

INDIGENOUS TREE SPECIES IN SOUTHWEST BURKINA FASO: CONFLICTING PERCEPTIONS AND USES

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ABSTRACT: *Farmers from Sahelian Africa have developed an extensive knowledge of the uses and potentials of various indigenous trees. Many rural populations have been described as respectful of their environment, carefully protecting a range of natural resources. It is important however not to generalize rural populations' attitude toward trees. Different groups possess different perceptions of the elements which compose their environment and have developed different practices accordingly. This paper will discuss the importance of trees for the Bwaba of Southwest Burkina Faso, and present some of the conflicts arising with the use of trees between the Bwaba and the Mossi, a group of migrants recently established in the area.*

TREE PERCEPTION: VARIATIONS WITHIN AND OUTSIDE THE RURAL WORLD

Most of the literature that has been written on West Africa since colonial times depicted savannas as monotonous landscapes, with no vegetative coverage at the exception of a few thorny bushes and shrubs. Yet, a careful look at the Sahelian landscape shows that rural peasants possess a substantial knowledge of the various trees which compose their environment and of the use of their products (ORSTOM, 1980). Knowledge about the potential uses and benefits of indigenous species was developed through a long history of cohabitation and peasants value trees for their multiple use. Living trees contribute to the diet of populations (through leaf, seeds and fruits), provide medicinal products and fodder for the livestock, fertilize and protect the soil, and once dead, trees can be used as a material for building or as fuelwood. Other groups, living outside the rural

world, have a significantly different perception of the same resource. For urban settlers and merchants, trees acquire their value once felled and sold on the market. These groups acquire the various elements of their alimentation, pharmaceutical products and fuel from urban markets and tend to ignore the multiple uses of indigenous trees by rural populations, which are outside the realm of economic markets.

Similarly, policy makers and development agencies usually come from and are located in urban centers. They are more exposed to the perception and the needs of urban populations and also tend to ignore the multipurpose value of indigenous trees for rural populations. Consequently, development programs conducted by major international agencies during the last twenty years almost systematically promoted the replacement of local tree species by more efficient, fast growing, foreign species, that could meet the needs and priorities of urban populations (Leach and Mearn, 1988).

Existing literature on the subject usually aggregates urban settlers, merchants, policy makers and development agencies into a single category, the

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outsiders, as opposed to the rural population (Bergeret and Ribot, 1990). Typically, such literature argues that valuable trees for rural populations are trees with multiple uses, located near the village, while for outsiders, they are fast growing species which produce easy to transport, marketable products or fuel. While recognizing that such images might generalize some of the differences in perceptions and needs between urban and rural populations from various parts of West Africa, we consider it essential to warn against idealizing and simplifying the relations between rural societies and their environment.

The Sahel is occupied by various different ethnic groups living in close proximity and sometimes sharing the same territory or the same resources. Each ethnic group has a very selective perception of the elements that compose its environment based on its experience and its needs (practices). For example, a population with a long agrarian history has a perception of its surrounding environment (living environment) which is more confined than a nomadic society moving continuously from one place to another in a wider, more open territory. Furthermore, one may expect the nomadic population to know more about the potential uses of a tree or a shrub other than ways of cultivating it.

Groups with diverging perceptions of their environment develop different expertise or knowledge, and adopt different practices. In some cases, perception and utilization of tree species by two rural groups can be as different and conflicting as those between an urban and a rural group. For example, in the case of population relocation or migrations, the displaced group becomes an "outsider" with an experience and a set of knowledge different from those of the local people.

This paper will discuss data that were collected for research on agricultural practices in Dossi (Southwest Burkina Faso) (Figure 1.). In 1992, the population of the village was about 3300 inhabitants. Two agricultural groups co-exist in the area: i) the Bwaba, which have been living in the area for centuries and have developed a complex, intensive agricultural system involving the use of various species of trees; and ii) the Mossi, who migrated to the area from the North, mainly during the last 20 years. A third ethnic group, the Peul, have cohabited with the Bwaba for centuries. They are not agriculturists (they only grow small quantities of sorghum around their encampment) but herders. Their presence in the area has been essential for the adoption and rapid spreading of cattle ploughing by the Bwaba (they provided the animals to tract the plows and take care of the

