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西アフリカ地域セネガルおよびギニアにおける アフリカイネの共同探索調査（2006 年）

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Collaborative Exploration of African rice (*Oryza glaberrima* Steud.) in Sénégal and Guinea in 2006

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Summary

Under the cooperation of the Institut Sénégalais de Recherche Agronomique(ISRA), Africa Rice Center(WARDA), and Institut de Recherche Agronomique de Guinée(IRAG), we explored African rice, *Oryza glaberrima* Steud. in Sénégal and Guinea. The total 67 cultivated and wild rice including 42 *O. glaberrima* were collected through the survey. Most of *O. glaberrima*

were grown in the wetlands and flood-prone area. Through the fact-finding on the spot in farmer's fields, the collected *O. glaberrima* had elongation ability in wetland as well as tolerance of deepwater. *O. glaberrima* seems to adapt better in wetlands than in upland. In the area on tributary of Niger river in Guinea, farmers like to cultivate the *O. glaberrima* because of its shoot elongation ability and other biological resistance to disease and pest even if its lower productivity. On the other hand, a farmer knew cultivation selectively in most of *O. glaberrima* in Sénégal. However, most of farmers abandon the *O. glaberrima* because of their unfavorable taste, and new improved rice, *O. sativa,* has been introduced into the farmer's fields enthusiastically. Moreover, collected genetic resources were analyzed morphologically. Among cultivars, a variation of grains shape, color, paddy hair was small in *O. glaberrima* compared with collected *O. sativa*. In conclusion, *O. glaberrima* adapts itself in severe water stresses condition under lower input rice cultivation system in the regions.

Keywords: African rice, Drought, Elongation, Flood, Guinea, Sénégal, Wetlands

Introduction

Oryza glaberrima Steud., which is called African rice, is one of the cultivated rice in the genus *Oryza* in West Africa. The cultivation area is observed at present in deep water, swamp and flood prone wetlands of Niger, Mali, Guinea, Sénégal, Sierra Leone and Gambia. Recently, *O. glaberrima* has been replaced by *O. sativa* because of its poor productivity, and those cultivation areas decrease year by year. On the other hand, it is known that it has resistance against to typical diseases and pests which are major limiting factors for rice production in the area. Therefore, the collection and preservation of the *O. glaberrima* are urgent subjects from above reasons.

Southern part of Sénégal and tributary of Niger river in Guinea have been known as an area of habitat for *O. glaberrima* in particular swamp or flood-prone area. It's cultivation was recognized by Porter *et al* (1960), though little information is known up to now. Therefore, Japan International Research Center for Agricultural Sciences planned the collaborative exploration of *O. glaberrima* Steud. in Sénégal and Guinea under the Gene bank project of the National Institute of Agrobiological Sciences.

The purpose of the collaborative exploration of *O. glaberrima* in Sénégal and Guinea is to collect the germplasm with seed or panicle. Furthermore, its characteristics such as the cultivation ecology are investigated for the database development.

Method

This collaborative exploration of *O. glaberrima* in Sénégal and Guinea was conducted with Centre de Recherche d'Agriculture de Foulaya and Centre de Recherche d'Agriculture de Bordor of Institut de Recherche Agronomique de Guinée(IRAG), and Institut Sénégalis de Recherche Agronomique(ISRA), and Africa Rice Center(WARDA) in Sénégal. The targeted area of exploration was farmer's field in swamp or flood-prone area in Fatick region in Sénégal and Kankan region in Guinea. As for this investigation, we made the fact-finding to understand the ecological characteristic of rice cultivation system and its environmental situation. Furthermore,

morphological characteristics about the seed or panicle were investigated in detail after collection. The photos of the samples of all collected rice were taken for a database.

The following activities were performed for the collaborative exploration;

1. The collection of rice germplasm in the investigation area.
2. The characterization of cultivar.
3. The cultivated ecosystem and management of rice cultivation through farmer.
4. The analysis of the rice morphology on seed and panicle.
5. The collection of literature on diversification of rice.

Result

Outline of the exploration

The route and the schedule for the exploration were shown in Fig.1 and 2 and in the Table 1. First, in Sénégal, the Fatick area which is a marshland in the rainy season was focused. The Fatick area is next to the border with Gambia, and is high in agricultural potential in the country. It is reported that southern Casamance is main cultivation area of *O. glaberrima*. However, the investigation was allowed only up to the Fatick deu to the political unstability at the time. The exploration was conducted from 24 to 31 October 2006. Next, in Guinea, the headwaters of Niger River were focused on. Flood prone-area of the tributary of the river has been known as deepwater cultivation in particular in the natural habit of *O. glaberrima* in Guinea. The exploration was conducted from 19 to 24 November 2006.

We collected the total 67 accessions cultivars including ancestor of cultivated rice. It consists of 42 *O. glaberrima*, 16 *O. sativa*, 2 *O. barthii*, 2 *O. longistaminata*, one wild rice, and 4 unknown germplasm in the exploration.

Fig. 1. Map of Sénégal in the exploration

Fig. 2. Map of Guinea in the exploration

Table 1. Itinerary

1. Sénégal	
24-Oct	Conakry (V7721) Dakar
25-Oct	Planning of the survey with cooperator
26-Oct	Move to Fatick (Site 1,2)
	Survey in Fatic
	Move to Foundiougne (Site 3,4,5)
27-Oct	Survey in Foundiougne
	Move to Sokon (Site 6)
28-Oct	Survey in Toubacouta
29-Oct	Move to Saint-Louis
	Visit in ISRA Saint-Louis
	Visit in WARDA Saint-Louis
30-Oct	Move to Darkar
31-Oct	Visit in Japanese Embassy
	Visit in JICA Senegal office
	Darkar (V7721) Conakry
2. Guinea	
19-Nov	Kindia (car) KanKan
20-Nov	Planning of the survey with cooperator
	Move to Djimbala (Site 1)
	Survey in Djimbala
	Move to Balandou(Site 2)
	Survey in Balandou
21-Nov	Move to Fodecariah (Site 3)
	Survey in Fodecariah
	Move to Moussaya or Selin Moussaya (Site 4)
	Survey in Moussaya or Selin Moussaya
22-Nov	Move to Norassaoba (Site 5)
	Survey in Norassoba
23-Nov	Move to Dalagbeda (Site 6)
	Survey in Dalagbeda
	Move to Kignbakoura (Site 7)
	Survey to Kignbakoura
24-Nov	KanKan (car) Kindia

Site number is 1 to 6 in Sénégal, and 1 to 7 in Guinea.

The exploration in Sénégal

1. Area of Ndofan Village and Ndiouar Village

Two sites of farmer's fields were investigated. Site 1, Ndofan Village is near the center of Fatick (N 9° 40' 117'' W 13° 26' 222?'', height above sea level 12 m). Three *O. glaberrima* (1-3) were collected in farmer's field directly. The rice ecosystem was characterized by rainfed lowland. The topsoil of the field was dried, while subterranean water was sufficient for the growth of rice at maturity period. The water level rose even up to about 60 cm in the field, and rice was damaged by the flood often due to excessive rainfall during the rainy season from June to September from farmer's interview on the spot for farmer. The rice was grown by direct seeding, and the chemical fertilizer and any agricultural materials were not applied at

all. The severe lodging was observed at the harvest time. The different cultivars were founded in the same field partly because of the contamination of seed. A farmer probably has practiced the multiple seeding intentionally to avoid the risk of the damage by the environmental stress through their experiences. A farmer called all these different cultivar “Momo”. Momo means traditional rice in the local language.

