

# Collaborative Collecting Mission between NARI (*National Agricultural Research Institute, Papua New Guinea*) and NIAS in Western and Gulf Provinces, Papua New Guinea 3<sup>rd</sup>-21<sup>st</sup> July 2006

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## Summary

Here we report on the third joint NARI-NIAS collecting mission for crop and wild relatives of crops genetic resources. This mission covered parts of Western and Gulf Provinces. The genetic resources collected included five species of *Vigna*, three species of *Oryza*, cassava, taro, sago, aibika and banana (*Musa acuminata*). The areas visited represented distinctly different ecologies and in each area a different assemblage of species was found. Only in the coastal villages of Mabaduan and Masingara were the species *O. officinalis* and *Vigna* cf. *minima* found. In Balimo the orange soil suggests the presence of iron resulting in lake water with low pH. In that area *O. rufipogon* is abundant. In the Kikori area *Oryza* species were not found but *Vigna* species were present. In the coastal village of Mabaduan cassava was collected. In Balimo and Kikori delta, sago was collected. The germplasm represents new collecting locations for several species. The diverse ecologies in which germplasm was collected suggest that they are likely to have useful adaptive traits.

## Procedures

The collecting mission was based on a Memorandum of Understanding, three years Workplan and agreed Materials Transfers Agreement between NARI and NIAS (signed by Dr. Kazutoshi Okuno, 22 September 2003 and Dr. Raghunath Ghodake 6<sup>th</sup> October 2003). Prior to this years collecting mission NARI was contacted by NIAS staff 6 months in advance and an agreed joint collecting plan was developed. In early April a specific request for permission to undertake the collaborative collecting was directed via NARI to the PNG Department of Environment and Conservation for approval. After approval for the collecting trip was obtained from the Department of Environment and Conservation and they informed the PNG Ministry of Foreign Affairs of the decision, research visas were granted to NIAS officials for the mission.

In Papua New Guinea the collecting team consisted of NIAS and NARI officials and in each area visited local Ministry of Agriculture staff joined the team. In each village visited the head of the village was contacted to get permission to collect in the village.

At the end of the trip PNG quarantine clearance was obtained. All seed materials and herbarium specimens collected were divided between NARI and NIAS. At Narita airport, Japan collected samples and herbarium specimens were given to Japan Quarantine Services for inspection and clearance.

## Objectives

The overall objectives of the 3 years workplan in Papua New Guinea were to collect for conservation germplasm of interest to both NARI and NIAS scientists (Fig.1). In particular lowland areas rich in *Oryza* spp., *Vigna* spp., sago and root crops were targeted. Reports of previous missions have already been published (Tomooka *et al.* 2005, Vaughan *et al.*, 2006).

The specific objectives of the mission this year were to visit Western and Gulf provinces. Western Province is particularly rich in diverse *Oryza* species having AA, BB, CC, HH and JJ genomes. These *Oryza* species were the main focus for NIAS officials. NARI officials aimed to collect sago, cassava and taro from the areas visited.

## Methods

For *Oryza* and *Vigna* seed samples were collected. For sago and tuber crops vegetative samples, suckers, stems or tubers were collected. Herbarium specimens were made for some materials. The itinerary is shown (Table 1) and complete passport data including GPS position of sites were obtained and are presented (Table 3 and 4).

## Results

### a. Mabaduan area and Masingara (Fig. 2a)

The coastal village of Mabaduan is about 70 km to the west of Daru. Masingara, another coastal village, is between Mabaduan and Daru, about 40 km from Daru. Patches of forest interspersed with natural savannah or swamps characterize the land behind the coastline.

### *Vigna* species

In Mabaduan we were able to survey around the village and also a swamp area about 2 km inland at the nearby village of Kulalai. Close to the village of Mabaduan we found three species of *Vigna*, *V. cf. minima*, *V. luteola* and *V. radiata* var. *sublobata*. Seeds were collected from *V. cf. minima* and *V. luteola* but *V. radiata* var. *sublobata* was at the seedling stage at one site and another plant was found in grassland although pods could be found all the seeds were eaten by insects.

### *V. cf. minima*

This species is the most common *Vigna* in the area. It grows in the open grassland savannah close to paths. At one place at the edge of Mabaduan village (west side) (O6PNG-08) the plants were growing intertwined with *Oryza officinalis*. Recent studies suggest that this species, first collected in 2005 in savannah plains north of the Sepik river, is indeed a member of the *V. minima* complex. It is more closely related to *V. riukiensis* and *V. nakashimae* than *V. minima*. Its distinctive leaf shape and other characteristics suggest that this may well be a new species or sub-species of this group. Based on the locations it has been collected it seems to occur in areas with acid soils.

