PACIFIC REGIONAL AGRICULTURAL PROGRAMME

PROJECT 2 P. D. I. C. C.

HYBRID CULTIVARS TRIALS AND COCONUT GERMPLASM IN VANUATU

TECHNICAL REPORT
JULY 1995 - JUNE 1996

by Jean Pierre LABOUISSE

PRAP

PACIFIC REGIONAL AGRICULTURAL PROGRAMME

PROJECT 2 P. D. I. C. C.

HYBRID CULTIVARS TRIALS AND COCONUT GERMPLASM IN VANUATU

TECHNICAL REPORT
JULY 1995 - JUNE 1996

by Jean Pierre LABOUISSE

PACIFIC REGIONAL AGRICULTURAL PROGRAMME
SUVA, FIJI
1996

PROGRAMME	PRAP II
PROJECT	Production and Dissemination of Improved Coconut Cultivars (Project 2)
IMPLEMENTING AGENCY	Vanuatu Agricultural Research and Training Centre- Santo - Vanuatu
TYPE OF REPORT	Annual technical report
# OF THE REPORT	05/96
REPORTING PERIOD	1 July 1995 - 30 June 1996
AUTHOR	Jean-Pierre Labouisse, Technical Adviser
OVERALL GOAL OF THE PROJECT	Sustain the supply of food and the level of income from the coconut in the South-Pacific
PROJECT PURPOSE	Increase the potential of coconut production
RESULTS	Increase the choices of improved cultivars Improve the quality of the planting material
ACTIVITIES	Inventory and description of coconut cultivars in the region Creation and test of hybrid cultivars in Vanuatu Advising the countries on the best hybrids to produce Training on breeding techniques, management of seed-gardens and nurseries
REPORT CONTENTS	Status of the hybrid cultivars' trials in Vanuatu and collections on June 1996 Works implemented from July 95 to June 96

TABLE OF CONTENTS

INTRODUCTION

This annual technical report is produced as a supplement of the Project 2 six monthly report (January 96-June 96).

The progress of the activities regarding each hybrid cultivars trials and the new collection of dwarf ecotypes set up in the Vanuatu Research and Training Centre (Santo, Vanuatu) is described in detail :

* Experimental design and field layout

* List of palms replaced since the planting of the trial

* Field map showing the status of the palms (dead, illegitimate) updated on June 1996

* Works implemented from 1st July 1995 to 30 June 1996: maintenance, fertilizers applied, leaf analysis results, pests and diseases recorded, treatments applied, hazards (cyclon), type of data gathered.

* Results of the observations: growth in young age, flowering

Since the beginning of the Project, 33 Dwarf x Tall cultivars have been created and 6 trials have been already planted. The planting of the last one, testing various hybrids with Samoan Tall as male, has been postponed to the end of 1996.

At present, the renewing of the Dwarf ecotypes collection (14 ecotypes) is nearly achieved. Thirteen ecotypes has been planted. The later one (Kiribati Green Dwarf) has been reproduced by hand pollination during year 1995 and the nuts are growed in nursery.

The status of the whole germplasm of VARTC is also presented.

Acknowledge to the VARTC Coconut Division for his substantial help in the maintenance of the trials and the gathering of data and specially to Gerald Pilot, Jean-Pierre Tabiusu, Godefroy Buletare, Valentino Telukluk and Eric Pascal.

ACCESSIONS CODES

GGZ - GPT	=	Gazelle Peninsula Tall - PNG
GKI - KIT	=	Kiribati Tall
GMV - MVT	=	Markham Valley Tall - PNG
GPY2 - RGT	=	Rangiroa Tall
GRL - RIT	=	Rennell Tall
GRT - RTM	=	Rotuman Tall - Fiji
GTG - TON	=	Tonga Tall
GVT - VTT	=	Vanuatu Tall
GWS - WST	=	Western Samoa Tall
NBN - MBD	=	Madang Brown Dwarf - PNG
NJA - SYD	=	Samoa Yellow Dwarf
NJM - MYD	=	Malayan Yellow Dwarf
NNL - NLA	=	Nui Leka Green Dwarf
NRC - CRD	=	Cameroon Red Dwarf
NRM - MRD	=	Malayan Red Dwarf
NRV - VRD	=	Vanuatu Red Dwarf
NVB - BGD	=	Brazilian Green Dwarf
NVP2 - CAT	=	Catigan Green Dwarf
NVP3 - TAC	=	Tacunan Green Dwarf
NVP5 - PIL	=	Pilipog Green Dwarf - Philippines
NVP7 - ARO	=	Aromatic Green Dwarf
NVT - THD	=	Thailand Green Dwarf

General list of the Dwarf x Tall comparative trials - Data gathered till June 1996

TRIAL AND ORIGIN OF POLLEN	TREATMENTS	DATE OF PLANTING	DATA GATHERED
VT-GC21 RENNELL TALL (RIT) SOLOMON ISLANDS	MBDxRIT MYDxRIT CRDxRIT VRDxVTT (control) BGDxRIT MRDxRIT (control)	APRIL 1992	Speed of germination Growth in the nursery Growth in the field (young age) Precocity (Flowering) First harvest (May 96) Disease susceptibility
VT-GC22 TONGA TALL (TON) TONGA	MRDxRIT (control) VRDxVTT (control) MRDxTON MYDxTON SYDxTON TONxNLA	FEBRUARY 1993	Speed of germination Growth in the nursery Growth in the field (young age) Precocity (Flowering) Disease susceptibility
VT-GC23 KIRIBATI TALL (KIT) KIRIBATI	VRDxVTT (control) BGDxRGT (control) MYDxKIT BGDxKIT MBDxKIT MRDxKIT	JANUARY 1994	Speed of germination Growth in the nursery Growth in the field (young age) Disease susceptibility
VT-GC24 ROTUMAN TALL (RTM) FIJI	VRDxVTT (control) MRDxRIT (control) MYDxRTM CRDxRTM MBDxRTM MRDxRTM	FEBRUARY 1994	Speed of germination Growth in the nursery Growth in the field (young age) Disease susceptibility
VT-GC25 MARKHAM VALLEY TALL (MVT) PNG	VRDxVTT (control) MRDxRIT (control) MBDxMVT MYDxMVT CRDxMVT MRDxMVT	DECEMBER 1994	Speed of germination Growth in the nursery Growth in the field (young age) Disease susceptibility
VT-GC26 GAZELLE PENINSULA TALL (GPT) PNG	VRDxVTT (control) MRDxRIT (control) MBDxGPT MYDxGPT CRDxGPT MRDxGPT BGDxGPT	JANUARY 1995	Speed of germination Growth in the nursery Growth in the field (young age) Disease susceptibility
VT-GC 27 WESTERN SAMOA TALL (WST) WESTERN SAMOA	VRDxVTT (control) MRDxRIT (control) MYDxWST SYDxWST CRDxWST BGDxWST MRDxWST	NOVEMBER 1996	Speed of germination Growth in the nursery

TRIAL VT- GC21

DWARVES x RENNELL TALL HYBRIDS

PDICC TRIAL N°1 **Field 105**

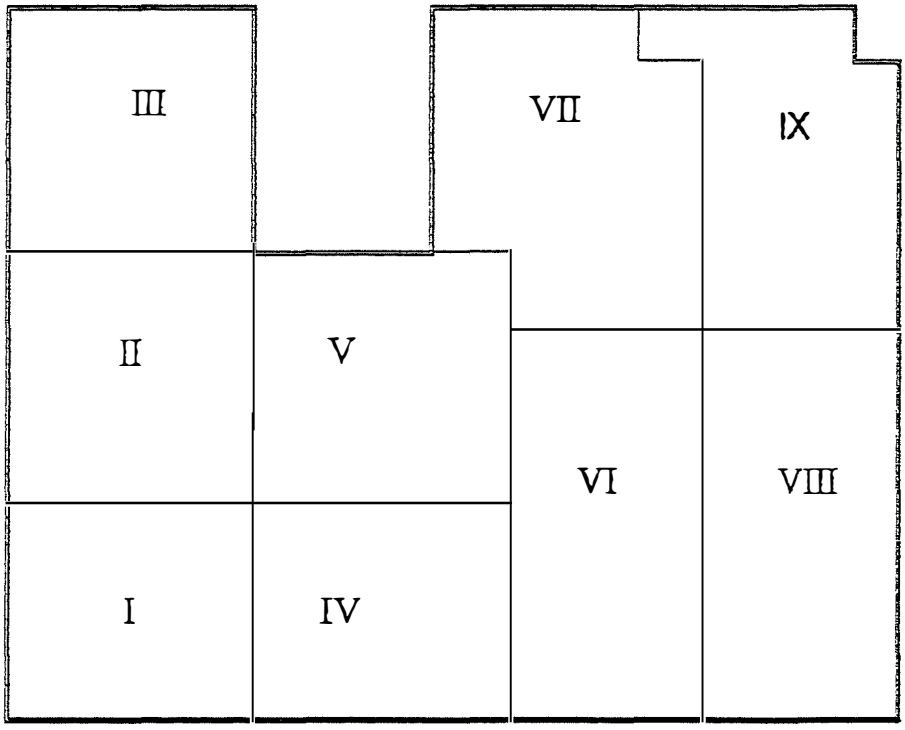
Pollen Variety : Rennell Tall (code : RIT = GRL)
Origin of pollen : Saraoutou germplasm (Field P30)

Treatments :

1	MBD x RIT NBNxGRL	4	VRDxVTT NRVxGVT
2	MYDxRIT NJMxGRL	5	BGDxRIT NVBxGRL
3	CRDxRIT NRCxGRL	6	MRDxRIT NRMxGRL

Experimental design : 9 randomized blocks
16 palms/plot

Field Lay-out :



Number of palms and area : Experiment : 864 palms (5,4 ha)
Total : 1229 palms (7,68 ha)

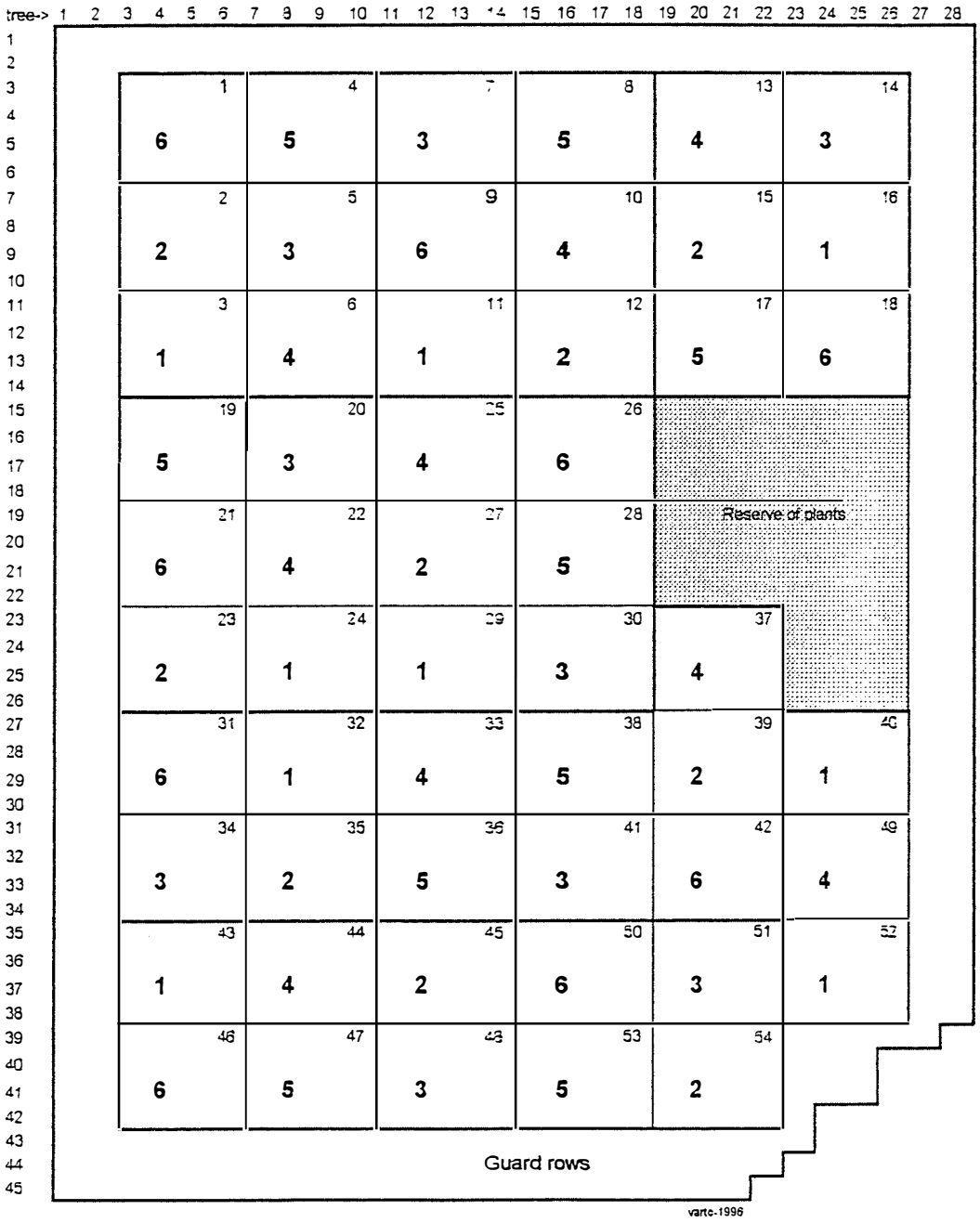
Date (s) of Planting April 1992 Blocks I - II complete
Blocks III-IV-V-VI-VII-VIII-IX without treatment n°6
February 1993 - Treatment 6 - on blocks III to IX

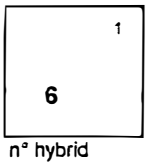
Other(s) February 1994 - Replacement of palms (see details)

PDICC-VTGC21 **FIELD 105**

Pollen variety: Rennell Tall

Planting : April 1992- February 1993





1= MBDxRIT (NBNxGRL)
2= MYDxRIT (NJMxGRL)
3= CRDxRIT (NRCxGRL)
4= VRDxVTT (NRVxGVT)
5= BGDxRIT (NVBxGRL)
6= MRDxRIT (NRMxGRL)

