SOD
Sri Lanka Red Dwarf	Sri Lanka		SLRD01	Sri Lanka	Ceylon Red Dwarf, SLRD
Sri Lanka Red Dwarf	Sri Lanka		SLRD01	Viet Nam	SLRD
Sri Lanka Red Dwarf	Sri Lanka	Kundasale	SLRD02	Sri Lanka	Ceylon Red Dwarf, SLRD
Sri Lanka Tall	Sri Lanka		SLT	Jamaica	CRIC60
Sri Lanka Tall	Sri Lanka		SLT	Solomon Islands	Ceylon Tall, C
Sri Lanka Tall	Sri Lanka	Adikarigoda	SLT47	Sri Lanka	Adikarigoda
Sri Lanka Tall	Sri Lanka	Aluthwatta	SLT35	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Ambakelle	SLT02	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Ambakelle	SLT02	Thailand	
Sri Lanka Tall	Sri Lanka	Andigama	SLT28	Sri Lanka	Andigama
Sri Lanka Tall	Sri Lanka	Beliatta	SLT32	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Dadella	SLT42	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Debarayaya	SLT03	Sri Lanka	Debarayaya
Sri Lanka Tall	Sri Lanka	Dehigahalanda	SLT29	Sri Lanka	Dehigahalanda
Sri Lanka Tall	Sri Lanka	Dickwella	SLT30	Sri Lanka	Dickwella
Sri Lanka Tall	Sri Lanka	Galenbin-dunuwewa	SLT39	Sri Lanka	Galenbindunuwewa
Sri Lanka Tall	Sri Lanka	Goluwapokuna	SLT04	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Goyambokka	SLT05	Sri Lanka	Goyambokka
Sri Lanka Tall	Sri Lanka	Haragama	SLT31	Sri Lanka	Haragama
Sri Lanka Tall	Sri Lanka	Heediwatta	SLT46	Sri Lanka	Heediwatta
Sri Lanka Tall	Sri Lanka	Horakelle	SLT06	Sri Lanka	Horakelle
Sri Lanka Tall	Sri Lanka	Iranawila	SLT45	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Kasagala	SLT07	Sri Lanka	Kasagala
Sri Lanka Tall	Sri Lanka	Keenakelle	SLT08	Sri Lanka	Keenakelle
Sri Lanka Tall	Sri Lanka	Kivulakelle	SLT23	Sri Lanka	Kivulakelle
Sri Lanka Tall	Sri Lanka	Madagma	SLT38	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Magama	SLT49	Sri Lanka	Magama

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Sri Lanka Tall	Sri Lanka	Mahakumbukwewa	SLT33	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Maliboda	SLT09	Sri Lanka	Maliboda
Sri Lanka Tall	Sri Lanka	Mangala-Eliya	SLT11	Sri Lanka	Mangala-Eliya
Sri Lanka Tall	Sri Lanka	Marandawila	SLT22	Sri Lanka	Marandawila
Sri Lanka Tall	Sri Lanka	Margaret	SLT12	Sri Lanka	Margaret
Sri Lanka Tall	Sri Lanka	Melsiripura	SLT10	Sri Lanka	Melsiripura
Sri Lanka Tall	Sri Lanka	Millawana	SLT34	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Moorock	SLT13	Sri Lanka	Moorock
Sri Lanka Tall	Sri Lanka	Namalwatta	SLT14	Sri Lanka	Namalwatta
Sri Lanka Tall	Sri Lanka	Palugaswewa	SLT15	Sri Lanka	Palugaswewa
Sri Lanka Tall	Sri Lanka	Pamunugama	SLT44	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Pitiyakanda	SLT16	Sri Lanka	Pitiyakanda
Sri Lanka Tall	Sri Lanka	Raddegoda	SLT40	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Razeena	SLT17	Sri Lanka	Mahena
Sri Lanka Tall	Sri Lanka	Saint Anne's	SLT19	Sri Lanka	Saint Anne's
Sri Lanka Tall	Sri Lanka	Sithrakala	SLT26	Sri Lanka	Sithrakala
Sri Lanka Tall	Sri Lanka	Spicata	SLT18	Sri Lanka	Spicata
Sri Lanka Tall	Sri Lanka	Thammenna	SLT25	Sri Lanka	Thammenna
Sri Lanka Tall	Sri Lanka	Wackwella	SLT41	Sri Lanka	
Sri Lanka Tall	Sri Lanka	Walahapitiya	SLT20	Sri Lanka	Walahapitiya
Sri Lanka Tall	Sri Lanka	Wellawa	SLT21	Sri Lanka	Wellawa
Sri Lanka Tall	Sri Lanka	Wellawa G	SLT36	Sri Lanka	Wellawa
Sri Lanka Tall	Sri Lanka	Wellawaya B	SLT37	Sri Lanka	Wellawaya
Sri Lanka Tall	Sri Lanka	Wilhelmina	SLT24	Sri Lanka	Wilhelmina
Sri Lanka Tall	Sri Lanka	Yatawatta	SLT27	Sri Lanka	Yatawatta
Sri Lanka Tall	Sri Lanka	Yodakandiya	SLT48	Sri Lanka	Yodakandiya
Sri Lanka Tall	Sri Lanka	Zoysawatta	SLT43	Sri Lanka	Zoysawatta
Sri Lanka Tall	Sri Lanka		SLT	India	Ceylon Tall
Sri Lanka Tall	Sri Lanka	Ambakelle	SLT02	Côte d'Ivoire	Grand Sri Lanka Amélioré, GSL
Sri Lanka Yellow Dwarf	Sri Lanka		CYD	India	Ceylon Yellow Dwarf, SYD
Sri Lanka Yellow Dwarf	Sri Lanka		CYD	Jamaica	Ceylon Yellow Dwarf
Sri Lanka Yellow Dwarf	Sri Lanka		CYD	Sri Lanka	Sri Lanka Yellow Dwarf, SLYD
Sri Lanka Yellow Dwarf	Sri Lanka		CYD	Viet Nam	CYD
Sri Lanka Yellow Dwarf	Sri Lanka	Kundasale	CYD02	Sri Lanka	Sri Lanka Yellow Dwarf, SLYD
Sri Tanjung Dwarf	Indonesia		STD	Indonesia	
Standard Kudat Tall	Indonesia		STKT	India	Standard Kudat, SKT
Surinam Brown Dwarf	Suriname		SUBD	India	Surinam Dwarf, SRD
Surinam Tall	Suriname		SUT	India	SRT
Ta Tall	Viet Nam	Ben Luc	TAAT03	Viet Nam	
Ta Tall	Viet Nam	Cat Trinh	TAAT09	Viet Nam	
Ta Tall	Viet Nam	Giong Lon	TAAT11	Viet Nam	
Ta Tall	Viet Nam	Giong Trom	TAAT01	Viet Nam	Dua Ta Ta Tall
Ta Tall	Viet Nam	Ham Tien	TAAT08	Viet Nam	

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Ta Tall	Viet Nam	Phu Huu	TAAT05	Viet Nam	
Ta Tall	Viet Nam	Tam An Dong Nai	TAAT04	Viet Nam	
Ta Tall	Viet Nam	Tam An Vung Tau 1	TAAT06	Viet Nam	
Ta Tall	Viet Nam	Tam An Vung Tau 2	TAAT07	Viet Nam	
Ta Tall	Viet Nam	Tam Quan Nam	TAAT10	Viet Nam	
Ta Tall	Viet Nam	Tan Thoi	TAAT02	Viet Nam	
Tacunan Green Dwarf	Philippines		TACD	Ghana	TACD
Tacunan Green Dwarf	Philippines		TACD	Malaysia	
Tacunan Green Dwarf	Philippines		TACD	Tanzania	TCN
Tacunan Green Dwarf	Philippines		TACD	Vanuatu	Nain Vert Tacunan, NVP3
Tacunan Green Dwarf Tacunan, NVP3, PGD3	Philippines		TACD	Côte d'Ivoire	Nain Vert Philippines
Tacunan Green Dwarf	Philippines		TACD	Philippines	PGD3, TAC, BILAKA
Tagnanan Tall	Philippines		TAGT	Ghana	TAGT
Tagnanan Tall	Philippines		TAGT	Malaysia	
Tagnanan Tall	Philippines		TAGT	Tanzania	TGT
Tagnanan Tall	Philippines		TAGT	Vanuatu	Grand Tagnanan, GTN1
Tagnanan Tall	Philippines		TAGT	Côte d'Ivoire	Grand Tagnanan, GTN, TNT
Tagnanan Tall	Philippines		TAGT	Philippines	TNT, TAG
Tahitian Red Dwarf	France French Polynesia		TRD	Côte d'Ivoire	Nain Rouge Tahiti, NRY, RYT
Tahitian Tall	France French Polynesia		TAT	Brazil	Polynesia Tall 1, Gigante da Polinesia, GPY
Tahitian Tall	France French Polynesia		TAT	Indonesia	Polynesian Tall n°1 (PYT01), PYT, Dalam Polynesia
Tahitian Tall	France French Polynesia		TAT	India	THT
Tahitian Tall	France French Polynesia		TAT	Jamaica	
Tahitian Tall	France French Polynesia		TAT	Malaysia	
Tahitian Tall GPY, PYT	France French Polynesia		TAT	Philippines	Polynesia Tall, PYT
Tahitian Tall	France French Polynesia		TAT	Tanzania	Polynesia Tall, PYT
Tahitian Tall	France French Polynesia		TAT	Côte d'Ivoire	Grand Polynésie Tahiti, GPY1, PYT1
Takome Tall	Indonesia		TKT	Côte d'Ivoire	Grand Indonésie Takome, GDO1, DOT1
Takome Tall	Indonesia		TKT	Indonesia	DTE, Dalam Takome
Talasea Red Tall	Papua New Guinea		TRT	Papua New Guinea	
Talisay Green Dwarf	Philippines		TALD	Philippines	TAL
Talise Tall	Indonesia		TALT	Indonesia	DTS, Dalam Talise
Tam Quan Yellow Dwarf	Viet Nam		TYD	Viet Nam	Dua Nep
Tampakan Tall	Philippines		TPKT	Philippines	TPK
T'boli Tall	Philippines		TBOT	Philippines	TPK
Tebing Tinggi Green Dwarf	Indonesia		TTD	Indonesia	GTT, Genjah Tebing Tinggi

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Tekulai Tall	Indonesia		TEKT	Indonesia	
Tenga Tall	Indonesia		TGT	Côte d'Ivoire	Grand Indonésie Tenga, GDO2, DOT2
Tenga Tall	Indonesia		TGT	Indonesia	DTA, Dalam Tenga
Thailand Brown Dwarf	Thailand		THBD	Thailand	
Thailand Green Dwarf	Thailand		THD	Vanuatu	Nain Vert Thaïlande, NVT
Thailand Green Dwarf	Thailand		THD	Côte d'Ivoire	Nain Vert Thaïlande, NVT, TGD
Thailand Orange Dwarf	Thailand	Chumphon	THOD01	Thailand	Maphrao Fai, FAID, Thai Red Dwarf I
Thailand Orange Dwarf	Thailand	Prachuap	THOD02	Thailand	Thai Red Dwarf II, MSSD, Mu Si Som
Thailand Tall	Thailand		THT	Tanzania	Thailand Tall
Thailand Tall	Thailand	Bang Laung	THT20	Thailand	
Thailand Tall	Thailand	Edible Husk	THT16	Thailand	
Thailand Tall	Thailand	Jehae	THT23	Thailand	
Thailand Tall	Thailand	Kalok	THT08	Thailand	Kalok, KLKT
Thailand Tall	Thailand	Kanchanadit	THT19	Thailand	
Thailand Tall	Thailand	Khlong Ging	THT14	Thailand	
Thailand Tall	Thailand	Klog Yao	THT29	Thailand	
Thailand Tall	Thailand	Ko Samui	THT04	Côte d'Ivoire	Grand Thaïlande Ko Samui, GTH4, THT4
Thailand Tall	Thailand	Ko Samui	THT04	Thailand	
Thailand Tall	Thailand	Kuan Don	THT27	Thailand	
Thailand Tall	Thailand	Laem Ngop	THT10	Thailand	
Thailand Tall	Thailand	Laem Talumpuk	THT26	Thailand	
Thailand Tall	Thailand	Makham Khu	THT22	Thailand	
Thailand Tall	Thailand	Maphrao Klang	THT06	Thailand	Maphrao Klang, KLGT
Thailand Tall	Thailand	Maphrao Yai	THT05	Thailand	Maphrao Yai, YAI
Thailand Tall	Thailand	Na Toey	THT30	Thailand	
Thailand Tall	Thailand	Nakhon si Tham.	THT03	Thailand	Nakhon Si Thammarat Tall
Thailand Tall	Thailand	Nam Sung	THT09	Thailand	
Thailand Tall	Thailand	Namon	THT24	Thailand	
Thailand Tall	Thailand	Nong Song Hong	THT13	Thailand	
Thailand Tall	Thailand	Pa Ngew	THT18	Thailand	
Thailand Tall	Thailand	Pak Nam	THT11	Thailand	
Thailand Tall	Thailand	Pattani	THT21	Thailand	
Thailand Tall	Thailand	Sawi	THT01	Thailand	
Thailand Tall	Thailand	Sawi Yellow	THT15	Thailand	
Thailand Tall	Thailand	Spicata	THT07	Thailand	Maphraeo, SPIT
Thailand Tall	Thailand	Taidaeng	THT28	Thailand	
Thailand Tall	Thailand	Tap Sakae	THT02	Thailand	Tap Sakae Tall
Thailand Tall	Thailand	Thong Badan	THT17	Thailand	
Thailand Tall	Thailand	Wang Chang	THT12	Thailand	
Thailand Tall	Thailand	Wang Yao	THT25	Thailand	

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Thailand Tall	Thailand	Sawi	THT01	Côte d'Ivoire	Grand Thaïlande Sawi, *GTH1
Thailand Yellow Dwarf	Thailand		MSLD	Thailand	Mu Si Luang Nali Ke
Thalai Roi Tall	Thailand		TLRT	Thailand	Thalai Roi Thailand Tall Phuang
Thung Kled Green Dwarf	Thailand		TKD	Thailand	Mu Si Khieo, Thung Kled
Tigbaon Tall	Philippines		TIGT	Philippines	Ac 47
Tinambacan Tall	Philippines		TINT	Philippines	
Tiptur Tall	India		TPT	India	
Togawa Tall	Indonesia		TWT	Indonesia	DOK, Dalam
Tonga Tall	Tonga		TONT	Brazil	Gigante de Tonga, GTG
Tonga Tall	Tonga		TONT	Jamaica	
Tonga Tall	Tonga		TONT	Tonga	
Tonga Tall	Tonga		TONT	Vanuatu	Grand Tonga, GTG
Tonga Tall	Tonga	Alaki	TONT01	India	Niu Taukave Tall, TKV
Tonga Tall	Tonga	Kalanga	TONT02	India	Niu Hako, NUH
Tonga Tall	Tonga	Utongau	TONT06	Tonga	
Tonga Tall	Tonga	Veitongo	TONT03	India	Tonga Niu Ui Tall, NUI
Tonga Tall	Tonga		TONT	Côte d'Ivoire	Grand Tonga, GTG, TGT
Tontalete Tall	Indonesia		TTT	Indonesia	DTT, Dalam Tontalete
Trenggalek Dwarf	Indonesia		TGKD	Indonesia	
Tupi Green Dwarf	Philippines		TUPD	Philippines	TUP
Upi Tall	Philippines		UPIT	Philippines	Ac 40
Vailala Tall	Papua New Guinea	Keakea	VLT02	Papua New Guinea	Keakea
Vailala Tall	Papua New Guinea	Miha Kavava	VLT01	Papua New Guinea	Miha Kavava
Vanikoro Tall	Solomon Islands		VKT	Solomon Islands	
Vanuatu Red Dwarf	Vanuatu		VRD	Vanuatu	Nain Rouge Vanuatu, NRV
Vanuatu Tall	Vanuatu		VTT	Ghana	
Vanuatu Tall	Vanuatu		VTT	Jamaica	New Hebrides Tall, NHT
Vanuatu Tall	Vanuatu		VTT	Philippines	VTT, VTT, GVT
Vanuatu Tall	Vanuatu		VTT	Tanzania	New Hebrid Tall, NHT
Vanuatu Tall	Vanuatu	Avunarara	VTT22	Vanuatu	Grand Vanuatu Avunarara, MLO1, GVT22
Vanuatu Tall	Vanuatu	Banks	VTT10	Vanuatu	Grand Vanuatu Banks, GVT10, Grand Nouvelle-Hébrides-GNH
Vanuatu Tall	Vanuatu	Bay Barrier	VTT13	Vanuatu	Grand Vanuatu Bay Barrier, PEN1, GVT13
Vanuatu Tall	Vanuatu	Bethel	VTT15	Vanuatu	Grand Vanuatu Bethel, AMB1, GVT15
Vanuatu Tall	Vanuatu	Brenwe	VTT11	Vanuatu	Grand Vanuatu Brenwe, MAL1, GVT11

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
Vanuatu Tall	Vanuatu	Bulldoz	VTT05	Vanuatu	**Grand Vanuatu Bulldoz,** GVT05, Grand Nouvelle-Hébrides-GNH
Vanuatu Tall	Vanuatu	Leroux	VTT02	Vanuatu	**Grand Vanuatu Leroux,** GVT02, Grand Nouvelle-Hébrides-GNH
Vanuatu Tall	Vanuatu	Napueiamasan	VTT16	Vanuatu	**Grand Vanuatu** Napueiamasan, TAN1, GVT16
Vanuatu Tall	Vanuatu	Nipeka	VTT17	Vanuatu	**Grand Vanuatu Nipeka,** TAN2, GVT17
Vanuatu Tall	Vanuatu	Pélé	VTT21	Vanuatu	**Grand Vanuatu Pélé,** TON1, GVT21
Vanuatu Tall	Vanuatu	Port-Olry	VTT06	Vanuatu	**Grand Vanuatu Port-**Olry, GVT06, Grand Nouvelle-Hébrides-GNH
Vanuatu Tall	Vanuatu	Sanesup	VTT14	Vanuatu	**Grand Vanuatu** Sanesup, AMB1
Vanuatu Tall	Vanuatu	Surunda	VTT01	Vanuatu	**Grand Vanuatu** Surunda, GVT01, Grand Nouvelle-Hébrides-GNH
Vanuatu Tall	Vanuatu	Tanna1	VTT07	Vanuatu	**Grand Vanuatu Tanna1,** GVT07, Grand Nouvelle-Hébrides-GNH
Vanuatu Tall	Vanuatu	Tanna2	VTT09	Vanuatu	**Grand Vanuatu Tanna2,** GVT09, Grand Nouvelle-Hébrides-GNH
Vanuatu Tall	Vanuatu	Torres	VTT08	Vanuatu	**Grand Vanuatu Torres,** GVT08, Grand Nouvelle-Hébrides-GNH
Vanuatu Tall	Vanuatu	Ukoro	VTT12	Vanuatu	**Grand Vanuatu Ukoro,** SAN1, GVT12
Vanuatu Tall	Vanuatu	Var	VTT19	Vanuatu	**Grand Vanuatu Var,** BAN1, GVT19
Vanuatu Tall	Vanuatu	Walarano	VTT18	Vanuatu	**Grand Vanuatu** Walarano, MAL2, GVT18
Vanuatu Tall	Vanuatu	Waluembue	VTT20	Vanuatu	**Grand Vanuatu** Waluembue, AOB1
Vanuatu Tall	Vanuatu		**VTT**	**Côte d'Ivoire**	**Grand Vanuatu, GVT,** VTT
Vanuatu Tall	Vanuatu		**VTT**	**Brazil**	**Gigante de Vanuatu,** Gigante de Novas Hebridas, GVT, GNH
Venus Tall	Philippines		**VENT**	**Philippines**	**VEN**
Verikobbari Tall	India		**VKBT**	**India**	**WKB**
West African Tall	Benin	Benin	WAT05	Benin	**Grand Ouest Africain,** GOA

International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Country of conservation	Synonyms and other names
West African Tall	Benin	Benin	WAT05	Ghana	**WAT Benin Type, WAT**
West African Tall	Benin	Ouidah	WAT06	Vanuatu	**Grand Ouest Africain** Ouidah, GOA6, Grand Dahomey
West African Tall	Benin	Ouidah	WAT06	Côte d'Ivoire	**Grand Ouest Africain** Ouidah, GOA6
West African Tall	Côte d'Ivoire		**WAT**	**Brazil**	**Gigante do Oeste** Africano, GOA
West African Tall	Côte d'Ivoire		**WAT**	**Indonesia**	**WAT, Dalam Afrika** Barat
West African Tall	Côte d'Ivoire		**WAT**	**Philippines**	**GOA, WAT**
West African Tall	Côte d'Ivoire		**WAT**	**Thailand**	**GOA, Dalam Afrika** Barat
West African Tall	Côte d'Ivoire		**WAT**	**Tanzania**	
West African Tall	Côte d'Ivoire		**WAT**	**Viet Nam**	**Grand Ouest Africain,** GOA
West African Tall	Côte d'Ivoire		**WAT**	**Côte d'Ivoire**	
West African Tall	Côte d'Ivoire		**WAT**	**India**	
West African Tall	Côte d'Ivoire	Akabo	WAT03	Côte d'Ivoire	**Grand Ouest Africain** Akabo, GOA3, WAT3
West African Tall	Côte d'Ivoire	Mensah	WAT04	Côte d'Ivoire	**Grand Ouest Africain** Mensah, GOA4, WAT4
West New Britain Tall	Papua New Guinea	Gaungo	WLT01	Papua New Guinea	**Gaungo**
West New Britain Tall	Papua New Guinea	Naviro	WLT02	Papua New Guinea	**Naviro**
Wulurat Tall	Indonesia		**WTT**	**Indonesia**	**DWT, Dalam Wulurat**
Wusa Tall	Indonesia		**WST**	**Indonesia**	**DWA, Dalam Wusa**
Wutung Tall	Papua New Guinea		**WUNT**	**Papua New Guinea**	
Xiem Green Dwarf	Viet Nam		**XGD**	**Viet Nam**	
Yap Island Tall	Micronesia Federated States of			**YIT**	**Jamaica**
Yunnan Tall	China		**YUT**	**China**	
Zambales Tall	Philippines		**ZABT**	**Philippines**	**Ac 34**
Zambales Tall	Philippines	Buenavista	ZABT02	Philippines	
Zambales Tall	Philippines	Ibaba	ZABT01	Philippines	
Zambales Tall	Philippines	Quintang Island	ZABT03	Philippines	
Zamboanga Tall	Philippines		**ZAMT**	**Philippines**	**ZAM**

1b. List of Coconut germplasm registered in the Coconut Genetic Resources Database ordered by country of origin

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
American Samoa	Samoan Tall		SMOT	India	Tutiala Niu Tall, TLN
Bangladesh	Bangladesh Tall	Agailjhara	BAGT17	Bangladesh	
Bangladesh	Bangladesh Tall	Atkapalia	BAGT27	Bangladesh	
Bangladesh	Bangladesh Tall	Babugonj	BAGT15	Bangladesh	
Bangladesh	Bangladesh Tall	Bagerhat	BAGT39	Bangladesh	
Bangladesh	Bangladesh Tall	Bagharpara	BAGT24	Bangladesh	
Bangladesh	Bangladesh Tall	Bhola	BAGT22	Bangladesh	
Bangladesh	Bangladesh Tall	Bogra	BAGT36	Bangladesh	
Bangladesh	Bangladesh Tall	Buikara	BAGT28	Bangladesh	
Bangladesh	Bangladesh Tall	Chinashukhani	BAGT33	Bangladesh	
Bangladesh	Bangladesh Tall	Gafaragoan	BAGT32	Bangladesh	
Bangladesh	Bangladesh Tall	Hathazari	BAGT07	Bangladesh	
Bangladesh	Bangladesh Tall	Ishurdi	BAGT11	Bangladesh	
Bangladesh	Bangladesh Tall	Jamalpur	BAGT10	Bangladesh	
Bangladesh	Bangladesh Tall	Jhalakathi	BAGT19	Bangladesh	
Bangladesh	Bangladesh Tall	Jhenaidah	BAGT25	Bangladesh	
Bangladesh	Bangladesh Tall	Kalapara	BAGT20	Bangladesh	
Bangladesh	Bangladesh Tall	Kayemkola	BAGT23	Bangladesh	
Bangladesh	Bangladesh Tall	Khagrachari	BAGT14	Bangladesh	
Bangladesh	Bangladesh Tall	Khairtala	BAGT05	Bangladesh	
Bangladesh	Bangladesh Tall	Kisorganj	BAGT37	Bangladesh	
Bangladesh	Bangladesh Tall	Kushtia	BAGT26	Bangladesh	
Bangladesh	Bangladesh Tall	Lebukhali	BAGT21	Bangladesh	
Bangladesh	Bangladesh Tall	Manikgonj	BAGT29	Bangladesh	
Bangladesh	Bangladesh Tall	Muktagacha	BAGT31	Bangladesh	
Bangladesh	Bangladesh Tall	Nator	BAGT35	Bangladesh	
Bangladesh	Bangladesh Tall	Poilanpur	BAGT12	Bangladesh	
Bangladesh	Bangladesh Tall	Puthia	BAGT34	Bangladesh	
Bangladesh	Bangladesh Tall	Ramgorh	BAGT13	Bangladesh	
Bangladesh	Bangladesh Tall	Rathmapur A	BAGT01	Bangladesh	
Bangladesh	Bangladesh Tall	Rathmapur B	BAGT02	Bangladesh	
Bangladesh	Bangladesh Tall	Rathmapur C	BAGT03	Bangladesh	
Bangladesh	Bangladesh Tall	Razbari	BAGT38	Bangladesh	
Bangladesh	Bangladesh Tall	Red Shundhi A	BAGT08	Bangladesh	
Bangladesh	Bangladesh Tall	Red Shundhi B	BAGT09	Bangladesh	
Bangladesh	Bangladesh Tall	Rhaikhali	BAGT06	Bangladesh	
Bangladesh	Bangladesh Tall	Sherpur	BAGT30	Bangladesh	
Bangladesh	Bangladesh Tall	Swarupkathi	BAGT18	Bangladesh	
Bangladesh	Bangladesh Tall	Uzipur	BAGT16	Bangladesh	
Bangladesh	Chinashkhania Dwarf		CHND	Bangladesh	
Benin	West African Tall	Benin	WAT05	Benin	Grand Ouest Africain, GOA

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Benin	West African Tall	Benin	WAT05	Ghana	WAT Benin Type, WAT
Benin	West African Tall	Ouidah	WAT06	Vanuatu	Grand Ouest Africain Ouidah, GOA6, Grand Dahomey
Benin	West African Tall	Ouidah	WAT06	Côte d'Ivoire	Grand Ouest Africain Ouidah, GOA6
Brazil	Brazilian Green Dwarf	Equatorial Guinea	BGD02	Sri Lanka	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazil	Brazilian Green Dwarf	Equatorial Guinea	BGD02	Vanuatu	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazil	Brazilian Green Dwarf	Equatorial Guinea	BGD02	Benin	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazil	Brazilian Green Dwarf	Equatorial Guinea	BGD02	Côte d'Ivoire	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazil	Brazilian Green Dwarf	Equatorial Guinea	BGD02	Ghana	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazil	Brazilian Green Dwarf	Equatorial Guinea	BGD02	Tanzania	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazil	Brazilian Green Dwarf	Equatorial Guinea	BGD02	Viet Nam	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazil	Brazilian Green Dwarf		BGD	Brazil	Anao verde do Brasil, Anao verde de Jiqui, AVEJ
Brazil	Brazilian Green Dwarf	Equatorial Guinea	BGD02	Côte d'Ivoire	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazil	Brazilian Green Dwarf	Equatorial Guinea	BGD02	Philippines	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Brazil	Brazilian Red Dwarf		BRD	Brazil	Anao Vermelho Do Brasil, Anao Vermelho De Gramame, AVG