Table 1. Itinerary

Date	Places visited
3rd July 2006	Narita - Cairns
4th July	Cairns - Port Moresby
5th July	Port Moresby - Daru
6th July	Daru - Mabaduan Daru - Balimo
7th July	Mabaduan - Kulalai - Mabaduan
8th July	Mabaduan - Masingara - Daru
9th July	Daru
10th July	Daru - Balimo
11th July	Balimo - Kini - Balimo
12th July	Balimo - Kimama - Balimo
13th July	Balimo - Old Balimo - Balimo
14th July	Balimo - Kikori
15th July	Kikori - Kikori river - Kikori
16th July	Kikori - Bavi - Baimaru - Kikori
17th July	Kikori - Kopi - Kikori
18th July	Kikori - Port Moresby
19th July	Port Moresby - Seed processing
20th July	Port Moresby - Quarantine
21st July	Port Moresby - Cairns - Narita - Tsukuba

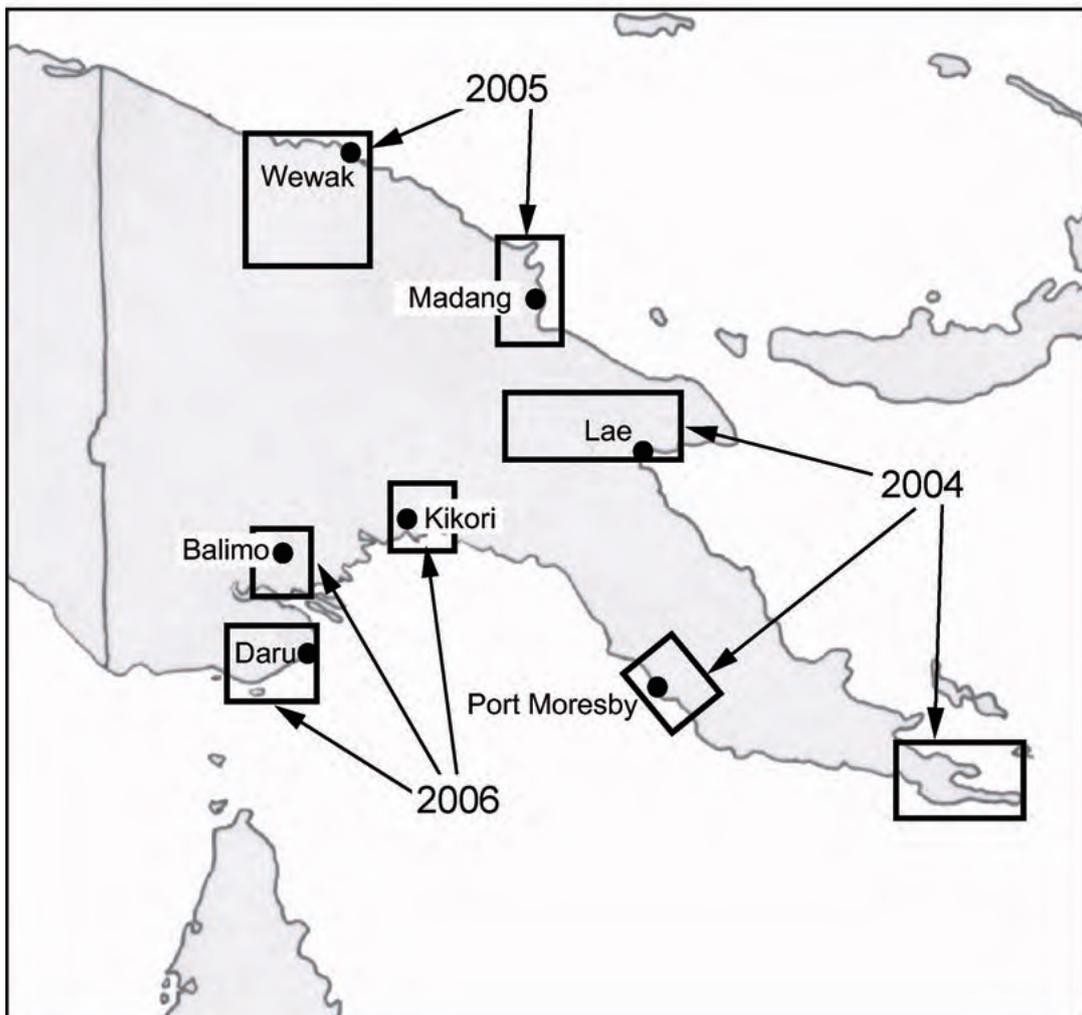


Fig. 1. Areas of Papua New Guinea visited during the 3 years of the collaborative project.

### *V. luteola*

A large population was found next to a creek. This species can grow as an aquatic (see comments below regarding this species in the Balimo area). At this site the plant was growing over bushes in full sun close to *V. cf. minima*.

### *V. radiata* var. *sublobata*

This species was found as just 2 or three seedlings growing under a coconut tree within Mabaduan village. At another site (O6PNG-03) one or two plants were growing in natural grassland savannah by the edge of a forest.

### *V. reflexo-pilosa* (O6PNG-14)

This species is recorded for the first time from Western Province. The population was small and only a few mature pods were found. The population was found adjacent to the swampland near Kulalai village growing close to *O. officinalis* and *O. rufipogon*.

