

Improved Mixed Farming Research (IMFRE) – A Small Farm in Uganda



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I. Uganda

1.1 General information



Uganda is one of the countries that make up East Africa. Its neighbours are Sudan in the North, Kenya in the east, and Republic of Congo in the west while Tanzania and Rwanda in the south. The capital city is Kampala but there are many other small towns, which include Entebbe where the main airport is located.

Uganda is located on the most fertile plateau of Africa with a rim of mountains at a height of 1 200 metres above sea level. Its climate is mainly tropical generally rainy with two dry seasons (December to February, June-August).

The major sector of the economy is agriculture though the recent discovery of oil anticipates a shoot up in the economy.

1.2 Quick facts Uganda

Area:	236 040 km ² (91,136 sq miles)
Agricultural land:	21%
Woodland and grassland:	45%
National parks, forests, and game reserves	13%
Climate:	Temperate
Population size:	34,612,250
GDP per capita:	23.7% (2008/09)
Trade balance:	36.7 USD per capita (2010)
Main exports:	Agricultural products (coffee, tea, horticulture, and fish products). Electricity is also exported to the neighbouring countries
Main imports:	Cars, equipments, petroleum and medical supplies.□
Source: Uganda Bureau of Statistics (http://www.ubos.org/) and Wikipedia (en.wikipedia.org)	

1.3 Ugandan Agriculture

Agriculture has for a long time been the core sector of Uganda's economy in terms of its contribution to the GDP and employment. Uganda's favourable soil condition and climate has contributed to the country's agriculture success. Most areas especially the southern parts of the country have received more than 150 millimetres of rainfall. In the northern part there is often a dry season in December to January. Temperatures in the country vary only a few degrees above or below 20°C but are moderate by a difference in altitude. Such conditions have allowed continuous cultivation in the south, annual cropping in the north and pastoral economies in the North Eastern part of the country. Although population growth has created pressure for land in a few areas, land shortages have been rare and only about one third of estimated area of arable land was under cultivation by 1989.

Agriculture products have dominated Uganda's export throughout its history with coffee as the major export from the 1950s followed by cotton and tea. Food crops including plantains, beans, millet, sorghum, cassava, sweet potatoes, peanuts, and groundnuts, soya beans, vegetables (cabbage, carrot, onion, fresh greens and numerous peppers) have been widely grown.

Livestock include cattle, mainly indigenous and those known as exotic (Frisian), which are experimental cross-breeds, goats, sheep, pigs, chicken, ducks and turkeys.

Farmers in Uganda work on an average of less than 3 acres (1 hectare) to provide more than half of the agriculture products. Small-scale mixed farming dominates the farming system with production methods employing largely rudimentary technology (hand hoes and associated tools) with minimal access and use of chemical fertilizers and herbicides. Family (especially

women) provides the main source of labour with hired labour for wage to support harder tasks. Direct farm ownership is generally held by the man.

1.4 History and development of the agricultural sector

Uganda was reported to have had fertile soils that facilitated crop production. In the 1960s agriculture produce had ready market from the marketing boards, where farmers through cooperatives sold their produce at reportedly reasonable prices. However, the economic growth and standards of living started to deteriorate in the 1970s due to political insecurity, mismanagement and lack of adequate resources that seriously eroded incomes from commercial agriculture affecting Ugandan economy. Technological development was also delayed by economic stagnation and agricultural production that used primarily unemployed methods of production on small, widely scattered farms with low levels of capital outlay. Other problems included poor national roads network that destroyed the market system increasing inflation and low production process.

The economic deterioration was exacerbated in the 1980s due to the liberation wars of 1979 and 1980-1986 and the outbreak of HIV/AIDS pandemic which caused death of many people in the productive age, creating a high number of orphans depending on the mainly poor, rural dwellers and vulnerable members of the community. These factors contributed to low volumes of export commodity production and a decline per capita food production and consumption.

Despite these serious problems, agriculture continues to dominate the economy. In 1980s, the sector contributed two thirds of the GDP, 95% of the export revenues, 40% of government revenues. Roughly 20% of regular wage earners worked in agriculture commercial sectors and 60% of the work

force earned some income from farming. Agricultural output by then was generated by about 2.2 million small-scale producers on their small farms.

