



**Farming in Tsetse Controlled Area
FITCA**

Environmental Monitoring and Management Component
EMMC
Project N° 7 ACP RPR 578

Semi- Annual Report
April 1st - November 30th 2002

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Recent vegetation clearance in Akoroi Village, a FITCA tsetse control area in Serere, Soroti district Uganda.

EMMC SIX MONTH REPORT – MAY 1 TO OCTOBER 31ST 2002

1. Introduction

The European Union finances the FITCA program with regional and national indicative funds under the EDF VII, agreement #5682/reg. The program will cover a period of four years and is currently implemented in Ethiopia. Kenya and Uganda and plans are underway to implement the project in Tanzania. The Regional Tsetse co-ordination Unit based at AU/IBAR offices supervises the FITCA Regional program. Part of this program, the Environmental Monitoring and Management Component (EMMC) is contracted to ILRI and the TAC for the first 2 years period was signed on March 28th 2001. ILRI is subcontracting two Institutes that are members of the SEMG (Scientific and Environment Monitoring Group). Some of the work presented here is a result of these subcontracts.

The first year report mentions and comments on the results of a series of a short – term consultancies, based on the discussion meetings during the missions and the draft reports. The five final reports expected from the eight consultants were received. The reports are as follows;

- Assessment of disease risk and tsetse challenge – G. Kleitz, R. Lancelot, S.de la Rocque , - Sept. 02
- Landscape and land use analysis using satellite imagery at the FITCA regional and National level – G. de Wispelaere, -Aug. 02
- Agro pastoral and agro-ecological baseline survey. Methodology. – Maitima, P. Poilecot, B. Toutain, – Spt 02
- Community profile analysis in the FITCA regional area – M. Djama,- April 02
- Reginal and National FITCA database harmonisation – G. Fornié – April 02

This first period of the second year represents the starting point of monitoring implementation in one of the pilot area previously selected for the high impact expected from tsetse control activity. During this period a Kenya community specialist was appointed as a secondment from KETRI. A student from Montpellier University conducted the field survey in western Kenya. This study is focused on landscape and land use analysis and represents an assessment of the initial situation before the effect of the control of flies and the expected increase of livestock population. It resulted in the detailed drawing of the land cover of the area strictly based on field observations and discussions with farmers. Use of questinnaire allowed reconstituting of the evolution of land use over a ten years period. A social study informed about the evolution of the land use of population structure by class of age. Soil sampling was done to monitor changes in soil fertility.

This work starts the monitoring activity in the field and offers the opportunity to experiment the feasibility and limits the principles of the project, amended and completed during the first year.

2. Field visits

The project document of the EMMC emphasizes the necessity to adapt or develop appropriate methodologies for environmental monitoring and management. This early part of the project is therefore devoted to acquiring existing data in various study sites and conducting field surveys in areas where additional information is required. Thus with the help from STC an exhaustive survey in the FITCA area has been done in order to draw a clear and easily interpretable picture of the project operations, conceptualising, thematic issues and methodological approaches.

3. Mapping Land Use / Land Cover in Angurai

- i) Stephanie started work on mapping land use in Angurai one of the Kenya FITCA project areas selected for EMMC activities. The objective of her work was to document current land use patterns in Angurai and assess the changes in land use / land cover associated with tsetse control. Angurai is one of the areas where tsetse infestation was the highest with fly catches of over 1000 per day per trap before FITCA and after FITCA tsetse control efforts, fly catches went down to almost none per catch. Due to this reduction in tsetse flies and trypanosomosis, re-stocking of cattle was being done at very high rate and a substantial increase in cultivated areas as well as changes in crop types was quite evident. For example there was a remarkable increase in tobacco farms not only in the number of farms but also in the size of farms cultivated. This was probably due to availability of oxen for ploughing among other factors.

a. Highlights on preliminary report.

The overall objective was to provide baseline data for monitoring environmental impact of tsetse control. Specific objectives include; to generate a landscape map showing the area under crop, natural vegetation and settlement, assess socio-economic aspects in the utilization of natural resources. Record of the main plant species in the natural vegetation. Assess the extent of soil erosion in relation to land use and slope. Follow up and comparison with other areas in future.