Site 2, Ndiouar Village (N 14° 20 '644'' W 16° 26' 550'', height above sea level 7m) was also rainfed lowland along the trunk road where about 2 km left Site 1. Four *O. glaberrima* (4-7) were collected. The surface of the soil dried at the visit. In the site, water level rose about 60 cm in the period of the rainy season in September from June if it has rained heavy, while the water level is usually about 30 cm. The rice of the field was grown by direct seeding, and the chemical fertilizer and the other agricultural materials were not applied at all. The improved cultivar, “Sahel 108” of *O. sativa,* which was recommended and distributed by the Agricultural Research Station of Saint-Louis, was grown. The characteristic of this cultivar is strong salt-resistant and high yielding. *O. glaberrima* was found in the “Sahel 108” field because of contamination. Four *O. glaberrima* were collected in this field. A farmer didn't know these cultivar’s names of *O. glaberrima*.

2. Area of Foundiougne

In site 3, Fayal-Thiare Village (N 14° 06 '168'' W 16° 29' 528'', height above sea level 7 m), 6 *O. glaberrima* (8-13), one *O. sativa* (14) and one *O. barthii* (15) were collected. Water level was maintained at about 30 cm during the rainy season, while the topsoil was dried when we visited. This area is located in the delta of the river. The direct seeding was done in mid July, and a harvest was done in late October. The chemical fertilizer and the agricultural materials were not applied. Most of rice were lodged severely at the visit. Some of rice plants were damaged by salt in the field. The farmers called *O.glaberrima* as "Momo" and *O. sativa* as "Yaka", respectively. According to them, "Momo" can avoid the drought in the dry season. The cultivar has an advantage in this area because it can mature within 3 months from seeding to harvest.

In site 4, Ndour Ndour Village (N 14° 05 '752'' W 16° 18' 501'' , height above sea level 10 m), 3 *O. glaberrima* (16, 17 and 19), and one *O. barthii* (18) were collected. This field was in the wide marshland, and the water level was about 30 cm when we visited. *O. glaberrima* was at heading stage. The rice ecosystem was deepwater with the water level more than 50 cm usually. "Sahel 108” was grown in the field. *O. glaberrima* was contaminated in the field. Farmers seeded directly in July 15 and harvested in about October 25. Though they didn't apply the chemical fertilizer, but the non-selective herbicide was applied to the field before seeding. They did not eat *O. glaberrima* for food because the taste was not better than other cultivated rice. But, a yellow paddy *O. glaberrima* was milled for their consumption.

In site 5, Boli Village (N 14° 05 '081'' W 16° 18' 645'', height above sea level 10 m), 3 *O. glabrrima* (20, 21 and 23) and one wild rice (22), which was not clear species, were collected. Rice ecosystem was rainfed lowland. *O. glaberrima* was grown in the weeds. The water level was from 10 cm to about 30 cm during the rainy season, but the water level rose up to 50 cm often. The farmers didn't know the name of *O. glaberrima*, and they did not eat it for food.

3. Area of Toubacouta

In site 6, Dossilome Socé Village, Toubacouta (N 13° 40 '140'' W 16° 24' 096'', height above sea level 32 m) germplasms were collected from 3 different fields. Four *O. glaberrima* (24-27) were collected. The ecosystem of these rice fields was from shallow (0 cm, 30 cm) to deep water (30 cm, 50 cm) according to those geographical features. Water level rose beyond 60 cm during rainy season, and most rices were submerged when rainfall was heavy according to the farmers. The traditional cultivar, "Manfiniamou" and "Nounfngo" of *O. sativa* were grown by farmers. "Manfinamou" means a black rice, and "Nounfngo" means a black flower. In particular, the plant length of "Manfniamou" was tall, and that stem was big and sturdy. *O. glaberrima* was contaminated in the fields. Farmer didn't know the name of *O. glaberrima*. In the field the seeding was in July and harvesting was in October to November. Any chemical fertilizer and agricultural materials were not applied.

The exploration in Guinea

1. Area of Djimbala

A Djimbala area as Site 1 (N 10° 23 '403'' W 08° 58' 814'', height above sea level 358 m) is located at 50 km from Kankan. "Gnanansira" and "Gbilimgbalan" of *O. glaberrima* (28 and 29) in the Damba Lèè Village and "Djoukeme" of *O sativa* (30) in Senda Lee Village were collected in the farmer's fields. Although Gnanansira is susceptible to lodging at the harvest period, the farmers selected it because they preferred the taste. The field was located on the headwaters of the Djesse River, which is the tributary of Niger River. According to the farmers, the direct seeding was done in mid June and they harvested in October. They applied Glycel which was herbicide after seeding, though fertilizer was not applied. They harvested when we investigated in the field. Though the surface of the soil dried on our visit, the water level reached up to about 1.5m in Damba Lee Village and about 1m in Senda Lee Village in the rainy season. The problem was a lodging of rice at harvesting time.

2.Area of Balandou

Balandou, Site 2 (N 10° 24 '651' 'W 09° 15' 544'' height above sea level 362 m) which is 11 km from Kankan was investigated. The fields of Kabakanna Lèè and Lèè Lindjan Villages were visited. Both of fields were located in the upper reaches of the Milo River. "Dagbe" of *O. glaberrima* (32 and 33) and Showeta soke of *O. Sativa* (31) were collected in Kabakanna Lèè Village. "Dagbenin" of *O. glaberrima* (35) and "Kologbe" of *O. Sativa* (34) were collected in Lèè Lindjan. The farmers called *O. glaberrima* as "Dagbe" in these villages. They usually seeded in June or July, and harvest them in October or November. They did not apply the chemical fertilizer, while the herbicide was applied in the field after the seeding in Kabakanna Lee. Water level rose up to 2 m of Kabakanna Lèè and 1 m of Lèè Lindjan when the water was overflowed from the river. The surface of the soil dried at the investigation.

3. Area of Fodécariah

A Fodécariah area (Site 3, N 10° 51 '623'' W 09° 13' 046'', height above sea level 357m.) is located at about 60 km from Kankan. One *O. glaberrima* (37) and 2 *O. longistaminata* (38 and

39) were collected. The farmers called the *O. glaberrima* cultivar "Maloyen". It means "discover the rice" by a local word. They called the *O. longistaminata* "Kondjon". It means "the bad weeds" by a local word. They grew the rice from late May to early November. It was seeded directly and the chemical fertilizer was not applied, but they applied the Glycel which was the herbicide after seeding. Water level sometimes rose up to 3 m in the rainy season in August. They grew some cultivar in *O. sativa*, "Chinois oulen", "Chinois gbe" and "Seelin". Many wild rice were grown around the field and canal.

4. Area of Seelin Moussaya

The investigation of the Area of Sèèlin Moussaya, Site 4, was carried out. A area (N10 ° 40 '095'' W09°24' 834'', height above sea level 367m.) is located at 67 km left Kankan. Three *O. glaberrima* (42-44), 2 *O. sativa* (41 and 45) were collected in the farmer's field. Four rice varieties of unknown species (46-49) were collected in the farmer's store. They seeded in July, and harvested it in November. They did not apply the agricultural chemicals and fertilizer. Although the surface of the soil in the field was dried at the investigation time, the water level sometimes rose from 1.5 m to 2 m in the rainy season. They called the *O. glaberrima* as "Gnanan sira" or "Kouman malo". These *O. glaberrima* show higher tolerance, drought, submergence, disease and pest, and weeds in this area according to the farmers.

