

## Factsheet final findings Applied Research Fund Call 2



### Improving smallholders' food and income security by introducing non-timber forest products in reforestation schemes and tree-crop farms: A collaborative learning process in Ghana ('the Treefarms project')

#### Summary

The Modified Taungya System (MTS) – a landscape restoration and climate-change mitigation strategy involving the Ghana Forestry Commission and smallholders – combines trees with food crops. The project examined whether integrating shade-tolerant non-timber forest products (NTFPs) could enhance farmers' benefits after canopy closure, when food crops can no longer be grown. Staff of partner organisations were trained as MSc researchers to study the potential and caveats of introducing honey (beekeeping), grains of paradise and black pepper in tree-planting schemes, which led to institutional strengthening and sustainable results. Later, a pilot was added to experiment with shade-tolerant food crops (ginger, cocoyam and wild yam) that are part of farmers' diets and have ready markets. Introducing shade-tolerant NTFPs and food crops in the MTS is now a key component of Ghana's Forest Plantation Strategy 2016-2040 and beekeeping is being rolled out. Black pepper and grains of paradise production groups were established to overcome marketing challenges as well as networks with interested companies. Post-project field trials showed that farmers engaging in bulk processing of NTFPs realised triple the value of unprocessed NTFPs. The pilot with shade-tolerant food crops showed promising results deserving follow-up. The Forestry Commission institutionalized the learning platform as a different way of interacting with farmers, giving greater value to their knowledge and experiences.

#### Research findings

- Grains of paradise thrive better in reforestation schemes than black pepper: they are more shade tolerant; allow higher tree densities; and are preferred by off-reserve farmers.
- Market challenges that need to be overcome include: limited consumer trust in locally produced honey (fear for contamination); low quantities and prices for grains of paradise and black pepper; expensive processing equipment; limited processing capacity; and inadequate knowledge of quality standards. Bulk group marketing and value addition can help.
- Farmers growing NTFPs have low to median entrepreneurial scores, but differ in this respect. Improving entrepreneurial skills therefore requires a tailor-made approach, but marketing information and value-addition knowledge stand out as important gaps.
- Farmers growing NTFPs monitor their MTS plots better, resulting in reduced wildfires.
- Other identified NTFPs with potential for integration into tree farms were: *Griffonia simplicifolia* (Atooto) used for an extract that stimulates serotonin production in brains; *Voacanga africana* (Bedaa) with several medicinal applications; and Atiegyaa and Marantaceae leaves (Ahonomo) for food wrapping.
- Grains of paradise have higher survival rates in cedrella plantations (70%) than under teak (34%), but bee hives thrive better under teak (*Tectona grandis*) and ofram (*Terminalia superba*), but not under cedrella (*Cedrella odorata*).

## Outcomes achieved

**Story 1:** Mr. Alex Kwofie, an MTS and cocoa farmer and elder in his community, was growing food crops such as maize, cassava, plantain and garden eggs for subsistence and sale. It was not very profitable. The Treefarms project introduced him to beekeeping. From the two beehives he received, he has harvested honey twice, which he sold with profit. With the profit he intends to expand his honey production. He has constructed another beehive and is willing to train other farmers in beekeeping and honey production.



**Story 2:** Madam Esther Musa abandoned her MTS plot after canopy closure because her food crops were no longer doing well. Through the Treefarms project, she decided to participate in black pepper planting. After preparing the land for cultivation, she noted that cocoyam started growing abundantly and she was able to sell the crops. Madam Musa said the project made her go back to the MTS plot and helped her gain an income to take care of her son's high school education.

## Project messages to

### A) Actors from private sector:

- New NTFP supplies are possible through partnerships with Forestry Commission, the NGO Agribusiness in Sustainable Natural African Plant Products (ASNAPP), and the Ministry of Food & Agriculture, but farmers need market information and training.
- With knowledge of African indigenous plants, experience with enterprise development, and international networks, ASNAPP is a key actor in linking communities to market opportunities.

### B) Civil society and practitioners organizations:

- Beekeeping can be rolled out if occurrence of wax moths is monitored.
- Introducing grains of paradise requires partnerships with the private sector or an intermediary organization (e.g. ASNAPP) to link farmers to markets.
- More research is needed before black pepper can be successfully integrated in tree plantations; its shade tolerance could not be confirmed.

### C) Policy makers:

- Recognizing different ways of knowledge exchange between farmers and other stakeholders, with more value attached to farmers' knowledge and experience, is key to the successful introduction of NTFPs in tree farms and reforestation schemes.
- Frontline staff need simplified handbooks, guidelines and manuals to support the rollout as well as training in nursery establishment.

## Knowledge products

Several knowledge products are available on <https://treefarms.wordpress.com/>. Examples are:

- *For the general public and professional use:* a [project infosheet](#), [project poster](#), [dissemination folder](#), [PowerPoint presentation](#) with project results, and [infosheet on entrepreneurial skills](#).
- *For consortium and associated partners and donors:* several reports, such as the [progress, community of practice, learning platform, and training reports](#) and [final report](#).
- *For the academic community:* [7 MSc theses](#), a paper in the Environmental Management journal on the [role of the MTS in integrated landscape approaches](#) (2017), and a paper (under review by Forest Policy and Economics) on entrepreneurial skills among NTFP farmers.

## Knowledge networks

Communities of practice and learning platforms brought farmers together with practitioners, private sector actors, researchers and practitioners for joint learning and knowledge exchange. Networks were established between companies and communities for NTFP marketing and with other ARF projects for information exchange following workshops in Cotonou (Benin), Accra (Ghana) and The Hague (the Netherlands).

## Knowledge co-creation

Steering committee meetings pooled knowledge of consortium partners from policy, practice and science. Knowledge co-creation also occurred during working sessions with policymakers and practitioners, farm-to-farm visits, study tours, training of trainers in postharvest processing and entrepreneurial skills, on-the-job training in nursery establishment and photo monitoring, write shops for consortium partners and their staff, community of practice meetings, a learning platform, and a dissemination meeting. This helped gaining a complete picture of possibilities and constraints to introducing NTFPs in reforestation schemes. The 'knowledge co-creation spirit' changed the nature of research and training, with more appreciation for community knowledge and experience, reflected in training manuals and research methods. Valuable lessons learned from farmers include: (a) black pepper is not as shade-tolerant as assumed – it prefers some sunlight; (b) the wood used for beehives affects attraction to bees and honey yields.

## Consortium partners

- [Resource Management Support Centre](#) of the [Forestry Commission](#), (Ghana)
- [University of Energy and Natural Resources](#) (Ghana)
- [University of Amsterdam/Amsterdam Institute for Social Science Research](#) (NL)
- [Rural Development and Youth Association](#) (Ghana)

## Associated partners

[Ministry of Food & Agriculture](#) & [Agribusiness in Sustainable Natural African Plant Products](#) Ghana

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## Project website

[F&BKP Research Project page](#) & [Treefarms Wordpress page](#)