By 2005 the sector employed 73% of labour force. In 2008 it accounted for 23.7% of total GDP agriculture export accounted for 47% of total export in 2007. Most of the industrial sector in the country is agro-based though the total GDP is declining, 83% majority of women are employed in agriculture as primary producers and contribute 70-75% of agricultural production. In the face of the global financial crisis, agriculture contributes a lot of foreign exchange revenue from regional trade and therefore improving the country's balance of payments position and in the process help to stabilize the depreciation of the shilling.

Agriculture in Uganda has the potential to significantly increase its contribution to the economic growth and poverty reduction. It has been demonstrated that if agriculture in the country grew at the average rate of 2.8% as experimented in the past eight years, the poverty rate would be reduced to 26.5% by 2015.

1.5 Agricultural policy

In 1990s general exports steadily increased where they were sufficient to produce a trade surplus (most of Uganda's export were sent to the USA, Britain, Netherlands and France) in 1988 a new program designed to support the expansion of non-traditional exports to diversify exports and increase exchange. This opened up private export initiatives with the United Agency for international development which assisted the private sector in expanding production, marketing and trade of items like fruits, vegetables spices and fresh-cut flowers.

The poverty alleviation program (PAP) in late 1990, gave rise to Poverty Eradication Plan (PEAP) with its Pillar 2; Plan for modernization of Agriculture (PMA), which is a multi sector policy framework for agriculture and rural development. This has shaped the agricultural policy environment in the last eight years. The PMA scope covers pillars of research and technology development, national agriculture, advisory services, rural finance, agro-processing and marketing, agriculture education, and sustainable natural resource utilisation and management.

In 2005 a rural development strategy was formulated with the objective to raise household incomes focusing on the sub county as basic unit for planning. In 2006 a much broader vision of Prosperity for All (PFA) was designed with a goal to improve the lives of all Ugandans in all aspects. The first Development Strategy Investment Plan (DSIP) was developed as a medium-term development plan of Ministry of Agriculture, Animal Industry and fisheries (MAAIF). The DSIP was to translate the national goals and priorities contained in the PMA into a plan for public sector activities in the agricultural sector.

Source: Uganda National Development Plan (2010/11-2014/15)¹.

1.5.1 Subsidies

Uganda does not offer any subsidies specifically designed to promote exports. Uganda maintains no export duties, except the 1 percent access collected on coffee exports. The major export incentive is a Fixed Duty Drawback Scheme. The scheme operates on input-output coefficients

¹Address: http://planipolis.iiep.unesco.org/upload/Uganda/Uganda_NDP_April_2010.pdf

calculated in advance on the basis of information provided by the exporter. Under this mechanism, duties paid on imported inputs (not locally available) that go into the production of exports are refunded so that their export is not rendered uncompetitive as a result of duties. The scheme was established to meet the needs of exporters of agricultural and fishery products that rely on a large quantity of imported inputs, especially packaging materials.

1.5.2 Role of state trading enterprises

As part of Uganda's efforts to create favourable conditions for a market-driven economy, the monopoly of state agencies in the marketing of agricultural products was abolished. The government established regulatory bodies like the Uganda Coffee Development Authority and the Cotton Development Organization to ensure that farmers and exporters maintain quality standards of products and to provide technical backstopping.

1.5.3 Sanitary and Phytosanitary Measures (SPS) Agreement

Imported food is checked by the UNBS², the Customs Department and the Government Chemist³. All these base their assessment on scientific and technological regulations and hence do not create unnecessary obstacles to trade. To date, Uganda has not applied any SPS measures against food imports (<http://www.fao.org/DOCREP/005/y4632E/y4632e0x.htm>).

² Uganda National Bureau of Standards (UNBS): <http://www.unbs.go.ug/>

³ Ugandan Government Chemist and Analytical Laboratory

1.6 History and development of the organic sector⁴

The export market has been the main driving force for the organic agriculture movement in Uganda. A few commercial companies began deliberately engaging in organic agriculture, with an eye on the export market, as early as 1993. At the same time many NGOs, community based organizations (CBOs), and the government promoted an approach to agriculture that would allow the safeguarding of food security, help to provide income, maintain soil fertility, and control pests. From there, it was only a small step towards embracing the formal practices of organic agriculture, which, with their emphasis on nature, were found to be palatable to Ugandans.