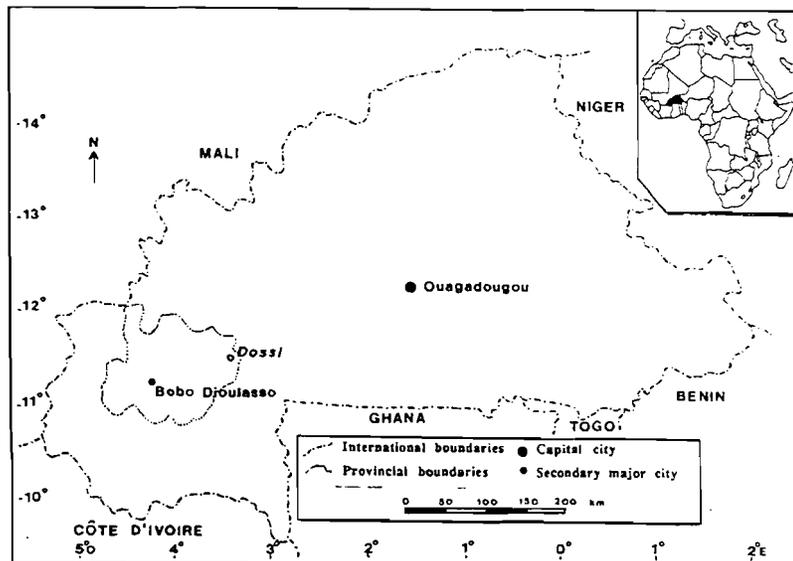


Figure 1: The research area: Dossi, Burkina Faso

herds of the Bwaba).

We will start by presenting some of the trees used by the Bwaba and the rules regulating their use in order to show the importance of local trees for rural populations. We will then proceed to present some of the differences existing between the perception and utilization of tree resources by the Bwaba and the Mossi to illustrate variations that can exist between rural populations. Finally, we will provide a brief description of the impact of Mossi migration in the Bwaba country to stress the fact that local systems are not static but dynamic over time. A better understanding of the complexity and diversity of ways local populations perceive and use natural resources is essential if development agencies are to develop programs that fulfill the various needs of these populations.

PERCEPTION AND UTILIZATION OF TREE PRODUCTS AMONG THE BWABA

The Bwaba society is sometimes referred to as being acephalous because of its lack of centralized power structure. The socio-economic and political activities are organized around two poles: the village and the family. In both structures, a strict hierarchy ranks the role and responsibilities of the people. At the village level, priority of occupation is the key factor determining the rights and power of a family over another. At the family level, the hierarchy is based on seniority. Young individuals are grouped in age cohorts and must be obedient to senior members of the family who are traditionally responsible for every decision related to agricultural activities. According to Capron (1971), Bwaba villages lived in almost complete autarky until the beginning of the century, probably as a result of the relative instability that characterized the area, and only started to develop networks to exchange goods after the strengthening of the French administration, when tensions in the area started to decrease.

The Bwaba are a sedentary population with a strong tie to their land. Their living space, the terroir (or village lands), includes all lands

cultivated or in fallow, pastures and forests used for harvesting and hunting by the members of the village. The Bwaba developed a complex agricultural system to manage "their" natural resources (agricultural lands and vegetation) including soil and water conservation techniques and the preservation of several tree species around the village and scattered on their fields (De plaen, 1994). The right to use tree products varies according to species, purpose of the collection, and location of the tree.

The Bwaba usually distinguish between two different types of trees: bush trees and domestic ones. The belonging of a tree to any of those two categories is not based on spatial criteria (its location) but on the value of the species for the community. Domestic trees are "useful" trees, which contribute either to the fertilization of agricultural fields or the diet of the population, or produce a marketable product, regardless of their location in relation to the village. Bush trees are trees that can be located anywhere near the village or in the bush, but do not produce any valuable product.

Contrary to the widespread image of rural peasants clearcutting trees to expand their agricultural fields or for fuelwood purposes, Bwaba rarely cut trees. The fulfillment of fuelwood needs comes from the very selective collection of dead branches fallen on the ground, in the bush surrounding the village (women only collect certain species, considered suitable for cooking activities). It is strictly forbidden for a woman to cut a living tree or a branch to contribute to firewood supplies. Few activities only, such as construction, carving of ritual masks, or opening of new agricultural fields can justify cutting down trees, but even then, the choice of species and quantities of trees felled is strictly regulated and involves mainly less valuable species (bush trees).

The complexity of the agricultural system developed by the Bwaba was described for the first time four decades ago by G. Savonnet (Savonnet, 1959). The most striking characteristic of the agricultural system is its organization in three concentric agricultural perimeters that organize and determine the various agricultural methods used by peasants and the land tenure system under which such activities are performed.