Pollen variety: Rennell Tall

Planting : April 1992- February 1993

LIST OF PALMS REPLACED

Palms replaced			Origin of replacement		
Matricule	Variety	Cause of Replacement	Variety	Origin	Date of Replacement
3.3	MRDxRIT	illegitimate	VRDxVTT	KDP	march 1994
3.28	border	dead	VRDxVTT	KDP	march 1994
4.24	CRDxRIT	illegitimate	CRDxRIT	P 105 24.26	march 1994
4.26	CRDxRIT	illegitimate	CRDxRIT	P 105 23.26	march 1994
5.11	CRDxRIT	illegitimate	CRDxRIT	P 105 25.26	march 1994
5.14	CRDxRIT	illegitimate	CRDxRIT	P 105 23.25	march 1994
7.3	MYDxRIT	illegitimate	VRDxVTT	KDP	march 1994
7.7	CRDxRIT	illegitimate	CRDxRIT	P 105 24.25	march 1994
13.18	MYDxRIT	dead	VRDxVTT	KDP	march 1994
13.21	BGDxRIT	dead	BGDxRIT	P 105 22.26	march 1994
17.19	BGDxRIT	dead	VRDxVTT	KDP	march 1994
19.22	BGDxRIT	dead	VRDxVTT	KDP	march 1994
20.20	BGDxRIT	illegitimate	VRDxVTT	KDP	march 1994
20.26	BGDxRIT	illegitimate	VRDxVTT	KDP	march 1994
24.6	MYDxRIT	dead	VRDxVTT	KDP	march 1994
24.15	CRDxRIT	dead	CRDxRIT	P 105 26.26	march 1994
24.17	CRDxRIT	illegitimate	CRDxRIT	P 105 25.25	march 1994
26.6	MYDxRIT	illegitimate	VRDxVTT	KDP	march 1994
26.19	VRDxVTT	illegitimate	VRDxVTT	FA n° K1216/8	march 1994
27.26	MBDxRIT	CFD	VRDxVTT	KDP	march 1994
28.20	MYDxRIT	illegitimate	VRDxVTT	KDP	march 1994
32.14	BGDxRIT	dead	BGDxRIT	P 105 21.26	march 1994
33.5	CRDxRIT	illegitimate	CRDxRIT	P 105 23.24	march 1994
36.22	CRDxRIT	illegitimate	CRDxRIT	P 105 24.24	march 1994
37.18	MRDxRIT	CFD	VRDxVTT	KDP	march 1994
21.26	BGDxRIT	replace 32.14	VRDxVTT	KDP	march 1994
22.26	BGDxRIT	replace 13.21	VRDxVTT	KDP	march 1994
23.24	CRDxRIT	replace 33.5	VRDxVTT	KDP	march 1994
23.25	CRDxRIT	replace 5.14	VRDxVTT	KDP	march 1994
23.26	CRDxRIT	replace 4.26	VRDxVTT	KDP	march 1994
24.24	CRDxRIT	replace 36.22	VRDxVTT	KDP	march 1994
24.25	CRDxRIT	replace 7.7	VRDxVTT	KDP	march 1994
24.26	CRDxRIT	replace 4.24	VRDxVTT	KDP	march 1994
25.25	CRDxRIT	replace 24.17	VRDxVTT	KDP	march 1994
25.26	CRDxRIT	replace 5.11	VRDxVTT	KDP	march 1994
26.26	CRDxRIT	replace 24.15	VRDxVTT	KDP	march 1994

PDICC- VTGC21 **FIELD 105**

Pollen Variety: Rennell Tall (RIT)

Planting: April 1992-February 1993 **Up-dated:** June 1996

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
2	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
3	7	7	I	⑥	⑥	⑥	5	5	5	5	3	3	3	3	5	5	5	5	4	4	4	4	3	3	3	3	7	R
4	7	7	⑥	⑥	⑥	⑥	5	⑤	⑤	5	3	③	③	3	5	⑤	⑤	5	4	④	④	4	3	R	③	R	7	7
5	7	7	⑥	⑥	⑥	⑥	5	⑤	⑤	5	R	③	③	R	5	⑤	⑤	5	4	④	④	4	3	③	③	3	7	7
6	7	7	⑥	⑥	⑥	⑥	5	5	5	5	3	3	3	3	5	5	5	5	4	4	4	4	3	3	3	3	7	7
7	7	7	I	2	2	2	R	3	3	3	⑥	⑥	⑥	⑥	4	4	4	4	2	2	2	2	1	1	1	1	7	7
8	7	7	2	②	②	2	3	③	③	3	⑥	⑥	⑥	⑥	4	④	④	4	2	②	②	2	1	①	①	1	D	7
9	7	7	2	②	②	2	3	③	③	3	⑥	⑥	⑥	⑥	4	④	④	4	2	②	②	2	1	①	①	1	7	7
10	7	7	2	2	2	2	3	3	3	3	⑥	⑥	⑥	⑥	4	4	4	4	2	2	2	2	1	1	1	1	7	7
11	7	7	1	1	1	1	4	4	4	4	1	1	1	1	2	2	2	2	5	5	5	5	6	6	6	6	7	7
12	7	7	1	①	①	1	4	④	④	4	1	①	①	1	2	②	②	2	5	⑤	⑤	5	6	6	6	6	7	7
13	7	7	1	①	①	1	4	④	④	4	1	①	①	1	2	②	②	I	5	⑤	R	5	6	6	6	6	7	7
14	7	7	1	1	1	1	4	4	4	4	1	1	1	1	2	2	2	2	5	5	5	5	6	6	6	6	7	7
15	7	7	5	5	5	5	3	3	3	3	4	4	4	4	6	6	6	6	5	5	5	5	5	5	5	5	7	7
16	7	7	5	⑤	⑤	5	3	③	③	3	4	④	④	4	6	6	6	6	5	5	5	5	5	5	5	5	7	7
17	7	7	5	⑤	⑤	5	3	③	③	3	4	④	④	4	6	6	6	6	I	5	5	5	5	5	5	5	7	7
18	7	7	5	5	5	5	3	3	3	3	4	D	4	4	6	6	6	6	5	5	5	5	5	5	5	5	7	7
19	7	7	6	6	6	6	4	4	4	D	D	2	D	2	5	5	5	5	5	5	5	I	5	5	5	5	7	7
20	7	7	6	6	6	6	4	④	④	D	2	D	②	2	5	⑤	⑤	5	5	I	5	5	5	5	5	I	7	7
21	7	7	6	6	6	6	4	④	④	4	2	②	②	2	5	⑤	⑤	5	5	5	5	5	5	5	5	I	7	7
22	7	7	6	6	6	6	4	4	4	4	2	2	2	2	5	5	5	5	5	5	5	5	5	5	5	I	7	7
23	7	7	2	2	2	2	1	1	1	1	1	1	1	1	3	3	3	3	4	4	4	4	3	R	R	I	7	7
24	7	7	2	②	②	I	1	①	①	1	1	①	①	1	R	③	R	3	4	④	④	4	3	R	R	I	7	7
25	7	7	2	②	②	2	1	①	①	1	1	①	①	1	3	③	③	3	4	④	④	4	3	3	R	I	7	7
26	7	7	2	2	2	I	1	1	1	1	1	1	1	1	3	3	3	3	R	4	4	4	3	3	3	I	7	7
27	7	7	6	6	6	6	1	1	1	1	4	4	4	4	5	5	5	5	2	2	2	2	1	1	1	I	7	7
28	7	7	6	6	6	6	1	①	①	1	4	④	④	4	5	⑤	⑤	5	2	I	②	2	1	①	①	1	7	7
29	7	7	6	6	6	6	1	①	①	1	4	④	④	4	5	⑤	⑤	5	2	②	②	2	1	①	①	1	7	7
30	7	7	6	6	6	6	1	1	1	1	4	4	4	4	5	5	5	5	2	2	2	2	1	1	1	1	7	7
31	7	7	3	3	3	3	2	2	2	2	5	5	5	5	3	3	3	3	6	6	6	6	4	4	4	4	7	7
32	7	7	3	③	③	3	2	②	②	2	5	⑤	⑤	R	3	③	③	3	6	6	6	6	4	④	④	4	7	7
33	7	7	3	③	R	3	2	②	②	2	5	⑤	⑤	5	3	③	③	3	6	6	6	6	4	④	④	4	7	7
34	7	7	3	3	3	3	2	2	2	2	5	5	5	5	3	3	3	3	6	6	6	6	4	4	4	4	7	7
35	7	7	1	1	1	1	4	4	4	4	2	2	2	2	6	6	6	6	3	3	3	3	1	1	1	1	7	7
36	7	7	1	①	①	1	4	④	④	4	2	②	②	2	6	6	6	6	3	③	③	R	1	①	①	1	7	7
37	7	7	1	①	①	1	4	④	④	4	2	②	②	2	6	6	6	I	3	③	③	3	1	①	①	1	7	7
38	7	7	1	1	1	1	4	4	4	4	2	2	2	2	6	6	6	6	3	3	3	3	1	1	1	1	7	7
39	7	7	6	6	6	6	5	5	5	5	3	3	3	3	5	5	5	5	2	2	2	2	7	7	7	7	7	
40	7	7	6	6	6	6	5	⑤	⑤	5	3	③	③	3	5	⑤	⑤	5	2	②	②	2	7	7	7			
41	7	7	6	6	6	6	5	⑤	⑤	5	3	③	③	3	5	⑤	⑤	5	2	②	②	2	7	7	7			
42	7	7	6	6	6	6	5	5	5	5	3	3	3	3	5	5	5	5	2	2	2	2	7					
43	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7					
44	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7						
45	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7							

1= MBDxRIT MBNxGRL 2= MYDxRIT NJMxGRL 3= CRDxRIT NRCxGRL 4= VRDxVTT NRVxGVT 5= BGDxRIT NVBxGRL 6= MRDxRIT NRMxGRL

7= GUARD ROWS BORDURE R= REPLACEMENT REMPLACANT I= ILLEGITIMATE ILLEGITIME D=DEAD MORT

① ② ③ ④ ⑤ ⑥ = palms for measurements
arbres retenus pour les mesures de croissance

Activities from 1-7-95 to 30-6-96

1) MAINTENANCE

Weeding:

- circle weeding (radius of the circle 2 m) every two months : manual (for the vines) and chemical (glyphosate)
- outside the circle the cover crop is weak and inequally established

Fertilizers:

1st application:
- Date: 24/10/95
- Rate: 220 g urea/palm + 500 g KCl/palm

2d application:
- Date: 28/5/96
- Rate: 220 g urée/palm

Leaf sampling for mineral analysis

- Date of collection: 21/9/95
- 3 varieties collected, 20 palms/variety, leave # 9
- Results:

	N%	P%	K%	Ca%	Mg%	Cl%	Bppm
MYD x RIT	2.104	0.176	1.352	0.453	0.339	0.452	11.6
VRD x VTT	1.809	0.128	1.089	0.461	0.287	0.433	9.9
BGD x RIT	2.098	0.167	1.159	0.386	0.325	0.441	12.4

Pests

- no serious insects damages
- Five trees have died:

Matricule: 105-20-10 VRD x VTT }
105-19-10 VRD x VTT } uprooted on 7/3/96
105-19-11 MYD x RIT }

105-20-12 MYD x RIT }
105-19-13 MYD x RIT } uprooted on 24-4-96

An other palm (105-18-12 VRD x VTT) without clear symptoms has been uprooted on 24-4-96.
The origin of death is not yet clearly established: blasting or *Phytophtora* attack.

Cyclon:

Cyclon Betsy blew on 23-24 March 96.
Some nut falls and very few broken leaves but no serious damages except one palm (105-8-27= guard palm VRD x VTT) pulled up.

2) DATA GATHERING

a) Determination of precocity by recording the palms with flowers every two months from 28th month to 43th month (December 95) after planting. See graphic attached.
At this date, for all the varieties, 80% or more of the palms have got flowers. The VRDxGVT hybrid is the later for precocity.

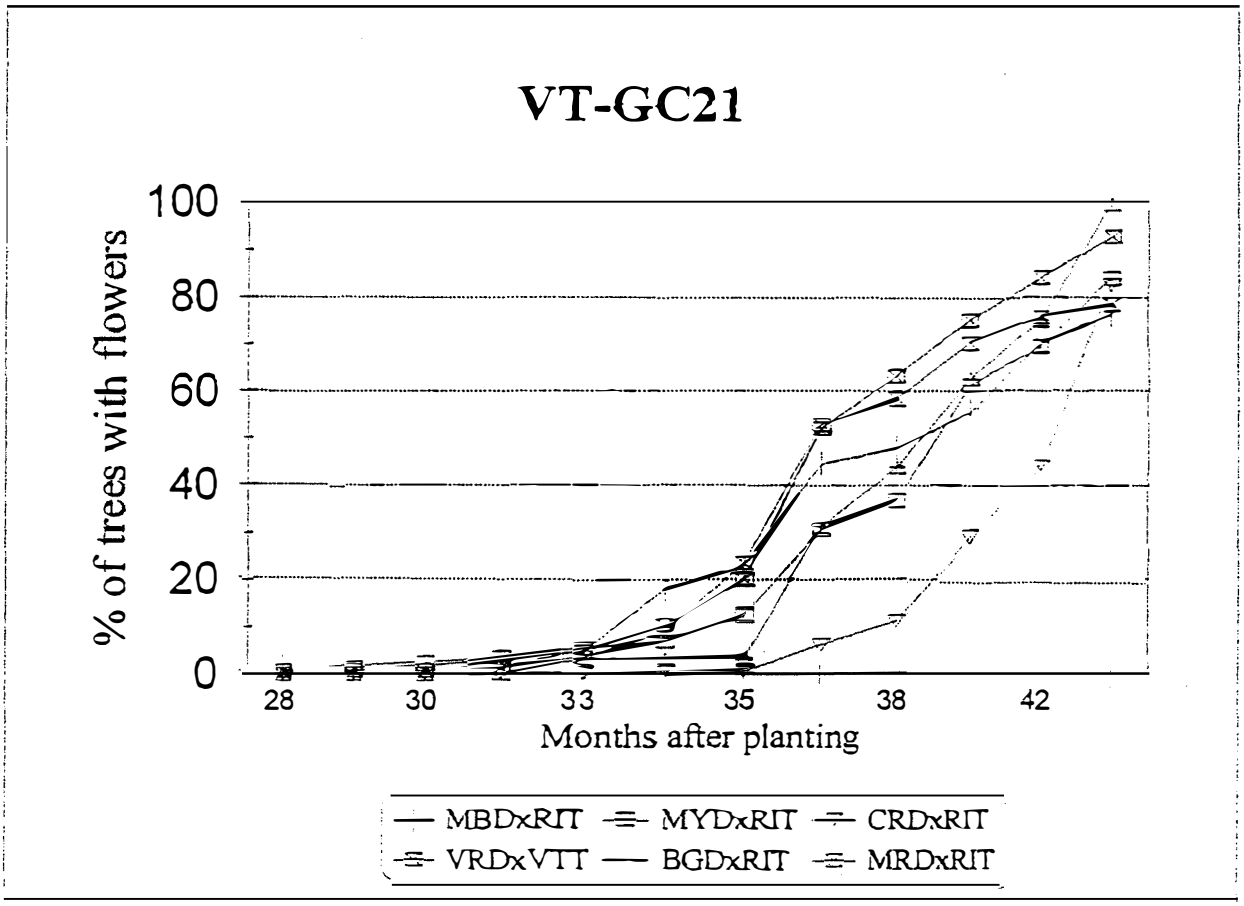
b) The record of production (number of bunches and nuts) started in May 96.