Most of Ugandan agriculture is close to organic methods because the traditional farming practices that still are largely followed by the majority of the smallholder farmers emphasize organic farming methods. Over 50,000 farm households are certified as organic; for most of these, cash crops are the major source of income. In this regard, commercial organic agriculture can be seen as a major employer or employment opportunity. If a farm is organically certified it is normally registered in the name of the man.

The development of the organic export markets to date has relied heavily on the support of foreign donor programs. In 2001 the National Organic Agricultural Movement of Uganda–NOGAMU (www.nogamu.org.ug/) was established, and in 2005 was linked to 25,000 stakeholders. NOGAMU promotes export and also the development of the domestic market in several ways, such as a shop in Kampala and supplies to schools, restaurants, and supermarkets. The elaboration of an East African Organic Standard for

⁴ Source: http://www.ifoam.org/growing_organic/2_policy/case_studies/uganda_ag_social_conditions.php

organic agriculture started in 2002 and was adopted by the East African Community in January 2007 after a process of co-operation between the private sector and governmental institutions. Organic policy development in Uganda has been spearheaded by the private sector. A process to draft a policy concept paper was initiated in 2004, involving government departments and the private sector. The Uganda Export Promotion Board (UEPB) has taken a keen interest in organic exports for many years, and the Coffee Development Authority has established a target of 10% certified organic coffee.

NOGAMU which is the apex organisation bringing together the producers, processors, exporters, NGOs, and other stakeholders in the organic sector, has instigated a measure among organic dried fruit processors to ensure their standards of hygiene and sanitation. Working with Makerere University with support from HIVOS (a Dutch NGO), NOGAMU has embarked on a series of training programs, including the deployment of graduate interns at dried fruit processing facilities. The United Nations Industrial Development Organization (UNIDO), with contributions from NOGAMU, is currently in the process of writing a curriculum for the training of dried fruit processors in standards of sanitation and hygiene.

Organic certification by European certification bodies has taken place in Uganda since 1993. IMO and KRAV have dominated the certification scene; others are EcoCert, Ceres, Soil Association, and SKAL. Currently IMO certifies the vast majority of production, and a few projects are certified by EcoCert. In 1994, a few local inspectors were trained by KRAV, but much of the inspection work so far has been done by foreigners. IMO has an expatriate inspector based in Uganda, and since 2004 has worked in close cooperation with UgoCert for its inspections.

1.7 Regional climate⁵

The Southern and Eastern parts of Rakai, which also include Kalisizo area where the Farm is located display fair distributions of rainfall throughout the year. There is a relatively dry season from January to February and from June to August. However, a few occasional light rainfalls mitigate these dry periods. A principal peak is due around March-April and May, whereas the minor peak is around October and November. The mean annual precipitation varies from 1,350 mm to 2,125 mm. This decreases to 850 mm and 750 mm in Kooki County that lies in the cattle corridor.

The District generally records around 25°C mean annual maximum temperatures. The Eastern parts record a mean annual minimum of 17.5°C while it decreases to around 15°C to the West. The Kibanda areas record mean monthly maximum temperatures ranging between 26°C and 27°C. These are very insignificant variations and hence indicate that there are generally high temperatures within the District throughout the year.

Relative humidity ranges between 80-90% in the morning and decreases to between 61% and 66% in the afternoons during the months of January and May. From June to August, the morning recordings decrease to around 77% and so, are the afternoon recordings that decrease to around 56% and 57%. The implication is that though the morning recordings are always within reasonable limits to induce rainfall, they normally reduce unfavourably in the afternoons resulting in poor chances of getting rainfall. However, it should be noted that relative humidity is so variable with time and thus liable to change any time in relation to other climatic conditions.

⁵ [Source: Rakai district Production and Marketing Department plan 2010/2011 – 2012/2013.](#)

1.8 Soils on Improved Mixed Farming Research (IMFRE)

Over 75% of Rakai soils are ferralitic representing an almost final stage of weathering with little or no mineral reserve left. Some “heavy” clay varieties have some fertility but sandy varieties are particularly poor. Other types include lithosols, alluvial and lacustrine sands and alluvial clays. Generally lithosols and humus loams are the dominant upland components while the grey sandy soils derived from hill wash or river alluvium, grey clays of the valley bottoms and lacustrine sands dominate the lowland component. Lithosols are soils without horizons and thus young and stony or bare rocks. This type of soil dominated the land on which IMFRE is situated.