The first perimeter is composed of fields located in the immediate vicinity of the village and

between the habitations. These fields, called "household fields" (Ka), are the most intensively cultivated. They are cultivated by elders who mainly plant a variety of "early yield" maize and tobacco. Various species of domestic trees such as tamarin tree, baobab and kapok tree (also called cotton tree) are found in the village and across the household fields. They are not subject to any individual or familial right, but are considered communal property, and it is considered proper for the members of the various households of the village to collect their leaves, fruits or seeds for domestic consumption. However, when the collection of tree product is intended for commercial purposes (to be sold on the market), it must comply to a number of rules. The tree has to be located near the home of the harvester or at least on the lands "belonging" to his lineage (families from the same descent cultivate the same portion of the terroir). The harvesting can only be done at certain periods of the year, when the supply is abundant, so that it does not impinge on the basic needs of other households. The collection of these products from trees located in the bush is not subject to any type of restriction.

The village is surrounded by a second perimeter of fields called "village fields" (Wa) which are also permanent or semi-permanent. Middle-age agriculturists use them to grow consumption crops (maize, millet, peanuts) and sorghum (which is used by women to produce sorghum beer). Village fields are characterized by the use of several intensive cultivation techniques such as terracing on heavy slopes, construction of rock dikes (that run parallel to the contour lines) on gentle slopes, manuring, crop rotation and multi-cropping, and most importantly the use of *Faidherbia albida* in association with crops in almost every fields.

Faidherbia albida is probably the most important tree for the Bwaba and is an essential component of their agricultural system. Because of an inverted phenological cycle, the tree contributes to field fertilization (through leaf decomposition and nitrogen fixation) without competing with crops (no shade) and constitutes an essential source for the feeding of domestic animals and cattle during the dry season (Vandenbelt, 1992). Until recently (10 to 15 years), there was no regulation for the use of *Faidherbia albida* products. Trees were independent of the fields in which they stood and

the "owner" of the field (Bwaba have no property right on their fields but can inherit permanent usage right on some of the village fields through lineage) had no specific right to their production. Products of *Faidherbia albida* (leaves, fruits or bark) were accessible to any member of the village.

Today, because of an increase in population density and a rapid increase of the number of animals kept near the village (cattle ploughing was introduced in the area 20 years ago and is now widely used by peasants, causing a considerable increase of the number of cattle in and around the village), a number of restrictions have been established. Before using any product of a *Faidherbia albida* standing on someone else's field, a peasant must ask for the authorization of the "owner" of the field. This authorization is almost automatically granted for any member of the village and in many cases, since most of the peasants who do not have any *Faidherbia albida* on their fields collect products from trees located on the fields of relatives (mainly because of proximity factors - relatives live clustered together in the same quarter and share a portion of the village lands), the permission is considered to be granted. The harvester simply mentions to the "owner" of the field which products he has collected, after completion of the task.

During the dry season, when the vegetation disappears, a few branches are felled to the ground, to feed the animals. Cattle and sheep only eat leaves on the fallen branches, leaving the stems on the ground. The bare branches are carefully piled at the base of the tree from which they were felled and left to dry on the spot until the end of the dry season, when they will be picked up as fuelwood supply by either the wives or daughters of the field's "owner".

The two most valuable domestic trees for the Bwaba after *Faidherbia albida*, karité (*Butirospermum parkii*) and néré (*Parkia biglobosa*), are found naturally in the bush surrounding the village and scattered on the "bush fields". The bush fields (which make up the third agricultural perimeter) are temporary fields located further away from the village (up to 15 km away), and cultivated by young agriculturalists using the fallow technique. They are mainly used to produce cash crops such as cotton, maize and sorghum. Karité and néré do not share any of the agronomic

properties of *Faidherbia albida* but instead compete for light (by their shade) with crops surrounding them. However, their negative impact on crop productivity is compensated by their contribution to the diet and income of the household. Karité fruits are excellent to eat and the nuts that they contain contribute to the production of karité butter. Néré are essentially valued for their seeds and flowers; the seeds are used for the confection of *sumbala* while the flowers are incorporated into sauces. Both karité butter and *sumbala* are essential ingredients for cooking and are marketable.