Description Of the study area: The area of study was a bloc measuring 2.5 X2.0 km stretching a long river Malaba. Most of the natural vegetation is represented by short trees, shrubs, bushes and tall grass. This area was divided into three classes, depending on the slope: high, moderate or low.

Materials and methods

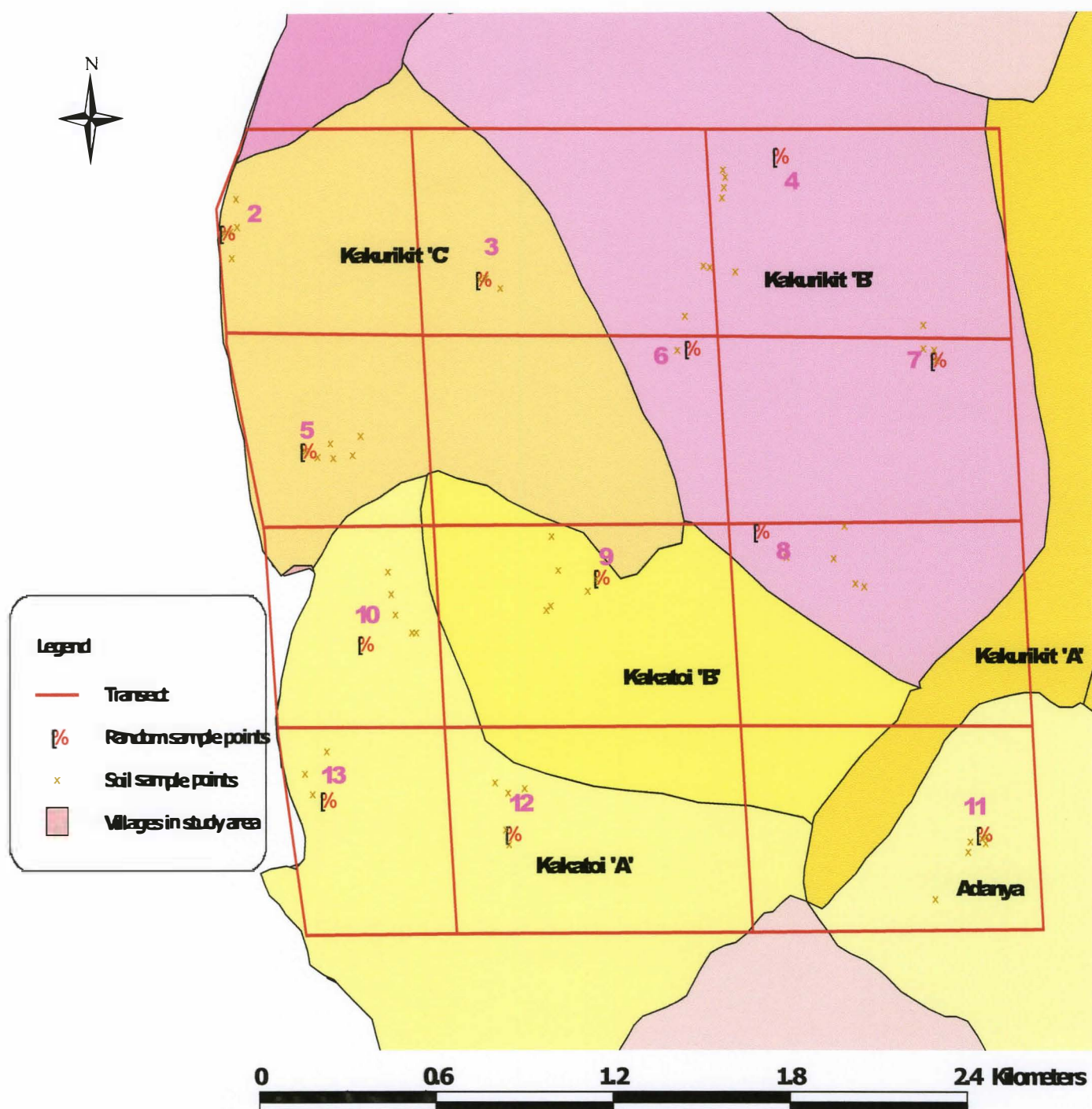
Mapping: Global Positioning System (GPS) Garmin 12XL program was used. House hold survey was done using a questionnaire, and GPS were taken. Plant species identification was done at University of Nairobi Range management herbarium: Soil erosion survey was done using a standard assessment form adapted from LUCID project: GPS points were taken in every soil sampling point.

