

# UPPER VOLTA

by G. Savonnet

## 1. Physical environment and communications

With a total area of some 275,000 km<sup>2</sup> Upper Volta stretches across 700 km of the sudan zone of west Africa, from about 6°W to 7°30'E. Its northern and southern extremities are between 9°N and 15°N and it is a landlocked country, the distance from its frontiers nearest to the sea being in the south, some 500 km.

The best-known physical characteristic of the country is the vast, uniform, even monotonous Mossi plateau, but there are several distinctive relief features to be noted. The average altitude of the country is about 300m; the highest point is at 749m, in Teninkourou in the southwest, near the junction of the borders with those of Mali and Ivory Coast; the lowest altitudes occur in the south, in the valleys of the Black Volta river and, on the southeast border, of the Oti river, at around 200m.

Three physical zones can be distinguished. The central zone comprises a number of plains, ranging in altitude between 250m and 350m, which together make up the Mossi plateau. The plateau is not entirely flat, for there are isolated buttes here and there. A number of rivers, which are intermittent in flow, have excavated very broad valleys; several wide vales break the monotony of the landscape and appear to correspond to structural features in the underlying Pre-Cambrian crystalline basement.

In both western and eastern extremities of the country sandstone massifs, of Palaeozoic age, overlie the Archaean basement. They rise, in a series of steps, to relatively substantial heights and are often massive in character. In the west, the Banfora sandstones are connected with the Bandiagara sandstones of southern Mali, by a series of more or

less elevated plateaux over a distance of over 600 km. The eastern edge of these sandstones forms an escarpment facing southeast running through the Bobo-Dioulasso region. In the east, in the Gourma country south of Diapaga, the edge of the sandstone plateau of Gobnangou parallels the boundary with Dahomey, the plateau itself being continuous across the border into the northern part of that country.

In the west-central part of Upper Volta there occur, between the Banfora sandstone formations and the crystalline plateau, a series of hills of volcanic origin. They date from Pre-Cambrian times and in many cases are of bold relief. Rising in the south beyond the border of Ivory Coast, they lie in the Gaoua and Houndé regions. Thence the volcanic hills trend north-eastwards, as far as Ouahigouya.

On the whole Upper Volta is a country of poor soils. This is related to the fact that the underlying rocks are of very early origin, all having been in situ by the Devonian period of the Primary era. The surface has undergone erosion through a long course of time, and has been peneplained many times. A few remnants of planation surfaces at altitudes around 550m were formed in Eocene times; other wider and more numerous surfaces around 350m were formed during the Quaternary period. Subsequently, under humid climatic conditions, the weather debris that mantled these various peneplains underwent chemical alteration and emerged as vast stretches of hard ironstone crust, of greater or less thickness, masking the original structures. At the present day, these duricrusts are undergoing erosion and everywhere the underlying structures are being exposed. The breakdown of the rocks gives rise to a variety of soils. The products of the ferruginous crust are washed in solution into lower horizons, often recementing them into ironstone layers.

TEMPERATURE (°C) AND RAINFALL (mm)

|                               | Jan. | Feb. | Mar. | Apr. | May   | June  | July  | Aug.  | Sept. | Oct. | Nov. | Dec. |
|-------------------------------|------|------|------|------|-------|-------|-------|-------|-------|------|------|------|
| Ouagadougou                   |      |      |      |      |       |       |       |       |       |      |      |      |
| Average daily                 |      |      |      |      |       |       |       |       |       |      |      |      |
| maximum temperature . . . . . | 36.1 | 38.7 | 41.1 | 41.7 | 39.2  | 36.3  | 33.7  | 31.8  | 33.6  | 37.8 | 38.8 | 36.4 |
| Average daily                 |      |      |      |      |       |       |       |       |       |      |      |      |
| minimum temperature . . . . . | 14.2 | 16.1 | 20.9 | 24.3 | 24.9  | 23.1  | 22.1  | 21.3  | 21.1  | 22.0 | 19.0 | 15.3 |
| Average rainfall . . . . .    | 0.0  | 2.5  | 15.2 | 20.3 | 73.7  | 124.6 | 213.4 | 266.7 | 142.2 | 22.9 | 0.0  | 0.0  |
| Bobo-Dioulasso                |      |      |      |      |       |       |       |       |       |      |      |      |
| Average daily                 |      |      |      |      |       |       |       |       |       |      |      |      |
| maximum temperature . . . . . | 34.2 | 36.7 | 38.2 | 28.2 | 35.7  | 32.9  | 30.6  | 29.7  | 31.0  | 33.9 | 35.1 | 34.8 |
| Average daily                 |      |      |      |      |       |       |       |       |       |      |      |      |
| minimum temperature . . . . . | 15.7 | 16.7 | 20.8 | 22.3 | 21.4  | 21.7  | 20.9  | 20.7  | 20.4  | 20.7 | 19.3 | 16.7 |
| Average rainfall . . . . .    | 2.5  | 5.1  | 27.9 | 53.3 | 116.8 | 121.9 | 248.9 | 304.8 | 215.9 | 63.5 | 17.8 | 0.0  |

Source: R. J. Harrison Church, West Africa, London, 1970.