### *Oryza* species

#### *O. officinalis*

This is a common *Oryza* species along the coastline in Western Province. It was found close to gardens along a wet channel to the east of the Mabaduan village near the main school. Plants were flowering and seeds abundant. Populations were also found along the path to the west of the village. Close to Kulalai village *O. officinalis* is abundant in many areas, close to the village, beyond the swamp and in the forest. In Masingara *O. officinalis* is common all around the village and grows in similar habitats and close to *V. minima*. In Masingara we were told the stem of *O. officinalis* is used as a straw for drinking coconuts.

#### *O. rufipogon*

A large population of this species is present in the swamp behind Kulalai village. However, at the time of the visit flowering was over and the few panicles that were found had few seeds. Here as in other areas of Western province where this species is very common the main difficulty is access to the populations. Since no suitable boat was available in the Kulalai swamp the team waded through waist deep water to collect seeds. The peak flowering time seems to be April here when water depth would be greater.

#### *O. longiglumis*

This is a rare forest species and appears restricted to southern New Guinea. It was found in the primary forest behind Kulalai. However, the forest has been much disturbed in recent years and so the population was not vigorous. As with its close relative *O. ridleyi* that was found in many areas in the north of PNG in 2005 it was difficult to find mature seeds.

### Cassava (*Manihot esculenta*)

A collection of 11 cultivars was made from the village of Mabaduan.

#### b. Balimo (Fig. 2b)

Balimo is situated 125 km north of Daru in Western province. Balimo is on elevated land surrounded by lakes at the edge of the Aramia River.

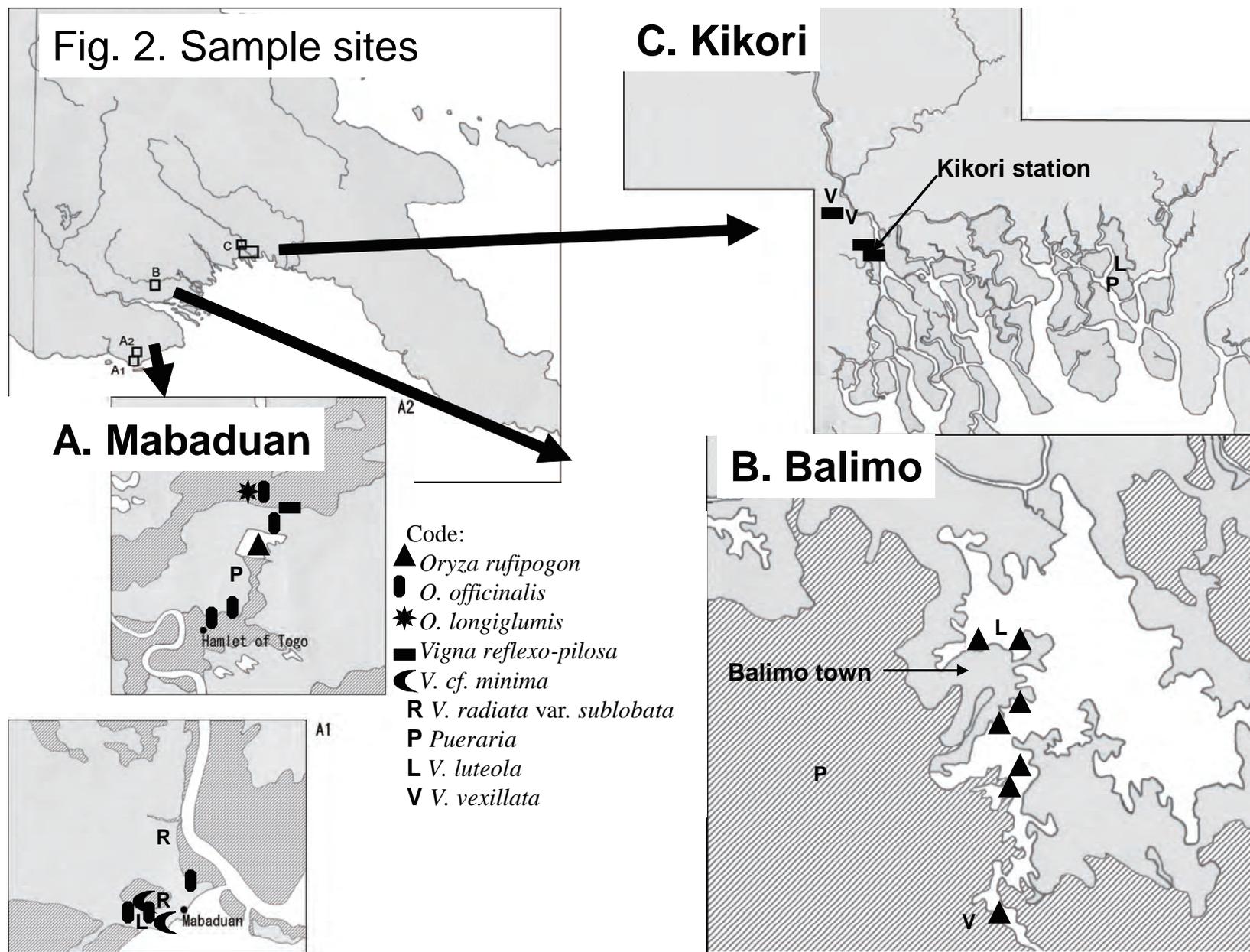


Fig. 2. Collection site for different wild *Oryza* and legume species collected.