Mapping: Mapping was done by tracking around each and every land use (crops, settlement and fallow) while taking way points with a GPS. The data downloaded from the GPS to the computer for processing using various programs. Map was generated using Arc view.

Household survey was done using a questionnaire. Interviews were done on the house hold heads assistance by a local translator from Iteso to English and English to Iteso.

Plant identification. Plants were identified at the department of Range Management at the University of Nairobi. Type of cover was estimated and description of the vegetation class given. Soil erosion survey. The survey area was divided into 12 grids and one random point generated in each grid. The 4 grids adjacent to the Malaba river measured (0.5'0.5 Km), and the others were (0.5'1 Km) see fig.1 below. The collection was done from the different land use types closest to the point

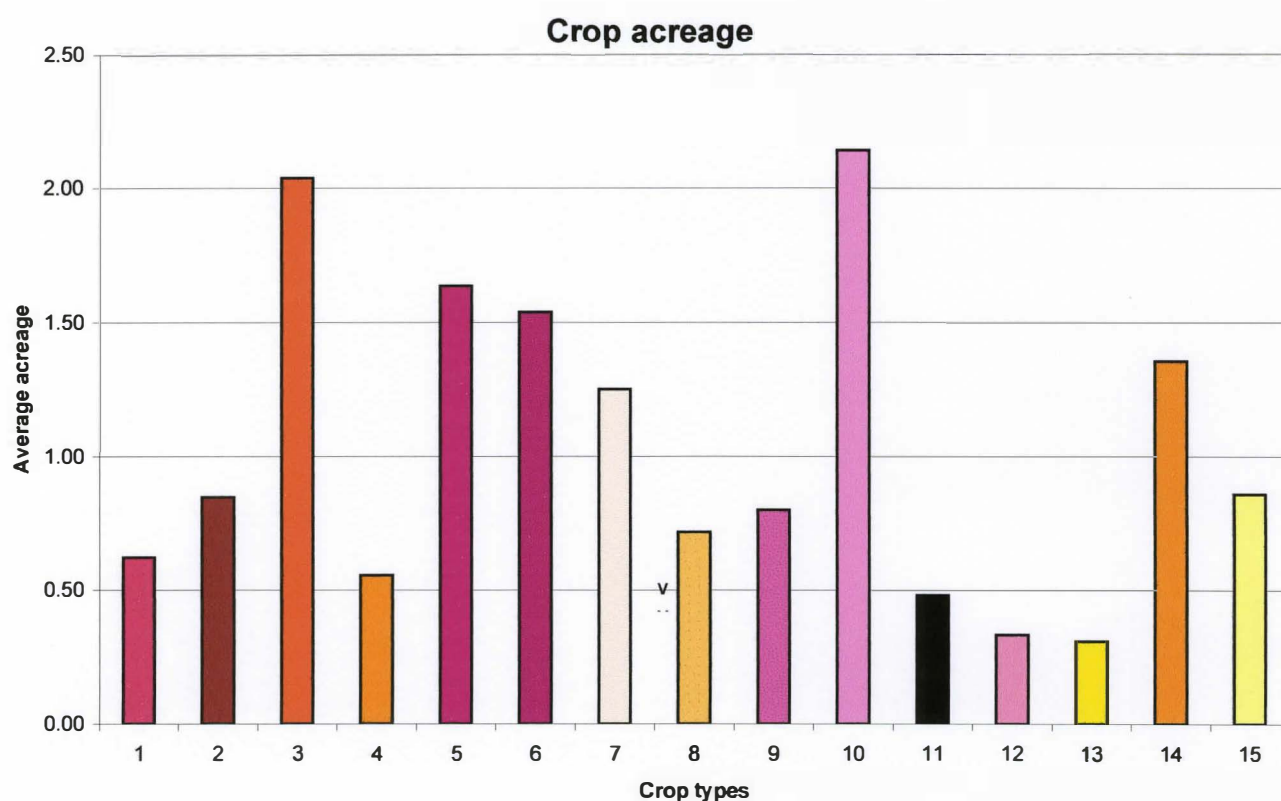
Figure 1. Land use mapping blocks with random generated numbers for soil sampling.