5. Area of Norassoba

The area of Norassoba, (Site 5, N 10° 55 '144'' W 09° 28' 855'', height above sea level 367 m) is located at 80 km left Kankan. Three *O. glaberrima* (51, 52 and 54) and 3 *O. sativa* (50, 53 and 56) in the farmer's field were collected in the fields, and one *O. glaberrima* (57) and *O. sativa* (55) were collected in farmer's store, respectively. Three *O. glaberrima* collected in the fields were called in "Kouman malo", "Malo missin" and "Dossori" in this area by the farmers. The cultivation of rice started in early July from mid June, and it was harvested in November. The farmers applied herbicides before and after seeding. Their fields were located on the upper reaches of the Niger River, and water level rose to 2 m by overflow from the river, and then the whole of rice plant was often submerged by flooding water . The lodging of rice plant was recognized in this area when the water level was reduced.

6. Area of Dalagbèda

Dalagbèda area (Site 6, N 11° 29 '512'' W 08° 53' 232'', height above sea level 337m.) was investigated. This place is 170 km from Kankan. One *O. glaberrima* (60) and two *O. sativa* (58 and 59) were collected. Cultivation period varied in this area. The farmers seed from the end in June to August, and harvested it from November to December. They did not apply the fertilizer, while herbicide was applied just before the seeding. Though the surface of the soil dried at the investigation, water level often rose from 0.5 m up to 1 m in August of the rainy season. *O. glaberrima* was grown widely in this area, and they called *O. glaberrima* as "Malonin" or "Koman". And they believed that *O. glaberrima* possessed resistance of abiotec stress such a drought and submergence through their experiences. On the other hand, they grew improved cultivar "Kaolaka-ba" and traditional cultivar "Bebala-wouli " of *O. sativa*.

7. A rea of Kignèbakoura

The investigation of the Kignèbakoura area was carried out (Site 7, N 11° 18 '577'' W 09 ° 09' 600'', height above sea level 350 m). The rice field is located in the Niger River between Siguiri and Kankan. Five *O. glaberrima* (62-66) and two *O. sativa* (61 and 67) were collected in the area. In general, *O. glaberrima* was called "Balaoulen-Ba","Dissigbe" and "Mereke" by the farmers. The farmers seeded in June, and harvested it in November. They applied the Glycel as herbicides before and after the seeding, though the fertilizer application was not done. They believed that. "Dissigbe" and "Mereke" possessed resistance for drought, submergence and disease and pest. In particular, "Mereke" showed the competitive ability to weeds. Though the surface of the soil dried, water level sometimes rose up to 1 m in the rainy season.

Discussion

O. glaberrima has been cultivated since B.C. 1500 (Porterés 1970) and gradually spread for swamp or flood-prone area of wetlands in Sénégal and Guinea. The planted area for *O. glaberrima* is rather continuance to wetlands, has not spread over to upland in Niger (Sakagami 1995). Most of *O. glaberrima* are cultivated with low input of agrochemicals by the direct seeding. *O. glaberrima* seems to have superiority to the wetland environments and low resource inputs. It is likely that *O. glaberrima* could survive better than in *O. sativa* in wetlands in particular the flood-prone area, because their higher elongation ability confers the avoidance from the submergence. *O. glaberrima* originated from the inland valley of Niger Delta which is frequently inundated in the inundation area. Although farmers are aware of dramatic effect of fertilizer on crop performance, their access to the fertilizer is still limited. Also the responsiveness of *O. glaberrima* to the fertilizer application has not been clearly quantified.

One of reasons why *O. glaberrima* is still being cultivated in the West Africa, may be various tolerance to abiotic and biotic stresses *O. glaberrima* played a very important role in breeding NERICA as a donor of major genes and is expected to play more important role in understanding, tolerant mechanisms for improving genetic potential and cultivation technology in Africa.

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Table 2 Information I (place, date and species)