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Brazil	Brazilian Tall	Baia Formosa	BRT08	Brazil	SJM, Gigante de Sao Jose de Mipibu, GBRRN1
Brazil	Brazilian Tall	Luis Correia	BRT07	Brazil	Gigante do Bras.Praia do Forte, GBRPF
Brazil	Brazilian Tall	Merepe	BRT09	Brazil	SJM, Gigante de Sao Jose de Mipibu, GBRRN1
Brazil	Brazilian Tall	Olho de Cravo	BRT02	Brazil	Merepe, Gigante de Merepe, GBRPE1
Brazil	Brazilian Tall	Pacatuba	BRT10	Brazil	Merepe, Gigante de Merepe, GBRPE1
Brazil	Brazilian Tall	Praia do Forte	BRT01	Brazil	Gigante do Bras.Praia do Forte, GBRPF
Brazil	Brazilian Tall	Santa Rita	BRT05	Brazil	SJM, Gigante de Sao Jose de Mipibu, GBRRN1
Brazil	Brazilian Tall	Santo Inácio	BRT04	Brazil	GBRPF
Brazil	Brazilian Tall	São José do Mipibu	BRT06	Brazil	Merepe, Gigante de Merepe, GBRPE1
Brazil	Brazilian Tall	Senador Georgino Avelino	BRT03	Brazil	SJM, Gigante de Sao Jose de Mipibu, GBRRN1
Brazil	Brazilian Yellow Dwarf		BYD	Brazil	Anao amarelo do brasil, Anao amarelo de gramame, AAG
Cambodia	Cambodia Tall		KAT	Jamaica	CMT
Cambodia	Cambodia Tall	Battambang	KAT09	Côte d'Ivoire	Grand Cambodge Battambang, GCB9, KAT9
Cambodia	Cambodia Tall	Kampot	KAT03	Côte d'Ivoire	Grand Cambodge Kampot, GCB3, KAT3
Cambodia	Cambodia Tall	Kompong Trach	KAT05	Côte d'Ivoire	Grand "Feu" Kompong Trac, GCB5, KAT5
Cambodia	Cambodia Tall	Kopal Tani	KAT04	Côte d'Ivoire	Grand Cambodge "Kopal" Tani, GCB4, KAT4
Cambodia	Cambodia Tall	Ktis Battambang	KAT11	Côte d'Ivoire	Grand Cambodge Ktis Battambang, GCB11, KAT11
Cambodia	Cambodia Tall	Ream	KAT07	Côte d'Ivoire	Grand Cambodge Ream, GCB7
Cambodia	Cambodia Tall	Sre Cham	KAT08	Côte d'Ivoire	Grand Cambodge Sre Cham, GCB8
Cambodia	Cambodia Tall	Tuk Sap	KAT02	Tanzania	GCB2, CBT
Cambodia	Cambodia Tall	Tuk Sap	KAT02	Côte d'Ivoire	Grand Cambodge Tuk Sap, GCB2, KAT2
Cambodia	Cambodia Tall	Koh Rong	KAT10	Côte d'Ivoire	Grand Cambodge Koh Rong, GCB10, KAT10
Cambodia	Cambodian Green Dwarf		KGD	Côte d'Ivoire	Nain Vert Cambodge Kolke, NVC, CGD

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Cameroon	Cameroon Kribi Tall		CKT	Côte d'Ivoire	Grand Cameroun Kribi, GCA
Cameroon	Cameroon Red Dwarf		CRD	Benin	Nain Rouge Cameroun, NRC
Cameroon	Cameroon Red Dwarf		CRD	Brazil	Anao vermelho de camaroes, AVC
Cameroon	Cameroon Red Dwarf		CRD	Ghana	CRD
Cameroon	Cameroon Red Dwarf		CRD	Indonesia	CRD, Genjah Merah Kamerun
Cameroon	Cameroon Red Dwarf		CRD	India	Cameroon Orange Dwarf
Cameroon	Cameroon Red Dwarf		CRD	Sri Lanka	COD
Cameroon	Cameroon Red Dwarf		CRD	Malaysia	
Cameroon	Cameroon Red Dwarf		CRD	Philippines	COD, CRD, NRC
Cameroon	Cameroon Red Dwarf		CRD	Thailand	Cameroon Orange Dwarf, NRC
Cameroon	Cameroon Red Dwarf		CRD	Tanzania	
Cameroon	Cameroon Red Dwarf		CRD	Vanuatu	Nain Rouge Cameroun, NRC
Cameroon	Cameroon Red Dwarf		CRD	Côte d'Ivoire	Nain Rouge Cameroun, NRC, COD
China	Guangdong Tall		GDT	China	
China	Hainan Tall		HAIT	China	
China	Yunnan Tall		YUT	China	
Comoros	Comoro Moheli Tall		CMT	Côte d'Ivoire	Grand Comores Moheli, GCO, COT
Côte d'Ivoire	West African Tall		WAT	Brazil	Gigante do Oeste Africano, GOA
Côte d'Ivoire	West African Tall		WAT	Indonesia	WAT, Dalam Afrika Barat
Côte d'Ivoire	West African Tall		WAT	Philippines	GOA, WAT
Côte d'Ivoire	West African Tall		WAT	Thailand	GOA, Dalam Afrika Barat
Côte d'Ivoire	West African Tall		WAT	Tanzania	
Côte d'Ivoire	West African Tall		WAT	Viet Nam	Grand Ouest Africain, GOA
Côte d'Ivoire	West African Tall		WAT	Côte d'Ivoire	
Côte d'Ivoire	West African Tall		WAT	India	
Côte d'Ivoire	West African Tall	Akabo	WAT03	Côte d'Ivoire	Grand Ouest Africain Akabo, GOA3, WAT3
Côte d'Ivoire	West African Tall	Mensah	WAT04	Côte d'Ivoire	Grand Ouest Africain Mensah, GOA4, WAT4
Cuba	Cuban Orange Dwarf		CUD	Jamaica	
Fiji	Fiji Niu Bulundrau Tall		FJBT	India	Niu Bulundrau, NUB, Niu Drau
Fiji	Fijian Longtongwan Tall		FJLT	India	Longtongwan Tall
Fiji	Fijian Tall		FJT	Fiji	
Fiji	Fijian Tall		FJT	India	
Fiji	Fijian Tall		FJT	Jamaica	

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Fiji	Fijian Tall		FJT	Malaysia	
Fiji	Fijian Tall	Lakeba	FJT04	Fiji	
Fiji	Fijian Tall	Ringed	FJT03	India	FRN
Fiji	Fijian Tall	Taveuni	FJT01	Fiji	
Fiji	Fijian Tall	Taveuni	FJT01	India	Niu Balavu, TVT
Fiji	Fijian Tall	Tuvumaca	FJT05	Fiji	
Fiji	Fijian Tall	Ura	FJT06	Fiji	
Fiji	Fijian Tall	Wanigata	FJT02	India	Wanigata Tall
Fiji	Niu Damu Tall		NDMT	Malaysia	
Fiji	Niu Leka Dwarf		NLAD	Fiji	NLD, Niu Le'a
Fiji	Niu Leka Dwarf		NLAD	India	Niu Leka type I, NLA
Fiji	Niu Leka Dwarf		NLAD	Jamaica	
Fiji	Niu Leka Dwarf		NLAD	Malaysia	
Fiji	Niu Leka Dwarf		NLAD	Solomon Islands	NL
Fiji	Niu Leka Dwarf		NLAD	Tonga	
Fiji	Niu Leka Dwarf		NLAD	Tanzania	Niu Leka Green Dwarf, NLGD
Fiji	Niu Leka Dwarf		NLAD	Vanuatu	Nain Niu Leka, NNL, Fiji Dwarf
Fiji	Niu Leka Dwarf	Niu Le'a Ordinary	NLAD01	Samoa	Niu Le'a Dwarf
Fiji	Niu Leka Dwarf	Niu Le'a Small fruited	NLAD02	Samoa	Niu Le'a Dwarf
Fiji	Niu Leka Dwarf		NLAD	Côte d'Ivoire	Nain Niu Leka, NNL, NLD
Fiji	Rotuman Tall		RTMT	Brazil	Gigante de rotuma, GRT
Fiji	Rotuman Tall		RTMT	Fiji	ROT
Fiji	Rotuman Tall		RTMT	India	Fidji Rotuma Tall
Fiji	Rotuman Tall		RTMT	Jamaica	
Fiji	Rotuman Tall		RTMT	Malaysia	
Fiji	Rotuman Tall		RTMT	Solomon Islands	ROT
Fiji	Rotuman Tall		RTMT	Tanzania	ROT
Fiji	Rotuman Tall		RTMT	Vanuatu	Grand Rotuma, GRT, Fiji Rotuma
Fiji	Rotuman Tall		RTMT	Côte d'Ivoire	Grand Rotuma, GRT, RTT
France French Polynesia	Bora Bora Tall		BBT	India	
France French Polynesia	Moorea Tall	Haapiti	MRT02	India	Moorea Tall II, MRT, Haepiti
France French Polynesia	Moorea Tall	Pao-Pao	MRT01	India	Moorea Tall I, MRT, Pao-Pao
France French Polynesia	Rangiroa Red Dwarf		RRD	India	Hari Papua Dwarf, HPD
France French Polynesia	Rangiroa Red Dwarf		RRD	Jamaica	
France French Polynesia	Rangiroa Tall		RGT	Jamaica	

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
France French Polynesia	Rangiroa Tall		RGT	Malaysia	
France French Polynesia	Rangiroa Tall		RGT	Solomon Islands	RAN
France French Polynesia	Rangiroa Tall		RGT	Vanuatu	Grand Polynesie, GPY2
France French Polynesia	Rangiroa Tall	Avatoru	RGT01	India	Rangiroa Avatoru Tall, RAT
France French Polynesia	Rangiroa Tall	Tiputa	RGT02	India	Rangiroa (Tiputa) Tall, RTT
France French Polynesia	Rangiroa Tall		RGT	Côte d'Ivoire	Grand Polynésie Rangiroa, GPY2, PYT2
France French Polynesia	Tahitian Red Dwarf		TRD	Côte d'Ivoire	Nain Rouge Tahiti, NRY, RYT
France French Polynesia	Tahitian Tall		TAT	Brazil	Polynesia Tall 1, Gigante da Polinesia, GPY
France French Polynesia	Tahitian Tall		TAT	Indonesia	Polynesian Tall n°1 (PYT01), PYT, Dalam Polynesia
France French Polynesia	Tahitian Tall		TAT	India	THT
France French Polynesia	Tahitian Tall		TAT	Jamaica	
France French Polynesia	Tahitian Tall		TAT	Malaysia	
France French Polynesia	Tahitian Tall		TAT	Philippines	Polynesia Tall, PYT GPY, PYT
France French Polynesia	Tahitian Tall		TAT	Tanzania	Polynesia Tall, PYT
France French Polynesia	Tahitian Tall		TAT	Côte d'Ivoire	Grand Polynésie Tahiti, GPY1, PYT1
France Mayotte	Mayotte Tall		MYOT	France Mayotte	
France New Caledonia	Lifou Tall		LFT	India	
France New Caledonia	New Caledonia Tall		NCT	Vanuatu	Grand Nouvelle Caledonie, GNC, Grand Ouvéa
France New Caledonia	Nu Fella Tall		NUFT	India	Nu Fella, NUF
France New Caledonia	Nu Gili Tall		NUGT	India	Nu Gili, NUG
France New Caledonia	Nu Himi Kupien Tall		NHKT	India	Nu Himi Kupien Tall, NHK
France New Caledonia	Nu Quawen Tall		NUQT	India	Nu Quawen, NUQ
France New Caledonia	Nu Wallis Tall		NUWT	India	Nu Wallis, NUW
France New Caledonia	Nu Wehnug Tall		NWHT	India	Nu Wehnug, NWH
Guam	Guam Tall	Type II	GUBT	India	Guam Type II, GUT-2

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Guam	Guam Tall	Type III	GUCT	India	Guam Type III, GUT-3
India	Adirampatanam Tall		ADPT	India	ADP
India	Andaman Giant Tall		AGT	India	Andaman Giant, AG
India	Andaman Giant Tall		AGT	Côte d'Ivoire	Grand des Indes Andaman Géant, GND3, NDT3
India	Andaman Green Dwarf		ANGD	India	
India	Andaman Ordinary Tall		ADOT	Ghana	Indian Andaman Tall
India	Andaman Ordinary Tall		ADOT	India	Andaman Ordinary, AO, ADO
India	Andaman Ordinary Tall		ADOT	Côte d'Ivoire	Grand Indes Andaman Ordinary, GND2, NDT2
India	Andaman Ranguchan Tall		ADRT	India	Andaman Ranguchan, ADR
India	Andaman Yellow Dwarf		ANYD	India	AD
India	Ayiramkachi Tall		AYRT	India	AYK
India	Benaulim Tall		BENT	India	Benawali Green Round, BEN, Pratap
India	Calangute Tall		CALT	India	CAL
India	Carnicobar Tall		CART	India	CAR
India	Chowghat Green Dwarf		CGD	Jamaica	
India	Chowghat Green Dwarf	Pattukottai	CGD01	India	Pattukottai Green Dwarf, PGD
India	Chowghat Green Dwarf		CGD	India	
India	Chowghat Orange Dwarf		COD	India	
India	Chowghat Orange Dwarf	Pattukottai	COD01	India	Pattukottai Red Dwarf, PRD
India	Chowghat Orange Dwarf		COD	Jamaica	
India	Gangabhavani Tall		GBVT	India	Gangabhavani, GBV
India	Gangabondam Green Dwarf		GGBD	India	Gangabondam, GB
India	Gangapani Tall		GPNT	India	Gangapani, GPN
India	Gudanjali Green Dwarf		GDD	India	Gudanjali Dwarf
India	Hazari Tall		HZT	India	
India	Indian East Coast Tall		ECT	India	East Coast Tall
India	Indian West Coast Tall		WCT	Jamaica	INDIAN TALL
India	Indian West Coast Tall		WCT	India	West Coast Tall
India	Indian West Coast Tall	Spicata	WCT01	India	Spicata, SPI
India	Jahaji Tall		JAHT	India	Jahaji
India	Kaithathali Tall		KAIT	India	Kaithathali, KAI

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
India	Kappadam Tall		KPDT	India	Kappadam, KAP
India	Kappadam Tall		KPDT	Côte d'Ivoire	Grand Kappadam, GND5, NDT5
India	Kenthali Orange Dwarf		KTOD	India	Kenthali Dwarf, KTD
India	Laccadive Micro Tall		LMT	Tanzania	LACM, LACO
India	Laccadive Micro Tall		LMT	Côte d'Ivoire	Grand Laccadive Micro, GND7, Lakshadweep Micro
India	Laccadive Micro Tall		LMT	India	Lakshadweep Micro, LM, LCM
India	Laccadive Orange Dwarf		LCOD	India	Laccadive Dwarf, LD
India	Laccadive Ordinary Tall		LCT	Ghana	Indian Laccadive Tall, LCT
India	Laccadive Ordinary Tall		LCT	Tanzania	LACO, LACM
India	Laccadive Ordinary Tall		LCT	Côte d'Ivoire	Grand Laccadive Ordinaire, GND8, Lakshadweep Ordinary
India	Laccadive Ordinary Tall		LCT	India	Lakshadweep Ordinary, LO, LCO
India	Nadora Tall		NDRT	India	Nadora, NDR
India	Navassi Tall		NVT	India	Navassi
India	Nicobar Tall	Auck Chung	NICT06	India	NAC
India	Nicobar Tall	Campbell Bay	NICT01	India	NCB
India	Nicobar Tall	Katchal	NICT02	India	NKC
India	Nicobar Tall	Kimmai	NICT03	India	NKI
India	Nicobar Tall	Kimos	NICT04	India	NKS
India	Nicobar Tall	Tamaloo	NICT05	India	NTL
India	Rangoon Kobbari Tall		RKBT	India	Rangoon Kobbari, RKB
India	Sakhi Gopal Tall	Accession 1	SKGT01	India	Orissa Tall
India	Sakhi Gopal Tall	Accession 2	SKGT02	India	Orissa Tall
India	Sakhi Gopal Tall		SKGT	India	SKG
India	Tiptur Tall		TPT	India	
India	Verikobbari Tall		VKBT	India	WKB
Indonesia	Aertembaga Tall		AET	Indonesia	DAA, Dalam Aertembaga
Indonesia	Babang Tall		BBGT	Indonesia	DBB, Dalam babang
Indonesia	Bali Tall		BAT	Indonesia	DBI, Dalam Bali
Indonesia	Bali Yellow Dwarf		BAYD	Indonesia	GKB, Genjah Kuning Bali
Indonesia	Banyuwangi Tall		BGT	Indonesia	DBG, Dalam Banyuwangi
Indonesia	Beber Tall		BET	Indonesia	DBR, Dalam Beber
Indonesia	Bibinoi Tall		BIBT	Indonesia	DBN, Dalam Bibinoi
Indonesia	Bitunuris Tall		BITT	Indonesia	
Indonesia	Borneo Tall		BONT	India	BRT

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Indonesia	Boyolali Tall		BOYT	Indonesia	
Indonesia	Gotalamo Tall		GOT	Indonesia	DGO, Dalam Gotalamo
Indonesia	Guntung Tall		GGT	Indonesia	DGG, Dalam Guntung
Indonesia	Igo Bulan Tall		IBT	Indonesia	DIB, Dalam Igo Bulan
Indonesia	Igo-Duku Tall		IDT	Indonesia	DID, Dalam Igo Duku
Indonesia	Ijobalit Tall		IJT	Indonesia	DIJ, Dalam Ijobalit
Indonesia	Ilo-Ilo Tall		IIT	Indonesia	DII, Dalam Ilo-Ilo
Indonesia	Java Tall		JVT	India	
Indonesia	Jepara Tall		JPT	Indonesia	DJP, Dalam Jepara
Indonesia	Jombang Green Dwarf		JGD	Indonesia	GHJ, Genjah Hijau Jombang
Indonesia	Jombang Red Dwarf		JORD	Indonesia	GMJ, Genjah Merah Jombang
Indonesia	Jombang Yellow Dwarf		JYD	Indonesia	GKJ, Genjah Kuning Jombang
Indonesia	Kalasey Tall		KLYT	Indonesia	DKY, Dalam Kalasey
Indonesia	Kambaniru Tall		KAMT	Indonesia	KUT!, DKU, Dalam Kambaniru
Indonesia	Kapal Brown Dwarf		KABD	Indonesia	
Indonesia	Kelambu Buruk Tall		KBT	Indonesia	
Indonesia	Kinabuhutan Tall		KNT	Indonesia	DKN, Dalam Kinabuhutan
Indonesia	Kongthien Yong Tall		KTYT	India	Kongthien Yong, KTY
Indonesia	Kumo-B Tall		KUOT	Indonesia	DKU, Dalam Kumo-B
Indonesia	Kupal Tall		KLT	Indonesia	DKL, Dalam Kupal
Indonesia	Lubuk Pakam Tall		LPT	Indonesia	DLP, Dalam Lubuk Pakam
Indonesia	Mamuaya Tall		MAMT	Indonesia	
Indonesia	Mapanget Tall		MPT	Indonesia	DMT, Dalam Mapanget
Indonesia	Mapanget Tall	2	MPT02	Indonesia	DMT, Dalam Mapanget
Indonesia	Mapanget Tall	10	MPT10	Indonesia	DMT, Dalam Mapanget
Indonesia	Mapanget Tall	99	MPT99	Indonesia	DMT, Dalam Mapanget
Indonesia	Marinsow Tall		MWT	Indonesia	DMW, Dalam Marinsow
Indonesia	Melongoane Tall		MELT	Indonesia	
Indonesia	Ngilngof Tall		NFT	Indonesia	DNF, Dalam Ngilngof
Indonesia	Nias Green Dwarf		NGD	Indonesia	GHN, Genjah Hijau Nias
Indonesia	Nias Green Dwarf		NGD	Malaysia	GNH
Indonesia	Nias Yellow Dwarf		NYD	Indonesia	GKN, Genjah Kuning Nias
Indonesia	Nita Tall		NAT	Indonesia	DNA, Dalam Nita
Indonesia	Oenggauk Tall		OKT	Indonesia	DOK, Dalam Oenggauk
Indonesia	PagandaranTall		PAGT	Indonesia	
Indonesia	Palakahembing Tall		PKHT	Indonesia	
Indonesia	Palapi Tall		PALT	Indonesia	

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Indonesia	Palu Tall		PUT	Côte d'Ivoire	Grand Indonésie Palu, GDO3
Indonesia	Palu Tall		PUT	Indonesia	DPU, Dalam Palu
Indonesia	Pandu Tall		PDT	Indonesia	DPD, Dalam Pandu
Indonesia	Pangandaran Tall		PRT	Indonesia	
Indonesia	Paslaten Tall		PSNT	Indonesia	DPN, Dalam Paslaten
Indonesia	Pulau Kelapa Tall		PKT	Indonesia	DPK, Dalam Pulau Kelapa
Indonesia	Pungkol Tall		PGLT	Indonesia	DPL, Dalam Pungkol
Indonesia	Raja Brown Dwarf		RBD	Indonesia	Kelapa Raja, GRA, Genjah Raja
Indonesia	Raja Brown Dwarf	Ternate	RBD01	Côte d'Ivoire	Nain Brun Indonésie, NBOIBD
Indonesia	Rarumis Tall		RART	Indonesia	
Indonesia	Riau Tall		RUT	Indonesia	
Indonesia	Rote Tall		ROTT	Indonesia	
Indonesia	Sagerat Orange Dwarf		SOD	Indonesia	GOS, Genjah Oranye Sagerat
Indonesia	Salak Green Dwarf		SKD	Indonesia	GSK, Genjah Salak
Indonesia	Santongbolan Tall		SNTT	Indonesia	
Indonesia	Sarawak Tall		SKT	Jamaica	
Indonesia	Sawarna Tall		SAT	Indonesia	DSA, Dalam Sawarna
Indonesia	Sea Tall		SET	Indonesia	DES, Dalam Sea
Indonesia	Shinta Red Dwarf		SHRD	Indonesia	
Indonesia	Soasio Red Dwarf		SORD	Indonesia	GMS, Genjah Merah Soasio
Indonesia	Sokong Tall		SOT	Indonesia	DSK, Dalam Sokong
Indonesia	Solo Tall		SOLT	Indonesia	
Indonesia	Sri Tanjung Dwarf		STD	Indonesia	
Indonesia	Standard Kudat Tall		STKT	India	Standard Kudat, SKT
Indonesia	Takome Tall		TKT	Côte d'Ivoire	Grand Indonésie Takome, GDO1, DOT1
Indonesia	Takome Tall		TKT	Indonesia	DTE, Dalam Takome
Indonesia	Talise Tall		TALT	Indonesia	DTS, Dalam Talise
Indonesia	Tebing Tinggi Green Dwarf		TTD	Indonesia	GTT, Genjah Tebing Tinggi
Indonesia	Tekulai Tall		TEKT	Indonesia	
Indonesia	Tenga Tall		TGT	Côte d'Ivoire	Grand Indonésie Tenga, GDO2, DOT2
Indonesia	Tenga Tall		TGT	Indonesia	DTA, Dalam Tenga
Indonesia	Togawa Tall		TWT	Indonesia	DOK, Dalam
Indonesia	Tontalete Tall		TTT	Indonesia	DTT, Dalam Tontalete
Indonesia	Trenggalek Dwarf		TGKD	Indonesia	
Indonesia	Wulurat Tall		WTT	Indonesia	DWT, Dalam Wulurat
Indonesia	Wusa Tall		WST	Indonesia	DWA, Dalam Wusa
Jamaica	Jamaica Tall		JMT	India	
Jamaica	Jamaica Tall		JMT	Jamaica	
Jamaica	Spicata Red Dwarf		SRD	Jamaica	

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Jamaica	Spicata Tall		SPIT	Jamaica	
Kenya	East African Tall	Faza	EAT13	Tanzania	EATFAZ
Kenya	East African Tall	Kenya	EAT32	India	Kenya Tall KYT
Kenya	East African Tall	Lamu	EAT29	Tanzania	EATLAM
Kenya	East African Tall	Msambweni	EAT27	Tanzania	EATBWE
Kiribati	Christmas Island Tall		CIT	Solomon Islands	CI
Kiribati	Kiribati Tall		KIT	Solomon Islands	Gilbertese Tall
Madagascar	Comoros Tall		CMRT	India	
Madagascar	Sambava Green Tall		SBGT	India	
Madagascar	Sambava Tall		SMBT	India	SAMT
Malaysia	Guam Tall	Type I	GUAT	India	Guam Type I, GUT-1
Malaysia	Klapawangi Tall		KWGT	India	
Malaysia	Malayan Green Dwarf		MGD	India	
Malaysia	Malayan Green Dwarf		MGD	Malaysia	
Malaysia	Malayan Green Dwarf		MGD	Solomon Islands	GMD
Malaysia	Malayan Green Dwarf		MGD	Tanzania	
Malaysia	Malayan Green Dwarf	Kulasekharam	MGD02	India	Kulasekharam Green Dwarf, KGD
Malaysia	Malayan Green Dwarf		MGD	Côte d'Ivoire	Nain Vert Malaisie, NVM
Malaysia	Malayan Red Dwarf		MRD	Brazil	Anao Vermelho da Malasia, AVM
Malaysia	Malayan Red Dwarf		MRD	Fiji	
Malaysia	Malayan Red Dwarf		MRD	Ghana	MRD
Malaysia	Malayan Red Dwarf		MRD	Indonesia	MRD, Genjah Merah Malaysia
Malaysia	Malayan Red Dwarf		MRD	India	Malayan Orange Dwarf, MOD
Malaysia	Malayan Red Dwarf		MRD	Jamaica	
Malaysia	Malayan Red Dwarf		MRD	Malaysia	
Malaysia	Malayan Red Dwarf		MRD	Philippines	OD, MRD, NRM
Malaysia	Malayan Red Dwarf		MRD	Papua New Guinea	
Malaysia	Malayan Red Dwarf		MRD	Solomon Islands	RMD(M)
Malaysia	Malayan Red Dwarf		MRD	Thailand	NRM
Malaysia	Malayan Red Dwarf		MRD	Tanzania	
Malaysia	Malayan Red Dwarf		MRD	Viet Nam	Orange Dwarf

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Malaysia NRM, Nain Rouge Fiji	Malayan Red Dwarf		MRD	Vanuatu	Nain Rouge Malais,
Malaysia	Malayan Red Dwarf	Fiji	MRD04	Solomon Islands	RMD(F)
Malaysia	Malayan Red Dwarf	Kira Kira	MRD03	Solomon Islands	Kira Kira Dwarf, KK
Malaysia	Malayan Red Dwarf	Kukum	MRD02	Solomon Islands	Kukum Dwarf, KKKD
Malaysia	Malayan Red Dwarf		MRD	Côte d'Ivoire	Nain Rouge Malaisie, NRM
Malaysia	Malayan Red Dwarf	Kulasekharam	MRD01	India	Kulasekharam Orange Dwarf, KOD
Malaysia	Malayan SS Apricot Tall		SSAT	India	Strait Settlement ApricotSSA
Malaysia	Malayan SS Green Tall		SSGT	India	Strait Settlement Green, SSG
Malaysia	Malayan Tall		MLT	Brazil	Gigante da Malasia GML
Malaysia	Malayan Tall		MLT	Côte d'Ivoire	Grand Malaisie GML
Malaysia	Malayan Tall		MLT	India	
Malaysia	Malayan Tall		MLT	Jamaica	
Malaysia	Malayan Tall		MLT	Malaysia	
Malaysia	Malayan Tall		MLT	Tanzania	
Malaysia	Malayan Tall		MLT	Vanuatu	Grand de Malaisie, GML
Malaysia	Malayan Tall	Bachok	MLT02	Malaysia	
Malaysia	Malayan Tall	Bagan Datoh	MLT03	Malaysia	
Malaysia	Malayan Tall	Balik Pulau	MLT04	Malaysia	
Malaysia	Malayan Tall	Batu Pahat 1	MLT05	Malaysia	
Malaysia	Malayan Tall	Batu Pahat 2	MLT06	Malaysia	
Malaysia	Malayan Tall	East Johore 1	MLT07	Malaysia	
Malaysia	Malayan Tall	East Johore 2	MLT08	Malaysia	
Malaysia	Malayan Tall	Endau	MLT09	Malaysia	
Malaysia	Malayan Tall	FMS	MLT01	Solomon Islands	FSM
Malaysia	Malayan Tall	FMS	MLT01	India	Federated Malayan States, FMS
Malaysia	Malayan Tall	Hilir Perak	MLT10	Malaysia	
Malaysia	Malayan Tall	Kangar	MLT11	Malaysia	
Malaysia	Malayan Tall	Kapar	MLT12	Malaysia	
Malaysia	Malayan Tall	Kota Bharu	MLT13	Malaysia	
Malaysia	Malayan Tall	Kuala Muda	MLT14	Malaysia	
Malaysia	Malayan Tall	Kuala Selangor	MLT15	Malaysia	
Malaysia	Malayan Tall	Kuantan	MLT16	Malaysia	
Malaysia	Malayan Tall	Langkawi Island	MLT17	Malaysia	
Malaysia	Malayan Tall	Larut Matang	MLT18	Malaysia	
Malaysia	Malayan Tall	Lekir	MLT19	Malaysia	
Malaysia	Malayan Tall	Melaka Tengah	MLT20	Malaysia	
Malaysia	Malayan Tall	Merlimau	MLT21	Malaysia	

