

# CULTIVATED AND WILD SPECIES OF RICE COLLECTED IN GUINEA

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Collecting rices in Guinea has become important for three principal reasons:

- in 1956 R. Porteres described the Guinean ridge (Macenta area) as a secondary segregating centre for the African cultivated species (Oryza glaberrima);
- rice culture is found everywhere in the country and the ecological diversity has led to a great variation in cultivation of the two species, O. glaberrima and O. sativa;
- the wild species related to O. glaberrima are also found in Guinea.

The first collecting mission was carried out from 15 November to 30 December 1979 by G. Bezancon, Koffi Goli, Mamady Camara and Mamadou Diallo from the Guinean Ministry of Agriculture. Because of the delay in this first expedition it was decided to organize a second one (from 17 November to 24 December 1982) for the purpose of visiting Upper Guinea and the Fouta Djallon areas. The participants were A. de Kochko, Koffi Goli, R. Balla, Sekou Keita and Bayero Barry from the Guinean Ministry of Agriculture. These two expeditions were sponsored by the IBPGR.

## Material collected

Samples of the different species were collected from all regions of the country. The itinerary and the collecting points are shown in Figure 1. Collections were made from farmers' stores and fields. Sampling methods varied according to the species concerned.

**Cultivated species** - With regard to both pure and mixed varieties, the authors collected seeds in bulk and about 10 individual panicles for each sample (which corresponds to one field). But frequently, when plants had already been harvested, we were obliged to take samples in farmers' stores with the name and characteristics given by the farmers.

O. breviligulata - Panicles could often not be sampled due to shattering, but the seeds were picked up off the ground.

O. longistaminata - when it was possible, seeds were collected in bulk; otherwise only rhizomes or cuttings were taken about every 20 m in the population.

In total, 770 samples were collected, with the following breakdown:

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2/ Institut des Savannes (IDESSA), C.V., B.P. 635 Bouake, Ivory Coast

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573 O. sativa

172 O. glaberrima

7 O. breviligulata (spontaneous form)

9 O. breviligulata (weed form)

9 O. longistaminata

The material collected was divided into two parts: one was deposited at the Ministry of Agriculture in Conakry and the other was introduced in Ivory Coast for evaluation and multiplication. Duplicate samples will be sent for long-term preservation to the International Rice Research Institute (IRRI) in the Philippines, to the West African Rice Development Association (WARDA) in Liberia and the International Institute of Tropical Agriculture (IITA) in Nigeria, the latter two for medium-term preservation.

#### Physical Geography of Guinea

Guinea is located at the limit of the so-called Guinean sub-equatorial and Sudanian classical tropical climate and at the limit of the moist forest and savannah. Guinea has an exceptionally varied climate and each of the four main areas is unique.

(a) Maritime Guinea: Guinea's coast is seasonally flooded and extends from Sierra Leone in the south to the Gambia in the north. On a coastline 30 to 50 km wide, mud is colonized by mangrove swamps. Huge estuaries and arms of the sea form an important series of meanders, and the tide can penetrate very far inland.

The climate is of a tropical type and is modified by the monsoon. More than 3,000 mm fall in this area and over 4,000 mm in Conakry. The dry woodland areas have been highly degraded by man and have been converted into tree savannah, and swampy areas in the plains are partly developed into rice fields.

(b) Middle Guinea (the Fouta Djallon): This is a mountainous area; altitude is often above 1,000 m. It consists of mountains and plateaux at different levels. The climate is of a tropical type but it is modified by altitude. The relief and rainfall make the Fouta Djallon a water reservoir for West Africa. The richer soils are those which are accumulated at the foot of scarps. Slopes are often very steep but upland rice is grown on them.

(c) Upper Guinea (the valleys of the large rivers): This area is a vast plateau. Elevations are about 400 m. The large rivers such as Niger, Milo and Tinkisso are deeply incised in this plateau (15-20 m). The valleys so formed have a "step relief" and are progressively less covered with alluvium from the flood plain to the laterite plateau. Climate is of a classical Guinean type with opposed seasons. Rainfall does not exceed 1,500 mm. Aquatic rice cultivation is developed in the large river plains.

(d) Forest Guinea (the Guinean ridge): This consists of a series of secondary chains, plateaux and valleys. In the forest area the climate is of an equatorial type. Rainfall is abundant (2,700 mm), with two extremes: the higher in September and the lower in June-July. Because of the climate, the Guinea forest area has extremely good agricultural potential. The rain forest predominates but is being cleared for upland rice cultivation.

#### Rice Species in Guinea

(a) Cultivated species: Throughout Guinea, two cultivated species, O. glaberrima

of African origin and O. sativa of Asian origin, are found. Both species are morphologically quite different and have two distinct characteristics: O. glaberrima has a short truncated ligule and erect panicles at maturity while O. sativa has a long sharp ligule and recumbent crooked panicles.

