

## **International Coconut Genebank for the South Pacific**

### **11<sup>th</sup> COGENT Steering Committee Meeting**

**25-28 June 2002**

**Bangkok, Thailand**

### **Introduction**

The Coconut palm (*Cocos nucifera L.*) is the tree of life in the Pacific because of its many uses and it is an integral part of the culture of the people of the Pacific Islands in a variety of ecologies. Because of its many uses many ecotypes have emerged both through the selection of man and nature. Conservation of this genetic diversity is crucial because of the genetic erosion brought about through a number of causes including the introduction of new coconut varieties, shifts in farming systems and changing economic conditions. The Cocoa and Coconut Research Institute of Papua New Guinea was designated as the executing agency for the ICG for the South Pacific. CCRI has an ongoing coconut research and development programme and the ICG is based at the Stewart Research Station in Madang. At the Stewarts Research Station there is research on coconut agronomy, coconut-based farming systems, breeding & production of coconut hybrids, and entomology of coconut pests.

### **Conservation of Coconut Germplasm**

Currently there are a total of 41 local tall, 6 local dwarf and 5 exotic dwarfs populations are being maintained in the field genebank at Stewart Research Station. This will form part of International Coconut Genebank for the South Pacific. The regional centre will liaise with COGENT member countries in the region to identify and select germplasm accessions for importation to the ICG-SP. Some of the accessions from the member countries are listed in Annex 1. Recently the list was circulated to the COGENT member countries to reconfirm the list and obtains suggestions for additional line and lines that they would like to obtain from inside our outside the Pacific. It was suggested that the germplasm from outside the Pacific not be included in the ICG to keep the collection to a manageable size. This list is incomplete at present time until the donating countries submit their selected varieties for conservation.

The following germplasm accessions are currently being held in the laboratory as in vitro culture from five member countries. The collection of this germplasm from the atoll countries was a collaborative effort that includes funding support through COGENT, collection by CIRAD researcher with national staff, coconut embryo culture at the

Regional Germplasm of SPC and transfer to the ICG in PNG. The survival rate from the time of collection has been very low due to a variety of factors. The lessons have been learned during this activity will greatly assist future collection and transfer to the ICG. Trial shipments are underway with germplasm from Fiji to further fine-tune the transfer process. COGENT has provided funding to support this activity.

**Table 1:**

<b>Accession No.</b>	<b>Country of Origin</b>	<b>Number Imported</b>	<b>Number surviving as of 22/04/02</b>
TUV 01	Tuvalu	25	19
TUV 02	Tuvalu	7	6
TUV 03	Tuvalu	1	1
TUV 04	Tuvalu	13	5
TUV 05	Tuvalu	11	7
TUV 06	Tuvalu	49	38
KIRI 01	Kiribati	19	4
KIRI 02	Kiribati	31	11
COKT 03	Cook Islands	18	0
COKT 04	Cook Islands	15	7
COKT 05	Cook Islands	2	0
MAD 02	Cook Islands	22	14
MITA 1	Marshall Islands	51	33
FJT	Fiji	62	37
<b>TOTAL</b>		<b>326</b>	<b>182</b>

## **Capacity Building**

The field for the ICG was manually cleared by 1997 and a cover crop of Puereria has been established. The soils are mostly silty clay loam with either coarse sand or heavy clay subsoil with good to medium drainage. Annual rainfall is 3,500mm.

The embryo culture unit has two staff, which includes a Research Officer and laboratory assistant. Shortly after recruitment the RO went for 2 weeks training in 1999 on embryos culture techniques in the Philippines and also attended two workshops in 2000. The previous laboratory assistant resigned and a new one was recruited in November 2001. She under went on job training, supervised by the RO since then and till now she can be able to do most of the laboratory work independently.

Currently the embryo culture laboratory is fully operational with additional stock of glassware's and chemicals purchased in June 2001. COGENT has secured funding for the embryo laboratory. The building of the acclimatisation unit is in progress and is expected to be completed at the end of September 2002.

A member of the CCRI staff and another one from the University of Technology at Lae attended the micro-satellite workshop in France. A variety of other training courses have been provided.

## ICG Activities

A total of 13 accessions from 4 different countries (Tuvalu, Kiribati, Cook Islands and Marshall Islands) collected by CIRAD/COGENT team had been imported to the ICG – SP in 2000 and 2001 (APO 1/ 015). From the number of accessions imported only 11 accessions are being maintained in the laboratory as in vitro cultures. Two accessions were lost due to contamination. From the ICG – SP service countries only 62 embryos from one accession (Fiji Tall) in Fiji had been imported in March 2002. The regional centre has yet to receive germplasm from Vanuatu, Samoa, and Tonga (APO1/ 016)

The imported germplasm are currently being maintained in the laboratory using the upgraded coconut embryo culture protocol. Most of the evaluation work on the performance of the germplasm will be done in the field.