Estimation of précocity

Pourcentage of trees with flowers

Size of the sample: MBDxRIT, MYDxRIT, CRDxRIT, VRDxVTT, BGDxRIT : 144 trees/variety
MRDxRIT : 32 trees

months after plantin	MBDxRIT	MYDxRIT	CRDxRIT	VRDxVTT	BGDxRIT	MRDxRIT
28	0,7	0	0,7	0	0,7	0
29	0,7	0,7	1,4	0	0,7	0
30	1,4	0,7	2,1	0	0,7	0
32	2,8	1,4	3,5	0	1,4	0
33	4,9	3,5	5,6	0	4,9	3,1
34	18,1	9,0	6,9	0,7	10,4	3,1
35	22,9	23,6	12,5	0,7	20,1	3,1
37	44,4	52,8	30,6	6,3	52,1	31,3
38	47,9	58,3	36,8	11,1	63,2	43,8
40	55,6	70,1	61,1	29,2	75,0	62,5
42	70,1	75,7	69,4	44,4	84,0	75,0
44	76,4	78,5	84,0	82,6	93,1	100,0



TRIAL VT- GC22

DWARVES x TONGA TALL

HYBRIDS

PDICC TRIAL N°2 **Field 115**

Pollen Variety : Tonga Tall (code : TON = GTG)
Origin of pollen : Saraoutou germplasm (Field P40)

Treatments :

1	MRDxRIT	4	MYDxTON
	NRMxGRL		NJMxGTG
2	VRDxVTT	5	SYDxTON
	NRVxGVT		NJAxGTG
3	MRDxTON	6	TONxNLA
	NRMxGTG		GTGxNNL

Experimental design : 9 randomized blocks
16 palms per plot

Field Lay-out :

I	II	III
IV	V	VI
VII	VIII	IX

Number of palms and area : Experiment : 864 palms (5,4 ha)
Total : 1260 palms (7,88 ha)

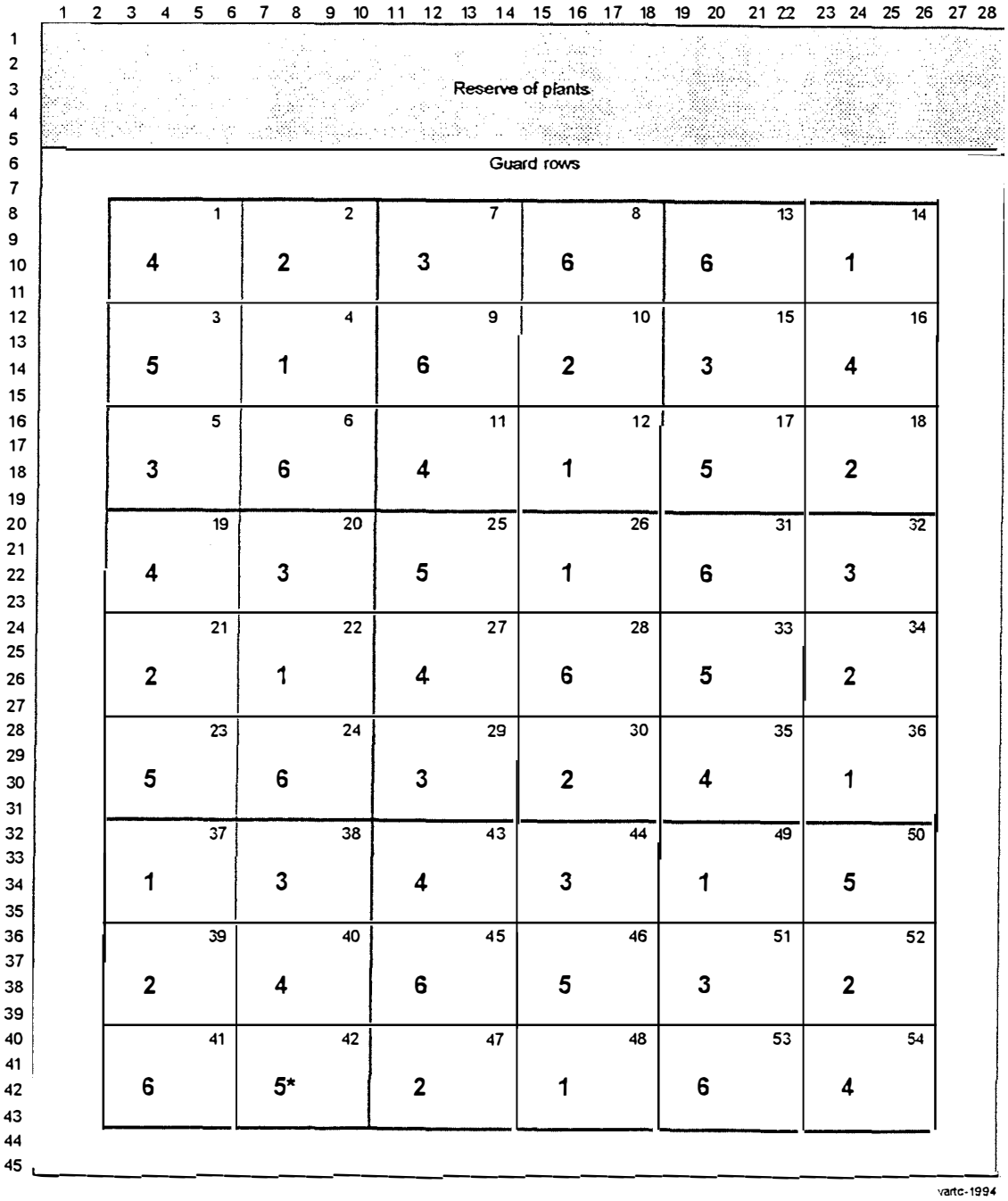
Date (s) of Planting : February 1993
incomplete blocks No 2 - no treatment No 5
No 7 - treatment No 5 incomplete

Other(s) : February 1994 - Replacement of palms (see details)
Planting of reserve palms - Kiribati - Tonga

PDICC-VTGC22 FIELD 115

Pollen variety: Tonga Tall

Planting : February 1993



1	n°plot
4	

LEGEND:

1= MRDx RIT (NRMxGRL)
2= VRDx VTT (NRVxGVT)
3= MRDxTON (NRMxGTG)
4= MYDxTON (NJMxGTG)
5= SYDxTON (NJAxGTG)
6= TONx NLA (GTGxNNL)
Guard rows=VRD x VTT
* incomplete plot

Pollen variety: Tonga Tall

Planting : February 1993

LIST OF PALMS REPLACED

Palms replaced			Origin of replacement		
Matricule	Variety	Cause of Replacement	Variety	Origin	Date of Replacement
10.16	TONxNLA	abnormal	TONxNLA	FA n° J1569/2	march 1994
17.24	VRDxVTT	dead	VRDxVTT	FA n° K872/5	march 1994
18.28	Border	dead	VRDxVTT	KDP	march 1994
21.03	MYDxTON	abnormal	MYDxTON	FA n° I2591/3	march 1994
25.12	MYDxTON	abnormal	MYDxTON	FA n° J1000	march 1994
27.08	MRDxRIT	abnormal	MRDxRIT	FA n° I395/2	march 1994
31.03	SYDxTON	dead	VRDxVTT	KDP	march 1994
31.06	SYDxTON	abnormal	VRDxVTT	KDP	march 1994
33.06	MRDxRIT	dead	MRDxRIT	FA n° I2886/2	march 1994
43.06	TONxNLA	dead	TONxNLA	FA n° J1552/1	march 1994

PDICC-VTGC22 FIELD 115

Pollen variety: Tonga Tall

Planting : February 1993 Updated : May 1996

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	7	7	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	K2	7	7
2	7	7	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	K3	7	7
3	7	7	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	K6	7	7
4	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T1	T4	T4	T4	T4	T4	T4	T4	T4	T4	T4	T4	T4	T4	T4
5	T6	T6	T6	T6	T6	T6	T6	T6	T6	T6	T6	T6	T6	T6	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3
6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
8	7	7	4	4	4	4	2	2	2	2	3	3	3	3	6	6	6	6	6	6	6	6	M	1	1	1	7	7
9	7	7	4	④	④	4	2	②	②	2	3	③	③	3	6	⑥	⑥	6	6	⑥	⑥	6	1	①	①	M	7	7
10	7	7	4	④	④	4	2	②	②	2	3	③	③	3	6	R	⑥	6	6	⑥	⑥	6	1	①	①	1	7	7
11	7	7	4	4	4	4	2	2	2	2	3	3	3	3	6	6	6	6	6	6	6	6	1	1	1	1	7	7
12	7	7	5	5	5	5	1	1	1	1	6	6	6	6	2	2	2	2	3	3	3	3	4	4	4	4	7	7
13	7	7	5	⑤	⑤	5	1	①	①	1	6	⑥	⑥	6	2	②	②	2	3	③	③	3	4	④	④	4	7	7
14	7	7	5	⑤	⑤	5	1	①	①	1	6	⑥	⑥	6	2	②	②	2	3	③	③	3	4	④	④	4	7	7
15	7	7	5	5	5	5	1	1	1	1	6	6	6	6	2	2	2	2	3	3	3	3	4	4	4	4	7	7
16	7	7	3	3	3	3	6	6	6	6	4	4	4	4	1	1	1	1	5	5	5	5	2	2	2	2	7	7
17	7	7	3	③	③	3	6	⑥	⑥	6	4	④	④	4	1	①	①	1	5	⑤	⑤	5	2	R	②	2	7	7
18	7	7	3	③	③	3	6	⑥	⑥	6	4	④	④	4	1	①	①	1	5	⑤	⑤	5	2	②	②	2	7	R
19	7	7	3	3	3	3	6	6	6	6	4	4	4	4	1	1	1	1	5	5	5	5	2	2	2	2	7	7
20	7	7	4	4	4	4	3	3	3	3	5	5	5	5	1	1	1	1	6	6	6	6	3	3	3	3	7	7
21	7	7	R	④	④	4	3	③	③	3	5	⑤	⑤	5	1	①	①	1	6	⑥	⑥	6	3	③	③	3	7	7
22	7	7	4	④	④	4	3	③	③	3	5	⑤	⑤	5	1	①	①	1	6	⑥	⑥	6	3	③	③	3	7	7
23	7	7	4	4	4	4	3	3	3	3	5	5	5	5	1	1	1	1	6	6	6	6	3	3	3	3	7	7
24	7	7	2	2	2	2	1	1	1	1	4	4	4	4	6	6	6	6	5	5	5	5	2	2	2	2	7	7
25	7	7	2	②	②	2	1	①	①	1	4	R	④	4	6	⑥	⑥	6	5	⑤	⑤	5	2	②	②	2	7	7
26	7	7	2	②	②	2	1	①	①	1	4	④	④	4	6	⑥	⑥	6	5	⑤	⑤	5	2	②	②	2	7	7
27	7	7	2	2	2	2	1	R	1	1	4	4	4	4	6	6	6	6	5	5	5	5	2	2	2	2	7	7
28	7	7	5	5	5	5	6	6	6	6	3	3	3	3	2	2	2	2	4	4	4	4	1	1	1	1	7	7
29	7	7	5	⑤	⑤	5	6	⑥	⑥	6	3	③	③	3	2	②	②	2	4	④	④	4	1	①	①	1	7	7
30	7	7	5	⑤	⑤	5	6	⑥	⑥	6	3	③	③	3	2	②	②	2	4	④	④	4	1	①	①	1	7	7
31	7	7	I	5	5	I	6	6	6	6	3	3	3	3	2	2	2	2	4	4	4	4	1	1	1	1	7	7
32	7	7	1	1	1	1	3	3	3	3	4	4	4	4	3	3	3	3	1	1	1	1	5	5	5	5	7	7
33	7	7	1	①	①	R	3	③	③	3	4	④	④	4	3	③	③	3	1	①	①	1	5	⑤	⑤	5	7	7
34	7	7	1	①	①	1	3	③	③	3	4	④	④	4	3	③	③	3	1	①	①	1	5	⑤	⑤	5	7	7
35	7	7	1	1	1	1	3	3	3	3	4	4	4	4	3	3	3	3	1	1	1	1	5	5	5	5	7	7
36	7	7	2	2	2	2	4	4	4	4	6	6	6	6	5	5	5	5	3	3	3	3	2	2	2	2	7	7
37	7	7	2	②	②	2	4	④	④	4	6	⑥	⑥	6	5	⑤	⑤	5	3	③	③	3	2	②	②	2	7	7
38	7	7	2	②	②	2	4	④	④	4	6	⑥	⑥	6	5	⑤	⑤	5	3	③	③	3	2	②	②	2	7	7
39	7	7	2	2	2	2	4	4	4	4	6	6	6	6	5	5	5	5	3	3	3	3	2	2	2	2	7	7
40	7	7	6	6	6	6	5	5	5	5	2	2	2	2	1	1	1	1	6	6	6	6	4	4	4	4	7	7
41	7	7	6	⑥	⑥	6	3	3	3	5	2	②	②	2	1	①	①	1	6	⑥	⑥	6	4	④	④	4	7	7
42	7	7	6	⑥	⑥	6	5	5	5	5	2	②	②	2	1	①	①	1	6	⑥	⑥	6	4	④	④	4	7	7
43	7	7	6	6	6	R	5	5	5	5	2	2	2	2	1	1	1	1	6	6	6	6	4	4	4	4	7	7
44	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
45	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7

1= MRDxRLT NRMxGRL 2= VRDxVTT NRVxGVT 3= MRDxTON NRMxGTG 4= MYDxTON NJMxGTG 5= SYDxTON NJAxGTG 6= TONxNLD GTGxNNL

7= GUARD ROWS VRDXVTT BORDURE NRVxGVT R= REPLACEMENT REMPLACANT I= illegitimate D=DEAD

T1 T3 T4 T6 RESERVE OF PLANTS FOR TRIAL TONGA

K2 K3 K6 RESERVE OF PLANTS FOR TRIAL KIRIBATI

① ② ③ ④ ⑤ ⑥ = palms for measurements
arbres retenus pour les mesures de croissance

Activities from 1-7-95 to 30-6-96

1) MAINTENANCE

Weeding:

- circle weeding (radius of the circle 2 m) every two months : manual (for the vines) and chemical (glyphosate)
- outside the circle the cover crop is weak and inequally established

Fertilizers:

1st application:
- Date : 25/10/95
- Rate: 180 g urea/palm + 400 g KCl/palm

2d application:
- Date : 29/5/96
- Rate: 180g urea/palm

Leaf sampling for mineral analysis

- Date of collection: 21/9/95
- 3 varieties collected, 20 palms/variety, leave # 9
- Results:

	N%	P%	K%	Ca%	Mg%	Cl%	Bppm
VRD x VTT	1.973	0.166	1.394	0.429	0.298	0.463	11.6
MYD x TON	2.098	0.163	1.068	0.351	0.367	0.412	11.5
BGD x RIT	1.978	0.151	0.996	0.438	0.372	0.529	11.1

Pests

- no serious damages
- no treatment applied

Cyclon:

Cyclon Betsy blew on 23-24 March 96.
Some nut falls, very few broken leaves, two palms broken (115-8-23 and 115-9-26 MRDxRIT).

2) DATA GATHERING

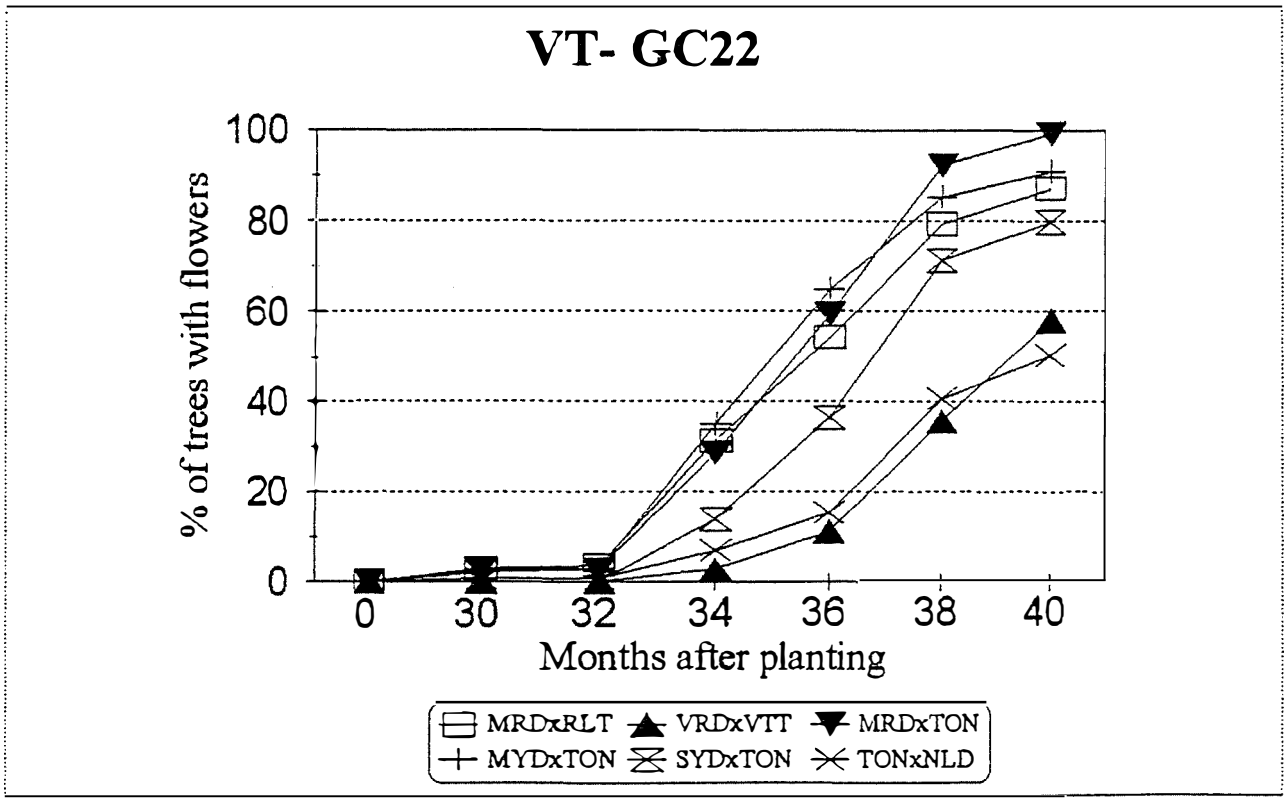
a) Determination of precocity by recording the palms with flowers every two months from 30th month after planting. See graphic attached.