## *Vigna* species

### *V. vexillata*

*V. vexillata* was found in grassland savannah near Kini village as an occasional plant and also by the lake. Mature seeds of this species were collected.

### *V. luteola*

This species was collected from the lake where it grows in deep water. Mature seeds of this species were collected.

## *Oryza* species

### *Oryza rufipogon*

Balimo soil is orange in color suggestive of iron. The lake water is dark and clear that suggests an acid soil that may reflect high iron concentration in the soil. Soil maps indicate Balimo is located in an area of acid soils. Based on observations in the Sepik River it seems that *O. rufipogon* occurs in water of low pH rather than high pH. So *O. rufipogon* was not present in the Chambri lakes with 'white' water but wild sugarcane was. However, it was present down stream in the Blackwater area where wild sugarcane was less abundant. In Balimo wild sugarcane was not observed and the water had a high organic matter content suggesting low pH.

*O. rufipogon* is the dominant aquatic grass in Balimo lakes mixed with two different *Leersia* species. *O. rufipogon* grows up from thick beds of previous years vegetation.

The collection of *O. rufipogon* was made on an individual panicle (plant) basis. It was not easy to collect seeds, in part because the main flowering period was over. It was not clear the extent of seed fertility of this ecotype of *O. rufipogon*. When seeds were found on a panicle there were only usually one or two fertile seeds. It is therefore possible that, unlike the Lake Murray ecotype 190km to the northwest, this maybe a shy seeding ecotype. Water fluctuation is great in the Balimo lakes but perhaps not as great as in Lake Murray, which is on a different river system.

Variation in seed size and hull color was an unusual feature of seeds collected and suggested a high degree of heterozygosity. Seeds with straw colored hull were found and the common spider of the area mimics straw seeds (spiders body) and straw awns (spiders legs). The spiders are a remarkable product of coevolution. Seed size was also variable.

### Sago (*Metroxylon sago*)

Three samples of sago were obtained from a farmer in the village of Kini, near Balimo. Sago in this area is said to be of high quality and it is commonly taken to other areas as a gift.

### c. Kikoro (Fig. 2c)

Kikori is situated 160 km to the east of Balimo. Between Balimo and Kikori there still remains abundant primary forest. The Kikori area can be divided into two parts towards the sea is a delta region with abundant Nipa palm groves. Up stream there is primary forest that receives abundant rainfall. The collecting team visited both area by boat and also spent one day on the only road north of Kikori.

*Vigna* species

*V. reflexo-pilosa*

This species was found in two locations - close to the main market in Kikori between a back swamp and the main river. It was also found in a disturbed roadside habitat near the village of Kopi. No other *Vigna* species of the subgenus *Ceratotropis* were found in the Kikori area.

*V. luteola*

This species was found at the edge of a garden on the riverbank near Bavi in the delta region.

*V. vexillata*

This species at Kikori had a much lighter color corolla than the same species in Balimo where it has bright dark blue corolla. *V. vexillata* was found growing abundantly near the village of Kopi.

*Oryza* species

Despite searching in several likely habitats for members of the *O. ridleyi* complex no *Oryza* species were found. Searches were also conducted in likely habitats for *O. schlechteri*. *Oryza schlechteri* is the only *Oryza* species recorded from Gulf province. A herbarium specimen for this species was collected in the Baimaru area. The team was unable to get as far as Baimaru and *O. schlechteri* was not found in likely habitats in areas visited.

Sago (*Metroxylon* sp.)

Three samples of sago were collected in the delta area of the Kikori River.

Aibika (*Abelmoschus manihot*)

Two samples of cultivated Aibika and one sample of wild Aibika were collected from the roadside on the road from Kikori north. In Papua New Guinea this species is used as a leafy vegetable and is in the same genus as okra. This seems to be a common plant in this area.

Banana (*Musa accuminata*)

An accession of this species was collected from the roadside on the road north from Kikori. This is a diploid species and a useful breeding resource for edible bananas.

## **Conclusions**

This collecting mission covered three distinct ecological zones of southern Papua New Guinea; Coastal savannah lands around Mabaduan and Masingara, inland lakes and swamps and adjacent forests around Balimo and diverse wet tropical primary forests and forest delta around Kikori. In each area a distinctly different assemblage of crops and wild relatives of crops were collected (Table 2).

