

# Coconut research at CIRAD

Alexia Prades

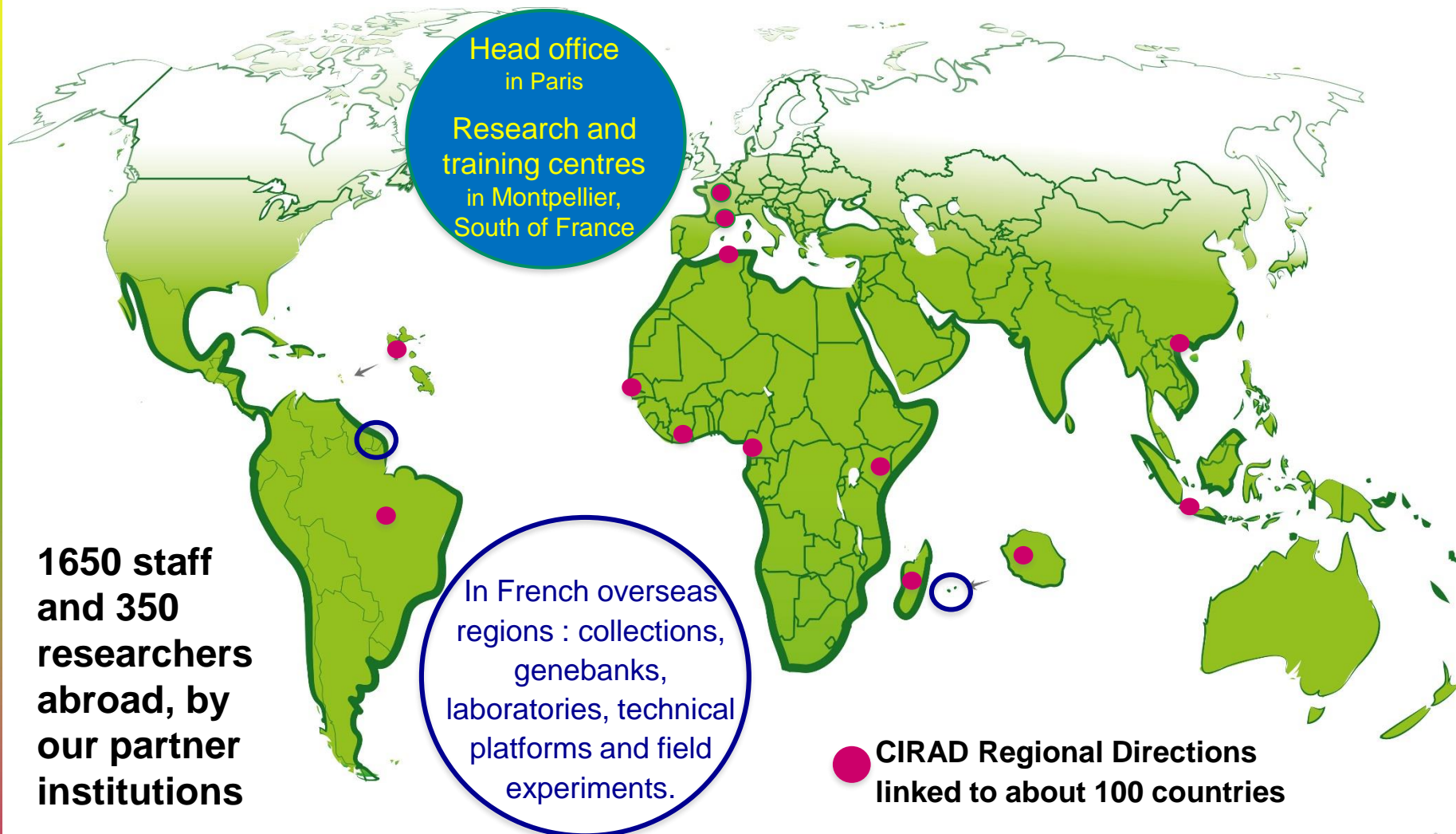
Jean-Pierre Labouisse

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[www.cirad.fr](http://www.cirad.fr)



# 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 partner  
institutions**

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

**● CIRAD Regional Directions  
linked to about 100 countries**



# CIRAD and the coconut sector



- **More than 70 years of experience on coconut fruit production and processing over the world**
  
- **A pool of 15 researchers working on coconut**
  - Breeding, genomics, bioinformatics (4)
  - Agronomy (4)
  - Phytopathology, entomology and pest control (2)
  - Coconut fruit processing and products quality (4)
  - Market and value chain analysis (1)



# Genetics and genomics



Luc Baudouin



Stéphanie Sidibe-Bosc



# First publication of the sequence of the coconut genome



# Genetic resources management and breeding



Roland Bourdeix



Jean-Pierre Labouisse

## Coconut Genetic Resources Network



## Seed supply for replanting in the Pacific



<http://replantcoconut.blogspot.com/>

# Diversification and quality of food products



Alexia Prades



Victoria Bancal

Re-engineering of traditional processes and new products



## Vegetable oils as biofuel for local uses



Gilles Vaitilingom

Several technical-economical studies for coconut oil biofuel projects in the Pacific (Vanuatu, New Caledonia, Fiji, etc.)



