Coconut research at CIRAD

Dr. Alexia Prades
Coconut sector focal point
www.cirad.fr

55th ICC Ministerial Session, 25-30 August 2019, Manila, Philippines
CIRAD - French Agricultural Research and International Cooperation Organization working for the sustainable development of Tropical and Mediterranean regions

1650 staff and 350 researchers abroad, by our partners institutions

In French overseas regions: collections, genebanks, laboratories, technical platforms and field experiments.

CIRAD Regional Directions linked to about 100 countries

Head office in Paris
Research and training centres in Montpellier, South of France
Three scientific departments

UNDERSTANDING biological systems, from molecule to ecosystem

Biological Systems Department (BIOS)
11 research units

ANALYSING the practices and performance of farming systems, from plot to farm

Tropical Production and Processing Systems Department (PERSYST)
12 research units

SUPPORTING players in rural areas, from a local to a global level

Environment and Societies Department (ES)
10 research units
A basic working principle: research in partnership

- Working together to establish and implement priorities
- Working in the South, where our partners are, in their laboratories or in their fields

Training the talents of the future

800 researchers and technicians received and trained each year
300 PhD students (60% from developing and emerging countries)
CIRAD and the coconut sector

- More than 70 years of experience on coconut fruit production and processing in the world

- A pool of 15 researchers
  - Breeding, genomic, bioinformatic (4)
  - Agronomy and GIS (4)
  - Phytopathology and entomology (2)
  - Coconut fruit processing and products quality (4)
  - Market and value chain analysis (1)
Sustainability of coconut sector in the future

1. **Replant** and replace old trees with proper planting material
2. Preserve the **biodiversity** in genebanks (to address new market trends, climate change…)
3. Decrease the **biotic pressure** (LYDs and insects) and increase **productivity** in the field (fertilizers, inter-cropping…)
4. Improve the **quality** of copra (efficient and safe dryers, controlled conditions and duration of storage) – (sanitary issue)
5. Encourage **diversification** of products and participatory certification systems. This will increase farmers’ and processors’ revenues and create jobs in rural areas.

**CIRAD activities to support this strategy in partnership**
Topics

- **Conservation**, breeding and selection: genomic studies, characterization of the biodiversity
- **Agronomy**: primary production from nursery stages until harvesting
- **Phytopathology** and **Entomology** (focus on LYD)
- **Processing**: domestic to semi-industrial scales, focus on re-engineering of traditional process
- **Quality** and **standards** for coconut products
- Development of **communication** and information (documents, database, etc.)
- **Training** of scientific officers
Signature of MoU between CIRAD and ICC
in Jakarta, Indonesia
duration 5 years from 2019 to 2023

Three forms of cooperation

• Project for technical assistance
• Project for research
• Other specific projects:
  • Training of research and technical staff
  • Hosting of research and technical staff
  • Organization of seminars, meetings…
Seed supply for replanting in the Pacific

Dr. Roland Bourdeix  Dr. Jean-Pierre Labouisse

The CIDP Project Purpose is to improve the competitiveness of small producers engaged in the coconut value chains, through a strengthened regional integration of related markets and the intensification of Coconut production.

http://replantcoconut.blogspot.com/

Source R. Bourdeix et al., APCC Conf., 2018
Mapping population in the nursery (CNRA, CIRAD, COGENT)
2012 – 2016

Leaf samples sent to CIRAD for analyses Sept.2015 through SMTA
Coconut Genome sequencing

First publication of the sequence of the coconut genome by CATAS, BGI, CIRAD, CNRA

Preserving biodiversity

Consultancy for the Government of Ivory Coast to prepare the transfer of the International Coconut Genebank for Africa and Indian Ocean in collaboration with CNRA, COGENT and TIRPAA/FAO
Preserving biodiversity against lethal yellowing in Indian Ocean

EPIBIO PROJECT
REGIONAL EPIDEMIOLOGICAL SURVEY
AND LETHAL YELLOWING IDENTIFICATION

- Two types of phytoplasma in East Africa
- Risks of contamination for Madagascar, Comoro Islands, etc.
- Regular prospection missions, sampling and biomolecular analyses

Source: F. Pilet, Coconut internal workshop, CIRAD, Sept. 2018
Preserving biodiversity against lethal yellowing

**EUROPEAN H2020 PROJECT TROPICSAFE**

Insect-borne prokaryote-associated diseases in tropical and subtropical perennial crops

- Coordination: A. Bertaccini (University of Bologna, Italy)
- Three biological models: vines, citrus, and coconut

Control of biotic stress

Full success confirmed in Timor Leste

Introduction of a biological agent (*Chilocorus politus*, Coleoptera, Coccinellidae) to control the pest *Aspidiotus destructor* (Hemiptera, Coccoidea, Diaspididae)

December 2003

December 2018

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Diversification

Value chain analysis of the coconut sector in Côte d’Ivoire – ongoing

Coordination and Technical team

- Dr. Alexia Prades (CIRAD, Montpellier)
- Eng. Victoria Bancal (CIRAD, Abidjan)
- Dr. Rebecca Assa-Yao (Université F. Houphouët Boigny)
- Lucien Dagri Nguessan (Master student, Univ. Nangui Abrogoua)

Agro-economic team

- Dr. Frédéric Lançon (CIRAD, Montpellier)
- Dr. Jean-Jacques Iritié Bi Goli (INP-HB)
- Fulgence Soumonni (Master Student, INP-HB)
Traditional and New Products from Côte d’Ivoire

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Thank you for your attention