Conserving Biodiversity in the Modernising Farmed Landscapes of Uganda

Field Report

Preliminary Study Site Selection in the Banana/Coffee Arc around L. Victoria

(22nd – 28th Sept. 2005)

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October, 2005

1. Overview

This report presents notes on the field visit for the preliminary study site selection in the project target region – the Banana/Coffee arc around Lake Victoria. The field visiting team included Dr. Phil Atkinson, BTO; David Mushabe, NU Project Coordinator; Dianah Nalwanga and Theodore Munyuli, both PhD candidates supported by the project at Makerere University Institute of Environment and Natural Resources (MUIENR).

The field visit lasted for five days (see Appendix 1 for the map with route followed) and in the first three days (22nd – 24th); we visited randomly selected spots around Mabira forest in the districts of Mukono and Kayuga; the IBERO/USAID-APEP programme in Kamuli; and other random spots in Luwero district and the newly created Mityana district. In the last two days (27th and 28th), we visited the intervention and non-interventions areas of the VI-Agroforestry project in Masaka district and other random spots in the districts of Rakai and Mpigi.

With the aid of local guides/extensionist plus direct observations, we made notes (using a field form, see Annex 2) on the following variables in each site.
- Presence of farming interventions/modern practices
- Crops present (Proportion of primary, secondary and tertiary crop)
- Proportion and period of fallow
- Proportion and type of natural vegetation
- Patchiness of natural vegetation
- Tree types (native versus exotic species)
- Level of intercropping
- Use of mulch
- Use of pesticides
- Use of cover crops
- Distance to the nearest forest
- GPS coordinates and photographs

2. Description of the sites visited in the East/North of Kampala

In the first three days, we decided to concentrate on two main areas around Mabira Forest and around Masaka. The first day we drove east from Kampala and picked a spot at random just about 2 km south of the forest. We summarised the observations (see table 1) of the key variables. This site is in the middle of the coffee/banana growing area and was typical subsistence farming with smaller amounts of cash crops. Gardens were small (c. 1 acre), crop diversity was high, intercropping was high and fallow were relatively common, especially for farmers that had more land elsewhere. There was some NAADS intervention with passion fruit demonstration plots but no major intervention. Mabira forest was close by to the north and there were also tea/sugar plantations in the vicinity. There were fewer old forest trees in some gardens and more exotics are being planted. If looking at distance to forest/plantation as a gradient were desirable then this area would be ideal; one could get 2-3 sites in this area.

We then moved to another site (north of Mukono town), which was also part of IFPRI's agro biodiversity study. Similar crops were observed although vanilla growing was high in this area. Fallows are mainly recent as people left their plots to lease nearby government land that is being afforested. This could change because when the forest plantations grow over 5 years, people will no longer be able to grow crops there and therefore resort back to their plots.

We never observed any interventions and very few farmers, mainly growing cabbage and tomatoes used pesticides. Some banana plantations are abandoned and one can hardly distinguish these gardens and fallows. The trees are both exotics and native, and these are mainly grown to provide shade to coffee and vanilla. Although 'agriculture modernisation' is questionable here, bout 2 comparable sites could be setup in this area but would require some more visit particularly when the exact site selection criteria has been reached.

