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Cocoa, fast-growing trees and/or fruit tree system in the Bakumu Kilinga sector, Ubundu territory, DRC. Photo: Charles Mpoyi

## Farmers’ perceptions of agroforestry, Democratic Republic of the Congo

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***“Building an agroforestry model requires a continuous, participatory and iterative process that involves all stakeholders.”***

### Introduction

The development of agriculture, particularly monocultures and extensive, land-consuming practices, to meet the growing needs of humanity poses serious problems for forests and biodiversity (Wu et al. 2010). The resulting deforestation and forest degradation are fuelling climate change. Forests are important carbon sinks; their destruction leads to significant greenhouse gas emissions. There is an urgent need to protect forests, and yet, the increase in the world’s population and the spread of consumerism requires either improved production systems and techniques or the expansion of production areas. Reconciling the needs of forest populations with the preservation of forests and biodiversity in the context of resilience to the effects of climate change is becoming a priority for development players and public authorities.





**Cocoa-plantain system in the community field of the Barumbi-Tshopo local community forest concession, Bekeni Kondolole sector, Bafwasende territory, DRC. Photo: Augustin Toiliye**

Agroforestry, the association of trees with crops and/or livestock, is increasingly seen as a way of contributing to climate change resilience, and above all as an alternative to industrial agriculture and slash-and-burn practices. Agroforestry has a lot to offer: the protection of soil, water and biodiversity; maintaining agricultural production; mitigation of climate change or adaptation to it; multiple tree products, such as wood, fruit, fodder, medicines, etc. (Torquebiau 2022; Katayi et al. 2023).

Specialists can design agroforestry models that in theory increase farm resilience and crop productivity. However, these models, even those developed in research stations and those that work elsewhere in the world, face challenges. Models must be feasible in the local context in which they are implemented and must meet a range of needs; this often forces specialists to rethink and reinvent their approach in the face of in-the-field realities.

Agroforestry, like all innovation, must be a dynamic process involving both farmers and technical experts. It should follow a process of mutual learning; this requires constant questioning, reflection and updating of the approaches used, of the relationships between the stakeholders and understanding of the stakeholders

themselves, in order to be feasible on the ground. This concerns the entire process: the choice of crops to grow, the selection of tree species to be planted in the fields, the choice of management methods for agroforestry systems (individual or community), land rights, and so on.

This article reviews the experience of Tropenbos DRC to support small forest and agricultural producers in agroforestry as part of Tropenbos International's Working Landscapes programme (Maindo and Kapa 2015). The study is based in the Bafwasende area of Tshopo Province. It illustrates how agricultural production systems designed by experts and implemented or popularized by development projects are often at odds with the perceptions and practices of local people in tropical forest areas, who are reluctant to engage in reforestation activities. For forest populations, forests were, are and always will be there; they are eternal. These farmers often equate agroforestry with reforestation. Thus, the participation of target populations in the design of agroforestry models does not necessarily guarantee their success. Local needs are not identical to those of the experts. This is certainly what Tropenbos DRC has been working to understand.



## Integrating agroforestry into community forestry

Bafwasende covers an area of almost 47,087 km<sup>2</sup>, with a sparse population (around 12 inhabitants per km<sup>2</sup>) living in very isolated villages where extreme poverty is widespread. The people traditionally practise slash-and-burn agriculture. There is 98% forest cover, but this has come under serious threat in recent years, particularly from uncontrolled logging (including opening up areas for agriculture) and the in-migration of people from North Kivu and Ituri provinces.

For Tropenbos DRC, promoting agroforestry as part of community forestry would reduce pressure on the forests while providing food, generating substantial income and increasing land security for local communities. Following a baseline study in 2019, a model was designed based on two pillars: a community field system and an agroforestry model combining cocoa and plantain (cooking bananas) with trees (forest and fruit species, etc.).