Number	Site number	Date	Location							Habitat, average of water level	Name of Cultivar	Origin of name	Species	Way of collection	Name of Farmer
			Latitude	Longitude	Altitude (m)	Depertment	City	Village	Point						
1	1	26-Oct	N 9° 40'117'' ?	W 13° 26'222'' ?	12	Fatick	Fatick	Ndofan		Lowland 10 - 30 cm	Momo	unnown	*O. glaberrima*	Farmer's field	Ndamir Djalik (Farmer's group)
2	1	26-Oct	N 9° 40'117'' ?	W 13° 26'222'' ?	12	Fatick	Fatick	Ndofan		Lowland 10 - 30 cm	Momo	unnown	*O. glaberrima*	Farmer's field	Ndamir Djalik (Farmer's group)
3	1	26-Oct	N 9° 40'117'' ?	W 13° 26'222'' ?	12	Fatick	Fatick	Ndofan		Lowland 10 - 30 cm	Momo	unnown	*O. glaberrima*	Farmer's field	Ndamir Djalik (Farmer's group)
4	2	26-Oct	N 14° 20'644''	W 16° 26'550''	7	Fatick	Fatick	Ndiouar		Lowland 10 - 30 cm	unknown	unnown	*O. glaberrima*	Farmer's field	Gnilane Faye
5	2	26-Oct	N 14° 20'644''	W 16° 26'550''	7	Fatick	Fatick	Ndiouar		Lowland 10 - 30 cm	unknown	unnown	*O. glaberrima*	Farmer's field	Gnilane Faye
6	2	26-Oct	N 14° 20'644''	W 16° 26'550''	7	Fatick	Fatick	Ndiouar		Lowland 10 - 30 cm	unknown	unnown	*O. glaberrima*	Farmer's field	Gnilane Faye
7	2	26-Oct	N 14° 20'644''	W 16° 26'550''	7	Fatick	Fatick	Ndiouar		Lowland 10 - 30 cm	unknown	unnown	*O. glaberrima*	Farmer's field	Gnilane Faye
8	3	27-Oct	N 14° 06'168''	W 16° 29'528''	7	Foundiougne	Diouroup communaute rurale	Thiare	Fayal	Lowland 10-30 cm	Momo	unnown	*O. glaberrima*	Farmer's field	Marie Faye
9	3	27-Oct	N 14° 06'168''	W 16° 29'528''	7	Foundiougne	Diouroup communaute rurale	Thiare	Fayal	Lowland 10-30 cm	Momo	unnown	*O. glaberrima*	Farmer's field	Marie Faye
10	3	27-Oct	N 14° 06'168''	W 16° 29'528''	7	Foundiougne	Diouroup communaute rurale	Thiare	Fayal	Lowland 10-30 cm	Momo	unnown	*O. glaberrima*	Farmer's field	Marie Faye
11	3	27-Oct	N 14° 06'168''	W 16° 29'528''	7	Foundiougne	Diouroup communaute rurale	Thiare	Fayal	Lowland 10-30 cm	Momo	unnown	*O. glaberrima*	Farmer's field	Marie Faye
12	3	27-Oct	N 14° 06'168''	W 16° 29'528''	7	Foundiougne	Diouroup communaute rurale	Thiare	Fayal	Lowland 10-30 cm	Momo	unnown	*O. glaberrima*	Farmer's field	Marie Faye
13	3	27-Oct	N 14° 06'168''	W 16° 29'528''	7	Foundiougne	Diouroup communaute rurale	Thiare	Fayal	Lowland 10-30 cm	Momo	unnown	*O. glaberrima*	Farmer's field	Marie Faye
14	3	27-Oct	N 14° 06'168''	W 16° 29'528''	7	Foundiougne	Diouroup communaute rurale	Thiare	Fayal	Lowland 10-30 cm	Yaka	unnown	*O. sativa*	Farmer's field	Marie Faye
15	3	27-Oct	N 14° 06'168''	W 16° 29'528''	7	Foundiougne	Diouroup communaute rurale	Thiare	Fayal	Lowland 10-30 cm	unknown	unnown	*O. barthii* ?	Farmer's field	Marie Faye
16	4	27-Oct	N 14° 05'752''	W 16° 18'501''	10	Foundiougne	Diouroup communaute rurale	Ndour Ndour	Ndour Ndour	Deepwater 30-50 cm	unknown	unnown	*O. glaberrima*	Farmer's field	Groupment de jeunes du village
17	4	27-Oct	N 14° 05'752''	W 16° 18'501''	10	Foundiougne	Diouroup communaute rurale	Ndour Ndour	Ndour Ndour	Deepwater 30-50 cm	unknown	unnown	*O. glaberrima*	Farmer's field	Groupment de jeunes du village
18	4	27-Oct	N 14° 05'752''	W 16° 18'501''	10	Foundiougne	Diouroup communaute rurale	Ndour Ndour	Ndour Ndour	Deepwater 30-50 cm	unknown	unnown	*O. barthii* ?	Farmer's field	Groupment de jeunes du village
19	4	27-Oct	N 14° 05'752''	W 16° 18'501''	10	Foundiougne	Diouroup communaute rurale	Ndour Ndour	Ndour Ndour	Deepwater 30-50 cm	unknown	unnown	*O. glaberrima*	Farmer's field	Groupment de jeunes du village
20	5	27-Oct	N 14° 05'081''	W 16° 18'645''	9	Foundiougne	Diouroup communaute rurale	Boli	Boli 1	Lowland 10-30 cm	unknown	unnown	*O. glaberrima*	Beside of experimental field (WARDA)	unknown
21	5	27-Oct	N 14° 05'081''	W 16° 18'645''	9	Foundiougne	Diouroup communaute rurale	Boli	Boli 1	Lowland 10-30 cm	unknown	unnown	*O. glaberrima*	Beside of experimental field (WARDA)	unknown
22	5	27-Oct	N 14° 05'081''	W 16° 18'645''	9	Foundiougne	Diouroup communaute rurale	Boli	Boli 1	Lowland 10-30 cm	unknown	unnown	Wild rice ?	Beside of experimental field (WARDA)	unknown
23	5	27-Oct	N 14° 05'081''	W 16° 18'645''	9	Foundiougne	Diouroup communaute rurale	Boli	Boli 1	Lowland 10-30 cm	unknown	unnown	*O. glaberrima*	Beside of experimental field (WARDA)	unknown
24	6	27-Oct	N 13° 40'140''	W 16° 24'096''	32	Foundiougne	Toubacouta communaute rurale	Dossilome Socé	Ndinderling	Lowland 10- 30 or deepwater 30 -50 cm	unknown	unnown	*O. glaberrima*	Farmer's field	Ndianke Diouf, Saly Diame, and Souadou Fall
25	6	27-Oct	N 13° 40'140''	W 16° 24'096''	32	Foundiougne	Toubacouta communaute rurale	Dossilome Socé	Ndinderling	Lowland 10- 30 or deepwater 30 -50 cm	unknown	unnown	*O. glaberrima*	Farmer's field	Ndianke Diouf, Saly Diame, and Souadou Fall
26	6	27-Oct	N 13° 40'140''	W 16° 24'096''	32	Foundiougne	Toubacouta communaute rurale	Dossilome Socé	Ndinderling	Lowland 10- 30 or deepwater 30 -50 cm	unknown	unnown	*O. glaberrima*	Farmer's field	Ndianke Diouf, Saly Diame, and Souadou Fall
27	6	27-Oct	N 13° 40'140''	W 16° 24'096''	32	Foundiougne	Toubacouta communaute rurale	Dossilome Socé	Ndinderling	Lowland 10- 30 or deepwater 30 -50 cm	unknown	unnown	*O. glaberrima*	Farmer's field	Ndianke Diouf, Saly Diame, and Souadou Fall
28	1	20-Nov	N 10° 23'403''	W 8° 58'814''	358	Kankan	Djimbala	Djimbala	Damba-Lèè	Irrigated, Floating 150 cm	Gnanansira	Mix	*O. glaberrima*	Farmer's field	Fodé Konaté
29	1	20-Nov	N 10° 23'403''	W 8° 58'814''	358	Kankan	Djimbala	Djimbala	Damba-Lèè	Irrigated, Floating 150 cm	Gbilimgbalan	unnown	*O. glaberrima*	Farmer's field	Fodé Konaté
30	1	20-Nov	N 10° 23'403''	W 8° 58'814''	358	Kankan	Djimbala	Djimbala	Senda Lèè	Irrigated, Deepwter 50-100 cm	Djoukèmè	100tilars	*O. sativa*	Farmer's field	Tadiba Konaté
31	2	20-Nov	N 10° 24'651''	W 9° 15'544''	362	Kankan	S/P Balandou	Balandou	Kabakan na Lèè	Irrigated, Floating 200 cm	Showeta soké	unnown	*O. sativa*	Farmer's field	Djibril Diallo
32	2	20-Nov	N 10° 24'651''	W 9° 15'544''	362	Kankan	S/P Balandou	Balandou	Kabakan na Lèè	Irrigated, Floating 200 cm	Gnanansira ou Dagbè	Mix	*O. glaberrima*	Farmer's field	Djibril Diallo
33	2	20-Nov	N 10° 24'651''	W 9° 15'544''	362	Kankan	S/P Balandou	Balandou	Kabakan na Lèè	Irrigated, Floating 200 cm	Gnanansira ou Dagbè	Mix	*O. glaberrima*	Farmer's field	Djibril Diallo
34	2	20-Nov	N 10° 23'525''	W 9° 14'815''	373	Kankan	S/P Balandou	Balandou	Lèè Lindjan	Irrigated, Deepwter 50-100 cm	Kologbè	White caryopsis	*O. sativa*	Farmer's field	N'Faly Diallo

Table 2 (continued).