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Five main types of soil can be distinguished. Two kinds of sandy soils occur, derived either from sandstones, in which case they are generally fine, or from decomposed granites, when they are coarser. They are always of indifferent fertility. The yellow clay soils, derived from Lower Birrimian schists, are compact and of average fertility. Brown soils derived from Upper Birrimian rocks are rich in calcium and form the richest soils in the country. The alluvium deposits found in the depressions yield deep fertile soils. Lastly, the ironstone duricrusts covering ancient erosion surfaces are totally sterile; in some places they form vast, almost bare plains.

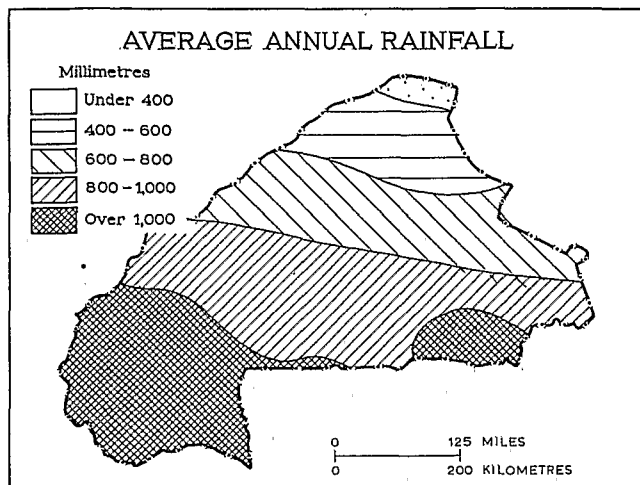
In addition to the general poverty and thinness of its soils, Upper Volta suffers from limitations of rainfall and of surface water. The climate is hot and dry for the greater part of the year. Annual rainfall ranges from 635mm in northern sahel zones to 1,145mm in the southern savanna zones of the south. The rainy season lasts at most for five months, between May and September-October. Ouagadougou, at 300m altitude in the central area, receives 880mm of rainfall a year; Bobo-Dioulasso in the southwest region, at 443m altitude, receives 1,180mm. The variability of the rainfall increases from south to north and becomes more critical because of the high temperatures.

The territory south of Bobo-Dioulasso, Houndé, Léo and Pô receives over 1,000mm of rain per year. In this southern sudan zone, winter starts in May and ends in October; this rainy season is interrupted by a weak dry season between mid-June and mid-July. Because of these conditions, the work of the early agricultural season can be retarded. Under the influence of southerly winds throughout much of the year, relative humidity rarely falls below 25 per cent in January and February; in the rainy season it can exceed 98 per cent. In this zone, temperature ranges are fairly limited: the temperature rarely falls below 18 °C or exceeds 38 °C.

The natural vegetation in the humid southern zone consists of woodland savanna, in which typical trees are baobab, shea butter tree and acacia. Here and there, in depressions, a more closely wooded guinea savanna vegetation occurs. In the drier northern parts of the country, both the soil and the vegetation are thin and poor.

Upper Volta may be divided into three major regions and eight subregions on the basis of a combination of physical characteristics — geology, soils and climate — and in some degree, of the ethnic composition of local populations.

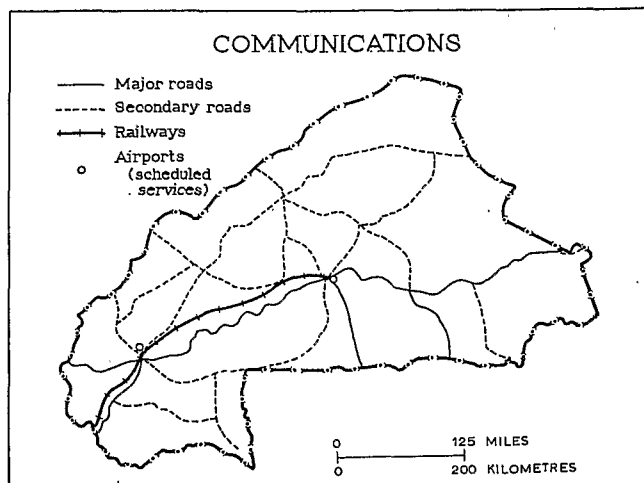
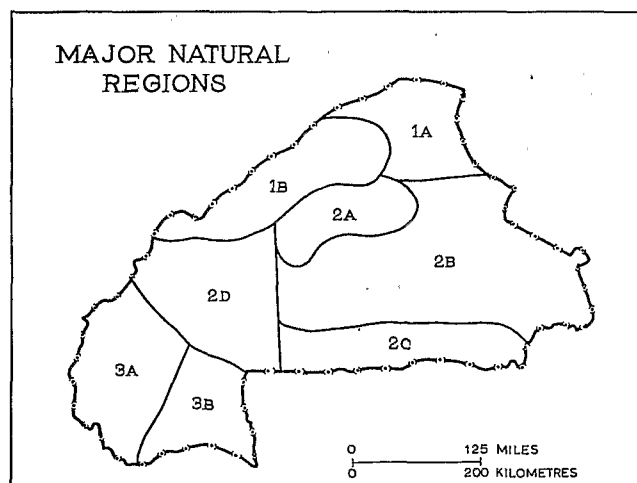
The Northern Region has two subregions. The northeastern region around Dori (1A) has the typical dry climate and thorny vegetation of the southern sahel. The northwestern region of Tougan, Ouahigouya and Aribinda (1B) includes numerous ridges, covered with ferruginous crust, separated by fertile



depressions. Although it is an arid area, the climate, with an annual rainfall of 600-700mm, is slightly more humid than that of the northeast.