CRUDE COCONUT OIL IN MODIFIED DIESEL ENGINE



2004 GENSET. 300KVA  
Power Station of ENERCAL (Utility) New Caledonia

Port Olry pilot project (2004 feasibility study)



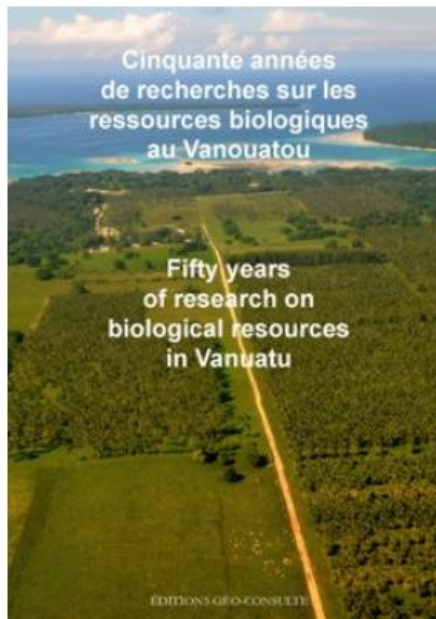
# Continuous involvement of CIRAD in agricultural R & D in Vanuatu for more than 50 years.



**1962** - Creation of a **coconut research station managed by IRHO (now CIRAD)** with cattle breeding and pasture improvement under coconut

**1994** – Establishment of **Vanuatu Agricultural Research and Technical Center (VARTC)** under the management of CIRAD

**2002** – VARTC handover to Vanuatu Government



**Co-publications on coconut in Vanuatu (1962-2012)**

- 34 scientific papers
- 7 book chapters
- 22 conference papers and posters
- 9 PhD dissertations

# Coconut in Vanuatu

## New research priority

- **Agronomy and planting material for a better use of land resources**
  - Restore the fertility of old coconut groves;
  - Facilitate access to high yielding planting material;
  - Search for new varieties suitable for other uses than copra
- **Control of *O. rhinoceros*: Focus on trapping strategy**



# 1. Restore the senescent coconut groves on coral soils



“ How better use the large areas with old coconuts, large spacing, low productivity, and low level of land fertility”

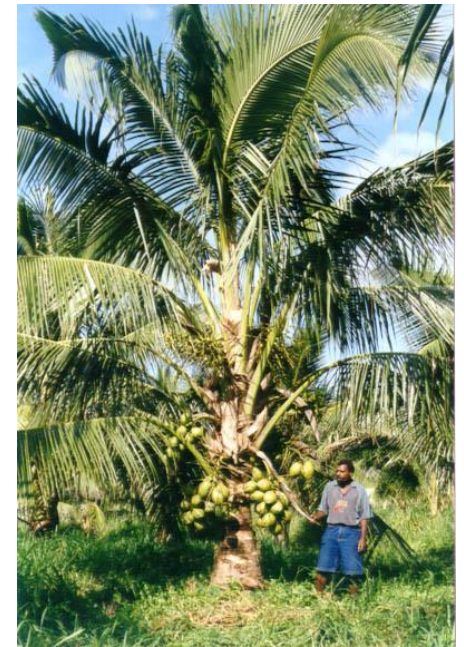
## NEEDS IN RESEARCH & FARM EXPERIMENTS

- Restoration of fertility of soil on coral terraces (Nitrogen Fixing Trees)
- Experiment/evaluation of crop management sequences with young coconuts, food and cash crops, fruit and nut trees in replacement of old coconuts





## 2. Facilitate farmers' access to improved planting material



« To amplify the impact of the current plan of distribution, each plot of Improved VTT should become a seed garden of Improved VTT

Improved Vanuatu Tall  
4 years after planting

**Provided that:**

- the plot is isolated from other coconut plantations and have a surface area  $> 0.7$  ha (100 palms)
- the plot is well managed, attractive,



## This also implies to :

- To maintain a **database of the farmers** (location, number of palms, etc) to trace the planting material
- **Train farmers** how to **select the seeds on the seed garden**, and to **manage a nursery**



- Set up a label of “certified seeds provider” given by DARD/VARTC?



### 3 . Search for new varieties suitable for other uses than copra



IFAD Project surveys 1998-2000

- More than 40 different products or uses identified in the villages
- Collections of 20 populations of Vanuatu Tall collected in the islands
- **Resume the surveys with a focus on coconuts with outstanding characters**



# Dwarf coconut plants identified in populations of local coconuts in VARTC collection.



## 4. Control of *Oryctes rhinoceros*: a focus on trapping strategy

Trap + pheromone + synergist is **only a monitoring tool**

**Does trapping solve the problem in a satisfactory way  
or  
does it encourage it ?**

Trap : ONLY for population monitoring NOT for mass trapping  
(no idea of lure attraction distance)

Which *Oryctes* are receptive to the lure ?



## Short-term proposals

- Handpicking
- Destroy breeding sites

## Mid-term proposals

- Improve trapping strategy
- Mass rearing *O. rhinoceros* to test nudivirus strain virulence



# An example of successful control of scale insects in Timor Leste



Laurence Ollivier Xavier Bonneau

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



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1 December 2003

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