Number	Site number	Date	Location							Habitat, average of water level	Name of Cultivar	Origin of name	Species	Way of collection	Name of Farmer
			Latitude	Longitude	Altitude (m)	Depertment	City	Village	Point						
35	2	20-Nov	N 10° 23'525''	W 9° 14'815''	373	Kankan	S/P Balandou	Balandou	Lèè Lindjan	Irrigated, Deepwter 50-100 cm	Dagbènin	Mix	*O. glaberrima*	Farmer's field	N'Faly Diallo
36	3	21-Nov	N 10° 51'623''	W 9° 13'046''	357	Kankan	District Fodécariah	Fodécariah	Ourou-ourou	Irrigated, Floating 300 cm	Chinois-oulén	Chinese red	*O. sativa*	Farmer's field	Moussa Berete
37	3	21-Nov	N 10° 51'623''	W 9° 13'046''	357	Kankan	District Fodécariah	Fodécariah	Ourou-ourou	Irrigated, Floating 300 cm	Maloyén	Mix	*O. glaberrima*	Farmer's field	Moussa Berete
38	3	21-Nov	N 10° 51'623''	W 9° 13'046''	357	Kankan	District Fodécariah	Fodécariah	Ourou-ourou	Irrigated, Floating 300 cm	Kondjon	Bad weed	*wildrice .longista-minata*?	Farmer's field	Moussa Berete
39	3	21-Nov	N 10° 51'623''	W 9° 13'046''	357	Kankan	District Fodécariah	Fodécariah	Ourou-ourou	Irrigated, Floating 300 cm	Kondjon	Bad weed	*wild rice O.longistaminata*?	Farmer's field	Moussa Berete
40	3	21-Nov	N 10° 51'623''	W 9° 13'046''	357	Kankan	District Fodécariah	Fodécariah	Noradala	Irrigated, Floating	Chinois-gbè	Chinese white	*O. sativa*	Farmer's field	Nodouba Bo Berete
41	4	21-Nov	N 10° 40'095''	W 9° 24'834''	367	Kankan	District Sèèlin Moussaya	Sèèlin Moussaya	Sèèlin Fra	Irrigated, Floating 150 cm	Dissi-oulén	unknown	*O. sativa*	Farmer's field	Moussa Kanté
42	4	21-Nov	N 10° 40'095''	W 9° 24'834''	367	Kankan	District Sèèlin Moussaya	Sèèlin Moussaya	Sèèlin Fra	Irrigated, Floating	Kouman Malo	rice for bird Kouman	*O. glaberrima*	Farmer's field	Moussa Kanté
43	4	21-Nov	N 10° 40'095''	W 9° 24'834''	367	Kankan	District Sèèlin Moussaya	Sèèlin Moussaya	Sèèlin Fra	Irrigated, Floating 150 cm	Gnanan sira	Mix	*O. glaberrima*	Farmer's field	Moussa Kanté
44	4	21-Nov	N 10° 40'095''	W 9° 24'834''	367	Kankan	District Sèèlin Moussaya	Sèèlin Moussaya	Sèèlin Fra	Irrigated, Floating	Gnanan sira	Mix	*O. glaberrima*	Farmer's field	Moussa Kanté
45	4	21-Nov	N 10° 40'197''	W 9° 24'701''	357	Kankan	District Sèèlin Moussaya	Sèèlin Moussaya	Sèèlin Fra	Irrigated, Floating 200 cm	Gbankè N'yèrèla ou Djisèmbè	Jumping rice	*O. sativa*	Farmer's field	Moussa Kanté
46	4	21-Nov	N 10° 40'198''	W 9° 24'702''	358	Kankan	District Sèèlin Moussaya	Sèèlin Moussaya	Sèèlin Fra	Upland	Koundou Nèn		unknown	Farmer's house	Ousmane Kanté
47	4	21-Nov	N 10° 40'199''	W 9° 24'703''	359	Kankan	District Sèèlin Moussaya	Sèèlin Moussaya	Sèèlin Fra	Upland	Danaka	Which makes difference	unknown	Farmer's house	Mory Kanté
48	4	21-Nov	N 10° 40'200''	W 9° 24'704''	360	Kankan	District Sèèlin Moussaya	Sèèlin Moussaya	Sèèlin Fra	Upland	Mamadydou-ka	unknown	unknown	Farmer's house	Moussa Condé
49	4	21-Nov	N 10° 40'201''	W 9° 24'705''	361	Kankan	District Sèèlin Moussaya	Sèèlin Moussaya	Sèèlin Fra	Upland	Dossori	fight against poverty	unknown	Farmer's house	Bangaly Kanté
50	5	22-Nov	N 10° 55'144''	W 9° 28'855''	348	Kankan	District Nanin Traoré	Norassoba	Dala-kan	Irrigated, Floating 200 cm	Bintoubala	unknown	*O. sativa*	Farmer's field	Morisanda Doumbouya
51	5	22-Nov	N 10° 55'144''	W 9° 28'855''	348	Kankan	District Nanin Traoré	Norassoba	Dala-kan	Irrigated, Floating 200 cm	Kouman-malo	Bad weed	*O. glaberrima*	Farmer's field	Koulako Fadima Condé
52	5	23-Nov	N 10° 55'145''	W 9° 28'856''	348	Kankan	District Nanin Traoré	Norassoba	Dala-kan	Irrigated, Floating 201 cm	Kouman-malo	Bad weed	*O. glaberrima*	Farmer's field	Koulako Fadima Condé
53	5	22-Nov	N 10° 54'142''	W 9° 28'881''	347	Kankan	District Nanin Traoré	Norassoba	Banssoun	Irrigated, Floating 200 cm	Maloba-oulén	unknown	*O. sativa*	Farmer's field	Bakary Saran Doumbouya
54	5	22-Nov	N 10° 54'142''	W 9° 28'881''	347	Kankan	District Nanin Traoré	Norassoba	Banssoun	Irrigated, Floating 200 cm	Malo missin	unknown	*O. glaberrima*	Farmer's field	Bakary Saran Doumbouya
55	5	22-Nov	N 10° 54'142''	W 9° 28'881''	347	Kankan	District Nanin Traoré	Norassoba	Bâtinkan	Upland	Sèlinka	unknown	*O. sativa*	Farmer's house	Lancinè Konaté
56	5	22-Nov	N 10° 56'336''	W 9° 28'543''	350	Kankan	District Nanin Traoré	Norassoba	Bâfofo	Irrigated, Floating 200 cm	Froto kolon	unknown	*O. sativa*	Farmer's field	Aly Doumbouya
57	5	22-Nov	N 10° 56'336''	W 9° 28'543''	350	Kankan	District Nanin Traoré	Norassoba	Bilindô	Upland	Dossori	unknown	*O. glaberrima*	Farmer's house	Sacko Doumbouya
58	6	23-Nov	N 11° 29'512''	W 8° 53'232''	337	Kankan	District Dalagbèda	Dalagbèda	Sènda-fra	Irrigated, Deepwter 50-100 cm	Bébala-wouli	rescue	*O. sativa*	Farmer's field	Moussa Doumbouya
59	6	23-Nov	N 11° 29'512''	W 8° 53'232''	337	Kankan	District Dalagbèda	Dalagbèda	Sènda-fra	Irrigated, Floating 150 cm	Kaolaka-ba	Big Kaolak	*O. sativa*	Farmer's field	Lamine Doumbouya
60	6	23-Nov	N 11° 29'512''	W 8° 53'232''	337	Kankan	District Dalagbèda	Dalagbèda	Sènda-fra	Irrigated, Deepwter 50-100 cm	Malonin-koman ou koman	rice with tail	*O. glaberrima*	Farmer's field	Moussa Doumbouya
61	7	23-Nov	N 11° 18'577''	W 9° 09'600''	350	Kankan	Siguirin	Kignèbakoura	Kôo-fra	Irrigated, Deepwter 50-100 cm	Dissigbè	unknown	*O. sativa*	Farmer's field	Moussa Koulibaly
62	7	23-Nov	N 11° 18'577''	W 9° 09'600''	350	Kankan	Siguirin	Kignèbakoura	Kôo-fra	Irrigated, Deepwter 50-100 cm	Balaoulén-bâ	Mix	*O. glaberrima*	Farmer's field	Moussa Koulibaly
63	7	24-Nov	N 11° 18'578''	W 9° 09'601''	350	Kankan	Siguirin	Kignèbakoura	Kôo-fra	Irrigated, Deepwter 50-101 cm	Balaoulén-bâ	Mix	*O. glaberrima*	Farmer's field	Moussa Koulibaly
64	7-2''	25-Nov	N 11° 18'579''	W 9° 09'602''	350	Kankan	Siguirin	Kignèbakoura	Kôo-fra	Irrigated, Deepwter 50-102 cm	Balaoulén-bâ	Mix	*O. glaberrima*	Farmer's field	Moussa Koulibaly
65	7-2'''	26-Nov	N 11° 18'580''	W 9° 09'603''	350	Kankan	Siguirin	Kignèbakoura	Kôo-fra	Irrigated, Deepwter 50-103 cm	Balaoulén-bâ	Mix	*O. glaberrima*	Farmer's field	Moussa Koulibaly
66	7-2''''	27-Nov	N 11° 18'581''	W 9° 09'604''	350	Kankan	Siguirin	Kignèbakoura	Kôo-fra	Irrigated, Deepwter 50-104 cm	Balaoulén-bâ	Mix	*O. glaberrima*	Farmer's field	Moussa Koulibaly
67	7-3	23-Nov	N 11° 18'577''	W 9° 09'600''	350	Kankan	Siguirin	Kignèbakoura	Kôo-fra	Irrigated, Deepwter 50-100 cm	Mèrèkè	American height	*O. sativa*	Farmer's field	Djelibala Dioubaté