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Malaysia	Malayan Tall	Morib	MLT22	Malaysia	
Malaysia	Malayan Tall	Muar	MLT23	Malaysia	
Malaysia	Malayan Tall	Pasir Putih	MLT24	Malaysia	
Malaysia	Malayan Tall	Pontian 1	MLT25	Malaysia	
Malaysia	Malayan Tall	Pontian 2	MLT26	Malaysia	
Malaysia	Malayan Tall	Port Dickson	MLT27	Malaysia	
Malaysia	Malayan Tall	Sabak Bernam	MLT28	Malaysia	
Malaysia	Malayan Tall	Seberang Prai	MLT29	Malaysia	
Malaysia	Malayan Tall	Sepang	MLT30	Malaysia	
Malaysia	Malayan Tall	Sungai Besar	MLT31	Malaysia	
Malaysia	Malayan Tall	Teluk Gong	MLT32	Malaysia	
Malaysia	Malayan Tall	Tioman Island	MLT33	Malaysia	
Malaysia	Malayan Tall	Tuba Island	MLT34	Malaysia	
Malaysia	Malayan Tall	Tumpat	MLT35	Malaysia	
Malaysia	Malayan Tall	3 Heads	MLT36	Côte d'Ivoire	Grand Malaisie, GML
Malaysia	Malayan Yellow Dwarf		MYD	Benin	Nain Jaune Malais, NJM
Malaysia	Malayan Yellow Dwarf		MYD	Brazil	Anao Amarelo Da Malasia, AAM
Malaysia	Malayan Yellow Dwarf		MYD	Fiji	
Malaysia	Malayan Yellow Dwarf		MYD	Ghana	MYD
Malaysia	Malayan Yellow Dwarf		MYD	Indonesia	MYD, Genjah Kuning Malaysia
Malaysia	Malayan Yellow Dwarf		MYD	India	
Malaysia	Malayan Yellow Dwarf		MYD	Mexico	Enano Amarillo de Malasia Coco de la India EAM
Malaysia	Malayan Yellow Dwarf		MYD	Malaysia	
Malaysia	Malayan Yellow Dwarf		MYD	Philippines	Yellow Dwarf, MYD, NJM, GYD
Malaysia	Malayan Yellow Dwarf		MYD	Papua New Guinea	
Malaysia	Malayan Yellow Dwarf		MYD	Solomon Islands	YMD
Malaysia	Malayan Yellow Dwarf		MYD	Thailand	Genjah Kuning Malaysia
Malaysia	Malayan Yellow Dwarf		MYD	Tanzania	MYD, MLI
Malaysia	Malayan Yellow Dwarf		MYD	Viet Nam	
Malaysia	Malayan Yellow Dwarf		MYD	Vanuatu	Nain Jaune Malais, NJM, Nain Jaune Ghana
Malaysia	Malayan Yellow Dwarf	Bangladesh	MYD04	Bangladesh	

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Malaysia	Malayan Yellow Dwarf	Ghana	MYD02	Côte d'Ivoire	Nain Jaune Ghana, NJG
Malaysia	Malayan Yellow Dwarf	Ghana	MYD02	Viet Nam	Malayan Yellow Dwarf, MYD
Malaysia	Malayan Yellow Dwarf	Jamaica	MYD03	Jamaica	
Malaysia	Malayan Yellow Dwarf	Kulasekharam	MYD01	India	Kulasekharam Yellow Dwarf, KYD
Malaysia	Malayan Yellow Dwarf		MYD	Côte d'Ivoire	Nain Jaune Malaisie, NJM
Malaysia	Sabah Tall		SBT	Malaysia	Kudat Tall, Kelapa Kudat
Malaysia	Sabah Tall	Sweet Husk	SBT01	Malaysia	
Malaysia	Sarawak Tall		SKT	Malaysia	
Malaysia	Spicata Red Dwarf	Spicata	SRD	Solomon Islands	RMDsp
Marshall Islands	Marshall Islands Green Dwarf		MIGD	Vanuatu	Nain Vert Kiribati, NVK, MIGD
Mauritius	Dupays Tall		DUPT	India	
Mauritius	Guelle Rose Tall		GRT	India	
Mauritius	Pemba Green Dwarf		PEGD	India	PGD
Mauritius	Pemba Red Dwarf	Mauritius	PRD03	India	Pemba Orange Dwarf
Mauritius	Pemba Red Tall		PERT	India	PRT
Mauritius	Pemba Yellow Dwarf		PEYD	India	
Mexico	Mexican Atlantic Tall	Champoton	MXAT01	Mexico	Alto Atlantico de Mexico
Mexico	Mexican Atlantic Tall	Ciudad del Carmen	MXAT02	Mexico	Alto Atlantico de Mexico
Mexico	Mexican Atlantic Tall	Sabancui	MXAT03	Mexico	Alto Atlantico de Mexico
Mexico	Mexican Pacific Tall	Callejones 1	MXPT08	Mexico	Alto Pacifico de Mexico
Mexico EAM	Mexican Pacific Tall	Callejones 2	MXPT09	Mexico	Alto Pacifico de Mexico,
Mexico	Mexican Pacific Tall	Cihuatlan 1	MXPT13	Mexico	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Cihuatlan 2	MXPT14	Mexico	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Cuyutlan	MXPT11	Mexico	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	El Carizo	MXPT02	Mexico	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	El Centinella	MXPT12	Mexico	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	El Ticuiz	MXPT07	Mexico	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Lazaro Cardenas 1	MXPT05	Mexico	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Lazaro Cardenas 2	MXPT06	Mexico	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Marquelia	MXPT01	Mexico	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Matanchan	MXPT16	Mexico	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Nuxco	MXPT03	Mexico	Alto Pacifico de Mexico, Guerrero 1
Mexico	Mexican Pacific Tall	San Blas	MXPT15	Mexico	Alto Pacifico de Mexico, ERM
Mexico	Mexican Pacific Tall	Tecoman	MXPT10	Mexico	Alto Pacifico de Mexico, ERM
Mexico	Mexican Pacific Tall	Tecpan	MXPT04	Mexico	Alto Pacifico de

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
					Mexico,EAM
Micronesia Federated States of	Yap Island Tall		YIT	Jamaica	
Mozambique GMZ	Mozambique Tall		MZT	Côte d'Ivoire	Grand Mozambique,
Nigeria	Nigerian Green Dwarf		NIGD	India	Nigerian Dwarf, NGD
Nigeria	Nigerian Tall		NIT	India	NGT, Mapio Pong
Pakistan	Pakistan Tall		PAKT	Pakistan	
Panama	Panama Tall		PNT	Jamaica	Redondo, San Blas
Panama	Panama Tall	Aguadulce	PNT01	Ghana	PNT01
Panama	Panama Tall	Aguadulce	PNT01	Tanzania	PNT
Panama	Panama Tall	Monagre	PNT02	Ghana	PNT02
Panama	Panama Tall	Monagre	PNT02	Tanzania	PNT
Panama	Panama Tall		PNT	India	
Panama	Panama Tall	Aguadulce	PNT01	Côte d'Ivoire	Grand Panama 1 Aguadulce, GPA1, PAT1
Panama	Panama Tall	Jamaica	PNT03	India	Jamaica Tall San Blas, JSB, Redondo
Panama	Panama Tall	Monagre	PNT02	Côte d'Ivoire	Grand Panama 2 Monagre, GPA2, PAT2
Papua New Guinea	Baibara Tall		BBR	Papua New Guinea	BBT
Papua New Guinea	Bougainville Tall		BOT	Jamaica	BLT
Papua New Guinea	East Sepik Tall	Hawain	ELT02	Papua New Guinea	Hawain, ELT2
Papua New Guinea	East Sepik Tall	Marineberg	ELT05	Papua New Guinea	Marineberg, ELT5
Papua New Guinea	East Sepik Tall	Vokio	ELT04	Papua New Guinea	Vokio, ELT4
Papua New Guinea	East Sepik Tall	Yangoru	ELT03	Papua New Guinea	Yangoru, ELT3
Papua New Guinea	Gazelle Peninsula Tall		GPT	Côte d'Ivoire	Grand Gazelle, GNG4, NGT4
Papua New Guinea	Gazelle Peninsula Tall		GPT	India	Natava Tall, Nik Alama
Papua New Guinea	Gazelle Peninsula Tall		GPT	Philippines	NGT, GPT
Papua New Guinea	Gazelle Peninsula Tall		GPT	Vanuatu	Grand Gazelle, GGZ, GNG04
Papua New Guinea	Gazelle Peninsula Tall	Natava	GPT03	Papua New Guinea	Natava, GLT3
Papua New Guinea	Gazelle Peninsula Tall	Natava Many fruited	GPT05	Papua New Guinea	Natava "Many fruited", GLT5
Papua New Guinea	Gazelle Peninsula Tall	New Massava	GPT04	Papua New Guinea	New Massava, GLT4
Papua New Guinea	Gazelle Peninsula Tall	Pellavarua	GPT01	Papua New Guinea	Pellavarua, GLT01
Papua New Guinea	Gazelle Peninsula Tall	Raulawat	GPT02	Papua New Guinea	Raulawat, GLT2
Papua New Guinea	Hihisu Tall		HLT	Papua New Guinea	
Papua New Guinea	Iokea Red Dwarf		IRD	Papua New Guinea	
Papua New Guinea	Iokea Tall		ILT	Papua New Guinea	

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Papua New Guinea	Karkar Tall		KKT	Indonesia	
Papua New Guinea	Karkar Tall		KKT	India	KAR
Papua New Guinea	Karkar Tall		KKT	Jamaica	
Papua New Guinea	Karkar Tall		KKT	Malaysia	
Papua New Guinea	Karkar Tall		KKT	Philippines	NGT, KKT
Papua New Guinea	Karkar Tall		KKT	Papua New Guinea	
Papua New Guinea	Karkar Tall		KKT	Tanzania	
Papua New Guinea	Karkar Tall		KKT	Vanuatu	Grand Karkar, GKK, GNG01
Papua New Guinea	Karkar Tall	Guanaga	KKT01	Papua New Guinea	Guanaga
Papua New Guinea	Karkar Tall	Kinim	KKT02	Papua New Guinea	Kinim
Papua New Guinea	Karkar Tall	Ulatava	KKT03	Papua New Guinea	Ulatava
Papua New Guinea	Karkar Tall		KKT	Côte d'Ivoire	Grand Kar-Kar, GNG1, NGT1
Papua New Guinea	Kiwai Tall	Boze	KWT02	Papua New Guinea	Boze
Papua New Guinea	Kiwai Tall	Severimabau	KWT01	Papua New Guinea	Severimabu
Papua New Guinea	Madang Brown Dwarf		MBD	Thailand	Papua New Guinea Brown Dwarf
Papua New Guinea	Madang Brown Dwarf		MBD	Tanzania	Papua New Guinea Brown Dwarf, PGBD
Papua New Guinea	Madang Brown Dwarf		MBD	Papua New Guinea	
Papua New Guinea	Madang Brown Dwarf		MBD	Vanuatu	Nain Brun Nouvelle Guinée, NBN
Papua New Guinea	Madang Brown Dwarf		MBD	Côte d'Ivoire	Nain Brun Nouvelle Guinée, NBN, NBD
Papua New Guinea	Manus Tall	Baluan	MAT03	Papua New Guinea	Baluan, MLT03
Papua New Guinea	Manus Tall	Lako	MAT02	Papua New Guinea	Lako, MLT02
Papua New Guinea	Manus Tall	Lawes	MAT01	Papua New Guinea	Lawes, MLT01
Papua New Guinea	Markham Valley Tall		MVT	Indonesia	
Papua New Guinea	Markham Valley Tall		MVT	Jamaica	
Papua New Guinea	Markham Valley Tall		MVT	Malaysia	
Papua New Guinea	Markham Valley Tall		MVT	Philippines	GNT, MVT
Papua New Guinea	Markham Valley Tall		MVT	Papua New Guinea	
Papua New Guinea	Markham Valley Tall		MVT	Solomon Islands	MV
Papua New Guinea	Markham Valley Tall	ILara Village	MVT02	Papua New Guinea	Liara Village
Papua New Guinea	Markham Valley Tall	Markham Farm Pao	MVT01	Papua New Guinea	Markham Farm
Papua New Guinea	Markham Valley Tall		MVT	Côte d'Ivoire	Grand Markham Valley, GNG3, GMV, NGT3
Papua New Guinea	Markham Valley Tall		MVT	India	Markham Valley
Papua New Guinea	Milne Bay Tall	Bubuleta	MBT04	Papua New Guinea	Bubuleta
Papua New Guinea	Milne Bay Tall	Siagara	MBT03	Papua New Guinea	Siagara
Papua New Guinea	Muwa Tall		MUWT	India	Tall Muwa
Papua New Guinea	Namatanai Tall	Etalat	NLT04	Papua New Guinea	Etalat
Papua New Guinea	Namatanai Tall	Karu Village	NLT01	Papua New Guinea	Karu Village
Papua New Guinea	Namatanai Tall	Kenapit	NLT02	Papua New Guinea	Kenapit
Papua New Guinea	Namatanai Tall	Tall Sohu	NLT03	Papua New Guinea	Sohu

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Papua New Guinea	New Guinea Kavieng Tall		KVT	India	Kavieng Tall
Papua New Guinea	New Guinea Kiriwana Tall		KRT	India	
Papua New Guinea	New Guinea Orange Dwarf		NGOD	India	Nik Kore, NKD
Papua New Guinea	New Guinea Tall		NGAT	India	NGA
Papua New Guinea	Nias Green Dwarf		NGD	Papua New Guinea	
Papua New Guinea	Nias Red Dwarf		NRD	Papua New Guinea	
Papua New Guinea	Nias Yellow Dwarf		NYD	Papua New Guinea	
Papua New Guinea	Oro Tall	Ajoa	OLT02	Papua New Guinea	Ajoa
Papua New Guinea	Oro Tall	Kikibator	OLT03	Papua New Guinea	Kikibator
Papua New Guinea	Oro Tall	Saiho	OLT01	Papua New Guinea	Saiho
Papua New Guinea	Papua New Guinea Red Dwarf	Type 1	PARD01	Papua New Guinea	
Papua New Guinea	Papua New Guinea Red Dwarf	Type 2	PARD02	Papua New Guinea	
Papua New Guinea	Papua New Guinea Yellow Dwarf		PYD	Papua New Guinea	
Papua New Guinea	Poligolo Tall		PLT	Papua New Guinea	
Papua New Guinea	Rabaul Red Dwarf		RARD	Papua New Guinea	
Papua New Guinea	Talasea Red Tall		TRT	Papua New Guinea	
Papua New Guinea	Vailala Tall	Keakea	VLT02	Papua New Guinea	Keakea
Papua New Guinea	Vailala Tall	Miha Kavava	VLT01	Papua New Guinea	Miha Kavava
Papua New Guinea	West New Britain Tall	Gaungo	WLT01	Papua New Guinea	Gaungo
Papua New Guinea	West New Britain Tall	Naviro	WLT02	Papua New Guinea	Naviro
Papua New Guinea	Wutung Tall		WUNT	Papua New Guinea	
Peru	Peru Tall		PET	Jamaica	
Philippines	Agta Tall		AGAT	Philippines	
Philippines	Aguinaldo Tall		AGDT	Philippines	AGD
Philippines	Aklan Tall	Matabana	AKT03	Philippines	
Philippines	Aklan Tall	Pinamuc-an	AKT02	Philippines	
Philippines	Aklan Tall	San Fernando	AKT01	Philippines	
Philippines	Anda Tall		ANDT	Philippines	Ac 46
Philippines	Anda Tall	Binuling	ANDT02	Philippines	
Philippines	Anda Tall	Tondol	ANDT01	Philippines	
Philippines	Antique Tall		ANTT	Philippines	Ac 44
Philippines	Antique Tall	Batuan	ANTT02	Philippines	
Philippines	Antique Tall	Tabayon	ANTT03	Philippines	
Philippines	Antique Tall	Mapatag	ANTT01	Philippines	
Philippines	Bago-Oshiro Tall		BAOT	VietNam	Hijo Tall
Philippines	Bago-Oshiro Tall		BAOT	Philippines	BAO
Philippines	Baguer Green Dwarf		BAGD	Philippines	BAG
Philippines	Ballesteros Tall	Cagayan	BALT01	Philippines	
Philippines	Ballesteros Tall	Tarraq	BALT02	Philippines	

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Philippines	Ballesteros Tall		BALT	Philippines	Ac 27
Philippines	Banga Green Dwarf		BAND	Philippines	Bañga, BAN
Philippines	Bani Tall		BANT	Philippines	Ac 36
Philippines	Banigan Tall		BNGT	Philippines	BNG
Philippines	Basey Tall		BAST	Philippines	
Philippines	Bataan Tall		BAAT	Philippines	Ac 33
Philippines	Bataan Tall	Kitaotao	BAAT03	Philippines	
Philippines	Bataan Tall	Mianay	BAAT02	Philippines	
Philippines	Bataan Tall	Tenejero	BAAT01	Philippines	
Philippines	Bato Bato Tall		BATT	Philippines	BAT
Philippines	Baybay Tall		BAYT	Vanuatu	Grand Bay-Bay, GPH4, PHT4
Philippines	Baybay Tall		BAYT	Côte d'Ivoire	Grand Bay-Bay, GPH4, PHT4
Philippines	Baybay Tall		BAYT	Philippines	Grand Bay-Bay, GPH4, PHT4
Philippines	Borongan Tall		BORT	Philippines	
Philippines	Botolan Tall		BOTT	Philippines	Ac 30
Philippines	Bukidnon Tall		BUKT	Philippines	Ac 32
Philippines	Bukidnon Tall	Damulog	BUKT04	Philippines	
Philippines	Bukidnon Tall	Gutapol	BUKT03	Philippines	
Philippines	Bukidnon Tall	Tambo	BUKT02	Philippines	
Philippines	Bukidnon Tall	Alfonso	BUKT01	Philippines	
Philippines	Cagayan Tall		CAGT	Philippines	Ac 28
Philippines	Cagayan Tall	Bannag	CAGT03	Philippines	
Philippines	Cagayan Tall	Leron	CAGT04	Philippines	
Philippines	Cagayan Tall	Sanchez Mira	CAGT02	Philippines	
Philippines	Cagayan Tall	Saud	CAGT01	Philippines	
Philippines	Catbalogan Tall		CATT	Philippines	
Philippines	Catigan Green Dwarf		CATD	Ghana	
Philippines	Catigan Green Dwarf		CATD	Malaysia	
Philippines	Catigan Green Dwarf		CATD	Tanzania	CAT
Philippines	Catigan Green Dwarf		CATD	Viet Nam	
Philippines	Catigan Green Dwarf		CATD	Viet Nam	
Philippines	Catigan Green Dwarf		CATD	Vanuatu	NVP2
Philippines	Catigan Green Dwarf		CATD	Côte d'Ivoire	Nain Vert Philippines Catigan, NVP2, PGD2
Philippines	Catigan Green Dwarf		CATD	Philippines	Rabara, Bilaka, CAT
Philippines	Cotabato Tall		COTT	Philippines	Ac 23
Philippines	Cotabato Tall	Barangiran	COTT02	Philippines	
Philippines	Cotabato Tall	Esperanza	COTT03	Philippines	
Philippines	Cotabato Tall	Ionas	COTT01	Philippines	
Philippines	Cotabato Tall	Surallah	COTT04	Philippines	
Philippines	Culaman Tall		CULT	Philippines	CUL
Philippines	Dalican Tall		DALT	Philippines	Ac 26

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Philippines	De Guzman Macapuno Tall			MACT01	Philippines MAC-DG, MAC, Macapuno Tall
Philippines	Galas Green Dwarf		GALD	Philippines	GAL
Philippines	Gatusan Tall		GAT	Philippines	GAT
Philippines	Guiuan Green Dwarf		GUID	Philippines	
Philippines	Guiuan Tall		GUIT	Philippines	
Philippines	Ilocos Sur Tall		ILOT	Philippines	Ac 21
Philippines	Ilocos Sur Tall	Aloleng	ILOT01	Philippines	
Philippines	Ilocos Sur Tall	Catarman	ILOT02	Philippines	
Philippines	Kapatagan Green Dwarf		KAPD	Philippines	KAP
Philippines	Katangawan Tall		KGT	Philippines	NGT, KKT, GNG1
Philippines	Kiamba Green Dwarf		KIAD	Philippines	KAP
Philippines	Kinabalan Green Dwarf		KIND	Philippines	PGD6, KIN, NVP6
Philippines	Kinabalan Green Dwarf		KIND	Côte d'Ivoire	Nain Vert Philip. Kinabalan, NVP6, PGD6
Philippines	La Union Tall		LAUT	Philippines	Ac 20
Philippines	La Union Tall	Bolinao	LAUT01	Philippines	
Philippines	La Union Tall	Tall Sablot	LAUT02	Philippines	
Philippines	La Victoria Dwarf		VICD	Philippines	VIQ-g
Philippines	La Victoria Dwarf	Brown	VICD02	Philippines	La Victoria,VIC-b, VIBD
Philippines	La Victoria Dwarf	Green	VICD01	Philippines	La Victoria, VIQ-g
Philippines	Laguna Tall		LAGT	India	LAG
Philippines	Laguna Tall		LAGT	Malaysia	
Philippines	Laguna Tall		LAGT	Philippines	LAG
Philippines	Laoang Tall		LAOT	Philippines	
Philippines	Lato Lato Tall		LAT	Philippines	
Philippines	Leon Tall		LEOT	Philippines	Ac 42
Philippines	Loong Tall		LONT	Philippines	LON
Philippines	Lope De Vega Tall		LPVT	Philippines	
Philippines	Lupon Tall		LUPT	Philippines	LON
Philippines	Magtuod Green Dwarf		MAGD	Philippines	MAG
Philippines	Maitum Tall	Spicata	MAIT01	Philippines	Spicata Tall
Philippines	Maitum Tall Kuyamis		MAIT02	Philippines	
Philippines	Makilala Green Dwarf		MAKD	Philippines	MAK
Philippines	Mangipod Green Dwarf		MGPD	Philippines	MÑD, MND
Philippines	Mestiza Tall		MEST	Philippines	GNT, MVT, GNG3, GMV
Philippines	Namukon Tall		NAMT	Philippines	Ac 35
Philippines	New Buswang Green Dwarf			BUSD	Philippines BUS
Philippines	North Cotabato Tall		NOCT	Philippines	Ac 16
Philippines	North Cotabato Tall	Dagupan	NOCT01	Philippines	
Philippines	North Cotabato Tall	Magpet	NOCT03	Philippines	
Philippines	North Cotabato Tall	Taluntalun	NOCT02	Philippines	
Philippines	Pandan Tall		PADT	Philippines	
Philippines	Pangasinan Tall		PANT	Philippines	Ac 18

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Philippines	Pangasinan Tall	Galarin	PANT03	Philippines	
Philippines	Pangasinan Tall	Payar	PANT02	Philippines	
Philippines	Pangasinan Tall	Santa Lucia	PANT01	Philippines	
Philippines	Philippines Dailig Tall		PDLT	India	PHG
Philippines	Philippines Kalambahim Tall			PKBT	India
Philippines	Philippines Lono Tall		PLNT	India	PHL
Philippines	Philippines Ordinary Tall		PHOT	India	Philippines Ordinary
Philippines	Philippines Palawan Tall		PPWT	India	PHP
Philippines	Philippines Tall Spicata		SPIT01	Philippines	SPI01, Spicata Tall
Philippines	Pikit Tall		PIKT	Philippines	Ac 17
Philippines	Pikit Tall	Calawag	PIKT01	Philippines	
Philippines	Pikit Tall	Magpet	PIKT02	Philippines	
Philippines	Pilipog Green Dwarf		PILD	Vanuatu	Nain Vert Pilipog, NVP5
Philippines	Pilipog Green Dwarf	Fiji	PILD02	Fiji	Malayan Green Dwarf
Philippines	Pilipog Green Dwarf		PILD	Côte d'Ivoire	Nain Vert Philippines Pilipog, NVP5, PGD5
Philippines	Pilipog Green Dwarf		PILD	Philippines	PGD, PIL NVP5
Philippines	Pugo Tall		PUGT	Philippines	Ac 37
Philippines	Salambuyan Tall		SALT	Philippines	SAL
Philippines	Samal Island Tall	Banaba	SAIT05	Philippines	
Philippines	Samal Island Tall	Bautod	SAIT04	Philippines	
Philippines	Samal Island Tall	Damulog	SAIT03	Philippines	
Philippines	Samal Island Tall	Gutapol	SAIT02	Philippines	
Philippines	Samal Island Tall	Tambo	SAIT	Philippines	Ac 31
Philippines	Samal Island Tall	Tambo1	SAIT01	Philippines	
Philippines	San Isidro Green Dwarf		SNID	Philippines	SNI
Philippines	San Policarpo Tall		SPOT	Philippines	
Philippines	San Ramon Tall		SNRT	India	
Philippines	San Ramon Tall		SNRT	Viet Nam	
Philippines	San Ramon Tall		SNRT	Philippines	SNR
Philippines	Sanchez Mira Tall	Agose	SCHT02	Philippines	
Philippines	Sanchez Mira Tall	Centro Dos	SCHT	Philippines	Ac 29
Philippines	Sanchez Mira Tall	Centro Dos1	SCHT01	Philippines	
Philippines	Santa Cruz Tall		SACT	Philippines	
Philippines	Santa Margarita Green Dwarf		SMAD	Philippines	
Philippines	Santiago Island Tall		SANT	Philippines	Ac 19
Philippines	Santo Nino Green Dwarf		SNOD	Philippines	SÑO, SNO
Philippines	Sibuga Tall		SIBT	Philippines	
Philippines	Spring Taluya Tall		SPRT	Philippines	Ac 25
Philippines	Tacunan Green Dwarf		TACD	Ghana	TACD
Philippines	Tacunan Green Dwarf		TACD	Malaysia	
Philippines	Tacunan Green Dwarf		TACD	Tanzania	TCN
Philippines	Tacunan Green Dwarf		TACD	Vanuatu	Nain Vert Tacunan, NVP3

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Philippines	Tacunan Green Dwarf		TACD	Côte d'Ivoire	Nain Vert Philippines Tacunan, NVP3, PGD3
Philippines	Tacunan Green Dwarf		TACD	Philippines	PGD3, TAC, BILAKA
Philippines	Tagnanan Tall		TAGT	Ghana	TAGT
Philippines	Tagnanan Tall		TAGT	Malaysia	
Philippines	Tagnanan Tall		TAGT	Tanzania	TGT
Philippines	Tagnanan Tall		TAGT	Vanuatu	Grand Tagnanan, GTN1
Philippines	Tagnanan Tall		TAGT	Côte d'Ivoire	Grand Tagnanan, GTN, TNT
Philippines	Tagnanan Tall		TAGT	Philippines	TNT, TAG
Philippines	Talisay Green Dwarf		TALD	Philippines	TAL
Philippines	Tampakan Tall		TPKT	Philippines	TPK
Philippines	T'boli Tall		TBOT	Philippines	TPK
Philippines	Tigbaon Tall		TIGT	Philippines	Ac 47
Philippines	Tinambacan Tall		TINT	Philippines	
Philippines	Tupi Green Dwarf		TUPD	Philippines	TUP
Philippines	Upi Tall		UPIT	Philippines	Ac 40
Philippines	Venus Tall		VENT	Philippines	VEN
Philippines	Zambales Tall		ZABT	Philippines	Ac 34
Philippines	Zambales Tall	Buenavista	ZABT02	Philippines	
Philippines	Zambales Tall	Ibaba	ZABT01	Philippines	
Philippines	Zambales Tall	Quintang Island	ZABT03	Philippines	
Philippines	Zamboanga Tall		ZAMT	Philippines	ZAM
Samoa	Niu Kafa Tall	Samoa	NKFT02	Samoa	Niu 'Afa Tall, NAF
Samoa	Niu Vai Tall		NVIT	Samoa	
Samoa	Nu Ati Red Dwarf		NATD	Samoa	Niu New Guinea
Samoa	Samoan Green Dwarf		SGD	Samoa	
Samoa	Samoan Tall		SMOT	Solomon Islands	S
Samoa	Samoan Tall		SMOT	Samoa	
Samoa	Samoan Tall	Alao	SMOT02	India	Tutiala Local Tall
Samoa	Samoan Tall	Samatau	SMOT01	Jamaica	Western Samoa Tall
Samoa	Samoan Tall	Samatau	SMOT01	Samoa	SMT, Samatau
Samoa	Samoan Tall	Spicata	SMOT03	Samoa	Spicata, SPIT
Samoa	Samoan Yellow Dwarf	American Samoa	SYD02	India	Niu Oma Dwarf, NOD
Samoa	Samoan Yellow Dwarf		SYD	Vanuatu	Nain Jaune Apia, NJA, Nain Jaune Samoa
Seychelles	Coco Bleu Tall		CBLT	India	
Seychelles	Coco Le Haut Tall		CLHT	India	
Seychelles	Coco Le Rein Tall		CLRT	India	
Seychelles	Coco Raisin Tall		CRST	India	
Seychelles	Macapuno Tall Coco Gra		MACT03	India	Coco Gra, CGRT
Seychelles	Seychelles Tall		SCT	Jamaica	SYC
Seychelles	Seychelles Tall		SCT	India	SYC
Solomon Islands	Bellona Tall		BLT	Solomon Islands	B