## **Acknowledgments.**

The team expresses their thanks to the Papua New Guinea Department of the Environment and Conservation for permission to undertake the trip. The hospitality and help from various people during the trip is gratefully acknowledged, particularly Mr. Babalela Kalama MBE, Principal Advisor, Western Provincial Administration, Giboi Waini (Daru), Mr. Bani Gilosa (Balimo) and Mr. Tom Yamara (Kikori). The support of Dr. Raghunath Ghodake, Director General and Dr. Sergie Bang, Director of Research, at NARI Headquarters in Lae is much appreciated. Finally

NIAS staff express their whole hearted thanks to Ms. Rosa Kambuou, Research Program Leader and Principal Scientist Plant Genetic Resources, NARI, for all she did this year and previous years to ensure successful collaboration in Papua New Guinea on the conservation of crops and their relatives.

## References

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Table 2. Summary of collected materials

Species name	Mabaduan/ Daru area	Balimo area	Kikori area
<i>Vigna cf. minima</i>	5		
<i>V. radiata</i> var. <i>sublobata</i>	2		
<i>V. reflexo-pilosa</i>	1		3
<i>V. vexillata</i>		2	1
<i>V. luteola</i>	1	2	1
<i>Oryza officinalis</i>	9		
<i>O. longiglumis</i>	1		
<i>O. rufipogon</i>	1	6	
Sago ( <i>Metroxylon</i> sp.)	3		3
Cassava ( <i>Manihot esculenta</i> )	11		
Taro ( <i>Colocassia esculenta</i> )			3
Banana ( <i>Musa acuminata</i> )			1
Aibika ( <i>Abelmoschus manihot</i> )			3
<i>Pueraria</i> (small)	1		
<i>Pueraria</i> (large)	2		
Large seeded native legume	1		

## 和文摘要

### 1. 手続き等の経緯

本調査は生物研とパプアニューギニア国（PNG）の農業研究所（NARI）との間に 2003 年に取り交わされた 3 年計画の植物遺伝資源共同探索調査の MOU に基づくものである。その最終年度にあたる今年度の探索調査に先立ち、半年前より NARI との事前準備を進めてきた。4 月初めには NARI を通じて PNG の環境保全省宛に共同調査実施の許可申請を行ったが、先方の手続きが進まず当初予定していた時期に間に合うように回答を得ることができなかった。そのため計画を延期し、この間に環境保全省への許可申請ならびにこれに基づく PNG 外務省からの研究ビザ発給に至った。これらの諸手続のため出発を 2 週間延期するに至ったが、計画した探索調査の遂行には支障を及ぼすことはなかった。

PNG での活動は生物研および NARI 担当者による調査隊が遂行し、各訪問地で現地の農業省スタッフに参加する形をとった。

現地における探索調査終了後、収集品の PNG における検疫手続きを踏み、全ての収集遺伝資源および植物標本は NARI と生物研で二分した。帰国時に成田空港で植物防疫法に基づく検査を受け、収集品および標本を持ち帰った。

### 2. 現地における具体的活動

3 年間の大きな課題目標は PNG における NARI および生物研による植物遺伝資源の探索・収集である。特に低地における *Oryza* 属, *Vigna* 属, サゴヤシおよびその他のイモ類に焦点を置いた。

今年度の調査は 3 年計画の最終年にあたる。今回の調査は前回までの 2 年間の東部および北部の探索調査を踏まえたうえで、PNG のなかでもアクセスが非常に困難である PNG 南西部、特に海岸部や河川のデルタ地帯に広がる沼地・湿地帯および高温多湿の熱帯雨林が広がる Western 州および Gulf 州において探索を行った。Western 州ではまず Daru を起点に Mabaduan ~ Masingara を陸地の集落部は徒歩で、海岸部・川沿いおよび湿地帯（swamp）はボートで探索した。次に同じ Western 州の Balimo に移動し Fly 川流域の広大な swamp 地帯をボートで探索した。また、Gulf 州 Kikori 周辺では河川流域をボートで、熱帯雨林地帯を車および徒歩で探索した。その結果、*Oryza* 属野生種 3 種 17 系統、*Vigna* 属野生種 3 種 11 系統を収集することができた。特に *Oryza* 属の多様性に富むと予想された Western 州で、Mabaduan から Pahoturi 川を上った Kulalai 村周辺においてわずか数百 m の範囲内に *Oryza rufipogon*, *O. officinalis* および *O. longiglumis* のゲノム構成の異なる 3 種の野生稲が観察されたことは特筆すべきことであった。一方、今回訪問した Western および Gulf 州の住民はデンプン源としてサゴ・バナナ・タロイモ等を主食としており、それぞれの地域の各集落が独自の品種・系統を維持しているようである。今回はサゴヤシ 6 系統、キャッサバ 11 系統、野生タロイモ 3 系統および野生バナナ 1 系統を収集し、NARI としても大きな成果が得られた。

以上、今回の PNG における現地活動では滞りなく課題目標をこなすことができた。多大なる協力支援・便宜供与をいただいた PNG 関係各位に御礼申し上げます。

Table 3. Passport data of the wild legumes and *Oryza* materials in Papua New Guinea