PDICC - Trial VT GC22

Estimation of precocity

Pourcentage of trees with flowers
Size of the sample: 144 trees /variety

Months after planting	MRDxRLT	VRDxVTT	MRDxTON	MYDxTON	SYDxTON	TONxNLD
0	0	0.0	0.0	0.00	0.0	0.0
30	2.9	0.0	2.8	2.10	0.0	0.7
32	3.6	0.0	2.8	2.80	0.0	0.7
34	31.4	2.8	28.7	34.97	14.0	7.0
36	54.3	11.2	59.4	65.03	36.4	15.4
38	79.3	35.7	92.3	85.31	71.3	40.6
40	87.1	58.0	99.3	90.91	79.7	50.3



TRIAL VT- GC23

DWARVES x KIRIBATI TALL HYBRIDS

PDICC TRIAL N°3 **Field 125**

Pollen Variety : Kiribati Tall (code : KIT = GKI)

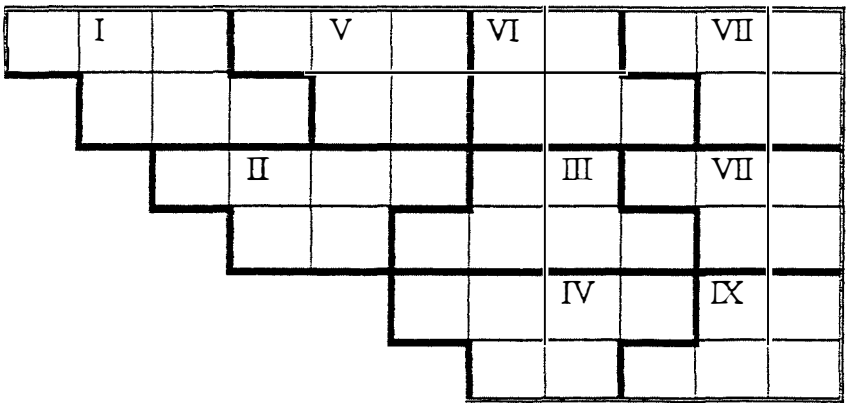
Origin of pollen : Tarawa (Kiribati)

Treatments :

1	VRDxVTT	4	MBDxKIT
	NRVxGVT		NBNxGKI
2	BGDxRGT	5	MYDxKIT
	NVBxGPY2		NJMxGKI
3	BGDxKIT	6	MRDxKIT
	NVBxGKI		NRMxGKI

Experimental design : 9 randomized blocks
16 palms per plot

Field Lay-out :



Number of palms and area : Experiment : 784 palms (4,90 ha)
Total : 963 palms (6,08 ha)

Date (s) of Planting : January 1994
blocks complete : I - II - III - IV
blocks incomplete : V to IX - no treatments No 5

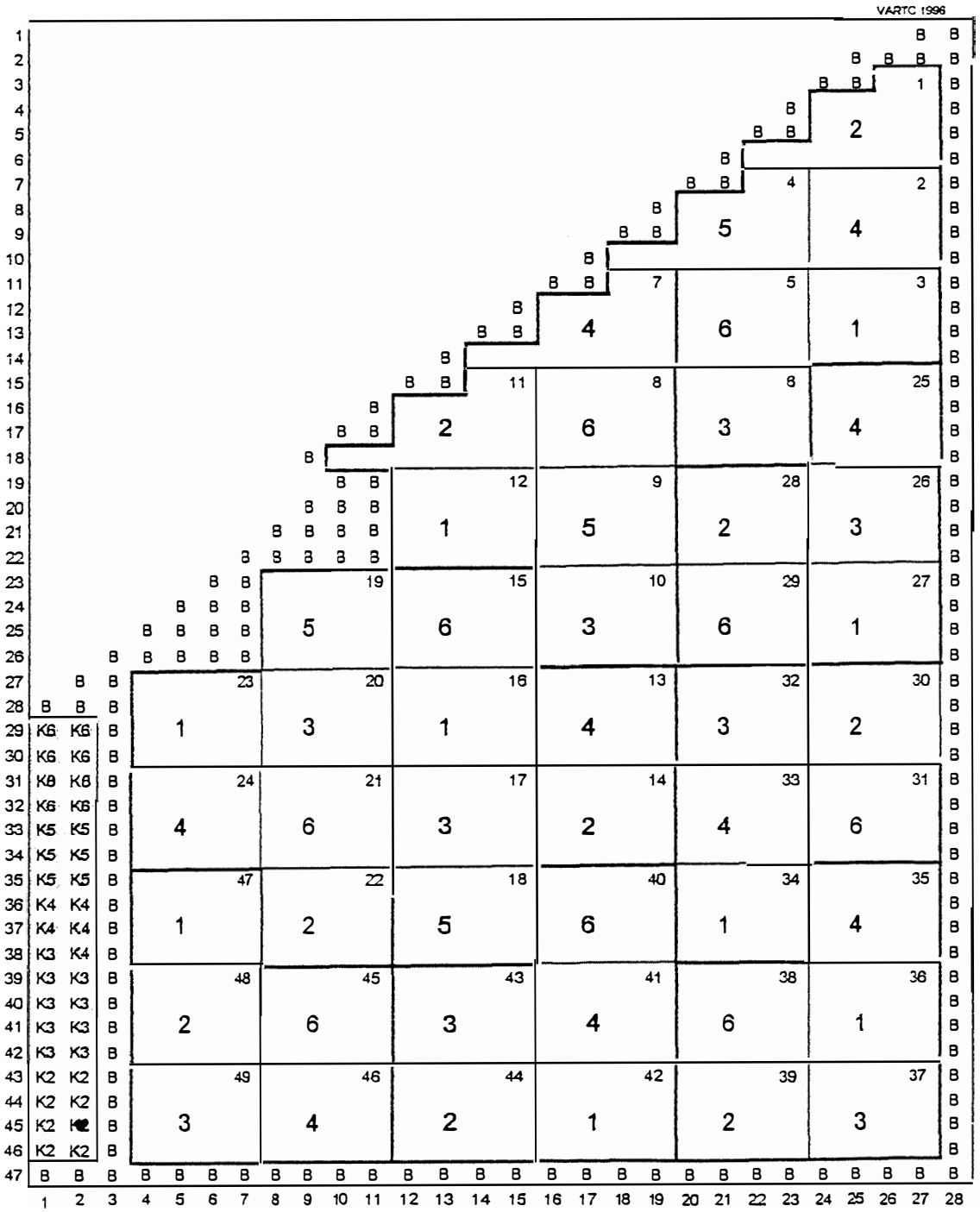
shape of the plots modified : block I - Plots 2 - 5
block II - Plots 4 - 2

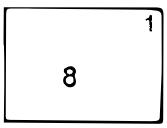
Other(s) : January 1995 - replacement of palms (see details)
December 1995 - replacement of 125-7-27 (MBD x KIT)

PDICC-VTGC23 FIELD 125

Pollen variety: Kiribati Tall

Planting : January 1994





LEGEND

1= VRDxVTT
NRVxGVT

2= BGDxPYT2
NVBxGPY2

3= BGDxKIT
NVBxGKI

4= MBDxKIT
NBNxGKI

5= MYDxKIT
NJMxGKI

6= MRDxKIT
NRMxGKI

K2 K3 K4 K5 K6 — RESERVE OF PLANT FOR TRIAL KIRIBATI

B= BORDER
BORDURE

PDICC-VTGC23 FIELD 125

Pollen variety: Kiribati Tall

Planting : January 1994

LIST OF PALMS REPLACED

Palms replaced			Origin of replacement		
Matricule	Variety	Cause of Replacement	Variety	Origin	Date of Replacement
07.27	MBDxKIT	dead	MBDxKIT		december 95
23.24	VRDxVTT	sick	VRDxVTT	FA n° K 2231/10	january 95
23.25	VRDxVTT	sick	VRDxVTT	FA n° K 2493/1	january 95
23.26	VRDxVTT	sick	VRDxVTT	FA n° K 2231/7	january 95
23.28	Border	dead	VRDxVTT	FA n° K 3122/6	january 95
24.28	Border	dead	VRDxVTT	P 84	january 95
27.02	Border	dead	VRDxVTT	P84	january 95
28.25	BGDxRGT	dead	BGDxRGT	FA n° J 4023/3	january 95
31.15	BGDxKIT	sick	BGDxKIT	FA n° J 4117/5	january 95
31.17	BGDxRGT	dead	BGDxRGT	FA n°J 4078/9	january 95
31.21	MBDxKIT	dead	MBDxKIT	FA n° J 4746/3	january 95
32.14	BGDxKIT	dead	BGDxKIT	FA n° J 3078/14	january 95
33.14	BGDxKIT	dead	BGDxKIT	FA n° J 4235/13	january 95
44.17	VRDxVTT	dead	VRDxVTT	FA n° J 4766/3	january 95
46.20	BGDxRGT	dead	BGDxRGT	FA n° J 4123/3	january 95
36.01	MBDxKIT	replace 31.21	VRDXVTT	P84	january 95
36.02	MBDXKIT	replace 07.27	VRDxVTT	P84	december 95
39.02	BGDxKIT		VRDxVTT	P84	january 95
40.01	BGDxKIT	replace 33.14	VRDxVTT	P84	january 95
41.01	BGDxKIT	replace 32.14	VRDxVTT	P84	january 95
42.01	BGDxKIT	replace 31.15	VRDxVTT	P84	january 95
43.01	BGDxRGT	replace 28.25	VRDxVTT	P84	january 95
44.01	BGDxRGT	sick	VRDxVTT	P84	january 95
45.01	BGDxRGT	replace 31.17	VRDxVTT	P84	january 95
46.01	BGDxRGT	replace 46.20	VRDxVTT	P84	january 95

PDICC-VTGC23 **FIELD 125**

Pollen variety: Kiribati Tall

Planting : January 1994 Updated : June 1996

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1																											B	B
2																									B	B	B	B
3																								B	B	2	2	B
4																							B	2	2	2	2	B
5																						B	B	2	2	2	2	B
6																					B	2	2	2	2	2	2	B
7																				B	B	5	5	4	4	4	R	B
8																			B	5	5	5	5	4	4	4	4	B
9																		B	B	5	5	5	5	4	4	4	4	B
10																	B	5	5	5	5	5	5	4	4	4	4	B
11																B	B	4	4	6	6	6	6	1	1	1	1	B
12															B	4	4	4	4	6	6	6	6	1	1	1	1	B
13														B	B	4	4	4	4	6	6	6	6	1	1	1	1	B
14													B	4	4	4	4	4	4	6	6	6	6	1	1	1	1	B
15												B	B	2	2	6	6	6	6	3	3	3	3	4	4	4	4	B
16											B	2	2	2	2	6	6	6	6	3	3	3	3	4	4	4	4	B
17										B	B	2	2	2	2	6	6	6	6	3	3	3	3	4	4	4	4	B
18									B	2	2	2	2	2	2	6	6	6	6	3	3	3	3	4	4	4	4	B
19										B	B	1	1	1	1	5	5	5	5	2	2	2	2	3	3	3	3	B
20									B	B	B	1	1	1	1	5	5	5	5	2	2	2	2	3	3	3	3	B
21								B	B	B	B	1	1	1	1	5	5	5	5	2	2	2	2	3	3	3	3	B
22							B	B	B	B	B	1	1	1	1	5	5	5	5	2	2	2	2	3	3	3	3	B
23						B	B	5	5	A	5	6	6	6	6	3	D	3	3	6	6	6	6	R	R	R	1	R
24					B	B	B	5	5	5	5	6	6	6	6	3	3	3	3	6	6	6	6	1	1	1	1	R
25				B	B	B	B	5	5	5	5	6	6	6	6	3	3	3	3	6	6	6	6	1	1	1	1	B
26			B	B	B	B	B	5	5	5	5	6	6	6	6	3	3	3	3	6	6	6	6	1	1	1	1	B
27		R	B	1	1	1	1	3	3	3	3	1	1	1	1	4	4	4	4	3	3	3	3	2	2	2	2	B
28	B	B	B	1	1	1	1	3	3	3	3	1	1	1	1	4	4	4	4	3	3	3	3	2	R	2	2	B
29	K6	K6	B	1	1	1	1	3	3	3	I	1	1	1	1	4	4	4	4	3	3	3	3	2	2	2	2	B
30	K6	K6	B	1	1	1	1	3	3	3	3	1	1	1	1	4	4	4	4	3	3	3	3	2	2	2	2	B
31	K6	K6	B	4	4	4	4	6	6	6	6	3	3	3	R	2	R	2	2	4	R	4	4	6	6	6	6	B
32	K6	K6	B	4	4	4	4	6	6	6	6	3	3	R	3	2	2	2	2	4	4	4	4	6	6	6	6	B
33	K5	K5	B	4	4	4	4	6	6	6	6	3	3	R	3	2	2	2	2	4	4	4	4	6	6	6	6	B
34	K5	K5	B	4	4	4	4	6	6	6	6	3	3	3	3	2	2	2	2	4	4	4	4	6	6	6	6	B
35	K5	K5	B	1	1	1	1	2	2	2	2	5	5	5	5	6	6	6	6	1	1	1	1	4	4	4	4	B
36	I	I	B	1	1	1	1	2	2	2	2	5	5	5	5	6	6	6	6	1	1	1	1	4	4	4	4	B
37	D	K4	B	1	1	1	1	2	2	2	2	5	5	5	5	6	6	6	6	1	1	1	1	4	4	4	4	B
38	K3	K4	B	1	1	1	1	D	2	2	2	5	5	5	5	6	6	6	6	1	1	1	1	4	4	4	4	B
39	K3	I	B	2	2	2	2	6	6	6	6	3	3	3	3	4	4	4	4	6	6	6	6	1	1	1	1	B
40	I	K3	B	2	2	2	2	6	6	6	6	3	3	3	3	4	4	4	4	6	6	6	6	1	1	1	1	B
41	I	K3	B	2	2	2	2	6	6	6	6	3	3	3	3	4	4	4	4	6	6	6	6	1	1	1	1	B
42	I	K3	B	2	2	2	2	6	6	6	6	3	3	3	3	4	4	4	4	6	6	6	6	1	1	1	1	B
43	I	K2	B	3	3	3	3	4	4	4	4	2	2	2	2	1	1	1	1	2	2	2	2	3	I	3	3	B
44	I	K2	B	3	3	3	3	4	4	4	4	2	2	D	2	1	R	1	1	2	2	2	2	3	3	3	3	B
45	I	K2	B	3	3	3	3	4	4	4	4	2	2	2	2	1	1	1	1	2	2	2	2	3	3	3	3	B
46	I	K2	B	3	3	3	3	4	4	4	4	D	2	2	2	1	1	1	1	R	2	2	2	3	3	3	3	B
47	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28

1 n° plot
8

LEGEND

1= VRDxVTT
NRVxGVT

2= BGDxPYT2
NVBxGPY2

3= BGDxKIT
NVBxGKI

4= MBDxKIT
NBNxGKI

5= MYDxKIT
NJMxGKI

6= MRDxKIT
NRMxGKI

K2
K3
K4
K5
K6

RESERVE OF PLANTS FOR TRIAL KIRIBATI

B= BORDER
BORDURE

D= dead
I=illegitimate
A=abnormal
R=replacement

Activities from 1-7-95 to 30-6-96

1) MAINTENANCE

Weeding:

- circle weeding (radius of the circle 1,5 m) every two months : manual (for the vines) and chemical (glyphosate)
- outside the circle the cover crop is weak and inequally established

Fertilizers:
1st application:
- Date: 26/10/95
- Rate: 100 g urea/palm + 200 g KCl/palm

2d application:
- Date: 30/5/96
- Rate: 100g urea/palm

Pests

-Damages of *Brontispa longissima* treated by endosulfan
Date of traitements: 5/7, 19/7, 3/8, 16/8, 31/8, 8/9

- 2 palms infected by Coconut Foliar Decay (viral disease transmitted by *Myndus taffini*)

Matricule :125-44-14 BGD x RGT (has been uprooted on 12/2/96)
125-46-12 BGD x RGT (has been uprooted on 6/5/96)

- Serious damages due to infection by *Pestalozzia*. One palm has been uprooted because of severe attacks.
Matricule : 125-38-08 BGD x RGT

Cyclon:
Cyclon Betsy blew on 23-24 March 96.
Very few broken leaves, few palms layed on the side. They have been set upright.