Table 3 Information II (Morphological character of rice)

Number	Site number	Information of cultivars						Morphological imformation									
		Seeding date	Transplanting date	Heading date	Hervesting date	Yield (t/ha)	Stress tolerance	Plant type			Stem		Leaf				Leaf Bristle
								Statue	Figure	Type	Touch	Color	Touch	Thickness	Figure	Color	
1	1	Unknown	Dirct seeding	unknown	26-Oct	1.5	unknown	Medium	Medium	Panicle number	Medium	Green	Strong	Thin	Medum	Green	Medium
2	1	Unknown	Dirct seeding	unknown	26-Oct	1.5	unknown	Medium	Medium	Panicle number	Medium	Yellow	Medium	Thin	Medium	Green	Medium
3	1	Unknown	Dirct seeding	unknown	26-Oct	1.5	unknown	Medium	Medium	Panicle number	Medium	Green	Medium	Thin	Medium	Green	Thinly
4	2	1-Jul	Dirct seeding (Sahel 108)	unknown	End of October	unknown	unknown	Medium	Medium	Panicle number	Medium	Green	Medium	Thin	Medium	Green	Thinly
5	2	1-Jul	Dirct seeding (Sahel 108)	unknown	End of October	unknown	unknown	Medium	Medium	Panicle number	Medium	Green	Medium	Thin	Medium	Green	Medium
6	2	1-Jul	Dirct seeding (Sahel 108)	unknown	End of October	unknown	unknown	Medium	Medium	Panicle number	Medium	Green	Medium	Thin	Medium	Green	Thinly
7	2	1-Jul	Dirct seeding (Sahel 108)	unknown	End of October	unknown	unknown	Medium	Medium	Panicle number	Medium	Green	Medium	Thin	Medium	Green	Medium
8	3	Middle of July	Direct seeding	First of October	27-Oct	0.5	unknown	Medium	Spred	Panicle number	Medium	Green	Medium	Thin	Medium	Green	Medium
9	3	Middle of July	Direct seeding	First of October	27-Oct	0.5	unknown	Medium	Medium	Panicle number	Medium	Green	Medium	Thin	Medium	Green	Thinly
10	3	Middle of July	Direct seeding	First of October	27-Oct	0.5	unknown	Medium	Medium	Panicle number	Medium	Green	Medium	Thin	Medium	Green	Medium
11	3	Middle of July	Direct seeding	First of October	27-Oct	0.5	unknown	Medium	Medium	Panicle number	Medium	Green	Medium	Thin	Medium	Green	Medium
12	3	Middle of July	Direct seeding	First of October	27-Oct	0.5	unknown	Medium	Medium	Panicle number	Medium	Green	Medium	Thin	Medium	Green	Thinly
13	3	Middle of July	Direct seeding	First of October	27-Oct	0.5	unknown	-	-	-	-	-	Soft	Thin	-	Green	Thinly
14	3	Middle of July	Direct seeding	First of October	27-Oct	0.5	unknown	-	-	-	-	-	Medium	Medium	-	Green	Densely
15	3	Middle of July	Direct seeding	First of October	27-Oct	-	unknown	-	-	-	-	-	Soft	Thin	-	Green	Densely
16	4	After 15 July	Direct seeding (Sahel 108)	End of August	End of October	-	unknown	-	-	-	-	-	Strong	Medium	-	Green	Thinly
17	4	After 15 July	Direct seeding (Sahel 108)	End of August	End of October	-	unknown	Medium	Medium	Panicle number	Strong	Green	Medium	Medium	Medium	Green	Thinly
18	4	After 15 July	Direct seeding (Sahel 108)	End of August	End of October	-	unknown	Medium	Medium	Panicle number	Strong	Green	Strong	Medium	Medium	Green	Densely
19	4	After 15 July	Direct seeding (Sahel 108)	End of August	End of October	-	unknown	-	-	-	-	-	-	-	-	-	-
20	5	-	-	-	-	-	unknown	Medium	Medium	Panicle number	Medium	Green	Medium	Medium	Medium	Green	Densely
21	5	-	-	-	-	-	unknown	Medium	Spread	Panicle number	Strong	Green	Soft	Thin	Medium	Green	Thinly
22	5	-	-	-	-	-	unknown	Medium	Spread	Panicle number	Strong	Green	Soft	Thin	Medium	Green	Densely
23	5	-	-	-	-	-	unknown	Medium	Spread	Panicle number	Strong	Green	Medium	Medium	Medium	Green	Densely
24	6	July	Direct seeding (*O. sativa*, Manfiniamou, or Nounfingo)	unknown	October - November	-	unknown	Medium	Medium	Panicle number	Soft	Green	Soft	Thin	Medium	Green	Thinly
25	6	July	Direct seeding (*O. sativa*, Manfiniamou, or Nounfingo)	unknown	October - November	-	unknown	-	-	-	-	-	Medium	Medium	-	-	Densely
26	6	July	Direct seeding (*O. sativa*, Manfiniamou, or Nounfingo)	unknown	October - November	-	unknown	Medium	Medium	Panicle number	Strong	Green	Strong	Medium	Medium	Green	Thinly
27	6	July	Direct seeding (*O. sativa*, Manfiniamou, or Nounfingo)	unknown	October - November	-	unknown	-	-	-	-	-	-	-	-	-	-
28	1	20-Jun to 10-Jul	Dirct seeding	Middle of September	End of October	0.8	Submergence, Insect and Disease	Long	Thin	Medium	Medium	Green	Strong	Medium	Drop	Green	Medium
29	1	15-May to End of July	Dirct seeding	October	November	0.8	Submergence, Insect and Disease	Long	Medium	Medium	Medium	Green	Soft	Thin	Drop	Green	Thinly
30	1	End of June to biggining of July	Dirct seeding	biggining of October	End of October to biggining of November	0.6	Submergence, Insect and Disease	Medium	Thin	Medium	Strong	Green	Medium	Medium	Erect	Green	Thinly
31	2	Middle of July	Dirct seeding	October	November	1.3	Drought, Submergence and Weed	Short	Thin	Medium	Medium	Green	Soft	Thin	Erect	Green	Thinly
32	2	Middle of July	Dirct seeding	October	November	-	Drought and Submergence	Short	Thin	Medium	Soft	Green	-	-	-	-	-
33	2	-	-	-	-	-	unknown	-	-	-	-	-	-	-	-	-	-
34	2	Middle of July	August	Middle of October	November	0.8	Drought, Submergence, Insect and Disease	-	-	-	-	-	-	-	-	-	-
35	2	June	Dirct seeding	September	October	1.3	Drought, Submergence, Insect and Disease	-	-	-	-	-	-	-	-	-	-
36	3	End of May	Direct seeding	October	November	1.4	Drought, Submergence and Insect	Long	Thin	Panicle weight	Strong	Green	Strong	Thickness	Erect	Green	Medium
37	3	End of May	Direct seeding	October	November	-	Drought, Submergence and Insect	Long	Thin	Medium	Medium	Green	Soft	Medium	Drop	Green	Thinly
38	3	-	-	-	-	-	unknown	Long	Thin	Medium	Medium	Green	Medium	Medium	Erect	Green	Thinly
39	3	-	-	-	-	-	unknown	-	-	-	-	-	-	-	-	-	-

Table 3 (continued).