CROPPING PATTERN AND TREND

One of the tasks was to determine cropping patterns and the trends of change if any change is observed. Preliminary analysis shows that the main crops produced in the area-included maize with an average acreage of (2.14), cassava (2.04), finger millet (1.64), finger millet mixed millet (1.54) and tobacco (1.35).

Figure 2. Preliminary results for the average acreage of crops grown for both commercial and subsistence



1=Banana 2=Beans, maize 3=Cassava 4=Cotton 5=Finger Millet 6 Finger Millet, Millet 7=Finger Millet, Millet, sim sim 8=Gr nut 9=Gr nut , maize 10=Maize 11=Millet 12=Sugar cane 13=Sweet potatoes 14=Tobacco 15=Other subsistence crops

Farmers reported major decline in cropping over the last ten years. Crops with the highest decrease were cotton (89%), maize (83%), finger millet mixed with millet (81%), tobacco (76%) and sweet potatoes (71%). Only sugarcane was reported to have increased by 56%.

Figure 3. Preliminary analysis for trends of change in cropping pattern.

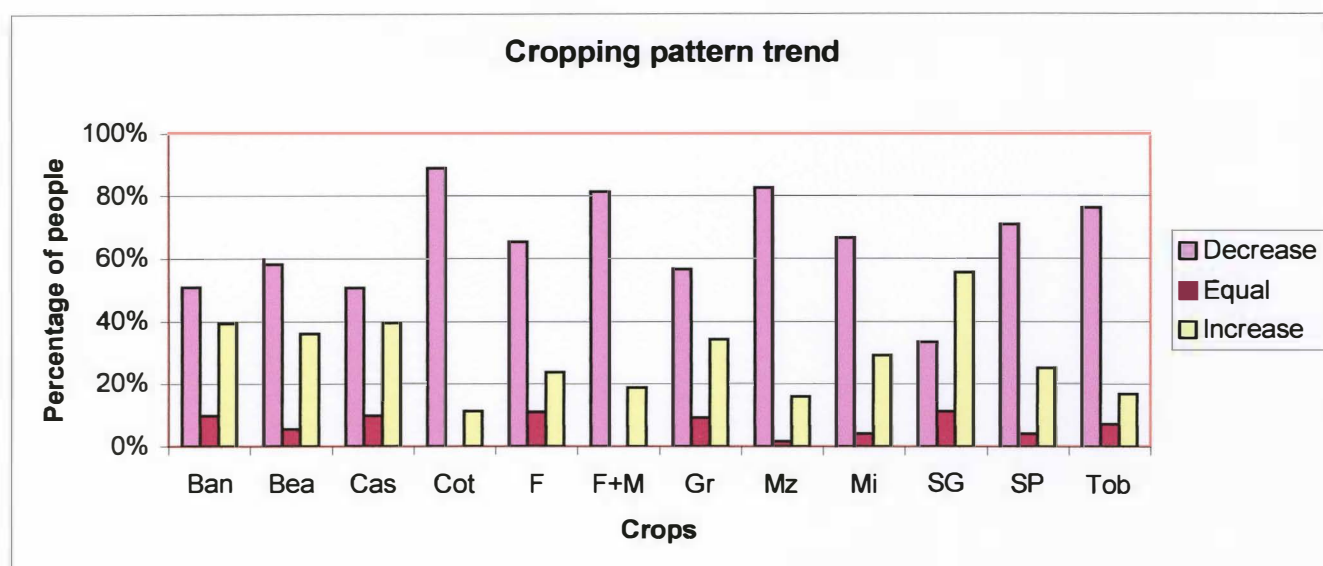
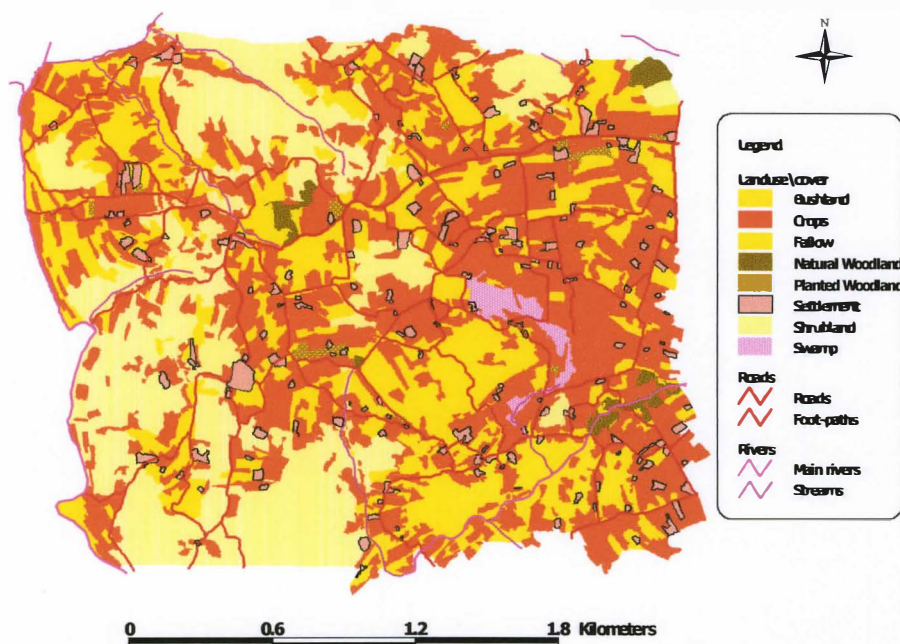


Figure 4. Map showing land use and land cover in Katotoi study site in Angulai Kenya



4. Maps and databases

One of the most important tasks in the project has been to develop maps to provide a baseline on land use characteristics and biodiversity distribution in the study sites.

a. Identification of sampling sites

Following visits in Ethiopian, Kenyan, and Ugandan sites EMMC study sites have been identified. In Ethiopia Two sites have already been identified, the Didessa

valley and Gambella valley. A third site was suggested the Ghibe valley. FITCA activities in Didessa valley was particularly important to EMMC goals because plans are underway to settle people in the tsetse controlled areas of the valley. This will provide an opportunity for us to conduct baseline surveys before settlement and monitor changes after the settlement. Ghibe valley is also important for EMMC because there is baseline data on impacts of tsetse control on biodiversity from a previous project funded by IFAD. *See Map.*

In Kenya three sites have been identified from the areas where FITCA Kenya is currently operating. Selected areas are Angulai, Busia Township, and Budalangi. *See map.* In Angulai work to map land use and land cover as outlined elsewhere in this report has already started and socio-economic surveys are going on. In Busia township the environment is quite different and livestock development approach is quite different as the focus is on daily Zero grazing units. The thrust in this site will be to study how increased demand for animal feeds will impact on vegetation cover, how availability of manure will improve soil fertility and how small scale dairy farming will impact on water resources and biodiversity. The third site selected in Kenya is Budalangi which is in a low flat area near the shores of lake Victoria.

Landscape and land use patterns in these three areas are quite different ranging from the high elevated Angulai. The three sites represent a transect from high elevated areas in Angulai near the slopes of Mt. Elgon to Budalangi on the shores of lake Victoria.