The Central Region may be divided into four subregions. In the north central region of Yako, Gourcy and Kaya (2A), the soils derived from the Upper Birrimian rocks are fertile and the rainfall is sufficient to allow intensive agricultural exploitation of the land. The large central region of Koudougou, Ouagadougou and Fada N'Gourma (2B) has sandy soils of indifferent quality, derived from granitic quartz sands and there are considerable areas of ferruginous duricrust. In four months during the rainy season, there is on average a rainfall of 800mm. The south central region around Léo, Pô and Zabré (2C) has similarly poor soils, but a greater rainfall — up to 1,000mm per year — gives conditions which permit better crop yields. The west central region, around Houndé, Dédougou and Nouna (2D) has a variety of soils and annual rainfalls of 900-1,000mm. Although this is a fairly diversified region, it is given its unity largely by the Bobo people who occupy it.

On the west of the Southern Region, the Banfora region (3A) covers the dry sandstone plateaux, where the people of the Senoufo ethnic group put the land to good use, thanks to the availability of adequate rainfall. To the east of this, the region around Gaoua and Diébougou (3B) has a longer rainy season and receives as much as 1,000mm in five months. Again the regional unity is chiefly based on the occupying ethnic group which is a branch of the Lobi people.



Apart from roads in the major towns, none of the country's main road routes was bituminized in 1966. The two national road axes covered about 1,800 km and were all-season roads. The east-west route gives links with Niger, Mali and Ivory Coast, passing through Niamey, Ouagadougou and Bobo-Dioulasso; the north-south route, giving links with Mali and Ghana, passes through Ouahigouya and Ouagadougou. Departmental roads totalled some 3,500 km in length. They radiate from the capital Ouagadougou, linking it with major towns, and also link the major towns in the various regions. They are liable to become impassable in the rainy season. Local roads and tracks were estimated to cover about 5,000 km. They vary in standard and many are liable to be difficult to negotiate by vehicles for as much as four to six months in the year.

The narrow-gauge railway from Abidjan, on the coast of Ivory Coast, passes through the southwest region via Bobo-Dioulasso to Ouagadougou and covers over 500 km within Upper Volta. It terminated at the former town up to 1954 when it was extended to the capital. It is proposed to extend it to the Niger and Mali borders.

## 2. Population

According to a demographic survey carried out by sampling between October 1960 and March 1961, the total population numbered a little over 4.5 millions, giving an average density slightly higher than 16 persons per km<sup>2</sup>.

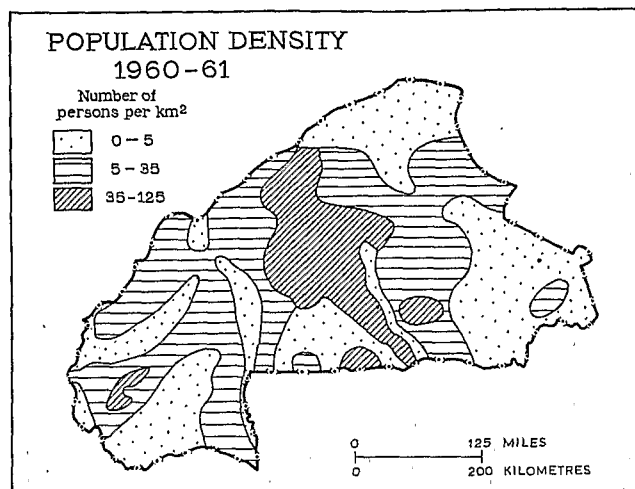
Among the ethnic groups that make up the population, by far the most important is the Mossi group, inhabiting the regions of Ouagadougou and Ouahigouya and estimated to number 2,160,000. The Samo-Marka groups of the north-west, around Tougan, numbered 440,000, and the Senoufo groups — Turka, Gouin and Senoufo — who occupy south-western districts, around Banfora, numbered 280,000. The Bobo people who live in the west around Nouna and Houndé, include the Bobo-fing, Bobo-dioula and Bwa peoples. The Fulani pastoralists and some Touareg occupy the Dori region and the Gourounsi farmers are installed in the southern parts of the Mossi country, around Léo and Pô. Each of these three main groups numbered about 250,000.

The Lobi group, numbering 230,000, include the Dagara, Birifor and Lobi who are both farmers and hunters and who occupy the southern part of the Black Volta, around Gaoua and Diébougou. In the eastern regions, the Bissa of Garango and the Gourma centred on Fada N'Gourma totalled 200,000 and 220,000 respectively.

Apart from the Fulani and Touareg pastoralists, who are Moslem, most of the Voltaians are animists.