1.9 Landscape and natural environment

The vegetation on the farm is varied as the different ecosystems that characterize the area. It ranges from the medium altitude forests, through swamps, to savannahs. The vegetation is the potential for eco-tourism. However, the forests in the nearby area are heavily encroached due to increased demand for forest and wood products and land for cultivation.



Natural forest and savannah type of vegetation on which land is located

II. The farm

2.1 Introduction

Farm name:	Improved Mixed Farming Research (IMFRE)
Farm size:	23 acres (7 hectares)
Farmer and family:	A K B Mayanja Buligwanga family head, widower 66 years old (farm director and manager) 13 persons living on farm
Location:	Rakai District 160 km South –West of Kampala, Kalisizo Town 0°32' 06" South, 31°37'21" East, Kalagala Parish, Kinaawa Village
Farm type:	Mixed farming (banana 2 acres, coffee 3 acres, Eucalyptus forest 2 acres, natural forest 12 acres, wetland/grazing land 4 acres)
Soil type	Semi-loamy, semi rocky, clay-sandy
Mean annual rainfall	1,350 mm to 2,125 mm
Mean annual temperature	17.5 – 27°C.
Livestock husbandry	Cattle, poultry and bee keeping
Plant production	Primarily coffee, banana, fruit, timber, vegetable, bee keeping and livestock rearing
Marketing	Area households, hotels/commercial eating places, area institutions (schools, hospital), NOGAMU and general community trainings, guided tours, social activities (hosting elderly days)
Human activities on farm	Care and management of produce and products, marketing, on-farm

2.2 History of the farm

2.2.1 Acquiring the farm

Mr. Mayanja was born in Nninsi village Kalisizo, Rakai district by Mr, Mrs Sebastian Mukasa. He is the first born out of 10 children. His parents were prominent coffee farmers in the area who managed to acquire more land within the area and away from home as well in the other areas of the country including Kampala. After acquiring a certificate in nursing (1972) he went to live in Kampala and started a drug shop. In 1974 he got married to Drolence Nassuna together they were blessed with 5 children, also had a second wife Margaret Nankya with whom they had 10 children.

He was given three acres of land (which is currently part of the land for the farm) by his parents (as is the custom in Buganda for fathers to give land to their grown up children to go and start a family).

Though his family and business were in Kampala, he kept on engaging himself in subsistence agriculture back home having picked an interest in farming from childhood. Trainings and farm visits from the catholic church especially Masaka diocese, Mityana farms and farm institutions inspired him a lot. His interest in agriculture was cemented by the inspiration and advise from Dr. Samson Kiseka (by then the Vice president of Uganda who continuously advised city dwellers with land in the country side to engage in agriculture instead of engaging into trade where they had no expertise as most shop owners had acquired shops freely during Idi Amin's regime from expelled Asians).

During the period when all his siblings were in school there was a pressing need to look after the parents back home. On the business side, the trade system was very risky after the liberation war, due to high smuggling

especially drugs. His uncle Mr. Charles Mukasa Nsimbi a prominent farmer and an agro- business person in Kalisizo town council also encouraged him to purely engage in agriculture as he already had enough land.

By that time he had joined different farmers' group including among others; Rakai District farmers association, Kulika Charitable organisation farmer's desk, model farmer of Kakoma organic farm school, model farmer to Mbuye farm school.

In 1996 he left the drug shop to purely engage in agriculture. After three years of total engagement on his farm, he realised that the soil type on which the land is located is not very fertile for crop growing as compared to other areas in the region. He realised that this was a limiting factor for his neighbours to fully engage agriculture. He vowed to show the community that was lamenting about the soil condition that something can be done on such soil and one can improve the standard of living rather than sitting back and wait for handouts.

He started with intensive cultivation and management of three acres. Later there was pressing need to expand which forced him to keep on buying more land (10 acres) from neighbours to expand his farm by then which was doing so well. His father realizing his persistent interest in farming, he gave him 10 acres more.

