

PRELIMINARY REPORT

ON

THE ROLE OF LAND AND TREE TENURE IN

THE ADOPTION OF

AGROFORESTRY TECHNOLOGIES IN

UGANDA

Interim report of the project, "The Role of Land and Tree Tenure on the Adoption of Agroforestry Technologies," a collaborative project between Makerere University, the Land Tenure Center of the University of Wisconsin, and the International Centre for Research in Agroforestry. The project is funded by the Africa Bureau of the U.S. Agency for International Development.

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We are optimistic that all conditions will remain the same for the detailed second phase studies.

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CHAPTER 1: INTRODUCTION

This is the interim report of the study, "The Role of Land and Tree Tenure on the Adoption of Agroforestry Technologies," a collaborative study between the University of Wisconsin's Land Tenure Center, Makerere University, and the International Centre for Research in Agroforestry (ICRAF). The study was developed after a realization by ICRAF that tenure factors are complex and play an important role in the establishment of long-term improvements such as agroforestry. This two-year project was funded by USAID and is also taking place in Uganda, Burundi, and Malawi.

1.1 Objectives of Study

The study has three research objectives:

- 1) To evaluate the role of tenure systems and laws concerning land and forestry on adoption of various agroforestry technologies,
- 2) To assist in designing and targeting agroforestry interventions with a high probability of adoption,
- 3) To identify tenure policies which would be more supportive of agroforestry development.

These are intended to assist ICRAF in its agroforestry programme in Uganda with the emphasis on enhancing adoption of agroforestry technologies. ICRAF is currently emphasizing research into several technologies in Uganda. On-station trials have been on-going in Kabale and Mpigi Districts since 1988. In Mpigi, the chief experiments concern multipurpose tree screening trials which compare growth and productivity from a number of species as well as their effect on adjacent crop performance (mixed trees in cropland). The most promising species in terms of growth include: *Cassia siamea*, *Jacaranda mimosifolia*, and *Grevillea robusta*. Trials of several species found *Alnus acuminata* and *Markhamia lutea* to be the least competitive with maize.

In Kabale, on-station trials were aimed at increasing soil conservation, improving fertility, increasing fodder supply, and adding productive upper storey trees in lines on the steep hillsides which cover most of the district. Among upper storey trees, *Grevillea robusta*, *Casuarina cunninghamiam*, and *Alnus acuminata* are showing the best results to date. On-farm trials of *Calliandra calothyrsus*, *Leucaena leucocephala*, and *Sesbania sesban* hedges are newly underway to improve fertility and fodder supply. A new program addressing increased fruit tree development has been initiated.

This study takes a broad approach by looking at the general issue of how tenure factors impact on all types of agroforestry systems, as well as on other long-term land improvements (e.g. terracing). The reason for this broader focus is that few farmers in our study regions have adopted any particular agroforestry technology currently under testing. Thus, the study is an *ex ante* study of the impact of tenure factors on the adoption of new agroforestry technologies, extrapolating results from an evaluation of the impact of tenure on indigenous agroforestry practices as well as on other long-term land improvements.

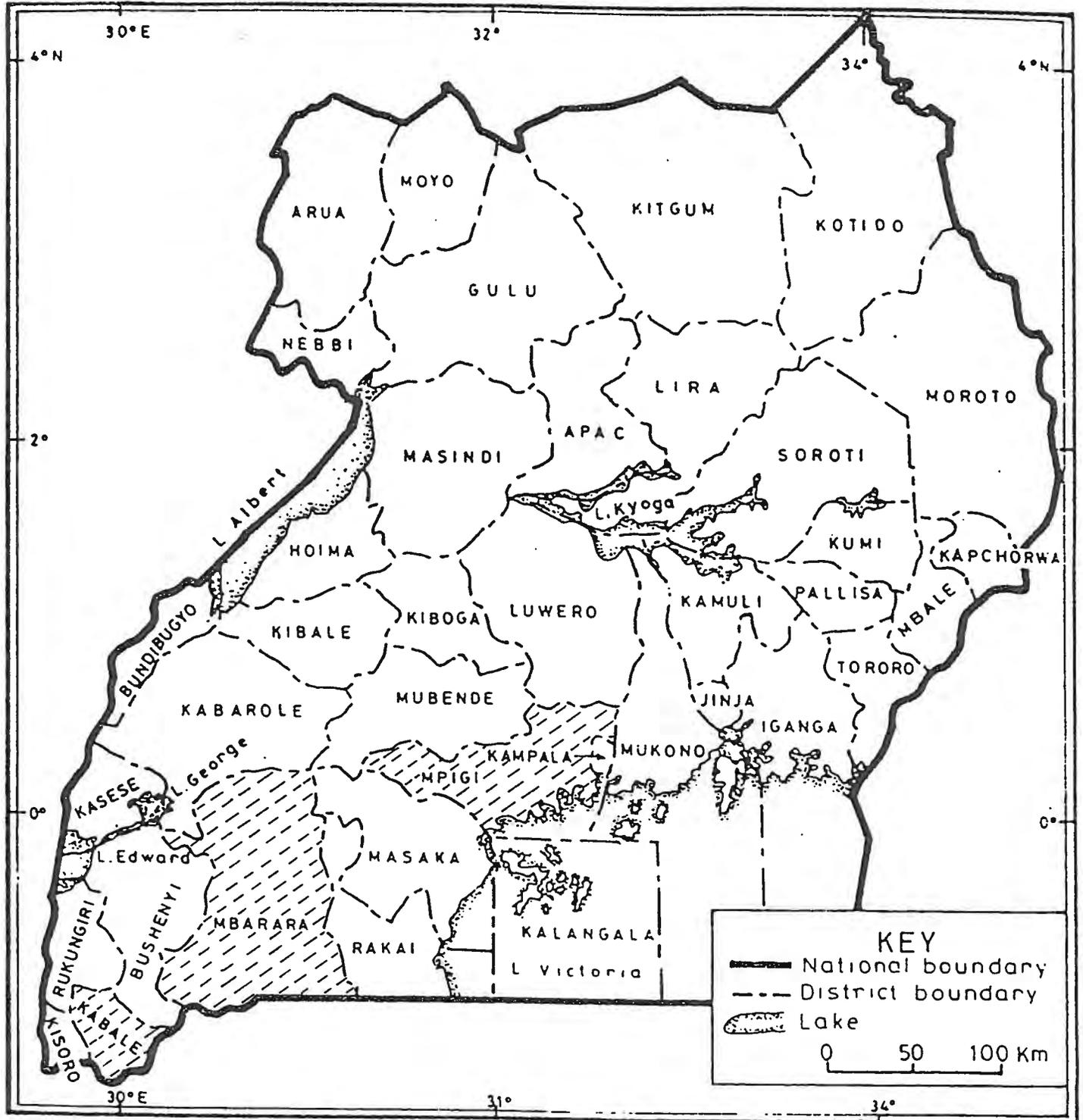
1.2 Methodology

The research is divided into two information collection stages. The first is a review of the literature along with informal interviews with farmers and key informants to determine tenure practices, agroforestry practices, and the links between the two. This stage has been concluded and the findings are reported here. The second phase will involve formal household surveys which will be used to quantify and statistically measure the implications of tenure factors on the adoption of agroforestry.

Three districts were selected for study in the first phase (see Figure 1). Mpigi District, surrounding Kampala on three sides, has a relatively high population density, produces several types of cash crops, contains a large percentage of mailo tenure

Fig. 1

UGANDA DISTRICTS



 STUDY AREA

land¹, and a number of agroforestry practices (indigenous and extended) are known to exist. Within Mpigi District we visited farmers both on mailo and public (or customary) land, as well as areas with accessible communal woodlands and those without. Kabale District has the highest population density of any in Uganda, extreme land fragmentation, a mountainous terrain, is under customary tenure, and farmers plant few trees. Within the district, we visited virtually all counties in order to include areas near the ICRAF project and those beyond its reach. Mbarara District was chosen as a relatively low population case. Unlike the other districts, it relies to a large extent on livestock production and contains a large proportion of communal grazing/shrub land. Like Kabale, few trees are found in the landscape. Within Mbarara we focussed on areas with relatively more settled agriculture, where there would exist more incentive for on-farm tree planting.

The topic of agroforestry is relatively new to Uganda, and not surprisingly, there is little written on it. While there has been some work on land tenure, little information could be found which looked at tree tenure.

Thus, we have made an initial visit to our sites to answer a large number of preliminary questions. The topics addressed were:

- 1) ecological characteristics of the regions
- 2) economic and institutional conditions
- 3) demographic characteristics
- 4) economic activities of households
- 5) land holdings, methods of acquisition, and rights to land
- 6) trees found and planted, and rights to trees
- 7) land and tree disputes and their settlement
- 8) administration of land and trees
- 9) major constraints to agroforestry adoption

¹ The mailo land tenure system was a freehold system introduced by the colonialists in the Buganda Kingdom (see Chapter 4).

A comprehensive questionnaire guide was originally designed for collecting the necessary information. After a two-day trial in Mpigi, the questionnaire was found cumbersome to use and it took too long to administer per farmer. The team revised it and concentrated on a few vital issues which served as a guide for the interviews - Appendix 1.

All field visit arrangements were made by the District Forest officers who also informed the respective Chiefs, Resistance Council Chairmen and villagers in the areas to be visited. This was preceded by a letter to the District Administrators giving them the objectives of the study and seeking their permission for the work. There were no problems encountered during the field survey.

Each district was covered in 5 days. With the team splitting into smaller groups, about 20 - 30 farmers were interviewed in each parish selected. The interviews lasted as long as necessary, but varied with the interest and willingness of the farmers to discuss the issues. In some cases, group interviews were done. Some farmers also willingly permitted a tour of their farms. The team was warmly welcomed and farmers were very cooperative and honest in their answers.

We questioned numerous types of people in addition to farmers in the course of the project. This included agroforestry researchers, scientists and technicians from the Ministries of Agriculture and Forestry, local government leaders, lenders, private sector businessmen, herders, and women's farming groups.

1.3 Background

Traditional agroforestry technologies have been practiced in Uganda from the time settled agriculture started. These mainly involved leaving big trees in crop fields and home gardens. In some cases there was deliberate but random planting of some trees, especially to serve as shade trees, interspersed with perennial crops such as coffee and bananas in southern Uganda. The main tree species were *Ficus natalensis* which is also used for bark-cloth production and *Maeosopsis eminii* for timber.

Further, other important trees such as *Chlorophora excelsa* (for timber) and *Markhamia lutea* (for poles), which generally germinated on their own, were protected and allowed to grow to maturity. Most recently a variety of fruit trees have been integrated, especially in homegardens. In all these examples no deliberate effort was made to maximise the positive interactions and contributions of trees towards increased crop and livestock production. Other types of plots had hardly any recognizable tree integration systems apart from leaving huge trees in croplands. The productivity of these traditional systems is unknown.

As for tenure, population pressure has led to a high degree of individualization of land rights. Land has been passed from father to sons for generations in most regions and has been sold for decades in many. The process of individualization was hastened during the colonial period most notably with the creation of mailo (freehold) areas in the Buganda Kingdom. In 1975 the government of Uganda passed a decree vesting all land in the state. However, the pre-1975 distinct tenure arrangements remain operational on the ground: mailo-owners (under state leasehold), mailo tenants, and customary holdings. This situation is expected to change once again as a new land tenure reform bill has been drafted and is likely to be put to parliament soon.

So far, any laws related to tree tenure, ownership, management and utilization apply to forest reserves. Numerous reserves have been gazetted and many of them are well protected by Forest Department personnel. During colonial times, there were many bylaws in place, some of which pertained to tree planting. Today, only one tree species, *Chlorophora excelsa*, is "reserved" by forest law wherever it is regardless of who has planted and/or protected it to grow to maturity. It was considered government property and is cut after obtaining permission/licence from the Forest Department. For the most part, farmers are free to plant trees on their own land. However, mailo tenants were effectively prohibited from developing permanent structures and planting trees by owners as these serve as indicators of permanent ownership.

1.4 Organization of the report

The remainder of the report is divided into 4 main chapters. Chapter 2 presents an overview of the study regions, with sections on the physical geography & climate, demographics, and resources, economic activities, and constraints of households.

The third chapter presents the agroforestry practices found during our fieldwork including the species, arrangements, and uses of the trees.

