

AGRICULTURE IN UGANDA

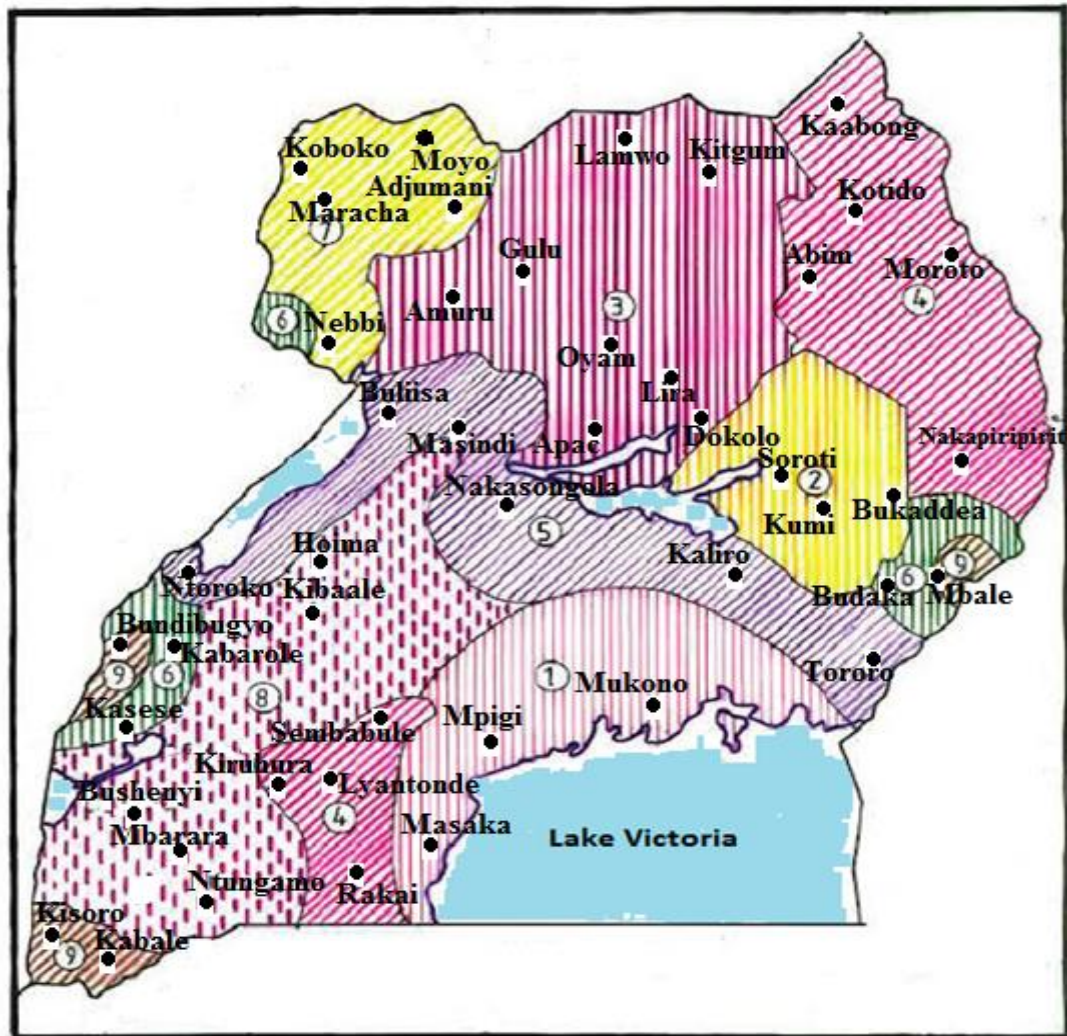
Agriculture in Uganda involves growing of crops and rearing of animals on both small and large scale. Both food and cash crops are grown in different regions of the country for home consumption and for sale respectively. Most people with limited land, practice subsistence farming in which food crops are grown for home consumption. These food crops include; Sweet potatoes, sorghum, cassava, beans, peas, maize, Irish potatoes, millet, groundnuts etc. Subsistence farming is a non-monetary sub sector in agriculture. Similarly, agriculture under cash crop growing is also carried on a large scale under plantation farming dominated by foreigners.

Agriculture is still the backbone of Uganda's economy employing over 60% of the country's population.

The status of the agricultural sector in Uganda is as follows;

- 72% of Uganda's working population is employed in agriculture; (UBOS) 2016.
- Agricultural products contribute about 80% of Uganda's total exports.
- The agricultural sector is dominated by the production of food crops.
- Coffee is the principal export crop for Uganda.
- The agriculture sector remains the back bone of Uganda's economy.
- The main food crops are bananas.
- NAADS (National Agricultural Advisory services) is supported by the UPDF under Operation Wealth Creation to increase efficiency and effectiveness of agriculture extension services.
- Acreage planted for perennial crops has increased in the recent years.
- Modified crops are being introduced on market.eg. Water melons.
- Cattle rearing dominates the agricultural sector.
- Large scale agriculture is done by foreign companies.
- The sector is largely subsistence.
- Small holder farms dominate where small plots are either hired or owned by small scale farmers.
- Etc

A sketch map showing agrarian systems in Uganda.



