WORLD AGROFORESTRY IN PRACTICE

AGROFORESTRY SYSTEMS OF COCOA IN *CAMEROON*

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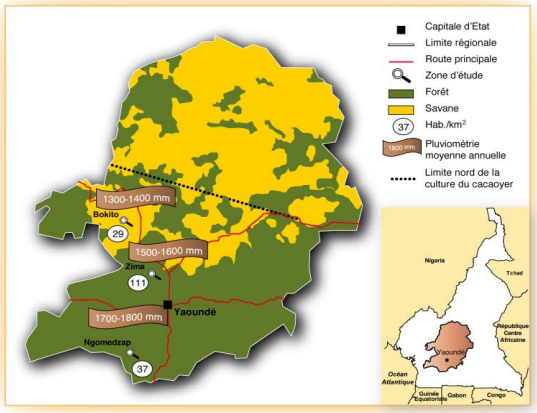
LOCATION Africa, Cameroon

ORGANISATION CIRAD, UMR System

TYPE OF PRACTICES Under shade cocoa

PRODUCTION Cocoa, fruits, firewood, timber

When producing cocoa in a multipurpose system is possible



1 GENERAL CONTEXT

The Central Cameroon region is an important cocoa production zone for the country. Most of its cocoa orchard is made up of agroforestry systems in which cocoa trees are associated with many perennial species with multiple uses: fruits, firewood, timber, pharmacopoeia, tools. These systems, which exhibit complex spatial structures and are often very old (> 60 years), are still managed by farmers. They significantly contribute to the functioning of local farms.

Front view of a cocoa agroforestry system

2 ENVIRONMENTAL CHARACTERISTICS

Central Cameroon is located between 2.1 ° and 5.8 ° North and 10.5 ° and 16.2 ° East at 600-800 m altitude. The humid tropical climate is equatorial with an average annual temperature of 25 ° C and an annual rainfall between 1600 and 1800 mm (under bimodal regime). Local soils are ferralitic and more or less desaturated depending on the area considered. Natural vegetation varies along a latitudinal gradient, ranging from forest galleries intertwined with herbaceous savannahs dominated by *Pennisetum purpureum* and *Imperata cylindrical* in the Northern areas, to dense evergreen forest in the Southern areas.

3 DESCRIPTION AND INTEREST

The cocoa stand (3-4 m average height) is the main component of these agroforestry systems. It is often dominated by a first strata of fruit trees (10-15 m) and a second strata of forest trees (20 m or more). Cocoa stand density can vary greatly and depends on the area considered as well as the timespan of use and management practices. On average, cocoa agroforestry systems exhibit 1200-1600 cocoa trees and about 80-200 associated trees, respectively per hectare.

Products diversification allows farmers to limit risks when, for example, cocoa market price falls. The high level of biodiversity of these systems reduces the reliance on chemical inputs, lowers production costs while permitting cocoa production on decades-long timescales.

4 TREE SPECIES

Even if these systems contain more forest species than fruit species, these last represent regularly half of the individuals that can be inventoried. Fruit trees are either endemic species – eg. *Dacryodes edulis, Elaeis guineensis, Cola nitida, Canarium schweinfurtii, Irvinguia gabonensis, Ricinodendron heudelotii, Voacanga africana, Garcinia cola,* or exotic species – eg. *Citrus sinensis, Citrus reticulata, Persea americana, Mangifera indica,* Forest trees comprise native species such as *Terminalia superba* (Fraké), *Milicia excelsa* (Iroko), *Ficus mucoso* (Fig tree), *Pycnanthus angolensis* (Ilomba), *Carpolobia alba* (Tombo)...

5 PRODUCTS AND USES

In addition to the cocoa production, which remains in all cases the main objective of farmers, associated species provide different products that are either used for self-consumption or sold (fruit, timber, medicinal barks, palm oil and wine, etc.). These species, preserved during the establishment of cocoa stand or introduced into the system during its life, also offer various ecosystem services (provision of shade adapted to the cocoa trees, maintenance of soil fertility, carbon storage, technical alternative to pesticide use, etc.). Cocoa agroforestry systems in Central Cameroon thus appear multifunctional.

6 LANDSCAPE MANAGEMENT

Cocoa agroforestry systems from Central Cameroon are singular thanks to their complexity and multifunctionality as well as to the fact that successive generations of farmers continuously manage the cocoa trees and associated trees community. Once grown, cocoa trees are regularly pruned in order to eliminate any orthotropic sucker that may impair their development. But when they become senescent, after 30-40 years, they are cut back on a case-by-case basis in order to renew their crown. After having kept 3 to 4 orthotropic suckers next to the stump, the senescent cocoa trunk is eliminated when one of these suckers begins to carry pods.

WORDS FROM THE FIELD

Essomba Cosmas

"My cocoa orchard dates back to 1935. It is a legacy of my grandfather, which my father passed on to me in 1980. I still manage it today! I have replaced most of the cocoa trees since and maintain them in «good shape». I girdle trees where there is too much shade. Where shading is missing, I add other trees. Shade helps me also to control weeds and keeps the soil fertile! It also limits damages from the mirids. At the same time, I «ventilate» my orchard to avoid black pod disease."

Farmer Essomba Cosmas and his cocoa pods harvest

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