The fourth chapter contains a review of land and tree legislation along with a discussion on its effects on the rural population. Added to this are the results of our informal interviews concerning the following aspects: modes of land acquisition, rights to land and tenure security, land disputes and settlement, and customary tree tenure practices.

The final chapter is an initial attempt to examine the relationship between agroforestry adoption and various tenure factors. It also discusses the most important non-tenure constraints mentioned by farmers and other key informants in our interviews.

CHAPTER 2: DESCRIPTION OF STUDY AREAS

2.1 Mpigi District

2.11 Relief, Climate, Soils and Vegetation

Mpigi district is the rural area virtually surrounding Kampala city and extends to the north, west and south covering a total area of 6278 km², with 4514 km² of land in the lakeshore region - see Figure 2. Mpigi district headquarters are located 34 kms west of Kampala along Masaka road.

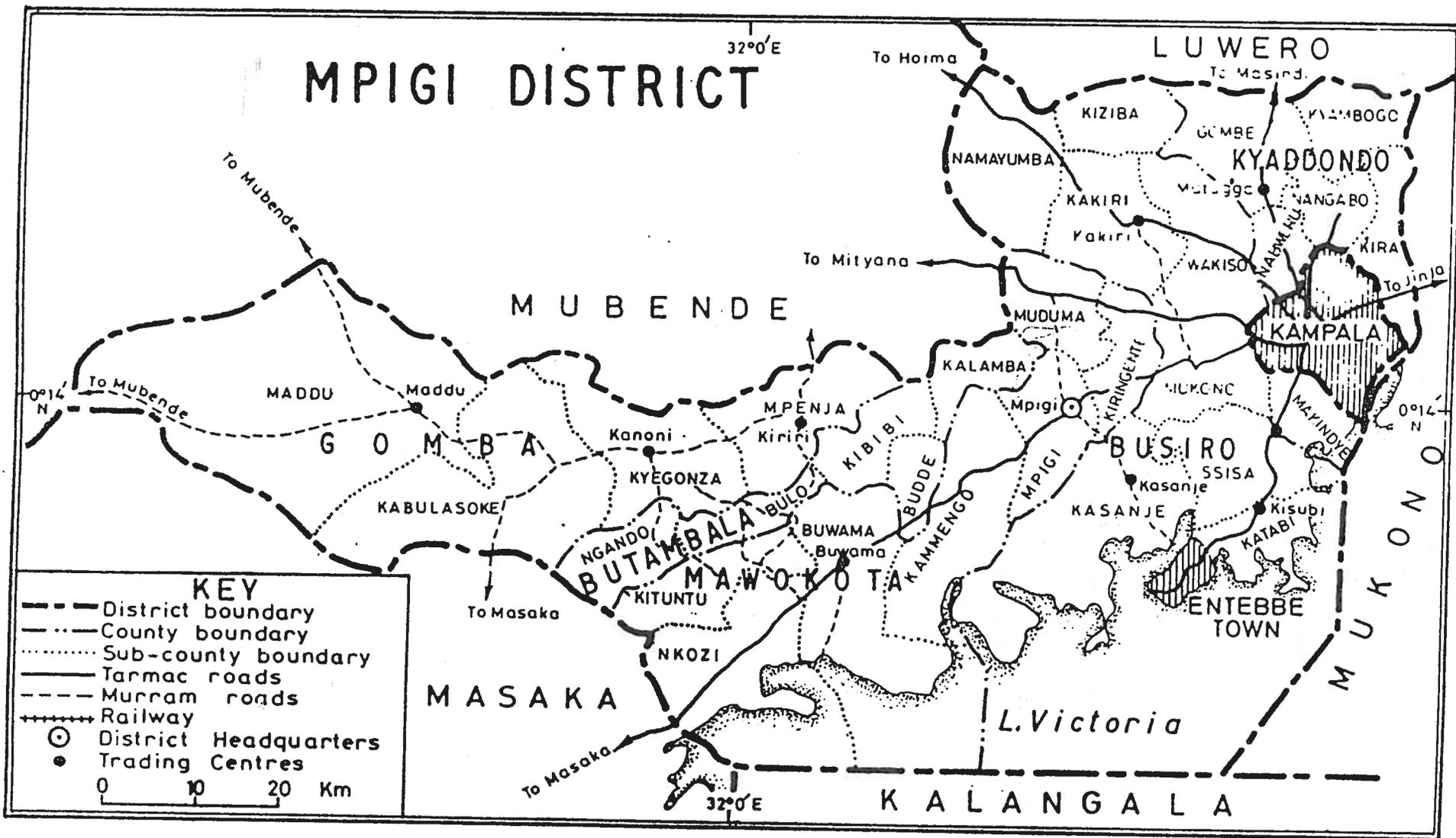
The terrain typically consists of undulating plateau with flat-topped hills (15%) of slopes between 10-20%, plains and wide-bottomed valleys generally occupied by papyrus swamps - all averaging 1182 - 1341m above sea level.

The soils are typical ferralitic red/yellow sandy/clay loams (latosols) with pH 5.5 - 6, rather leached but generally well drained. Valleys have colluvial grey sandy loams while swamp bottoms have grey clays and silt with pH 4.5 - 5.2. The soils are described as being generally less fertile. Than those in other districts of Uganda.

Climatically, Mpigi district experiences little variation in temperatures throughout the year with minimum recorded temperatures of 11.6°C and maximum of 33.3°C but a daily mean of 22° - 25°C. Mean annual rainfall is between 1200 - 1550 mm with a bimodal distribution. The primary rainy season normally occurs during February - June and the second season September - November. The rest of the months are considered "dry seasons" though occasionally broken by rainfalls. (These days there seems to be less of a pattern of distribution and it can rain any time). Average wind speeds are 22kph. There are numerous streams in the area but Lake Victoria is the only open water body.

The general vegetation is comprised of 5% dense moist natural forests, 90% savanna woodland, and the rest in swamp.

Fig 2



2.12 Population

According to the 1991 population census, the total population of Mpigi district was 913,867 of which 455,703 were males, 458,164 females, 137,126 urban (9.2%) and 776,741 rural (90.8%) with an overall density of 202 persons/km², rising to 220 if forest land is excluded. Average household size was 4.3 persons. The population of the two counties sampled totaled 522,068 (57.1%).

While most of the population is evenly distributed over the land, there is a linear pattern along major roads and some concentration around townships, trading centres and other institutions. Mpigi is next door to Kampala with 774,241 inhabitants and contains Entebbe (42,763) and Mpigi town (7,283).

2.13 Household Resources

Although the district's average family size was 4.3 persons, the households interviewed had 4-10 persons made up of husbands, wives and children; in many cases close relatives were also resident. These met virtually all labour requirements but in a few cases hired labour was used if funds permitted, mainly when the children had gone to school.

Most land was not surveyed and so exact areas could not be obtained. However, the majority claimed to have 3-5 acres in one piece immediately around the homestead. Very few had larger land holdings and/or distant fields. On the whole, family land was clearly marked by boundary trees/shrubs. Land was operated under three main tenures: mailo owners, mailo tenants, and customary farmers, all distinctive despite the 1975 Decree which placed all land under state ownership.

The agriculture and livestock census in 1991 estimates the total population of cattle at 125,116, goats at 32,334, and sheep at 11,456. Judging from the homes visited, there was not an equal distribution. While the majority had a couple of cattle, 2-5 goats, 1-3 sheep and some pigs and chicken, few had over 20 head of cattle and more than 5 goats. Due to land shortage, wealthier homes (often educated) had adopted

zerograzing of 2-3 dairy cows of exotic breed and also raised poultry. The census puts the number of cattle at 28 per km² or .6 per household. The numbers for goats and sheep are both very low.

2.14 Economic Activities

Economic activities of the district hinge on agriculture as a major landuse with intensive mixed farming practices focusing on the following:

- (a) Food crops: bananas, potatoes, maize, cassava, groundnuts, beans, fruit, vegetables, sugarcane.
- (b) Cash crops: coffee, cotton, some vanilla.
- (c) Dairying and poultry farming with some areas having a large-scale cattle grazing system.

Few inputs are used outside of manure. Mulching is done only in coffee and banana plots. Crop stover is normally used for composting or mulching.

Other economic activities include fishing (especially in Lake Victoria), trading in various goods along the roads, local markets and trading centres, and a few industries such as jaggery, timber production, furniture, handicrafts, brick-making, and quarrying. Beer brewing, firewood, and charcoal selling are also very common.

2.15 Major constraints

Every farmer interviewed identified shortage of land as a major constraint to their agricultural activities. This was aggravated by poor marketing facilities for purchase of their produce resulting in frustration and discouragement. This is attributed to the failure of cooperatives due to lack of crop finance. For other crops outside the cooperative system, the problem was lack of transport from homes to the market.

2.2 Mbarara District

2.21 Relief, Soils, Climate and Vegetation.

Mbarara district lies in the south-western region of Uganda with Mbarara municipality located 260km along the Kampala-Kabale road from Kampala. It covers a total area of 10,839 km² with only 252 km² of open water bodies - mainly Lakes Mburo, Kachina and Nahivali (see Figure 3).

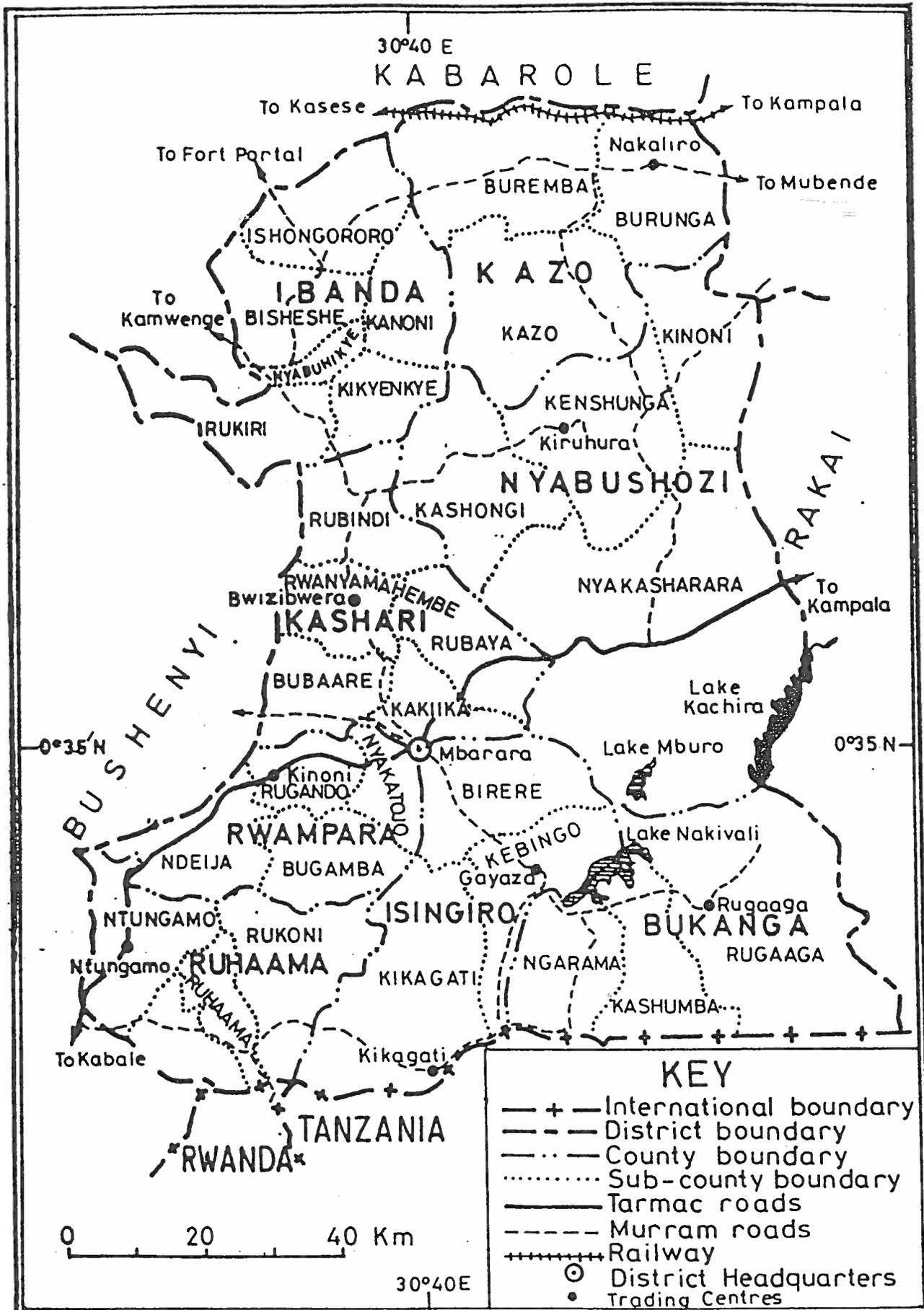
Mbarara is made up of an undulating plain (30%) and hilly ridges (70%) at an average altitude of 1290 - 1524m above sea level. Most hills are round-topped but rugged with steep slopes (10-20%). The highest peak is at 1571m. There are also wide valleys between some of the hills which become seasonal swamps.

