



COLLECTING RICES IN THE REVOLUTIONARY PEOPLE'S  
REPUBLIC OF GUINEA  
(WEST AFRICA)

G. BEZANCON(1), A. de KOCHKO(1), KOFFI GOLI(2)

Collecting rices, in Guinea is interesting for many reasons  
+ in 1956 R. PORTERES described the guinean ridge (Macenta area)  
as a secondary segretating center for the African cutivated species  
*Oryza glaberrima*.

+ rice culture is found everywhere in the country and the ecolo-  
gical diversity has led to a great diversity of technics, cropping  
systems, varieties of the two cultivated 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 november  
15<sup>th</sup> to December 30<sup>th</sup> in 1979 by G. BEZANCON , KOFFI GOLI , MAMADY  
CAMARA and MAMADOU DIALLO from Guinean Ministry of Agriculture. Because  
of the delay in this first expedition it was decided to organize a second  
one (from november 17<sup>th</sup> to December 24<sup>th</sup> in 1982) particularly for visi-  
ting Upper Guinea and the Fouta Djalon areas. The participants were :  
A. de KOCHKO , KOFFI GOLI , R. BALLA, SEKOU KEITA and BAYERO BARRY  
from Guinean Ministry of Agriculture. These two expeditions were spon-  
sored by IBPGR.

MATERIAL COLLECTED

Samples of the different species were collected of all the  
natural regions of the country. Vegetation and rainfall are represented  
on the map (fig. 1). The itinerary and the collecting points are also  
shown (fig. 2). Collections were made from farmer's stores and fields.  
Sampling methods vary according to the species concerned.

(1) ORSTOM, BP. V-51 ABIDJAN (Ivory Coast)  
(2) IDESSA-C.V., BP. 635 BOUAKE (Ivory Coast)

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\* Cultivated species.

With regard to both pure and mixed varieties, we 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 farmer's stores with the name and characteristics given by the farmers.

\* *O. breviligulata*

Often, because of the shedding we could not sample panicles, but the seeds were picked up off the ground.

\* *O. longistaminata*

When it was possible we collected seeds in bulk, otherwise only rhizomes or cuttings were taken about every 20 m in the whole population.

On the whole, 770 samples were collected : with the following breakdown :

- 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 one was introduced in Ivory Coast for evaluation and multiplication. Duplicate samples will be send for long term preservation to I.R.R.I. (Philippines) and also to W.A.R.D.A. (Liberia) and I.I.T.A. (Nigeria) for medium term preservation.

We want to point out we also collected about 29 samples of OKRA (*Abelmoschus esculentus* and *A. sp.*)

## PHYSICAL GEOGRAPHY OF GUINEA

The Revolutionary People's Republic of Guinea is located at the limit of the so-called guinean subequatorial and so-called sudanian classical tropical climate and at the limit of the moist forest and savannah. Guinea has exceptionally varied climates and each of the four main natural areas is original.

### 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 of a tropical type is modified by the monsoon. More than 3,000 mm fall everywhere and over 4,000 mm in Conakry.

The dry woodland which has been highly degraded by man is converted into tree savannah, and the swampy areas in the plains are partly developed into rice fields.

### b) Middle Guinea : the Fouta Djallon

It is a mountainous area : altitude is often above 1,000 m. It consists of mountains and plateaux at different levels, where the cuirasse appears in the form of Bowe (a peul term).

The climate is of a tropical type but it is modified by altitude.

The relief and rainfall make the Fouta Djallon the water tower of West Africa.

The richer soils are the loose soils 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 less and less covered with alluvions from the flood plain to the lateritic 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.

It is a serie 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 maxima : the higher in september and the lower in june-july.

Because of the climate the forest Guinea area has extremely good agricultural potentialities. The moist forest is the natural vegetation, but this forest is destroyed for upland rice cultivation.

### RICE SPECIES IN GUINEA

a) Cultivated species

In all the areas, we have found the two cultivated species : *O. glaberrima* of African origin and *O. sativa* of Asian origin. Both species are morphologically quite different and two of their characters are simple to remember : *O. glaberrima* has a short truncated ligule and erect panicles at maturity time while *O. sativa* has a long sharp ligule and recumbent crooked panicles.