No.	Coll. Date	Coll. No.	Species	Status	Collection Site	Latitude/ Longitude	Altitude (m)	Habitat
1	7/6	06PNG-01	<i>V. cf. minima</i>	wild	Mabaduan, Daru, Western	S09-16-43.7 E142-43-50.8	2	Near cassava gardens
2	7/6	06PNG-02	<i>V. luteola</i>	wild	Mabaduan, Daru, Western	S09-16-45.5 E142-43-49.1	2	Bushes by creek
3	7/6	06PNG-03	<i>V. radiata</i> var. <i>sublobata</i>	wild	Mabaduan, Daru, Western	S09-16-5.9 E142-43-56.8	10	Savannah
4	7/6	06PNG-04	<i>O. officinalis</i>	wild	Mabaduan, Daru, Western	S9-16-18.8 E142-44-8.6	13	beside cultivated fields
5	7/7	06PNG-05	<i>V. radiata</i> var. <i>sublobata</i>	wild	Mabaduan, Daru, Western	S09-16-43.2 E142-44-1.1	2	By village path
6	7/7	06PNG-06	<i>O. officinalis</i>	wild	Mabaduan, Daru, Western	S09-16-42.7 E142-43-48.6	2	Savannah/ gardens
7	7/7	06PNG-07	<i>O. officinalis</i>	wild	Mabaduan, Daru, Western	S09-16-41.7 E142-43-43.3	1	Savannah/ gardens
8	7/7	06PNG-08	<i>V. cf. minima</i>	wild	Mabaduan, Daru, Western	S09-16-42.9 E142-43-48.7	1	Savannah/ gardens
9	7/7	06PNG-09	<i>O. officinalis</i>	wild	Kulalai, Mabaduan, Daru, Western	S9-14-11.5 E142-44-16.5	5	trees/bushes
10	7/7	06PNG-10	<i>O. officinalis</i>	wild	Kulalai, Mabaduan, Daru, Western	S09-14-6.6 E142-44-36.3	3	Savannah
11	7/7	06PNG-11	<i>Pueraria</i> sp.	wild	Kulalai, Mabaduan, Daru, Western	S09-13-51.3 E142-42-9.1	4	Savannah/ swamp
12	7/7	06PNG-12	<i>O. rufipogon</i>	wild	Kulalai, Mabaduan, Daru, Western	S9-13-28.6 E142-45-25.9	7	Savannah/ swamp
13	7/7	06PNG-13	<i>O. officinalis</i>	wild	Kulalai, Mabaduan, Daru, Western	S9-13-17.8 E142-45-35.2	14	Edge of swamp
14	7/7	06PNG-14	<i>V. reflexo-pilosa</i>	wild	Kulalai, Mabaduan, Daru, Western	S9-13-17.8 E142-45-35.2	14	Edge of swamp
15	7/7	06PNG-15	<i>O. officinalis</i>	wild	Kulalai, Mabaduan, Daru, Western	S9-13-7.9 E142-45-31.9	16	Forest
16	7/7	06PNG-16	<i>O. longiglumis</i>	wild	Kulalai, Mabaduan, Daru, Western	S9-13-2.9 E142-45-24.3	12	Forest
17	7/8	06PNG-17	<i>V. cf. minima</i>	wild	Community land, See Masanginle, Masingara, Daru, Western	S9-7-40 E142-56-48.7	sea level	Coconut, grasses
18	7/8	06PNG-18	<i>O. officinalis</i>	wild	Community land, See Masanginle, Masingara, Daru, Western	S9-7-40 E142-56-48.7	sea level	Coconut, grasses

Shading	Disturbance	Population size	Growth stage	Seed	Herbarium	Rhizobium	Remarks
open	med	100x100m	flowering-maturity	bulk	yes	no	Flower with some purple pigmentation, many red ants here
open	med	50x50m	flowering-maturity	bulk	no	no	near PNG01, land owner Reily Baluze
open	low	10x10m	flowering	all eaten by insects	yes	no	
open	high	200x50	flowering-maturity	bulk	no	no	Individual leaves sampled for DNA
open	high	10x10m	vegetative	no seeds found	yes	no	Young plants only, large stipule
open	low	400x400m	flowering-maturity	bulk	no	no	Abundant on this western side of the village
open	medium	50x50m	flowering-maturity	bulk	no	no	Sympatric with <i>V. cf. minima</i>
open	m	50x50m	flowering-maturity	bulk	no	no	Sympatric with <i>O. officinalis</i>
light shade	low	100x100m	flowering-maturity	bulk	no	no	Abundant beside the track.
open	low	100x100m	flowering-maturity	bulk	no	no	
open	low	100x100m	flowering	bulk	no	no	IN the middle of this grassy/swampland
open	low	Many ha	past maturity	bulk	no	no	Despite plenty of water, seeds very difficult to find
light shade	medium	10x10m	flowering	bulk	no	no	
light shade	medium	10x10m	flowering	bulk	yes	no	Few mature pods. Record for Western province.
heavy	medium	100x100m	flowering	bulk	no	no	Disturbance by animals and humans. Unusual site as it is in the forest sympatric with <i>O. longiglumis</i> .
heavy	medium	100x100m	flowering	bulk	no	no	Seems not seasonal, difficult to find seeds. Growing together in places with <i>O. officinalis</i> .
light shade	low	10x10m	flowering/mature	bulk	yes	no	<i>O. officinalis</i> and <i>V. cf. minima</i> are very common across this village
light shade	low	25x25m	flowering-maturity	bulk	no	no	In this village the stem of <i>O. officinalis</i> is used as a straw, so it is called ??