Most of the soils are orthic and humic ferralsols comprised mainly of sandy and sandy-clay loams with a dominant yellowish colour. The soils are generally well drained but become water-logged in the flat plains and valleys because of poor drainage.

The district is a generally a "dry" region compared to others with minimum temperatures of 15°C, maximum of 33°C and a daily average of 25° - 27°C. Though rainfall is bimodal, March-May and August-December, total annual rainfall averages 1200mm with some parts of the district receiving as little as 500 - 750mm during 60 - 120 days/year. The evaporation rate is high (125-180mm/month) which generally exceeds the monthly rainfall amount. Therefore there is serious shortage of water for both humans and animals; the situation can become critical during dry seasons or droughts.

The available natural vegetation is classified as a mosaic of dry *Acacia* and grass savanna with *Euphorbia candelabrum* indicating extreme dry conditions in some parts. Most thick woodlands were cleared in 1950-1960 as an anti-tsetse fly measure. Thus

MBAKARA DISTRICT



most of the district is treeless grassland giving rise to the expression "Mbarara bare hills". *Acacia* thickets are found mainly in the gazetted ranches and Lake Mburo National Park.

2.22 Population

The 1991 census gave the total population of Mbarara district as 930,772 made up of 458,257 males and 472,515 females, with 44,616 urban (5%) and 884,156 rural (95%). Average density was 88 persons/km² and average family size was 5.4 persons. The two counties sampled - Rwampara and Kashari - had a total population of 242,403 (26%). Mbarara Municipality is the major urban area with 41,031 people.

Most of the population appears clustered around cultivable lands, water sources, trading centers and institutions. Vast areas are devoted to communal grazing grounds and demarcated ranches. Thus, the pressure on land is greater than indicated by the density of 88 persons/km².

2.23 Household resources

The average household size of 5.4 people generally serves to provide sufficient labor for household needs. Labor needs are somewhat lower than other regions due to a heavy reliance on livestock.

There are vast tracts of land which are used communally for livestock herding. Each household will have long-term rights to a small area around the home as well as one or more outlying fields for cultivation. In a normal year, households will cultivate 4 - 6 acres. Most households practice shifting cultivation and even relocate houses to find more fertile land. All the land is under customary tenure.

The agriculture and livestock census of 1991 gave the following animal populations: 775,812 cattle, 615,312 goats and 91,492 sheep. This represents the largest number of cattle and goats of any district in Uganda and Mbarara, along with Bushenyi, are the

largest suppliers of animals for slaughter in Kampala. Most families have large herds but it is a taboo to reveal exact numbers to strangers. On site one would estimate 20-50 cattle per average family besides goats and a few sheep. These figures give an animal to square kilometer density of 73 for cattle, 58 for goats, but only 9 for sheep. The census indicates an average of 4.55 cattle per household and 3.61 for goats.

2.24 Economic Activities

Most of Mbarara district falls within the agro-ecological zone described as "pastoral dry and semi-arid range land zone" of Uganda. Consequently the largest proportion (drier sites) are devoted to traditional pastoralism with portions now demarcated as ranches giving rise to the high animal population in the area.

On better (wetter) sites, there is intensive cultivation of the following:

- (a) Food crops; millet, sorghum, beans, maize, potatoes, groundnuts, bananas, peas, onions, cabbages, tomatoes, passion fruits and pineapples.
- (b) Cash crop: coffee, bananas.
- (c) Dairy farming is found in a few places.

Cash income is generated from sale of animals, milk, ghee and food crops. Some people engage in brick making though the availability and cost of firewood is a real problem. Sale of firewood and charcoal from the *Acacia* trees being cleared from ranches or open access thickets is a lucrative business especially for the young men.

2.25 Major Constraints

In terms of agricultural production, the major problem is climatic - poor and unreliable rainfall. Another major constraint was poor marketing for both crop and livestock products. Thus, primary commercial buyers pay very low prices in the villages as farmers have no transport of their own to towns and markets where they could receive higher prices.

2.3 Kabale District

2.31 Relief, Soils, Climate and Vegetation

Kabale district is located in the extreme south-western corner of Uganda generally referred to as the "Switzerland of Africa" due to its very hilly terrain. Kabale, which was part of the larger Kigezi district covering Rukungiri and Kisoro districts as well, is only 1,827km² with Lake Bunyonyi taking 94km² (see Figure 4).

Kabale is a typically hilly region and the hills run in more or less continuous ridges with valleys in between which end up as swamps at the lowest levels. The general altitude is 1270 - 2350m above sea level, the mountain peaks rise up to 4220m. Most hills are round-topped with smooth convex slopes (8 - 30°) but other steep slopes exceed 50°. There are numerous streams and swampy valleys.

The soils are generally of volcanic origin and thus fertile. There are also pockets of ferralsols, nitosols and andosols which are quite degraded.

Due to its altitude, Kabale temperatures are generally low. The mean minimum is 14°C, mean maximum is 22°C and the daily average is 17°C which occasionally drops to below 10°. Mornings are usually foggy.

The region has a bimodal rainfall pattern occurring in March-June and September-December while the rest of the months are dry seasons. Annual rainfall ranges from 1000-1500mm.

The altitude and climate combine to produce afro-alpine montaine type of vegetation, bamboo forests and tropical moist forests. Few tropical moist forests remain outside the gazetted reserves such as Echuya and Bwindi Forest reserves due to intensive human activities. Dense forests occupy no more than 10% of the land (40,000 ha)

and open woodland less than 10%. The rest of the land is intensely cultivated with a few scattered woodlots of planted *Eucalyptus* and naturally regenerating *Acacia mearnsii* (Black wattle). As a consequence, hillsides are virtually barren of trees or shrubs.

2.32 Population

Kabale district is reputed as being the most densely populated. The 1991 census gave its total population as 417,218 made up of 197,695 males and 219,523 females. Of the total, 29,246 were urban (7%) and 384,972 rural (93%) with an overall density of 246 persons/km². However, if forest land is subtracted, the density rises to 322 and in some villages the density can be as high as 620 persons/km². Kabale Municipality itself has a population of 29,246. It is the district with the highest rate of out-migration because of land shortage.

Apart from Kabale Municipality, all the counties were sampled. The population is generally evenly distributed throughout the district although settlements tend to be concentrated in the middle of less steep hill sides in order to avoid windy hill tops and valleys which are fully cultivated.

2.33 Household Resources

Household size averages 5 persons but can vary from 4 to over 13 persons depending on the number of wives a man has and lives with; polygamous marriages are the order of the day. The high population pressure has led to active labor markets which provide additional resources to households.

Most households have land holdings between a low of 0.4ha to a maximum of 2 ha due to population pressure and sub-division of land between wives and children. A family's land exists in 6-12 scattered parcels both in near and far (up to 6-10 kilometers) fields. Households will normally hold land in several different toposequences.

General conditions are not very favourable for animal rearing which is reflected in the numbers held: 54,823 cattle, 88,725 goats, and 47,854 sheep. It is not possible to keep large numbers per family due to shortage of grazing land. Livestock is held mainly for savings or security for households.

Quite a few wealthy and progressive farmers have large herds of exotic dairy cattle which are raised in the drained swamps. A number of families also keep a few pigs and poultry. The census gives an animal/km² figure of 32 for cattle, 52 for goats, and 28 for sheep. The figure for goats is similar to that of Mbarara while that for sheep is the largest of the three districts.

2.34 Economic Activities

Kabale depends entirely on cultivation of annual food crops. The region is famous for Irish potatoes and cowpeas, a lot of which are sold to markets outside the district up to Kampala. Also generating income are bananas and sorghum. Sweet potatoes and beans are grown for local consumption. Wheat and barley are becoming important cash crops and most recently pyrethrum has been introduced. Among the vegetables, cabbages, carrots and tomatoes are grown extensively. As stated earlier, dairy farming is practiced by a few well-to-do persons.

Households do not engage in many soil fertility measures. Fertilizers are not used and manuring is only applied to plots close to homesteads. Mulching is found only on banana plots and fallowing is severely restricted due to land shortage.

Brickmaking is concentrated in a few valleys due to shortage of fuelwood. Sale of *Eucalyptus* poles and firewood is a booming business. Beer brewing and transportation (of bricks, charcoal, and bananas) are also important revenue earners. Agricultural labor, although at a low wage, is widely used by households for revenue.

2.35 Major constraints

The most critical constraint is land shortage, exacerbated by fragmentation, which does not allow expansion of agricultural activities per family. Thus, agricultural productivity is declining due to deteriorating soil fertility as the whole land is prone to soil erosion.

Land fragmentation is a major constraint on development in the area and its implications on tree planting are discussed in Chapter 5. However, it should be emphasized here that due to the extreme distances of many fields, many men do not have the desire to work on the more distant plots. Without their interest in the plots, it will be difficult to achieve any productivity increases on them.

Transport is a very serious problem for produce movement due to the hilly terrain. In the absence of animal power, produce is largely moved on foot to the nearest local market for sale, requiring a great deal of labor time.

CHAPTER 3: AGROFORESTRY PRACTICES

3.1 Introduction

As stated in the main introduction, some form of traditional agroforestry systems have been knowingly or unknowingly practiced for years. Most of them were incidental rather than by deliberate design. The practices were not aimed at optimizing the multipurpose contribution of trees in the crop and livestock production system. That is, most trees integrated were for one major function which yielded direct products such as shade (for humans), fruit, and boundary markers.

Hence, the primary agroforestry niches used in traditional systems were boundary planting of shrubs for fencing or upper storey trees for markers; and homegardens. Scattered trees in croplands were more unintended than purposeful. Later, during the colonial period, some upper storey trees were introduced as shade for bananas and coffee fields (e.g. *Ficus spp.*). Also, as the area under communal forests declined, an increasing number of woodlots were planted.

In recent years, the number of farmers planting trees and the number of different agroforestry practices found are both greater in Mpigi District than in the other two. Population pressure along with proximity to Kampala has had an influence on this both through increased incentives to farmers and by greater technical support and assistance for tree planting efforts. We now discuss the more common agroforestry practices in each of the study Districts.

3.2 Mpigi District

3.21 The Agroforestry Systems

The most dominant agroforestry system in this district is the agrisilviculture system practiced mainly in the form of multistrata home gardens. Some form of traditional silvopastoral systems exist on pockets of remaining communal grazing grounds with

indigenous natural woodlands; in some cases trees have been thinned out for pasture improvement if fenced.

One striking feature of households in Mpigi District is the prevalence of fruit trees in homegardens. Almost all households visited had a jackfruit tree (*Artocarpus heterophyllus*). In addition, mango (*Mangifera indica*), papaya (*Carica papaya*), and avocado (*Persea americana*) trees were ubiquitous. Some households had planted guava (*Psidium guajava*) and a couple households had also planted orange trees.

As for non-fruit trees, there is a whole variety of trees ranging from high canopy timber trees to allow canopy shade trees to others specifically for poles and fuelwood which can be found in homegardens. The majority of non-fruit trees are indigenous species such as *Ficus natalensis*, *Maesopsis eminii*, *Markhamia lutea*, and *Chlorophora excelsa*. A couple of exotics can be found on home compounds having been planted originally as ornamentals for beauty but have been left to grow big; some have become good shade trees (e.g. *Delonix regia*). The homegarden was by far the preferred location for new tree plantings by Mpigi women farmers (Kasente, 1992).

Some specific trees may be either left or planted along boundaries or as boundary markers (e.g. *Ficus natalensis*). *Dracaena spp.* is a low shrub which is often used to mark corners of a plot while *Cupressus spp.* is a commonly used hedge, especially alongside dirt roads.