In Uganda several sites were selected from the drier eastern part of the country through the wetlands in the central part of the country to the area bounding the pastoral areas of northern Uganda. Sites selected include: Tororo township ? Namwenda, Namasagali, serere in Soroti. These four sites represent a cross-section of the country.

Digital maps

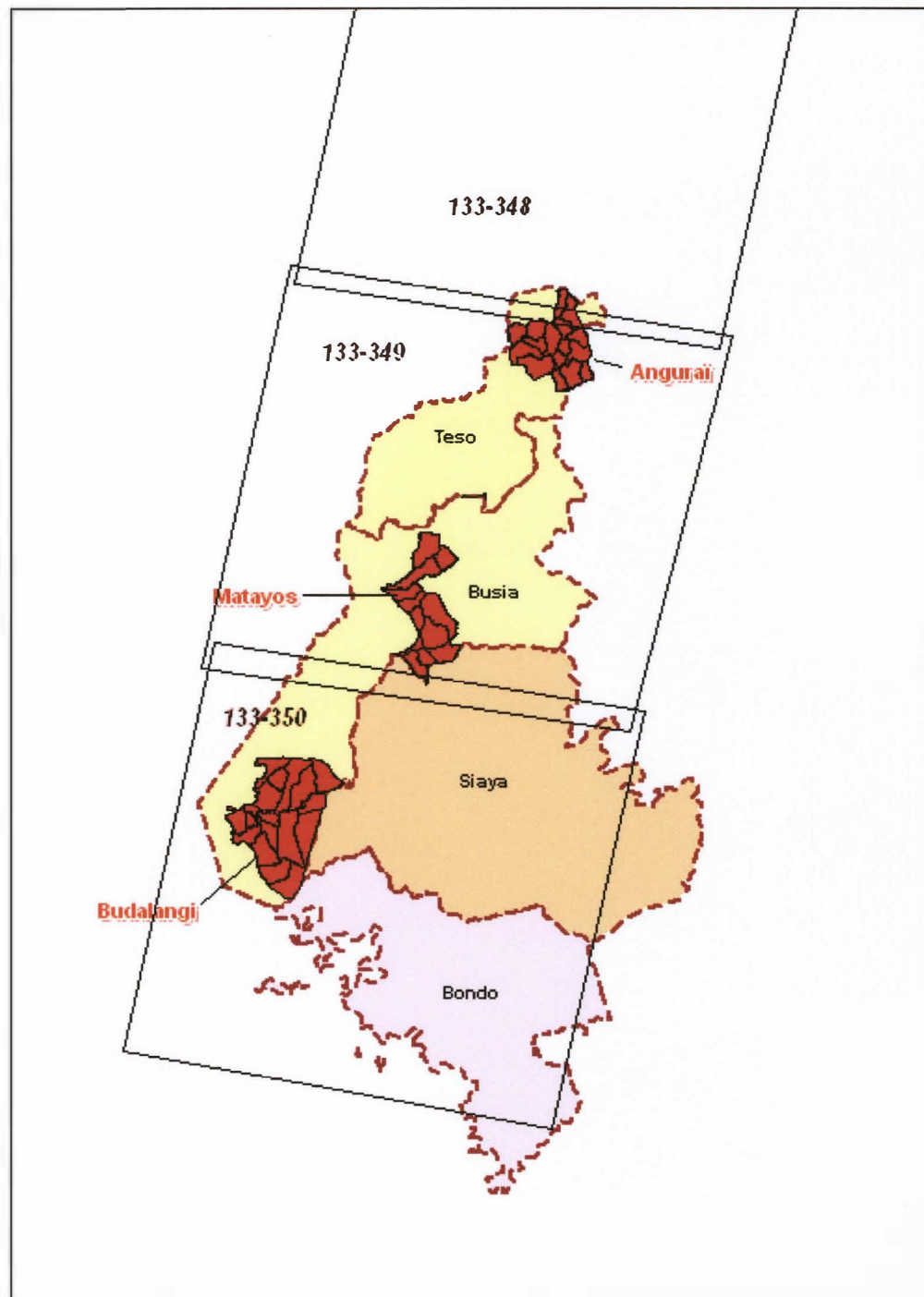
There are many types of maps but for our objective we will only take into account the maps useful for the project and available in vector format or easy to digitise (topographic and land use / land cover maps)