As soils were continuously cultivated with less land under fallow, Mayanja decided to diversify to local cattle keeping, poultry rearing, and piggyery to enable the farm access to farm yard manure.

Mayanja recalls how people and training institutions started to visit his farm including visitors from United Kingdom (Martyrs Church UK), who offered him an opportunity to visit (2002) other farmers in UK. This widened his network

and gave him renewed vigour to work harder and further engage community members into profitable agriculture.

On his return he engaged into fruits, vegetables and apiary as he had established a market outlet during his visit. This was supported by agricultural organisations from the UK (by then Hydra and Soil association).

2.2.2 Converting to organic agriculture

Hydra connected him to NOGAMU Uganda for certification and marketing of produce. The farmer never had any problems to adhere to the standards of organic agriculture, as he was already an organic farmer. He currently exports fruits like matooke (bananas), jackfruit (*Artocarpus heterophyllus*), gooseberries (*Ribes uva-crispa* L.), avocados and mangoes. He is also exporting vegetables⁶ like nakati, doodo, jobyo and nsuga entula biringanya.



Some of the vegetables grown for sale on the farm

⁶ Nakati (*Solanum aethiopicum*) is one of the numerous local vegetables in Uganda. Doodo is a leafy vegetable (*Amaranthus dubius*). Gyoyo/gyobyolo/jobyo is a vegetable (*Cleome gynandra*). Nsuga entula biringanya is eggplant (*Solanum melongena*).

2.3 Crop production

The farmer has a number of crops on the farm. These range from crops for food consumption, crops for sale especially fruits and vegetables. There are also crops, which provide food and fodder for animals and medicinal plants for disease prevention for animals and humans, as well as for pest, control. Main crops for food like cassava, sweet potatoes, beans and maize are seasonally grown. Rainfall pattern determines when such crops will be grown. There are normally two seasons per year. The vegetables are grown throughout the year. The small plots on which they are grown encourage irrigation when during the dry seasons.

Intercropping is highly encouraged and crops intercropped include vanilla, medicinal plants, yams and paw-paw (papaya). These are mainly planted in between banana plants. Cover crops like pumpkins are also intercropped to control run off especially in areas for new banana plants.



Maize



Banana



Vanilla with banana



Jackfruits



Coffee



Pumpkin acting as cover crops within banana areas

2.3.1 Crops and their use 2010

The following table presents the crops cultivated on I.M.F.R.E for the last 6 years and their usage.

Crop	Area (acreage)	Yield	Usage
Coffee	3	4 216 kg	School fees, home maintenance, farm improvement, major costs, salary, transport
Banana	2	72 bunches	Home consumption as food and surplus for sale
Vanilla	186 plants	420 kg	Market
Maize	1	400 kg	Food for home surplus for sell
Wild yam (kakopa)	20*11 *3 moths	60 baskets	Food ad market, Leaves vegetables and fodder for piggery, chicken
Cripping Yams (endaggu)	208 plants	20 baskets	Food, market

Crop	Area (acreage)	Yield	Usage
Mutuba (Ficus sp. Fig tree)	32	32	Back cloth for sell/timber, fodder, herbs, firewood
Mangoes	32 trees	10 *100	Sell and home consumption
Jack fruits	6 trees	78 pieces	Sell and home consumption, fodder and firewood and timber
Passion fruit	16 plants	8 sacks	Home consumption and market and tokens for tourists/visitors
Paw-paw (papaya)	8 trees	3 baskets	Home consumption, market
Guavas (Psidium guajava L.)	Numerous (Demarcation of farm land)	10 sacks	Home and market, poles for farm plants like coffee
Avocado	10 trees	12 baskets	Home consumption and sales
Vegetables	8 blocks (different varieties)	24 baskets	Home and market
Pumpkins	Along trenches	3 sacks	Home consumption
Eucalyptus forest	2	7 lorries	Poles for construction, firewood and apiary breeding place.
Total area cultivated	7 acres		

Fruit and vegetable baskets: around 15-20 kg each.

Banana bunches: around 10-20 kg each.