The most common integrated agroforestry system is the use of upper storey shade trees for coffee and banana. This system was introduced in the colonial period and include *Ficus spp.*, *Albizia spp.*, *Ricinus communis*, and *Markhamia platycalyx*. A number of other food crops such as potatoes, beans, cassava, yams, vegetables, which are more tolerant of shade are cultivated below randomly scattered trees (e.g. *Markhamia lutea*).

Woodlot plantings are also found, especially in Kyanddondo County to the north of Kampala. These are found on small to medium sized farms in addition to larger ones

in response to acute fuelwood and pole shortages brought about by lack of communal woodlands. By far, the most popular species is *Eucalyptus spp.*

A few farmers who have engaged in zero grazing of dairy cows have established some plots or alleys of *Leucaena* for fodder. These farmers operated under the HAIFA project which provides improved dairy cattle and seedlings for fodder trees to farmers and is extended through both religious groups such as churches and the YWCA.

There was no strong evidence of intensive or proper tree management except for pruning of heavily branched trees especially *Ficus natalensis* and mangoes. However, regular pruning of trees in cropland was not practiced possibly leading to conclusions that all trees are competitive with crops.

Many of tree species encountered during the preliminary survey are shown in Appendix 2 (from AFRENA Report No. 44).

3.22 Establishment Methods

The majority of the indigenous trees found on the farms grow from wildings which were merely protected and allowed to grow because they were known to be useful in one way or another. The only indigenous tree which has been directly planted from stem cuttings is *Ficus natalensis*. Even many fruit trees would have germinated from seed thrown after eating the fruit although now seedlings of improved varieties can be purchased from nurseries.

No farmer visited in the area around Mpigi town had a personal nursery but there were some group nurseries and those run by the Forest Department in sub-counties. The seedlings in greatest demand from the Forest Department nursery are *Eucalyptus* and various fruit trees. A women's group raised a number of exotic agroforestry species including *Calliandra calothyrsus* and *Leucaena leucocephala*. In Kyanddondo, on the other hand, we saw several on-farm nurseries raising a variety of species (e.g. *cupressus*, *leucaena*). Many were established with the aid of IAMBLAKPOWER, a

business involved in designing fuel efficient stoves and briquettes from crop residues.

3.23 Availability and Uses of Tree Products

Mpigi district has a number of pockets of "open access" natural forests from which farmers collect wood products. These are found mainly around the Kampala-Kabale road to the north and south of Mpigi town. There are also a number of gazetted forests (over 60 in the district) as well as numerous large woodlots found on private "mailo" land (over 200). Harvesting from the gazetted reserves is becoming restricted and may eventually be prohibited as a conservation measure.² As for the private forests, according to the extension officer, many of them are being converted into cropland as population pressure increases.

The incentive for farmers to plant their own trees is increasing every year as the number of trees in open access woodlands shrinks. These areas have already been largely depleted in the northern part of the district. There, most tree products must be purchased in the market.

The most important end products from trees are fuelwood, building materials, and fruits. Fruits are commonly gathered from own homegardens and some are purchased in the market. Fuelwood and poles are collected from common woodlots where feasible, but most often are purchased from neighbors or traders. In particular, fuelwood markets are very active in the north of the district as compared to the rest. Tree products for medicinal uses were collected mainly from common woodlots (where possible). The most obvious service used is that of shade. Tree planting for shade is mainly for humans but also found in coffee and banana fields. Windbreak functions are more incidental than intended.

² Just prior to our visit, a Forestry Department worker was hanged by a member or members of the community for allegedly prohibiting local use of the nearby forest while allowing outside concessioners access.

There were clearly lucrative markets for fuelwood and poles. Two to three year poles of *Eucalyptus* sell for between 600 and 1,000 shillings in the Kampala market so a well-managed woodlot can be more remunerative than coffee.³ Prices for fuelwood and charcoal are highly sensitive to the prices of alternative fuels in the city of Kampala. Lastly, fruits (especially avocado and mango) can also generate revenue for Mpigi households.

3.3 Mbarara District

3.31 Agroforestry Systems

Mbarara district does not have a widespread purposeful agroforestry system. The predominate land use is the natural silvopastoral system practiced mainly in traditional grazing grounds for livestock. As stated earlier, most of the thick woodlands were cleared as a tsetse control measure. Therefore intensive planting of trees is still feared as a means of reintroducing tsetse flies. Grazing areas now consist of widely scattered trees, mostly naturally regenerating *Acacia spp.*

On farms, sedentary households will have a few trees in a home compound and woodlots are popular. Households, also will adopt live fencing around the home compound.

Among the MPTS in the area, a few *Albizzia* trees can be found scattered around, some as shade trees on home compounds. The AFRENA Diagnosis and Design report (number 4) the presence of *Ficus*, *Markhamia*, *Pinus*, and *Cupressus* trees on farms in the district. Fruit trees are extremely rare.

Due to the general treelessness of the district, the most commonly planted tree is *Eucalyptus* in the form of small woodlots near homes to provide the much needed poles and firewood.

³ In fact, the extension officer mentioned that conversion of coffee to *Eucalyptus* has taken place.

For boundary fencing, common trees planted are *Euphorbia tirucalli*, *Thevetia peruviana* and cactus species.

The mixing of trees with crops is rare with the exception of banana. There, some farmers plant *Ficus* trees for shade.

3.32 Establishment Methods

Trees are mainly naturally regenerating in the district. An exception is Eucalyptus for which seedlings are planted. No nurseries, aside from the one managed by the Forest Department were spotted during the fieldwork. Even these, number few due to the lack of government forests in the district.

3.33 Availability and Uses of Tree Products

The lack of dense tree stands has created a scarcity of fuelwood, poles, and timber. The remaining Acacia woodland is a major source of firewood and charcoal. Fuelwood and poles are increasingly being gathered from one's own woodlot or purchased from the market. Timber is obtained either from the Government coniferous plantations or natural tropical moist forests outside the district.

Other common uses for trees or shrubs are hedges around homesteads or boundary markers. Fruits are not highly produced or consumed.

3.4 Kabale District

3.41 Agroforestry Systems

In general, Kabale district is as "treeless" as Mbarara district due to intensive cultivation. Thus, there is no recognizable traditional agroforestry system to describe.

The three main niches where trees are observed on farms are in isolated woodlots, in the homegarden area, and along boundaries.

On private farms, the most common trees are the planted *Eucalyptus* woodlots and now the naturally generating (but originally planted) *Acacia mearnsii* (black wattle) woodlots. These are often found on very steep slopes which have been considered to be unsuitable for cultivation. They are also planted as single trees on home compounds.

In the homegarden area, there is relatively more tree planting and sparing of trees than in the outlying fields, although the practice certainly cannot be described as an intensive homegardening system. Fruit trees are very rare and are mostly the so called "mountain pawpaw". A few farmers had planted oranges. Some single trees of *Grevillea robusta*, *Ficus natalensis*, *Casuarina spp.*, and *Markhamia spp.* can be found as well. A comprehensive list of trees found in the district is given in Appendix 3, adapted from an ethnobotanical survey done by the ICRAF/AFRENA-Kabale project.

Other trees scattered around but also specifically as boundary markers are *Erythrina abyssinica* and *Ficus natalensis*. Some homesteads have hedges of *Cupressus lusitanica* but *Euphorbia tirucalli* is especially prevalent as a boundary fence. Occasionally, some cactus species are used for fencing or boundary marking.

Other agroforestry practices include *Ficus natalensis* and castor oil (*Ricinus communis*) trees in banana fields the latter which are used to support the bananas. Lastly, due to the effect of the ICRAF - AFRENA agroforestry research project, a number of women groups have started planting *Calliandra calothyrsus* and *Leucaena leucocephala* hedges either around their home compounds or in fields near the homesteads where they can be closely watched or protected against animal damage.

The older farmers mentioned certain practices which were encouraged or enforced in the colonial days but which are no longer followed. These include cypress windbreaks

and soil conservation measures on hillsides.

3.42 Methods of Establishment

Aside from the few exotic fruits, the exotic multipurpose trees introduced by ICRAF and CARE, and *Eucalyptus*, most trees are not purposefully established by farmers. Instead, some of the naturally regenerating trees are allowed to mature. Care must be taken to prevent browsing damage to young trees. For this reason, many of the woodlots are planted on plots which are visible from the home compounds. Women's groups who are trying highly palatable species are establishing their trees alongside crops in order to discourage herders from grazing their livestock in the newly planted fields.

3.43 Availability and Uses of Tree Products

The major products desired of most multipurpose trees are poles and firewood which are in very short supply. The main sources for these (and charcoal) are *Eucalyptus* and Black Wattle which are found mainly in private lands, although there are areas of the district in which some communal woodlands remain (especially in the north-east).

Homegrown castor oil trees are used for stakes to support bananas as well as for medicinal purposes. Other medicinal trees specifically mentioned by farmers are *Eucalyptus*, Black Wattle, *Erythrina*, and *Vernonia*, among others.

CHAPTER 4: LAND AND TREE TENURE

4.1 General Concepts of Land Tenure

General land tenure issues are discussed first in this chapter followed by discussions of specific tenure information gathered from fieldwork in the three districts.

Land tenure refers to the integrated institutional arrangements through which individuals groups and organization gain access to land, incorporating economic, social and political issues. While it is often used to describe the mode of holding land, a more realistic characterization of land tenure would be a "bundle of rights" in land. The same holds for tree tenure.

Tenure types differ and are often complex. John Bruce () points out that "in grappling with tenure, one moves beyond the readily observable into the realm of values and norms." Land and tree tenure practices result from the interaction of state tenure law and socio-cultural values and customs of a given community. Often, customary land tenure rules override and can even run counter to state land tenure laws. A complex set of personal arrangements and transactions determines which land holdings change hands and whether for permanent ownership or temporary user rights. Similarly, tenure rules govern the use of communally used areas such as local woodlands and grazing areas and public land areas such as forests. All these arrangements and transactions are referred to as "land tenure relations".

It should be noted that there is an interdependence between land tenure and land use. In other words, the way a particular piece of land is utilized may reflect on the tenure enjoyed by the person or groups using that land and vice versa. Therefore a more appropriate concept of land tenure relations should not only refer to "sets of personal arrangements and transactions by which individuals access land, or have rights reallocated," but must embrace "land use patterns" as well.

The study of the nature of land tenure relations, whether influenced by modern market forces or traditional sociocultural values, can provide evidence of "pressure points" in land use. When these trouble spots are considered in relation to agroforestry technology initiatives, they serve to identify the following vital issues that will also help develop viable policy options:

- (a) The magnitude of the landholder's apathy or enthusiasm to plant trees and the primary factors determining their levels of interest
- (b) The potential to accommodate agroforestry technologies within existing tenure systems or relations. Which factors are likely to undermine the proposed agroforestry systems?
- (c) Given knowledge of tenure relations and attendant vitiating factors, what strategies should be devised to induce adoption of agroforestry technologies while preserving existing land use systems?
- (d) What types of tenure policy changes would facilitate agroforestry adoption and be beneficial to the rural population?

4.2 Land Tenure Systems in Uganda

4.21 Introduction

Prior to the arrival of the British colonialists, several traditional tenure systems thrived in Uganda under the general administration of various kingdoms. In the 19th century many of these systems had already recognized individual rights to land. Households were cultivating specific parcels of land for as long as they wished, land rights were bequeathed from father to sons, and sales were even taking place upon clan approval (Kisamba-Mugerwa et al, 1989).

Since 1900, a multiplicity of land tenure systems has existed in Uganda. At present, the legal position is that there are two types of land tenure systems: "leasehold" and "customary tenure" (Land Reform Decree 1975), each operating on land owned by the State. However, in practice there are four major types of land tenure systems operating in Uganda: Mailo, freehold, leasehold, and customary tenure. Although the law recognizes only two tenures, it is important to discuss the legal status of all four types of tenure for two reasons. First, households have been planting trees for many years, some of which were planted before the 1975 law. Second, the population still identifies their tenure status by the pre-1975 legal tenure modes.

4.22 Mailo Land Tenure

This type of tenure is confined to parts of the Buganda and Bunyoro regions (which includes Mpigi District). Under the Buganda Agreement of 1900, land in Uganda was divided up among the Protectorate Government, the Kabaka (Paramount Chief of Buganda), chiefs, and notables. In the course of allocating the land, the unit of measurement used was "a square mile." The word "mailo" was coined by the natives from this unit and was subsequently recognised and incorporated in most land legislations. Of the 19,600 square miles to be placed under mailo tenure, the Kabaka received 958, approximately one-thousand chiefs and notables received a total of 8,000 square miles, 1,500 square miles were declared forest land, 92 square miles were used by the existing colonial government, and the remaining unutilised land became Crownland (Kisamba-Mugerwa et al, 1989).

