Multipurpose shade trees in coffee and cocoa plantations in Côte d'Ivoire*

F. HERZOG
Department of Food Science, Swiss Federal Institute of Technology, ETH-Zentrum, CH-8092 Zurich, Switzerland (Present address: Centre for Environmental Research, PF 2, D-04301 Leipzig, Germany)

Key words: Theobroma cacao L., Coffea spp., multipurpose shade trees, minor forest products, agroforestry, Ivory Coast, West Africa

Abstract. Coffee and cocoa are the main cash crops of Côte d'Ivoire. They are mainly produced by small farmers in a rather extensive way. The shade trees used are mostly wild forest species yielding many different products. In the Baoulé region, an inventory of those trees and their, often multiple, uses was established. Of the 41 tree species, 22 are used as firewood and 16 as timber for local constructions. Nineteen furnish pharmaceutical products for traditional medicine and 15 have edible parts (fruits, leaves, flowers, palm wine). Those products are essential in daily life and play an important role in the local economy. The plantations can therefore be considered as agroforestry systems. Part of the world-wide research on coffee and cocoa should be reoriented to such systems, adapted to small farmer holdings, where few inputs are available and conditions of production are less favourable.

Résumé. Le café et le cacao sont les biens d'exportation les plus importants de Côte d'Ivoire. Ils sont surtout produits de manière extensive dans des plantations villageoises. La majorité des arbres d'ombrage utilisés sont des espèces forestières sauvages. En plus de l'ombre, ils fournissent une multitude de produits. Dans deux villages de la région Baoulé, un inventaire de ces arbres et de leurs multiples utilisations a été établi. De l'ensemble des 41 arbres recensés, 22 servent comme bois de chauffe et 16 comme bois d'oeuvre, 19 sont utilisés dans la médecine traditionnelle et 15 fournissent des produits alimentaires (fruits, feuilles, fleurs, vin de palme). Ces produits sont indispensables dans la vie quotidienne et jouent un rôle important dans l'économie villageoise. Il est alors proposé de considérer les plantations de cafétiers et de cacaoyers comme des systèmes agroforestiers et de réorienter une partie de la recherche effectuée partout dans le monde sur des systèmes de production adaptés aux petits cultivateurs qui produisent avec peu de moyens dans des conditions sub-optimalas.

1. Introduction

Coffee and cocoa are the main cash crops of Côte d'Ivoire. In 1984–1985, on about 1.2 million ha, and 1.3 million ha, respectively, coffee and cocoa for a total of $317 \times 10^9$ CFA (about 750 million US$) were produced [MEF, 1988]. In the meantime, the gain from these crops has considerably dimin-

ished due to the collapse of prices on the international stock market. This has affected not only governmental finances but also the budgets of tens of thousands of farmers, for whom coffee and cocoa are the main source of income.

In Côte d’Ivoire, coffee and cocoa are produced on small- and medium-size plantations, 95% of them ranging between 3 and 20 ha, with an average of 7 to 8 ha [Jarrige and Ruf, 1990]. Both crops are perfectly integrated into traditional agricultural systems (bush fallow system with two to three years of cultivation, followed by a fallow period of ideally 12–15 years). “The colonialist (…) has created monospecific fruit gardens. (He has) cut the forest, cleared the land, liberating the soil for the coffee plant, sometimes accompanied by shade trees. But the African, although forced labour had familiarised him with these ‘superior’ techniques, has resolutely decided to integrate coffee and cocoa into his agricultural system. The land is cleared for the main food crop, plantain, yams, rice, or less often cassava. Coffee is planted only after the food crop (…). Ivorian coffee and cocoa plantations have nothing spectacular, dispersed as they are (…), hidden by the cover of the forest, or resembling to underwood under the high crowns of the kapok or iroko trees, difficult to make out even from a low flying helicopter” (translated from Sawadogo [1977]).

Since Sawadogo’s description, the situation has slowly been changing. ‘Self shading’ production systems for cocoa have been developed allowing for a more intensive production (in the following, the terms ‘intensive’ and ‘extensive’ are used with regard to the yield of coffee/cocoa per ha). Shade trees are being removed from the plantations to increase yields and intensify production. But the collapse of prices and the increasing concern about the ecological impacts of intensive agriculture have lead to the question, whether this development really lies in the interest for the Ivorian farmer and what its ecological consequences will be.

The present investigation shows that, when comparing extensive to intensive ways of production, other factors than just the yield of coffee and cocoa must be taken into consideration. It is based on several years of research on wild food plants in the Baoulé-region in central Côte d’Ivoire [Gautier-Bégouin, 1992; Herzog, 1992; Herzog and Bachmann, 1992].

2. Materials and methods

In the south of the V-Baoulé, 12 coffee plantations in the village of Zougoussi and 18 cocoa plantations in the village of Bringakro were visited together with their owners, whom questions were asked about the plantations (size, yield, age) and about the shade trees (local names, uses, reasons why they were not eliminated). A sample of each tree species has been taken and identified at the ‘Centre Suisse de Recherches Scientifiques’ in Adiopodoumé.