2) DATA GATHERING

a) Completion of growth measurement recording (see table attached).

b) Determination of precocity by recording the palms with flowers every two months. First flowers appeared on 26th month (March 96). On June 96, 10 palms had produced flowers.

PDICC -VTGC23

Field 125

Pollen variety : Kiribati Tall

Planting: January 1994

MEASUREMENTS DURING YOUNG AGE - IN FIELD

	LEAF 0-6M	LEAF 6-12M	LEAF 12-18 M	LEAF 18-24 M	GIRTH 6M	GIRTH 12M	GIRTH 18 M	GIRTH 24 M	HEIGHT 6M	HEIGHT 12M
VRDxVTT										
Average	2.3	4.1	6.2	7.1	38.1	62.9	89.0	127.0	193.8	254.9
STD	0.7	0.6	0.7	0.6	7.3	8.4	10.7	10.7	31.6	33.2
BGDxRGT										
Average	2.0	4.1	5.9	7.3	39.8	66.4	91.5	137.2	224.4	276.7
STD	0.5	0.6	0.6	1.3	4.6	6.1	9.2	23.4	22.6	23.8
BGDxKIT										
Average	1.9	3.6	6.1	7.2	41.5	65.5	95.6	131.4	245.8	277.6
STD	0.5	0.6	0.4	0.8	6.5	9.7	12.2	12.2	33.2	31.0
MBDxKIT										
Average	2.1	3.9	5.6	6.5	38.4	62.6	87.3	123.7	221.7	275.7
STD	0.4	0.5	0.6	0.6	4.8	8.3	11.2	14.2	34.1	35.9
MYDxKIT										
Average	1.9	4.1	6.3	6.6	39.2	64.2	85.4	121.4	209.1	269.8
STD	0.2	0.6	0.7	1.2	5.4	9.0	9.0	23.0	28.0	25.0
MRDxKIT										
Average	1.9	3.8	6.0	6.7	42.0	68.2	94.5	134.5	246.6	288.2
STD	0.4	0.5	0.6	0.8	3.9	10.4	8.6	10.5	26.0	34.5

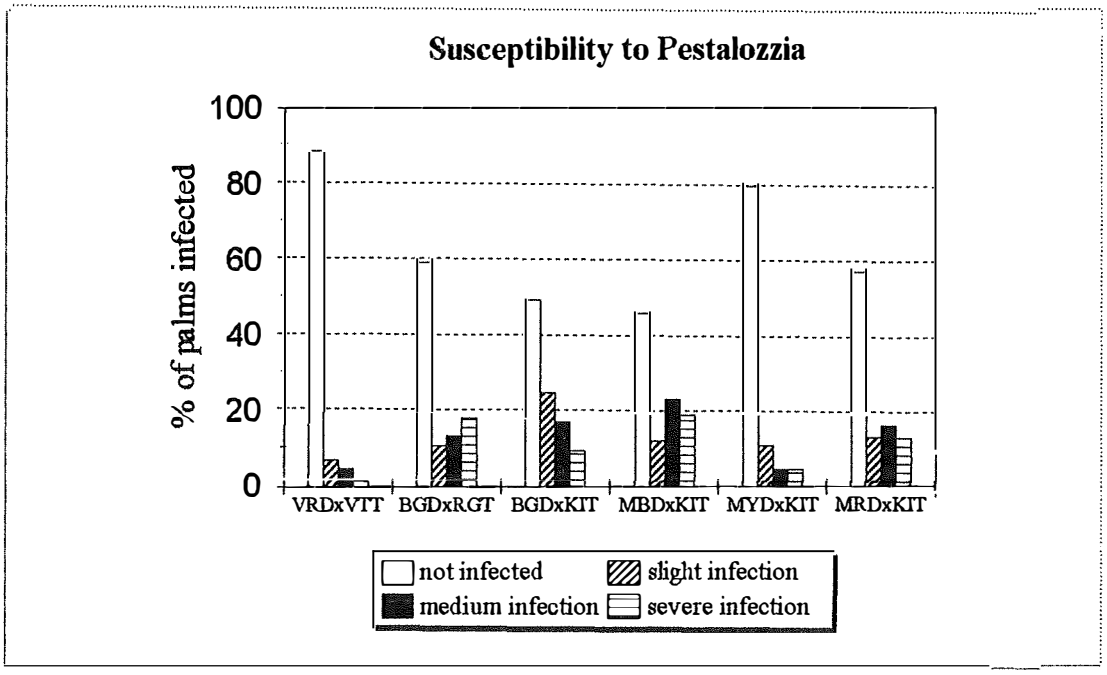
LEAF X-YM : Number of leaves emitted between X th and Yth month
GIRTH XM : Girth (in cm) at X months
HEIGHT XM: Height (in cm) at X months

Susceptibility to Pestalozzia

Date of recording: 25 June 1996
Level of infection 0 = not infected
1 = slight infection
2 = medium infection
3 = severe infection

Distribution of the infection levels for each cultivar (% of palms infected)

	Level of infection			
Cultivars	0	1	2	3
VRDxVTT	88.2	6.3	4.2	1.3
BGDxRGT	58.9	10.3	13	17.8
BGDxKIT	49.3	24.6	16.9	9.2
MBDxKIT	45.8	12	23.2	19
MYDxKIT	79.7	10.9	4.7	4.7
MRDxKIT	57.3	13.2	16.5	13



TRIAL VT- GC24

DWARVES x ROTUMAN TALL HYBRIDS

PDICC TRIAL N°4 **Field 104**

Pollen Variety : Rotuman Tall **(code : RTM = GRT)**

Origin of pollen : Saraoutou Germplasm (Field P30)

Treatments :

1	VRDxVTT NRVxGVT	4	MYDxRTM NJMxGRT	7	MRDxRIT NRMxGRL
2	RITxMRD GRLxNRM	5	MBDxRTM NBNxGRT		
3	MRDxRTM NRMxGRT	6	CRDxRTM NRCxGRT		

Experimental design : 9 randomized blocks
16 palms per plot

Field Lay-out :

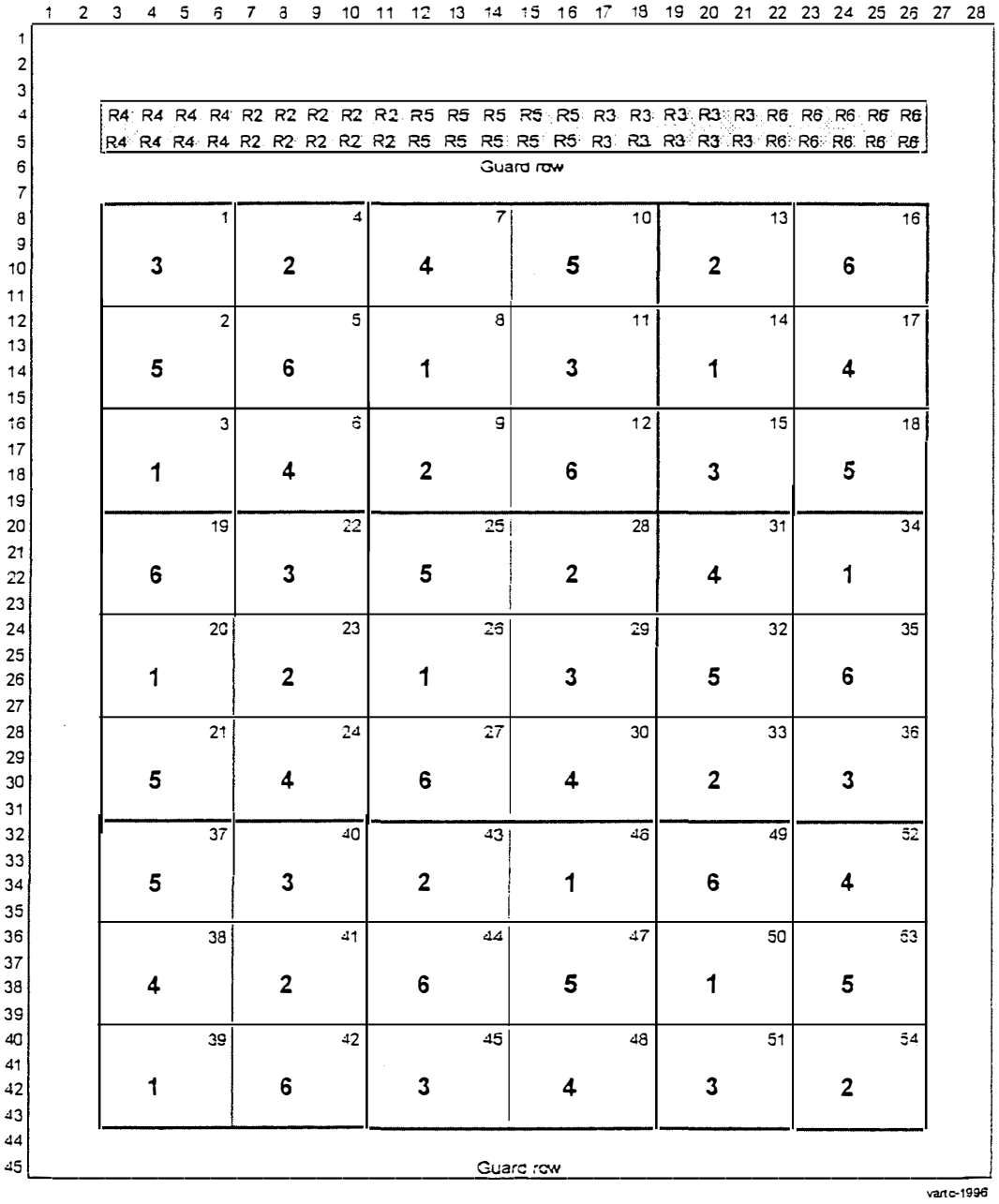
3	6	9
2	5	8
1	4	7

Date (s) of Planting : February 1994

PDICC-VTGC24 FIELD 104

Pollen variety: Roturman Tall

Planting : February 1994



1 n° plot

1

n° hybrid

LEGEND :

1= VRDxVTT
NRVxGVT
2= RITxMRD
GRLxNRM
3= MRDxRTM
NRMxGRT
4= MYDxRTM
NJMxGRT
5= MBDxRTM
NBNxGRT
6= CRDxRTM
NRCxGRT

Guard rows: VRD x VTT

R2 RESERVE OF PALMS

PDICC-VTGC24 **FIELD 104**

Pollen variety: Rotuman Tall

Planting : February 1994 Updated: June 1996

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1																												
2																												
3																												
4	B	D	D	R4	R4	R4	R2	R2	R2	R2	R2	R5	R5	R5	R5	R5	R3	R3	R3	R3	R3	R6	R6	R6	R6	R6	B	B
5	B	B	R4	R4	R4	R4	R2	R2	R2	R2	R2	R5	R5	R5	R5	R5	R3	R3	R3	R3	R3	R6	R6	R6	R6	R6	B	B
6	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
7	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
8	B	B	3	3	3	3	2	2	2	2	4	4	4	4	5	5	5	5	2	2	2	2	6	6	6	6	B	B
9	B	B	3	3	3	3	2	2	2	2	4	4	4	4	5	5	5	5	2	2	2	2	6	6	6	6	B	B
10	B	B	3	3	3	3	2	2	2	2	4	4	4	4	5	5	5	5	2	2	2	2	6	6	6	6	B	B
11	B	B	3	3	3	3	2	2	2	2	4	4	4	4	5	5	5	5	2	2	2	2	6	6	6	6	B	B
12	B	B	5	5	5	5	6	6	6	6	1	1	1	1	3	3	3	3	1	1	1	1	4	4	4	4	B	B
13	B	B	5	5	5	5	6	6	6	6	1	1	1	1	3	3	3	3	1	1	1	1	4	4	4	4	B	B
14	B	B	5	5	5	5	6	6	6	6	1	1	1	1	3	3	3	3	1	1	1	1	4	4	4	4	B	B
15	B	B	5	5	5	5	6	6	6	6	1	1	1	1	3	3	3	3	1	1	1	1	4	4	4	4	B	B
16	B	B	1	1	1	1	4	4	4	4	2	2	2	2	6	6	6	6	3	3	3	3	5	5	5	5	B	B
17	B	B	1	1	1	1	4	4	4	4	2	2	2	2	6	6	6	6	3	3	3	3	5	5	5	5	B	B
18	B	B	1	1	1	1	4	4	4	4	2	2	2	2	6	6	6	6	3	3	3	3	5	5	5	5	B	B
19	B	B	1	1	1	1	4	4	4	4	2	2	2	2	6	6	6	6	3	3	3	3	5	5	5	5	B	B
20	B	B	6	6	6	6	3	3	3	3	5	5	5	5	2	2	2	2	4	4	4	4	1	1	1	1	B	B
21	B	B	6	6	6	6	3	3	3	3	5	5	5	5	2	2	2	2	4	4	4	4	1	1	1	1	B	B
22	B	B	6	6	6	6	3	3	3	3	5	5	5	5	2	2	2	2	4	4	4	4	1	1	1	1	B	B
23	B	B	6	6	6	6	3	3	3	3	5	5	5	5	2	2	2	2	4	4	4	4	1	1	1	1	B	B
24	B	B	1	1	1	1	7	7	7	7	1	1	1	1	3	3	3	3	5	5	5	5	6	6	6	6	B	B
25	B	B	1	1	1	1	7	7	7	7	1	1	1	1	3	3	3	3	5	5	5	5	6	6	6	6	B	B
26	B	B	1	1	1	1	7	7	7	7	1	1	1	1	3	3	3	3	5	5	5	5	6	6	6	6	B	B
27	B	B	1	1	1	1	7	7	7	7	1	1	1	1	3	3	3	3	5	5	5	5	6	6	6	6	B	B
28	B	B	5	5	5	5	4	4	4	4	6	6	6	6	4	4	4	4	7	7	7	7	3	3	3	3	B	B
29	B	B	5	5	5	5	4	4	4	4	6	6	6	6	4	4	4	4	7	7	7	7	3	3	3	3	B	B
30	B	B	5	5	5	5	4	4	4	4	6	6	6	6	4	4	4	4	7	7	7	7	3	3	3	3	B	B
31	B	B	5	5	5	5	4	4	4	4	6	6	6	6	4	4	4	4	7	7	7	7	3	3	3	3	B	B
32	B	B	5	5	5	5	3	3	3	3	D	7	7	7	1	1	1	1	6	6	6	6	4	4	4	4	B	B
33	B	B	5	5	5	5	3	3	3	3	7	7	7	7	1	1	1	1	6	6	6	6	4	4	4	4	B	B
34	B	B	5	5	5	5	3	3	3	3	7	7	7	7	1	1	1	1	6	6	6	6	4	4	4	4	B	B
35	B	B	5	5	5	5	3	3	3	3	7	7	7	7	1	1	1	1	6	6	6	6	4	4	4	4	B	B
36	B	B	4	4	4	4	7	7	7	7	6	6	6	6	5	5	5	5	1	1	1	1	5	5	5	5	B	B
37	B	B	4	4	4	4	7	7	7	7	6	6	6	6	5	5	5	5	1	1	1	1	5	5	5	5	B	B
38	B	B	4	4	4	4	7	7	7	7	6	6	6	6	5	5	5	5	1	1	1	1	5	5	5	5	B	B
39	B	B	4	4	4	4	7	7	7	7	6	6	6	6	5	5	5	5	1	1	1	1	5	5	5	5	B	B
40	B	B	1	1	1	1	6	6	6	6	3	3	3	3	4	4	4	4	3	3	3	3	7	7	7	7	B	B
41	B	B	1	1	1	1	6	6	6	6	3	3	3	3	4	4	4	4	3	3	3	3	7	7	7	7	B	B
42	B	B	1	1	1	1	6	6	6	6	3	3	3	3	4	4	4	4	3	3	3	3	7	7	7	7	B	B
43	B	B	1	1	1	1	6	6	6	6	3	3	3	3	4	4	4	4	3	3	3	3	7	7	7	7	B	B
44	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
45	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