A mailo tenure interest is akin to that of a freehold. As originally conceived it would last in perpetuity, but the status of a mailo estate was greatly restricted over the years. The Buganda Possession of Land Law (1908) prevented a mailo owner from disposing of his land to one who was not of the Protectorate, the churches, or other societies, except with the approval of the Governor and Lukiiko (the Buganda Kingdom Legislative Council). The mailo owner was also prohibited from leasing his land to someone from outside the Protectorate for a period longer than one year, unless approval was obtained.

In the decades that followed, subdivisions and transfers of mailo land took place and squatters settled on mailo land which was unutilised. The large land tracts owned by chiefs and notables (averaging over 2,000 hectares) led to such developments. The presence of land titles also helped to spur mortgages and transfers (Kisamba-Mugerwa et al, 1989). From this process grew a large class of tenants who were called Kibanja holders.

The Busuulu and Envujjo Law of 1928 gave rights to Kibanja holders residing on another's mailo land. This law provided security of tenure to the mailo tenants by guaranteeing the following:

- a) the tenants could not be evicted by the mailo owner except by order of court, which must be convinced of the owner's need for use of the land;
- b) upon eviction, tenants were to be compensated by owners for any improvements made;
- c) in the absence of eviction, tenants retain rights of access to land and these rights are heritable;
- d) tenants' obligations to pay ground rent (obusuulu) were limited by law to shs. 10/=

These amendments to the original mailo tenure system have served to deny it the true character of a proper freehold. In particular, it increased insecurity of tenure for mailo owners by recognizing some of the secondary rights of tenants as primary rights, while extinguishing many primary rights of owners. At the time, this did not create

serious problems since unutilised land was still available.

This system operated without further significant legal change until the 1975 Land Reform Decree. One minor legislation affecting mailo land during this time was the 1964 Land Transfer Act. This confirmed the 1908 prohibition on transfers of land to non-Protectorates, however, it changed the wording to "non-Africans" and also specifically excluded mortgages from this provision.

The Land Reform Decree of 1975 vested all land in Uganda in the State. All land is now legally administered by the State through the Commission of Lands. The mailo owners (and the freeholders) were turned into lessees of the State for a period of 99 years from the commencement of the Decree (religious organisations could receive 199 year leases). The Decree also abolished the Busuulu and Envujjo Law of 1928. Existing tenancies on mailo land were permitted to continue and rental payments abolished, but such tenancies were clearly stated to be tenancies at sufferance.⁴ The decree gave "former" mailo owners greater powers to evict the tenant upon issuing a six-month notice, although the tenant still had to be compensated for any land improvements. Thus, there was again a shift in legal control over mailo land, this time in favor of the State and mailo owners.

Notwithstanding that the Land Reform Decree 1975 rendered a "Kibanja" holder on mailo land a tenant at sufferance, the tenant still remained quite secure on mailo land due to a number of factors. In fact, much as the mailo owner might have "dejure" ownership of the land, the tenant has "de facto" ownership of that land.

Studies carried out by Makerere University Institute of Social Research (MISR) indicate that on average between 60 and 85 % of mailo land is under tenancy due to the following reasons: 1) some mailo owners do not want to evict their tenants, 2) some are unable to evict their tenants, and 3) most tenants are not willing to leave on their own.

⁴ A tenancy at sufferance basically mean't that the tenant could be removed from the land without his consent.

1. Lack of Desire to Evict

- (a) Many mailo owners who inherited the land are "absentee landlords" living or working elsewhere or are engaged in personal business. For them, land does not provide a primary basis of income and livelihood. They have therefore not confronted nor become antagonistic to their tenants.
- (b) Moreover, most mailo owners who inherited their mailo land have not bothered to update their ownership in the Lands Registry due to the time and costs involved.⁵
- (c) Over the years, a strong sociocultural relationship has evolved between some mailo owners and their tenants. This may also account for the low incidence of evictions of Kibanja holders both by longtime mailo owners and new buyers.

2. Lack of Ability to Evict

- (a) Some mailo owners have lower economic and/or social status than their tenants. Therefore they are not powerful enough to evict or compensate the tenants, some of whom will have longer interests in the land.
- (b) Mailo owners of tenanted land can hardly resell their land because of the tenants. Such encumbered land is not attractive to potential buyers and falls out of the land market.

⁵ A study by Kisamba-Mugerwa et al (1989) found that among their samples of mailo owners in Luwero and Masaka Districts, 70 % and 30 % respectively did not update the registry following transfer.

3. Lack of Desire of Tenants to Vacate

- (a) Land scarcity intensifies over the years leaving fewer alternatives for tenants.
- (b) Rents paid by mailo tenants to owners were very low before the Land Reform Decree of 1975 and abolished thereafter.

It should be emphasized that between the mailo owner and tenants and between the tenants themselves, a strong social-cultural bondage has evolved over time such that a feeling of brotherhood and good neighbourliness has served to prevent certain land disputes and has also facilitated the settlement of any by mutual agreement "inter partes".

To summarize, most mailo tenants enjoy long-term rights to cultivation on the land they now occupy. In fact, in a study by Kisamba-Mugerwa et al (1989), mailo tenants felt more secure over retaining rights to land than did mailo owners or customary farmers. Thus, the 1975 Decree had little effect on the tenure security of "Kibanja" holders.

However, this is not to say that the mailo owner has no control over the land. Because of the right to evict, it has been long recognized that tenants should not make substantial long-term improvements to land without approval of the owner. In particular, it is often difficult for tenants to plant trees on mailo land.

4.23 Freehold Land Tenure

The freehold land tenure system is not very widespread in Uganda. It is found in parts of former Ankole (Mbarara and Bushenyi), Toro (Kasese and Kabarole), Kigezi (Kabale, Kisoro and Rukungiri), and Bugishu (Mbale and Kapchorwa) Districts.

In Ankole and Toro, land was allotted under the 1900 and 1901 Agreements respectively and freehold titles were later issued to the allottee in accordance with

Crown Lands Ordinance of 1903.

In some parts of Kigezi, Ankole, and Bugishu there was also another category of freehold known as "adjudicated freehold" granted in accordance with the Crown Lands (Adjudication) Rules of 1958. The protectorate Government also granted freehold land to some special interest groups such as the Protestant and Catholic churches.

All of these types of freeholds were converted to State leaseholds under the 1975 Land Reform Decree.

4.24 Leasehold Land Tenure

There are a good number of people and institutions in Uganda who have leased public land. A State leasehold is both a contract and grant of an estate in land for a fixed term of period of 49 or 99 years. The leases are granted by the Uganda Land Commission after the District Land Committees is satisfied that the land intended for lease is free of any other claimants except the person applying for the lease. Following the 1975 Decree, these are treated just like the former freeholds.

4.25 Customary Land Tenure

Most of the land in Uganda is public land with the majority of the people occupying such land as customary tenants. Two of the districts sampled - Mbarara and Kabale - are predominantly areas of public land with the overwhelming majority of the people occupying land as customary tenants.

Although customary farmers may apply for title, in practice very few titles are acquired under this system. Consequently, land under this tenure system cannot be used as collateral for formal credit.

Customary tenure was recognised by the Public Lands Act 1969 and the Land Reform Decree 1975. The 1969 Public Lands Act enhanced the security of customary rights by stating that households on such lands may not be evicted without the consent of the tenants, satisfactory compensation, and plans for their resettlement. However, the 1975 Decree removed this security by converting customary farmers into "tenants at sufferance," subject to eviction with the consent of the Lands Commission and Minister of Lands. This has resulted in some evictions of customary tenants on public land. Some well-to-do individuals have invoked the provisions of the Land Reform Decree 1975 and in collusion with some district officials and land officers, have evicted customary tenants on public land (MISR).

Despite these occurrences, customary tenants on public land for the most part enjoy security of tenure. Due to population pressure, lands have been cultivated within families over several generations and family rights over land are strong. The powers of traditional chiefs eroded as land came under control of families, and in 1966 the institution of chiefdom was abolished by law. Of course disputes still occur among family members over the distribution of rights and between neighbors over boundaries. Disputes used to be resolved through elders and other traditional authorities, but now are usually settled by the Resistance Committees.

Under customary tenure, land is held according to the rules of a particular area. These systems, while retaining some common features, vary from one locality to another. In all parts of Uganda, inheritance is the most common form of acquisition and follows patrilineal descent patterns. Customs will differ as to whether one or more sons shall receive land, at what time, and how much. Land markets are more or less active in all areas of the country, indicating a strong individuality of tenure.

4.26 Legally Recognized Transfers of Interests in Land

The Land Reform Decree of 1975 recognizes several types of land rights transfers. Sales of leaseholds are specifically sanctioned as are transfers through bequest. The ability of Kibanja holders to transfer land is not addressed and is considered to be

implicitly sanctioned. Customary households could continue to transfer land under traditional inheritance rules. However, they were not to sell the land without approval from the Lands Commission. In practice, there was little teeth to this section of the law. The Decree also forbade illegal settling on public land. This extinguished any rights of local traditional authorities to unused land in their area. New households would have to apply for land through the government instead of seeking allocations through chiefs. Neither of these last points were necessarily enforced or effective.

4.27 Registration of Title

The Registration of Titles Act sets forth the mechanisms under which titles may be obtained on land. Although originally intended for freeholders, this still applies to those aspiring to obtain Staté leasehold titles. Any individual residing on public land may apply for title. The authenticity of rights is verified and a period of time is allowed for counter claims and adjudication. There are numerous levels of authorization in the process including local and national government participation at several stages. There are two key elements in the process which have discouraged registration. The first is the requirement of a fixed-point survey which is costly. Second, as pointed out by Kisamba-Mugerwa et al (1989), many rural lands offices are run-down, have few resources, and poor morale. This results in considerable delays and in some cases, farmers having to complete the entire process through the Kampala office.

4.28 Women's Rights Under the Law

Women are not legally discriminated in the ability to have title to land. However, women's rights to land in customary systems are almost always derived from husbands, with the exception of where a woman has purchased land. Women do not usually receive land through inheritance according to customary rules. However, the Intestate Succession Law does protect their rights to some land. It specifically allows for 20 percent of the land to be given to the widow while 75 percent passes to the

children. In the case of a single wife with children, under the written law the family will be well protected in its claim to the land following an intestate death. However, even this legal framework cannot prevent dilution of land where polygamous marriages are concerned.

4.29 Proposed Land Tenure Reform Bill

Several years ago, the NRM Government set in motion the process of land tenure review and reform. The Land Reform Committee has recently completed its work and has recommended many changes to the law. First, it proposes that the country strive towards a uniform system of tenure and that this system be freehold. The argument is that most systems (including Mailo and customary) operate as virtual freeholds already. Second, it proposes that the competing rights to land between mailo owners and tenants be resolved by awarding land to the tenants and compensation for lost rights to owners. The Committee feels that these changes will foster agricultural development. Concerning potential negative effects of freeholds, they point out that the government will still be able to enact rules to discourage unwanted practices and that it is futile to attempt to assure all Ugandans the right to land since it is not feasible given the man to land ratio.

4.3 Land Tenure Relations: Mpigi District

Mpigi District is located in the mailo land region. Just as in other mailo areas there are also many "public land" areas originally considered wasteland or under woodlot and forest and not allocated under the 1900 Buganda Agreement. They constituted what was referred to as "Crown land" during the colonial period. After independence, this became public land and is presently administered under the Public Lands Act 1969. Today, some of these lands are occupied by households for farming. We interviewed farmers both on mailo land (owners and tenants) and on public land.

Houses are found in scattered settlements. Land holdings are small in the areas visited, ranging from 3 to 5 acres and most of the land is adjacent to the house.

Exceptions are in the hilly areas where households more often have a field near the house and on the hillside.

The major land acquisition methods in the district are inheritance (or gifts to children) and purchase. This would include Kibanja holders who receive their rights from other Kibanja rather than directly from mailo owners. The proximity to Kampala (and Entebbe) has also led to some instances of renting from landlords who are working in the city. There are also temporary land borrowings which are intra-familial and also may involve an absentee owner in an urban area.