Table 3 (continued).

No.	Coll. Date	Coll. No.	Species	Status	Collection Site	Latitude/ Longitude	Altitude (m)	Habitat
19	7/8	06PNG-19	<i>O. officinalis</i>	wild	Community land, See Masanginle, Masingara, Daru, Western	S9-8-9.7 E142-57-5.2	sea level	Grassland
20	7/8	06PNG-20	<i>V. cf. minima</i>	wild	Community land, See Masanginle, Masingara, Daru, Western	S9-8-7.2 E142-57-13.6	sea level	Cultivated/ grassland
21	7/8	06PNG-21	<i>V. cf. minima</i>	wild	Community land, See Masanginle, Masingara, Daru, Western	S9-7-53.5 E142-57-7.7	sea level	Coconut, grasses
22	7/11	06PNG-22	<i>O. rufipogon</i>	wild	Kini, Balimo, Western	S8-5-46.2 E142-57-28.2	3	swamp
23	7/11	06PNG-23	<i>V. vexillata</i>	wild	Kini, Balimo, Western	S8-5-46.2 E142-57-28.2	3	Grassland
24	7/11	06PNG-24	<i>O. rufipogon</i>	wild	Waligi, Balimo, Western	S8-3-10 E142-57-47.8	3	swamp
25	7/12	06PNG-25	<i>O. rufipogon</i>	wild	Kimama, Balimo, Western	S8-3-24.6 E143-00-11	25	swamp
26	7/12	06PNG-26	<i>O. rufipogon</i>	wild	Btw Kimama and Balimo, Western	S8-2-41.4 E142-59-16.9	24	swamp
27	7/12	06PNG-27	<i>O. rufipogon</i>	wild	Old Balimo, Balimo, Western	S8-2-49.4 E142-57-29.4	39	swamp
28	7/13	06PNG-28	<i>O. rufipogon</i>	wild	Balimo town, Western	S8-1-53.6 E142-57-38	26	swamp
29	7/13	06PNG-29	<i>V. vexillata</i>	wild	Balimo town, Western	S8-1-44.4 E142-57-12	31	swamp
30	7/13	06PNG-30	<i>V. luteola</i>	wild	Balimo town, Western	S8-1-44.4 E142-57-12	31	swamp
31	7/13	06PNG-31	<i>Pueraria species</i>	wild	Balimo airstrip, Western	S8-3-29.4 E142-55-41.3	16	Grassland
32	7/13	06PNG-32	Native legume	wild	Balimo airstrip, Western	S8-3-29.4 E142-55-41.3	16	Grassland
33	7/15	06PNG-33	<i>V. reflexo-pilosa</i>	wild	Kikori station, Gulf	S07-25-15.7 E144-15-00.9	8	Bushes and grassland
34	7/16	06PNG-34	<i>V. luteola</i>	wild	Bavi, Kikori-Baimaru	S7-22-53.5 E144-38-23.7	5	Semi- cultivated land, beside river
35	7/16	06PNG-35	<i>Pueraria</i> sp.	wild	Bavi, Kikori-Baimaru	S7-22-53.5 E144-38-23.7	5	Semi- cultivated land, beside river
36	7/17	06PNG-36	<i>V. reflexo-pilosa</i>	wild	Kikori station, Gulf	S07-25-15.7 E144-15-00.9	20	Roadside ditch
37	7/17	06PNG-37	<i>V. vexillata</i>	wild	Kopi, Kikori, Gulf	S7-18-26.1 E144-10-7	12	Beside forest road
38	7/17	06PNG-38	<i>V. reflexo-pilosa</i>	wild	Kopi, Kikori, Gulf	S7-18-26.1 E144-10-7	12	Beside forest road