Number	Site number	Information of cultivars						Morphological imformation									
		Seeding date	Transplanting date	Heading date	Hervesting date	Yield (t/ha)	Stress tolerance	Plant type			Stem		Leaf				Leaf Bristle
								Statue	Figure	Type	Touch	Color	Touch	Thickness	Figure	Color	
40	3	End of May	Direct seeding	October	November	1.6	Drought, Submergence and Insect	Long	Thin	Medium	Soft	Green	Soft	Thin	Erect	Green	Thinly
41	4	July	Direct seeding	October	November	1.5	Drought, Submergence, Insect, Disease and Weed	Short	Thin	Medium	Medium	Green	Soft	Thin	Erect	Green	Medium
42	4	July	Direct seeding	October	November	-	Drought, Submergence, Insect, Disease and Weed	Medium	Thin	Medium	Medium	Green	-	-	-	-	-
43	4	July	Direct seeding	October	November	-	Drought, Submergence, Insect, Disease and Weed	Medium	Thin	Medium	Medium	Green	-	-	-	-	-
44	4	July	Direct seeding	October	November	-	Drought, Submergence, Insect, Disease and Weed	Medium	Thin	Medium	Soft	Green	Soft	thin	Erect	Green	Thinly
45	4	July	Direct seeding	October	November	0.8	Submergence, Insect and Disease	Medium	Thin	Medium	Medium	Green	Strong	Thickness	Erect	Green	Medium
46	4	variable (whenever farmer needs)	-	-	-	-	Drought	-	-	-	-	-	-	-	-	-	-
47	4		-	-	-	-	unknown	-	-	-	-	-	-	-	-	-	-
48	4	May	-	-	October	-	unknown	-	-	-	-	-	-	-	-	-	-
49	4	May	-	-	-	-	unknown	-	-	-	-	-	-	-	-	-	-
50	5	July	Direct seeding	October	November	1.8	Drought, Submergence and Disease	Long	Medium	Medium	Strong	Green	Strong	Thickness	Erect	Green	Densely
51	5	-	-	-	-	-	unknown	Long	Medium	Medium	Medium	Green	Soft	Thin	Medium	Green	Medium
52	5	-	-	-	-	-	unknown	-	-	-	-	-	-	-	-	-	-
53	5	Middle of June	Direct seeding	October	November	-	Drought, Submergence and Disease	Medium	Thin	Medium	Soft	Green	Soft	Thin	Erect	Green	Thinly
54	5	-	-	-	-	-	unknown	Short	Spread	Panicle number	Soft	Green	Soft	Thin	Erect	Green	Thinly
55	5	July	Direct seeding	September	October	-	Drought, Insect and Disease										
56	5	June	Direct seeding	October	November	0.72	Drought, Submergence, Insect, Disease and Weed	Long	Thin	Medium	Medium	Green	Soft	Medium	Erect	Green	Thinly
-57	5	End of July	Direct seeding	September	October	0.75	Drought, Insect and Disease	-	-	-	-	-	-	-	-	-	-
58	6	End of June to biggining of July	Direct seeding	September	October - November	1.5	Submergence, Insect and Disease	Medium	Thin	Panicle weight	Strong	Green	Soft	Thin	Erect	Green	Medium
59	6	August	Direct seeding	November	December	-	Submergence, Insect and Disease	Long	Thin	Panicle weight	Strong	Green	Strong	Thin	Erect	Green	Thinly
60	6	-	-	-	-	-	Drought, Submergence, Insect and Disease	Medium	Thin	Medium	Soft	Green	Soft	Thin	Erect	Green	Thinly
61	7	June to July	Direct seeding	October	November	0.8	Drought, Submergence, Insect and Disease	Medium	Thin	Medium	Strong	Green	Soft	Thin	Erect	-	Medium
62	7	-	-	-	-	-	unknown	Medium	Thin	Medium	Strong	Green	-	-	-	-	Medium
63	7	-	-	-	-	-	unknown	-	-	-	-	-	-	-	-	-	-
64	7-2"	-	-	-	-	-	unknown	-	-	-	-	-	-	-	-	-	-
65	7-2"'	-	-	-	-	-	unknown	-	-	-	-	-	-	-	-	-	-
66	7-2"''	-	-	-	-	-	unknown	-	-	-	-	-	-	-	-	-	-
67	7-3	June	Direct seeding	End of October	End of November	0.8	Drought, Submergence, Insect, Disease and Weed	Medium	Thin	Medium	Soft	Green	Soft	Thin	Erect	Green	Medium