Kenya sample areas

Three sample areas (or pilot areas) have been selected as indicated elsewhere in this report and their area covers are as follows:

Angulai	: 10,210 ha (about 11 by 14 km)
Busia township	: 10,341 ha (about 12 by 20 km)
Budalangi	: 18,650 ha (about 13.5 by 19 km)

Figure 5 Kenya sample areas and Spot scene locations



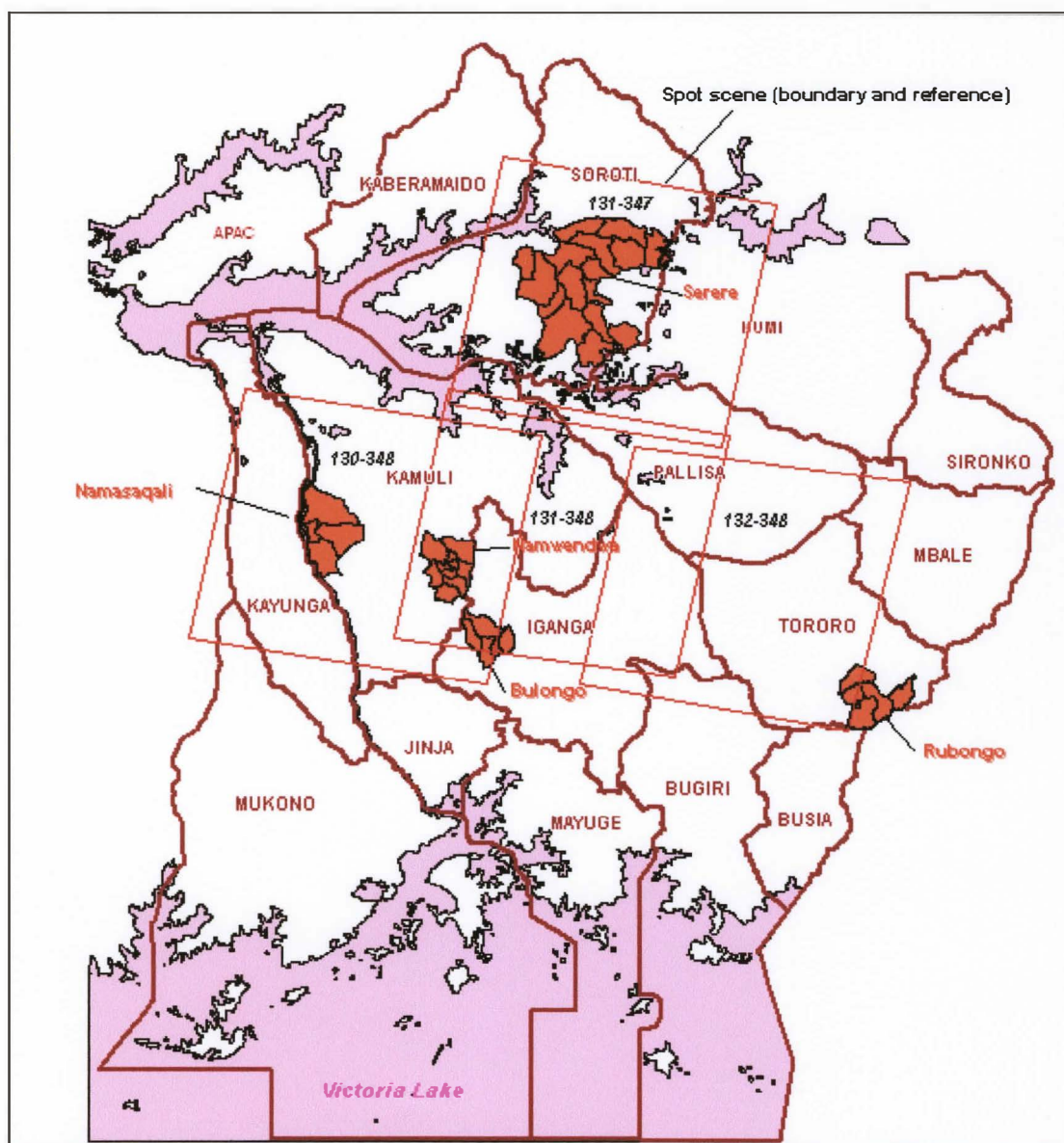
Scale 1:750,000

Uganda study sites

Five study sites have been selected for EMMC by STC and FITCA Uganda component. The sites are as follows:

Zone 1 : Namasagali (Kamuli district)	: 21,050 ha
Zone 2 : Namwendwa (Kamuli district)	: 14, 950 ha
Zone 3 : Bulongo (Iganga district)	: 9, 600 ha
Zone 4 : Rubongo (Tororo district)	: 14, 900 ha
Zone 5 : Serere (Soroti district)	: 72, 270 ha

Figure 6 Uganda sample areas - SPOT scene locations



Scale 1 : 1,300,000

b. Gathering of available data

Gathering of baseline data on EMMC study sites has continued during the reported period. We now have government reports on environmental profiles in four districts covering our study sites. These profiles will provide basic information on agricultural development, human settlements and changes in socio-economics of the study sites. Similar reports will be sort from other countries where they may be available. In Kenya we have received similar reports from the veterinary department through FITCA Kenya. We have also received data on socio-economic surveys done by various groups in the past. In Ethiopia we have identified topographic maps covering the study sites and plans to purchase them are underway once appropriate authorization is secured.

5. Socio-economic surveys in Kenya

Socio-economic surveys were started in Angurai in western Kenya. This was done as part of the work by Stephanie De Lacroix assisted by Alice Miriithi and the purpose of their work was to understand the driving forces for land use change and also assess people's perceptions on both the environmental change, driving forces for the change and the changing patterns of disease challenge.

Surveys were conducted in households using a questionnaire. Households were sampled using random numbers generated by use of a computer and stratified in geographically selected sampling blocks. Data was computerized and preliminary analysis were done and results presented in a seminar in ILRI. Further analysis is being done and following which a final report will be prepared.