In February 2001 Mr. Alfred Kambu attended a training workshop in Fiji where he assisted Dr. Mary Taylor as the resource person in training participants from ICG – SP services countries in coconut embryo culture work. In preparation for the introduction of germplasm from member countries the regional centre is conducting a trial shipment of coconut embryos from Papua New Guinea to Fiji. This is to determine whether endosperm plugs or naked embryos are the most effective method of importation. The information generated will be made available to member countries to assist them in sending their designated germplasm to the regional centre. This trial shipment was between PNG and Fiji thus we would have provided Fiji with some of the germplasm from the ICG – SP.

## Funding

1. Funding contribution of host country Government and from COGENT/IPGRI and other international organizations.

Project code	Donors	National counterpart (in kind) \$US	COGENT/IPGRI \$US
LOA AP01/016	DFID	1,500	3,000
LOA AP01/015	ADB (Phase II)	3,500	7,000
LOA AP98/121	ADB	10,000	30,000
LOA AP98/055	DFID (Phase II)	2,500	5,000

**Note:** Budget figures used here are as shown in LOA's and National budget. Most of the numbers consists of overheads (staff, transport, etc)

## Planned Activities

Project Code	Planned Activities	Year 2002			Year 2003			
		Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
AP98/121	PEQ and Acclimatization Units	X	X					
AP01/015	Furnish the list of designated germplasm for ICG – SP		X	X				
AP01/015	Trial shipment of germplasm between PNG and Fiji	X	X					
AP01/015	Arrange permits to import germplasm from ICG – SP Service countries			X		X	X	
AP98/121	Request NAQIA to inspect facility			X				
AP01/016	In Vitro culture of Imported germplasm	X	X	X	X	X	X	X
AP01/016	Potting and Acclimatization of plantlets			X	X	X	X	X
AP98/054	Characterization of germplasm in the ICG – SP		X	X	X	X	X	X
	Field management, including fertilizer applications	X	X	X	X	X	X	X
	Assessment & identification of insects pest (Coconut Base Borer – CBB)	X	X					
	Survey of dead palms in December 2000			X				X
	In – filling of the dead palms						X	X
	Control treatment for pest			X		X	X	X
	Outstanding germplasm for collection		X	X		X	X	
	T702: Hybrid Progeny Trial							
	Evaluation of hybrids			X			X	X
	Management of the trial	X	X	X	X	X	X	X

Annex 1 Designated accessions for introduction into the ICG-SP (incomplete)

<i>No.</i>	<i>Code</i>	<i>Accession</i>	<i>Country of origin</i>	<i>Source of collection</i>
1		Rotuma Tall	Fiji	Taveuni
2		Tonga	Tonga	Tonga
3		Kiribati	Kiribati	Kiribati
4		Rangiroa	Tahiti	Tahiti
5		Vanuatu	Vanuatu	Ivory Coast
6		Western Samoa	Western Samoa	Western Samoa
7		Samoan Yellow Dwarf	Western Samoa	Western Samoa
8		Niu Leka Green Dwarf	Fiji	Fiji
9	TCCFJT	Fiji Tall	Fiji	Fiji
10		Niu Vai	Western Samoa	Western Samoa
11		Niu Afa	Western Samoa	Western Samoa
12		Christmas Island Tall	Kiribati	Kiribati
13		Kiribati Green Dwarf	Kiribati	Kiribati
14		New Caledonia Tall	New Caledonia	New Caledonia
15		Vanikoro Tall	Solomon Islands	Solomon Islands
16		Solomon Tall	Solomon Islands	Solomon Islands
17		Niu-bubu	PNG & Solomon Islands	PNG & Solomon Islands
18		Cameroon Red Dwarf	Cameroon	Ivory Coast
19		Salak Green Dwarf	Indonesia	Indonesia
20		Pilipo Green Dwarf	Philippines	Indonesia?
21		Tacunan Green Dwarf	Philippines	Indonesia?
22		Aromatic Green Dwarf	Thailand	Thailand
23		Catigan Green Dwarf	Philippines	Indonesia
24		Brazilian Green Dwarf	Brazil	Ivory Coast
25		West African Tall	Ivory Coast	Ivory Coast
26		Sri Lankan Tall	Sri Lanka	Sri Lanka
27		Panama Tall	Jamaica	Ivory Coast