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Solomon Islands	British Solomon Island Tall		BSIT	India	British Solomon Island, BSI
Solomon Islands	Christmas Island Tall		CIT	Malaysia	
Solomon Islands	Fiami Red Dwarf		FMD	Solomon Islands	FD
Solomon Islands	Rennell Island Tall		RIT	Brazil	Gigante de Rennell, GRL,
Solomon Islands	Rennell Island Tall		RIT	Fiji	RLT
Solomon Islands	Rennell Island Tall		RIT	Indonesia	RLT, Dalam Rennell
Solomon Islands	Rennell Island Tall		RIT	India	Rennell Tall, RLT
Solomon Islands	Rennell Island Tall		RIT	Jamaica	
Solomon Islands	Rennell Island Tall		RIT	Malaysia	
Solomon Islands	Rennell Island Tall		RIT	Philippines	RIT, RIT
Solomon Islands	Rennell Island Tall		RIT	Papua New Guinea	RLT
Solomon Islands	Rennell Island Tall		RIT	Solomon Islands	
Solomon Islands	Rennell Island Tall		RIT	Thailand	RLT, Dalam Rennell
Solomon Islands	Rennell Island Tall		RIT	Tanzania	RLT, RLT
Solomon Islands	Rennell Island Tall		RIT	Vanuatu	Grand Rennel, GR
Solomon Islands	Rennell Island Tall		RIT	Samoa	
Solomon Islands	Rennell Island Tall		RIT	Côte d'Ivoire	Grand Rennell, GRL, RLT
Solomon Islands	Solomon Island Tall		SIT	Côte d'Ivoire	Grand Salomon, GSN
Solomon Islands	Solomon Island Tall		SIT	India	Solomon Tall
Solomon Islands	Solomon Island Tall		SIT	Jamaica	
Solomon Islands	Solomon Island Tall		SIT	Solomon Islands	Local Tall, LT
Solomon Islands	Solomon Islands Tall	Nendo	SIT01	Vanuatu	Grand Salomon, GSN1
Solomon Islands	Solomon Islands Tall	Reef	SIT02	Vanuatu	Grand Salomon, GSN2
Solomon Islands	Vanikoro Tall		VKT	Solomon Islands	
Sri Lanka	Bodiri Tall		BDRT	Sri Lanka	Maphrao Phuang Bodiri
Sri Lanka	Gon Thembili Tall		GTBT	India	Gonthembili, GTB
Sri Lanka	Gon Thembili Tall		GTBT	Sri Lanka	Gonthambili, GT
Sri Lanka	Kamandala Tall		KMT	Sri Lanka	Kamandala
Sri Lanka	King Coconut		RTB	Jamaica	Rath Thembili, KC
Sri Lanka	King Coconut		RTB	Tanzania	Rath Thembili, KC
Sri Lanka	King Coconut		RTB01	Sri Lanka	Rath Thembili, KC
Sri Lanka	King Coconut	Nawasi Thambili	RTB02	Sri Lanka	KCNT, KCNT
Sri Lanka	King Coconut	Ratharan Thembili	RTB03	Sri Lanka	KCRT, KCRT
Sri Lanka	King Coconut	India	RTB04	India	KCD, Rath Tembili
Sri Lanka	Macapuno Tall I Dikiri Pol		MACT04	Sri Lanka	Dikiri Poll, DIT
Sri Lanka	Nawasi Tall		NAWT	Sri Lanka	Nawasi
Sri Lanka	Pora Pol Tall		PPT	Sri Lanka	Pora Pol
Sri Lanka	Ran Thembili Tall		CRAT	Sri Lanka	Ran Thembili, RT
Sri Lanka	San Ramon Tall	Clovis	SNRT01	Sri Lanka	SR, SR
Sri Lanka	Sri Lanka Brown Dwarf		SLBD	Sri Lanka	
Sri Lanka	Sri Lanka Green Dwarf		PGD	Ghana	Pumila Green Dwarf

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Sri Lanka	Sri Lanka Green Dwarf		PGD	India	Ceylon Green Dwarf, SGD
Sri Lanka	Sri Lanka Green Dwarf		PGD	Jamaica	Ceylon Green Dwarf, Pumilla Green Dwarf
Sri Lanka	Sri Lanka Green Dwarf		PGD	Philippines	Sri Lanka Green Dwarf, SGD, CGD
Sri Lanka	Sri Lanka Green Dwarf		PGD	Tanzania	Pumilla Green Dwarf, SGD
Sri Lanka	Sri Lanka Green Dwarf		PGD	Sri Lanka	Sri Lanka Green Dwarf, SLGD
Sri Lanka	Sri Lanka Green Dwarf		PGD	VietNam	Pumilla Green Dwarf, PGD
Sri Lanka SLGD	Sri Lanka Green Dwarf	Kundasale	PGD02	Sri Lanka	Sri Lanka Green Dwarf,
Sri Lanka	Sri Lanka Green Dwarf		PGD	Côte d'Ivoire	Nain Vert Sri Lanka, NVS, SGD!, Pumilla Green Dwarf
Sri Lanka	Sri Lanka Mirishena Semi Tall		SLM	Sri Lanka	Mirishena
Sri Lanka SOD	Sri Lanka Red Dwarf		SLRD01	India	Ceylon Orange Dwarf,
Sri Lanka	Sri Lanka Red Dwarf		SLRD01	Sri Lanka	Ceylon Red Dwarf, SLRD
Sri Lanka	Sri Lanka Red Dwarf		SLRD01	Viet Nam	SLRD
Sri Lanka	Sri Lanka Red Dwarf	Kundasale	SLRD02	Sri Lanka	Ceylon Red Dwarf, SLRD
Sri Lanka	Sri Lanka Tall		SLT	Jamaica	CRIC60
Sri Lanka	Sri Lanka Tall		SLT	Solomon Islands	Ceylon Tall, C
Sri Lanka	Sri Lanka Tall	Adikarigoda	SLT47	Sri Lanka	Adikarigoda
Sri Lanka	Sri Lanka Tall	Aluthwatta	SLT35	Sri Lanka	
Sri Lanka	Sri Lanka Tall	Ambakelle	SLT02	Sri Lanka	
Sri Lanka	Sri Lanka Tall	Ambakelle	SLT02	Thailand	
Sri Lanka	Sri Lanka Tall	Andigama	SLT28	Sri Lanka	Andigama
Sri Lanka	Sri Lanka Tall	Beliatta	SLT32	Sri Lanka	
Sri Lanka	Sri Lanka Tall	Dadella	SLT42	Sri Lanka	
Sri Lanka	Sri Lanka Tall	Debarayaya	SLT03	Sri Lanka	Debarayaya
Sri Lanka	Sri Lanka Tall	Dehigahalanda	SLT29	Sri Lanka	Dehigahalanda
Sri Lanka	Sri Lanka Tall	Dickwella	SLT30	Sri Lanka	Dickwella
Sri Lanka	Sri Lanka Tall	Galenbindunuwewa	SLT39	Sri Lanka	Galenbindunuwewa
Sri Lanka	Sri Lanka Tall	Goluwapokuna	SLT04	Sri Lanka	
Sri Lanka	Sri Lanka Tall	Goyambokka	SLT05	Sri Lanka	Goyambokka
Sri Lanka	Sri Lanka Tall	Haragama	SLT31	Sri Lanka	Haragama
Sri Lanka	Sri Lanka Tall	Heediwatta	SLT46	Sri Lanka	Heediwatta
Sri Lanka	Sri Lanka Tall	Horakelle	SLT06	Sri Lanka	Horakelle
Sri Lanka	Sri Lanka Tall	Iranawila	SLT45	Sri Lanka	
Sri Lanka	Sri Lanka Tall	Kasagala	SLT07	Sri Lanka	Kasagala
Sri Lanka	Sri Lanka Tall	Keenakelle	SLT08	Sri Lanka	Keenakelle
Sri Lanka	Sri Lanka Tall	Kivulakelle	SLT23	Sri Lanka	Kivulakelle
Sri Lanka	Sri Lanka Tall	Madagma	SLT38	Sri Lanka	

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Sri Lanka	Sri Lanka Tall	Magama	SLT49	Sri Lanka	Magama
Sri Lanka	Sri Lanka Tall	Mahakumbukwewa	SLT33	Sri Lanka	
Sri Lanka	Sri Lanka Tall	Maliboda	SLT09	Sri Lanka	Maliboda
Sri Lanka	Sri Lanka Tall	Mangala-Eliya	SLT11	Sri Lanka	Mangala-Eliya
Sri Lanka	Sri Lanka Tall	Marandawila	SLT22	Sri Lanka	Marandawila
Sri Lanka	Sri Lanka Tall	Margaret	SLT12	Sri Lanka	Margaret
Sri Lanka	Sri Lanka Tall	Melsiripura	SLT10	Sri Lanka	Melsiripura
Sri Lanka	Sri Lanka Tall	Millawana	SLT34	Sri Lanka	
Sri Lanka	Sri Lanka Tall	Moorock	SLT13	Sri Lanka	Moorock
Sri Lanka	Sri Lanka Tall	Namalwatta	SLT14	Sri Lanka	Namalwatta
Sri Lanka	Sri Lanka Tall	Palugaswewa	SLT15	Sri Lanka	Palugaswewa
Sri Lanka	Sri Lanka Tall	Pamunugama	SLT44	Sri Lanka	
Sri Lanka	Sri Lanka Tall	Pitiyakanda	SLT16	Sri Lanka	Pitiyakanda
Sri Lanka	Sri Lanka Tall	Raddegoda	SLT40	Sri Lanka	
Sri Lanka	Sri Lanka Tall	Razeena	SLT17	Sri Lanka	Mahena
Sri Lanka	Sri Lanka Tall	Saint Anne's	SLT19	Sri Lanka	Saint Anne's
Sri Lanka	Sri Lanka Tall	Sithrakala	SLT26	Sri Lanka	Sithrakala
Sri Lanka	Sri Lanka Tall	Spicata	SLT18	Sri Lanka	Spicata
Sri Lanka	Sri Lanka Tall	Thammenna	SLT25	Sri Lanka	Thammenna
Sri Lanka	Sri Lanka Tall	Wackwella	SLT41	Sri Lanka	
Sri Lanka	Sri Lanka Tall	Walahapitiya	SLT20	Sri Lanka	Walahapitiya
Sri Lanka	Sri Lanka Tall	Wellawa	SLT21	Sri Lanka	Wellawa
Sri Lanka	Sri Lanka Tall	Wellawa G	SLT36	Sri Lanka	Wellawa
Sri Lanka	Sri Lanka Tall	Wellawaya B	SLT37	Sri Lanka	Wellawaya
Sri Lanka	Sri Lanka Tall	Wilhelmina	SLT24	Sri Lanka	Wilhelmina
Sri Lanka	Sri Lanka Tall	Yatawatta	SLT27	Sri Lanka	Yatawatta
Sri Lanka	Sri Lanka Tall	Yodakandiya	SLT48	Sri Lanka	Yodakandiya
Sri Lanka	Sri Lanka Tall	Zoysawatta	SLT43	Sri Lanka	Zoysawatta
Sri Lanka	Sri Lanka Tall		SLT	India	Ceylon Tall
Sri Lanka	Sri Lanka Tall	Ambakelle	SLT02	Côte d'Ivoire	Grand Sri Lanka Amélioré, GSL
Sri Lanka	Sri Lanka Yellow Dwarf		CYD	India	Ceylon Yellow Dwarf, SYD
Sri Lanka	Sri Lanka Yellow Dwarf		CYD	Jamaica	Ceylon Yellow Dwarf
Sri Lanka	Sri Lanka Yellow Dwarf		CYD	Sri Lanka	Sri Lanka Yellow Dwarf, SLYD
Sri Lanka	Sri Lanka Yellow Dwarf		CYD	Viet Nam	CYD
Sri Lanka	Sri Lanka Yellow Dwarf	Kundasale	CYD02	Sri Lanka	Sri Lanka Yellow Dwarf, SLYD
Suriname	Surinam Brown Dwarf		SUBD	India	Surinam Dwarf, SRD
Suriname	Surinam Tall		SUT	India	SRT
Tanzania	East African Tall	Bagamoyo	EAT18	Tanzania	EATBAG
Tanzania	East African Tall	Boma	EAT25	Tanzania	EATBOM
Tanzania	East African Tall	Boza	EAT14	Tanzania	EATBOZ

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Tanzania	East African Tall	Chambezi	EAT02	Tanzania	EATCHA
Tanzania	East African Tall	Gujarat	EAT31	India	Gujarat Zanzibar, GZB
Tanzania	East African Tall	Jambiani	EAT04	Tanzania	EATJAM
Tanzania	East African Tall	Kiembesamaki	EAT05	Tanzania	EATKIE
Tanzania	East African Tall	Kifumangao	EAT03	Tanzania	EATKIF
Tanzania	East African Tall	Kimanga	EAT15	Tanzania	EATKIM
Tanzania	East African Tall	Kinowe	EAT08	Tanzania	EATKIN
Tanzania	East African Tall	Kiombamvua	EAT06	Tanzania	EATKIO
Tanzania	East African Tall	LBS	EAT12	Tanzania	Kange, LBS
Tanzania	East African Tall	Mafia	EAT01	Tanzania	EATMFA
Tanzania	East African Tall	Mazizini	EAT07	Tanzania	EATMAZ
Tanzania	East African Tall	Mchukwi	EAT17	Tanzania	EATMCH
Tanzania	East African Tall	Mikindani	EAT21	Tanzania	EATMIK
Tanzania	East African Tall	Msanga Mkuu	EAT22	Tanzania	EATMSA
Tanzania	East African Tall	Msuka	EAT09	Tanzania	EATMSU
Tanzania	East African Tall	Mtoni	EAT28	Tanzania	EATMTO
Tanzania	East African Tall	Mwambani	EAT23	Tanzania	EATMWA
Tanzania	East African Tall	Ng'apa	EAT20	Tanzania	EATNGP
Tanzania	East African Tall	Pehepehe	EAT11	Tanzania	EATPEH
Tanzania	East African Tall	Singino	EAT19	Tanzania	EATKLW
Tanzania	East African Tall	Songomnara	EAT30	Tanzania	EATSMR
Tanzania	East African Tall	Songosongo	EAT16	Tanzania	EATSON
Tanzania	East African Tall	Tumaini	EAT24	Tanzania	EATTUM
Tanzania	East African Tall	Vuo	EAT26	Tanzania	EATVUO
Tanzania	East African Tall	Yellow	EAT10	Tanzania	EATYEL
Tanzania	East African Tall		EAT	Tanzania	
Tanzania	East African Tall	Zanzibar	EAT33	India	Zanzibar Tall, ZNT
Tanzania	Pemba Red Dwarf	Tanga	PRD01	Tanzania	Kitamli, PRDTAN
Tanzania	Pemba Red Dwarf	Zanzibar	PRD02	Tanzania	Kitamli, PRDZNZ
Thailand	Aromatic Green Dwarf		AROD	Côte d'Ivoire	Nain Vert Aromatic, NVP7, PGD7
Thailand	Aromatic Green Dwarf		AROD	Malaysia	Kelapa Pandan, Kelapa Wangi
Thailand	Aromatic Green Dwarf		AROD	Thailand	Nam Hom, ARO
Thailand	Aromatic Green Dwarf		AROD	Vanuatu	Nain Vert Aromatique, NVP7
Thailand	Aromatic Green Dwarf		AROD	Philippines	PGD7, ARO, Pandan
Thailand	Maphraeo Thailand Tall		MPET	Jamaica	Thailand Tall, THT
Thailand	Nawasi Tall Sugar Thailand Tall		NAWT01	Thailand	
Thailand	Nok Koom Green Dwarf		NKMD	Thailand	Mu Si Khieo (Nok Koom)
Thailand	Pak Chok Tall	Long fruited	PCKT02	Thailand	
Thailand	Pak Chok Tall	Round fruited	PCKT01	Thailand	
Thailand	Pathiu Green Dwarf		PTID	Thailand	Mu Si Khieo, Pathiu

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Thailand	Thailand Brown Dwarf		THBD	Thailand	
Thailand	Thailand Green Dwarf		THD	Vanuatu	Nain Vert Thaïlande, NVT
Thailand	Thailand Green Dwarf		THD	Côte d'Ivoire	Nain Vert Thaïlande, NVT, TGD
Thailand	Thailand Orange Dwarf	Chumphon	THOD01	Thailand	Maphrao Fai, FAID, Thai Red Dwarf I
Thailand	Thailand Orange Dwarf	Prachuap	THOD02	Thailand	Thai Red Dwarf II, MSSD, Mu Si Som
Thailand	Thailand Tall		THT	Tanzania	Thailand Tall
Thailand	Thailand Tall	Bang Laung	THT20	Thailand	
Thailand	Thailand Tall	Edible Husk	THT16	Thailand	
Thailand	Thailand Tall	Jehae	THT23	Thailand	
Thailand	Thailand Tall	Kalok	THT08	Thailand	Kalok, KLKT
Thailand	Thailand Tall	Kanchanadit	THT19	Thailand	
Thailand	Thailand Tall	Khlong Ging	THT14	Thailand	
Thailand	Thailand Tall	Klog Yao	THT29	Thailand	
Thailand	Thailand Tall	Ko Samui	THT04	Côte d'Ivoire	Grand Thaïlande Ko Samui, GTH4, THT4
Thailand	Thailand Tall	Ko Samui	THT04	Thailand	
Thailand	Thailand Tall	Kuan Don	THT27	Thailand	
Thailand	Thailand Tall	Laem Ngop	THT10	Thailand	
Thailand	Thailand Tall	Laem Talumpuk	THT26	Thailand	
Thailand	Thailand Tall	Makham Khu	THT22	Thailand	
Thailand	Thailand Tall	Maphrao Klang	THT06	Thailand	Maphrao Klang, KLGT
Thailand	Thailand Tall	Maphrao Yai	THT05	Thailand	Maphrao Yai, YAI
Thailand	Thailand Tall	Na Toey	THT30	Thailand	
Thailand	Thailand Tall	Nakhon si Tham.	THT03	Thailand	Nakhon Si Thammarat Tall
Thailand	Thailand Tall	Nam Sung	THT09	Thailand	
Thailand	Thailand Tall	Namon	THT24	Thailand	
Thailand	Thailand Tall	Nong Song Hong	THT13	Thailand	
Thailand	Thailand Tall	Pa Ngew	THT18	Thailand	
Thailand	Thailand Tall	Pak Nam	THT11	Thailand	
Thailand	Thailand Tall	Pattani	THT21	Thailand	
Thailand	Thailand Tall	Sawi	THT01	Thailand	
Thailand	Thailand Tall	Sawi Yellow	THT15	Thailand	
Thailand	Thailand Tall	Spicata	THT07	Thailand	Maphraeo, SPIT
Thailand	Thailand Tall	Taidaeng	THT28	Thailand	
Thailand	Thailand Tall	Tap Sakae	THT02	Thailand	Tap Sakae Tall
Thailand	Thailand Tall	Thong Badan	THT17	Thailand	
Thailand	Thailand Tall	Wang Chang	THT12	Thailand	
Thailand	Thailand Tall	Wang Yao	THT25	Thailand	
Thailand	Thailand Tall	Sawi	THT01	Côte d'Ivoire	Grand Thaïlande Sawi, GTH1

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Thailand	Thailand Yellow Dwarf		MSLD	Thailand	Mu Si Luang Nali Ke
Thailand	Thalai Roi Tall		TLRT	Thailand	Thalai Roi Thailand Tall Phuang
Thailand	Thung Kled Green Dwarf		TKD	Thailand	Mu Si Khieo, Thung Kled
Tonga	Niu Kafa Tall	Tonga	NKFT03	Tonga	Niu Afa
Tonga	Niu Matakula		NLLT	Tonga	
Tonga	Niu Taokave		NTAT	Tonga	
Tonga	Niu Vai Tall		NVIT	Tonga	
Tonga	Tonga Tall		TONT	Brazil	Gigante de Tonga, GTG
Tonga	Tonga Tall		TONT	Jamaica	
Tonga	Tonga Tall		TONT	Tonga	
Tonga	Tonga Tall		TONT	Vanuatu	Grand Tonga, GTG
Tonga	Tonga Tall	Alaki	TONT01	India	Niu Taukave Tall, TKV
Tonga	Tonga Tall	Kalanga	TONT02	India	Niu Hako, NUH
Tonga	Tonga Tall	Utongau	TONT06	Tonga	
Tonga	Tonga Tall	Veitongo	TONT03	India	Tonga Niu Ui Tall, NUI
Tonga	Tonga Tall		TONT	Côte d'Ivoire	Grand Tonga, GTG, TGT
Trinidad and Tobago	Blanchisseuse Tall		BLIT	India	Blanch Issues, BLN
Trinidad and Tobago	Saint Vincent Tall		STVT	India	ST. Vincent, STV
Vanuatu	Vanuatu Red Dwarf		VRD	Vanuatu	Nain Rouge Vanuatu, NRV
Vanuatu	Vanuatu Tall		VTT	Ghana	
Vanuatu	Vanuatu Tall		VTT	Jamaica	New Hebrides Tall, NHT
Vanuatu	Vanuatu Tall		VTT	Philippines	VTT, VTT, GVT
Vanuatu	Vanuatu Tall		VTT	Tanzania	New Hebrid Tall, NHT
Vanuatu	Vanuatu Tall	Avunarara	VTT22	Vanuatu	Grand Vanuatu Avunarara, MLO1, GVT22
Vanuatu	Vanuatu Tall	Banks	VTT10	Vanuatu	Grand Vanuatu Banks, GVT10, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Bay Barrier	VTT13	Vanuatu	Grand Vanuatu Bay Barrier, PEN1, GVT13
Vanuatu	Vanuatu Tall	Bethel	VTT15	Vanuatu	Grand Vanuatu Bethel, AMB1, GVT15
Vanuatu	Vanuatu Tall	Brenwe	VTT11	Vanuatu	Grand Vanuatu Brenwe, MAL1, GVT11
Vanuatu	Vanuatu Tall	Bulldoz	VTT05	Vanuatu	Grand Vanuatu Bulldoz, GVT05, Grand Nouvelle-Hébrides-GNH

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Vanuatu	Vanuatu Tall	Leroux	VTT02	Vanuatu	Grand Vanuatu Leroux, GVT02, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Napueiamasan	VTT16	Vanuatu	Grand Vanuatu Napueiamasan, TAN1, GVT16
Vanuatu	Vanuatu Tall	Nipeka	VTT17	Vanuatu	Grand Vanuatu Nipeka, TAN2, GVT17
Vanuatu	Vanuatu Tall	Pélé	VTT21	Vanuatu	Grand Vanuatu Pélé, TON1, GVT21
Vanuatu	Vanuatu Tall	Port-Olry	VTT06	Vanuatu	Grand Vanuatu Port-Olry, GVT06, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Sanesup	VTT14	Vanuatu	Grand Vanuatu Sanesup, AMB1
Vanuatu	Vanuatu Tall	Surunda	VTT01	Vanuatu	Grand Vanuatu Surunda, GVT01, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Tanna1	VTT07	Vanuatu	Grand Vanuatu Tanna1, GVT07, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Tanna2	VTT09	Vanuatu	Grand Vanuatu Tanna2, GVT09, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Torres	VTT08	Vanuatu	Grand Vanuatu Torres, GVT08, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Ukoro	VTT12	Vanuatu	Grand Vanuatu Ukoro, SAN1, GVT12
Vanuatu	Vanuatu Tall	Var	VTT19	Vanuatu	Grand Vanuatu Var, BAN1, GVT19
Vanuatu	Vanuatu Tall	Walarano	VTT18	Vanuatu	Grand Vanuatu Walarano, MAL2, GVT18
Vanuatu	Vanuatu Tall	Waluembue	VTT20	Vanuatu	Grand Vanuatu Waluembue, AOB1
Vanuatu	Vanuatu Tall		VTT	Côte d'Ivoire	Grand Vanuatu, GVT, VTT
Vanuatu	Vanuatu Tall		VTT	Brazil	Gigante de Vanuatu, Gigante de Novas Hebridas, GVT, GNH
Viet Nam	Cochin China Tall		CCNT	India	CC
Viet Nam	Dau Tall Binh An		DAUT04	Viet Nam	
Viet Nam	Dau Tall Cha Va		DAUT03	Viet Nam	
Viet Nam	Dau Tall Giong Trom		DAUT01	Viet Nam	DAUT, Dau Tall
Viet Nam	Dau Tall Phu My		DAUT02	Viet Nam	

Country of origin	International cultivar name	Population within the the cultivar	International abbreviation	Country of conservation names	Synonyms and other
Viet Nam	Eo Brown Dwarf		EOD	Viet Nam	
Viet Nam	Lua Tall		LUAT	Viet Nam	Do (Red)
Viet Nam	Macapuno Tall Dua Sap		MACT02	Viet Nam	Sap Dua kem
Viet Nam	Ta Tall	Ben Luc	TAAT03	Viet Nam	
Viet Nam	Ta Tall	Cat Trinh	TAAT09	Viet Nam	
Viet Nam	Ta Tall	Giong Lon	TAAT11	Viet Nam	
Viet Nam	Ta Tall	Giong Trom	TAAT01	Viet Nam	Dua Ta Ta Tall
Viet Nam	Ta Tall	Ham Tien	TAAT08	Viet Nam	
Viet Nam	Ta Tall	Phu Huu	TAAT05	Viet Nam	
Viet Nam	Ta Tall	Tam An Dong Nai	TAAT04	Viet Nam	
Viet Nam	Ta Tall	Tam An Vung Tau 1	TAAT06	Viet Nam	
Viet Nam	Ta Tall	Tam An Vung Tau 2	TAAT07	Viet Nam	
Viet Nam	Ta Tall	Tam Quan Nam	TAAT10	Viet Nam	
Viet Nam	Ta Tall	Tan Thoi	TAAT02	Viet Nam	
Viet Nam	Tam Quan Yellow Dwarf		TYD	Viet Nam	Dua Nep
Viet Nam	Xiem Green Dwarf		XGD	Viet Nam	

1c. List of Coconut germplasm registered in the Coconut Genetic Resources Database ordered by country of conservation

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Bangladesh	Bangladesh Tall	Bangladesh	Agailjhara	BAGT17	
Bangladesh	Bangladesh Tall	Bangladesh	Atkapalia	BAGT27	
Bangladesh	Bangladesh Tall	Bangladesh	Babugonj	BAGT15	
Bangladesh	Bangladesh Tall	Bangladesh	Bagerhat	BAGT39	
Bangladesh	Bangladesh Tall	Bangladesh	Bagharpara	BAGT24	
Bangladesh	Bangladesh Tall	Bangladesh	Bhola	BAGT22	
Bangladesh	Bangladesh Tall	Bangladesh	Bogra	BAGT36	
Bangladesh	Bangladesh Tall	Bangladesh	Buikara	BAGT28	
Bangladesh	Bangladesh Tall	Bangladesh	Chinashukhani	BAGT33	
Bangladesh	Bangladesh Tall	Bangladesh	Gafaragoan	BAGT32	
Bangladesh	Bangladesh Tall	Bangladesh	Hathazari	BAGT07	
Bangladesh	Bangladesh Tall	Bangladesh	Ishurdi	BAGT11	
Bangladesh	Bangladesh Tall	Bangladesh	Jamalpur	BAGT10	
Bangladesh	Bangladesh Tall	Bangladesh	Jhalakathi	BAGT19	
Bangladesh	Bangladesh Tall	Bangladesh	Jhenaidah	BAGT25	
Bangladesh	Bangladesh Tall	Bangladesh	Kalapara	BAGT20	
Bangladesh	Bangladesh Tall	Bangladesh	Kayemkola	BAGT23	
Bangladesh	Bangladesh Tall	Bangladesh	Khagrachari	BAGT14	
Bangladesh	Bangladesh Tall	Bangladesh	Khairtala	BAGT05	
Bangladesh	Bangladesh Tall	Bangladesh	Kisorganj	BAGT37	
Bangladesh	Bangladesh Tall	Bangladesh	Kushtia	BAGT26	
Bangladesh	Bangladesh Tall	Bangladesh	Lebukhali	BAGT21	
Bangladesh	Bangladesh Tall	Bangladesh	Manikgonj	BAGT29	
Bangladesh	Bangladesh Tall	Bangladesh	Muktagacha	BAGT31	
Bangladesh	Bangladesh Tall	Bangladesh	Nator	BAGT35	
Bangladesh	Bangladesh Tall	Bangladesh	Poilanpur	BAGT12	
Bangladesh	Bangladesh Tall	Bangladesh	Puthia	BAGT34	
Bangladesh	Bangladesh Tall	Bangladesh	Ramgorh	BAGT13	
Bangladesh	Bangladesh Tall	Bangladesh	Rathmapur A	BAGT01	
Bangladesh	Bangladesh Tall	Bangladesh	Rathmapur B	BAGT02	
Bangladesh	Bangladesh Tall	Bangladesh	Rathmapur C	BAGT03	
Bangladesh	Bangladesh Tall	Bangladesh	Razbari	BAGT38	
Bangladesh	Bangladesh Tall	Bangladesh	Red Shundhi A	BAGT08	
Bangladesh	Bangladesh Tall	Bangladesh	Red Shundhi B	BAGT09	
Bangladesh	Bangladesh Tall	Bangladesh	Rhaikhali	BAGT06	
Bangladesh	Bangladesh Tall	Bangladesh	Sherpur	BAGT30	
Bangladesh	Bangladesh Tall	Bangladesh	Swarupkathi	BAGT18	
Bangladesh	Bangladesh Tall	Bangladesh	Uzipur	BAGT16	
Bangladesh	Chinashkhania Dwarf	Bangladesh		CHND	
Bangladesh	Malayan Yellow Dwarf	Malaysia	Bangladesh	MYD04	