Table 1: Summary of variables observed in the visited districts

District	Around Mabira Forest			Kamuli	Luwero/ Nakaseke	Mityana
	Mukono (Kinoni)	Mukono	Kayuga			
Criteria/Variable						
Distance (km) from Kampala	50	40	110	130	70	65
Farming interventions	NAADS demo plot	None	None	Ibero/Apep Project	Some NARO sites	None
Primary crop	Maize	Banana	Maize	Maize	Banana	Banana
Secondary crop	Coffee	Coffee	Coffee	Coffee	Coffee	Coffee
Tertiary crop	Banana	Vanilla	Banana	Cotton	maize	
Prop. & type of fallow	15% (2-10yrs abandoned)	10% (2-5 yrs) – people acquired govt land nearby	-	1% (very young -1yr	30% in some places(old)	20% in some places (old)
Prop. & type natural vegetation	1% (probably infertile land)	None	-	None	50% in some places (forest reserves?)	10% could be forest reserves?
Patchiness of natural vegetation	Observed 1 or 2 patches	None	-	None	Big patches	scattered
Tree types (native vs exotic)	Old forest trees left in gardens vs more exotics being planted	Mainly exotics		Mainly exotics	Mainly native and grown up	native
Level of intercropping	30% - more than 5 crops	40% - more than 6 crops	20%	10%	10%	10%
Use of mulch	Limited	Limited	-	Mainly in coffee		
Use of pesticides	Limited (some tomato growing)	Limited (tomato/cabbage growing)	-	Some coffee/cotton farmers do	-	-
Use of cover crops	limited	Limited	-	limited	-	-
Distance to the nearest forest	500 meters	3 km	5 km	none	various	Various

The next day, we then moved on to Kamuli, which was suggested by Simon Bolwig as a suitable site. This is an area just east of the Nile and in the north of the coffee/banana region. This was in fact a coffee/maize system. The intervention here is the APEP (USAID)/Ibero scheme/project promoting coffee growing as well as buying the coffee direct from the farmers. They have >300 farmers signed up and farmers have to abide by certain conditions – e.g. soil/water conservation techniques, shade trees etc – to enter the scheme. The advantage of this site is that it should be possible to find areas with/without yield enhancement measures as well as areas with high/low numbers of trees. Fallow land was restricted in this area. The coffee project collects socio-economic/yield information (kg coffee from X number of coffee bushes) as well as details on husbandry techniques. Although a coffee/maize system this area does have enough variation to look along an intervention-non intervention gradient, i.e. degree of 'modernisation'.

From Kamuli, we again drove to Kayuga - around the north of Mabira. This area is close to Kamuli but on the west side of the Nile. It was obviously much drier here and again coffee and maize were the key crops. There was no intervention and might serve as a useful comparison with the Kamuli area. Although we did not identify any particular sites there were many possibilities here, although in some places the road conditions were difficult.

The third day, we took a route north-west of Kampala, past Kawanda Research Institute to Luwero and the newly created district - Nakaseke. The first part of this area, near Luwero town, was a bit drier (savannah kind of) and was on the edge of the banana/coffee and grazing systems. There were many areas where it would be possible to work. Production seemed fairly small-scale. Some demo plots by NARO were observed in some village and coffee growing seemed to provide relatively good yield compared to bananas. Trees remain manly native and the level of intercropping was medium. Population density in this area was low due to past conflicts.

Next we headed towards Nakaseke, also previously war-ravaged area. There was much fallow and many farms were on recently cleared land. Most of the natural vegetation was being converted to gardens (see figure below). Production also seemed of low intensity and poor yielding. There were many patches of natural vegetation (or abandoned land due to war?). This area would be suitable for this study – considering land use intensification factor.

Fig. 1: Clearing of natural vegetation for crop growing in Nakaseke district

Past Nakaseke, we drove towards Mityana-also a newly created district. Farming in this area is similar to that in Mukono except that there were many patches of natural vegetation especially in valley/wetland areas. We did observe some recently rehabilitated tea plantation which is surrounded by natural vegetation. This could perhaps serve as a study site to compare with other large-scale sites that may be included in this study. Along the Mityana-Kampala road, we did make some observations and there is a possibility of getting study sites along this route. This area is fairly populated and there is a mixture of animal farms and crop growing.

3. Description of the sites visited in the West of Kampala

The fourth and fifth day, we explored areas (see table 2) around Masaka, Rakai and Mpigi districts north of Kampala. In Rakai we stopped on the edge of the coffee/banana growing area and found a farming area, which supported large stands of bananas as well as a number of smaller crops. This was a system that seemed to have a large cash crop component but also some subsistence crops as well. Coffee growing was also prominent in this area with intervention by APEP programme. We did observe some NAADS signposts along the way indicating their intervention too in this area. In terms of 'modernisation', this area could provide some comparable study sites as faming seemed more organised.