A large number of landraces can be found but there has been a tendency for the African species to disappear in West Africa. However, the authors found it grown rather frequently either in mixed culture with the Asian species or as a pure stand. In this case, the cultivars are highly adapted to well-defined agricultural practices. For example, the Baga-Male variety (floating type) is cultivated almost everywhere in Maritime Guinea despite a great number of introduced cultivars. This cultivar is highly composite and the components can be cultivated as pure stands or partly grouped. According to Portères (1966) this cultivar would have come from inland a long time ago, when the Baga people were obliged to leave the Fouta Djalon and went to the coast.

Another example is the Gbaye-Gbaye upland cultivar - widely grown in the Guinea forest area. Even when not mixed with other species, several types are often found in the same field; Portères (1956) called it the "agrarian combination". On the basis of simple characters (lemma colour, glume length, etc.) the farmer gathers different forms having the same physio-ecological requirements. Because of the migrations and exchanges of cultivars between villages and regions, these mixtures are more or less reduced. During the whole prospection we could see that the cultivars "travel" a great deal. For this reason it is often very difficult to identify a cultivar by its local name (a cultivar is renamed when it is introduced in a village or in a region).

(b) Wild species: There are two wild species closely related to the African cultivated species: O. longistaminata and O. breviligulata.

O. longistaminata - This is an allogamous perennial species which reproduces both by seeds and rhizomes. This species is typical of the seasonally flooded African plains. Large populations of O. longistaminata are present in Upper Guinea and some other small populations can be found along the irrigation canals.

Another sample was collected from a small multi-specific population growing in a swamp, where O. longistaminata, O. breviligulata, O. glaberrima and also some plants of O. sativa coexisted. O. longistaminata plants were highly sterile and only a few seeds could be collected.

O. breviligulata - This autogamous annual species is found under a spontaneous form in a well-defined habitat: savannah pools temporarily flooded by rain and run-off waters, plant earliness being determined by pool depth. The authors sampled some populations of this type and others as weeds mixed with the cultivated species in rice fields.

#### References

Portères, R. Taxonomie agro-botanique des riz cultivés O. sativa linn. et O. glaberrima 1956 Steud. J.A.T.B.A. 3:7-12, 341-856 pp.