1= VRDxVTT NRVxGVT

2= RITxMRD GRLxNRM

3= MRDxRTM NRMxGRT

4= MYDxRTM NJMxGRT

5= MBDxRTM NBNxGRT

6= CRDxRTM NRCxGRT

7= MRDxRIT NRMxGRL

B= BORDER VRDXVTT BORDURE NRVxGVT

D= dead

R2 R3 R4 R5 R6 RESERVE OF PALMS FOR TRIAL ROTUMA

Activities from 1-7-95 to 30-6-96

1) MAINTENANCE

Weeding:
- circle weeding (radius of the circle 2 m) every two months : manual (for the vines) and chemical (glyphosate)
- outside the circle the cover crop is weak and inequally established

Fertilizers:
1st application:
- Date: 26/10/95
- Rate: 100 g urea/palm ÷ 200 g KCl/palm

2d application:
- Date : 30/6/96
- Rate: 100 g urea/palm

Pests
- Damages of *Brontispa longissima* treated by endosulfan (6/7/95, 20/7, 4/8, 18/8, 2/9) and *Metarhizium anisopliae* (11/10, 5/12)

Cyclon:
Cyclon Betsy blew on 23-24 March 96.
Very few broken leaves, very few palms layed on the side. They have been set upright.

2) PALMS REPLACEMENT

- 2 palms replaced on 20/12/95: 104-21-24 (taken from reserve 104-4-2) and 104-28-16 (taken from reserve 104-4-3)
- 1 palm not replaced 104-32-11

3) DATA GATHERING

a) Completion of growth measurement recording (see table attached).

b) Determination of precocity by recording the palms with flowers every two months. First flowers appeared on 26th month (April 96). On June 96, 4 palms had produced flowers.

PDICC -VTGC24

Field 104

Pollen variety : Rotuman Tall

Planting: February 1994

MEASUREMENTS DURING YOUNG AGE - IN FIELD

	LEAF 0-6M	LEAF 6-12M	LEAF 12-18M	GIRTH 6M	GIRTH 12M	GIRTH 18M	HEIGHT 6M	HEIGHT 12M
VRDxVTT								
Average	3.2	4.1	6.18	28.5	45.6	71.03	148.8	209.4
STD	0.6	0.9	0.51	4.3	9.4	9.46	11.6	40.9
RITxMRD								
Average	3.5	4.5	6.07	27.3	45.3	74.36	150.6	217.2
STD	0.5	0.6	0.26	4.2	7.4	10.84	20.5	28.8
MRDxRTM								
Average	2.9	4.0	6.18	36.6	54.8	85.56	207.3	250.8
STD	0.4	0.5	0.51	4.1	5.8	10.48	18.5	24.9
MYDxRTM								
Average	3.4	4.5	6.56	33.0	52.9	80.11	172.4	232.3
STD	0.5	0.5	0.68	4.0	5.6	10.87	18.3	21.0
MBDxRTM								
Average	3.1	4.0	6.28	34.7	52.7	82.03	186	245.5
STD	0.4	0.5	0.61	6.2	6.8	10.92	19.1	29.3
CRDxRTM								
Average	2.9	4.2	6.44	33.6	53.2	80.86	179.78	232.6
STD	0.5	0.5	0.55	4.3	6.9	13.84	23.6	24.7
MRDxRIT								
Average	3.1	4.6	6.33	27.5	48.0	79.38	159.6	229.8
STD	0.6	0.6	0.55	5.5	6.8	9.59	22.4	25.2

LEAF X-YM : Number of leaves emitted between X th and Yth month
GIRTH XM : Girth (in cm) at X months
HEIGHT XM: Height (in cm) at X months

PDICC TRIAL N°5 Field 103

TRIAL VT- GC25

DWARVES x MARKHAM VALLEY TALL HYBRIDS

PDICC TRIAL N°5 **Field 103**

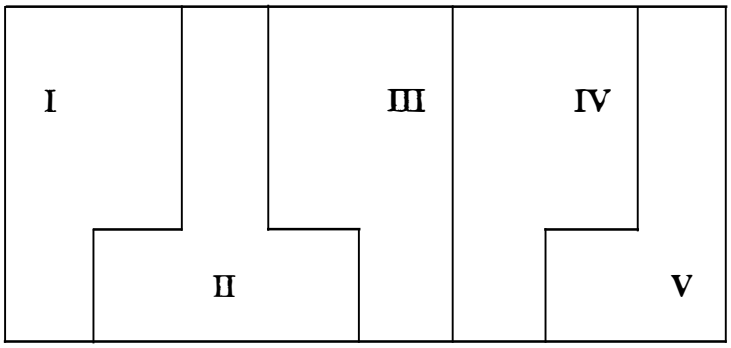
Pollen Variety : Markham Valley Tall (code : GMV = MVT)
Origin of pollen : PNG (CCRI- Madang)

Treatments :

1	MRDxRIT	4	MYDxMVT
	NRMxGRL		NJMxGMV
2	VRDxVTT	5	MBDxMVT
	NRVxGVT		NBNxGMV
3	MRDxMVT	6	CRDxMVT
	NRMxGMV		NRCxGMV

Experimental design : 9 randomized blocks
16 palms/plot

Field Lay-out :



Number of palms and area: Experiment : 240 palms (1,5 ha)
Total : 390 palms (2,43 ha)

Date (s) of Planting : December 1994

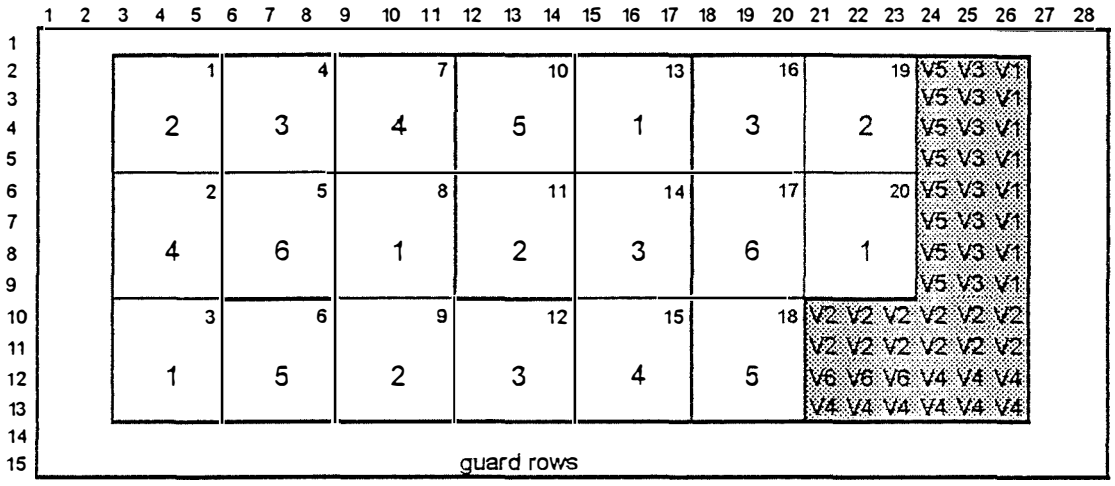
Block incomplete : I no treatments N° 5
II no treatments N° 6
III no treatments N° 6
IV no treatments N° 4

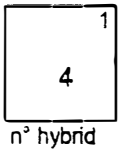
Block V : reserve of plants

PDICC-VTGC25 FIELD 103

Pollen variety: Markham Valley Tall

Planting : 28-29 December 1994





1= MRDxRLT
NRMxGRL

2= VRDxVTT
NRVxGVT

3= MRDxMVT
NRMxGMV

4= MYDxVTT
NJMxGMV

5= MBDxMVT
NBNxGMV

6= CRDxMVT
NRCxGMV

RESERVE OF PALMS

PDICC-VTGC25 FIELD 103

Pollen variety: Markham Valley Tall

Planting : 28-29 December 1994 Updated: June 1996

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	7	7	7	7	7	7	R	R	R	R	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
2	7	7	2	2	2	3	3	3	4	4	4	5	5	5	1	1	1	3	3	3	2	2	2	V5	V3	V1	7	7
3	7	7	2	2	2	3	3	3	4	4	4	5	5	5	1	1	1	3	3	3	2	2	2	V5	V3	V1	7	7
4	7	7	2	2	2	3	3	3	4	4	4	5	5	5	1	1	1	3	3	3	2	2	2	V5	V3	V1	7	7
5	7	R	2	2	2	3	3	3	4	4	4	5	5	5	1	1	1	3	3	3	2	2	2	V5	V3	V1	7	7
6	7	7	4	4	4	6	6	6	1	1	1	2	2	2	3	3	3	6	6	6	1	1	1	V5	V3	V1	7	7
7	7	7	4	4	4	6	6	6	1	1	1	2	2	2	3	3	3	6	6	6	1	1	1	V5	V3	V1	7	7
8	7	7	4	4	4	6	R	6	1	1	1	2	2	2	3	3	3	6	6	6	1	1	1	V5	V3	V1	7	7
9	7	7	4	4	4	6	6	6	1	1	1	2	2	2	3	3	3	6	6	6	1	1	1	V5	V3	V1	7	7
10	7	7	1	1	1	5	5	5	2	2	2	3	3	3	4	4	4	5	5	5	V2	V2	V2	V2	V2	V2	7	7
11	7	7	1	1	1	5	5	5	2	2	2	3	3	3	4	4	4	5	5	5	V2	V2	V2	V2	V2	V2	7	7
12	7	7	1	1	1	5	5	5	2	2	2	3	3	3	4	4	4	5	5	5	V6	R	V6	V4	V4	V4	7	7
13	7	7	1	1	1	5	5	5	2	2	2	3	3	3	4	4	4	5	5	5	V4	V4	V4	V4	V4	V4	7	7
14	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
15	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7

1= MRDxRIT NRMxGRL 2= VRDxVTT NRVxGVT 3= MRDxMVT NRMxGMV 4= MYDxVTT NJMxGMV 5= MBDxMVT NBNxGMV 6= CRDxMVT NRCxGMV

7= BORDER

V1 V2 V3 V4 V5 V6 RESERVE OF PLANTS R= Replacement

Activities from 1-7-95 to 30-6-96

1) MAINTENANCE

Weeding:

- circle weeding (radius of the circle 2 m) every two months : manual (for the vines) and chemical (glyphosate)
- no cover crop

Fertilizers:
1st application:
- Date : 14/12/95
- Rate: 60 g urea/palm + 150 g KCl/palm + 30g Borax/palm

2d application:
- Date : 30/5/96
- Rate: 60 g urea/palm

Pests
- Damages of *Brontispa longissima* treated by endosulfan (6/7/95, 20/7, 3/8, 24/8, 2/9, 11/4/96, 6/5)

Cyclon:
Cyclon Betsy blew on 23-24 March 96.
Few palms layed on the side. They have been set upright.

2) DATA GATHERING

a) Recording of growth measurement (see table attached).

PDICC - VTGC25 **Field 103**

Pollen Variety : Markham Valley Tall

Planting: December 1994

MEASUREMENTS DURING YOUNG AGE - IN FIELD

	LEAF 0-6M	LEAF 6-12M	LEAF 12-18M	GIRTH 6M	GIRTH 12M	GIRTH 18M	HEIGHT 6M	HEIGHT 12M
CRDxMVT								
Average	2.75	4.92	6.00	28.92	50.42	84.58	180.22	253.92
STD	0.43	0.86	0.58	2.81	13.89	26.49	11.92	53.42
VRDxVTT								
Average	2.20	5.46	6.38	31.17	52.25	94.76	184.83	286.96
STD	0.40	0.91	0.63	5.26	7.94	14.45	23.49	38.67
MBDxMVT								
Average	2.89	5.61	6.17	30.11	51.94	95.06	173.39	279.28
STD	0.57	0.49	0.60	2.45	7.75	14.37	14.74	44.75
MYDxMVT								
Average	2.78	5.44	6.61	27.67	53.56	95.67	165.00	274.83
STD	0.42	0.60	0.49	4.97	6.38	16.18	25.00	48.28
MRDxRIT								
Average	2.67	5.46	6.25	32.39	63.42	106.38	202.83	316.00
STD	0.47	0.64	0.43	5.63	9.22	7.73	17.35	20.02
MRDXMVT								
Average	2.42	5.17	6.00	28.50	55.21	94.29	159.73	291.04
STD	0.49	0.62	0.41	6.76	6.24	21.48	22.85	23.47

LEAF X-YM: Number of leaves emitted between Xth and Yth month
GIRTH XM: Girth (in cm) at X months
HEIGHT XM: Height (in cm) at X months

TRIAL VT- GC26

DWARVES x GAZELLE PENINSULA TALL HYBRIDS

PDICC TRIAL N° 6 **Field 114**

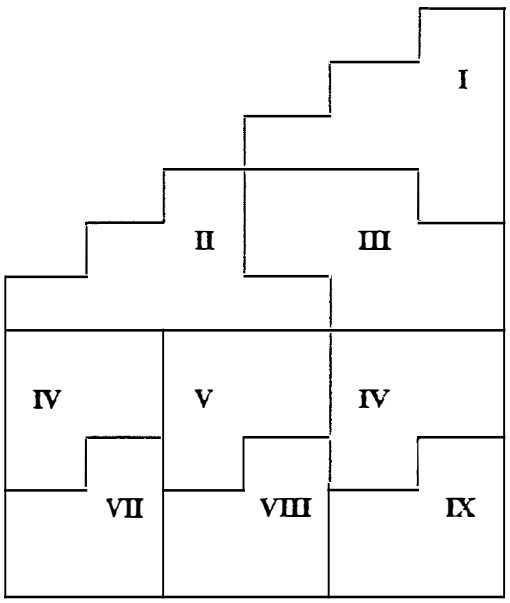
Pollen Variety : Gazelle Peninsula Tall (code : GPT = GGZ)
Origin of pollen : Saraoutou Collection

