



Collaborative Program Perspective on Cocoa Agroforestry in Africa

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with inputs from

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Introduction and Background



This is a collaboration between

- Sustainable Tree Crops Programme (STCP) - IITA
- World Cocoa Foundation (WCF)
- Forest and Landscape Denmark (FLD)
- MARS Inc.
- West and Central African Cocoa Farmers

The program is operational in Ghana, Côte d'Ivoire, Cameroon and Nigeria and in collaboration with the following local and international partners:

- Conservation International (CI Ghana)
- Cocoa Research Institute of Ghana (CRIG)
- Forestry Research Institute of Ghana (FORIG)
- Ministry of Food and Agriculture (MOFA Ghana)
- World Agroforestry Centre (ICRAF)
- Cocoa Research Institute of Nigeria (CRIN)
- Institut de Recherche Agronomique pour le Developpement (IRAD)
- Centre National de Recherche Agronomique (CNRA)
- ANADER (Extension Organisation in Côte d'Ivoire)

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STCP'S Strategic framework on agricultural growth in Africa

- Enhanced productivity of smallholder farms through intensification;
- Enhanced marketing efficiency in the cocoa sector;
- **Income alternative in cocoa farming communities and agro-ecologies for equitable growth – COCOA AGROFORESTRY;**
- Improved policy environment to enable rural transformation in cocoa communities and agro-ecologies;
- Scaling out.



Main objective

The overall objective is to contribute to ecological sustainable cocoa production and improved livelihoods of small-scale cocoa farmers in West Africa by presenting comprehensive and accessible information and knowledge on suitable tree species and their planting materials in cocoa growing systems.

The immediate objectives are to:

- Compile, review, analyse and make accessible knowledge from existing research on preferred trees in cocoa in West Africa;
- Contribute to the development of training modules and extension materials for farmer field schools/vocational education programmes on suitable trees, including propagation, nursery and planting techniques;
- Contribute to increased accessibility of planting material of preferred tree species in cocoa;
- Contribute to policy dialogue to address on-farm tree tenure system.



Four R&D action areas in cocoa agroforestry

1. Studying the value of biodiversity in cocoa agroforestry in West and Central Africa;
2. Participatory development of improved cocoa agroforestry models in Cameroon and Nigeria;
3. Developing a participatory learning approach for tree diversification of cocoa agroforests in Ghana and Côte d'Ivoire;
4. Regional research group on cocoa agroforestry in Africa - INAFORESTA.



1. Research on the value of cocoa agroforestry

Location: Lékié, Mefou and Mvila all in southern Cameroon
(Gockowski et al., in press)

- Potential of cocoa agro-forest systems as a “middle ground” between agriculture and forest conservation;
- Impact of markets and agricultural intensification on ecosystems and livelihoods;
- The extent to which cocoa agroforests offer viable pathways out of chronic poverty;
- Ways to improve the profitability of cocoa agroforests.



Initial research findings

Non-timber product inventory

- 254 plant species from 78 different families with some consumptive value;
- A significant proportion of fruits produced is marketed (16%-26%);
- Caloric supply from *Dacryodes* produced on 1 ha of cocoa agroforest exceeds minimum RDA for one adult.

Medicinal Plants

- 57% of households (n=90) had utilized a medicinal plant from their cocoa agroforest in the last 12 months;
- The value of this consumptive use may be imputed from the average treatment cost of \$27 per bout of malaria using pharmaceuticals and clinic visits;



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Timber Inventory

- Commercially exploited timber species were dominant on 62% of sampled farms;
- Average volume of 35 cu m per ha;
- 1 in 5 farms using timber for home construction.



Conclusions

- The nutritional contribution to the household is quantitatively and qualitatively significant;
- Poverty reduction potential increases with intensification and commercialization and decreases with increase in biodiversity;
- The shaded cocoa production system of southern Cameroon maintains a substantial portion of forest services;
- Some decline in biodiversity occurred over the gradient of agricultural intensification.



2. Cocoa agroforestry modeling

- Develop a model of cocoa agroforestry that can provide sustainable socio-economic and ecological services by the year 2020 at the household, national, regional and global level;
- Motivation of farmers- assess old cocoa farms and build improved cocoa agroforest where tree/plant resources are managed in a modern manner.

Cocoa agroforestry modeling process

1. Participatory information gathering;
2. Develop methodological tools;
3. Discussion with key informants;
4. Build consensus amongst participants on model type to be implemented;
5. Field implementation.