a. Questionnaire development

A standard questionnaire has been developed to capture people's perceptions on environmental changes, agricultural practices and how such changes were associated with tsetse control. The questionnaire is now being revised and will soon be tested in the field.

6. Administrative and organizational visits

The EMMC coordinator has made several meetings during the early part of this period before he moved on to another project. Part of the meetings held include visits to national tsetse control authorities mainly in connection to secondment of community specialists to the project. In Kenya a community specialist is already posted to the project. In Ethiopia and Uganda recruitment procedures and negotiations with relevant authorities are still in progress.

7. Presentations of project activities

a. PAAT and ISCTC meetings

EMMC project activities were presented in two international meeting of tsetse control stake holders: the programme Against African Trypanosomosis (PAAT) and the International Scientific Council for Trypanosomosis Control (ISCTC). In both meetings an overview of EMMC research approach was

presented to the top managers of trypanosomosis control. During the discussions it was noted that EMMC has taken an adequate broad approach to studying environmental problems associated with Tsetse control. In recognition of EMMC endeavors, PAAT made a recommendation that environmental impact assessment is desired in all tsetse control projects especially those to do with the less known indirect impacts.

b. Stephanie De Lacroix and Alice Muriithi's seminar

Following completion of a tedious field study by Stephanie to map land use and land cover in Angulai a power point presentation was made to a small audience within ILRI. The presentation was based on preliminary analysis and some of the results are presented in this report.

8. Staff Changes in EMMC

During the period covered by this report changes have occurred in EMMC personnel. The Coordinator Dr. Daniel Bourzat moved to another project earlier during the period and his place has recently been taken over by Dr. Bernard Toutain. Meshack Nyabenge the former GIS specialist in the project also moved to another project and after a long period of recruitment process his place has now been filled by Mr. Evanson Njuguna.