Table 4 Information III (Morphological character of grain) and remark

Number	Site number	Information of grains								Remark
		Size	Form	Color of paddy	Color of grain	Awm	Hair of paddy	Stril lemmas	Shattering habit*	
1	1	Medium	Medium	Light brown	Brown	None	None	long, white	unknown	lodging. Seeds were supplied by Regional direction for rural development. This filed was submerged at 60 cm water depth often from July to September.
2	1	Medium	long	Light brown	Clear red	Long (4 cm)	Short	Short	unknown	lodging. Seeds were supplied by Regional direction for rural development. This filed was submerged at 60 cm water depth often from July to September.
3	1	Medium	Medium	Black	Clear red	Long (2 cm)	long	Short	unknown	lodging. Seeds were supplied by Regional direction for rural development. This filed was submerged at 60 cm water depth often from July to September.
4	2	Medium	Medium	Black	Clear red	None	Short	Short	unknown	This site is 2 km far from site one. Farmer cultivated Sahel 108, *O. glaberrima* was contaminated in Sahel 108. This field was submerged at 60 cm water depth often from July to September.
5	2	Big	Medium	Black	White	None	Short	long, white	unknown	This site is 2 km far from site one. Farmer cultivated Sahel 108, *O. glaberrima* was contaminated in Sahel 108. This field was submerged at 60 cm water depth often from July to September.
6	2	Medium	Long	Light brown	Clear red	None	Short	Short	unknown	This site is 2 km far from site one. Farmer cultivated Sahel 108, *O. glaberrima* was contaminated in Sahel 108. This cultivar has similality with Momo 1-1. This field was submerged at 60 cm water depth often from July to September.
7	2	Medium	Medium	Light brown	Clear red	Short	Long	Short	unknown	This site is 2 km far from site one. Farmer cultivated Sahel 108, *O. glaberrima* was contaminated in Sahel 108. This field was submerged at 60 cm water depth often from July to September.
8	3	Medium	Medium	Black	Clear red	Long	Short	Short	3	According farmer, the reason of cultivation of Momo is short growth period. Therefor, the risk of drought becomes less.
9	3	Medium	Medium	Black	Clear red	None	short	Short	3	According farmer, the reason of cultivation of Momo is short growth period. Therefor, the risk of drought becomes less.
10	3	Big	Medium	Yellow	Red	Long	Long	Short	3	According farmer, the reason of cultivation of Momo is short growth period. Therefor, the risk of drought becomes less.
11	3	Medium	Medium	Light brown	Clear red	None	Short	Short	3	According farmer, the reason of cultivation of Momo is short growth period. Therefor, the risk of drought becomes less.
12	3	Medium	Medium	Yellow	Red	None	None	long, white	3	According farmer, the reason of cultivation of Momo is short growth period. Therefor, the risk of drought becomes less.
13	3	Medium	Medium	Light brown	Clear red	Long	None	long, white	3	According farmer, the reason of cultivation of Momo is short growth period. Therefor, the risk of drought becomes less. The population of this cultivar is small.
14	3	Big	Long	Yellow	Clear red	None	Short	Short	2	This cultivar comes from Casamance.
15	3	Medium	Medium	Black	Clear red	Long	Long	Short	4	
16	4	Medium	Medium	Black	Clear White	None	Short	Short	4	Farmer plants Sahel 108, however *O. glaberrima* is grown up in Sahel 108. Farmer dose not eat this cultivar.
17	4	Medium	Medium	Light brown	Clear red	None	Short	Short	4	Farmer plants Sahel 108, however *O. glaberrima* is grown up in Sahel 108. Farmer eat this cultiver as milled grain.
18	4	Medium	Medium	Black	Clear red	Long (5 cm)	long	Short	4	Farmer plants Sahel 108, however this cultivr is grown up in Sahel 108. Farmer dose not eat this cultivar.
19	4	Medium	Medium	Black	Clear red	Long (4 cm)	Long	long, White	4	Farmer plants Sahel 108, however *O. glaberrima* is grown up in Sahel 108. Farmer dose not eat this cultivar.
20	5	Medium	Medium	Light brown	Clear red	None	Short	Short	3	Farmer dose not eat this cultivar.
21	5	Big	Medium	Yellow	Clear red	None	Short	Short	3	Farmer dose not eat this cultivar. Largr flag leaf
22	5	Medium	Medium	Black	Clear red	Long	Long	Short	4	Farmer dose not eat this cultivar.
23	5	Medium	Medium	Black	Clear red	None	Short	Short	4	Farmer dose not eat this cultivar. Largr flag leaf. Leaf rolling was observed, even the rice plant was submerged.
24	6	Medium	Medium	Black	Clear red (close to white)	None	Short	Short	4	Farmer plants local cultivar, Manfiniamou or Nounfingo (*O. sativa*). These cultivars are long statue. The seed of Nounfingo is large. *O. galberrima* is grown up in theses cultivars.
25	6	Medium	Medium	Black	White	Long (4 cm)	Long	Short	4	Farmer plants local cultivar, Manfiniamou or Nounfingo (*O. sativa*). These cultivars are long statue. The seed of Nounfingo is large. *O. galberrima* is grown up in theses cultivars.
26	6	Medium	Medium	Dark brown	Clear red	None	None	Short	3	Farmer plants local cultivar, Manfiniamou or Nounfingo (*O. sativa*). These cultivars are long statue. The seed of Nounfingo is large. *O. galberrima* is grown up in theses cultivars.
27	6	Medium	Medium	Black	Clear red (close to white)	None	Short	Short	unknown	Farmer plants local cultivar, Manfiniamou or Nounfingo (*O. sativa*). These cultivars are long statue. The seed of Nounfingo is large. *O. galberrima* is grown up in theses cultivars. Plant was not collected.
28	1	Medium	Short	Brown	Red	None	None	Short	4	elongation, lodging
29	1	Medium	Short	Black	Yellow	None	None	Short	4	elongation, lodging
30	1	Medium	Long	Brown	White	None	Short	Short	2	good taste
31	2	Medium	Medium	Brown	Clear	None	Short	Short	1	
32	2	Small	Short	Brown	Red	None	None	Short	3	This variety was found in the field of 2-1.
33	2	Small	Short	Brown	Red	None	None	Short	3	
34	2	Medium	Medium	Brown	White	None	None	Short	1	
35	2	Medium	Medium	Brown	Red	None	None	Short	3	
36	3	Medium	Short	Brown	Red	Short	Short	Short	2	lodging
37	3	Medium	Short	Brown	Clear red	None	None	Short	3	lodging. This variety was found in the field of 3-1

Table 4 (continued).

Number	Site number	Information of grains								Remark
		Size	Form	Color of paddy	Color of grain	Awn	Hair of paddy	Stril lemmas	Shattering habit*	
38	3	Medium	Long	Brown	Red	Long	Short	Short	unknown	lodging. This variety was found in the field of 3-1
39	3	Medium	Long	Brown	Red	Long	Short	Short	unknown	lodging. This variety was found in the field of 3-1. Fermers think that 3-3 and 3-4 are same (both of two are wild rice) but there are morphologically different.
40	3	Medium	Short	Brown	Red	None	Short	Short	1	
41	4	Medium	Long	Brown	Clear	None	Short	Short	3	
42	4	Medium	Short	Black	Clear red	None	None	Short	3	This cultivar was found in the field of 4-1.
43	4	Medium	Medium	Black	Clear red	Long	Short	Short	3	This cultivar was found in the field of 4-1.
44	4	Medium	Short	Brown	Pink	None	None	Short	3	This cultivar was found in the field of 4-1.Fermers think that 4-3 and 4-4 are same but there are morphologically different.
45	4	Medium	Medium	Brown	White	None	Short	Short	3	
46	4	Medium	Long	Black	Clear red	None	None	Short	unknown	
47	4	Medium	Short	Brown	Red	None	None	Short	unknown	Photo sensitive
48	4	Big	Long	Brown	White	None	Short	Short	1	
49	4	Medium	Short	Brown	Red	None	None	Short	unknown	
50	5	Medium	Medium	Brown	clear	None	Short	Short	3	
51	5	-	-	-	-	-	-	-	-	Farmer doesn't cultivate.
52	5	-	-	-	-	-	-	-	-	
53	5	Medium	Short	Brown	Clear	None	Short	Short	3	
54	5	Medium	Short	Black	Clear red	Short	None	Short	3	This cultivar was found in the field of 5-3. For farmer, it is not rice.
55	5	Big	Medium	Brown	White	None	None	Short	3	
56	5	Medium	Short	Brown	Clear	None	Short	Short	3	
57	5	Medium	Medium	Brown	Red	None	None	Short	unknown	Farmer bought this variety in the market at 4 years ago because it has been said to adapt in upland.
58	6	Big	Long	Brown	White	None	Short	Short	3	
59	6	Medium	Short	Brown	White	None	Short	Short	3	
60	6	Medium	Medium	Black	Clear	Long (9 cm)	Short	Short	4	Farmer doesn't cultivate.
61	7	Big	Long	Brown	Pink	None	Short	Short	3	
62	7	Medium	Short	Brown	Clear red	None	None	Short	3	This variety was found in site 7-1. There were 5 different varieties in the field. One is *O.sativa* and the others are *O. glaberrima*. Farmer didn't recognize the difference among these 5 varieties.
63	7	Medium	Short	Brown	Clear red	None	None	Short	3	
64	7-2"	Medium	Short	Brown	Clear red	None	None	Short	3	
65	7-2"'	Medium	Short	Brown	Clear red	None	None	Short	3	
66	7-2"''	Medium	Short	Brown	Clear red	None	None	Short	3	
67	7-3	Medium	Long	Brown	Clear red	None	Short	Short	2	

*The score of shattering : 1 is the weakest and 4 is the strongest.