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Benin	Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Benin	Cameroon Red Dwarf	Cameroon		CRD	Nain Rouge Cameroun, NRC
Benin	Malayan Yellow Dwarf	Malaysia		MYD	Nain Jaune Malais, NJM
Benin	West African Tall	Benin	Benin	WAT05	Grand Ouest Africain, GOA
Brazil	Brazilian Green Dwarf	Brazil		BGD	Anao verde do Brasil, Anao verde de Jiqui, AVEJ
Brazil	Brazilian Red Dwarf	Brazil		BRD	Anao Vermelho Do Brasil, Anao Vermelho De Gramame, AVG
Brazil	Brazilian Tall	Brazil	Baia Formosa	BRT08	SJM, Gigante de Sao Jose de Mipibu, GBRRN1
Brazil	Brazilian Tall	Brazil	Luis Correia	BRT07	Gigante do Bras.Praia do Forte, GBRPF
Brazil	Brazilian Tall	Brazil	Merepe	BRT09	SJM, Gigante de Sao Jose de Mipibu, GBRRN1
Brazil	Brazilian Tall	Brazil	Olho de Cravo	BRT02	Merepe, Gigante de Merepe, GBRPE1
Brazil	Brazilian Tall	Brazil	Pacatuba	BRT10	Merepe, Gigante de Merepe, GBRPE1
Brazil	Brazilian Tall	Brazil	Praia do Forte	BRT01	Gigante do Bras.Praia do Forte, GBRPF
Brazil	Brazilian Tall	Brazil	Santa Rita	BRT05	SJM, Gigante de Sao Jose de Mipibu, GBRRN1
Brazil	Brazilian Tall	Brazil	Santo Inácio	BRT04	GBRPF
Brazil	Brazilian Tall	Brazil	São José do Mipibu	BRT06	Merepe, Gigante de Merepe, GBRPE1
Brazil	Brazilian Tall	Brazil	Senador Georgino Avelino	BRT03	SJM, Gigante de Sao Jose de Mipibu, GBRRN1
Brazil	Brazilian Yellow	Brazil		BYD	Anao amarelo do brasil, Anao amarelo de gramame, AAG
Brazil	Cameroon Red Dwarf	Cameroon		CRD	Anao vermelho de camaroes, AVC
Brazil	Malayan Red Dwarf	Malaysia		MRD	Anao Vermelho da Malasia, AVM
Brazil	Malayan Tall	Malaysia		MLT	Gigante da Malasia GML
Brazil	Malayan Yellow Dwarf	Malaysia		MYD	Anao Amarelo Da Malasia, AAM
Brazil	Rennell Island Tall	Solomon Islands		RIT	Gigante de Rennell, GRL

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Brazil	Rotuman Tall	Fiji		RTMT	Gigante de rotuma, GRT
Brazil	Tahitian Tall	France French Polynesia			TAT Polynesia Tall 1, Gigante da Polinesia, GPY
Brazil	Tonga Tall	Tonga		TONT	Gigante de Tonga, GTG
Brazil	Vanuatu Tall	Vanuatu		VTT	Gigante de Vanuatu, Gigante de Novas Hebridas, GVT, GNH
Brazil	West African Tall	Côte d'Ivoire		WAT	Gigante do Oeste Africano, GOA
China	Guangdong Tall	China		GDT	
China	Hainan Tall	China		HAIT	
China	Yunnan Tall	China		YUT	
Côte d'Ivoire	Andaman Giant Tall	India		AGT	Grand des Indes Andaman Géant, GND3, NDT3
Côte d'Ivoire	Andaman Ordinary Tall	India		ADOT	Grand Indes Andaman Ordinary, GND2, NDT2
Côte d'Ivoire	Aromatic Green Dwarf	Thailand		AROD	Nain Vert Aromatic, NVP7, PGD7
Côte d'Ivoire	Baybay Tall	Philippines		BAYT	Grand Bay-Bay, GPH4, PHT4
Côte d'Ivoire	Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Côte d'Ivoire	Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Côte d'Ivoire	Cambodia Tall	Cambodia	Battambang	KAT09	Grand Cambodge Battambang, GCB9, KAT9
Côte d'Ivoire	Cambodia Tall	Cambodia	Kampot	KAT03	Grand Cambodge Kampot, GCB3, KAT3
Côte d'Ivoire	Cambodia Tall	Cambodia	Kompong Trach	KAT05	Grand "Feu" Kompong Trac, GCB5, KAT5
Côte d'Ivoire	Cambodia Tall	Cambodia	Kopal Tani	KAT04	Grand Cambodge "Kopal" Tani, GCB4, KAT4
Côte d'Ivoire	Cambodia Tall	Cambodia	Ktis Battambang	KAT11	Grand Cambodge Ktis Battambang, GCB11, KAT11
Côte d'Ivoire	Cambodia Tall	Cambodia	Ream	KAT07	Grand Cambodge Ream, GCB7
Côte d'Ivoire	Cambodia Tall	Cambodia	Sre Cham	KAT08	Grand Cambodge Sre Cham, GCB8
Côte d'Ivoire	Cambodia Tall	Cambodia	Tuk Sap	KAT02	Grand Cambodge Tuk Sap, GCB2, KAT2
Côte d'Ivoire	Cambodia Tall	Cambodia	Koh Rong	KAT10	Grand Cambodge Koh Rong, GCB10, KAT10

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Côte d'Ivoire	Cambodian Green Dwarf	Cambodia		KGD	Nain Vert Cambodge Kolke, NVC, CGD
Côte d'Ivoire	Cameroon Kribi Tall	Cameroon		CKT	Grand Cameroun Kribi, GCA
Côte d'Ivoire	Cameroon Red Dwarf	Cameroon		CRD	Nain Rouge Cameroun, NRC, COD
Côte d'Ivoire	Catigan Green Dwarf	Philippines		CATD	Nain Vert Philippines Catigan, NVP2, PGD2
Côte d'Ivoire	Comoro Moheli Tall	Comoros		CMT	Grand Comores Moheli, GCO, COT
Côte d'Ivoire	Gazelle Peninsula Tall	Papua New Guinea		GPT	Grand Gazelle, GNG4, NGT4
Côte d'Ivoire	Kappadam Tall	India		KPDT	Grand Kappadam, GND5, NDT5
Côte d'Ivoire	Karkar Tall	Papua New Guinea		KKT	Grand Kar-Kar, GNG1, NGT1
Côte d'Ivoire	Kinabalan Green Dwarf	Philippines		KIND	Nain Vert Philip. Kinabalan, NVP6, PGD6
Côte d'Ivoire	Laccadive Micro Tall	India		LMT	Grand Laccadive Micro, GND7, Lakshadweep Micro
Côte d'Ivoire	Laccadive Ordinary Tall	India		LCT	Grand Laccadive Ordinaire, GND8, Lakshadweep Ordinary
Côte d'Ivoire	Madang Brown Dwarf	Papua New Guinea		MBD	Nain Brun Nouvelle Guinée, NBN, NBD
Côte d'Ivoire	Malayan Green Dwarf	Malaysia		MGD	Nain Vert Malaisie, NVM
Côte d'Ivoire	Malayan Red Dwarf	Malaysia		MRD	Nain Rouge Malaisie, NRM
Côte d'Ivoire	Malayan Tall	Malaysia		MLT	Grand Malaisie GML
Côte d'Ivoire	Malayan Tall	Malaysia	3 Heads	MLT36	Grand Malaisie, GML
Côte d'Ivoire	Malayan Yellow Dwarf	Malaysia	Ghana	MYD02	Nain Jaune Ghana, NJG
Côte d'Ivoire	Malayan Yellow Dwarf	Malaysia		MYD	Nain Jaune Malaisie, NJM
Côte d'Ivoire	Markham Valley Tall	Papua New Guinea		MVT	Grand Markham Valley, GNG3, GMV, NGT3
Côte d'Ivoire	Mozambique Tall	Mozambique		MZT	Grand Mozambique, GMZ
Côte d'Ivoire	Niu Leka Dwarf	Fiji		NLAD	Nain Niu Leka, NNL, NLD
Côte d'Ivoire	Palu Tall	Indonesia		PUT	Grand Indonésie Palu, GDO3
Côte d'Ivoire	Panama Tall	Panama	Aguadulce	PNT01	Grand Panama 1 Aguadulce, GPA1, PAT1

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Côte d'Ivoire	Panama Tall	Panama	Monagre	PNT02	Grand Panama 2 Monagre, GPA2, PAT2
Côte d'Ivoire	Pilipog Green Dwarf	Philippines		PILD	Nain Vert Philippines Pilipog, NVP5, PGD5
Côte d'Ivoire	Raja Brown Dwarf	Indonesia	Ternate	RBD01	Nain Brun Indonésie, NBOIBD
Côte d'Ivoire	Rangiroa Tall	France French Polynesia		RGT	Grand Polynésie Rangiroa, GPY2, PYT2
Côte d'Ivoire	Rennell Island Tall	Solomon Islands		RIT	Grand Rennell, GRL, RLT
Côte d'Ivoire	Rotuman Tall	Fiji		RTMT	Grand Rotuma, GRT, RTT
Côte d'Ivoire	Solomon Island Tall	Solomon Islands		SIT	Grand Salomon, GSN
Côte d'Ivoire	Sri Lanka Green Dwarf	Sri Lanka		PGD	Nain Vert Sri Lanka, NVS, SGD!, Pumilla Green Dwarf
Côte d'Ivoire	Sri Lanka Tall	Sri Lanka	Ambakelle	SLT02	Grand Sri Lanka Amélioré, GSL
Côte d'Ivoire	Tacunan Green Dwarf	Philippines		TACD	Nain Vert Philippines Tacunan, NVP3, PGD3
Côte d'Ivoire	Tagnanan Tall	Philippines		TAGT	Grand Tagnanan, GTN, TNT
Côte d'Ivoire	Tahitian Red Dwarf	France French Polynesia		TRD	Nain Rouge Tahiti, NRY, RYT
Côte d'Ivoire	Tahitian Tall	France French Polynesia		TAT	Grand Polynésie Tahiti, GPY1, PYT1
Côte d'Ivoire	Takome Tall	Indonesia		TKT	Grand Indonésie Takome, GDO1, DOT1
Côte d'Ivoire	Tenga Tall	Indonesia		TGT	Grand Indonésie Tenga, GDO2, DOT2
Côte d'Ivoire	Thailand Green Dwarf	Thailand		THD	Nain Vert Thaïlande, NVT, TGD
Côte d'Ivoire	Thailand Tall	Thailand	Ko Samui	THT04	Grand Thaïlande Ko Samui, GTH4, THT4
Côte d'Ivoire	Thailand Tall	Thailand	Sawi	THT01	Grand Thaïlande Sawi, *GTH1
Côte d'Ivoire	Tonga Tall	Tonga		TONT	Grand Tonga, GTG, TGT
Côte d'Ivoire	Vanuatu Tall	Vanuatu		VTT	Grand Vanuatu, GVT, VTT
Côte d'Ivoire	West African Tall	Benin	Ouidah	WAT06	Grand Ouest Africain Ouidah, GOA6
Côte d'Ivoire	West African Tall	Côte d'Ivoire		WAT	
Côte d'Ivoire	West African Tall	Côte d'Ivoire	Akabo	WAT03	Grand Ouest Africain Akabo, GOA3, WAT3
Côte d'Ivoire	West African Tall	Côte d'Ivoire	Mensah	WAT04	Grand Ouest Africain Mensah, GOA4, WAT4
Fiji	Fijian Tall	Fiji		FJT	
Fiji	Fijian Tall	Fiji	Lakeba	FJT04	

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Fiji	Fijian Tall	Fiji	Taveuni	FJT01	
Fiji	Fijian Tall	Fiji	Tuvumaca	FJT05	
Fiji	Fijian Tall	Fiji	Ura	FJT06	
Fiji	Malayan Red Dwarf	Malaysia		MRD	
Fiji	Malayan Yellow Dwarf	Malaysia		MYD	
Fiji	Niu Leka Dwarf	Fiji		NLAD	NLD, Niu Le'a
Fiji	Pilipog Green Dwarf	Philippines	Fiji	PILD02	Malayan Green Dwarf
Fiji	Rennell Island Tall	Solomon Islands		RIT	RLT
Fiji	Rotuman Tall	Fiji		RTMT	ROT
France Mayotte	Mayotte Tall	France Mayotte		MYOT	
Ghana	Andaman Ordinary Tall	India		ADOT	Indian Andaman Tall
Ghana	Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Equatorial Guinea GreenDwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Ghana	Cameroon Red Dwarf	Cameroon		CRD	CRD
Ghana	Catigan Green Dwarf	Philippines		CATD	
Ghana	Laccadive Ordinary Tall	India		LCT	Indian Laccadive Tall, LCT
Ghana	Malayan Red Dwarf	Malaysia		MRD	MRD
Ghana	Malayan Yellow Dwarf	Malaysia		MYD	MYD
Ghana	Panama Tall	Panama	Aguadulce	PNT01	PNT01
Ghana	Panama Tall	Panama	Monagre	PNT02	PNT02
Ghana	Sri Lanka Green Dwarf	Sri Lanka		PGD	Pumila Green Dwarf
Ghana	Tacunan Green Dwarf	Philippines		TACD	TACD
Ghana	Tagnanan Tall	Philippines		TAGT	TAGT
Ghana	Vanuatu Tall	Vanuatu		VTT	
Ghana	West African Tall	Benin	Benin	WAT05	WAT Benin Type, WAT
India	Adirampatanam Tall	India		ADPT	ADP
India	Andaman Giant Tall	India		AGT	Andaman Giant, AG
India	Andaman Green Dwarf	India		ANGD	
India	Andaman Ordinary Tall	India		ADOT	Andaman Ordinary, AO, ADO
India	Andaman Ranguchan Tall	India		ADRT	Andaman Ranguchan, ADR
India	Andaman Yellow Dwarf	India		ANYD	AD
India	Ayiramkachi Tall	India		AYRT	AYK
India	Benaulim Tall	India		BENT	Benawali Green Round, BEN, Pratap
India	Blanchisseuse Tall	Trinidad and Tobago		BLIT	Blanch Issues, BLN

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
India	Bora Bora Tall	France French Polynesia		BBT	
India	Borneo Tall	Indonesia		BONT	BRT
India	British Solomon Island Tall	Solomon Islands		BSIT	British Solomon Island, BSI
India	Calangute Tall	India		CALT	CAL
India	Cameroon Red Dwarf	Cameroon		CRD	Cameroon Orange Dwarf
India	Carnicobar Tall	India		CART	CAR
India	Chowghat Green Dwarf	India	Pattukottai	CGD01	Pattukottai Green Dwarf, PGD
India	Chowghat Green Dwarf	India		CGD	
India	Chowghat Orange Dwarf	India		COD	
India	Chowghat Orange Dwarf	India	Pattukottai	COD01	Pattukottai Red Dwarf, PRD
India	Cochin China Tall	Viet Nam		CCNT	CC
India	Coco Bleu Tall	Seychelles		CBLT	
India	Coco Le Haut Tall	Seychelles		CLHT	
India	Coco Le Rein Tall	Seychelles		CLRT	
India	Coco Raisin Tall	Seychelles		CRST	
India	Comoros Tall	Madagascar		CMRT	
India	Dupays Tall	Mauritius		DUPT	
India	East African Tall	Kenya	Kenya	EAT32	Kenya Tall KYT
India	East African Tall	Tanzania	Gujarat	EAT31	Gujarat Zanzibar, GZB
India	East African Tall	Tanzania	Zanzibar	EAT33	Zanzibar Tall, ZNT
India	Fiji Niu Bulundrau Tall	Fiji		FJBT	Niu Bulundrau, NUB, Niu Drau
India	Fijian Longtongwan Tall	Fiji		FJLT	Longtongwan Tall
India	Fijian Tall	Fiji		FJT	
India	Fijian Tall	Fiji	Ringed	FJT03	FRN
India	Fijian Tall	Fiji	Taveuni	FJT01	Niu Balavu, TVT
India	Fijian Tall	Fiji	Wanigata	FJT02	Wanigata Tall
India	Gangabhavani Tall	India		GBVT	Gangabhavani, GBV
India	Gangabondam Green Dwarf	India		GGBD	Gangabondam, GB
India	Gangapani Tall	India		GPNT	Gangapani, GPN
India	Gazelle Peninsula Tall	Papua New Guinea		GPT	NatavaTall, Nik Alama
India	Gon Thembili Tall	Sri Lanka		GTBT	Gonthembili, GTB
India	Guam Tall	Guam	Type II	GUBT	Guam Type II, GUT-2
India	Guam Tall	Guam	Type III	GUCT	Guam Type III, GUT-3
India	Guam Tall	Malaysia	Type I	GUAT	Guam Type I, GUT-1
India	Gudanjali Green Dwarf	India		GDD	Gudanjali Dwarf
India	Guelle Rose Tall	Mauritius		GRT	
India	Hazari Tall	India		HZT	

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
India	Indian East Coast Tall	India		ECT	East Coast Tall
India	Indian West Coast Tall	India		WCT	West Coast Tall
India	Indian West Coast Tall	India	Spicata	WCT01	Spicata, SPI
India	Jahaji Tall	India		JAHT	Jahaji
India	Jamaica Tall	Jamaica		JMT	
India	Java Tall	Indonesia		JVT	
India	Kaithathali Tall	India		KAIT	Kaithathali, KAI
India	Kappadam Tall	India		KPDT	Kappadam, KAP
India	Karkar Tall	Papua New Guinea		KKT	KAR
India	Kenthali Orange Dwarf	India		KTOD	Kenthali Dwarf, KTD
India	King Coconut	Sri Lanka	India	RTB04	KCD, Rath Tembili
India	Klapawangi Tall	Malaysia		KWGT	
India	Kongthien Yong Tall	Indonesia		KTYT	Kongthien Yong, KTY
India	Laccadive Micro Tall	India		LMT	Lakshadweep Micro, LM, LCM
India	Laccadive Orange Dwarf	India		LCOD	Laccadive Dwarf, LD
India	Laccadive Ordinary Tall	India		LCT	Lakshadweep Ordinary, LO, LCO
India	Laguna Tall	Philippines		LAGT	LAG
India	Lifou Tall	France New Caledonia			LFT
India	Macapuno Tall Coco Gra	Seychelles		MACT03	Coco Gra, CGRT
India	Malayan Green Dwarf	Malaysia		MGD	
India	Malayan Green Dwarf	Malaysia	Kulasekharam	MGD02	Kulasekharam Green Dwarf, KGD
India	Malayan Red Dwarf	Malaysia		MRD	Malayan Orange Dwarf, MOD
India	Malayan Red Dwarf	Malaysia	Kulasekharam	MRD01	Kulasekharam Orange Dwarf, KOD
India	Malayan SS Apricot Tall	Malaysia		SSAT	Strait Settlement ApricotSSA
India	Malayan SS Green Tall	Malaysia		SSGT	Strait Settlement Green, SSG
India	Malayan Tall	Malaysia		MLT	
India	Malayan Tall	Malaysia	FMS	MLT01	Federated Malayan States, FMS
India	Malayan Yellow Dwarf	Malaysia		MYD	
India	Malayan Yellow Dwarf	Malaysia	Kulasekharam	MYD01	Kulasekharam Yellow Dwarf, KYD
India	Markham Valley Tall	Papua New Guinea		MVT	Markham Valley
India	Moorea Tall	France French Polynesia	Haapiti	MRT02	Moorea Tall II, MRT, Haepiti

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
India	Moorea Tall	France French Polynesia	Pao-Pao	MRT01	Moorea Tall I, MRT, Pao-Pao
India	Muwa Tall	Papua New Guinea		MUWT	Tall Muwa
India	Nadora Tall	India		NDRT	Nadora, NDR
India	Navassi Tall	India		NVT	Navassi
India	New Guinea Kavieng Tall	Papua New Guinea		KVT	Kavieng Tall
India	New Guinea Kiriwana Tall	Papua New Guinea		KRT	
India	New Guinea Orange Dwarf	Papua New Guinea		NGOD	Nik Kore, NKD
India	New Guinea Tall	Papua New Guinea		NGAT	NGA
India	Nicobar Tall	India	Auck Chung	NICT06	NAC
India	Nicobar Tall	India	Campbell Bay	NICT01	NCB
India	Nicobar Tall	India	Katchal	NICT02	NKC
India	Nicobar Tall	India	Kimmai	NICT03	NKI
India	Nicobar Tall	India	Kimos	NICT04	NKS
India	Nicobar Tall	India	Tamaloo	NICT05	NTL
India	Nigerian Green Dwarf	Nigeria		NIGD	Nigerian Dwarf, NGD
India	Nigerian Tall	Nigeria		NIT	NGT, Mapio Pong
India	Niu Leka Dwarf	Fiji		NLAD	Niu Leka type I, NLA
India	Nu Fella Tall	France New Caledonia		NUFT	Nu Fella, NUF
India	Nu Gili Tall	France New Caledonia		NUGT	Nu Gili, NUG
India	Nu Himi Kupien Tall	France New Caledonia		NHKT	Nu Himi Kupien Tall, NHK
India	Nu Quawen Tall	France New Caledonia		NUQT	Nu Quawen, NUQ
India	Nu Wallis Tall	France New Caledonia		NUWT	Nu Wallis, NUW
India	Nu Wehnug Tall	France New Caledonia		NWHT	Nu Wehnug, NWH
India	Panama Tall	Panama		PNT	
India	Panama Tall	Panama	Jamaica	PNT03	Jamaica Tall San Blas, JSB, Redondo
India	Pemba Green Dwarf	Mauritius		PEGD	PGD
India	Pemba Red Dwarf	Mauritius	Mauritius	PRD03	Pemba Orange Dwarf
India	Pemba Red Tall	Mauritius		PERT	PRT
India	Pemba Yellow Dwarf	Mauritius		PEYD	
India	Philippines Dailig Tall	Philippines		PDLT	PHG
India	Philippines Kalambahim Tall	Philippines		PKBT	
India	Philippines Lono Tall	Philippines		PLNT	PHL
India	Philippines Ordinary Tall	Philippines		PHOT	Philippines Ordinary

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
India	Philippines Palawan Tall	Philippines		PPWT	PHP
India	Rangiroa Red Dwarf	France French Polynesia		RRD	Hari Papua Dwarf, HPD
India	Rangiroa Tall	France French Polynesia	Avatoru	RGT01	Rangiroa Avatoru Tall, RAT
India	Rangiroa Tall	France French Polynesia	Tiputa	RGT02	Rangiroa (Tiputa) Tall, RTT
India	Rangoon Kobbari Tall	India		RKBT	Rangoon Kobbari, RKB
India	Rennell Island Tall	Solomon Islands		RIT	Rennell Tall, RLT
India	Rotuman Tall	Fiji		RTMT	Fidji Rotuma Tall
India	Saint Vincent Tall	Trinidad and Tobago		STVT	ST. Vincent, STV
India	Sakhi Gopal Tall	India	Accession 1	SKGT01	Orissa Tall
India	Sakhi Gopal Tall	India	Accession 2	SKGT02	Orissa Tall
India	Sakhi Gopal Tall	India		SKGT	SKG
India	Sambava Green Tall	Madagascar		SBGT	
India	Sambava Tall	Madagascar		SMBT	SAMT
India	Samoan Tall	American Samoa		SMOT	Tutiala Niu Tall, TLN
India	Samoan Tall	Samoa	Alao	SMOT02	Tutiala Local Tall
India	Samoan Yellow Dwarf	Samoa	American Samoa	SYD02	Niu Oma Dwarf, NOD
India	San Ramon Tall	Philippines		SNRT	
India	Seychelles Tall	Seychelles		SCT	SYC
India	Solomon Island Tall	Solomon Islands		SIT	Solomon Tall
India	Sri Lanka Green Dwarf	Sri Lanka		PGD	Ceylon Green Dwarf, SGD
India	Sri Lanka Red Dwarf	Sri Lanka		SLRD01	Ceylon Orange Dwarf, SOD
India	Sri Lanka Tall	Sri Lanka		SLT	Ceylon Tall
India	Sri Lanka Yellow Dwarf	Sri Lanka		CYD	Ceylon Yellow Dwarf, SYD
India	Standard Kudat Tall	Indonesia		STKT	Standard Kudat, SKT
India	Surinam Brown Dwarf	Suriname		SUBD	Surinam Dwarf, SRD
India	Surinam Tall	Suriname		SUT	SRT
India	Tahitian Tall	France French Polynesia		TAT	THT
India	Tiptur Tall	India		TPT	
India	Tonga Tall	Tonga	Alaki	TONT01	Niu Taukave Tall, TKV
India	Tonga Tall	Tonga	Kalanga	TONT02	Niu Hako, NUH
India	Tonga Tall	Tonga	Veitongo	TONT03	Tonga Niu Ui Tall, NUI
India	Verikobbari Tall	India		VKBT	WKB
India	West African Tall	Côte d'Ivoire		WAT	
Indonesia	Aertembaga Tall	Indonesia		AET	DAA, Dalam Aertembaga

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Indonesia	Babang Tall	Indonesia		BBGT	DBB, Dalam babang
Indonesia	Bali Tall	Indonesia		BAT	DBI, Dalam Bali
Indonesia	Bali Yellow Dwarf	Indonesia		BAYD	GKB, Genjah Kuning Bali
Indonesia	Banyuwangi Tall	Indonesia		BGT	DBG, Dalam Banyuwangi
Indonesia	Beber Tall	Indonesia		BET	DBR, Dalam Beber
Indonesia	Bibinoi Tall	Indonesia		BIBT	DBN, Dalam Bibinoi
Indonesia	Bitunuris Tall	Indonesia		BITT	
Indonesia	Boyolali Tall	Indonesia		BOYT	
Indonesia	Cameroon Red Dwarf	Cameroon		CRD	CRD, Genjah Merah Kamerun
Indonesia	Gotalamo Tall	Indonesia		GOT	DGO, Dalam Gotalamo
Indonesia	Guntung Tall	Indonesia		GGT	DGG, Dalam Guntung
Indonesia	Igo Bulan Tall	Indonesia		IBT	DIB, Dalam Igo Bulan
Indonesia	Igo-Duku Tall	Indonesia		IDT	DID, Dalam Igo Duku
Indonesia	Ijobalit Tall	Indonesia		IJT	DIJ, Dalam Ijobalit
Indonesia	Ilo-Ilo Tall	Indonesia		IIT	DII, Dalam Ilo-Ilo
Indonesia	Jepara Tall	Indonesia		JPT	DJP, Dalam Jepara
Indonesia	Jombang Green Dwarf	Indonesia		JGD	GHJ, Genjah Hijau Jombang
Indonesia	Jombang Red Dwarf	Indonesia		JORD	GMJ, Genjah Merah Jombang
Indonesia	Jombang Yellow Dwarf	Indonesia		JYD	GKJ, Genjah Kuning Jombang
Indonesia	Kalasey Tall	Indonesia		KLYT	DKY, Dalam Kalasey
Indonesia	Kambaniru Tall	Indonesia		KAMT	KUT, DKU, Dalam Kambaniru
Indonesia	Kapal Brown Dwarf	Indonesia		KABD	
Indonesia	Karkar Tall	Papua New Guinea		KKT	
Indonesia	Kelambu Buruk Tall	Indonesia		KBT	
Indonesia	Kinabuhutan Tall	Indonesia		KNT	DKN, Dalam Kinabuhutan
Indonesia	Kumo-B Tall	Indonesia		KUOT	DKU, Dalam Kumo-B
Indonesia	Kupal Tall	Indonesia		KLT	DKL, Dalam Kupal
Indonesia	Lubuk Pakam Tall	Indonesia		LPT	DLP, Dalam Lubuk Pakam
Indonesia	Malayan Red Dwarf	Malaysia		MRD	MRD, Genjah Merah Malaysia
Indonesia	Malayan Yellow Dwarf	Malaysia		MYD	MYD, Genjah Kuning Malaysia
Indonesia	Mamuaya Tall	Indonesia		MAMT	
Indonesia	Mapanget Tall	Indonesia		MPT	DMT, Dalam Mapanget
Indonesia	Mapanget Tall	Indonesia	2	MPT02	DMT, Dalam Mapanget
Indonesia	Mapanget Tall	Indonesia	10	MPT10	DMT, Dalam Mapanget

