PCP Agroforesterie Cameroun
Pôle de compétences en partenariat

cirad

AFS4Food
Agroforestry for food security

Activities conducted in Cameroon (cocoa based AFS systems)

CONTEXT

Dramatic increase of cocoa production and of land cultivated with cocoa trees during the last five years, as a consequence of increase of cocoa price

Traditional cocoa cultivation:

Small farms managed at family level (< 6ha) based on:

- **food crop plots, managed by women**
- **plots planted with cocoa intercropped with other perennial crops (fruit and timber trees), usually managed by men**

New trend:

Larger farms, using paid workers
Cocoa more predominant in these farms

Objectives

Assess the evolution of the respective importances of cocoa and food crops (annual crops and fruit crops) in farms located in two areas of the central region of Cameroon

Assess the present and future impacts of this evolution on the domestic market of product from food crops

Propose technical and political solutions in order to maintain familial agriculture ensuring food security

Objectives

Assess the efficiency of several ways for improving cocoa based agroforestry systems:

- ➡ **yield increase : new plot design with cocoa trees, food crops, plantain and other perennial species (fruit, coconut and oil palm trees)**
- ➡ **improvement of product quality and valorization (cocoa and safu)**

⇩

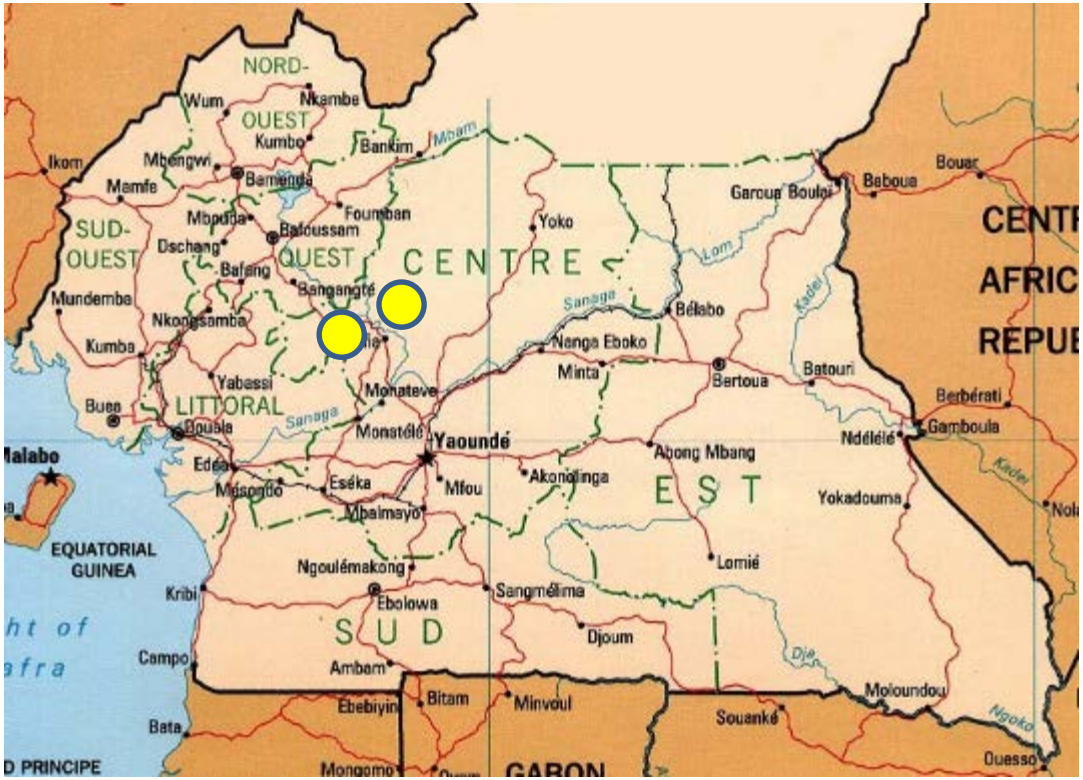
Propose technical solutions to farmers in order to increase their revenues while maintaining advantages brought by traditional cocoa systems (income diversification, sustainability and environmental services)

WP1. Project management and coordination

WP1.1. Target group identification (CIRAD, IRAD)

Two geographical sites identified:

Bokito area: traditional plots
Talba area: new trend



WP2: farm characterization and identification of the drivers of household and landscape evolution

WP2-1. Farm spatial and temporal analysis (CIRAD-IRAD)

Remote sensing: 1 satellite image from Bokito area (100 km2) analyzed (control point identification done in November 2012)

WP2: farm characterization and identification of the drivers of household and landscape evolution

WP2.2:

Evolution of strategies and agricultural activities adopted by small farmers: respective contribution of annual and perennial crops to food security and well-being of households (CIRAD-IRAD)