The very great resources in land-races which we could see during our prospection are to be pointed out. There is a tendency for the African species to disappear in West Africa but we found it rather frequently grown either in mixed culture with the Asian species or as a pure stand. In this case, the varieties are well adapted to some well defined conditions of cultivation for example, we can mention the BAGA-MALE variety (floating type) cultivated almost everywhere in Maritime Guinea despite a great number of introduced varieties. This variety is highly composite and the components can be cultivated as pure stands here and there

or partly grouped. According to PORTERES (1966) this variety 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 given by the GBAYE-GBAYE upland variety widely cultivated in the forest Guinea area. Even when it is not a species mixture several types are often found in the same field: PORTERES (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 varieties between villages and regions, these mixtures are more or less reduced. During the whole prospection we could see that the varieties "travel" a great deal. For this reason it is often very difficult to identify a variety by its local name (a variety 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*

It is an allogamous perennial species which reproduces both by seeds and rhizomes. This species is typical of the seasonally flooded African plains. We could see large populations of *O. longistaminata* in Upper Guinea, and some other small populations along the irrigation canals.

Another sample was collected in a small multispecific population, in a swamps, where *O. longistaminata*, *O. breviligulata*, *O. glaberrima* and also some plants of *O. sativa* coexisted. *O. longistaminata* plants were highly sterile and only few seed could be collected.

##### \* *O. breviligulata*

This autogamous annual species is found under a spontaneous form in a well defined habitat type : the savannah pools temporarily flooded by rain and run-off waters, plant earliness being determined by pool depth. We could sample some populations of this type and some other as weed mixed with the cultivated species in rice-fields.

## TYPES OF RICE CULTIVATION IN GUINEA

A prevailing type of rice cultivation can be defined in each main geographical region of the country, but we must point out that different types can exist within these regions.

- a) Deep water rice-fields reclaimed from mangrove swamps in Maritime Guinea.

This type of rice cultivation is also used in Guinea-Bissau and Casamance. In Guinea the Baga people were the first to practice it : they are established mainly in the coastal area to the north of Conakry. Baga rice-fields are polders reclaimed from the least humid mangrove area. After the construction of a big dike to protect the cleared ground from the sea effect, 2 or 3 wet seasons are required for reducing salt content in the soil.

Then, rice is transplanted on ridges made using a long spode over 2 m long called "Kop" or "Kofi" and handled by two men. Floating and half-floating varieties with long duration (6 to 8 months) are used : before they are harvested shorter duration (3 or 4 months) varieties are sown in nurseries so that it is possible to have a second cropping season. Most varieties belong to the Asian species. Only some well adapted varieties of the African species, such as the variety BAGA-MALE, with good yields, are kept.

- b) Rice cultivation in the Fouta Djalon mountains

Upland rice is grown on the loose rich greatly appreciated soils which have accumulated at the foot of scarps and can be very steep. Medium duration varieties (4 to 5 months) are generally cultivated. In deep valleys swamp rice can be cultivated. In these areas, varieties which can be cultivated either under rainfed conditions or on hydromorphic soils are frequently found : in the latter case the cycle is a little longer and yields are also higher.

- c) Rice cultivation in the Kissi country and Upper Guinea

Practically all types of rice cultivation are found : cultivation of upland and lowland rice and on hydromorphic soils in plains.

\* Upland rice cultivation is practised after deforestation, drying and burning. The farmer ploughs the soil with a daba and broadcasts rice. The following mixed crops are often found : rice, maize and sorghum.

\* On lowlands and plains, rice is broadcasted after ploughing. When the soil is waterlogged the farmers sow pregerminated seeds. *O. glaberrima* is grown less and less. It is considered as an early rice for pre-harvest shortage, and is also found on poor soils where the farmer is certain to harvest something.

Rice cultivation is more characteristic in Kankan, Kouroussa and Siguiri areas.

Flooded rice is grown there in the valleys of the large rivers. The different types of plains (open, half-open, and closed) determine the field location, variety choice and sowing dates.

In general, rice is sown with the first rains. At the flooding time, in september, rice seedlings are strong enough to stand up to flood. Rice is harvested from october to december during the fall of water.