Portères, R. Les noms des riz en Guinée. J.A.T.B.A. 1966

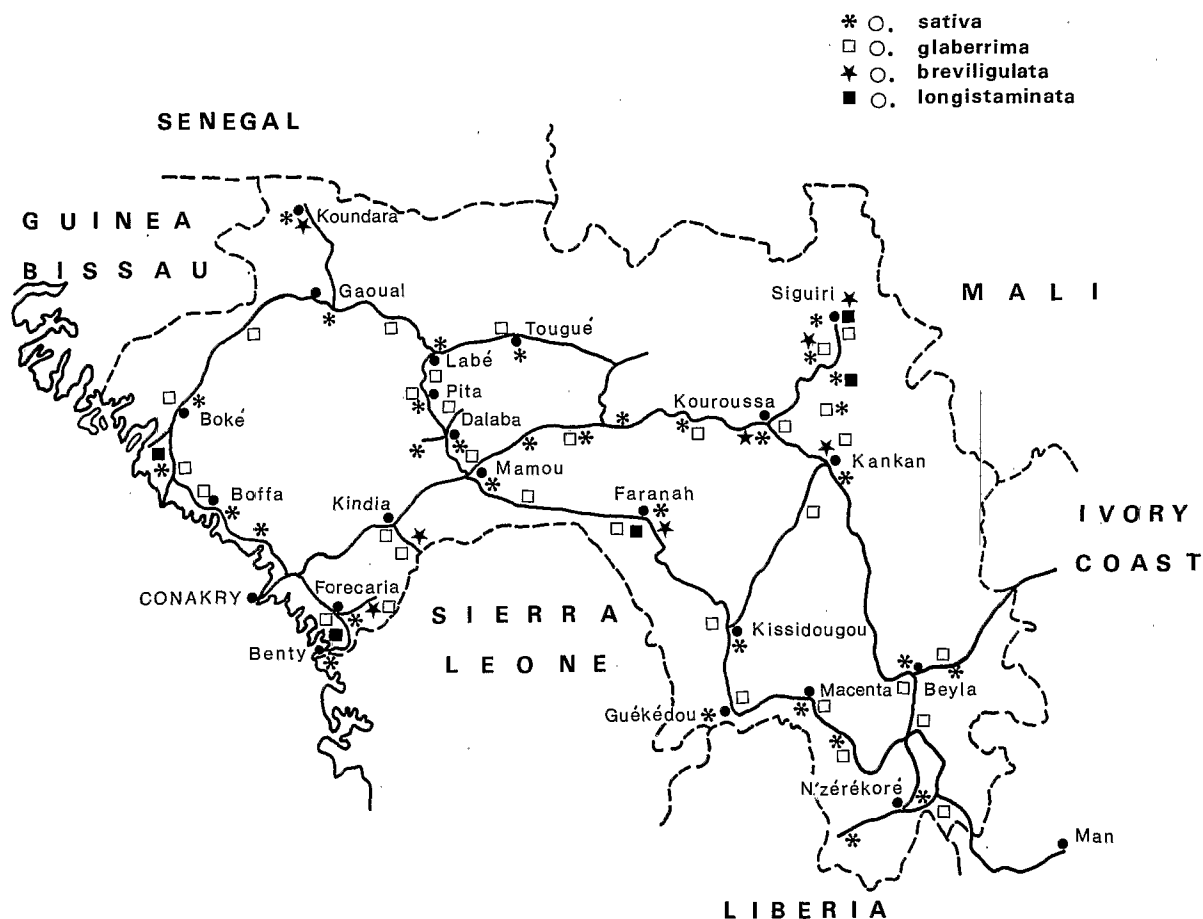


Fig. 1. Collecting points for each species of *Oryza* in Guinea

#### RESUME

Une mission de collecte de riz a été organisée en Guinée parce que la zone de Macenta est considérée comme un centre secondaire de l'espèce cultivée africaine (*Oryza glaberrima*) et parce qu'il existe en Guinée des variétés d'*Oryza sativa* et des espèces sauvages apparentées à *O. glaberrima*. Au total, 770 échantillons ont été collectés au cours de cette mission, qui est la deuxième mission de ce type parrainée par le CIRP.

#### RESUMEN

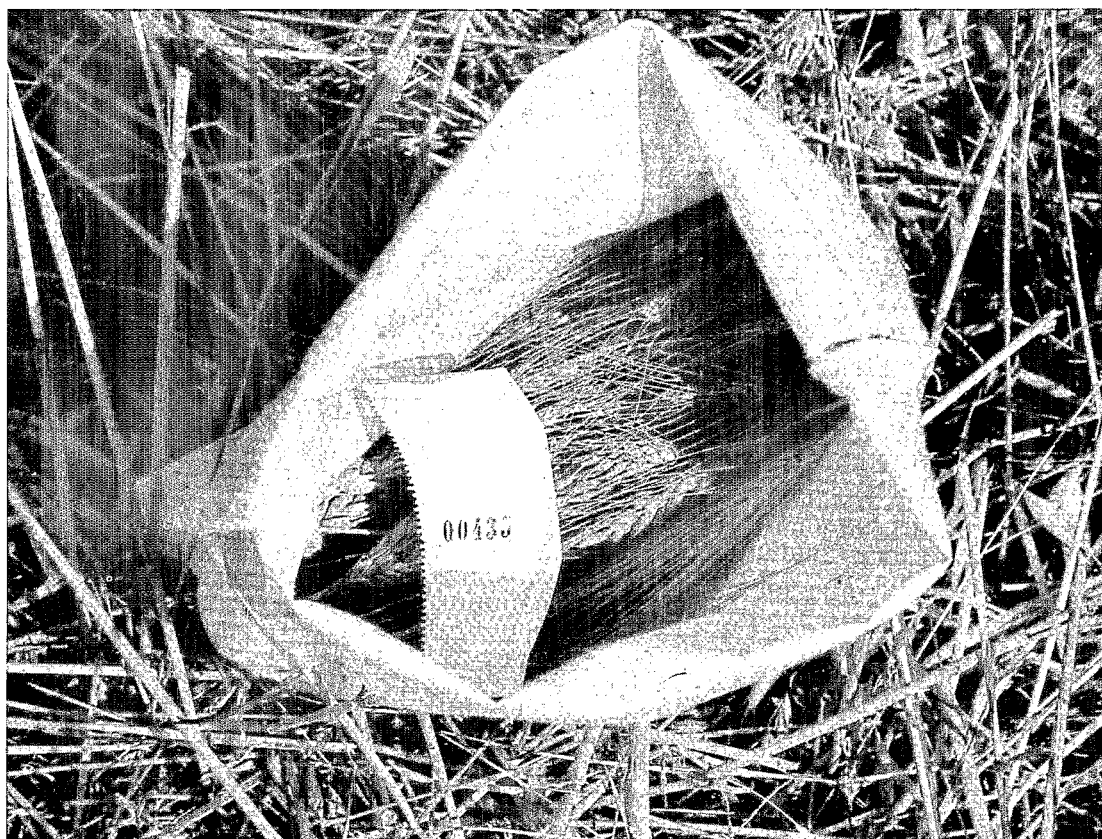
Se organizó una misión de recolección de arroz en Guinea por tres razones principales: la zona de Macenta se considera como el segundo centro para las especies *Oryza glaberrima* y *O. sativa* cultivadas en Africa, y en Guinea se pueden encontrar las especies silvestres afines a la *O. glaberrima*. Se tomaron 770 muestras en total, en la segunda de las dos misiones patrocinadas por el CIRP.

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