REPORT ON A VISIT TO KENYA AND UGANDA  
26 January – 8 February 2003  
FRP Research Scheme R6549, Phase II:  
Scaling up the promotion of calliandra in East Africa  

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ACRONYMS  
CBO Community Based Organisation  
FORRI Forest Resources Research Institute, Uganda  
HPI Heifer Project International (international NGO)  
ICRAF International Centre for Research in Agroforestry  
KCC Kenya Cooperative Creameries  
KWAP Kenya Woodfuel and Agroforestry Project  
MoARD Ministry of Agriculture and Rural Development (Kenya)  
NALEP National Agriculture and Livestock Extension Programme (Kenya, funded by SIDA)  
NGO Non-Governmental Organisation  
ZGU Zero grazing unit  

INTRODUCTION  
The visit focused on monitoring progress in two areas: western Kenya, where a dissemination facilitator, Hellen Arimi, has been employed by the project since July 2002; and south-west Uganda (Mbarara District) where the project only became active after our last visit, in October 2002. In both areas there has been impressive progress over these short periods.  

In addition to the two field visits, a total of 3½ days was spent at ICRAF HQ in Nairobi. During the first week of the visit Fred Mawanda, the student carrying out the economic impact study in Uganda (project output 3), was in Nairobi to discuss the survey methodology with Steven Franzel. The other major topic for discussion whilst in Nairobi was the project budget for 2003 and 2004.  

This report gives the main findings from the trip by country and output rather than providing a chronological record. The tour itinerary is given at the end of the report.  

KENYA  

With the addition of an economic impact study (output 3) in Embu (see below), all five project outputs are now being, or have been, addressed in Kenya. The potential for promotion and scaling-up is much greater here than in the other target countries.  

OUTPUT 1 (DOCUMENTATION OF FARMERS’ EXPERIENCES) AND OUTPUT 3 (IMPACT ASSESSMENT)  
A student of agricultural economics at Egerton University, Samuel Koech, is conducting a socio-economic analysis of the impact of fodder legumes (calliandra and desmodium) in Embu, as an M.Sc. research project. The benefits of calliandra as a substitute, and as a supplement, for dairy meal will be compared under different management regimes and market access scenarios. The study will also look at farmer innovations and the ways in which they have used or adapted recommendations they have been given on calliandra utilisation.
The study has been developed since October, and the initial field work will start in early February.

**OUTPUT 4 (DISSEMINATION AND PROMOTION)**

The project has links with a wide range of partners in central and western Kenya, mostly developed through Charles Wambugu’s work with calliandra over several years before the current project started. In addition to these continuing links, our main current focus is in Western Province, where Hellen Arimi is employed full-time by the project to promote calliandra and other fodder trees to small scale dairy farmers in the high potential areas in the Lake Victoria Basin area.

**WESTERN KENYA**

I spent three days visiting Hellen Arimi’s project sites with Steven Franzel and Charles Wambugu. During visits to several farms and farmer group meetings, as well as discussion with Hellen and Qureish Noordin (ICRAF co-ordinator for Western Kenya), and with MoARD and HPI staff, the following points emerged:

**Technical & socio-economic issues**

- **Calliandra** was originally introduced and promoted in western Kenya by KWAP in the early 1990s as a fuelwood crop. There is still a high demand for firewood so farmers want to manage calliandra for both fodder and fuel. Calliandra is also appreciated as bee forage, and some farmers keep hives under the trees. Some farmers have soil conservation structures (passive terraces) which can be further strengthened and stabilised with calliandra.

- Many smallholder dairy farmers have grade (improved) cows, which require high quality fodder. At the same time land holdings are becoming ever smaller and more fragmented. There is therefore a chronic shortage of fodder.

- There is a high demand for milk in the urban areas of Kisumu and Maseno: it is currently brought in from Kericho and other areas. There have been serious problems with milk marketing throughout Kenya owing to the effective demise of KCC in recent years, but the new government plans to revive it so milk marketing is likely to improve.

- Hellen is encouraging farmers to plant calliandra in association with Napier grass, and in niches where the rest of the farming system is not disturbed, e.g. in internal hedges and on boundaries. As it is managed by cutting to 1 m height, its use on boundaries does not shade neighbours’ fields.

- Dairy goats have been promoted in the area by the NGO Africa Now. Farm Africa also plans to start working here, with the first batch of goats due to arrive in February. Farmers will only receive goats if they have access to enough fodder to feed them. This will create additional demand for fodder trees, and Farm Africa has asked Hellen to help them to meet this demand.