Sacks: around 50-100 kg each

2.3.2 Field planning for 2004-2010

Month	Activity
December, January, part of February	Harvesting (especially coffee, fruits)
February and part of March	Field preparation (clearing, farmyard manure transfer, preparing mulching material)
March, April, May	Sewing/planting
May	Weeding
June, July and part of August	Harvesting
August September	Field preparation
October	Sewing/planting
November	Weeding
December	Harvesting

Vegetables and fruits are planted and harvested throughout the year. The farmer has mentioned that the above schedule is becoming very unpredictable due to the change in climate.

2.3.3 Weed management

The farmer uses hand hoes to clear weeds manually. Grass cut to maintain the grazing area is used for mulching part of the banana area to control weed growth and to keep moisture. The pumpkins and some other crops are grown as cover crop as these prevent weeds to grow.

2.3.4 Nutrient management

Animal waste collected from the pits is sprayed on to the plants as tea manure using a hand sprayer. The farmer also employs crop rotation for seasonal crops.

2.4 Livestock production

The farmer rears cattle for household consumption to cater for manure and milk. The cows are mainly local breeds, which do not require intensive care. The farmer has 8 animals, which are grazed on the swampland on which they are taken every morning and back to the shade in the evening. Along side cattle the farmer also rears poultry (exotic) for family and surplus for sale.

The above have been supplemented by beekeeping. Mayanja believes that bees are important for his fruit trees. But his major worry is that farmers in the neighbourhood are using pesticides and herbicides for weed control due to labour scarcity, which he believes will affect his apiary project.



Cattle grazing and water points for animals



Poultry unit on the farm



Bee keeping project

2.5 Buildings and machinery

Main house semi permanent and comprises of the following below.



Main house



Kitchen



Store for firewood



Multi-purpose shelter



Store for harvest and farm tools



Poultry unit

2.5.1 Machinery

The farm uses simple machines which range from hand hoes for tilling the land, slashes for working, pangs and axe for work in the grazing area, beekeeping area, uprooting of tree stamps and wheel barrows for transportation for harvest and other staff that needs light movement of water, firewood, seedlings to main gardens etc. and any locally available tool for pruning.

The farming system does not allow the use of tractor and the nature of the work does not allow animal traction, which is the general situation within the region.

2.6 Manure handling and storage

The primary source of nutrients is manure from the cattle and chicken droppings. Cows play a vital role in providing farmyard manure to the gardens. Every dry season composite pits are prepared and all kitchen waste is collected and mixed with cow dung. Urine from cattle has a specific collecting place. This is applied on the composite pit at certain intervals and in the rainy season it is applied directly on to the crops. Application of manure is mainly done during the last weeks of the dry season to ease application and to prepare crops for the rains.



Collecting area for animal urine



Drawing urine from the pit

2.7 On-farm work and employment

I.M.F.R.E employs 3 people, two men and one woman who are paid every month. These are supported by family members; especially during holidays the children do most of the work. The workload is divided up according to gender perspective. Big tasks like cutting trees, opening up and tilling fresh land for seasonal crops, taking care of animals is done by men while light duties like sewing, weeding and watering of vegetables and nursery plants is carried out by women. Women also do household work. Manual labour is entirely used with the help of simple tools. Mr. Mayanja directs all the activities on the farm.

Planting of the first season is done in March and harvesting in June. The second season begins in September and harvesting is done in December.

2.7.1 A daily schedule on the farm

6:00am	Waking up
	Prayers
	Cleaning the cattle shed and milking the cow
	Attending to poultry (feeding and water)
	Gardening
10:00am	Breakfast
	Preparing lunch and garden renovation
1:00- 2:30	Lunch
	Leisure and News
	Irrigation of nursery beds, seedlings in the garden and general cleaning
	Fetching water
	Farm records of the day
9:00pm	Supper
	News on radio and T/V
10:00pm	Bed time

2.7.2 The weekly schedule

Monday	Banana Plantation
Tuesday	Coffee
Wednesday	Intercropping management
Thursday	Animal husbandry
Friday	Apiary, eucalyptus forest and well
Saturday	Compound and marketing
Sunday	Church and consolidating farm records of the week

2.7.3 Consultancy

The farm attracts technical staff from the local government especially the extension staff from Rakai district production department, sub county extension staff and staff from the National Advisory services department at the district offer technical advice and also encourage other farmers to come and learn from the farm. Area local NGOs that promote farm enterprise while using available resources at hand like Family Development Support Initiatives (FADSI), Community Enterprise Development Organisation (CEDO) and Vi. Such organisation often brings farmers to have hands-on training as the farm offers a variety of opportunities. The farm is also open to individual farmers within the community who visit the farm to share knowledge and information.