In 2019 three communities already involved in community forestry were selected: Bampaka of Bafwamogo, Bampaka of Bapondi and Barumbi-Tshopo. They received their Local Community Forest Concession (LCFC) titles one year later, in February 2020, covering a total area of 90,000 ha. To this was added 300,000 ha of 10 new community forestry initiatives. Each community created

a community field at least 10 ha large in the wooded fallow land adjacent to the villages. The field would have cocoa and plantain. It was important to create small clearings in the fallow land in order to maintain some shade for the cocoa plants. Each community field is laid out in alternating strips of cocoa and plantain plants, 10 m wide, in order to maintain a good level of sunlight for the plantain. This gives a density of 555 cocoa trees per ha (with a planting density of 3 x 3 m) instead of the 1,111 grown in a cocoa monoculture.

Plantain is a traditional crop in Bafwasende, where it forms part of people's staple diet. Kisangani, around 100 kilometres from Bafwasende and with a population of 1.5 million, is a major outlet for plantains. Plantains are also a near-perennial crop: a plantation can last up to 25 years, according to Benoît Dhed'a Djailo, a Congolese plantain specialist at the University of Kisangani. The cocoa tree is little known in this region, but has significant economic potential: 2,000 kg of merchantable cocoa per ha per year, with 1 kg of merchantable cocoa worth USD 1.5. Yira migrants, who are familiar with cocoa growing and its commodity chain, are an asset for development of the sector in Bafwasende, where they are setting up cocoa farms. Growing perennial crops, as well as LCFCs and tree planting, make it possible to secure land for local communities and obtain an emphyteutis certificate (affirming property rights for a defined period), which is more secure than customary rights. Depending on the



Rehabilitation of an old palm grove with cocoa in the Babongombe area, Bakumu Obiatuku sector, Ubundu territory, DRC.  
Photo: Meschac Koy





Rehabilitation of an old palm grove with cocoa in the Basukwambao area, Bakumu Mandombe sector, Ubundu territory, DRC.

Photo: Meschac Koy

number of trees in the field, people also plant useful forest species (host trees for caterpillars, for example) and fruit trees, in addition to leaving naturally occurring trees in place to shade the cocoa trees.

### The failure of a communitarian ideology

The community agroforestry fields have not produced the expected results, despite the Working Landscapes programme's investment and Tropenbos DRC's technical support. From 2019 to 2021, only 4 ha of cocoa trees of the 30 ha expected were planted by the three communities: 1.5 ha by the Barumbi-Tshopo; 1.5 ha by the Bampaka of Bafwamogo; and 1 ha by the Bampaka of Bapondi. Members of the communities had no shortage of reasons for not taking part in the collective work. These reasons included the struggle for daily survival and the amount of work already required in the fields. An undisclosed reason, which was expressed later (Yee Wong et al. 2019) was concern about the sharing of the benefits of the community field. Among the Bampaka of Bafwamogo, for example, the community field was divided up into family plots, and each family looked after its own plot. This raises a real question of governance.

To work in the community fields, the members of the local communities asked for support in the form of food rations and farming implements. Surprisingly, the farmers claimed that they did not have the farm implements they

needed to work in the community fields, even though they did not ask for them when they went to work in their own fields. Therein lies the rationale: it is up to the community to pay for work that is in the community's interest, and not up to individuals. What's more, the programme's technical assistants had to supervise the community work so that it could be carried out. Some might be tempted to see in this a lack of mutual trust and of true community spirit, where no one feels directly responsible for the community field, since the income from it belongs to everyone, even those who have not contributed. Contrary to popular belief, local communities are no more communitarian than any individual. Individualism and social fragmentation are indeed at work in Bafwasende, but they coexist simultaneously with a certain solidarity with others (Marie et al. 2008). The various circumstances (happy or painful) of life bear witness to this solidarity: birth, marriage, celebrations, funerals, schooling, illness, etc., are all opportunities to show solidarity with others and to exchange with them. Individuals are bound together by relationships of dependence. This is what makes them a community. The only activities that are community-based, however, are those linked to setting up and maintaining the cocoa and tree nurseries.