The distribution of the population is very uneven over the whole country, and it is remarkable that some of the more fertile areas are often the least inhabited. The major river valleys are generally empty, in particular those of the Volta and its tributaries. The endemic diseases which are prevalent there, such as onchocercosis and trypanosomiasis, discourage human settlement. The most densely populated areas are in the north of the Mossi country, in the regions of Yako, Ouahigouya, Gourcy and Séguénéna. Despite the impoverishment of the soils and the complete sterility of the plateaux, densities in these areas sometimes exceed 75 persons per km<sup>2</sup>. In the west and south, densities range between 10 and 35 persons per km<sup>2</sup>.

According to the 1960-61 demographic enquiry, there were on average 99 females per 100 males in Upper Volta, a ratio which is the opposite of the average in adjacent countries. This phenomenon may be explained by the fact that the mortality rate is roughly the same for both sexes; elsewhere the



infant mortality rate for male children is always higher than that for female children. Amongst the Mossi the ratio was 102 females per 100 males but this was offset by the situation in the Gourounsi country — 94 females per 100 males — and among the Bobo and Gourma people where it fell to 92.

The average birth rate was 49 per 1,000 live births, but was as high as 57 per thousand amongst the Mossi, and as low as 45 per thousand in the western regions. The death rate averaged 31 per thousand. Mortality is very high during the early years: 174 out of a thousand children die before their first birthday and only 640 out of a thousand children reach the age of 5 years. The expectation of life at the present time is about 31 years.

Apart from the Fulani and some 15,000 Touareg who live by pastoralism in the Dori and Aribinda regions, almost the whole of the population depend on crop farming. Only about 4 per cent of the population live in towns of 10,000 or more inhabitants, and 5 per cent are officials, artisans or workers. Ninety per cent are engaged in crop farming and 5 per cent in animal husbandry.

Living conditions for the agricultural people appear not to have changed markedly since the beginning of the century. While a few cash crops, such as cotton, groundnuts, and sesame, have been introduced to the traditional farming cycle, thus bringing some cash income to the peasant farmers, the food crops — sorghum, millet, beans, peas and yams — are the principal products grown by most farmers.

Farming techniques have hardly changed at all: 99 per cent of all the farm work is still carried out by hand. Asses have been introduced in a few privileged regions as draught animals but are restricted to use by only a few tens of thousands of Mossi and Bobo cultivators working light sandy soils. Although many attempts have been made to introduce them during the past 30 years, draught cattle are still little used.

In the same way, both housing and settlement have developed little change since the days of the first explorers of the 19th century. Here and there, a corrugated iron roof may be seen in a village, usually on the house of a former soldier or civil servant who has retired to his native villages. The means at the disposal of most peasants prevents them from adopting such modernizations.

Because of differences in both houses and settlements, it is usually easy to distinguish between the various ethnic groups. Among the Mossi, Gourma and Senoufo people, the settlements are in large compact groups of households, the dwellings being round huts with thatched roofs. Among the Bobo the settlements are more open, with narrow lanes winding between the large dwellings, which are more or less rectangular in shape and flat-roofed. The farms of the Lobi, with their

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rectilinear walls and terraces of flattened earth, are scattered without any noticeable pattern across plains and valleys.

Because their methods of cultivation and techniques of construction are so primitive, some communities are forced to migrate periodically, when the soils of their land are exhausted or their dwellings are beginning to collapse. This has been the case with the Lobi people who are progressively abandoning the rich lands on the Birrimian rocks south of Gaoua and moving on to virgin land with light soils in northern Ivory Coast territory. Among the Mossi of the Ouahigouya, pressure of population and the wish to escape from too constraining family guardianship together lead to regular emigrations of young family groups. They establish themselves on new lands on the upper Black Volta.

Until 1965 the migratory movements of farming people were gradual and in any one year concerned only a small minority — a few thousand — of the total population. After this date the migratory movement of the Mossi to the Black Volta and to the southwest was accelerated. More noteworthy and much greater in size are the temporary migrations of young men who, after the harvest time, leave to work either in Ghana or in Ivory Coast, for one season or for several years. Some 5 per cent of the population — between 200,000 and 250,000 — Voltaians are concerned in these migrations each year. It is more difficult to assess the size of internal migrations. Every year between 10,000 and 20,000 rural dwellers go to look for work in the workshops of towns like Ouagadougou (90,000 inhabitants in 1968) or Bobo-Dioulasso (45,000 inhabitants).

### 3. Exploitation of resources, ownership and land tenure

Upper Volta became a separate state in 1919 but in 1932 part of the country was attached by the French to Ivory Coast, and part to Niger and French Sudan. It was reconstituted in 1947 within its former administrative boundaries and became independent in 1960.

A programme of rural development was put in motion by the land authorities from 1950 onwards. This development included experimental pilot farms from 1956 to 1959, a development study of the Sourou valley from 1950 to 1960, and, between 1962 and 1965, the implementation of soil conservation works in the Ouahigouya by the Groupement Européen pour la Restauration des Sols.

Upper Volta's fundamental problem is that of water supply, and it constantly demands attention from the authorities. Since 1945 the government administration has caused to be built, with varying success, almost one hundred earth or concrete retaining structures. In later years, the technical water services have constructed about 60 barrages to serve local areas, and in 1965 the European Development Fund provided a credit of 7.2 million U.S. dollars for the installation of 64 barrages. It must be noted, however, that with a few exceptions these major works have not been followed by the installation of agricultural water services on the lands downstream from them.