- ICRAF has set up a consortium of local farmer groups, which provides another useful entry point for Hellen’s activities. Many members have an interest in fodder and there is demand for inputs from Hellen. She has also written an article on fodder for the consortium newsletter.

- Hellen and Caleb Basweti (previously employed part-time by the project) have organised several exchange visits for farmers, and these, along with provision of seed, have been found to have a big impact and to be extremely effective in raising awareness and generating enthusiasm. 55 farmers and 5 officials from Nyamira District (Nyabigena Focal Area) went with Caleb on an exchange visit to Kericho in August 2002. Another visit by farmers from Ikerenyo Division was organised by Hellen in October. Two other exchange visits have also been organised by Hellen: in Nandi, a group went to Nyeri and Kyambu, and in Viga District a group from Sabatia Focal Area, Luanda Division went to Eshkhaya (also in Viga District).
We need to promote farmer-to-farmer dissemination by encouraging more interaction between existing groups and the rest of the community, e.g. by sale of seedlings. We could also provide assistance with developing the business.

Seed supply: Hellen has an agreement with groups which receive seed that they will pay back twice as much seed as they received, once they start producing their own. This will be bulked (to increase the genetic diversity) and redistributed.

Polytubes are expensive (KES 230/kg, i.e. 1200 4-inch tubes) and hard to get, as well as being very labour-intensive to fill and difficult to transport, so bare-root planting should be encouraged.

**Management issues**

- Hellen has made excellent progress in her first seven months in post. She is working with 40 groups and about 12 NGO and CBO partners. There is high demand for her services but it is important that she now focuses on consolidation of her existing network rather than further expansion.
- Responsibility for nurseries established through Caleb Basweti’s work is now being taken over by Hellen: Caleb will visit for a week to hand over.
- It is important to ensure that partner organisations deliver their fair share of inputs, e.g. VI is currently recruiting new staff, and should pay for Hellen to provide training in skills relevant to the fodder project. Similarly Hellen, together with MoARD staff, currently provide all the technical inputs to trainings run by HPI; their own staff mainly just monitor progress. It is important for the longer-term sustainability of our input that Hellen train HPI staff (or Government staff working with HPI) to take over the training role.
- It would be interesting to carry out a study of the process of uptake and farmer innovation. It might be possible to arrange funding through ANAFE for this, possibly based at Egerton University.
- Monitoring: Hellen will use an adapted version of the monitoring form developed by the farmers’ group consortium.
- Budget: To keep the budget within the available limits, Hellen should try to spend less time out of Kisumu, and work as much as possible through MoARD staff (this will also increase the sustainability of her inputs).
- Future partnerships to explore: Farm Africa may soon start work with dairy goats in Nyando and Vihiga. Africa Now is another NGO working with dairy goats: it has its own extension staff employed through the ICRAF-Africa Now Natural Resource Management (NARM) project funded by DFID. Another potential entry point is the Interactive Learning Sites: NGOs select sites where they are active and do an inventory of training needs. Hellen could have an input where fodder is identified as a priority.

**ADDITIONAL NOTES FROM FIELD VISITS**

*Thomas and Anna Angatya*

- Calliandra planted in rows within Napier grass plots, and on soil conservation terraces.
- A small on-farm fodder tree nursery has been established. Last year they raised 600 plants, planted 200 and sold 400 (calliandra, mulberry and *Leucaena trichandra*). Seedlings are sold to the farmers’ group for KES 1 each; the group also supplies polythene pots. The main problem with the nursery is water, which has to be carried from the river by women and children.
- The cow’s ration includes 3 kg sesbania, 3 kg desmodium and 10 kg Napier. Calliandra is only fed during lactation (3 kg in the morning and 3kg in the evening). The same quantities of dairy meal used to be used, but as this costs KES 40/kg they no longer use it. They also find...
that cows eat calliandra more slowly and calmly than they do dairy meal, allowing the farmer to collect an extra cup of milk.

The farmer received the dairy cow from HPI, who stipulate that a farmer must have a well-built cowshed and 600 calliandra trees established before they can get a cow.

In Luhya culture, women are traditionally barred from cutting trees, even branches; but this custom is now beginning to change.

The farmer recognises the value of manure and puts it on the crops and Napier plots. They only sell it (at KES 70 per wheelbarrow) when they have a cash problem.