Since bush fields are temporary, they imply opening of new fields every time the productivity of a field starts to decrease. This however does not mean that cultivation of these lands is not subject to any rules or that the natural vegetation is clearcut and land exploited until soil exhaustion. Even on temporary bush fields, farmers have to protect certain trees that are associated with the crops. Before opening new fields, young farmers have to ask the authorization of their elders. If the elders of the lineage decide to grant the requested authorization, more experienced cultivators are asked to go check the prospective field and decide which trees can be cut and which should be protected. Domestic trees are systematically protected except when their density is too high and they threaten the survival of the crop underneath. Elders might then decide to let the peasant reduce tree number and carefully point out the trees that can be felled or trimmed. There is no established sanction against someone not respecting the rule, but social recognition is so important among the Bwaba that peer pressure is enough to make the rule respected.

Néré trees are not common on every field. They are relatively scarce and their use is strictly regulated. Peasants are only allowed to collect products from trees produced in their own fields. If the field has been borrowed from another peasant, the actual cultivator is allowed to ask for a share of the production of the tree, but this authorization is not automatically granted. If the tree stands in a field that is not under cultivation, the tree becomes common property and its products can be harvested by any member of the village.

Karité trees are much more common and are not subject to strict regulations. They produce

large quantities of fruits which, when not promptly collected, fall on the ground and rot. Thus, any peasants walking by a karité can climb it, shake it and collect the fallen fruits, wherever the tree stands. Karité butter is not widely commercialized so local trees produce enough fruits to accommodate everybody.

The Bwaba do not allow the planting of trees. The only exception to this rule exists for mango trees which started to be planted during the last decade and a small patch of eucalyptus which were planted on one of the hills surrounding the village. Mango trees grow a harvestable product (the mango, which can be either eaten or sold on the market). Despite its contribution to the diet, the tree stands apart from other domestic trees.

Mango tree planting is a new phenomenon and is not highly thought of by the elders of the village. The tree can not be planted in fields since its dense canopy would kill most of the crops planted underneath, but is planted in small orchards (several trees planted in cluster, surrounded by a fence) by individuals, for commercial purposes. The tree and its production belong to the person who planted them and occupy a space (potential field) that becomes unavailable for anybody else or for any other purpose. In practice thus, planting mango trees equates taking a permanent right to a plot of land. The only peasants who own mango orchards in Dossi have a particular social or ethnic status. One of them was the "délégué" (official chief of the village, recognized by the state), and the others were Mossi migrants (one merchant and one farmer).

The planting of eucalyptus on one of the hills surrounding the village was undertaken by the state as part of a nationwide reforestation project at the end of the 1970's. Its aim was to produce a fast growing stock of trees which could be used as a source of fuelwood, or as material for construction activities (eucalyptus is resistant to many pests and termites). The project was designed with good intentions and is considered as a success by the administration representatives in the village. Eucalyptus trees grow well and can be seen from far away as a symbol of a successful rural project. However, since the Bwaba do not consider fuelwood supply to be a problem (mainly because of their small population density) and do not allow the felling of living trees for fuelwood purposes, the

logic and efficiency of the plantation can be seriously questioned. Eucalyptus do not share any of the other characteristics that the Bwaba consider essential for domestic trees. They do not contribute to the diet of the people and cannot be used to feed the herds (the leaves are toxic); they cannot be included in agroforestry practices because they considerably acidify the soil (allelopathy); and even when felled, they are considered unsuitable for cooking purposes by the women. Consequently, it is clear that the planting of eucalyptus did not meet any of the needs of the peasants and resulted in the withdrawal of part of the territory from the village land, to which peasants previously had access for agricultural activities. The area planted is now considered as part of a small enclave protected and owned by the state.

In conclusion, it is possible to say that the Bwaba have elaborated distinct sets of rules for the utilization of the various domestic trees and their products but that they all share one common characteristic: they are strictly protected. Bush trees, on the other hand, receive relatively little consideration compared to domestic trees, but are still partly protected. They should never be cut without valid reasons such as the opening of a new field for agricultural purpose, construction, making ladders, mortars or benches.

A DIFFERENT ATTITUDE TOWARD TREES: THE MOSSI

During the last half century, another ethnic group - the Mossi - migrated from the north and started to settle in the area. The Mossi, a segmentary society with a strong hierarchical social structure, were traditionally warriors and several scholars have linked this characteristic to a different attitude toward nature. According to such authors, Mossi tend to conquer the nature instead of taming it (as the Bwaba do) (Benoit, 1972; Hervouet, 1992). They do not use any intensive agricultural techniques or soil and water conservation methods but proceed through slash and burn practices. They clear-cut fields (leaving sometimes a few karité to have access to their fruits) and cultivate the plot until its productivity decreases. Then, they move on

to clear new plots of lands. Climatic changes and population pressure in the north of the country resulted in severe environmental degradation processes leading the Mossi to look for new lands southward.