KEY

1	-Intensive Banana- coffee system
2	-Eastern System-Teso System (Annual crops and cattle)
3	-Northern system
4	-Pastoral System
5	-Banana-Millet-Cotton System
6	-Medium Altitude Banana-Coffee System
7	-West Nile System
8	-Western Banana-Coffe-Cattle System
9	-Montane System

Factors encouraging the development of agriculture in Uganda

Physical conditions:

1. Nature of soils;

- Existence of deep mature fertile soils has encouraged the growth of Bananas, beans, and maize in Masaka, Bukomansimbi etc.
- Acidic soils encourage the growing of tea at Kasaku tea estate in Buikwe, Nakigalala tea estate in Wakiso, Kijura tea estate in Fort portal, Kayonza tea estate in Rukungiri, Mpanga tea estate in Kabarole, Nyambya tea estate in Kyenjojo etc.
- Fertile clay- sandy soils have encouraged the growth of rice at Tilda rice scheme in Bugiri, Namutumba, Kibuku, Olweny irrigation scheme in Lira etc.
- Fertile volcanic soils have promoted the growth of coffee in Bududa, Mbale, Kapchorwa, Manafwa, Bananas in Kapchorwa, Mbale, Bulambuli, Beans, Maize, carrots, onions in Mbale, Kapchorwa etc.
- Fairly fertile sandy-loam soils have encouraged the growing of cotton, millet, sorghum, simsim, sun flower and other crops in Gulu, Soroti, Pallisa, Lira, Ngora, Kitgum etc.

2. Conducive climatic conditions in form of;

- Heavy and well distributed rainfall of 1500mm and above per year has encouraged the growth of perennial crops like oil palms in Buvuma, coffee in Mbale, Mukono, Masaka, Bananas in Bukomansimbi, Mpigi etc.
 - Moderate rainfall of about 750mm has encouraged the growth of crops like cotton in Gulu, Soroti, and Pallisa.
 - Hot temperature has encouraged the growth of crops like beans, maize, bananas, coffee, and sugar canes Kayunga, Mukono, Mpigi, Masaka, and Bukomansimbi etc.
 - Cool temperature conditions have led to the growth of crops such as wheat along the slopes of Mt. Elgon in Kapchorwa, parts of Kabale, Bushenyi, Fort portal, Mbarara; Irish potatoes in Kanungu, Kabale, Mbale, Bududa etc.
3. Presence of large tracts/vast land has encouraged the establishment of plantations such as Kasaku tea plantation for tea growing in Buikwe, Olweny irrigation scheme for rice growing in Lira, Tilda Rice scheme for rice growing in Bugiri etc.
4. Well drained areas such as Mukono, Mpigi, and Bukomansimbi have encouraged the growing of crops like bananas, coffee, maize, beans, vanilla etc.
5. Temperate areas of Uganda with altitude above 1500m have encouraged growing of crops like wheat along the slopes of Mt. Elgon in Kapchorwa, parts of Kabale. Bushenyi, fort portal, Bundibugyo
6. Moderate altitude areas have encouraged the growth of crops like beans, maize, bananas in Mukono, Kayunga, Bukomansimbi etc.

Human Factors:

7. Wide market for food crops such as maize, beans, bananas from Mbale, Rukungiri, Ntungamo in towns like Kampala, Mbarara etc.
8. Supportive government policies through rehabilitating of roads, provision of funds through NAADS, promoting research through NARO (National Agricultural research organization); has encouraged the growing of crops like bananas, cow peas, beans, maize, cassava, vanilla in areas like Bududa, Mukono, Bushenyi, Soroti, Arua etc.
9. Adequate capital in form of loans provided by government, SACCOS and foreign investors; that is used to pay workers, purchasing agricultural inputs has encouraged the growing of crops like vanilla in Mukono, rice at Tilda rice scheme in Bugiri, sugar cane at Sugar Cooperation of Uganda Limited in Buikwe.