In a brainstorming session with the Tropenbos DRC team to evaluate and draw lessons from the programme, local community members clearly acknowledged this manifest lack of interest in community fields and



expressed their preference for individual or family fields (Vautier 2016). This implied that a fundamental change of perspective was needed. In a new approach in 2021, each local community had to identify people interested in agroforestry to get support from the programme. This approach paid off. In six months, nearly 50 small producers signed up and planted 45 ha of cocoa trees; the community approach had stalled at 4 ha in three years. Four cocoa tree nurseries have been set up in the three LCFCs: two in Barumbi Tshopo, one in Bafwamogo and one in Bapondi. The three community fields, whose total area has now increased from 4 to 5.5 ha, have been converted to training fields. The average size of the farmers' fields is around 2 ha. The first cocoa fields are already producing fruit, and the beans have been sold since 2021.

Under the Programme Intégré REDD+ Oriental (PIREDD+O), taking place in Tshopo, Ituri and Bas-Uélé provinces, and which is based on an individual approach, around 600 additional ha of cocoa trees were planted in one year in the individual fields of the three LCFCs and the 10 community forest initiatives of Bafwasende. This cocoa is mainly planted in the shade of tree fallows and/or planted trees.

## Economic factors

The agroforestry model — which combines cocoa and plantain with trees in degraded areas or in forest fallows — was designed to be economically and ecologically viable. For small producers, however, it does not appear to be economically viable. As a result, they refuse to practise it, either in community fields or individual plantations. They prefer not to combine plantain plants and cocoa trees, but do agree to keep or plant useful trees (forest and fruit species). For them, the aim is to maximize the number of cocoa trees in the fields and not plant plantain.

Commercial cocoa is more economically profitable than plantain: with 1 ha of well-tended cocoa trees, the 2,000 kg of beans produced each year can generate an income of USD 3,000. The first cocoa pods are harvested after 18 months. Plantains do not bring in as much, not to mention the difficulties of storing them for a long time when they are ripe. The risk of rot is too high and there are no plantain processing plants in the region. As a result, people plant the plantain trees in the traditional food crop fields, and not in the agroforestry fields.

In tropical forest areas, people believe that forests are eternal and do not imagine that they could one day disappear. This is why they do not reforest by planting trees, since they think natural regeneration will take



Nursery for cocoa, fruit trees and fast-growing trees in the Penekatanga area, Bakumu Kilinga sector, Ubundu territory, DRC.  
Photo: Charles Mpoyi

place despite the threats posed by excessive logging. However, they do leave or protect certain trees in their fields because of their cultural, medicinal or economic importance (pharmacopoeia, fruit, caterpillar-hosting, sacred trees, etc.).

To meet the economic needs of the farmers within the framework of agroforestry, the programme has worked closely with the communities to identify and select useful trees, to collect their fruit and to sow them in community nurseries. These include fruit trees, fast-growing forest species and species that host edible caterpillars. Examples are mandarin (*Citrus reticulata*), avocado (*Persea americana*), red apple (*Malus domestica*), bush butter (*Dacryodes edulis*), orange (*Citrus sinensis*), lambertian (*Triumfetta lepidota*), *Terminalia superba*, *Leucaena leucocephala*, *Albizia* sp., *Milletia laurentii* and *Treculia africana*. The total surface area of transplanted trees in cocoa fields is equivalent to 101 ha (with a theoretical spacing of 9 x 9 m).

Some farmers also include food crops (rice, maize, etc.) in their agroforestry field to provide food and income while waiting for cocoa plants and trees to produce. Most of the cocoa plantations were established in mid-2021. The first production was expected in 2024 (after 36 months). However, the hybrid variety of the *Institut National des Études et Recherches Agronomiques* in Yangambi is bearing fruit early, 18 or 20 months after planting.

## Conclusion

The success of an agroforestry model depends on its acceptance by farmers. Their needs and interests do not always correspond to those of the experts and NGOs

that support these models. Building a model therefore requires a continuous, participatory and iterative process that involves all stakeholders. Any model, even the best one, can fail if its designers are not flexible enough to adapt and reinvent it to serve its users/beneficiaries. “Who increases his knowledge increases his ignorance,” said Friedrich Schlegel.

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