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Indonesia	Mapanget Tall	Indonesia	99	MPT99	DMT, Dalam Mapanget
Indonesia	Marinsow Tall	Indonesia		MWT	DMW, Dalam Marinsow
Indonesia	Markham Valley Tall	Papua New Guinea		MVT	
Indonesia	Melongoane Tall	Indonesia		MELT	
Indonesia	Ngilngof Tall	Indonesia		NFT	DNF, Dalam Ngilngof
Indonesia	Nias Green Dwarf	Indonesia		NGD	GHN, Genjah Hijau Nias
Indonesia	Nias Yellow Dwarf	Indonesia		NYD	GKN, Genjah Kuning Nias
Indonesia	Nita Tall	Indonesia		NAT	DNA, Dalam Nita
Indonesia	Oenggauk Tall	Indonesia		OKT	DOK, Dalam Oenggauk
Indonesia	PagandaranTall	Indonesia		PAGT	
Indonesia	Palakahembing Tall	Indonesia		PKHT	
Indonesia	Palapi Tall	Indonesia		PALT	
Indonesia	Palu Tall	Indonesia		PUT	DPU, Dalam Palu
Indonesia	Pandu Tall	Indonesia		PDT	DPD, Dalam Pandu
Indonesia	Pangandaran Tall	Indonesia		PRT	
Indonesia	Paslaten Tall	Indonesia		PSNT	DPN, Dalam Paslaten
Indonesia	Pulau Kelapa Tall	Indonesia		PKT	DPK, Dalam Pulau Kelapa
Indonesia	Pungkol Tall	Indonesia		PGLT	DPL, Dalam Pungkol
Indonesia	Raja Brown Dwarf	Indonesia		RBD	Kelapa Raja, GRA, Genjah Raja
Indonesia	Rarumis Tall	Indonesia		RART	
Indonesia	Rennell Island Tall	Solomon Islands		RIT	RLT, Dalam Rennell
Indonesia	Riau Tall	Indonesia		RUT	
Indonesia	Rote Tall	Indonesia		ROTT	
Indonesia Sagerat	Sagerat Orange Dwarf	Indonesia		SOD	GOS, Genjah Oranye
Indonesia	Salak Green Dwarf	Indonesia		SKD	GSK, Genjah Salak
Indonesia	Santongbolan Tall	Indonesia		SNTT	
Indonesia	Sawarna Tall	Indonesia		SAT	DSA, Dalam Sawarna
Indonesia	Sea Tall	Indonesia		SET	DES, Dalam Sea
Indonesia	Shinta Red Dwarf	Indonesia		SHRD	
Indonesia	Soasio Red Dwarf	Indonesia		SORD	GMS, Genjah Merah Soasio
Indonesia	Sokong Tall	Indonesia		SOT	DSK, Dalam Sokong
Indonesia	Solo Tall	Indonesia		SOLT	
Indonesia	Sri Tanjung Dwarf	Indonesia		STD	
Indonesia	Tahitian Tall	France French Polynesia		TAT	Polynesian Tall n°1 (PYT01), PYT, Dalam Polynesia
Indonesia	Takome Tall	Indonesia		TKT	DTE, Dalam Takome
Indonesia	Talise Tall	Indonesia		TALT	DTS, Dalam Talise

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Indonesia	Tebing Tinggi Green Dwarf	Indonesia		TTD	GTT, Genjah Tebing Tinggi
Indonesia	Tekulai Tall	Indonesia		TEKT	
Indonesia	Tenga Tall	Indonesia		TGT	DTA, Dalam Tenga
Indonesia	Togawa Tall	Indonesia		TWT	DOK, Dalam
Indonesia	Tontalete Tall	Indonesia		TTT	DTT, Dalam Tontalete
Indonesia	Trenggalek Dwarf	Indonesia		TGKD	
Indonesia	West African Tall	Côte d'Ivoire		WAT	WAT, Dalam Afrika Barat
Indonesia	Wulurat Tall	Indonesia		WTT	DWT, Dalam Wulurat
Indonesia	Wusa Tall	Indonesia		WST	DWA, Dalam Wusa
Jamaica	Bougainville Tall	Papua New Guinea		BOT	BLT
Jamaica	Cambodia Tall	Cambodia		KAT	CMT
Jamaica	Chowghat Green Dwarf	India		CGD	
Jamaica	Chowghat Orange Dwarf	India		COD	
Jamaica	Cuban Orange Dwarf	Cuba		CUD	
Jamaica	Fijian Tall	Fiji		FJT	
Jamaica	Indian West Coast Tall	India		WCT	Indian Tall
Jamaica	Jamaica Tall	Jamaica		JMT	
Jamaica	Karkar Tall	Papua New Guinea		KKT	
Jamaica	King Coconut	Sri Lanka		RTB	Rath Thembili, KC
Jamaica	Malayan Red Dwarf	Malaysia		MRD	
Jamaica	Malayan Tall	Malaysia		MLT	
Jamaica	Malayan Yellow Dwarf	Malaysia	Jamaica	MYD03	
Jamaica	Maphraeo Thailand Tall	Thailand		MPET	Thailand Tall, THT
Jamaica	Markham Valley Tall	Papua New Guinea		MVT	
Jamaica	Niu Leka Dwarf	Fiji		NLAD	
Jamaica	Panama Tall	Panama		PNT	Redondo, San Blas
Jamaica	Peru Tall	Peru		PET	
Jamaica	Rangiroa Red Dwarf	France French Polynesia			RRD
Jamaica	Rangiroa Tall	France French Polynesia			RGT
Jamaica	Rennell Island Tall	Solomon Islands		RIT	
Jamaica	Rotuman Tall	Fiji		RTMT	
Jamaica	Samoan Tall	Samoa	Samatau	SMOT01	Western Samoa Tall
Jamaica	Sarawak Tall	Indonesia		SKT	
Jamaica	Seychelles Tall	Seychelles		SCT	SYC
Jamaica	Solomon Island Tall	Solomon Islands		SIT	
Jamaica	Spicata Red Dwarf	Jamaica		SRD	
Jamaica	Spicata Tall	Jamaica		SPIT	
Jamaica	Sri Lanka Green Dwarf	Sri Lanka		PGD	Ceylon Green Dwarf, Pumilla Green Dwarf
Jamaica	Sri Lanka Tall	Sri Lanka		SLT	CRIC60

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Jamaica	Sri Lanka Yellow Dwarf	Sri Lanka		CYD	Ceylon Yellow Dwarf
Jamaica	Tahitian Tall	France French Polynesia		TAT	
Jamaica	Tonga Tall	Tonga		TONT	
Jamaica	Vanuatu Tall	Vanuatu		VTT	New Hebrides Tall, NHT
Jamaica	Yap Island Tall	Micronesia Federated States of		YIT	
Malaysia	Aromatic Green Dwarf	Thailand		AROD	Kelapa Pandan, Kelapa Wangi
Malaysia	Cameroon Red Dwarf	Cameroon		CRD	
Malaysia	Catigan Green Dwarf	Philippines		CATD	
Malaysia	Christmas Island Tall	Solomon Islands		CIT	
Malaysia	Fijian Tall	Fiji		FJT	
Malaysia	Karkar Tall	Papua New Guinea		KKT	
Malaysia	Laguna Tall	Philippines		LAGT	
Malaysia	Malayan Green Dwarf	Malaysia		MGD	
Malaysia	Malayan Red Dwarf	Malaysia		MRD	
Malaysia	Malayan Tall	Malaysia		MLT	
Malaysia	Malayan Tall	Malaysia	Bachok	MLT02	
Malaysia	Malayan Tall	Malaysia	Bagan Datoh	MLT03	
Malaysia	Malayan Tall	Malaysia	Balik Pulau	MLT04	
Malaysia	Malayan Tall	Malaysia	Batu Pahat 1	MLT05	
Malaysia	Malayan Tall	Malaysia	Batu Pahat 2	MLT06	
Malaysia	Malayan Tall	Malaysia	East Johore 1	MLT07	
Malaysia	Malayan Tall	Malaysia	East Johore 2	MLT08	
Malaysia	Malayan Tall	Malaysia	Endau	MLT09	
Malaysia	Malayan Tall	Malaysia	Hilir Perak	MLT10	
Malaysia	Malayan Tall	Malaysia	Kangar	MLT11	
Malaysia	Malayan Tall	Malaysia	Kapar	MLT12	
Malaysia	Malayan Tall	Malaysia	Kota Bharu	MLT13	
Malaysia	Malayan Tall	Malaysia	Kuala Muda	MLT14	
Malaysia	Malayan Tall	Malaysia	Kuala Selangor	MLT15	
Malaysia	Malayan Tall	Malaysia	Kuantan	MLT16	
Malaysia	Malayan Tall	Malaysia	Langkawi Island	MLT17	
Malaysia	Malayan Tall	Malaysia	Larut Matang	MLT18	
Malaysia	Malayan Tall	Malaysia	Lekir	MLT19	
Malaysia	Malayan Tall	Malaysia	Melaka Tengah	MLT20	
Malaysia	Malayan Tall	Malaysia	Merlimau	MLT21	
Malaysia	Malayan Tall	Malaysia	Morib	MLT22	
Malaysia	Malayan Tall	Malaysia	Muar	MLT23	

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Malaysia	Malayan Tall	Malaysia	Pasir Putih	MLT24	
Malaysia	Malayan Tall	Malaysia	Pontian 1	MLT25	
Malaysia	Malayan Tall	Malaysia	Pontian 2	MLT26	
Malaysia	Malayan Tall	Malaysia	Port Dickson	MLT27	
Malaysia	Malayan Tall	Malaysia	Sabak Bernam	MLT28	
Malaysia	Malayan Tall	Malaysia	Seberang Prai	MLT29	
Malaysia	Malayan Tall	Malaysia	Sepang	MLT30	
Malaysia	Malayan Tall	Malaysia	Sungai Besar	MLT31	
Malaysia	Malayan Tall	Malaysia	Teluk Gong	MLT32	
Malaysia	Malayan Tall	Malaysia	Tioman Island	MLT33	
Malaysia	Malayan Tall	Malaysia	Tuba Island	MLT34	
Malaysia	Malayan Tall	Malaysia	Tumpat	MLT35	
Malaysia	Malayan Yellow Dwarf	Malaysia		MYD	
Malaysia	Markham Valley Tall	Papua New Guinea		MVT	
Malaysia	Nias Green Dwarf	Indonesia		NGD	GNH
Malaysia	Niu Damu Tall	Fiji		NDMT	
Malaysia	Niu Leka Dwarf	Fiji		NLAD	
Malaysia	Rangiroa Tall	France French Polynesia		RGT	
Malaysia	Rennell Island Tall	Solomon Islands		RIT	
Malaysia	Rotuman Tall	Fiji		RTMT	
Malaysia	Sabah Tall	Malaysia		SBT	Kudat Tall, Kelapa Kudat
Malaysia	Sabah Tall	Malaysia	Sweet Husk	SBT01	
Malaysia	Sarawak Tall	Malaysia		SKT	
Malaysia	Tacunan Green Dwarf	Philippines		TACD	
Malaysia	Tagnanan Tall	Philippines		TAGT	
Malaysia	Tahitian Tall	France French Polynesia		TAT	
Mexico	Malayan Yellow Dwarf	Malaysia		MYD	Enano Amarillo de Malasia Coco de la India EAM
Mexico	Mexican Atlantic Tall	Mexico	Champoton	MXAT01	Alto Atlantico de Mexico
Mexico	Mexican Atlantic Tall	Mexico	Ciudad del Carmen	MXAT02	Alto Atlantico de Mexico
Mexico	Mexican Atlantic Tall	Mexico	Sabancui	MXAT03	Alto Atlantico de Mexico
Mexico	Mexican Pacific Tall	Mexico	Callejones 1	MXPT08	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Mexico	Callejones 2	MXPT09	Alto Pacifico de Mexico, EAM
Mexico	Mexican Pacific Tall	Mexico	Cihuatlan 1	MXPT13	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Mexico	Cihuatlan 2	MXPT14	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Mexico	Cuyutlan	MXPT11	Alto Pacifico de Mexico

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Mexico	Mexican Pacific Tall	Mexico	El Carizo	MXPT02	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Mexico	El Centinella	MXPT12	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Mexico	El Ticuiz	MXPT07	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Mexico	Lazaro Cardenas 1	MXPT05	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Mexico	Lazaro Cardenas 2	MXPT06	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Mexico	Marquelia	MXPT01	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Mexico	Matanchan	MXPT16	Alto Pacifico de Mexico
Mexico	Mexican Pacific Tall	Mexico	Nuxco	MXPT03	Alto Pacifico de Mexico, Guerrero 1
Mexico	Mexican Pacific Tall	Mexico	San Blas	MXPT15	Alto Pacifico de Mexico, ERM
Mexico	Mexican Pacific Tall	Mexico	Tecoman	MXPT10	Alto Pacifico de Mexico, ERM
Mexico	Mexican Pacific Tall	Mexico	Tecpan	MXPT04	Alto Pacifico de Mexico,EAM
Pakistan	Pakistan Tall	Pakistan		PAKT	
Papua New Guinea	Baibara Tall	Papua New Guinea		BBR	BBT
Papua New Guinea	East Sepik Tall	Papua New Guinea	Hawain	ELT02	Hawain, ELT2
Papua New Guinea	East Sepik Tall	Papua New Guinea	Marineberg	ELT05	Marineberg, ELT5
Papua New Guinea	East Sepik Tall	Papua New Guinea	Vokio	ELT04	Vokio, ELT4
Papua New Guinea	East Sepik Tall	Papua New Guinea	Yangoru	ELT03	Yangoru, ELT3
Papua New Guinea	Gazelle Peninsula Tall	Papua New Guinea	Natava	GPT03	Natava, GLT3
Papua New Guinea	Gazelle Peninsula Tall	Papua New Guinea	Natava Many fruited	GPT05	Natava “Many fruited”, GLT5
Papua New Guinea	Gazelle Peninsula Tall	Papua New Guinea	New Massava	GPT04	New Massava, GLT4
Papua New Guinea	Gazelle Peninsula Tall	Papua New Guinea	Pellavarua	GPT01	Pellavarua, GLT01
Papua New Guinea	Gazelle Peninsula Tall	Papua New Guinea	Raulawat	GPT02	Raulawat, GLT2
Papua New Guinea	Hihisu Tall	Papua New Guinea		HLT	
Papua New Guinea	Iokea Red Dwarf	Papua New Guinea		IRD	
Papua New Guinea	Iokea Tall	Papua New Guinea		ILT	
Papua New Guinea	Karkar Tall	Papua New Guinea		KKT	

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Papua New Guinea	Karkar Tall	Papua New Guinea	Guanaga	KKT01	Guanaga
Papua New Guinea	Karkar Tall	Papua New Guinea	Kinim	KKT02	Kinim
Papua New Guinea	Karkar Tall	Papua New Guinea	Ulatava	KKT03	Ulatava
Papua New Guinea	Kiwai Tall	Papua New Guinea	Boze	KWT02	Boze
Papua New Guinea	Kiwai Tall	Papua New Guinea	Severimabau	KWT01	Severimabu
Papua New Guinea	Madang Brown Dwarf	Papua New Guinea		MBD	
Papua New Guinea	Malayan Red Dwarf	Malaysia		MRD	
Papua New Guinea	Malayan Yellow Dwarf	Malaysia		MYD	
Papua New Guinea	Manus Tall	Papua New Guinea	Baluan	MAT03	Baluan, MLT03
Papua New Guinea	Manus Tall	Papua New Guinea	Lako	MAT02	Lako, MLT02
Papua New Guinea	Manus Tall	Papua New Guinea	Lawes	MAT01	Lawes, MLT01
Papua New Guinea	Markham Valley Tall	Papua New Guinea		MVT	
Papua New Guinea	Markham Valley Tall	Papua New Guinea	ILara Village	MVT02	Liara Village
Papua New Guinea	Markham Valley Tall	Papua New Guinea	Markham Farm Pao	MVT01	Markham Farm
Papua New Guinea	Milne Bay Tall	Papua New Guinea	Bubuleta	MBT04	Bubuleta
Papua New Guinea	Milne Bay Tall	Papua New Guinea	Siagara	MBT03	Siagara
Papua New Guinea	Namatanai Tall	Papua New Guinea	Etalat	NLT04	Etalat
Papua New Guinea	Namatanai Tall	Papua New Guinea	Karu Village	NLT01	Karu Village
Papua New Guinea	Namatanai Tall	Papua New Guinea	Kenapit	NLT02	Kenapit
Papua New Guinea	Namatanai Tall	Papua New Guinea	Tall Sohu	NLT03	Sohu
Papua New Guinea	Nias Green Dwarf	Papua New Guinea			NGD
Papua New Guinea	Nias Red Dwarf	Papua New Guinea			NRD
Papua New Guinea	Nias Yellow Dwarf	Papua New Guinea		NYD	
Papua New Guinea	Oro Tall	Papua Ajoa New Guinea		OLT02	Ajoa
Papua New Guinea	Oro Tall	Papua New Guinea	Kikibator	OLT03	Kikibator
Papua New Guinea	Oro Tall	Papua New Guinea	Saiho	OLT01	Saiho
Papua New Guinea	Papua New Guinea Red Dwarf	Papua New Guinea	Type 1	PARD01	

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Papua New Guinea	Papua New Guinea Red Dwarf	Papua New Guinea	Type 2	PARD02	
Papua New Guinea	Papua New Guinea Yellow Dwarf	Papua New Guinea		PYD	
Papua New Guinea	Poligolo Tall	Papua New Guinea		PLT	
Papua New Guinea	Rabaul Red Dwarf	Papua New Guinea			RARD
Papua New Guinea	Rennell Island Tall	Solomon Islands		RIT	RLT
Papua New Guinea	Talasea Red Tall	Papua New Guinea		TRT	
Papua New Guinea	Vailala Tall	Papua New Guinea	Keakea	VLT02	Keakea
Papua New Guinea	Vailala Tall	Papua New Guinea	Miha Kavava	VLT01	Miha Kavava
Papua New Guinea	West New Britain Tall	Papua New Guinea		Gaungo	WLT01 Gaungo
Papua New Guinea	West New Britain Tall	Papua New Guinea	Naviro	WLT02	Naviro
Papua New Guinea	Wutung Tall	Papua New Guinea		WUNT	
Philippines	Agta Tall	Philippines		AGAT	
Philippines	Aguinaldo Tall	Philippines		AGDT	AGD
Philippines	Aklan Tall	Philippines	Matabana	AKT03	
Philippines	Aklan Tall	Philippines	Pinamuc-an	AKT02	
Philippines	Aklan Tall	Philippines	San Fernando	AKT01	
Philippines	Anda Tall	Philippines		ANDT	Ac 46
Philippines	Anda Tall	Philippines	Binuling	ANDT02	
Philippines	Anda Tall	Philippines	Tondol	ANDT01	
Philippines	Antique Tall	Philippines		ANTT	Ac 44
Philippines	Antique Tall	Philippines	Batuan	ANTT02	
Philippines	Antique Tall	Philippines	Tabayon	ANTT03	
Philippines	Antique Tall	Philippines	Mapatag	ANTT01	
Philippines	Aromatic Green Dwarf	Thailand		AROD	PGD7, ARO, Pandan
Philippines	Bago-Oshiro Tall	Philippines		BAOT	BAO
Philippines	Baguer Green Dwarf	Philippines		BAGD	BAG
Philippines	Ballesteros Tall	Philippines	Cagayan	BALT01	
Philippines	Ballesteros Tall	Philippines	Tarraq	BALT02	
Philippines	Ballesteros Tall	Philippines		BALT	Ac 27
Philippines	Banga Green Dwarf	Philippines		BAND	Bañga, BAN
Philippines	Bani Tall	Philippines		BANT	Ac 36
Philippines	Banigan Tall	Philippines		BNGT	BNG
Philippines	Basey Tall	Philippines		BAST	
Philippines	Bataan Tall	Philippines		BAAT	Ac 33
Philippines	Bataan Tall	Philippines	Kitaotao	BAAT03	
Philippines	Bataan Tall	Philippines	Mianay	BAAT02	

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Philippines	Bataan Tall	Philippines	Tenejero	BAAT01	
Philippines	Bato Bato Tall	Philippines		BATT	BAT
Philippines	Baybay Tall	Philippines		BAYT	Grand Bay-Bay, GPH4, PHT4
Philippines	Borongan Tall	Philippines		BORT	
Philippines	Botolan Tall	Philippines		BOTT	Ac 30
Philippines	Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Philippines	Bukidnon Tall	Philippines		BUKT	Ac 32
Philippines	Bukidnon Tall	Philippines	Damulog	BUKT04	
Philippines	Bukidnon Tall	Philippines	Gutapol	BUKT03	
Philippines	Bukidnon Tall	Philippines	Tambo	BUKT02	
Philippines	Bukidnon Tall	Philippines	Alfonso	BUKT01	
Philippines	Cagayan Tall	Philippines		CAGT	Ac 28
Philippines	Cagayan Tall	Philippines	Bannag	CAGT03	
Philippines	Cagayan Tall	Philippines	Leron	CAGT04	
Philippines	Cagayan Tall	Philippines	Sanchez Mira	CAGT02	
Philippines	Cagayan Tall	Philippines	Saud	CAGT01	
Philippines	Cameroon Red Dwarf	Cameroon		CRD	COD, CRD, NRC
Philippines	Catbalogan Tall	Philippines		CATT	
Philippines	Catigan Green Dwarf	Philippines		CATD	Rabara, Bilaka, CAT
Philippines	Cotabato Tall	Philippines		COTT	Ac 23
Philippines	Cotabato Tall	Philippines	Barangiran	COTT02	
Philippines	Cotabato Tall	Philippines	Esperanza	COTT03	
Philippines	Cotabato Tall	Philippines	Ionas	COTT01	
Philippines	Cotabato Tall	Philippines	Surallah	COTT04	
Philippines	Culaman Tall	Philippines		CULT	CUL
Philippines	Dalican Tall	Philippines		DALT	Ac 26
Philippines	De Guzman Macapuno Tall	Philippines		MACT01	MAC-DG, MAC, Macapuno Tall
Philippines	Galas Green Dwarf	Philippines		GALD	GAL
Philippines	Gatusan Tall	Philippines		GAT	GAT
Philippines	Gazelle Peninsula Tall	Papua New Guinea		GPT	NGT, GPT
Philippines	Guiuan Green Dwarf	Philippines		GUID	
Philippines	Guiuan Tall	Philippines		GUIT	
Philippines	Ilocos Sur Tall	Philippines		ILOT	Ac 21
Philippines	Ilocos Sur Tall	Philippines	Aloleng	ILOT01	
Philippines	Ilocos Sur Tall	Philippines	Catarman	ILOT02	
Philippines	Kapatagan Green Dwarf	Philippines		KAPD	KAP
Philippines	Karkar Tall	Papua New Guinea		KKT	NGT, KKT
Philippines	Katangawan Tall	Philippines		KGT	NGT, KKT, GNG1
Philippines	Kiamba Green Dwarf	Philippines		KIAD	KAP

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Philippines	Kinabalan Green Dwarf	Philippines		KIND	PGD6, KIN, NVP6
Philippines	La Union Tall	Philippines		LAUT	Ac 20
Philippines	La Union Tall	Philippines	Bolinao	LAUT01	
Philippines	La Union Tall	Philippines	Tall Sablot	LAUT02	
Philippines	La Victoria Dwarf	Philippines		VICD	VIQ-g
Philippines	La Victoria Dwarf	Philippines	Brown	VICD02	La Victoria,VIC-b, VIBD
Philippines	La Victoria Dwarf	Philippines	Green	VICD01	La Victoria, VIQ-g
Philippines	Laguna Tall	Philippines		LAGT	LAG
Philippines	Laoang Tall	Philippines		LAOT	
Philippines	Lato Lato Tall	Philippines		LAT	
Philippines	Leon Tall	Philippines		LEOT	Ac 42
Philippines	Loong Tall	Philippines		LONT	LON
Philippines	Lope De Vega Tall	Philippines		LPVT	
Philippines	Lupon Tall	Philippines		LUPT	LON
Philippines	Magtuod Green Dwarf	Philippines		MAGD	MAG
Philippines	Maitum Tall	Philippines	Spicata	MAIT01	Spicata Tall
Philippines	Maitum Tall Kuyamis	Philippines		MAIT02	
Philippines	Makilala Green Dwarf	Philippines		MAKD	MAK
Philippines	Malayan Red Dwarf	Malaysia		MRD	OD, MRD, NRM
Philippines	Malayan Yellow Dwarf	Malaysia		MYD	Yellow Dwarf, MYD, NJM, GYD
Philippines	Mangipod Green Dwarf	Philippines		MGPD	MN̈D, MND
Philippines	Markham Valley Tall	Papua New Guinea		MVT	GNT, MVT
Philippines	Mestiza Tall	Philippines		MEST	GNT, MVT, GNG3, GMV
Philippines	Namukon Tall	Philippines		NAMT	Ac 35
Philippines	New Buswang Green Dwarf	Philippines		BUSD	BUS
Philippines	North Cotabato Tall	Philippines		NOCT	Ac 16
Philippines	North Cotabato Tall	Philippines	Dagupan	NOCT01	
Philippines	North Cotabato Tall	Philippines	Magpet	NOCT03	
Philippines	North Cotabato Tall	Philippines	Taluntalun	NOCT02	
Philippines	Pandan Tall	Philippines		PADT	
Philippines	Pangasinan Tall	Philippines		PANT	Ac 18
Philippines	Pangasinan Tall	Philippines	Galarin	PANT03	
Philippines	Pangasinan Tall	Philippines	Payar	PANT02	
Philippines	Pangasinan Tall	Philippines	Santa Lucia	PANT01	
Philippines	Philippines Tall Spicata	Philippines		SPIT01	SPI01, Spicata Tall
Philippines	Pikit Tall	Philippines		PIKT	Ac 17
Philippines	Pikit Tall	Philippines	Calawag	PIKT01	
Philippines	Pikit Tall	Philippines	Magpet	PIKT02	
Philippines	Pilipog Green Dwarf	Philippines		PILD	PGD, PIL NVP5
Philippines	Pugo Tall	Philippines		PUGT	Ac 37