At Masaka we met up with the manager of the VI Agroforestry Project. They were incredibly helpful and we visited a number of sites – those that had had intervention several (five) years ago, some that had current intervention and some that had had no intervention. There was a real difference between the plots and the yield promoting / crop Agroforestry improvement techniques advocated by VI have made a real difference to farmers. This area would definitely provide comparable study sites especially with a view of agriculture modernisation models such as the Agroforestry practices.

From Masaka, we traversed the western part of Mpigi district (characterised by many forest patches). Land use intensification was lowest here and the main crops grown were coffee and bananas. The degree of natural forest patchiness was high and sites selected here could provide an insight of the relevancy of natural vegetation patches in farms for biodiversity purposes. Like Nakaseke, some new farms were being opened adjacent to the forest patches.

Table 2: Summary of variables observed in the visited districts

| District | Masaka | | Rakai | Mpigi |
	VI-Project	Non VI-Project		
Criteria/Variable				
Distance (km) from Kampala	130km	130km	180km	40 -70km
Farming interventions	VI project	None	Apep/Naads in some sites	-
Primary crop	Coffee	Banana	Banana	Banana
Secondary crop	Banana	Coffee	Coffee	Coffee
Tertiary crop	Maize	Maize	Cassava	
Prop. & type of fallow	Few Improved fallows	None	Few improved fallows/young	-
Prop. & type	-	-	Mainly scrub	High proportion and

District	Masaka		Rakai	Mpigi
	VI-Project	Non VI-Project		
Criteria/Variable				
natural vegetation				more of Forest type
Patchiness of natural vegetation	None	None	scarce	High
Tree types (native vs exotic)	Mainly exotics	Mainly exotics	Mainly native/ficus	Native
Level of intercropping	Low -5 %	10%	5% (coffee/banana)	5%
Use of mulch	yes	limited	yes	-
Use of pesticides	-	-	Some apep farmers	-
Use of cover crops	Few farmers	-	-	Fewer observed
Distance to the nearest forest	2km	1km	5km-savanah woodland	Various to forest patches

4. Conclusion

From observations made during the site visits in the areas described above, the exercise of site selection seems to be extremely difficult as each area had slightly different types of farming. We need to derive specific site selection criteria in the view of the models that are going to be encouraged and implemented by PMA. The main improvement models we saw were (1) mainly subsistence with cash cropping but with improved soil/water/husbandry techniques through direct farmer contracts (e.g. Kamuli), (2) larger farms with a higher cash crop component with smaller areas of other (subsistence) crops (Rakai/Masaka), (3) direct farmer extension (VI Agroforestry project) which provided farmers with technologies they themselves wanted and worked at a whole farm level and (4) the NAADS type extension service which farmers bought in for particular problems/issues. There are probably many other improvement ('modernisation') models but these were the ones we picked up on. The least effective seemed to be the NAADS route. The VI approach, working at the whole farm level and taking into account individual farmers needs seemed particularly effective with farmers singing their praises.

Annex 1: Map showing Route followed during the field visit

Fig. 2: Route (yellow colour) followed during the preliminary field site selection

Annex 2: Field Form

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Survey Data Form

Site name: _____   Total Distance walked (km): _____
Date _____   GPS waypoint _____

Criteria	Value/score	Comment
Crops present		
%cover primary crop		
% cover secondary crop		
% Cover tertiary crop		
% Fallow		
% natural vegetation		
Crop: Fallow		
Type of natural vegetation		
Patchiness of natural vegetation		
Tree types (native vs exotic)		
Level of intercropping		
Use of mulch		
Use of pesticides		
Use of cover crops		
Distance to the nearest forest		

Other Notes:
_____
_____
_____
_____