**Eshkhaya Women's Group (Peter Alukhusta’s farm)**

- The group started in 1996 and has 62 members, of whom 20 are men: “The men’s respect for women has increased through seeing that they can bring development”.
- They have acquired cows through the Kenya-Finland Livestock Development Project and more recently from HPI.
- Some farmers in the group find the cows and cowshed (zero-grazing unit) too expensive, so they are interested in getting dairy goats and improved chickens.
- The group has had trouble acquiring planting material but have now got calliandra seed and mulberry cuttings from Hellen.

**Ebuahanga Urafiki Women’s Group (Silas Musafiri’s farm)**

- The group started in 2001 and has 20 members of whom 7 are men.
- The group nursery distributed 50 calliandra seedlings to each members; on average 30-35 have survived.
- Silas Musafiri estimates that his cows give 7.5 l milk per day without calliandra, 9 l/day with calliandra; he has given up using dairy meal now he has calliandra and desmodium. Some cows prefer calliandra, some like both, none prefer desmodium.
- Perceived advantages of calliandra: available in dry season, easier than desmodium to establish.
- Perceived advantages of desmodium: better for soil improvement, gives higher production than calliandra during the rains.

**Nyabigena Focal Area, Magwagwa Sub-location, Nyamus Division, Nyamira District**

- Through NALEP and ICRAF, the Focal Area Committee received training and calliandra seed in August 2002, and established a group (committee) nursery. Group members have already planted about 3000 seedlings (12 farmers each received between 50 and 300 plants). Seed was also given to four other women’s and youth groups, and to seven farmers to establish individual nurseries, to raise seedlings for distribution in the community. Initially these will be given for free to introduce the concept; later farmers may be charged for them.
- Farmers and committee members look after the individual and committee nurseries in return for seedlings for themselves (30-35% of total).
- The committee follow up on progress after the seedlings are distributed; if farmers have cared for the seedlings, they can get more.

Three farmers in Magwagwa were also visited (Alex Miregwa, Patrick Keraro Marao and Mary Nyaribo). Patrick Keraro Marao was trying an innovative method of calliandra establishment which would allow him to plant out seedlings before the start of the rains. Each seedling is planted in a hole cut out of the centre of a short (c. 10 cm) section of a fresh banana pseudostem (which contains 90% water). The success of this method should be monitored.
**Butere-Mumias District**: meeting and farm visits with MoARD district staff and district co-ordinator for HPI (Faith Koima).

Much of the district is under sugar cane production. There are many higher rainfall areas (>2000 mm) with high potential for animal production. So far, however, there are few improved cows (MoARD estimate 56,000 local, 5000 grade cows). There is a deficit of milk so milk prices are high (KES 30/litre). There is a perception that purebred grade cows are expensive, prone to disease and difficult to manage, so MoARD is focussing on breeding programmes to improve local stock. Feed is also a major problem for owners of improved cows: land holdings are very small, so farmers need high quality fodder crops (Napier grass, fodder trees).

HPI collaborates with MoARD on dairy development. MoARD focuses on genetic improvement through bull and AI schemes. Fodder is a major constraint for owners of improved cows: MoARD & HPI encourage dairy farmers to have at least 500 fodder trees but very few have that many, and they estimate a total of only 17000 fodder trees in the whole district. Seed supply is a problem: in the past they have got it from KARI and ICRAF; they now buy seedlings from three commercial nurseries. Establishment of group nurseries (on-farm) is being encouraged but so far only four groups have done this. The main problem is that many farmers in this area are too poor to establish fodder banks or build ZGUs. Nonetheless there is a growing demand for fodder trees, as most cannot afford dairy meal, and the improved cows are not currently realising their genetic potential.

HPI has a three year project through Send-a-Cow (UK), through which two dairy groups have been established. Under this scheme, half the group members receive an improved cow: the two groups in Butere-Mumias have received 12 and 16 cows respectively.

In view of the current low level of awareness about fodder trees among farmers in this district, and the distance from Kisumu, we agreed that the most effective role for Hellen would be to train extension staff rather than farmers directly; it is not feasible for her to attempt to supply direct technical backstopping over the whole district. It was agreed that she should hold two trainings, for staff from 2 and 3 divisions respectively.

**UGANDA**

Project activities in Uganda contribute to Outputs 1 (farmers’ experiences with calliandra, in particular with regard to pests and diseases), 3 (impact assessment) and 4 (promotion). During the visit to Uganda, only the activities associated with Output 4 were seen, but an update on the economic impact assessment (Output 3) was given by Fred Mawanda, the student carrying out the study, at a meeting in ICRAF HQ.