20 farmers interviewed in Bokito and 57 in Talba about farm and farmer evolution and about its impact on food crops

Setting –up of a questionnaire on food security and diversity and release to farmers

WP2: farm characterization and identification of the drivers of household and landscape evolution

FUTURE ACTIVITIES

20 farmers to be interviewed about food security (10 in Bokito and 10 in Talba) adapting US Aid survey protocols to local conditions (February 2014)

WP3: Assessment of AFS (traditional and experimental) for their agronomical performances , environmental services and contribution to food security

(CIRAD – IRAD – Université Yaoundé 1)

quantified inventory of species present in the AFS plots as well as their uses by farmers

66 plots studied in Bakoa and 60 plots studied in Talba

WP3: Assessment of AFS (traditional and experimental) for their agronomical performances , environmental services and contribution to food security

(CIRAD – IRAD – Université Yaoundé 1)

Assessment of plot structure

66 plots studied in Bokito and 60 plots studied in Talba

Measurement (DBH, height, vertical structure) made on 10,000 cocoa trees and 3,700 companion trees)

WP3: Assessment of AFS (traditional and experimental) for their agronomical performances , environmental services and contribution to food security
(CIRAD – IRAD – Université Yaoundé 1)

quantification of the different products from the plot (cocoa, plantain, fruits and annual crops)

20 farms in Bokito and 20 farms in Talba under current study








WP3: Assessment of AFS (traditional and experimental) for their agronomical performances , environmental services and contribution to food security

(CIRAD – IRAD – Université Yaoundé 1)

Description of micro-climatic (humidity and light) and soil characteristics of the plots

Current data collection on 8 traditional multispecies AFS plots in Bokito

Soil fertility assessment (organic and mineral composition)

Physical and chemical analyses currently performed on soil samples collected in 24 AFS plots corresponding to 3 types:

- **traditional multispecies AFS (5 plots),**
- **experimental plots with cocoa/fruit trees intercropping (9 plots)**
- **experimental plots with cocoa/oil palm trees intercropping (10 plots)**

WP3: Assessment of AFS (traditional and experimental) for their agronomical performances , environmental services and contribution to food security (CIRAD – IRAD – Université Yaoundé 1)

assessment of yield and damages caused by pest and diseases on the main perennial crops (cocoa and fruit trees)

Data currently collected on 320 cocoa trees located in 8 traditional multi-species AFS in Bokito

assessment of pests and of their natural ennemies

Identification of insects and assessment of damages caused by mirids on 12 plots in Bokito (4 traditional, 4 intercropped with fruit trees and 4 intercropped with coconut or oil palm)

WP3: Assessment of AFS (traditional and experimental) for their agronomical performances , environmental services and contribution to food security
(CIRAD – IRAD – Université Yaoundé 1)

FUTURE ACTIVITIES

Assessment of yearly cocoa and food crop production on smallholder farms in Bokito and Talba (2 Msc students scheduled) (June 2014)

Assessment of soil quality in AFS plots in order to link it with yield, diversity and plot structure (1 Msc student involved) (September 2013)

WP 4. Improving the quality of agricultural products issued from AFS

WP 4.1 Assessment of the influence of several factors on cocoa organoleptic characteristics

Genotype (traditional and improved varieties)

2 experiments conducted in November 2012 and September 2013

Soil characteristics

1 experiment conducted in September 2013

WP 4.2. Improvement of safu (Dacryodes edulis) shelf life and added value (IRAD)

In usual conditions, fresh safu's shelf life does not exceed 2 weeks

Farmers have experimented simple techniques for drying and conditioning

These techniques need to be optimized and perfected

Comparison between different slice sizes and different packages for their impact on shelflife

Safu is a fruit with a high content in unsaturated fatty acids

⇩

Evaluate the possibility of using safu powder as a substitute to animal fats for biscuit confection

Testing of organoleptic value of biscuits containing flour made from safou powder

Evaluate nutritive quality of dried safu

Analyses currently performed

WP 4. Improving the quality of agricultural products issued from AFS

FUTURE ACTIVITIES

Assessment of the impact of shade on cocoa quality

2 experimented planned in November and December 2013: one sampling in traditional multispecies AFS and one sampling in experimental cocoa plots

TRAINING

WP2: farm characterization and identification of the drivers of household and landscape evolution

Results possibly valorized by a PhD thesis

WP3: Assessment of AFS (traditional and experimental) for their agronomical performances , environmental services and contribution to food security

4 students (Master University of Dschang)

2 students (Master University of Yaoundé 1)

1 student (Master ISA Lille France)

WP 4. Improving the quality of agricultural products issued from AFS

1 student (Master Yaoundé 1)