Treatments :

1	VRDxVTT	4	MYDxGPT
	NRVxGVT		NJMxGGZ
2	MRDxRIT	5	CRDxGPT
	NRMxGRL		NRCxGPT
3	MBDxGPT	6	NRMxGGZ
	NBNxGGZ		NRMxGGZ

Experimental design : 9 randomized blocks
16 palms/plot

Field Lay-out :

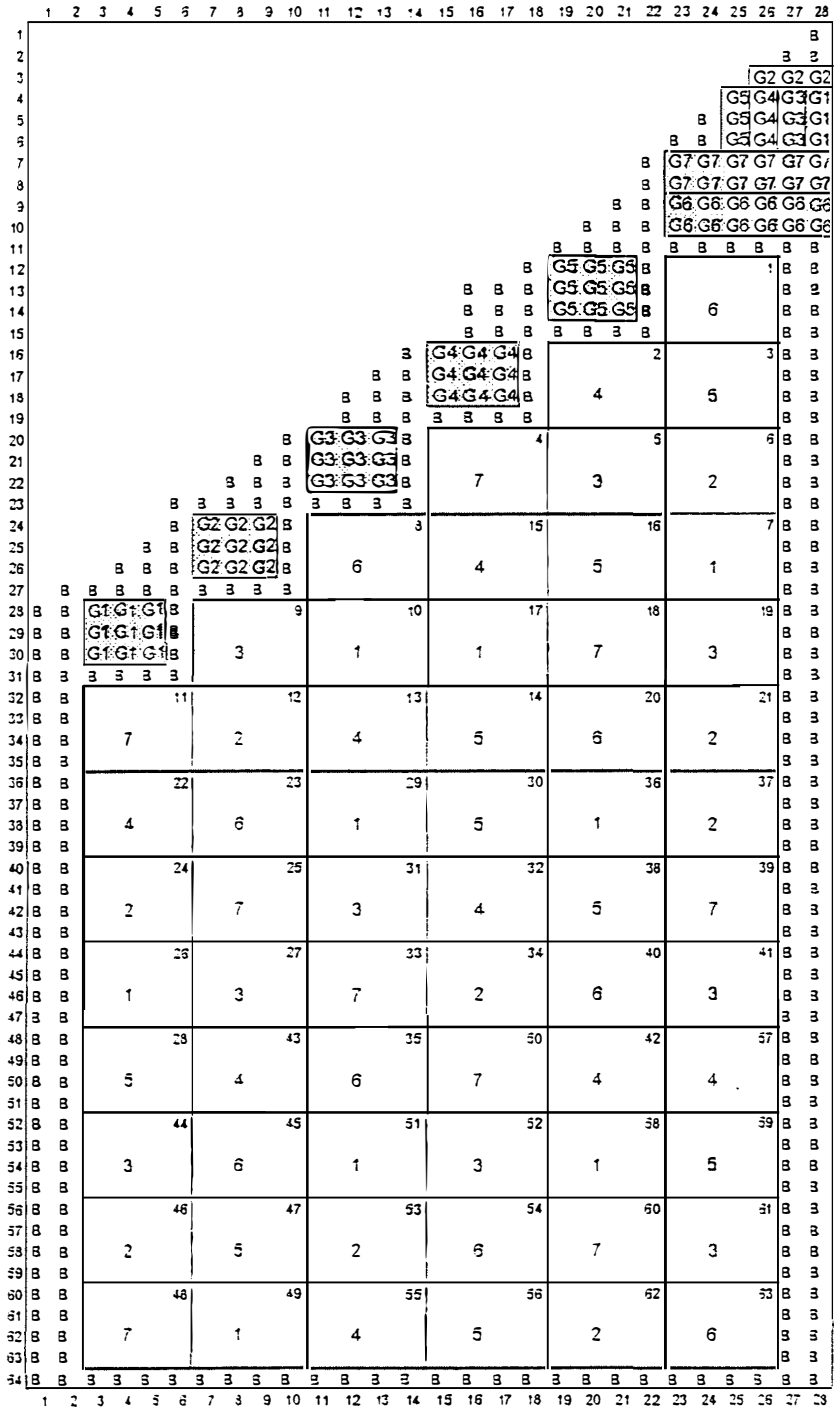


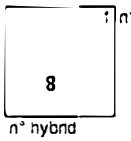
Number of palms and area: Experiment : 1008 palms (6,3 ha)
Total : 1414 palms (8,84 ha)

Date (s) of Planting : January 1995

Pollen variety: Gazelle Peninsula Tall

Planting : January 1995





1= VRDxVTT
NRVxGVT

2= MRDxRIT
NRMxGRL

7= BGDxGPT
NVBxGGZ

8= BORDER VRDXVTT

3= MBD xGPT
NBNxGGZ

4= MYDxGPT
NJMxGGZ

5= CRDxGPT
NRCxGGZ

6= MRDxGPT
NRMxGGZ

G1
G2
G3
G4
G5
G6
G7

RESERVE OF PALMS

Activities from 1-7-95 to 30-6-96

1) MAINTENANCE

Weeding:

- circle weeding (radius of the circle 2 m) every two months : manual (for the vines) and chemical (glyphosate)
- no cover crop

Fertilizers:
1st application:
- Date : 14/12/95
- Rate: 60 g urea/palm + 150 g KCl/palm + 30g Borax/palm

2d application:
- Date : 30/5/96
- Rate: 60 g urea/palm

Pests
- Damages of *Brontispa longissima* traited by endosulfan (6/7/95, 20/7, 3/8, 24/8, 7/9, 13/2/96, 12/3, 10/4, 21/5)

- Serious damages of *Aspidiotus destructor* traited by dimethoate (24/4//96, 11/6/96)

- 1 palm infected by Coconut Foliar Decay (viral disease transmitted by *Myndus taffini*)
114-59-26 MBDx GPT (as been uprooted on May 96 and replace on 5/6/96)

Cyclon:
Cyclon Betsy blew on 23-24 March 96.
Lot of palms layed on the side. They have been set upright.

2) DATA GATHERING

a) Recording of growth measurement (see table attached).

PDICC - VTGC26

Field 114

Pollen Variety : Gazelle Peninsula Tall

Planting: January 1995

MEASUREMENTS DURING YOUNG AGE - IN FIELD

	LEAF 0-6M	LEAF 6-12M	GIRTH 6M	GIRTH 12M	HEIGHT 6M	HEIGHT 12M
VRDxVTT						
Average	3.4	5.6	31.8	45.3	173.3	282.8
STD	0.6	0.6	7.2	6.3	17.1	24.3
MRDxRIT						
Average	3.4	5.5	37.3	51.8	178.7	316.0
STD	0.5	0.6	5.3	7.7	38.5	35.1
MBDxGPT						
Average	3.6	5.5	29.3	42.6	158.1	277.1
STD	0.5	0.5	4.8	6.4	19.9	29.0
MYDxGPT						
Average	3.6	5.8	31.1	46.9	172.2	291.5
STD	0.6	0.4	3.9	7.2	22.0	30.8
CRDxGPT						
Average	3.6	5.3	30.4	44.2	166.3	270.4
STD	0.5	0.6	4.6	7.5	22.2	29.5
MRDxGPT						
Average	3.5	5.3	32.9	48.2	178.3	307.4
STD	0.6	0.5	4.4	13.8	21.7	34.4
BGDxGPT						
Average	3.6	5.6	32.1	46.8	173.5	292.8
STD	0.5	0.6	5.1	6.0	27.4	28.4

LEAF X-YM: Number of leaves emitted between Xth and Yth month
GIRTH XM: Girth (in cm) at X months
HEIGHT XM: Height (in cm) at X months

COLLECTION OF DWARF ECOTYPES

COLLECTION OF DWARF ECOTYPES - EC7

tree-> 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

1 B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B

NBN (MBD)	NRC (CRD)
NVB (BGD)	NVP5 (PIL)
NVP3 (TAC)	NNL (NLA)
NJA (SYD)	NRV (VRD)
NJM (MYD)	NVP7 (ARO)
NVP2 (CAT)	NVT (THD)
NRM (MRD)	NJA (SYD)
NVP5 (PIL)	NBN (MBD)
NRC (CRD)	NJM (MYD)
NRV (VRD)*	NVB (BGD)
NVP7 (ARO)	NVP3 (TAC)
NVT (THD)	NRM (MRD)
NNL (NLA)**	NVP2 (CAT)

VARTC-1996

Date of planting:

23/3/94 | 22/3/95 | * 3/5/95 | ** 20/11/95 | Not planted

1= NBN-Nain Brun Nouvelle Guinee (MBD-Madang Brown Dwarf)
2= NRC-Nain Rouge Cameroun (CRD-Cameroon Red Dwarf)
3= NVB-Nain Vert Bresil (BGD-Brazilian Green Dwarf)
4= NVP5-Nain Vert Pilipog (PIL-Pilipog Green DWarf))
5= NVP3-Nain Vert Tacunan (TAC-Tacunan Green Dwarf)
6= NNL-Nain Niu Leka (NLA-Niu Leka Green Dwarf)
7= NJA-Nain Jaune Apia (SYD-Samoa Yellow Dwarf)
8= NRV-Nain Rouge Vanuatu (VRD-Vanuatu Red Dwarf)
9= NJM-Nain Jaune Malaisie (MYD-Malayan Yellow Dwarf)
10= NVP7-Nain Vert Aromatique (ARO-Aromatic Green Dwarf)
11= NVP2-Nain Vert Catigan (CAT-Catigan Green Dwarf)
12= NVT-Nain Vert Thailande (THD- Thailand Green Dwarf)
13= NRM-Nain Rouge Malaisie (MRD - Malayan Red Dwarf)
B= Borders (VRD free pollination)

Activities from 1-7-95 to 30-6-96

1) MAINTENANCE

Weeding:

- circle weeding (radius of the circle 2 m) every two months : manual and chemical (glyphosate)- outside the circle the cover crop (Pueraria javanica- established on March by cuttings) is inequally established

Fertilizers:

Palms planted on March 94
- Date: 17/10/95
- Rate: 100g g urea/palm + 200 g magnesium sulfate (16% MgO)/palm + 30g Borax/palm

Palms planted on March 95
- Date: 17/10/95
- Rate: 50 g urea/palm + 100g magnesium sulfate (16% MgO)/palm + 20g Borax/palm

Leaf sampling for mineral analysis

- Date of collection: 21/9/95
- 3 varieties collected, 20 palms/variety, leave # 9
- Results:

	N%	P%	K%	Ca%	Mg%	Cl%	Bppm
NRV	2.255	0.151	1.893	0.502	0.206	0.885	9.8
NVP7	2.282	0.141	1.715	0.375	0.242	0.810	10.5
NRM	2.408	0.167	1.583	0.455	0.250	0.765	9.3

Pests

- Damages of *Brontispa longissima* treated by endosulfan (19/7, 30/8, 28/9/95)

- Damages of *Aspidiotus destructor* treated by dimethoate (18/3//96, 15/4, 11/6). Releasing of ladybirds *Chilocorius nigritus* and *Pseudocymnus anomalus*.

Cyclon:

Cyclon Betsy blew on 23-24 March 96. No damages.

2) DATA GATHERING

a) Determination of precocity by recording the palms with flowers every two months from 12th month to 26th month (May 96) after planting. See graphics attached.
The more precocious variety is NVP5 (Pilipog Green Dwarf) which started flowering one year after planting. The later ones are NRM (MRD), NBN (MBD), NVP7 (ARO), NRV (VRD) and NNL (NLA)) which started flowering on 21th month. The other varieties are intermediary.

b) Completion of growth measurement recording (see table attached).

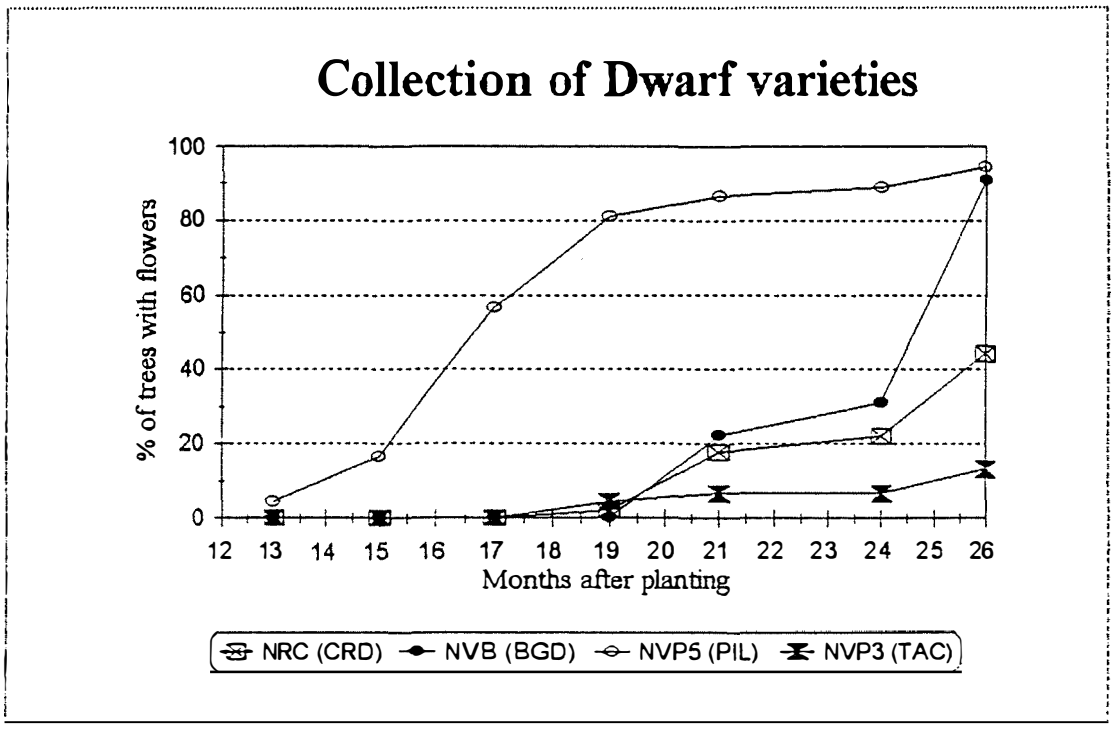
COLLECTION OF DWARF ECOTYPES

Estimation of precocity

Percentage of trees with flowers

Size of the sample: 45 trees /variety except for NJA, NBN, and NVP5 (90 trees)

Months after planting	NRC (CRD)	NVB (BGD)	NVP5 (PIL)	NVP3 (TAC)
13	0.0	0.0	4.4	0.0
15	0.0	0.0	16.7	0.0
17	0.0	0.0	56.7	0.0
19	2.2	0.0	81.1	4.4
21	17.8	22.2	86.7	6.7
24	22.2	31.1	88.9	6.7
26	44.4	91.1	94.4	13.3