**OUTPUT 3 (IMPACT ASSESSMENT)**

The impact assessment is being done as an M.Sc. thesis by Fred Mawanda at Makerere University. Utilisation of calliandra for fodder, fuelwood and soil conservation is being covered. The focus will be on economic impact, as this is the aspect of greatest interest to farmers; but environmental benefits (e.g. passive terrace performance) will also be assessed.

Initially Mawanda planned to work at two sites, Mukono (Lakeshore) and Kabale (SW Uganda); but farmers in Kabale have had calliandra for longer and in greater numbers than in Mukono, where most have fewer than 50 trees and only planted 1-2 years ago. It is therefore not realistic to assess
impact at Mukono at this time, so it was agreed to drop this site. The Kabale site has the additional advantage that good data on adoption are already available from a previous ICRAF-AFRENA study.

The methodology will involve initial interviews with 60 randomly selected farmers who use calliandra. Detailed profitability will be limited to a few selected farmers: at least four for each use/product, but this will be increased if different technologies (e.g. bare-root and container-grown seedlings) or different types of management are used for the same product.

For calliandra as fodder, Mawanda will do a partial budget, estimating the added costs and added benefits of using calliandra in terms of individual cows’ production before and after supplementation with calliandra. Soil fertility management (through erosion control by contour plantings on slopes) will be evaluated using an enterprise budget comparing slopes with and without calliandra contour hedges. In this case it is hard to do a straightforward cost-benefit analysis, as the benefits are hard to quantify. Instead he could do an indirect ‘break-even analysis’ in which the costs are quantified, then the increase in maize yield needed to justify these costs is estimated.

OUTPUT 4 (DISSEMINATION AND PROMOTION)
Scaling-up activities are being carried out in two areas: the Lakeshore area near Kampala, and Isingoro County, Mbarara District in SW Uganda. On this trip, Charles Wambugu and I visited Mbarara to assess progress, following our planning visit to Kabale in October 2002.

Project activities in SW Uganda are managed by Bueno Dickens Sande from the FORRI-ICRAF programme in Kabale, with a field assistant, Beinomugisha Dickson Hakiri, based in Isingoro County, Mbarara District. Since October the project has started activities in five parishes in Isingoro: three in Kabuyanda Sub-county and one each in Kikagati and Nyakitunda Sub-counties. The main activity so far has been establishment of group nurseries for existing farmer groups, and monitoring of their progress; a few individual nurseries have also been established.

During our visit we had meetings with Dickens Sande and with David Siriri (ICRAF-AFRENA Programme Leader, Kabale), as well as with Jane Kuyonza, who was visiting from the Lakeshore site and was able to update us on progress there. Most of the visit, however, was spent in the field visiting farmer groups in Isingoro South.

A new EU-funded agroforestry project is also starting in Kabale, Ntungamo and Mbarara Districts which will complement some of the calliandra project’s activities. On the way from Kabale to Isingoro we attended an EU project planning meeting at Kayonza Sub-county HQ in Ntungamo. The main points arising from the discussions and visits are summarised here.

**Technical and socio-economic issues**
- This is a semi-arid area (1000 mm rainfall, bimodal, up to 3 months dry). Water is a major problem: it has to be carried up to 3 km during the dry season, costing UGS 300 per jerrycan. The low rainfall will probably limit the productivity of calliandra here.
- Seedlings in group nurseries are grown in home-made banana leaf pots, but these dry out quickly and give much poorer performance than polythene tubes.
- The first planting will be done in March.
- Several of the farmer groups visited expressed a wish for more information and training. They also expected the project to provide other inputs including tools, pesticides, sprayers, watering cans and seed of a wider range of species. One group also asked for money for travel and for labour costs in the nursery. **It is an urgent priority to make it clear that the project will not provide any such inputs.**
Management issues

The project has got off to a very good start: in the short period since it started (October 2002), one or more group nurseries have been established in each of five parishes, as well as several individual nurseries.

Dickson has provided energetic field support under difficult conditions, covering a large area by bicycle and public transport. He needs a small motorbike as an urgent priority.

The two training workshops for extensionists from partner organisations, which were planned for October-December 2002, have not yet taken place. It took time to identify appropriate trainees, and they were then too busy to come for training. The workshops will take place in the coming months. It is hoped that participation and commitment of the NGO partners will become stronger after these trainings.

Requests have been received for assistance in forming additional groups. We agreed that this should only be done to the extent that is possible without compromising our capacity to work with, and consolidate, the existing groups.