Substantial funds have been devoted to the excavation of deep wells. In this connection the Société d'Assistance Technique de Crédit Social has involved rural communities in close participation with its work, and the digging of wells by their own efforts has devolved upon the villagers. For the Society's part, it has undertaken the construction of the complementary works, such as the building of channels and the installation of water-raising equipment.

All these technical developments concern an infinitely small part of the rural population, however. No more than 4-5

per cent benefit from the consequent improvements and even they have not modified their agrarian customs, particularly those relating to land tenure.

The right of land ownership is still dominated almost everywhere by religious concepts, the power of chief of the land belonging to the first occupant who cleared it and subsequently to his descendants. Thus, there is no land without a chief, since the boundaries of each *chef de terre* are simply those of the adjacent territories of neighbouring *chefs de terre*.

Judicial rights are attached to the religious rights, and the chief of the land is also responsible for the management of the land entrusted to him by the gods. While he may distribute a portion of the property to incomers, he must ensure that the territory remains whole and inalienable. While the chief of the land or headman thus has overall right, the villagers only have right of use and cultivation, which may be inherited or may be granted to strangers.

The village land is divided, under the control of the headman, amongst the resident cultivators, but some plots may be allocated to peasant farmers from neighbouring communities who ask for them. Such rights of usage of land are temporary and cease when the cultivator abandons the plots to fallow. However, it is customary for the cultivator to retain some priority of use on new fallow land for two or three years, by growing catch crops upon it. After that the land reverts to the public domain of the village that owns it.

The right to land, to its use and the duration of those rights are established as a result of the input of labour and material which the user, who is at the same time the beneficiary, applies to the land. The duration of the right of possession of the land is therefore directly related to the permanency of the crops grown. In this way the right of usage is in some respects similar to right of ownership in the western sense. Fields under permanent crops which are manured and tended, tree plantations and ricefields constitute "owned lands" for the cultivators who give them their continuing attention, and such fields may be loaned, exchanged or even mortgaged temporarily by the owner without need to refer to the headman as intermediary. On the other hand, if a cultivator and all of his family leave the village, all the land to which he has rights of usage, whether permanent or temporary, reverts to the village domain.

Conditions of land ownership of the kinds just described still apply in most of the farming regions of Upper Volta. The lands of the village communities can generally be divided into three categories. The cultivated land comprises both the fields of permanent crops, representing about 5 per cent of the total developed land, and the fields under temporary crops, representing the remaining 95 per cent of the cultivated land. The fallow land, usually in use for grazing purposes, may cover as much as three or four times the area of the first category, the cultivated zone. Lastly, there is a reserve of land intended for future expansion of the cultivated area.

In 1963 it was estimated that the total area of the cultivated lands was more than 2.4 million ha. Fallows occupy some 10-12 million ha.

Four kinds of tenure can be recognized in connection with the total land under cultivation. Fiftyfour per cent of the

LAND TENURE ESTIMATES (1)

|   | Area<br>(1,000 ha) |
|---|--------------------|
| Owner-cultivator operated enterprises . . . . . | 150                |
| Partially collective enterprises . . . . .      | 2,280              |

(1) Refers only to land under annual cultivation.

cultivated land is worked by householders with the right to use this land for the benefit of their households and family. Fourteen per cent is cultivated by entitlement through having cleared unused bush. Six per cent is cultivated by farmers who have inherited a right of usage conceded by a titleholder with a right to a permanent appropriation. The remaining 26 per cent is used by farmers who have obtained a provisional right of usage from the actual owner of those rights.

The greater part of the cultivable areas is that under traditional type of tenure, that is to say that the land belongs to the village and it is assigned to the head of the family who has the right of use and cultivation for two or three years during which the soil is productive. Individual ownership is very limited.