The farmer has been invited on different fora to share his experiences and has also participated in a number of agriculture exhibitions at local, national and international level.

Research institutions like National Agriculture Research Organization selected the farm to trap different insect species in the area for study purposes. Kawanda Research Station also has been giving him different varieties of banana and vegetable species varieties for experimental purposes on his farm to inform programming at regional and national level.



Mr. Mayanja giving remarks after farm tour



Farmers on a study tour

2.8 Non production on-farm activities

2.8.1 About human activity on the farm

On a number of occasions the farm has organised elderly days and has invited a number of old generation 70 years and above to have an evening and share a few experiences. Mr. Mayanja believes that this category of people are not considered when it comes to social gathering. On such occasions, different topical issues are discussed ranging from political, social, and economical issues. Lunch is served and sometimes items like fruits, sugar, and soap are given to the most vulnerable guests. The elders

have appreciated such moments and have confessed that they always go back home with renewed hope for the future.

Elders who are taking care of orphans are encouraged to come along with them.

2.9 Natural and landscape management

Taking a general lay out of I.M.F.R.E, it is located on a slopping land. But the farmer has managed to utilise every aspect of the landscape. The upper part of the farm before the main house is covered by short grass and many fruit trees for shed and water catchments. The next part is where the house is located part of this area is covered by a rock on which the animal shed is constructed as well as the pits for collecting animal. The rock provides a strong surface and easy run off of animal waste into the pits that were also dug into the rock.

From the main house the one move into a banana plantation, which is intercropped by various crops for food, medicine, shed and crop cover. A number of terraces are dug to control run soil erosion, plants for fodder are grown on the terraces to make the soil more firm. Composite pits are located in this section as it is near to the homestead to encourage easy movements and collection.

Next to banana plantation is the coffee area, which is also intercropped with other crops and trees. This area is followed by a field for seasonal crops, like maize, beans and sweet potatoes. At times, part of this land is left to fallow so that the area regains fertility. The farmer rotates crops grown in this area.

On the stiffer area the farmer has planted Eucalyptus trees for construction and firewood. It is in this area that the Apiary unit is located. This is followed

by a natural stream where the farm well is located. The stream leads into the grazing land, which is mainly swamp and savannah grassland. A number of water points have been prepared for the animals.

Alongside this area is the natural forest, which is the only one that has been reserved in the area.

2.10 Economy and marketing

2.10.1 Farm income

The major source of income on I.M.R F.E is sales from coffee, which is sold to buyers directly. This is followed by banana for food, yellow bananas for fruits, vegetables as well as fruits. The farmer delivers most of the produce to the buyers. But on other occasions, consumers can buy fruits and vegetables directly from the farm.

2.10.2 Farm expenses

The major expense is mainly labour costs for weed control and irrigation, transport for fruits is also expensive as the farmer has no means apart from the bicycle, yet fruits need fast means to be delivered. This forces the farmer to hire motorbike or a car depending on the bulk of products to be delivered.

Veterinary services are also costly.

2.10.3 Marketing

Apart from a few products like gooseberries and some fruits, which the farmer sells to NOGAMU, Most of the farm produce is sold locally to schools and hotel, restaurants, hospital and individuals within Kalisizo area who appreciate health eating.

2.10.4 The consumers

Nabisere Hotel: This is a big hotel at international standards located in Kalisizo Town council 4 kilometres away from the farm. The hotel receives fruits like mangoes, vegetables and sometimes poultry products from the farm. The Hotel manager says, "if only I.M.F.R.E had the potential to supply us constantly, the standards of his chicken are uncomparable to all people that have ever supplied us".

Schools like St. Andrew's Secondary school, Christ the King S.Sand Nabbunga Primary schools are some of the schools that enjoy produce from I.M.F.R.E. Products bought by the schools include among others banana for food and fruit, sweet potatoes and vegetables to feed the teachers. These school supports parents and farmers in the area and give them priority for market avenues. This has encouraged local small farmers to appreciate commercial farming.