Monitoring: we discussed development of a monitoring form (in Excel) to capture the following information:

- Name of group
- Membership (men/women)
- Sub-county, parish, village
- Main partners
- Amount of seed received (by species)
- No. of seedlings raised
- No. of seedling recipients
- Total cows & goats owned by recipients

Principal activities planned for 2003:

- training of farmer group representatives and extensionists from partner organisations
- technical support during planting
- formation of some new groups
- monitoring of planting success (survival)

A detailed work plan and budget will be prepared as soon as possible. The total budget available for this site for 2003 is USD 7000.

ADDITIONAL NOTES FROM FIELD VISITS

Nyarubungu Tweyombekye\(^1\) Farmers’ Group, Ntundu Parish, Kikagati Sub-county.

Species grown up to now include grevillea, cypress, mango and avocado. They now also have 1050 *L. trichandra* and 1000 calliandra seedlings, after 60g seed of each species was provided by the project in late 2002. They want more trees for fodder, income from timber and fuelwood, soil conservation, and to bring rain.

Animals are currently free-ranging but the farmers recognise the need to introduce zero grazing systems as land pressure increases.

Kyamuruka Farmers’ Group, Ruborogota Parish, Kabuyanda Sub-county.

The group has 18 men and 7 women members; formed October 2002; UGS 5000 membership fee.

Future plans include seedbeds for breadfruit; individual nurseries for each member; and monitoring of planting success on each member’s farm.

\(^1\) Tweyombekye: “Let’s develop ourselves”.
Ruborogota Church of Uganda Mothers Union Farmers’ Group.
- The group started in December 2002, and has 30 members. Each has produced a written progress report.
- The nursery has been strongly fenced to protect it from free-ranging sheep and chickens.
- Fodder species and seedling numbers raised so far: calliandra (245); *L. trichandra* (224); *L. leucocephala* (350). Avocado and mango have also been planted.

Kyamusoni Mixed Farmers’ Group, Kabuyanda Sub-county.
- 40 members.
- Fodder species raised so far: calliandra (235); *L. trichandra* (614). Avocado and mango have also been planted.

Rwamwijuka Women’s Group
- 60 members (to be divided into two groups, as currently too large).
- Report, work plan and budget produced; project expected to fund all costs!

RWANDA

OUTPUT 4 (DISSEMINATION AND PROMOTION)
A short visit was made to HPI, Byumba en route from Kabale to Kigali to check on progress there. Farmers representing groups set up under the HPI project received training from Charles Wambugu in November. Since then they have successfully raised seedlings and made farm maps showing where they will plant the fodder trees in April. These farmers will then train others. This is a case where a small input from our project has already had substantial impact.

ITINERARY

Sunday 26 January: Depart London (LHR) on BA 65.
Monday 27 January: Arrive Nairobi. Meeting at ICRAF with Fred Mawanda (Uganda) and Steven Franzel.
Tuesday 28 January: ICRAF HQ: meetings with Steven Franzel and Charles Wambugu; Caleb Basweti (former project assistant in Western Kenya); and Samuel Koech.
Wednesday 29 January: Nairobi-Kisumu by air. Meeting at ICRAF, Kisumu with Hellen Arimi. Field visit around Maseno.
Thursday 30 January: Field visit to Nyamira District; meeting with MoARD staff. Meeting at ICRAF, Kisumu with Qureish Noordin, Hellen Arimi and Charles Wambugu.
Friday 31 January: Field visit to Mumias District; meeting with MoARD staff. Wrap-up meeting at ICRAF, Kisumu with Qureish Noordin, Hellen Arimi and Charles Wambugu.
Monday 3 February: Leave.
Tuesday 4 February: Meetings at ICRAF HQ (a.m.). Nairobi-Kigali by air, Kigali-Kabale by road (p.m.).
Wednesday 5 February: Kabale-Kikagati (Isingoro South) by road, via meeting in Kayonza sub-county, Ntungamo District. Field visit near Kikagati.
Thursday 6 February: Visits to farmer groups in Kabuyanda sub-county. Return to Kabale by road. Meetings in Kabale with Jane Kugonza and David Siriri.

Friday 7 February: Kabale – Kigali by road, via HPI, Byumba (Rwanda) for short visit. Kigali – Nairobi by air; wrap-up meeting with Steven Franzel and Charles Wambugu at ICRAF HQ (p.m.). Depart Nairobi on BA 64.

Saturday 8 February: Arrive London (LHR).