**4. Land utilization, crops and animal husbandry**

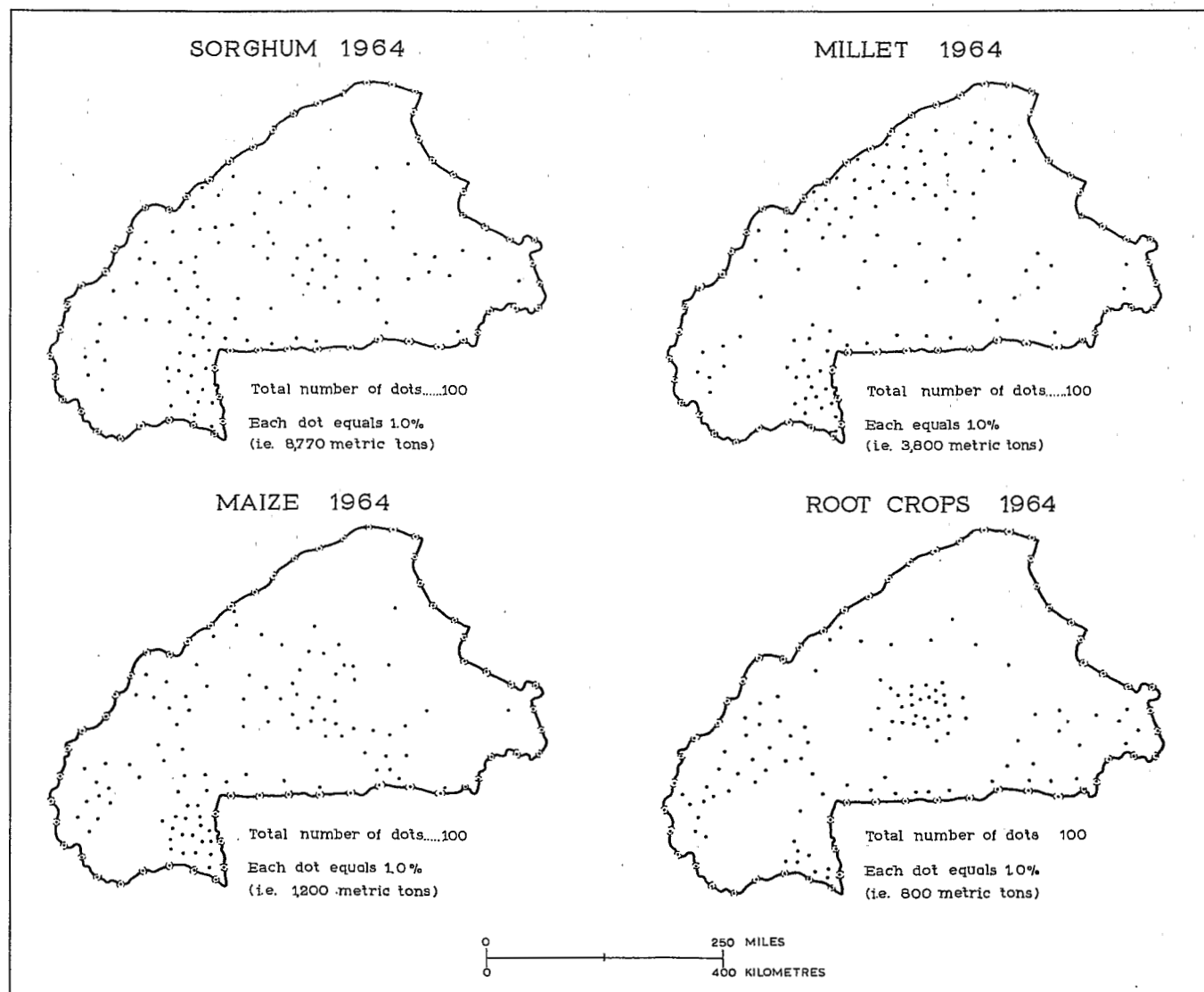
Village lands are usually in three distinct zones. Around the dwellings there are garden plots covering a few dozen m<sup>2</sup>, which are constantly enriched by the household refuse deposited on them. These carry early maize and sorghum

LAND UTILIZATION, 1965

|   | Area (1,000 ha) | % of total area |
|---|-----------------|-----------------|
| Arable land <sup>(1)</sup> . . . . .                              | 2,430           | 8.8             |
| Fruit trees and orchard land . . . . .                            | 30              | 0.1             |
| Non-agricultural land and rough grazing land . . . . .            | 2,925           | 10.6            |
| Non-agricultural land and rough grazing land with trees . . . . . | 22,115          | 80.5            |
| Total . . . . .   | 27,500          | 100.0           |

every year and, after those crops are harvested, tobacco. Surrounding these and stretching beyond the confines of the village land are the fields in which are cultivated the annual crops of sorghum, cotton, groundnuts and sometimes maize. They are enriched to some extent because of the livestock kept on them through the winter months. Once the soil is exhausted, they are abandoned for a period, and given over to common grazing. Scattered about them are a number of

<sup>(1)</sup> Land under annual cultivation.



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useful trees, preserved at the time of clearing the fields: *Acacia albid*a, locust bean and shea butter trees. Beyond these fields are the clearings in the forest or former fallow lands, which may often lie several kilometres away from the settlements. Various crops may be grown on these, including different varieties of sorghum and millets, and groundnuts. These fields are never improved and after six to eight years' use, they are abandoned to fallow, often for periods as long as 30 or 40 years.

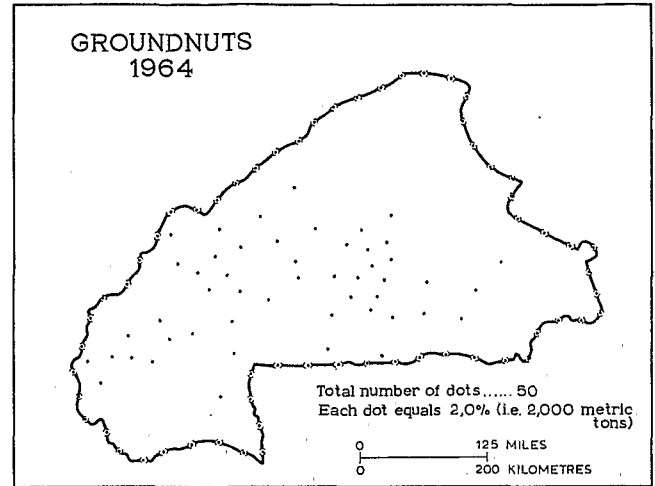
In valley bottoms where the soil is rich but difficult to work the land is generally cultivated with crops, without previous preparation of the soil. After all the other fields are sown, they will be planted with rice, sweet potatoes, maize and yams.