Kalisizo hospital staff also buys fruits and honey from the farm. Individuals within the community buy directly different products from the farm especially when they get visitors from the city.

2.11 Future plans and investments

The farmer has plans to increase the population of both coffee and banana since they are the main source of income and food. The varieties required are sometimes given freely to model farmers like him though he has to be selective, as he might receive varieties that are not accommodative to the nature of the soil on the farm.

He also expressed the desire to cross breed the cattle for better varieties that yield more milk.

There is a pressing need to obtain a water pump for irrigation and domestic water. The soil loses moisture fast especially in the dry season yet his natural stream in the valley can provide water to encourage crop production throughout the year.

Mr. Mayanja also plans to strengthen the banana association group in which he is a committee member to be registered as an association to enjoy the opportunities that come with farmer groups especially bulking and knowledge information sharing

He plans to improve on the campsites within the natural forests for both the local community to appreciate the natural environment and reduce the destruction of natural setups.

He also wants to promote study tours for schools and institutions to research as well as leisure for the general public. He believes there are tree/plants that have been destroyed; yet they were of great value to the environment and the community at large. Hence the natural forest will boost this.

He plans to have one collection of all beehives for proper management.

The farmer has plans of modifying his house.

2.11.1 Challenges

The farm faces the following challenges:

- Appropriate transport for produce, especially fruits and vegetables
- Irrigation facilities to encourage water for crops throughout the year
- Marketing of the consumers have not appreciated the value of fruits
- Domestic water harvesting facility/tank
- Labour is continuously becoming a challenge. Many energetic young men and women are moving to towns and trading centres for short-term jobs leaving agriculture in the hands of old people.
- Limited external tours to acquire more knowledge.



Improved Mixed Farming Research

IMFRE

Kalisizo, Rakai District

Uganda



As you enter the farm (homestead and surroundings)

Slow down from main road to IMFRE



Upper section of the farm as you approach homestead



Getting closer home



Compound for visitors, meetings and leisure



Welcome to IMFRE



A.K Mayanja in front of his house



Family members



Feel comfortable inside the house



Firewood store



Poultry unit accommodates 500 birds



Kitchen with improved energy saving stove



Food storage



Multi-purpose shelter



Family member washing utensils

FARM COMPONENTS



Maize grown seasonally



Maize grown seasonally



Jackfruit trees



Mango trees



Mango tree



Jackfruit trees



Passion fruit



Homestead



Graveyard



Banana intercropped with vanilla, pawpaw, yams and a variety of herbs.





Banana intercropped with vanilla, pawpaw, yams and a variety of herbs.



Vanilla



Cinnamon tree



Preparing suckers for planting
(animal urine, mixed with ash and herbs and water)



Sucker growing



Fully grown fruit banana



Improved variety of fruit bananas



Grafting seedlings to improve on the variety



Care for seedlings during dry season with banana fresh stems



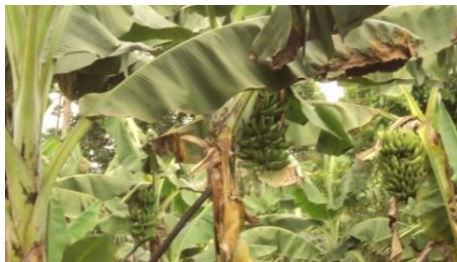
Area prepared for banana growing next season



Terraces separating components and to stop run-off



Banana variety for food (matooke)



Banana variety for food (matooke)



Plastic, glass, polyethen disposal



Vegetable growing area



Vegetable growing area



Nursery for tree fruits, coffee



Cattle shed

Rock for cattle shed construction

Urine collecting point for plant growth



Urine collecting point for plant growth



Ficus tree for bark cloth, supports yams, shed for coffee, support to plants, cocoyams, leaves for fodder, firewood and controls moisture loss



Coffee growing area, it is also intercropped



Tree uprooted for preparation of coffee growing



Yams



Yams supported by ficus tree



Yams supported by ficus tree



Fallow land for next seasonal crop



Eucalyptus forest



Bee keeping area



Natural spring



Natural spring



Natural forest



Grazing area



Grazing area (swampy area)



Grazing area (swampy area)



Water points for animals