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Philippines	Rennell Island Tall	Solomon Islands		RIT	RIT, RIT
Philippines	Salambuyan Tall	Philippines		SALT	SAL
Philippines	Samal Island Tall	Philippines	Banaba	SAIT05	
Philippines	Samal Island Tall	Philippines	Bautod	SAIT04	
Philippines	Samal Island Tall	Philippines	Damulog	SAIT03	
Philippines	Samal Island Tall	Philippines	Gutapol	SAIT02	
Philippines	Samal Island Tall	Philippines	Tambo	SAIT	Ac 31
Philippines	Samal Island Tall	Philippines	Tambo1	SAIT01	
Philippines	San Isidro Green Dwarf	Philippines		SNID	SNI
Philippines	San Policarpo Tall	Philippines		SPOT	
Philippines	San Ramon Tall	Philippines		SNRT	SNR
Philippines	Sanchez Mira Tall	Philippines	Agose	SCHT02	
Philippines	Sanchez Mira Tall	Philippines	Centro Dos	SCHT	Ac 29
Philippines	Sanchez Mira Tall	Philippines	Centro Dos1	SCHT01	
Philippines	Santa Cruz Tall	Philippines		SACT	
Philippines	Santa Margarita Green Dwarf	Philippines		SMAD	
Philippines	Santiago Island Tall	Philippines		SANT	Ac 19
Philippines	Santo Nino Green Dwarf	Philippines		SNOD	SÑO, SNO
Philippines	Sibuga Tall	Philippines		SIBT	
Philippines	Spring Taluya Tall	Philippines		SPRT	Ac 25
Philippines	Sri Lanka Green Dwarf	Sri Lanka		PGD	Sri Lanka Green Dwarf, SGD, CGD
Philippines	Tacunan Green Dwarf	Philippines		TACD	PGD3, TAC, BILAKA
Philippines	Tagnanan Tall	Philippines		TAGT	TNT, TAG
Philippines	Tahitian Tall	France French Polynesia		TAT	Polynesia Tall, PYT GPY, PYT
Philippines	Talisay Green Dwarf	Philippines		TALD	TAL
Philippines	Tampakan Tall	Philippines		TPKT	TPK
Philippines	T'boli Tall	Philippines		TBOT	TPK
Philippines	Tigbaon Tall	Philippines		TIGT	Ac 47
Philippines	Tinambacan Tall	Philippines		TINT	
Philippines	Tupi Green Dwarf	Philippines		TUPD	TUP
Philippines	Upi Tall	Philippines		UPIT	Ac 40
Philippines	Vanuatu Tall	Vanuatu		VTT	VTT, VTT, GVT
Philippines	Venus Tall	Philippines		VENT	VEN
Philippines	West African Tall	Côte d'Ivoire		WAT	GOA, WAT
Philippines	Zambales Tall	Philippines		ZABT	Ac 34
Philippines	Zambales Tall	Philippines	Buenavista	ZABT02	
Philippines	Zambales Tall	Philippines	Ibaba	ZABT01	
Philippines	Zambales Tall	Philippines	Quintang Island	ZABT03	
Philippines	Zamboanga Tall	Philippines		ZAMT	ZAM
Samoa	Niu Kafa Tall	Samoa	Samoa	NKFT02	Niu 'Afa Tall, NAF
Samoa	Niu Leka Dwarf	Fiji	Niu Le'a Ordinary	NLAD01	Niu Le'a Dwarf
Samoa	Niu Leka Dwarf	Fiji	Niu Le'a Small fruited	NLAD02	Niu Le'a Dwarf
Samoa	Niu Vai Tall	Samoa		NVIT	

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Samoa	Nu Ati Red Dwarf	Samoa		NATD	Niu New Guinea
Samoa	Rennell Island Tall	Solomon Islands		RIT	
Samoa	Samoan Green Dwarf	Samoa		SGD	
Samoa	Samoan Tall	Samoa		SMOT	
Samoa	Samoan Tall	Samoa	Samatau	SMOT01	SMT, Samatau
Samoa	Samoan Tall	Samoa	Spicata	SMOT03	Spicata, SPIT
Solomon Islands	Bellona Tall	Solomon Islands		BLT	B
Solomon Islands	Christmas Island Tall	Kiribati		CIT	CI
Solomon Islands	Fiami Red Dwarf	Solomon Islands		FMD	FD
Solomon Islands	Kiribati Tall	Kiribati		KIT	Gilbertese Tall
Solomon Islands	Malayan Green Dwarf	Malaysia		MGD	GMD
Solomon Islands	Malayan Red Dwarf	Malaysia		MRD	RMD(M)
Solomon Islands	Malayan Red Dwarf	Malaysia	Fiji	MRD04	RMD(F)
Solomon Islands	Malayan Red Dwarf	Malaysia	Kira Kira	MRD03	Kira Kira Dwarf, KK
Solomon Islands	Malayan Red Dwarf	Malaysia	Kukum	MRD02	Kukum Dwarf, KKKD
Solomon Islands	Malayan Tall	Malaysia	FMS	MLT01	FSM
Solomon Islands	Malayan Yellow Dwarf	Malaysia		MYD	YMD
Solomon Islands	Markham Valley Tall	Papua New Guinea		MVT	MV
Solomon Islands	Niu Leka Dwarf	Fiji		NLAD	NL
Solomon Islands	Rangiroa Tall	France French Polynesia		RGT	RAN
Solomon Islands	Rennell Island Tall	Solomon Islands		RIT	
Solomon Islands	Rotuman Tall	Fiji		RTMT	ROT
Solomon Islands	Samoan Tall	Samoa		SMOT	S
Solomon Islands	Solomon Island Tall	Solomon Islands		SIT	Local Tall, LT
Solomon Islands	Spicata Red Dwarf	Malaysia	Spicata	SRD	RMDsp
Solomon Islands	Sri Lanka Tall	Sri Lanka		SLT	Ceylon Tall, C
Solomon Islands	Vanikoro Tall	Solomon Islands		VKT	
Sri Lanka	Bodiri Tall	Sri Lanka		BDRT	Maphrao Phuang Bodiri
Sri Lanka	Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Sri Lanka	Cameroon Red Dwarf	Cameroon		CRD	COD
Sri Lanka	Gon Thembili Tall	Sri Lanka		GTBT	Gonthambili, GT
Sri Lanka	Kamandala Tall	Sri Lanka		KMT	Kamandala
Sri Lanka	King Coconut	Sri Lanka		RTB01	Rath Thembili, KC
Sri Lanka	King Coconut	Sri Lanka	Nawasi Thambili	RTB02	KCNT, KCNT
Sri Lanka	King Coconut	Sri Lanka	Ratharan Thembili	RTB03	KCRT, KCRT
Sri Lanka	Macapuno Tall Dikiri Poll	Sri Lanka		MACT04	Dikiri Poll, DIT
Sri Lanka	Nawasi Tall	Sri Lanka		NAWT	Nawasi
Sri Lanka	Pora Pol Tall	Sri Lanka		PPT	Pora Pol
Sri Lanka	Ran Thembili Tall	Sri Lanka		CRAT	Ran Thembili, RT
Sri Lanka	San Ramon Tall	Sri Lanka	Clovis	SNRT01	SR, SR

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Sri Lanka	Sri Lanka Brown Dwarf	Sri Lanka		SLBD	
Sri Lanka	Sri Lanka Green Dwarf	Sri Lanka		PGD	Sri Lanka Green Dwarf, SLGD
Sri Lanka	Sri Lanka Sri Lanka Green Dwarf	Kundasale		PGD02	Sri Lanka Green Dwarf, SLGD
Sri Lanka	Sri Lanka Mirishena Semi Tall	Sri Lanka	SLM	Mirishena	
Sri Lanka	Sri Lanka Red Dwarf	Sri Lanka		SLRD01	Ceylon Red Dwarf, SLRD
Sri Lanka	Sri Lanka Red Dwarf	Sri Lanka	Kundasale	SLRD02	Ceylon Red Dwarf, SLRD
Sri Lanka	Sri Lanka Tall	Sri Lanka	Adikarigoda	SLT47	Adikarigoda
Sri Lanka	Sri Lanka Tall	Sri Lanka	Aluthwatta	SLT35	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Ambakelle	SLT02	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Andigama	SLT28	Andigama
Sri Lanka	Sri Lanka Tall	Sri Lanka	Beliatta	SLT32	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Dadella	SLT42	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Debarayaya	SLT03	Debarayaya
Sri Lanka	Sri Lanka Tall	Sri Lanka	Dehigahalanda	SLT29	Dehigahalanda
Sri Lanka	Sri Lanka Tall	Sri Lanka	Dickwella	SLT30	Dickwella
Sri Lanka	Sri Lanka Tall	Sri Lanka	Galenbindunuwewa	SLT39	Galenbindunuwewa
Sri Lanka	Sri Lanka Tall	Sri Lanka	Goluwapokuna	SLT04	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Goyambokka	SLT05	Goyambokka
Sri Lanka	Sri Lanka Tall	Sri Lanka	Haragama	SLT31	Haragama
Sri Lanka	Sri Lanka Tall	Sri Lanka	Heediwatta	SLT46	Heediwatta
Sri Lanka	Sri Lanka Tall	Sri Lanka	Horakelle	SLT06	Horakelle
Sri Lanka	Sri Lanka Tall	Sri Lanka	Iranawila	SLT45	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Kasagala	SLT07	Kasagala
Sri Lanka	Sri Lanka Tall	Sri Lanka	Keenakelle	SLT08	Keenakelle
Sri Lanka	Sri Lanka Tall	Sri Lanka	Kivulakelle	SLT23	Kivulakelle
Sri Lanka	Sri Lanka Tall	Sri Lanka	Madagma	SLT38	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Magama	SLT49	Magama
Sri Lanka	Sri Lanka Tall	Sri Lanka	Mahakumbukwewa	SLT33	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Maliboda	SLT09	Maliboda
Sri Lanka	Sri Lanka Tall	Sri Lanka	Mangala-Eliya	SLT11	Mangala-Eliya
Sri Lanka	Sri Lanka Tall	Sri Lanka	Marandawila	SLT22	Marandawila
Sri Lanka	Sri Lanka Tall	Sri Lanka	Margaret	SLT12	Margaret
Sri Lanka	Sri Lanka Tall	Sri Lanka	Melsiripura	SLT10	Melsiripura
Sri Lanka	Sri Lanka Tall	Sri Lanka	Millawana	SLT34	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Moorock	SLT13	Moorock
Sri Lanka	Sri Lanka Tall	Sri Lanka	Namalwatta	SLT14	Namalwatta
Sri Lanka	Sri Lanka Tall	Sri Lanka	Palugaswewa	SLT15	Palugaswewa
Sri Lanka	Sri Lanka Tall	Sri Lanka	Pamunugama	SLT44	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Pitiyakanda	SLT16	Pitiyakanda
Sri Lanka	Sri Lanka Tall	Sri Lanka	Raddegoda	SLT40	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Razeena	SLT17	Mahena
Sri Lanka	Sri Lanka Tall	Sri Lanka	Saint Anne's	SLT19	Saint Anne's

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Sri Lanka	Sri Lanka Tall	Sri Lanka	Sithrakala	SLT26	Sithrakala
Sri Lanka	Sri Lanka Tall	Sri Lanka	Spicata	SLT18	Spicata
Sri Lanka	Sri Lanka Tall	Sri Lanka	Thammenna	SLT25	Thammenna
Sri Lanka	Sri Lanka Tall	Sri Lanka	Wackwella	SLT41	
Sri Lanka	Sri Lanka Tall	Sri Lanka	Walahapitiya	SLT20	Walahapitiya
Sri Lanka	Sri Lanka Tall	Sri Lanka	Wellawa	SLT21	Wellawa
Sri Lanka	Sri Lanka Tall	Sri Lanka	Wellawa G	SLT36	Wellawa
Sri Lanka	Sri Lanka Tall	Sri Lanka	Wellawaya B	SLT37	Wellawaya
Sri Lanka	Sri Lanka Tall	Sri Lanka	Wilhelmina	SLT24	Wilhelmina
Sri Lanka	Sri Lanka Tall	Sri Lanka	Yatawatta	SLT27	Yatawatta
Sri Lanka	Sri Lanka Tall	Sri Lanka	Yodakandiya	SLT48	Yodakandiya
Sri Lanka	Sri Lanka Tall	Sri Lanka	Zoysawatta	SLT43	Zoysawatta
Sri Lanka	Sri Lanka Yellow Dwarf	Sri Lanka		CYD	Sri Lanka Yellow Dwarf, SLYD
Sri Lanka	Sri Lanka Yellow Dwarf	Sri Lanka	Kundasale	CYD02	Sri Lanka Yellow Dwarf, SLYD
Tanzania	Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Tanzania	Cambodia Tall	Cambodia	Tuk Sap	KAT02	GCB2, CBT
Tanzania	Cameroon Red Dwarf	Cameroon		CRD	
Tanzania	Catigan Green Dwarf	Philippines		CATD	CAT
Tanzania	East African Tall	Kenya	Faza	EAT13	EATFAZ
Tanzania	East African Tall	Kenya	Lamu	EAT29	EATLAM
Tanzania	East African Tall	Kenya	Msambweni	EAT27	EATBWE
Tanzania	East African Tall	Tanzania	Bagamoyo	EAT18	EATBAG
Tanzania	East African Tall	Tanzania	Boma	EAT25	EATBOM
Tanzania	East African Tall	Tanzania	Boza	EAT14	EATBOZ
Tanzania	East African Tall	Tanzania	Chambezi	EAT02	EATCHA
Tanzania	East African Tall	Tanzania	Jambiani	EAT04	EATJAM
Tanzania	East African Tall	Tanzania	Kiembesamaki	EAT05	EATKIE
Tanzania	East African Tall	Tanzania	Kifumangao	EAT03	EATKIF
Tanzania	East African Tall	Tanzania	Kimanga	EAT15	EATKIM
Tanzania	East African Tall	Tanzania	Kinowe	EAT08	EATKIN
Tanzania	East African Tall	Tanzania	Kiombamvua	EAT06	EATKIO
Tanzania	East African Tall	Tanzania	LBS	EAT12	Kange, LBS
Tanzania	East African Tall	Tanzania	Mafia	EAT01	EATMFA
Tanzania	East African Tall	Tanzania	Mazizini	EAT07	EATMAZ
Tanzania	East African Tall	Tanzania	Mchukwi	EAT17	EATMCH
Tanzania	East African Tall	Tanzania	Mikindani	EAT21	EATMIK
Tanzania	East African Tall	Tanzania	Msanga Mkuu	EAT22	EATMSA
Tanzania	East African Tall	Tanzania	Msuka	EAT09	EATMSU
Tanzania	East African Tall	Tanzania	Mtoni	EAT28	EATMTO
Tanzania	East African Tall	Tanzania	Mwambani	EAT23	EATMWA
Tanzania	East African Tall	Tanzania	Ng'apa	EAT20	EATNGP

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Tanzania	East African Tall	Tanzania	Pehepehe	EAT11	EATPEH
Tanzania	East African Tall	Tanzania	Singino	EAT19	EATKLW
Tanzania	East African Tall	Tanzania	Songomnara	EAT30	EATSMR
Tanzania	East African Tall	Tanzania	Songosongo	EAT16	EATSON
Tanzania	East African Tall	Tanzania	Tumaini	EAT24	EATTUM
Tanzania	East African Tall	Tanzania	Vuo	EAT26	EATVUO
Tanzania	East African Tall	Tanzania	Yellow	EAT10	EATYEL
Tanzania	East African Tall	Tanzania		EAT	
Tanzania	Karkar Tall	Papua New Guinea		KKT	
Tanzania	King Coconut	Sri Lanka		RTB	Rath Thembili, KC
Tanzania	Laccadive Micro Tall	India		LMT	LACM, LACO
Tanzania	Laccadive Ordinary Tall	India		LCT	LACO, LACM
Tanzania	Madang Brown Dwarf	Papua New Guinea	MBD	Papua New Guinea	Brown Dwarf, PGBD
Tanzania	Malayan Green Dwarf	Malaysia		MGD	
Tanzania	Malayan Red Dwarf	Malaysia		MRD	
Tanzania	Malayan Tall	Malaysia		MLT	
Tanzania	Malayan Yellow Dwarf	Malaysia		MYD	MYD, MLI
Tanzania	Niu Leka Dwarf	Fiji		NLAD	Niu Leka Green Dwarf, NLGD
Tanzania	Panama Tall	Panama	Aguadulce	PNT01	PNT
Tanzania	Panama Tall	Panama	Monagre	PNT02	PNT
Tanzania	Pemba Red Dwarf	Tanzania	Tanga	PRD01	Kitamli, PRDTAN
Tanzania	Pemba Red Dwarf	Tanzania	Zanzibar	PRD02	Kitamli, PRDZNZ
Tanzania	Rennell Island Tall	Solomon Islands		RIT	RLT, RLT
Tanzania	Rotuman Tall	Fiji		RTMT	ROT
Tanzania	Sri Lanka Green Dwarf	Sri Lanka		PGD	Pumilla Green Dwarf, SGD
Tanzania	Tacunan Green Dwarf	Philippines		TACD	TCN
Tanzania	Tagnanan Tall	Philippines		TAGT	TGT
Tanzania	Tahitian Tall	France French Polynesia		TAT	Polynesia Tall, PYT
Tanzania	Thailand Tall	Thailand		THT	Thailand Tall
Tanzania	Vanuatu Tall	Vanuatu		VTT	New Hebrid Tall, NHT
Tanzania	West African Tall	Côte d'Ivoire		WAT	
Thailand	Aromatic Green Dwarf	Thailand		AROD	Nam Hom, ARO
Thailand	Cameroon Red Dwarf	Cameroon		CRD	Cameroon Orange Dwarf, NRC
Thailand	Madang Brown Dwarf	Papua New Guinea	MBD	Papua New Guinea	Brown Dwarf
Thailand	Malayan Red Dwarf	Malaysia		MRD	NRM
Thailand	Malayan Yellow Dwarf	Malaysia		MYD	Genjah Kuning Malaysia

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Thailand	Nawasi Tall Sugar Thailand Tall	Thailand		NAWT01	
Thailand	Nok Koom Green Dwarf	Thailand		NKMD	Mu Si Khieo (Nok Koom)
Thailand	Pak Chok Tall	Thailand	Long fruited	PCKT02	
Thailand	Pak Chok Tall	Thailand	Round fruited	PCKT01	
Thailand	Pathiu Green Dwarf	Thailand		PTID	Mu Si Khieo, Pathiu
Thailand	Rennell Island Tall	Solomon Islands		RIT	RLT, Dalam Rennell
Thailand	Sri Lanka Tall	Sri Lanka	Ambakelle	SLT02	
Thailand	Thailand Brown Dwarf	Thailand		THBD	
Thailand	Thailand Orange Dwarf	Thailand	Chumphon	THOD01	Maphrao Fai, FAID, Thai Red Dwarf I
Thailand	Thailand Orange Dwarf	Thailand	Prachuap	THOD02	Thai Red Dwarf II, MSSD, Mu Si Som
Thailand	Thailand Tall	Thailand	Bang Laung	THT20	
Thailand	Thailand Tall	Thailand	Edible Husk	THT16	
Thailand	Thailand Tall	Thailand	Jehae	THT23	
Thailand	Thailand Tall	Thailand	Kalok	THT08	Kalok, KLKT
Thailand	Thailand Tall	Thailand	Kanchanadit	THT19	
Thailand	Thailand Tall	Thailand	Khlong Ging	THT14	
Thailand	Thailand Tall	Thailand	Klog Yao	THT29	
Thailand	Thailand Tall	Thailand	Ko Samui	THT04	
Thailand	Thailand Tall	Thailand	Kuan Don	THT27	
Thailand	Thailand Tall	Thailand	Laem Ngop	THT10	
Thailand	Thailand Tall	Thailand	Laem Talumpuk	THT26	
Thailand	Thailand Tall	Thailand	Makham Khu	THT22	
Thailand	Thailand Tall	Thailand	Maphrao Klang	THT06	Maphrao Klang, KLGT
Thailand	Thailand Tall	Thailand	Maphrao Yai	THT05	Maphrao Yai, YAI
Thailand	Thailand Tall	Thailand	Na Toey	THT30	
Thailand	Thailand Tall	Thailand	Nakhon si Tham.	THT03	Nakhon Si Thammarat Tall
Thailand	Thailand Tall	Thailand	Nam Sung	THT09	
Thailand	Thailand Tall	Thailand	Namon	THT24	
Thailand	Thailand Tall	Thailand	Nong Song Hong	THT13	
Thailand	Thailand Tall	Thailand	Pa Ngew	THT18	
Thailand	Thailand Tall	Thailand	Pak Nam	THT11	
Thailand	Thailand Tall	Thailand	Pattani	THT21	
Thailand	Thailand Tall	Thailand	Sawi	THT01	
Thailand	Thailand Tall	Thailand	Sawi Yellow	THT15	
Thailand	Thailand Tall	Thailand	Spicata	THT07	Maphraeo, SPIT
Thailand	Thailand Tall	Thailand	Taidaeng	THT28	
Thailand	Thailand Tall	Thailand	Tap Sakae	THT02	Tap Sakae Tall
Thailand	Thailand Tall	Thailand	Thong Badan	THT17	
Thailand	Thailand Tall	Thailand	Wang Chang	THT12	
Thailand	Thailand Tall	Thailand	Wang Yao	THT25	
Thailand	Thailand Yellow Dwarf	Thailand		MSLD	Mu Si Luang Nali Ke

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Thailand Phuang	Thalai Roi Tall	Thailand		TLRT	Thalai Roi Thailand Tall
Thailand	Thung Kled Green Dwarf	Thailand	TKD	Mu Si Khieo, Thung Kled	
Thailand	West African Tall	Côte d'Ivoire		WAT	GOA, Dalam Afrika Barat
Tonga	Niu Kafa Tall	Tonga	Tonga	NKFT03	Niu Afa
Tonga	Niu Leka Dwarf	Fiji		NLAD	
Tonga	Niu Matakula	Tonga		NLLT	
Tonga	Niu Taokave	Tonga		NTAT	
Tonga	Niu Vai Tall	Tonga		NVIT	
Tonga	Tonga Tall	Tonga		TONT	
Tonga	Tonga Tall	Tonga	Utongau	TONT06	
Vanuatu	Aromatic Green Dwarf	Thailand		AROD	Nain Vert Aromatique, NVP7
Vanuatu	Baybay Tall	Philippines		BAYT	Grand Bay-Bay, GPH4, PHT4
Vanuatu	Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Vanuatu	Cameroon Red Dwarf	Cameroon		CRD	Nain Rouge Cameroun, NRC
Vanuatu	Catigan Green Dwarf	Philippines		CATD	NVP2
Vanuatu	Gazelle Peninsula Tall	Papua New Guinea		GPT	Grand Gazelle, GGZ, GNG04
Vanuatu	Karkar Tall	Papua New Guinea		KKT	Grand Karkar, GKK, GNG01
Vanuatu	Madang Brown Dwarf	Papua New Guinea		MBD	Nain Brun Nouvelle Guinée, NBN
Vanuatu	Malayan Red Dwarf	Malaysia		MRD	Nain Rouge Malais, NRM, Nain Rouge Fiji
Vanuatu	Malayan Tall	Malaysia		MLT	Grand de Malaisie, GML
Vanuatu	Malayan Yellow Dwarf	Malaysia		MYD	Nain Jaune Malais, NJM, Nain Jaune Ghana
Vanuatu	Marshall Islands Green Dwarf	Marshall Islands		MIGD	Nain Vert Kiribati, NVK, MIGD
Vanuatu	New Caledonia Tall	France New Caledonia		NCT	Grand Nouvelle Caledonie, GNC, Grand Ouvéa
Vanuatu	Niu Leka Dwarf	Fiji		NLAD	Nain Niu Leka, NNL, Fiji Dwarf
Vanuatu	Pilipog Green Dwarf	Philippines		PILD	Nain Vert Pilipog, NVP5
Vanuatu	Rangiroa Tall	France French Polynesia		RGT	Grand Polynesie, GPY2
Vanuatu	Rennell Island Tall	Solomon Islands		RIT	Grand Rennel, GR
Vanuatu	Rotuman Tall	Fiji		RTMT	Grand Rotuma, GRT, Fiji Rotuma

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Vanuatu	Samoan Yellow Dwarf	Samoa		SYD	Nain Jaune Apia, NJA, Nain Jaune Samoa
Vanuatu	Solomon Islands Tall	Solomon Islands	Nendo	SIT01	Grand Salomon, GSN1
Vanuatu	Solomon Islands Tall	Solomon Islands	Reef	SIT02	Grand Salomon, GSN2
Vanuatu	Tacunan Green Dwarf	Philippines		TACD	Nain Vert Tacunan, NVP3
Vanuatu	Tagnanan Tall	Philippines		TAGT	Grand Tagnanan, GTN1
Vanuatu	Thailand Green Dwarf	Thailand		THD	Nain Vert Thaïlande, NVT
Vanuatu	Tonga Tall	Tonga		TONT	Grand Tonga, GTG
Vanuatu	Vanuatu Red Dwarf	Vanuatu		VRD	Nain Rouge Vanuatu, NRV
Vanuatu	Vanuatu Tall	Vanuatu	Avunarara	VTT22	Grand Vanuatu Avunarara, MLO1, GVT22
Vanuatu	Vanuatu Tall	Vanuatu	Banks	VTT10	Grand Vanuatu Banks, GVT10, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Vanuatu	Bay Barrier	VTT13	Grand Vanuatu Bay Barrier, PEN1, GVT13
Vanuatu	Vanuatu Tall	Vanuatu	Bethel	VTT15	Grand Vanuatu Bethel, AMB1, GVT15
Vanuatu	Vanuatu Tall	Vanuatu	Brenwe	VTT11	Grand Vanuatu Brenwe, MAL1, GVT11
Vanuatu	Vanuatu Tall	Vanuatu	Bulldoz	VTT05	Grand Vanuatu Bulldoz, GVT05, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Vanuatu	Leroux	VTT02	Grand Vanuatu Leroux, GVT02, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Vanuatu	Napueiamasan	VTT16	Grand Vanuatu Napueiamasan, TAN1, GVT16
Vanuatu	Vanuatu Tall	Vanuatu	Nipeka	VTT17	Grand Vanuatu Nipeka, TAN2, GVT17
Vanuatu	Vanuatu Tall	Vanuatu	Pélé	VTT21	Grand Vanuatu Pélé, TON1, GVT21
Vanuatu	Vanuatu Tall	Vanuatu	Port-Olry	VTT06	Grand Vanuatu Port-Olry, GVT06, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Vanuatu	Sanesup	VTT14	Grand Vanuatu Sanesup, AMB1
Vanuatu	Vanuatu Tall	Vanuatu	Surunda	VTT01	Grand Vanuatu Surunda, GVT01, Grand Nouvelle-Hébrides-GNH

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Vanuatu	Vanuatu Tall	Vanuatu	Tanna1	VTT07	Grand Vanuatu Tanna1, GVT07, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Vanuatu	Tanna2	VTT09	Grand Vanuatu Tanna2, GVT09, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Vanuatu	Torres	VTT08	Grand Vanuatu Torres, GVT08, Grand Nouvelle-Hébrides-GNH
Vanuatu	Vanuatu Tall	Vanuatu	Ukoro	VTT12	Grand Vanuatu Ukoro, SAN1, GVT12
Vanuatu	Vanuatu Tall	Vanuatu	Var	VTT19	Grand Vanuatu Var, BAN1, GVT19
Vanuatu	Vanuatu Tall	Vanuatu	Walarano	VTT18	Grand Vanuatu Walarano, MAL2, GVT18
Vanuatu	Vanuatu Tall	Vanuatu	Waluembue	VTT20	Grand Vanuatu Waluembue, AOB1
Vanuatu	West African Tall	Benin	Ouidah	WAT06	Grand Ouest Africain Ouidah, GOA6, Grand Dahomey
Viet Nam	Brazilian Green Dwarf	Brazil	Equatorial Guinea	BGD02	Equatorial Guinea Green Dwarf, EGD, NVE, NVB, Nain Vert Guinée Equatoriale
Viet Nam	Catigan Green Dwarf	Philippines		CATD	
Viet Nam	Catigan Green Dwarf	Philippines		CATD	
Viet Nam	Dau Tall Binh An	Viet Nam		DAUT04	
Viet Nam	Dau Tall Cha Va	Viet Nam		DAUT03	
Viet Nam	Dau Tall Giong Trom	Viet Nam		DAUT01	DAUT, Dau Tall
Viet Nam	Dau Tall Phu My	Viet Nam		DAUT02	
Viet Nam	Eo Brown Dwarf	Viet Nam		EOD	
Viet Nam	Lua Tall	Viet Nam		LUAT	Do (Red)
Viet Nam	Macapuno Tall Dua Sap	Viet Nam		MACT02	Sap Dua kem
Viet Nam	Malayan Red Dwarf	Malaysia		MRD	Orange Dwarf
Viet Nam	Malayan Yellow Dwarf	Malaysia		MYD	
Viet Nam	Malayan Yellow Dwarf	Malaysia	Ghana	MYD02	Malayan Yellow Dwarf, MYD
Viet Nam	San Ramon Tall	Philippines		SNRT	
Viet Nam	Sri Lanka Red Dwarf	Sri Lanka		SLRD01	SLRD
Viet Nam	Sri Lanka Yellow Dwarf	Sri Lanka		CYD	CYD
Viet Nam	Ta Tall	Viet Nam	Ben Luc	TAAT03	
Viet Nam	Ta Tall	Viet Nam	Cat Trinh	TAAT09	
Viet Nam	Ta Tall	Viet Nam	Giong Lon	TAAT11	

Country of conservation	International cultivar name	Country of origin	Population within the cultivar	International abbreviation	Synonyms and other names
Viet Nam	Ta Tall	Viet Nam	Giong Trom	TAAT01	Dua Ta Ta Tall
Viet Nam	Ta Tall	Viet Nam	Ham Tien	TAAT08	
Viet Nam	Ta Tall	Viet Nam	Phu Huu	TAAT05	
Viet Nam	Ta Tall	Viet Nam	Tam An Dong Nai	TAAT04	
Viet Nam	Ta Tall	Viet Nam	Tam An Vung Tau 1	TAAT06	
Viet Nam	Ta Tall	Viet Nam	Tam An Vung Tau 2	TAAT07	
Viet Nam	Ta Tall	Viet Nam	Tam Quan Nam	TAAT10	
Viet Nam	Ta Tall	Viet Nam	Tan Thoi	TAAT02	
Viet Nam	Tam Quan Yellow Dwarf	Viet Nam		TYD	Dua Nep
Viet Nam	West African Tall	Côte d'Ivoire		WAT	Grand Ouest Africain, GOA
Viet Nam	Xiem Green Dwarf	Viet Nam		XGD	
VietNam	Bago-Oshiro Tall	Philippines		BAOT	Hijo Tall
VietNam	Sri Lanka Green Dwarf	Sri Lanka		PGD	Pumilla Green Dwarf, PGD

Annex 2. Guidelines for producing coconut photos

The procedure for producing good quality coconut photos is as difficult as a complex laboratory protocol. During the development of this catalogue, illustrated guidelines were conceived and sent to participating members, which described the procedures for making standardized photos requested for figures.