The chief characteristic of agriculture in Upper Volta is the high proportion of the cultivated land that is devoted to staple food crops. Out of more than 2.4 million ha under cultivation in 1963-64, only about 500,000 ha were reserved for cash crops.

**CROP DISTRIBUTION OF ARABLE LAND, 1963-64**

|                              | %<br>of cultivated<br>area |
|------------------------------|----------------------------|
| Sorghum . . . . .            | 48.0                       |
| Millet . . . . .             | 27.0                       |
| Maize . . . . .              | 6.0                        |
| Groundnuts . . . . .         | 8.5                        |
| Bambara groundnuts . . . . . | 5.0                        |
| Cotton . . . . .             | 2.0                        |
| Rice . . . . .               | 1.5                        |
| Other crops . . . . .        | 2.0                        |

According to the region, there are different combinations of crops grown and of types of farming. North of 14°N, including the area north of Dori, physical conditions generally allow the cultivation only of bulrush millet as a cereal. Along with early maize sown in the valley bottoms and near cattle grazing areas, this cereal constitutes the staple food of the Fulani who live in this area. In central Upper Volta, in the region bounded by Houndé, Ouahigouya, Diapaga and Tenkodogo, the peasant farmers grow, besides cereals, some cotton, groundnuts, and rice. In the east, they may even also grow manioc. Taking this region as a whole, sorghum and millet would occupy 65-85 per cent of the cultivated land. In the Fada N'Gourma and Kaya districts, the farmers devote 10-15 per cent of their fields to groundnuts and bambara nuts,



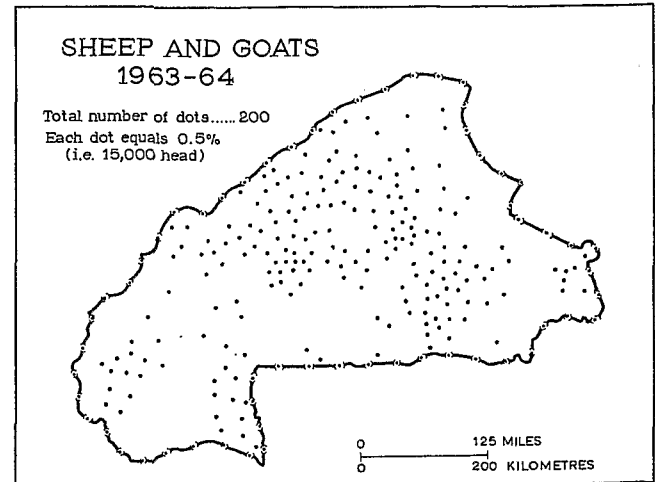
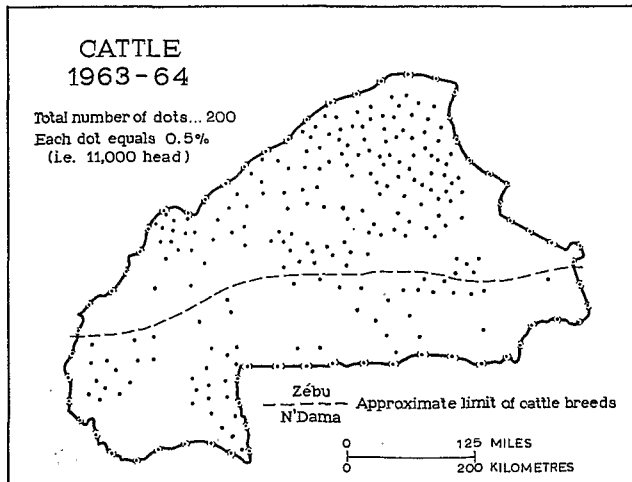
for which the light, coarse soils are suitable. In the regions of Ouagadougou and Kaya, ricefields occupy 2.5 per cent of the cultivated areas.

In the region south of 11°N, varieties of millet and maize occupy a dominant place among the crops. In addition, yams are very suitable crops on the sandy soils around Léo and Gaoua, and along with beans, which are a speciality of the Lobi farmers, they are the chief products exported from this region.

In the southwest, around Banfora, the farmers benefit from the existence of a better physical environment comprising wide piedmont plains, with light soils and crossed by perennial rivers. In addition to the traditional food crops, yams, maize and rice constitute cash crops par excellence. Towards the north, beyond Bobo-Dioulasso, the Bobo people specialize in growing groundnuts, yams, sesamum and cotton. Around Solenzo the farmers often devote nearly half of the cultivated area to cotton.

Apart from certain rare exceptions, agriculture and animal husbandry are never combined. Livestock are generally entrusted to Fulani herdsmen, who are allowed to use the milk they yield as remuneration for their services. Only the Bobo, Senoufo and Birifor farmers use animal manure on the large areas which they cultivate intensively.