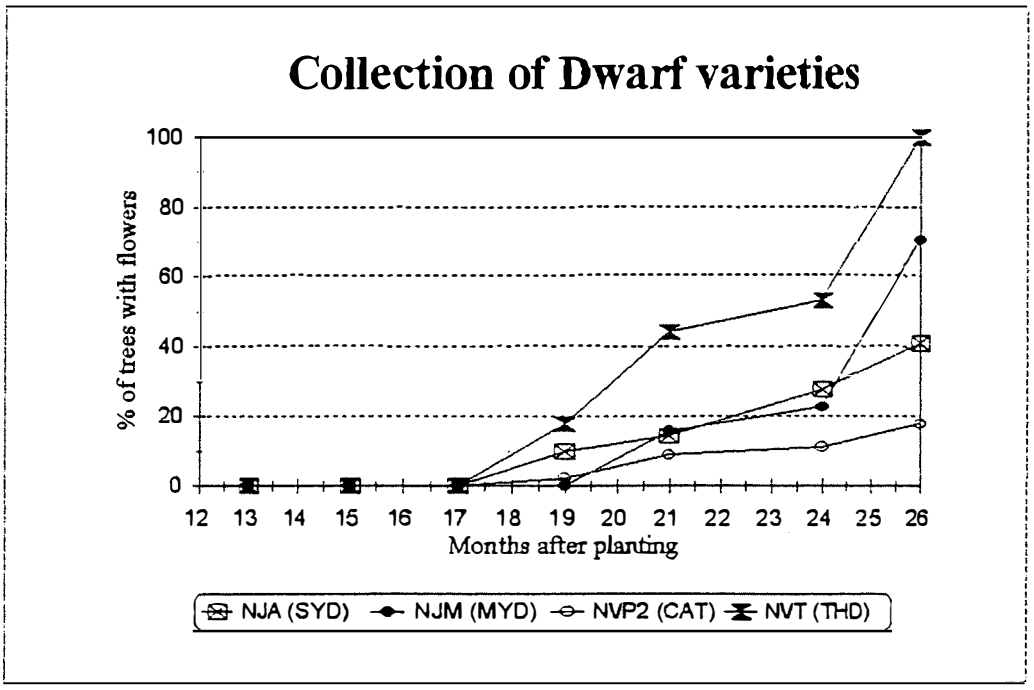
COLLECTION OF DWARF ECOTYPES

Estimation of precocity

Percentage of trees with flowers

Size of the sample: 45 trees /variety except for NJA, NBN, and NVP5 (90 trees

Months after planting	NJA (SYD)	NJM (MYD)	NVP2 (CAT)	NVT (THD)
13	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0
19	10.0	0.0	2.2	17.8
21	14.4	15.9	8.9	44.4
24	27.8	22.7	11.1	53.3
26	41.1	70.5	17.8	100.0



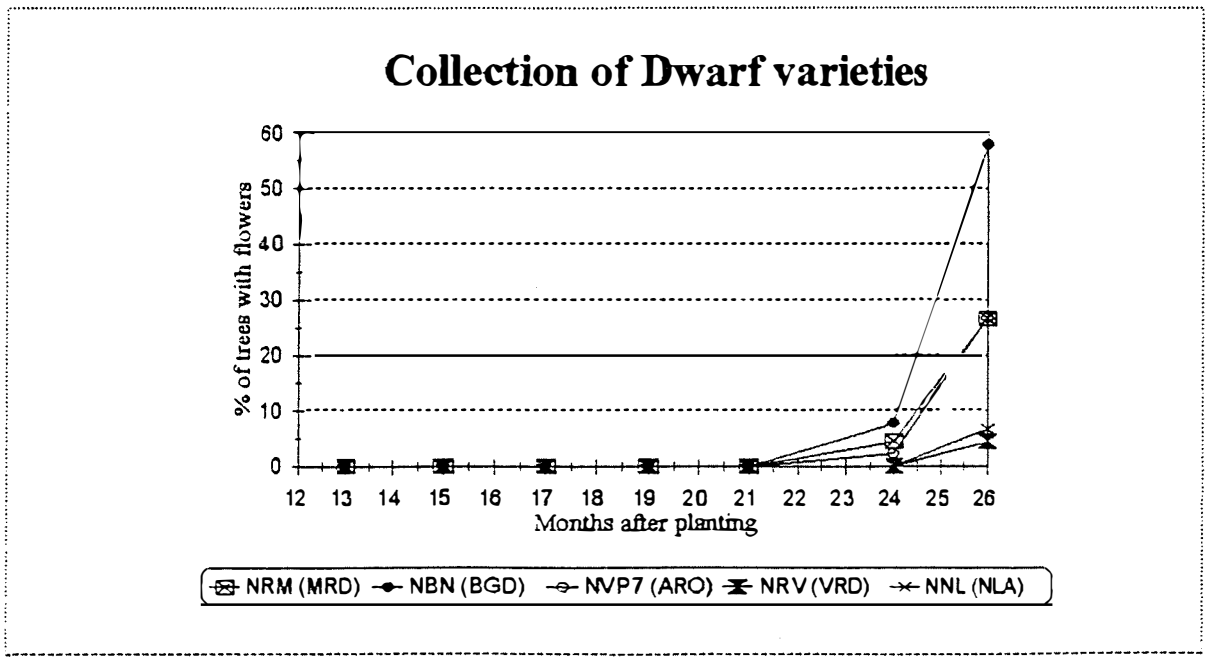
COLLECTION OF DWARF ECOTYPES

Estimation of precocity

Percentage of trees with flowers

Size of the sample: 45 trees /variety except for NJA, NBN, and NVP5 (90 trees)

Months after planting	NRM (MRD)	NBN (BGD)	NVP7 (ARO)	NRV (VRD)	NNL (NLA)
13	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0
19	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0
24	4.4	7.8	2.2	0.0	0.0
26	26.7	57.8	26.7	4.4	6.7



COLLECTION OF DWARF ECOTYPES

MEASUREMENTS DURING YOUNG AGE - IN FIELD

	LEAF 0-6M	LEAF 6-12M	LEAF 12-18M	GIRTH 6M	GIRTH 12M	GIRTH 18M	HEIGHT 6M	HEIGHT 12M	HEIGHT 18M
NBN - MBD									
Average	1.98	3.52	5.19	30.92	43.01	63.24	176.76	197.98	309.34
STD	0.52	0.69	0.61	4.47	6.58	9.07	18.28	19.36	42.21
NRC - CRD									
Average	2.42	3.80	5.40	28.00	39.87	61.40	146.13	175.20	258.02
STD	0.61	0.96	0.61	4.34	10.03	12.82	18.38	41.56	36.39
NVB - BGD									
Average	1.91	3.76	6.33	31.16	45.64	68.53	156.56	193.93	307.82
STD	0.66	0.48	0.56	4.66	7.47	12.84	22.83	21.25	32.93
NVP5 - PIL									
Average	1.58	3.10	5.58	30.42	39.86	58.11	181.41	192.89	270.99
STD	0.56	0.58	0.65	4.39	5.21	7.98	29.13	23.56	37.70
NVP3 - TAC									
Average	1.64	3.33	5.56	30.04	47.00	71.22	155.80	183.38	284.38
STD	0.52	0.56	0.58	5.24	7.75	8.70	27.68	19.88	31.06
NNL - NLA									
Average	2.36	3.60	5.64	27.89	47.62	68.02	136.67	176.73	254.44
STD	0.56	0.49	0.48	5.06	6.65	9.42	21.57	20.86	29.75
NJA - SYD									
Average	2.02	3.30	5.20	29.92	40.97	55.11	158.46	179.70	244.83
STD	0.26	0.48	0.60	4.62	6.77	8.20	17.20	21.03	33.28
NRV - VRD									
Average	1.76	3.59	5.56	22.91	36.23	57.38	105.22	166.16	244.51
STD	0.48	0.54	0.50	3.76	6.92	8.47	16.65	21.95	32.40
NJM - MYD									
Average	1.89	3.56	5.96	31.33	47.04	65.73	156.49	194.80	276.76
STD	0.31	0.50	0.47	3.80	4.68	6.59	14.55	11.90	24.83
NVP7 - ARO									
Average	1.84	3.62	6.27	26.87	48.71	67.78	134.33	180.93	273.60
STD	0.36	0.53	0.80	2.94	8.98	8.61	16.69	22.74	38.07
NVP2 - CAT									
Average	1.67	3.24	5.18	26.47	38.80	57.09	174.49	190.51	278.98
STD	0.47	0.43	0.53	2.83	4.15	7.68	17.35	15.02	30.98
NVT - THD									
Average	1.82	3.80	6.44	31.89	50.42	71.38	166.96	207.24	315.18
STD	0.38	0.54	0.72	4.39	16.31	6.08	13.95	18.75	28.25
NRM - MRD									
Average	1.98	3.49	5.96	32.40	46.87	66.89	182.42	210.53	293.40
STD	0.49	0.78	0.67	3.39	10.11	10.00	20.87	38.00	40.17

LEAF X-YM: Number of leaves emitted between Xth and Yth month

GIRTH XM: Girth (in cm) at X months

HEIGHT XM: Height (in cm) at X months

GENERAL LIST OF VARTC GERMPLASM

COLLECTION OF COCONUT CULTIVARS

I - TALL CULTIVARS

Access. Number	Cultivar Name	Accepted Abbrev.	French Name	Collection Site	Country of collection	Donor Name	Acquisition date	Maintenance			
								N° field	Date of planting	Progeny (1)	Accession size
GBB	Baybay tall	BAY	Grand Baybay		Philippines	PCA-Zamboanga	1982	P40	1983	G0	97
GGZ	Gazelle Peninsula Tall	GPT	Grand Gazelle		PNG	Bubia-Res.Centre	1984	P30	1985	G0	100
GKK	Karkar Tall	KKT	Grand Karkar		PNG	Bubia Res. Centre	1984	P30	1985	G0	89
GML	Malayan Tall	MLT	Grand Malalale		Malaysia	Yandina-Solomon	1966	P40	1984	G1	97
GNC	New Caledonia Tall	NCT	Grand Nelle Calédonie	Ouvéa Island	New Caledonia	DDER	1986	P20	1987	G0	133
GOA6	West African Tall	WAT	Grand Ouest Africain	Ouidah	Bénin	IRHO- SMD	1965	P40	1985	G1	78
GPY2	Rangiroa Tall	RGT	Grand Polynésie		French Polynesia	IRHO-Rangirao	1966	P00	1967	G0	8
GRL1	Rennell Island Tall	RIT	Grand Rennell	Rennell Island	Solomon Islands	Dep.Agric.-Solomon	1963	P00	1970	G1	53
	Rennell Island Tall	RIT	Grand Rennell	Rennell Island	Solomon Islands	Dep.Agric.-Solomon	1963	P30	1985	G2	101
GRT	Rotuman Tall	RTM	Grand Rotuma	Rotuma Island	Fiji	Dep.Agrl.Suva-Fiji	1968	P30	1985	G1	102
GSN1	Solomon Island Tall	SIT	Grand Salomon	Reef Island	Solomon Islands	IRHO-JF. JULIA	1985	P00	1987	G0	14
GSN2	Solomon Island Tall	SIT	Grand Salomon	Nendo Island	Solomon Islands	IRHO-JF. JULIA	1985	P00	1987	G0	16
GTG	Tonga Tall	TON	Grand Tonga		Tonga	Coc.Replant.Scheme	1968	P40	1985	G1	95
GTN1	Tagnanan Tall	TAG	Grand Tagnanan		Philippines	PCA-Zamboanga	1982	P40	1983	G0	97
GTN2	Tagnanan Tall	TAG	Grand Tagnanan	Tagnanan	Philippines	Tagnanan Estate Inc.	1982	P40	1983	G0	98
GVT1	Vanuatu Tall	VTT	Grand Vanuatu	Surunda - Santo	Vanuatu		1966	P00	1967	G0	177
GVT2	Vanuatu Tall	VTT	Grand Vanuatu	Leroux - Santo	Vanuatu		1966	P00	1967	G0	683
GVT3	Vanuatu Tall	VTT	Grand Vanuatu	Banks Islands	Vanuatu		1968	P32	1969	G0	23
GVT5	Vanuatu Tall	VTT	Grand Vanuatu	Bulldoz - Santo	Vanuatu		1983	P40	1984	G0	100
GVT6	Vanuatu Tall	VTT	Grand Vanuatu	Port-Olry - Santo	Vanuatu		1983	P40	1984	G0	94
GVT7	Vanuatu Tall	VTT	Grand Vanuatu	Tanna Island	Vanuatu		1984	P40	1985	G0	97
GVT8	Vanuatu Tall	VTT	Grand Vanuatu	Torres Islands	Vanuatu		1985	P20	1986	G0	88
GVT9	Vanuatu Tall	VTT	Grand Vanuatu	Tanna Island	Vanuatu		1986	P20	1987	G0	139
GVT10	Vanuatu Tall	VTT	Grand Vanuatu	Banks Islands	Vanuatu		1985	P20	1986	G0	58

(1) G0= Pop. introduced in Saraoutou; G1= First generation; G2=Second generation

VARTC 1994

COLLECTION OF COCONUT CULTIVARS

II - DWARF CULTIVARS

Access. Number	Cultivar Name	Accepted Abbrev.	French Name	Collection Site	Country of collection	Donor Name	Acquisition date	Maintenance			
								N° field	Date of planting	Progeny (1)	Accession size
NBN	Madang Brown Dwarf	MBD	Nain Brun Nelle Guinée		PNG	IRHO-SMD	1982	P31	1983	G0	60
								P51	1994	G1	90
NJA	Samoan Yellow Dwarf	SYD	Nain Jaune Samoa		Western Samoa	Dep.Agric. Apia	1967	P31	1984	G1	106
								P51	1994	G2	90
NJM	Malaysian Yellow Dwarf	MYD	Nain Jaune Malaisie		Malaysia	IRHO-SMD	1973	P31	1985	G1	55
								P51	1994/95	G2	90
NNL	Niu Leka Dwarf	NLA	Nain Niu Leka		Fiji		1963	P31	1984	G1	16
								P51	1994/95	G2	90
NVP3	Tacunan Green Dwarf	TAC	Nain Vert Tacunan		Philippines	Davoa Research Centre	1982	P31	1983	G0	46
								P51	1994/95	G1	90
NRC	Cameroon Red Dwarf	CRD	Nain Rouge Cameroun	Kribi	Cameroon	IRHO-SMD	1982	P31	1984	G0	65
								P51	1994/95	G1	90
NRM	Malayan Red Dwarf	MRD	Nain Rouge Malais		Fiji		1966	P31	1983	G1	132
								P51	1994/95	G2	90
NRV	Vanuatu Red Dwarf	VRD	Nain Rouge Vanuatu	Malo Island	Vanuatu		1973	P31	1985	G1	81
								P51	1994/95	G2	90
NVB	Brasilian Green Dwarf	BGD	Nain Vert Brésil		Brazil	IRHO-SMD	1974	P31	1984	G1	74
								P51	1994/95	G2	90
NVK	Kiribati Green Dwarf	KID	Nain Vert Kiribati	Butaritari Island	Kiribati	Min. Agric. Kiribati	1990	P50	1991	G0	31
NVP2	Catigan Green Dwarf	CAT	Nain Vert Catigan		Philippines	PCA - Zamboaga	1982	P31	1983	G0	44
								P51	1994/95	G1	90
NVP5	Pilipog Green Dwarf	PIL	Nain Vert Pilipog		Philippines	Davao Research Centre	1982	P31	1983	G0	58
								P51	1994	G1	90
NVP7	Aromatic Green Dwarf	ARO	Nain Vert Aromatique		Thaïland	Sawi Agric. Exper. Stat.	1982	P31	1983	G0	28
								P51	1994/95	G1	90
NVT	Thailand Green Dwarf	THD	Nain Vert Thaïlande		Thaïland	Sawi Agric. Exper. Stat.	1982	P31	1983	G0	43
								P51	1994/95	G1	75

(1) G0= Pop. introduced in Saraoutou; G1= First generation; G2=Second generation

VARTC-1995

Pacific Regional Agricultural Programme
GPO Box 12621
Suva, Fiji