Cocoa agroforestry modeling progress

- Agreement with farmers to start with 50% cocoa density;
- 11 farmers establishing demonstration plots;
- Approaches- mix cocoa agroforest system, alley cocoa agroforest system;
- Geographic area- forest-savannah transitional area, savannah area;
- Non-cocoa tree species will depend on farmers' preferences.



3. Tree diversification in cocoa

Cocoa agroforests reflect the concept of *tree diversification*; farmers' efforts to increase species diversity on farm and across the managed landscape in order to enhance economic gains, improve agronomic productivity and contribute to biodiversity conservation.



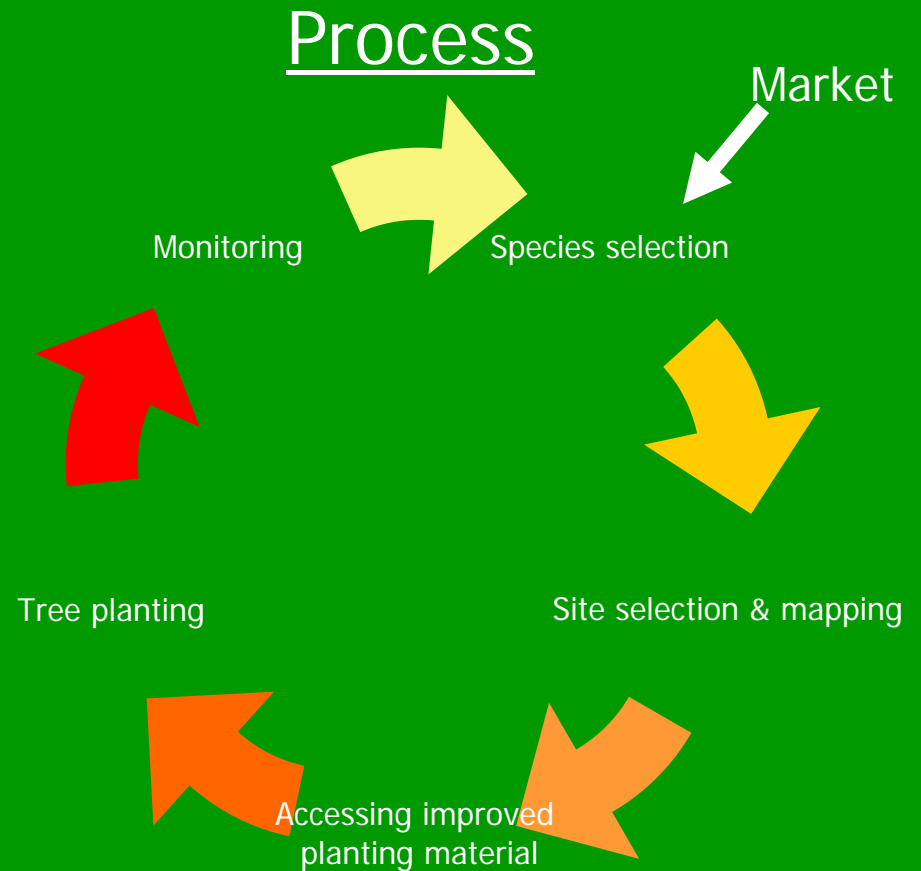


- **Design:** *Tree diversification* on farm is to promote a wider distribution of species that are already present somewhere in the landscape or from outside the landscape. These species may either be planted in mixtures or planted in sets of mono-specific plots in the cocoa system.
- **Rational:** Mixed species, multi-purposed cocoa growing system offers farmers a production system that reduces risk through product and income diversification. It also increases the economic life span of cocoa farms through the provision of environmental services which contributes to biodiversity conservation.



Tree diversification procedure

- A decision-making tool for neighbor tree selection in cocoa establishments;
- Designing of an appropriate planting arrangement for neighbor trees and cocoa to promote healthy interdependency and;
- Ensuring accessibility to improved planting materials of these forest trees.





Outcomes for cocoa agroforestry

- Farmers capable of making decisions on managing diversified cocoa systems;
- Increased system income with reduced reliance on cocoa component;
- Farmers have access to planting material;
- Local service providers capable to use extension approaches and tools;
- Network of scientists collaborating.



Challenges

- Intensification of cocoa farming practices;
- Institutional lags;
- Policy environment;
- Markets;
- Lack of improved planting materials;
- Technical and local knowledge;
- Scaling up.