Both species (Asian and African), medium or long duration varieties (4 to 6 months) are cultivated in this area.

d) Rice cultivation on newly cleared lands in forest Guinea area

It is a cropping system of the same type as that found in West Ivory Coast : a traditional extensive shifting system based on rice cultivation after the forest has been cleared and burnt. After 1 or 2 years of cultivation the soil is lain fallow or perennial crops (coffee trees, cocoa) can be planted.

Burning is practised one or two months after clearing work, at the end of the long dry season. Frequently fields are fenced to protect them against rodents. Rice is hill-sown with a tool to bury the seeds few centimeters deep in the soil ; generally during the first rains. At harvest time, panicles are stocked in the granaries near to the field and insects are controlled by fumigation.

In conclusion, Guinea is a country rich in traditional rice varieties. The African species *O. glaberrima* is still cultivated but in great danger of disappearing.

The first results obtained from genetical analysis and agronomical observations show that the samples we have collected in Guinea must be considered as a very precious material to be used in rice breeding programmes in Africa : either directly by multiplying some of the best traditional varieties well adapted to particular culture areas, or after an easy improvement.



REFERENCES

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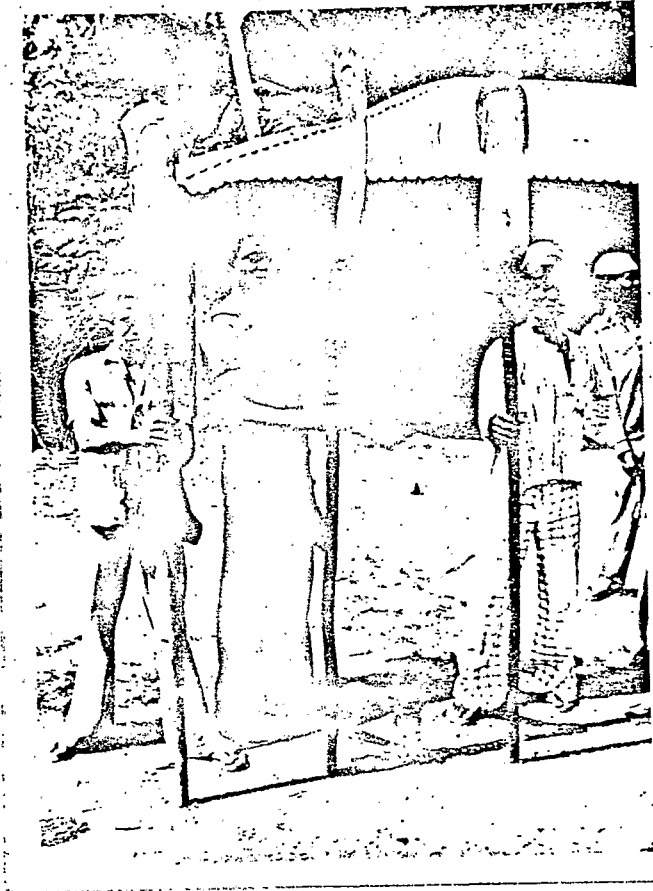
Taxonomie agro-botanique des riz cultivés *O. sativa* linn.  
et *O. glaberrima* Steud.

J.A.T.B.A. 3, 7 à 12, 1956, pp. 341-856

PORTERES, R. - 1966

Les noms des riz en Guinée

J.A.T.B.A. 1966.



N° 1 : Baga - people with their  
"Kofi".



N° 2 : Rice harvesting in Forest - Guinea area.

RESUME

Une mission de prospection des variétés traditionnelles et sauvages du genre *Oryza* a été organisée en République Populaire et Révolutionnaire de Guinée du 15 novembre au 30 décembre 1979 et du 17 novembre au 24 décembre 1982. Tout le pays a été visité ce qui nous a permis de constater sa richesse en riz. L'espèce africaine *O. glaberrima* y est encore largement cultivée bien qu'en voie de disparition.

770 échantillons ont été recueillis représentant 4 espèces : *O. sativa* (573), *O. glaberrima* (172), *O. breviligulata* (16) et *O. longistaminata* (9).

RESUMEN

Una misión de prospección de las variedades tradicionales y salvajes del género *Oryza* fue organizada en República Popular y Revolucionaria de Guinea del 15 de Noviembre al 30 de diciembre de 1979 y del 17 de noviembre al 24 de diciembre de 1982. Todo el país fue visitado lo que nos permitió constatar su riqueza en arroz. La especie africana *O. glaberrima* todavía se cultiva bastante pero se encuentra en vía de desaparición.