Bequeathing is normally done by a will whether written or verbal while direct inheritance could be automatic following the death of the father. Bequeathing could either involve the whole land unit to a single heir or a division among the children at the discretion of the father.⁶ On the other hand, gifts of land can be made for a variety of reasons including the marriage of a son/daughter.

As mentioned earlier, all types of occupants on the land, whether Kibanja, mailo owners, or customary tenants, enjoy long-term rights to the land. They therefore enjoy the ability to cultivate the land in the manner they desire, for as long as they wish. All may build permanent houses, maintain burial grounds, plant perennial crops, bequeath the land, and even sell their rights to the land.⁶ Interestingly, both the mailo tenant and mailo owner have been known to sell their interests in the same piece of land.⁷

There are important exceptions to this generalization which apply to mailo tenants. Although mailo owners may not themselves use land which is occupied by Kibanja tenants, they still exert some influence over the Kibanja's use of the land. This will

⁶ Sales of customary land on public lands are not recognized by law -- only the improvements may be sold.

⁷ A MISR study (Kisamba-Mugerwa et al, 1989) found that more mailo tenants had purchased their land than did mailo owners in Luwero District.

vary according to the particular circumstances, but it is common for Kibanja to be prohibited from undertaking significant long-term improvements on the land, including tree planting. By doing so, owners are attempting to limit compensation payments in the event that an eviction is desired.

The most common disputes in the district are as follows:

- a). Inheritance among the children.
- b). Boundary violations among neighbours.
- c). Usufructuary rights among families and neighbours
- d). Occupational rights among families and neighbours.
- e). Eviction of tenants on sale/purchase/lease of mailo/customary/public land.

Depending on the persons concerned, cases a - d can be settled among families, local communities and Resistance Committees. The level at which the issue is handled indicates the seriousness of the matter. The law courts are involved if the complainants are informed of the legal procedure or can obtain the assistance of lawyers. Virtually all eviction cases are handled through the state land law system and courts.

4.4 Land Tenure Relations: Mbarara District

In Mbarara there are both sedentary households and shifting households. The former set up permanent living quarters and pass more or less individual rights to specific land parcels to descendants in the form of bequest or gift. These lands include the homestead plot and perhaps one or two small fields nearby. Inheritance and gifts also occur among the shifting households, but it is more common that they acquire only usufructuary rights. Land is more considered family land in these areas with individual households moving within their boundaries. In both areas sales take place, but are rare among shifting cultivators. Some allocations have also been made by the government. These are mainly to individual ranchers.

The area of land which is transferred represents only a small portion of the land utilised in Mbarara District. There are vast areas of land in wooded/shrubby grasslands. Most of the expansive areas are in fact traditional grazing grounds with a migratory practice depending on the season. These "communal" systems really behave like "open-access" systems in that stocking rates are not regulated.

The bundle of rights in land enjoyed by customary tenants on their cultivated land is sufficient for tree planting initiatives. Households have long-term rights to land, should they choose; however, the reliance on livestock leads households to abandon properties instead of practicing sedentary agriculture. On the vast pasture lands, households are unable to claim ownership over specific land areas. Thus, tree planting will be much more difficult a task there.

Disputes over land are rare in the areas enumerated. There is less land pressure than in Kabale and Mpigi. Moreover, the reduced dependence on crop production probably reduces the tension over boundaries.

4.5 Land Tenure Relations: Kabale District

Land is highly fragmented between and within households in the Kabale District. Total farmsize is small (below 2 hectares) and is distributed among 8-12 small plots. The plots are often scattered far from the house and in fact, many cannot be seen from the house. On the hillsides, many plots are around 15 meters in width and 40 or so meters in length. This means that there is an enormous number of boundaries and there is a high potential for externalities occurring (that is, the actions of one farmer affecting others).

The indigenous mechanisms of accessing land under the customary tenure system in Kabale is nearly the same as those under mailo land except that the community tends to be involved to legitimatise the process.

The most common mechanisms for households are the following:

- a). bequeathing the land or direct inheritance.
- b). give it as gift usually to sons on marriage
- c). direct purchase

Inheritance is normally from the father to all the sons, with subdivision of the already tiny parcels common. When this occurs prior to the death of the father, it is considered a gift. In practice, this leads to exchanges, gifts or temporary grants, and sales between sons to arrive at meaningful farm layouts. Acquisition of land by purchase is common as farmers are driven by the need for more land. The sellers are those who are emigrating or are in need of cash. The acute need for land has forced farmers to purchase any land that might come into the market, including those far away. This has further aggravated the extreme fragmentation of holdings in the area (mentioned in Chapter 2). Rental markets exist but are not as active as one might expect given the high population density.⁸ There is virtually no virgin land which is not privately claimed.

Land rights are highly individualized in Kabale. Households have complete rights of use and can transfer the land in any matter, including alienation outside the family. Rights of exclusion are also claimed but are difficult to exercise. For instance, households can prohibit herders from grazing their livestock in the household's fields. However, practically speaking this is difficult to enforce when there is near complete absence of fencing and fields are widely scattered to the point where most are not visible from the homestead.

The most common disputes are over boundaries. On the hillsides, terrace structures are weak and periodically collapse. The neighbor below will often appropriate the fallen earth (and is alleged to further cut into the terrace riser) into his plot. Hence, over time the lateral boundaries have shifted so that original boundaries are no

⁸ Rental markets are active in the Northern Rwandan prefecture of Ruhengeri (Blarel and Place, 1991).

longer known and disputes are rampant. Land disputes between and amongst the extended family members relating to succession rights and division of land grants are very common. These therefore act as serious obstacles to tree planting.

4.6 Tree Tenure

4.61 Legislation

A review of all the past and present legislation shows that there are not explicit regulations on tree tenure in general.

All the five "forest policy" statements and attendant regulations from 1928 to 1988 focus on reserved forests, their management and exploitation. The only provisions addressed the right of the local communities to harvest non-commercial quantities of poles, firewood (dead wood) and other non-timber forest products for household use without first obtaining license from the Forest Department as required for pitsawyers and saw millers. The 1970 policy excluded all forest reserves less than 5ha from central government control and these reverted to either private or communal ownership, many of which became "open access" resources.

The only legislation which directly affected individual tree tenure is that related to the Chlorophora excelsa (Mvule). This tree is "reserved" and so was declared "government property" regardless of its location and whether someone planted or protected it. It can only be cut after obtaining licence from the Forest Department. Anyone may apply for a license without regard to the person who may have either planted it or protected and let it grow to maturity. Mvule is Uganda's Class 1A timber tree especially used for first class furniture.

4.62 Access to Trees on Communal Areas

Gazetted Forest Reserves are limited in size and number throughout Uganda. Access is becoming increasingly difficult and usually requires fees for harvesting the products.

There exist numerous woodlands and forests which are commonly used by local inhabitants. Because there are usually no restriction on their use, they can truly be described as "open access" resources. Such common areas include riverine, hill/mountain and swamp forests. There are examples of these in all our districts -- the extensive lowland woodlands such as the *Acacia* woodlands in Mbarara district; pockets of tropical forests in Mpigi district; and *Acacia mearnsii* hillside woodlots in Kabale.

Only in Mpigi do relatively large areas of common woodlands still exist. The ungazetted forests and woodlands on public land are "open access" resources for the majority of the people in the region as sources of poles, firewood and charcoal for either home use or sale. Restricted access exists for forest reserves except for those who wish to collect dead wood (firewood), medicinal herbs, bark roots, leaves etc and other non-timber products for non-commercial use. The prevalence of these open access wooded areas likely has a negative influence on the attitude of the people towards tree planting.

In both Mbarara and Kabale Districts, few truly common woodlots exist. In Mbarara the woodlands are sparsely populated by trees and many households must travel great distances to find tree products. In Kabale, many of the former common woodlots have since been appropriated by private individuals.

The communal woodland areas that remain are in danger of being cleared out due to encroachment by agriculture, high demands on existing trees, and lack of replanting. In some areas, the demand for trees is exacerbated by the banning of fuelwood cutting and charcoal burning from reserved forests as a conservation and production measure.

There is a real possibility that such restrictions may even be extended to such communal lands in future if environmental laws are put into effect and legal control and management of such areas is given to the local communities concerned.

4.63 Ownership of Trees on Cropland

Ownership of trees on cropland is more directly related to land tenure. The permanent land owners have complete ownership of all trees on their land except Mvule. This is clear in the case of Customary land farmers.

On the other hand, because land rights are distributed between owners and tenants on many mailo lands, tree tenure is also less clear. A tenant may be given complete freedom to use trees on their land parcels depending on the attitude of the land owner and the tree species. In general, tree species of commercial timber value present at the time the tenant was given land for use would normally belong to the land owner. Other non-timber tree species including fruit trees would belong to the tenants and can be used at their discretion.

However, it should be pointed out that the action of planting trees is regarded as an indicator of land ownership. Therefore, many mailo owners will not permit tree planting of any sort on the part of tenants. Any tenant who does so without assurance of ownership and user rights stands to lose if the piece of land is sold and they are told to move away.

Trees are usually planted and owned by men. A women in almost all cases must ask permission from her husband before planting trees. A couple of farmers mentioned that women could plant trees but that they could not use them to generate income -- that was the man's job. In none of the women's group nurseries visited were the women allowed to plant trees. Interviews with women's groups in Kabale District revealed that will not necessarily persist in the long-term. Some mentioned that their husbands were becoming sensitized to the importance of tree planting for soil conservation, fertility, and fodder, for example, and were permitting planting on the part of their wives.

4.64 Local Beliefs

Many of the farmers were of the general view that trees and crops do not mix. Many stated that all trees were too competitive for crops. They singled out *Eucalyptus* which was said to render fields infertile and even dry up drinking wells. This is potentially a serious obstacle to the extension of many agroforestry technologies.

As for unique customs or beliefs about particular trees, those that did develop appeared to be isolated cases which were definitely confined to a particular species or even a particular tree. Examples are that black wattle attracts lightning (Mpigi) and that a fallen *Cordia* caused the death of all who heard it in the 1930's (Kabale).

4.65 Tree Disputes

There are not many cases of tree disputes in Mpigi and Mbarara districts. In Mpigi, disputes are confined to those of planting rights or use rights of mailo tenants. As mentioned above, should mailo owners contest the tenant's tree rights, they shall usually win their case. Aside from this type of dispute, trees are planted mainly in homegardens which are secure.⁹

In Mbarara there were no disputes reported over the types of agroforestry practices adopted, namely, homegardens and *Eucalyptus* woodlots. The lands are individually owned and in the absence of high population pressure, competing claims for resources are kept low.

However in Kabale, tree disputes arise mainly due to serious land shortage. The shading by trees of another person's plot is a major cause of disputes and prevents tree planting near boundaries. This often leads to uprooting of seedlings by neighbours.

⁹ There were reported cases of stolen tree products such as firewood and poles.

Land shortage has also caused disputes to arise over ownership of trees in former communal areas. Past community tree planting projects quickly became converted to private woodlots when population pressure increased. Thus, there still are competing claims to trees in the traditional communal woodlands.

With the introduction of CARE and ICRAF projects in the area, there has been greater efforts towards establishing trees on distant crop fields. This has been hampered in large part by browsing from goats. This has led to dispute in some cases but in most others, the culprits cannot be identified (due to the difficulty of managing highly fragmented farms).

Also related to the projects is an increased effort to establish tree planting by women. Initially, this was not at all accepted by their husbands, who frequently uprooted the seedlings planted by the group members.

Any disputes are normally discussed between the persons concerned but if the case is more serious, then the RCs will be involved to settle the matter. However cases of mature trees being stolen may reach the law courts. Compensation has recently been established for browsing damage in the Kabale District. Also in Kabale, substantial fines can be levied against illegal cutting or damage by fire.

CHAPTER 5: CONSTRAINTS TO AGROFORESTRY

5.1 Introduction

At this early stage of development of agroforestry as a discipline, the more constraining factors impeding agroforestry adoption appear to be non-tenure related. Some tenure factors were also uncovered and these indeed may become more important once other constraints are removed. On the other hand, if a new land reform to freehold should be implemented, some of the tenure factors may be reduced, if not eliminated. We begin by reviewing earlier work by the Land Tenure Center and the Makerere Institute for Social Research which examined the effect of land tenure regimes and security on agricultural investment and productivity. This is followed by a discussion of important non-tenure and tenure factors uncovered by our informal surveys.