In accounting for the areas used for rough grazing, one has to include the enormous areas of almost uninhabited land, totalling 10,237,000 ha, and the areas of developed land that are given over to livestock, totalling some 3,000,000 ha.



It is estimated that a total of 14.5 million ha are used for pasturing livestock throughout the country.

The number of cattle in Upper Volta is estimated as 2-2.4 million head, and of goats and sheep together, 3 million head.

It is difficult to estimate with any accuracy the area of woods and forests. In the north, the undeveloped areas are under thorny savanna, and in the south the vegetation of undeveloped areas is woodland savanna. These zones of woodland are not exploited for timber, but serve as reserves for future expansion of cultivation. Certain areas are protected under the Water and Forestry Service, as game and classified forest reserves. Their total area may be estimated at 1.5 million ha.

The processing industries employ some 10,000 workers, about 0.5 per cent of the total population. There are about 40 factories, which include cotton ginneries, oil extracting factories, and factories for the manufacture of beverages, clothes and shoes.

AREA, PRODUCTION AND YIELD OF MAJOR CROPS, 1963-64

|                              | Area<br>(1,000 ha) | Production<br>(1,000 tons) | Yield<br>(quintals<br>per ha) |
|------------------------------|--------------------|----------------------------|-------------------------------|
| Sorghum . . . . .            | 1,200.0            | 750.0                      | 6.3                           |
| Millet . . . . .             | 650.0              | 319.8                      | 4.9                           |
| Maize . . . . .              | 166.0              | 126.6                      | 7.6                           |
| Bambara groundnuts . . . . . | 100.0              | 45.8                       | 4.6                           |
| Yam . . . . .                | 2.4                | 7.3                        | 30.4                          |
| Sweet potato . . . . .       | 14.9               | 35.3                       | 23.7                          |
| Rice . . . . .               | 34.8               | 33.8                       | 9.7                           |
| Groundnuts . . . . .         | 247.7              | 135.9                      | 5.5                           |
| Sesamum . . . . .            | 30.0               | 6.3                        | 2.1                           |
| Cotton . . . . .             | 56.2               | 14.6                       | 2.6                           |

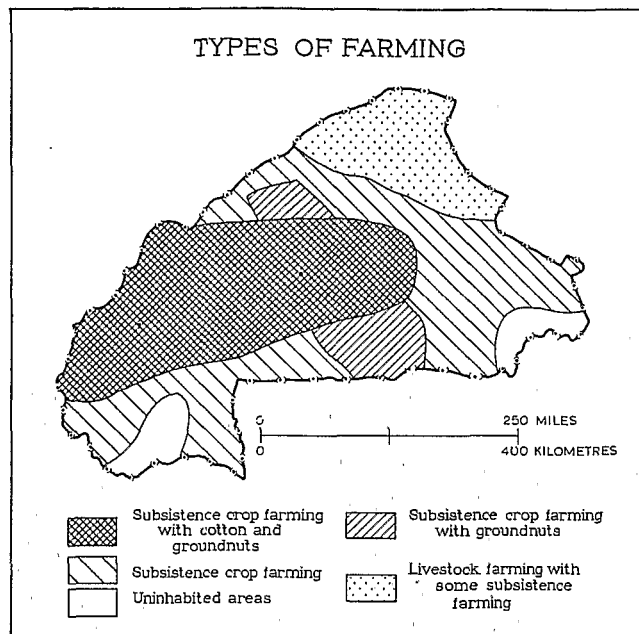
## 5. Agricultural economy

With a gross national income of about 288 million U.S. dollars, the average income per head is about 60 dollars per year. Animal husbandry holds a premier place in the country's economy, and the value of the total herd of sheep and goats may be estimated as 120-140 million dollars. Crop farming holds second place and the total value of agricultural production can be estimated at about 80 million dollars.

While the value of livestock and livestock products represents 70-80 per cent of the total value of exports, that of exported crop products is only about 8 per cent, mostly comprising beans, shea butter and groundnuts. It is impossible to evaluate, however, the quantity of millet, maize and yams which are sold in small consignments in the neighbouring countries, chiefly Ghana and Ivory Coast.

It may be concluded, therefore, that the bulk of the crop production is consumed domestically, but even this does not prevent the occurrence of famine, which causes grave hardship in one region or another that is overpopulated or suffers unfavourable climatic conditions.

It is in circumstances like these that the public authorities have undertaken a series of measures intended to increase the supply of foodstuffs within the country. Under a law passed by the government in July 1963, land that was not



used or was inadequately developed was declared to be state property. This measure made it possible for unexploited or insufficiently productive land to be occupied and managed by co-operatives. A more recent legislation provided for the establishment of Regional Development Organizations. The tasks of these bodies are to provide education for rural communities, to assist them to learn how to improve crop yields, and to coordinate economic activity in the country within a national plan.

Nevertheless, despite these actions on the part of the state, the income of the peasant farmer remains at a very low level. Numerous studies are in progress, seeking how to overcome the problems of rural areas and intended to direct the technical aid which will be needed in order to put the country's development plan into action. It is clear, however, that it will take many years and long-term sustained effort before the Voltaian peasant farmer could be entirely free of the threat of famine.

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