Cycles of key steps in Scaling up TREE DIVERSIFICATION



1. Identify persons with distinct knowledge and experiences of Tree Diversification

2. Enter into dialogue, listening and learning

3. Build database of images and testimonies

4. Edit and Produce as animated cases in DVD and other easily usable digital formats

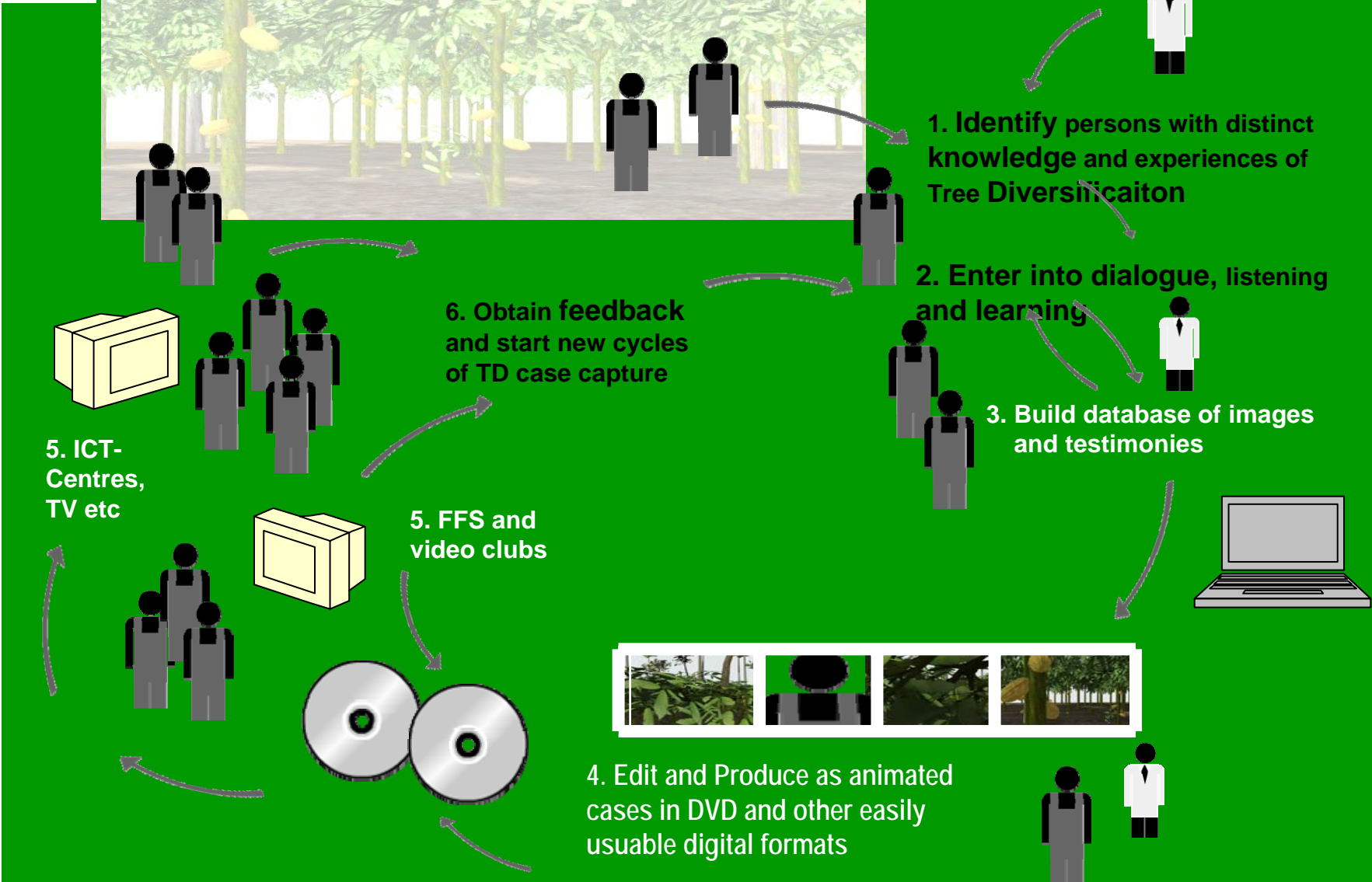
6. Obtain feedback and start new cycles of TD case capture

5. ICT-Centres, TV etc

5. FFS and video clubs



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Draft cocoa-forest tree animation

Sam Petersen, Nick Nathaniel, Richard Asare
Copenhagen 2006