5.2 The LTC-MISR Studies

Two studies were carried out, the first conducted in Luwero and Masaka Districts containing mailo lands, and the second in Rukungiri District in southwestern Uganda, which had hosted a registration in addition to having vast customary areas (Kisamba-Mugerwa et al, 1989 and 1988 respectively). The studies hoped to determine what effect, if any, the different tenure modes had on tenure security and long-term investment by farmers.

The Masaka and Luwero (M&L) study basically compared the results on three types of parcels: those farmed by mailo owners, those farmed by mailo tenants, and those farmed by customary tenants¹⁰. The results showed that mailo owners were much more worried about losing their land than were mailo tenants or farmers on customary land. They mainly feared expropriation by the state.

¹⁰ The word tenant here refers to the fact that the state is the landlord. These are not farmers under sub-lease to other individuals.

This difference in perceived security did not have a major impact on coffee yields, as these were relatively similar across land tenure categories.¹¹

As for investment, the authors found interesting results. In Luwero, the number of investments¹² made per parcel was linked to the level of security; that is, they were highest on customary lands, followed by mailo tenant lands, and lowest on mailo owner lands. However, the exact opposite occurred in Masaka, with the less secure mailo owners making more investments. Further investigations by the authors found that rather than being linked to security of tenure, the number of investments was related to the mode of acquisition. In particular, more types of investments took place in the tenure category for which the percentage of parcels purchased was highest. Thus, in Luwero customary operators and mailo tenants were more likely to have purchased their land than were mailo owners while the reverse is true in Masaka.

In a second study of Rukungiri District comparisons regarding investment were made between three groups of parcels: those which were operated under customary tenure, those for which registration was imposed under the Rujumbura Scheme (exogenous), and those for which households themselves decided to be registered (endogenous).

Rights claimed by households over parcels were generally greater on the endogenous titled lands than in the other two cases. However, according to the results, a great deal of customary influence remained over the titled parcels. For example, the percentage of endogenous parcels which could be bequeathed was only 80 percent, which was not significantly higher than on customary land. It was also revealed that over half the respondents on customary land claimed to be able to sell their land. Hence, we see that customary systems were already highly individualized and that 30

¹¹ With the exception of mailo owners operating large holdings (over 11 acres) who had higher yields.

¹² The number of investments was the total number of different types of improvements made on the land without regard to quality or level of investment.

years after the registration scheme, it has not had a significant impact on the traditional system.

Roth et al (1993) used this dataset in a regression analysis to determine the effect of registration on several different investments on land. They found that registration was positively correlated with the probability of making fencing, mulching and manuring improvements, but not to terracing or buildings. Unfortunately, the date of investment is not known so it is not possible to assign causality to the relationship.¹³

What does this all mean for agroforestry? Since agroforestry was one of the investments considered, the results have some direct bearing for our study. One main result is that one is not apt to find clear relationships between tenure modes or security of tenure and agroforestry investment. There are simply too many competing factors in the decision of whether to plant trees or not, not the least of which may be mailo tenants' desires to enhance claims to land by planting trees. Furthermore, tree planting is one of the lowest cost investments available to farmers. As such, simple agroforestry technologies (e.g. boundary planting) may be undertaken by all types of farmers regardless of their tenure status.

On the other hand, Roth's result regarding the positive effect of registration on fencing is important. It may imply that the adjudication process unleashes a potential agroforestry niche: the boundary, which would otherwise be off-limits due to uncertainty over its location.

A third result is that tenure may be associated with other factors which could have more of an influence on investment behavior. A link was made between purchased parcels and number of investments. Since purchasers are more likely to be wealthy individuals, there may be a direct link between wealth and mode of tenure.

¹³ That is, it is possible that investments were made prior to the registration of the parcel, perhaps in an attempt to enhance security of tenure.

5.3 Non-tenure Factors

1. Lack of knowledge of modern agroforestry concepts and technologies

Farmers are only recently being introduced to a whole host of new species and configurations intended to increase direct production from trees and indirectly increase the productivity of other farming operations. Farmers also lack knowledge of tree establishment and management techniques. Therefore, many misperceptions have been fostered, the most widely held one being that trees do not mix with crops. This overgeneralization results from lack of pruning knowledge which may have enabled many tree-crop systems to thrive.

Lack of knowledge is also pervasive among extension agents who themselves are recently learning agroforestry technologies. Traditional Forest Department officers are now experimenting with agroforestry species. The process of first educating the extension agents and then farmers will not happen overnight. A related obstacle is the lack of appropriate agroforestry packages for some areas. Agroforestry practitioners are aware of the limitations of their technologies both from a biophysical and socioeconomic point of view. For example, it is difficult to find a technology free from adoption difficulties for the steep hillsides of Kabale.

2. Unavailability of seeds or seedlings of suitable tree/shrub species

Once the knowledge constraint is lifted, the biggest obstacle in the promotion of agroforestry technologies will likely be shortages of supplies of planting materials. Supply of exotic tree seeds is very limited. The few seedlings produced by Forest Department nurseries can only serve a tiny percentage of households. Lastly, farmer knowledge of nursery establishment and management is virtually unknown.

3. Pests

Problems of pests are relatively minor compared with the previous factors. Nonetheless, farmers complained of moles in Kabale and termites in Mpigi. In Mbarara, it should be recalled that vast areas of dense tree cover was felled because of the tse-tse fly. The possibility of its revival is an obstacle to major replantings.

4. Others

Farmers, mainly from the Kabale area, mentioned that frequent fires placed agroforestry investments at risk. These were often set by herders to obtain fresh fodder grasses and sometimes are not well controlled. Kabale farmers also mentioned that they would have difficulty digging holes for seedlings in the rocky soils (on the hills) with their existing equipment.

5.4 Tenure Factors

1. Land shortage

Land shortage was one of the most common reasons given for lack of tree planting. Unfortunately, average farm sizes will not become larger over time. Because this response was heard even from farmers with relatively adequate holdings (e.g. 5 acres), it is also indicative of farmers' lack of knowledge of mixing trees with crops.

Moreover, as some farmers have shown, planting fast growing trees for poles can be more profitable than many other enterprises. Sometimes land shortage referred not to the overall size of the farm, but rather to the small sizes of plots operated by households. This raises the issue of fragmentation to which we now turn.

2. Land fragmentation

Land fragmentation is a real problem in densely populated areas such as Kabale. This is related to the custom of dividing land among children into progressively

smaller units which eventually become scattered at great distances. This situation is aggravated by the fact that adjacent parcels of land do not necessarily belong to the same family.

Fragmentation first acts to reduce an already small total farmsize into tiny plots on which farmers are reluctant to grow trees for fear of ruining yields. Fragmentation also exacerbates the problems of off-season grazing, disputes, and damage from fire. Herders that would like to respect others' plots and graze on their own land nonetheless have to cross many others' plots in going between his own plots. The fragmentation also creates a large area of boundaries and coupled with tiny parcels, shading and root competition on neighboring plots is a significant problem. Fragmentation also increases the likelihood of fire destruction on neighboring plots as a result of burning one's own land. Finally, and perhaps most importantly, most men do not have the desire to travel and work on the more distant plots.

3. Mailo land tenancy insecurity

The case of tenancies on mailo land (of which there are many) is one of contradictory rights. While owners have rights to evict tenants (upon payment of compensation for any permanent improvements made) and can effectively prohibit tenants from making long-term improvements on the land, tenants are rarely evicted from land in practice and continue exclusive cultivation on a long-term basis. In these cases, no one has a clearly defined right to plant trees. Trees that might be established can be subject to dispute if discovered. Because of the change in legal status of landlords viz tenants over the years and the consistent separation of *de jure* rights and *de facto* practices, uncertainty regarding long-term investment has been a feature of mailo tenancies.

This situation is likely to change if the proposed new land tenure law is adopted. This new law proposes uniform freehold tenure system throughout Uganda. It further states that tenants on mailo land will be given priority in owning the plots they are already using and that any land shall not be sold without consent of the tenants on it.

4. Open grazing systems

Interviews with farmers, including mailo tenants, indicate that they have rights to exclude others, but these rights are not necessarily abided by the community in the absence of investment by the individual (e.g. the construction of a fence). Thus, communities will also establish off-season free grazing rules in order to take advantage of the unutilized crop residues (e.g. Kabale and Mbarara Districts). Off-season grazing of croplands (an sometimes careless grazing during the rainy season) put young trees at jeopardy. In Kabale, the greatest problem involves damage by goats who are supervised by young boys. This is compounded by the fact that some of the fastest growing species are highly palatable (e.g. *calliandra calothyrsus*). In order to prevent grazing damage farmers are often obliged to invest in a fence or to plant trees at the same time with crops. Both practices reduce the attractiveness of the agroforestry investment.

In Mbarara, a communal grazing tenure system operates where large areas of land are equally accessible by community members. Herders move their cattle throughout the communal lands. They will have no motivation to invest in tree planting since they will not always be able to manage them and, as a consequence, the benefits from the trees may accrue to other herders. Hence, the scope for agroforestry development in Mbarara is limited the relatively small homestead areas and communities of relatively settled agriculture.

5. Women's rights to land

Women usually receive secondary rights to land save for the rare instance where they have purchased land. This leads to situations where women rarely have long-term rights to particular pieces of land. Thus it is not uncommon to find attempts at tree planting by women to be thwarted by males. Interviews in Kabale District found several cases where husbands have uprooted trees planted by their wives. It was nearly unanimous among respondents in all regions that wives required permission

prior to planting trees and it is therefore not surprising that women planted a tiny percentage of trees in the study areas.

6. Access to communal woodlands

Access to common woodland products reduces the incentives for on-farm planting. In the three districts visited, this influence is strong only in Mpigi, and even there many areas are without such woodlands. Therefore, this factor is of relatively less importance than the others listed. It is also clear that in Mpigi District household access to common areas will only decrease with time.

5.4 POSSIBLE SOLUTIONS

Due to the fact that most natural forests and especially forest reserves are becoming strictly conservation units with little or no harvesting, shortage of forest products particularly poles, fuelwood and timber on which over 90% of the population depend will increase with growing population. Thus, tree planting will become inevitable and so agroforestry will be seen as the best approach. Therefore the following steps will likely lead to adoption of agroforestry.

- a). intensive education and training of farmers will definitely contribute to adoption of agroforestry.
- b). development of appropriate packages by research institutions for transfer to the farmers. This should be facilitated by provision of seeds and seedlings of appropriate trees/shrubs.
- c). adoption of the "freehold " land tenure system will give people the long- term security to encourage them to plant their own trees.
- d). land consolidation in areas where there is excessive fragmentation will also improve adoption of various agroforestry technologies.