The main elements of these guidelines are given below, some of which appear to be deceptively basic.

Resources needed

1. Harvest hook
2. Bamboo metre scale
3. Digital camera with 300mm zoom lens and medium intensity electronic flash capable of taking the following quality: 8.7 x 13.9 cm (1029 x 1643 pixels) in the CYMK mode (Cyan, Magenta, Yellow and Black). Its resolution is 300 pixels per inch or 118.1 pixels per cm.
4. 12m aluminium ladder and/or trained coconut climber
5. Manual saw
6. Nut drying rack (thick piece of wood with nails)
7. Two workers for sawing, and hanging fruit
8. Mixture of water and lemon juice (copra cleaning fluid)
9. Scissors

Copra photo platform: A plywood sheet of 1.5 m x 1.8 m, with thickness of 20 to 30 mm covered with grey-blue fabric[1]. Hammer 12 large nails (about 10 cm long) into the back of the plywood sheet (at distances as shown) to hold the fruits as indicated in Figure 3 (see following pages). A 20-cm scale and a tag with the international name of the variety are added to the lower part.

10. De-husked nut photo platform: Another plywood sheet (0.5 m x 1 m x 10 to 20 mm), covered with grey-blue fabric, pieces of plastic tubes (10 to 15 cm in diameter and 2 to 5 cm long) may be used to hold the coconuts. A 10-cm scale is added to the lower part (see Figure 4).
11. Coconut eye cleaning-brush (toothbrush)
12. Light-reflector: Two *in situ* white painted walls, forming a reflective corner; or 2 white-painted 1 m x 1 m plywood sheets; or 2 large white umbrellas.
13. Photo-editing software

[1] Any available clean grey-blue fabric can fit, as the pictures will be further digitally processed.

Guidelines for producing the whole palm photo

Figure 1 illustrates the technique for taking a good photo of a coconut palm.

1. Select an appropriate, representative true-to-type palm, ideally 10 to 12 years of age, and if possible bearing more than 60 fruits, such as the palm presented in photos 1 and 2. It is preferable to portray healthy and productive coconut palms, as the idea of photographing an "average palm" is inappropriate: the same palm may bear a quite variable number of fruits according to seasons and years.
2. Remove the old, dry leaves and weeds around the palm. By using a harvest hook, or by climbing to the palm crown, cut also two to three leaves (as close to the stem as possible), in the direction of the photographer, so the bunches and fruits are clearly visible from the ground.
3. Avoid taking the photograph in the middle of the day, when the light reduces image quality, as shown in photo 3. Wait for a clear, sunny day, and go to the site at 7 am or 5 pm, according to the side of the palm that was prepared (see step 2) for being photographed. At these times of day, a golden, flat light should come from behind the photographer allowing for sharp photos, with bunches well illuminated and a blue sky as background, such as on photo 4.
4. The base of the stem and the ends of the leaves must be visible in the photo, in order to have a complete view of the palm. There is no scale in this photo. Ideally a 1m scale (such as a bamboo cane), should be visible, or an informal scale such as a person.
5. Making such a photo will require 1 to 2 hours, including the time spent to select and clean the palm.
6. The final output is a photo of 8.7 x 13.9 cm (1029 x 1643 pixels) in the CYMK mode (Cyan, Magenta, Yellow and Black). Its resolution is 300 pixels per inch or 118.1 pixels per cm.

Figure 1. Making a good coconut palm photo.



Guidelines for producing inflorescence and bunch photos

Figure 2 illustrates the technique for making inflorescence and bunch photos.

1. As inflorescence and bunch photos need to be made *in situ*, climbing the palm may often be required.

- For palms less than 12-years old, it is possible to make some of the photos from the ground or even standing on the roof of an (old) car, as shown in photo 1.
- For taller palms, researchers and technicians generally use aluminium ladders to reach an altitude up to 12 m. If ladders are not available a coconut climber[2] can be trained as follows:

   a. Climb the selected palm

   b. Clean it by cutting two leaves and a few leaflets from the other leaves.

   c. Climb down.

   d. Climb the closest neighbouring palm, well oriented to take the photo.

   e. Use a good camera with a minimum of 300 mm zoom lens, as generally a distance of 8 to 10 m separates the palms

2. Photos of bunches and inflorescences are ideally made during light cloudy days, avoiding the period from 11 am to 3 pm when the light is hard and vertically orientated. Otherwise the photos will not be good, such as those presented in photos 2a, b and 3a, b. In these photos, the palms were not cleaned and the light was too hard and bright.
3. The best light for these photographs is generally obtained during the changeover from direct sunlight to cloud shadow. Additional electronic flash of medium intensity may be used.
4. Take four to five photos for each topic to ensure good results and select the best photo (4a, b).
5. Making such a photo will require about 1 hour, including the time spent to select and clean the palm.
6. The final output for bunch and inflorescence illustrations are photos, in portrait format of 1000 x 667 pixels in the CYMK mode (Cyan, Magenta, Yellow and Black). At 118.1 pixels per cm, or 300 pixels per inch, it gives a printed size of 8.5 x 5.6 cm.

2 These workers are best fitted for such a task because their normal job consists in climbing the coconut palms to harvest the fruits.

Figure 2. Making good inflorescence and bunch photos.



1



2a



3a



4a

2b



3b



4b



Guidelines for producing the 12-fruit photos

Figure 3 provides an illustrated guideline for making a photo of 12 fruits.

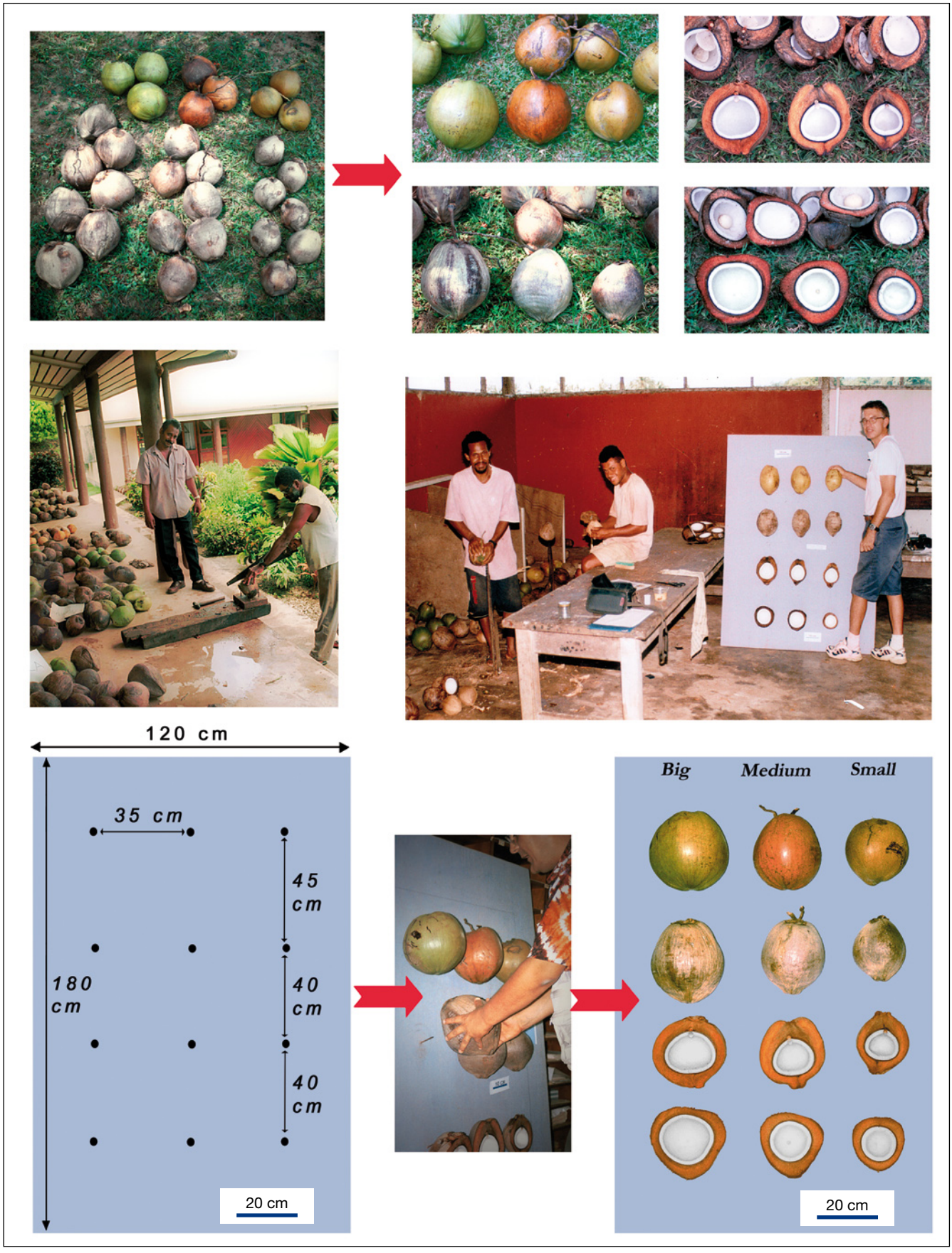
1. Harvest 9 immature fruits (3 samples of each small, medium and large nuts) on nine different palms. All fruits must be free of disease lesions and insect damage.
2. Select 3 immature fruits among the 9 harvested to portray colour, size and shape variability that may exist within the variety.
3. From the same 9 different coconut palms also harvest 21 mature fruits (7 each of small, medium and large nuts), each with a brown-grey epidermis and free water inside. All fruits must be free of disease lesions and insect damage.
4. Select 3 mature fruits among the 21 harvested to portray the colour, size and shape variability that may exist within the variety.
5. Split the remaining fruits, half longitudinally, the other half equatorially, using a manual saw, one worker sawing and another worker, if available, hanging the coconut fruit on a thick piece of wood with nails.
6. Wash the split nuts with a mix of water and lemon juice for the meat to remain white while drying. Remove any loose fibres that go over the husk with a pair of scissors.
7. Mount the fruits on the pre-prepared copra photo platform (see 'Resource needed' section 10) on the nails as shown on figure 3.
8. Add to the lower part of the platform a 20-cm scale and a tag with the international name of the variety.
9. The final output is a photo of 8.7 x 13.9 cm (1029 x 1643 pixels) in the CYMK mode. Its resolution is 300 pixels per inch or 118.1 pixels per cm. The 20-cm scale presented close to the fruits counts 200 pixels and is 1.69 cm long in the photo.
10. Making such a photo will require two to three hours of work. A team of three people can make ten of these photos in one (hard) working day.
11. Use photo editing software to optimize the final presentation. If the initial image is of good quality, the subsequent work is easier. However, even if the photo is only of medium quality, photo processing software is now so powerful that it is possible, although time-consuming, to achieve an acceptable-quality final product.

Partners often send photos of different size, which have to be converted in order to conform to the same specifications. The first step of the conversion process will be to measure the number of pixels within the 20-cm scale presented in the photo. In the final photo, the 20-cm scale must count 200 pixels and should be 1.69 cm long (see 9 above).

So, imagine you receive a dense, digital fruit photo of 1500 x 2500 pixels, with the 20-cm scale counting 280 pixels instead of the required 200 pixels.

- This photo will be resized with a 200/280 = 1.4 quotient.
- It will become a temporary photo of 1071 x 1786 pixels.
- The 12 resized fruits from this temporary photo will be digitally isolated, extracted from the background and transferred to another file with the standard size of 1029 x 1643 pixels and appropriate background colour and 20-cm scale. The background colour is a standard colour referenced: Pantone 644 CVC. This colour is equivalent to: Red 163 Green 180 and Blue 207 in the RGB mode, and Cyan 39%, Yellow 9%, Magenta 22%, and Black 0% in the CYMK mode.
- The processing of a 12-fruit photo will take at least 20 minutes using Photoshop software.

Figure 3. illustrated guideline for making a photo of 12 fruits.

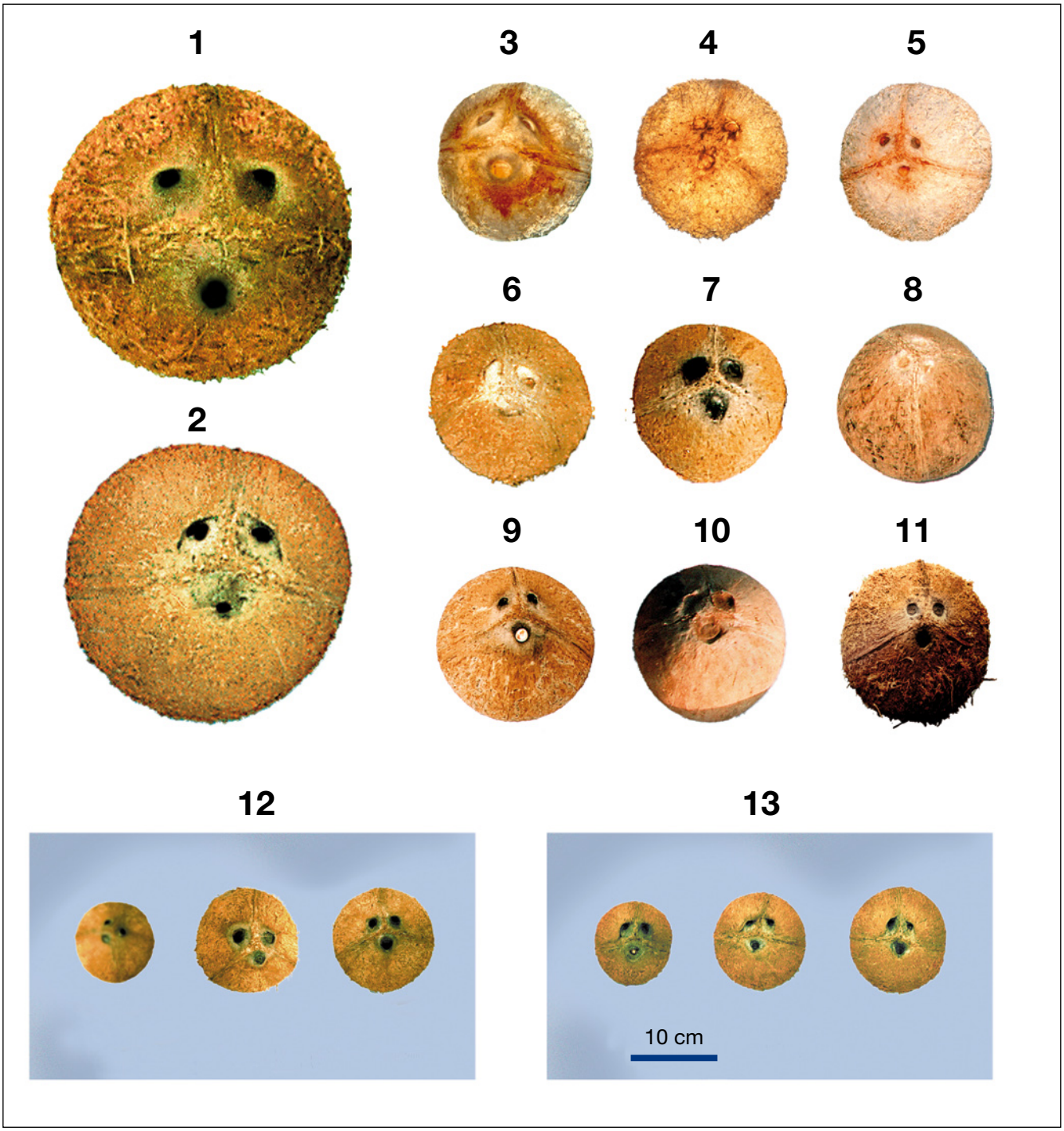


Guidelines for producing the photos of three de-husked nut

1. For making the photos of 3 de-husked nuts, 15 to 20 fully mature fruits need to be de-husked. The fruits need to be fully mature to avoid unpleasant whitish aspect from dry immature coconuts.
2. Allow a 1-2 day interval between de-husking and taking the photographs, to ensure a homogeneous russet colour.
3. Select three nuts from the lot, one each of large, medium and small.
4. Dry-clean the "coconut eyes" (fungus-blackened germination holes), with a brush (e.g. toothbrush).
5. Place a pre-prepared nut photo-platform (see 'Resources needed' section 11) on the ground,
6. Mount the three coconuts on the pieces of plastic tubing, horizontally aligning the top (germination holes) of the three coconuts. This ensures that the three coconuts are at the same distance from the camera to enable taking a perfectly sharp photo. A 10-cm scale is added to the bottom.
7. Take the photo from the top.
8. Avoid direct sunlight and any unidirectional lightning. Ideally, find a corner between two white walls, which act as reflectors, or two white-painted 1 m x 1 m plywood sheets, or two white umbrellas.
9. Previous observations record great variability in shape and disposition of the three "eyes" among and between the coconut varieties.
10. The final output is a photo of 10.16 x 6.77 cm (1200 x 800 pixels) in the CYMK mode. Its resolution is 300 pixels per inch or 118.1 pixels per cm. The 20-cm scale presented close to the fruits counts 400 pixels and is 3.36 cm long in the photo. So, compared to the other fruits from the 12 fruits photo, the de-husked nuts coconuts are represented with a two-fold larger scale.
11. Figure 4 gives examples of various good and bad photos for the three de-husked coconuts:

- 1 and 2: good single coconut photos
- 3 and 4: the coconuts are too young and not dry
- 5: the coconut remains too young (it remains whitish when dry)
- 6: the coconut eyes are not brushed (whitish)
- 7: the coconut eyes are not brushed (black fungus)
- 8: the coconut eyes are not well centred
- 9: removing of husk fibres by scraping is excessive
- 10: bad hard direct sunlight (excess shadow)
- 11: light is too directional (excess shadow)
- 12: an example of a bad photo: two coconuts are of the same size, eyes and mouth are not well oriented, scale is missing and the smaller coconut is blurred
- 13: a good 3 coconuts photo.

Figure 4. Making good photos of de-husked nuts.



Guidelines for standardization of the coconut fruit colours

The budget devoted to the catalogue project did not allow to buy a good digital camera and to use it in all the partner countries. As the files used and processing done was highly variable from Côte d'Ivoire through India to the Cook Islands, the quality was extremely variable, with strong dominant colours most often encountered.

Generally, the shades of coconut fruits are in the range of yellow, orange, green and brown. While making and receiving new fruit photos, different colours of immature fruits were progressively found. Each time a new colour was found; a coloured fruit was digitally picked and added to the new "standard for coconut fruit colours" which is presented in Figure 5. The fruit No. 11 was photographed in Santo Island, Vanuatu, while fruit No. 10 was photographed in Côte d'Ivoire; fruit No. 21 was in Tonga Islands, etc.

Colour perception is subjective — i.e. everyone sees colour somewhat differently. Colour is not an object; it is a property of light, of a particular portion of the visible spectrum that is reflected by the object. The light in the surroundings of an object also affects how human eye perceives it. This "standard of coconut fruit colour" helps to recognize the colour easily and to associate it with a variety.

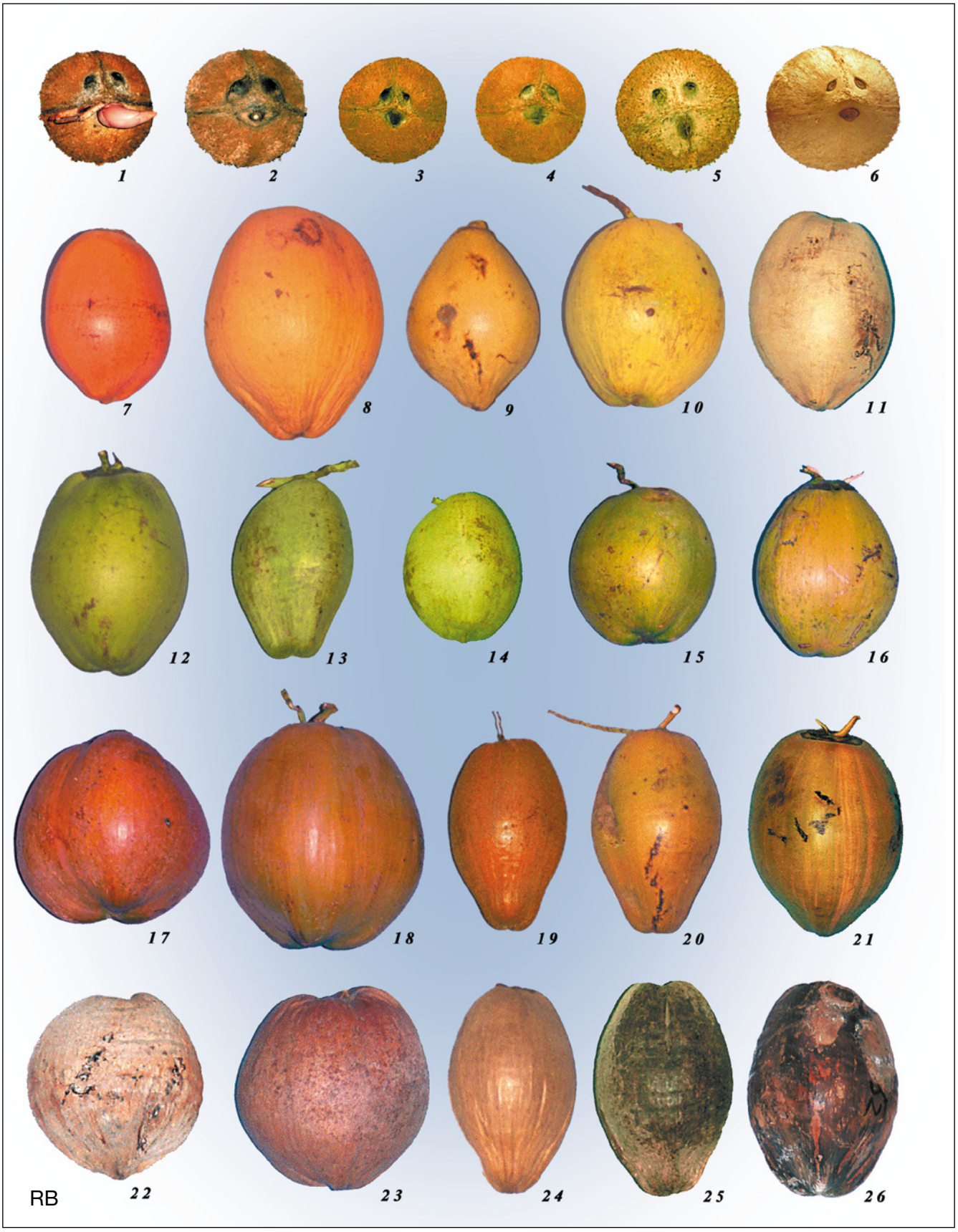
For instance, the paler yellow colour (No. 11) refers to the Samoa Yellow Dwarf, while Malayan Yellow Dwarf (No. 10) has a more intense and greenish yellow colour. The incorrectly named Cameroon Red Dwarf (No. 9) is paler orange in colour, soft like that of apricot. Malayan Red Dwarf (No. 8) has a bright orange colour, although the colour of Tahiti (No. 7) or Vanuatu Red Dwarf is more intense and reddish. Brazil Green Dwarf (No. 12) is deeper green, while Sri Lanka Green Dwarf (No. 13) is greyish green; the Pilipog Green Dwarf (No. 14) is yellowish green. Other colours, mostly intermediate between green and brown, are more frequent and can be found in a range of coconut varieties.

Some technical problems of colour adjustment have emerged. The initial digital standard was conceived under the RGB mode, i.e. red, green and blue colours of light mixed in the additive process for full-colour creation. To allow the standard to be printed, we have to move it from RGB to the CMYK mode. Changing the colour mode from RGB to CYMK generally provokes a slight fading of colours that has to be corrected later.

Therefore, once the standard is established, for each new variety photographed, the researcher-in-charge indicates the number of the standard colour closest to this variety. Then subjectively selected colour from the film can be re-created by using digital photo processing software.

As described above, the production of good usable quality images, a composite of six photos for each variety is indeed laborious and technically demanding. The whole process, when done carefully, from the negative film to the ready-to-print digitized variety figure takes between three and four hours of photo processing work.

Figure 5. Standardized coconut fruit colours.



Guidelines for producing the “free” picture to the top right

The “free” picture is presented on the top right of each variety figure.

This picture provides any additional illustration (photo, map, figure or drawing) related to the coconut variety, such as special traits not visible in other pictures (e.g. pink colour inside the husk, detail of inflorescence, or aspect of the young palm) or any special use or ethno-botanical information about the variety.

The final output is the same size as the bunch and inflorescence photos, i.e. photos in portrait format of 1000 x 667 pixels in the CYMK mode. At 118.1 pixels per cm, or 300 pixels per inch, it gives a printed size of 8.5 x 5.6 cm. In this design, it is presented within an oval shape. Making such a picture will require a variable time depending on the chosen subject.

Challenges and opportunities for guidelines

Although the project work turned out to be more difficult than initially expected, significant progress has been made in the cataloguing of coconut varieties. Protocols are now well defined and difficulties are less likely to be underestimated than in the past years. More than 150 coconut varieties have already been described from conserved germplasm and farmers’ varieties.

The standards defined for the catalogues were presented during three successive years to the COGENT Steering Committee, and unanimously accepted by its members. However, maintaining the high standard set remains a challenge. The most challenging point is about photos. Initially, the difficulty of making the standardized photos was greatly underestimated. Most of the coconut breeders do not have the capacity to produce the required high quality photos without receiving an appropriate training. Moreover, even if they are trained, it is time-consuming and physically demanding, requiring climbing the coconut and staying for long periods in the field, enduring discomforts such as mosquitoes. Even professional photographers hired for the purpose sometimes refused to do the work.

The standard of quality initially defined is very high and difficult to achieve, especially in a project involving more than 20 countries scattered across the globe. Nevertheless, investment in such quality is worthwhile in the context of communications regarding the coconut palm and its products, and regarding the lack of knowledge about coconut genetic resources at global level. Some examples of varietal descriptions were also published in the COGENT bulletin (Bourdeix 1999, Bourdeix et al. 2000, Konan et al. 2000, Bourdeix et al. 2002).

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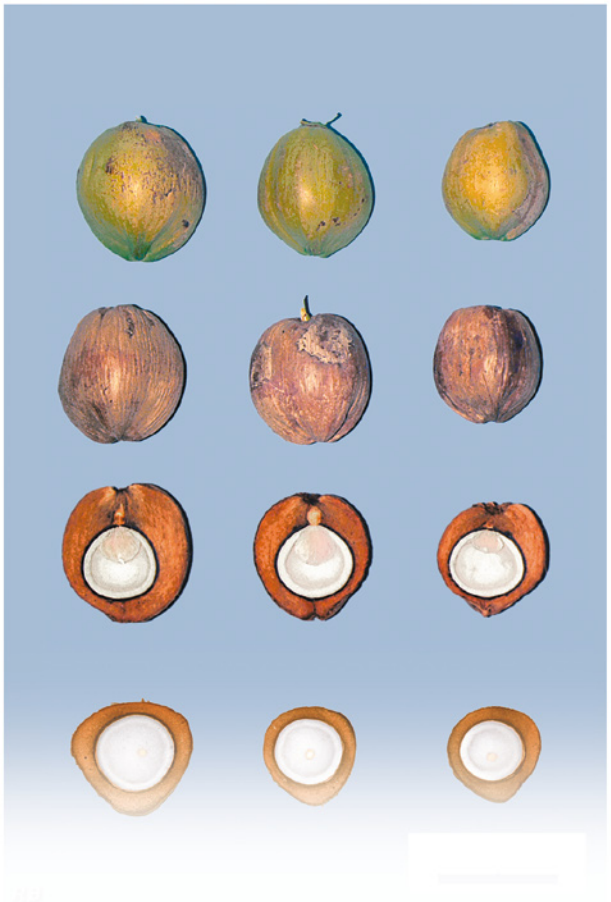







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