770 muestras fueron colectadas representando 4 especies : *O. sativa* (573), *O. glaberrima* (172), *O. breviligulata* (16) y *O. longistaminata* (9).

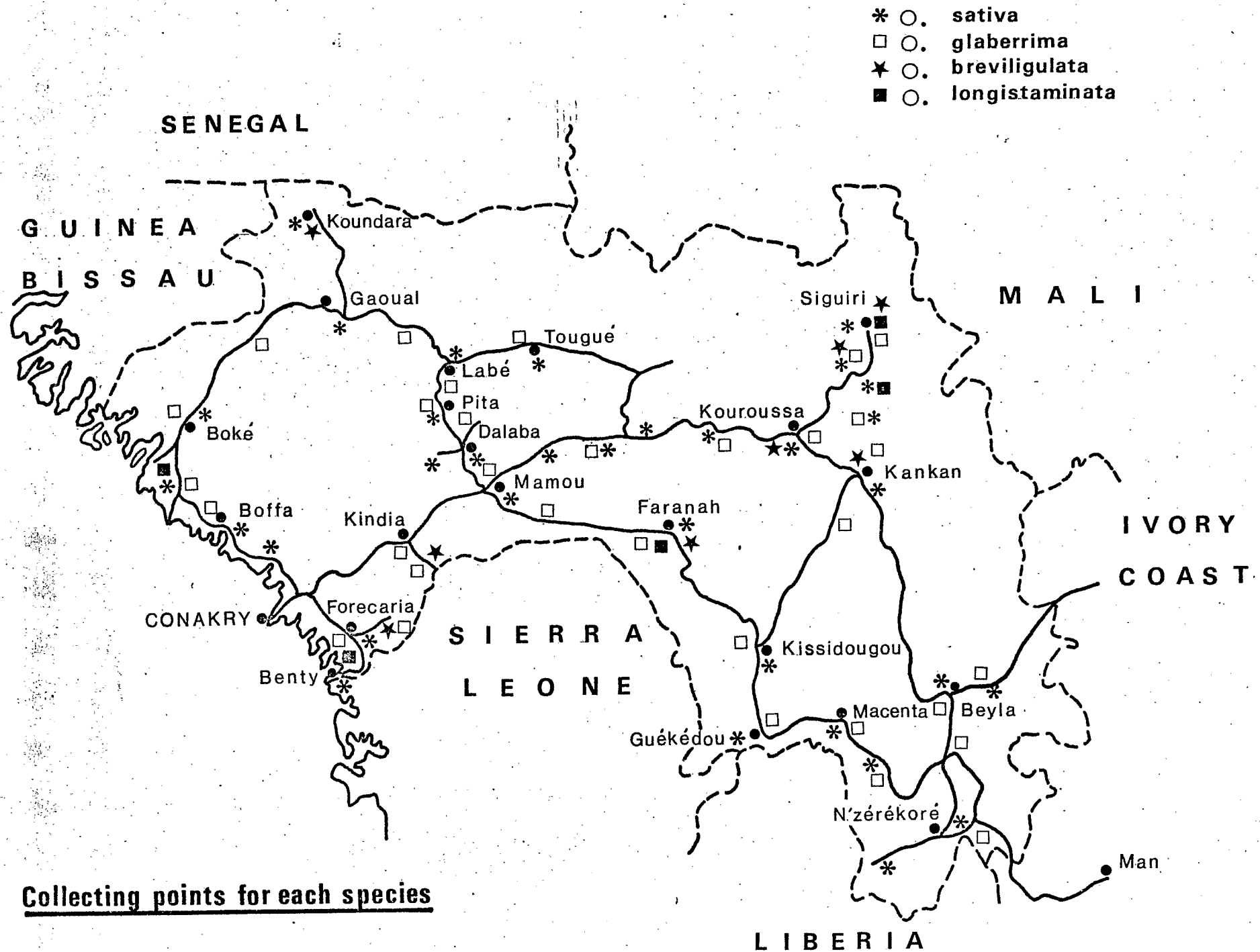
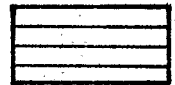