Appendix I:

LAND AND TREE TENURE STUDY VITAL ISSUES

1. LAND

- a) Acquisition and Rights
 - Ownership
 - Children's rights
 - Women's rights
- b) Land Uses
 - i) Farming systems
 - Cropping system
 - Livestock
 - Production
 - Agroforestry
 - Management
 - ii) Soil conservation measures
 - awareness of soil issues
 - erosion control practices
 - land management
 - mulching
- c) Land disputes
 - type
 - settlement

2. TREES

- a) Previous status of trees in land
- b) Trees planted since acquisition
 - i) System
 - Agroforestry
 - Woodlots
 - Boundaries
 - Other
 - ii) Tree management.
- c) Uses of trees
 - products
 - services
- d) Rights to trees
 - i) Ownership rights
 - by gender
 - by species
 - ii) Use rights
 - by gender
 - Communal vs private
- e) Source of general awareness information
- f) Own initiative to get information
- g) General attitude towards forests
- h) General attitude towards tree planting
- i) Problems related to tree planting
 - Species
 - Uses
 - damages
- i) Tree disputes
 - type
 - settlement

3. INCOME

- a) Marketing of products

Appendix 2

Tree species found in banana plots in the Intensive-coffee Lakeshore System - Mpigi District

Family	Species	Common name	Origin	Propagation	Arrangement in bananas	Interaction with bananas	Uses
Anacardiaceae	<i>Mangifera indica</i>	Mango	Exotic	Seeds*	Mixed	Negative	Fruits, firewood, charcoal
Anonaceae	<i>Annona muricata</i>	Soursop	Exotic	Seeds	Mixed	Neutral	Fruits, firewood
Araliaceae	<i>Polyscias fulva</i>		Indigenous	Seeds	Mixed	Neutral	Poles, firewood
Bignoniaceae	<i>Markhamia lutea</i>	Markhamia	Indigenous	Seeds	Mixed/Boundary	Negative	Poles, firewood
	<i>Spathodea campanulata</i>	Tulip tree	Indigenous	Seeds	Mixed	Neutral	Stakes, firewood
Bixaceae	<i>Bixa orellana</i>	Lipstic tree	Indigenous	Seeds	Mixed	Neutral	Dye (Red)
Nurseraceae	<i>Canarium schweinfurthii</i>	Canarium	Indigenous	Seeds	Mixed	Neutral	Fruits, firewood, charcoal, beer boats
Caricaceae	<i>Carica papaya</i>	Papaw	Exotic	Seeds	Mixed	Negative	Fruits
Compositae	<i>Vernonia amygdalina</i>		Indigenous	Seeds	Mixed	Neutral	Medicinal, firewood
Euphorbiaceae	<i>Manihot glaziovii</i>	Cassava tree	Exotic	Seeds	Boundary	Neutral	Glue/Rubber, shade
	<i>Ricinus communis</i>	Caster oil	Exotic	Seeds	Mixed	Neutral	Stakes, firewood
	<i>Sapium ellipticum</i>		Indigenous	Seeds/Cuttings	Mixed	Neutral	Poles, firewood
Lauraceae	<i>Persea americana</i>	Avocado	Exotic	Seeds	Mixed	Negative	Fruits, firewood
Leguminosae	<i>Albizia chinensis</i>		Exotic	Seeds	Mixed	Very positive	Shade, fertility, firewood
	<i>Albizia coriaria</i>		Indigenous	Seeds	Mixed	Positive	Shade, fertility, timber, firewood
	<i>Cassia spectabilis</i>	Cassia	Indigenous	Seeds	Boundary	Very negative	Poles, firewood
Moraceae	<i>Artocarpus heterophyllus</i>	Jackfruit	Exotic	Seeds	Mixed	Negative	Fruits, firewood
	<i>Chlorophora excelsa</i>	Mvule	Indigenous	Root suckers	Mixed	Positive	Timber, firewood, charcoal
	<i>Ficus brachypoda</i>		Indigenous	Cuttings	Mixed	Positive	Shade, stakes, firewood
	<i>Ficus exasperata</i>	Sand paper fig	Indigenous	Cuttings	Mixed	Positive	Firewood, charcoal
	<i>Ficus natalensis</i>	Bark cloth fig	Indigenous	Cuttings	Mixed	Very positive	Shade, bark cloth, fertility, fodder, stakes
	<i>Ficus platyphylla</i> <i>Ficus sycomorus</i>	Sycamore fig	Indigenous	Cuttings	Mixed	Positive	Shade, bark cloth, fertility, firewood Beer boats, firewood, charcoal
Myrtaceae	<i>Psidium guajava</i>	Guava	Exotic	Seeds	Mixed	Neutral	Fruits, firewood
	<i>Syzygium cumini</i>	Jambolan	Exotic	Seeds	Mixed	Neutral	Fruits, firewood
Rhamnaceae	<i>Maesopsis eminii</i>	Musizi	Indigenous	Seedlings	Mixed/Boundary	Negative	Timber, shade, firewood, charcoal
Sapindaceae	<i>Sapindus saponaria</i>		Indigenous	seeds	Boundary	Neutral	Soap

*Propagation by seeds or wildings (natural regeneration)

Trees found in farmers fields in Kabale District

Woody species	Local names	Woody species	Local Names
<i>Solanum giganteum</i>	Endembezi	<i>Syzygium guineense</i>	Omogote
<i>Dracaena afromontana</i>	Ekigorogoro	<i>Callandra calothyrsus</i>	Calliandra
<i>Polyscias fulva</i>	Omungwe	<i>Manihot glazovii</i>	Cassava
-	Omushaki	<i>Ficus pilosula</i>	Akatoma
<i>Ficus sp.</i>	-	<i>Trimeria bakeri</i>	Omwatanshare
<i>Cassia didymobotrya</i>	Omugabagaba	<i>Mangifera indica</i>	Mango or Omuyembe
-	Omugushagusha		
<i>Callistemon citrinus</i>	Bottle brush	<i>Bersama paullinoides</i>	Ekikaka
<i>Pinus patula</i>	-	<i>Mitrogyna rubrostipulata</i>	Engomera
<i>Arundinaria alpina?</i>	Mountain	<i>Dovyalis caffra</i>	Kei-apple or Omuyonza
-	Ekicuncu	<i>Malus pumila</i>	Apples
<i>Croton macrostachyus</i>	Omurangara	-	Omushura
<i>Phytoloca dodencandra</i>	Omuhoko	<i>Ficus sp.</i>	Omukunyu
<i>Vernonia amygdalina</i>	Omubirizi	-	Omugi
<i>Synadenium grantii</i>	Enkoni-Nyabito	<i>Dombeya goetzenii</i>	Omukore
-	Omushogoro	<i>Euphorbia sp.</i>	Maddido
<i>Bougainvillea spectabilis</i>	Bougainvillea	<i>Schinus molle</i>	-
<i>Sapum ellipticum</i>	Omushasha	<i>Citrus limon</i>	Lemon or Endimu
<i>Jacaranda mimosifolia</i>	Jacaranda	<i>Clerodendrum myricoides</i>	Omukuzanyena
<i>Clausena anisata</i>	Omutanu	<i>Albizia gummifera</i>	Omushabeya
<i>Psidium guajava</i>	Guava	<i>Pycotria megistosticta</i>	Omurehe
-	Omutarabano	-	Omwamira
<i>Indigofera sp.</i>	Omosoroza	<i>Spathodea campanulata</i>	African tulip
<i>Rhus vulgaris</i>	Omukanja	<i>Hagenia abyssinica</i>	Omujesi
<i>Bersama abyssinica</i>	Ekikaka	<i>Lachnopylis floribunda</i>	Omumuri
<i>Hibiscus rosa-sinensis</i>	Hibiscus	<i>Discopodium penninervum</i>	Ekinyagasani
<i>Nuxia congesta</i>	Omubuzigye	-	Enkanka cactus
<i>Citrus sinensis</i>	Oranges	-	Eirarira
<i>Brunfelsia calycina</i>	Yesterday, Today & Tomorrow	<i>Erythrococca stolziana</i>	-
		<i>Tectea nobilis</i>	omuzo
		<i>Tectea nobilis</i>	Omuzo

Appendix 3: Trees found in farmers fields in Kabale District (Contd.)

Woody species	Local names	Woody species	Local names
<i>Eucalyptus sp.</i>	Karutusi	-	Fushia
<i>Erythrina abyssinica</i>	Ekiko	<i>Annona squamosa</i>	Custard apple
<i>Cupressus lusitanica</i>	Karwenda or Bubani	<i>Cassia mannii</i>	-
<i>Carica papaya</i>	Eipapari	<i>Carissa edulis</i>	Omuyonza
<i>Datura suaveolens</i>	Moon flower	<i>Urera hypselodendron</i>	Omushu
<i>Dracaena fragrans</i>	Omugorora	<i>Buddleja polystachya</i>	-
<i>Ficus natalensis</i>	Ekitooma	<i>Pittosporum spathicalyx</i>	Omushikyera
<i>Euphorbia candelabrum</i>	Enkukuru	<i>Albizia grandibracteata</i>	Omujugangoma
<i>Vernonia auriculifera</i>	Ekinyaminyami	<i>Allophylus macrobotrys</i>	Omushusha
<i>Persea americana</i>	Avocado	<i>Scutia myrtina</i>	Omugasha
<i>Euphorbia tirucalli</i>	Oruyenje	<i>Ficus exasperata</i>	Omusomora
<i>Maesa lanceolata</i>	Omuhanga	<i>Ficus sp.</i>	Omurehe
<i>Sesbania sesban</i>	Omunyeganyegye	-	Omufura
<i>Acacia mearnsii</i>	Black wattle or Burikoti	-	Omeurucumbi
<i>Crassocephalum manii</i>	Omukona	-	Omuberano
<i>Cyphomandra betacea</i>	Tree tomato or Ekitunda	-	Ekizimyamuriro
<i>Coffea arabica</i>	Omwani Omuravunga	-	Ekibonono
<i>Craterispermum laurinum</i>	Omuniwameizi	-	Raspberry
<i>Verbencellae derodesedon</i>	Ekikondogoro	<i>Artocarpus heterophyllus</i>	Jackfruit (fene)
<i>Casuarina sp.</i>	Casuarina	<i>Gardenia sp.</i>	Gardenia
<i>Cassia occidentalis</i>	Omwitanjoka	-	Ekitahusha
<i>Morus alba</i>	Boberi/Ecerene/Mulberry	-	Omurashante
<i>Cestrum sp.</i>	Queen of the Night	<i>Cassia spectabilis</i>	-
<i>Ehretia cymosa</i>	Omukobakoba	<i>Syzygium cordatum</i>	Omukondondo
<i>Pygeum africanum</i>	Omumba	<i>Euclea divinorum</i>	Omusikizi
<i>Euphorbia cotinifolia</i>	-	-	Rocket
		-	Bigaro
		-	Palm
		<i>Strombosia scheffleri</i>	Muhika

Appendix 4:

RESPONSE TO MAJOR LAND AND TREE TENURE ISSUES

ISSUE	MPIGI	MBARARA	KABALE
I. LAND			
a) (Ownership)	Family, Individual, Customary:	Family, communal, customary	Family, customary, communal
b) Acquisition	Inheritance; Renting; Borrowing; Exchange; Purchasing; Usufructuary/ Occupational rights	Inheritance, Grants to sons/daughters on marriage; Purchasing; Usufructuary rights	Inheritance; grants to sons/daughters on marriage; purchasing. Usufructuary rights
c) Title	Titles available	Generally no titles	Generally no titles
d) Rights	Generally men; women if owns land; Tenants (user rights)	Men only Women in rare cases	Generally men only; Women if widowed
e) Land use/ Farming system	Mixed farming; small units; Perennials: banana, coffee Annuals: maize, beans, vegetables, cassava, potatoes	Generally monocropping Perennials: banana, coffee; Annuals: maize, millet Sorghum, potatoes, vegetables, beans	Generally monocropping; Generally annual crops: Sorghum, potatoes, peas, vegetables, some bananas
f) Livestock	Very few per family; private grazing grounds; zero-grazing-few cases	Very large herds; Communal grazing grounds; Ranches (personal)	Very few per family; Private/Communal grazing; Dairy farms - few cases
g) Management	Intensive; mulching and manuring in bananas: Home gardens	Mulching and manuring in bananas; Vegetable gardens	Slash and burn
h) Soil Conservation/ erosion control measures	None	None	Terraced lands Trash on bunds
i) Land Disputes and Settlements	Common Family/RCs mainly Laws very rare	Not common Family, Community, RCs	Fairly common Family, RCs mainly, Laws occasionally

Appendix 4:

RESPONSE TO MAJOR LAND AND TREE TENURE ISSUES

ISSUE	MPIGI	MBARARA	KABALE
2. TREES a) Previous situation	Natural tropical forests Savanna woodlands Extensive swamps	Savanna woodlands Savanna grasslands	Natural tropical forests; Extensive swamps
b) Present situation	Remnants in a few places mainly riverine/swamps; Forest Reserves	Large areas cleared as tsetse control measures. Acacia woodlands remain	Remnants in very few places and forest reserves, Most swamps reclaimed
c) Trees planted	Fruit/Timber trees; natural growth; ornamentals; boundary markers; various species; Agroforestry: not developed	Very few fruit trees; woodlots-Eucalyptus boundary markets Agroforestry: non-existent	Black wattle natural regeneration; woodlots-Eucalyptus; Boundary markets; Ornamentals Agroforestry: starting up
d) Uses of trees	Poles, fuelwood, timber, shade beauty, fodder (not common)	Poles, firewood, food	Poles, firewood
e) Attitude to forests	Mixed: generally positive	Positive, fear of tsetse fly	Positive
f) Attitude to tree planting	Positive Trees attract monkeys	Positive	Positive: require government law enforcement
g) Problems to tree planting	Land shortage species choice; seedlings; Technical knowledge; marketing - fruits	Species choice; seedlings; Technical knowledge; Droughts; Termites - Eucalyptus	Land shortage: fragmentation species choice - seedlings; Technical knowledge; Damage - animals; uprooting; theft. Boundary conflicts
i) Tree disputes	Mailo land between owners and tenants	None	Boundary issues