Mossi are the most important ethnic group of Burkina Faso (numerically) and the capital of the country (Ouagadougou) is located in the Mossi-land. Consequently, they usually occupy most of the administrative positions throughout the country and constitute the biggest army contingent. They also are involved in most of the trading activities between the north and the south.

Mossi migrants have a very different perception from the Bwaba of what constitutes domestic and bush tree species. They protect fewer trees (mainly karité to harvest their fruits) than the Bwaba and do not hesitate to fell the others when they can generate an income. They usually clear-cut the surrounding of their compound and the new plots, and transform the most suitable species into charcoal that is sold to merchants along the main roads. The production of charcoal in addition to agricultural activities is one of their major sources of income.

The colonization of a new area by Mossi migrants usually occurs in steps. The first migrants to settle in the new area are usually very careful to respect local laws (or rules) in order to obtain the authorization to cultivate and establish themselves. However, research has shown that as they obtain this authorization, they are joined by an increasing number of relatives, and that as their number increases, they gradually turn back to their own values and practices (felling the forest surrounding them to produce charcoal) (Benoit, 1982).

In Dossi, at the time of our study, the number of migrants was still very small and they generally complied with the same rules as the Bwaba (about tree protection). However, in many villages of the area, such as Bahoun (5 km north of Dossi), in which the proportion of Mossi was higher, severe tensions have developed between Bwaba agriculturists and migrant farmers. In these villages, Mossi migrants were numerous enough to confront the Bwaba and started to fell wide areas of forest around the village. Tensions between the migrants and the Bwaba arise around several issues:

- (1) Bwaba agriculturists felt that agricultural productivity was adversely affected by

- environmental degradation resulting from the disappearance of the forest (because of charcoal production).
- (2) Fuelwood and hardwood for construction purposes became increasingly scarce and their collection required an increasing amount of time.
 - (3) Mossi migrants earned higher incomes than Bwaba agriculturists, because of the income generated by charcoal production (so that they could afford many wives and ride mopeds).
 - (4) Several conflicts arose between younger and older Bwaba peasants since many of the young felt that local rules enforced by the elders deprived them of a substantial income.
 - (5) Even when young Bwaba peasants decided to enter the charcoal production sector, they could hardly compete with the Mossi since the merchants buying charcoal bags on the side of the roads and transporting them toward urban markets were Mossi and favored their kin.
 - (6) Since administrators and militaries were Mossi, it was very hard (or impossible) for the Bwaba to ask the help of the state or of the administration to force the migrants to comply with local rules or to leave the area.

Recent information from Dossi (from our field workers) indicates that the number of Mossi families established in Dossi increased threefold during the last 24 months, and that tensions between the Bwaba and the Mossi have increased steadily during that period.

CONCLUSION

As illustrated in this paper, a careful examination of the landscape (natural and humanized) in southern Sahelian Africa shows that different rural populations have developed specific relations with the various elements of their environment. Some, as the Bwaba, are characterized by strong bonds with the lands on which they live and complex systems of land

management which secure the sustainability of natural resources. These land management systems often involve the protection of a variety of trees, soil and water conservation techniques, and an elaborate agricultural system. Such practices allowed peasants to occupy the same territory for extended periods of time. Others, as the Mossi, seem less attached to specific land sites. They use the resources provided by their environment with less consideration for their regenerative potential. As the resource supplies of an area become depleted, they move to new, richer areas.

Deforestation problems are widespread in Sahelian Africa. However, it is essential to acknowledge that because of the diversity of relations between rural populations and their environment their causes and solutions vary considerably. While it is important to design solutions to fulfill the needs of urban populations, we must be careful that such solutions do not impinge on the life conditions of rural populations. Solutions should be elaborated locally, and should include considerations of the specific needs of different rural populations. Single projects can hardly aim to fulfill the demands of rural populations as a whole because needs, practices and resources available to each group may vary considerably. Finally, it is essential to consider the potential of indigenous tree species, which are often more adapted to ecological conditions and more suited to the needs of local populations, for reforestation activities that could be aimed at the fulfillment of both rural and urban demands.

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