Fig. 2 : Collecting points for each species

12



Dense humid forest



Mosaic forest-savannah



Light forest; relatively humid savannah



Light forest; sudanian savannah



Primary forest



Annual mean rainfall

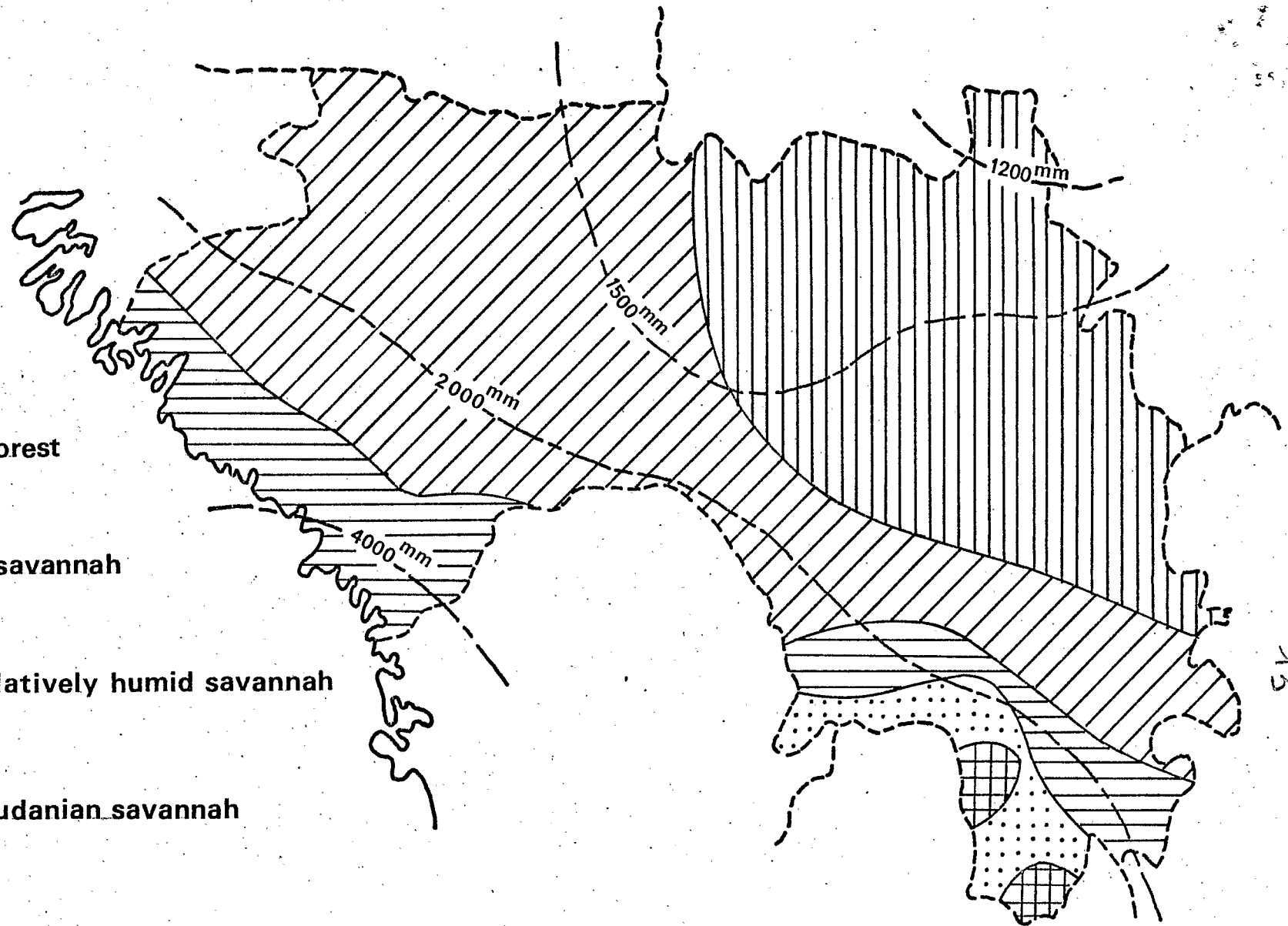


Fig. 1 : Vegetation and rainfall map