Shading	Disturbance	Population size	Growth stage	Seed	Herbarium	Rhizobium	Remarks
open	medium	200x200m	mature	bulk	no	no	
heavy	low	50x50m	flowering/ mature	bulk	yes	no	
medium	medium	100x100m	flowering/ mature	bulk	no	no	
open	low	Many ha	past maturity	Individual	no	no	
open	low	10x10m	flowering	bulk	yes	no	
open	low	Many ha	past maturity	Individual	no	no	
open	low	Many ha	past maturity	Individual	no	no	
open	low	Many ha	past maturity	Individual	no	no	
open	low	Many ha	past maturity	Individual	no	no	
open	low	Many ha	past maturity	Individual	no	no	
open	low	10x10m	flowering	bulk	yes	no	
open	low	10x10m	flowering	bulk	yes	no	
open	medium	100x100m	flowering	bulk	yes	no	Not native
open	medium	50x50m	flowering	bulk	yes	no	Known as Potopoto, large inflated pod collected had no fertile seeds.
open	medium	50x50m	flowering/ mature	bulk	no	no	
open	medium	25x25m	flowering/ mature	bulk	no	no	
open	medium	100x100m	flowering	bulk	no	no	
open	medium	20x20m	flowering	bulk	no	no	
open	medium	100x100m	flowering	bulk	no	no	
open	medium	50x50m	flowering	bulk	yes	no	

Table 4. Sago, cassava, taro, banana and aibika collections

**Sago (*Metroxylon sagu*)**

Donor name	Donor no.	Local name	Meaning of local name	Donor ethnic group	Coll. No	Coll. Date	Province	District	Village
Gauba Mugusi	GM03	Olabaya	with thorns	Siboko	PU03	11 July 06	Western	Gogodala	Kini
Gauba Mugusi	GM02	Digidigi	thornless	Siboko	PU02	11 July 06	Western	Gogodala	Kini
Gauba Mugusi	GM01	Muma	thornless	Siboko	PU01	11 July 06	Western	Gogodala	Kini
Babe Emegea	BE01	Ipiauo	igibo	Ipiauo	PU04	16 July 06	Gulf	Kikori	Ubuo-o
Babe Emegea	BE02	Ipiauo	Maodae	Ipiauo	PU05	16 July 06	Gulf	Kikori	Ubuo-o
Babe Emegea	BE03	Ipiauo	Amea	Ipiauo	PU06	16 July 06	Gulf	Kikori	Ubuo-o

***Colocassia esculenta***

Tom Yamara	TY01				PU01	17 July 06	Gulf	Kikori	Mati
Tom Yamara	TY02				PU02	17 July 06	Gulf	Kikori	Mati
Mathew Warato	MW01				PU03	17 July 06	Gulf	Kikori	Mati

***Musa acuminata***

Tom Yamara	TY01				PU01	17 July 06	Gulf	Kikori	
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**Cassava (*Manihot esculenta*)**

Donor name	Donor no.	Local name	Meaning of local name	Donor ethnic group	Coll. No	Coll. Date	Province	District	Village
Nahidi Dau	ND01			Gaidai	JP01	7 July 06	Western	Kiwai	Mabaduan
Nahidi Dau	ND02			Gaidai	JP02	7 July 06	Western	Kiwai	Mabaduan
Wasa Jawagi	WJ01			Marawadai	JP03	7 July 06	Western	Kiwai	Mabaduan
Elis Maburu	EM01			Marawadai	JP04	7 July 06	Western	Kiwai	Mabaduan
Margaret Wurumai	MW01			Kohodai	JP05	7 July 06	Western	Kiwai	Mabaduan
Kerepai Wageba	KW01			Umumere	JP06	7 July 06	Western	Kiwai	Mabaduan
Kerepai Wageba	KW02			Umumere	JP07	7 July 06	Western	Kiwai	Mabaduan
Kerepai Wageba	KW03			Umumere	JP08	7 July 06	Western	Kiwai	Mabaduan
Kerepai Wageba	KW04	Hybrid 2		Umumere	JP09	7 July 06	Western	Kiwai	Mabaduan
Kerepai Wageba	KW10			Umumere	JP010	7 July 06	Western	Kiwai	Mabaduan
Korona Tom	KT01			Umumere	JP011	7 July 06	Western	Kiwai	Mabaduan

**Aibika (*Abelmoschus manihot*)**

Kerepai Wageba	KW01	wild aibika			PU01	7 July 06	Western	Kiwai	Mabaduan
Tom Yamara	TY01	aibika			PU02	17 July 06	Gulf	Kikori	Mati
Tom Yamara	TY02	aibika			PU03	17 July 06	Gulf	Kikori	Kopi



Photo 1. Part of a large population of a species of the *Vigna minima* complex. Common in full sun or partial shade along the coast from Mabaduan to Masingara, Western Province.



Photo 2. *Oryza officinalis* growing in a ditch close to gardens in the village of Mabaduan, Western Province.



Photo 3. The large swamp behind Kulalai village, Western Province, where *Oryza rufipogon* is abundant. The fringe of the forest in the background is where *O. officinalis* and *Vigna reflexo-pilosa* were found. The forest is where *O. longiglumis* was found see photo. 4.



Photo 4. Forest habitat of *Oryza longiglumis* behind Kulalai village, Western Province, Western Province.



Photo 5. *Oryza rufipogon* in the Balimo swamp, near old Balimo town, Western Province.



Photo 6. Habitat of *Vigna reflexo-pilosa* in the Kikori river valley, Gulf Province.