10. Improved research in diseases control, discovery of resistant crop species at NARL (National Agricultural Research Laboratories) in Kawanda has encouraged the growing of bananas, improved maize varieties in Mukono, Mpigi Bukomansimbi etc.
11. Improved transport by road has encouraged the transportation of agricultural produce from farms to market centres e.g. the construction of Mpigi-Maddu road has encouraged the growing of ginger, tomatoes, and maize in Mpigi, Butambala.etc.
12. Presence of improved storage facilities has reduced post-harvest losses e.g. the establishment of community stores that are brick walled; has encouraged growing of beans, rice, soy beans, and maize g. nuts in Gulu, Kitgum, and Lira etc.
13. Improved technology that involves the use of combined harvesters that ease work has encouraged large scale crop growing such as rice at Tilda rice scheme in Bugiri, cassava planters for cassava in Arua; tractors and mini combined harvesters for barley growing and harvesting in Bukwo.
14. Existence of skilled labour from training institutions like Busitema University, Bukalasa Agricultural College (Wobulenzi), Arapai agricultural college (Soroti), Kyera agricultural college (Mbarara) and others used in research has encouraged the growing of crops like cassava, millet, oranges in areas like Pallisa, Arua, Nebbi, Soroti.etc.
15. Increased supply of power in form of HEP due to Rural electrification; has encouraged the establishment of processing factories that add value to the harvested produce e.g. Kyagulanyi coffee processing facility in Mbale and Kampala for coffee and Budadiri Arabica coffee factory for coffee in Mbale etc.
16. Privatization/Liberalisation of the agricultural sector has attracted foreign investors with the required capital leading to the establishment of large scale projects such as Tilda rice scheme for rice in Bugiri etc.
17. The establishment of processing factories that add value to the produce has encouraged continuous growing of crops like tea at Kasaku tea estate in Buikwe, Rice at Tilda rice scheme in Bugiri etc.

Problems faced by the agricultural sector in Uganda

- Pests like locusts and diseases that attack crops and animals leading to decline in the yields e.g. Banana wilt for bananas in Masaka; Maize streak for maize in Mukono; cassava mosaic for cassava in Arua; American boll worms for cotton in Soroti, Pallisa; Army worm for maize in Mbale, Kayunga; Newcastle in poultry in Kampala; foot and mouth disease in cattle in Kotido; heart water in goats and cows in Moroto; ticks in cows in Sembabule; liver flukes in cows in Mukono etc.
- Soil exhaustion/infertile soils due to over cultivation and monoculture hence leading to decline in the crop yields e.g. Bananas in Bukomansimbi and sugarcane in Kayunga.
- Unfavourable climatic conditions like drought, very heavy rainfall, hailstorms etc. destroy crops leading to low yields e.g. Bananas in Ntungamo while drought leads to shortage of water and pasture for cattle, goats and sheep in Rakai, Kiruhura, Moroto, and Kotido etc.
- Steep relief that makes mechanization difficult and expensive hence leading to continued use of rudimentary tools like hoes to cultivate maize in Mbale, Bududa, Kabale, Kanungu, Rubirizi and Kapchorwa etc.
- Natural hazards like floods, landslides destroy grazing grounds for cattle in Soroti and crops like coffee, bananas, onions in Mbale and Kabale etc.
- Limited capital has led to use of rudimentary tools such as hoes hence leading to low output e.g. in maize production in Mbale.
- Limited research in disease control and discovery of quick maturing animals and crop species leading to low output e.g. in pigs, cows, goats in Masaka and onions, Irish potatoes in Mbale.
- Low levels of technology have encouraged continued use of tools like pangas, hoes hence leading to low output for cotton in Soroti, Kumi, Pallisa and Mbale etc.
- Shortage of skilled labour needed for research has hindered production of high quality animals and poultry breeds e.g. cattle in Moroto.

- Corruption in government projects like NAADS, Operation Wealth Creation and others has resulted into provision of poor quality seeds to farmers leading to low output e.g. Mangoes in Gulu; maize in Masaka; cassava in Kumi etc.
- Price fluctuation /limited market /competition for market for crop yields and animal products with other countries has demoralized farmers leading to decline in production e.g. for Vanilla in Mukono, Maize in Masindi, milk from cows in Kiruhura etc.
- Fluctuation in power supply has hindered the establishment of processing factories leading to post harvest losses for milk from cows, goats in Kiruhura, Sembabule, and Kotido etc.
- Political instability characterized by cattle rustling has hindered the rearing of cattle, goats in Kotido, Moroto hence leading to loss etc.
- Limited government support has hindered rehabilitation of rural roads hence leading to limited market for milk and meat for cattle in Kaabong.
- Inefficient transport in rural areas has limited the extension of services to cattle farmers in Kotido and maize growers in Sheema etc.
- Poor storage facilities have led to post harvest losses for maize in Masindi; beans in Mbale; sorghum and millet in Gulu.
- Land tenure system/competition for land/limited land has hindered expansion hence leading to small scale farming mainly for subsistence purpose e.g. maize, tomatoes pumpkins and sunflower in Soroti etc.
- Conservatism among some societies like the Karamajongs of Moroto, Kotido has led to continued over stocking leading to poor quality cattle and low yields.
- Profit repatriation by foreign investors in the agricultural sector leading to increased capital out flow e.g. by Indians who grow sugar canes at SCOUL in Buikwe.

Steps being taken to improve the agricultural sector in Uganda

- Application of fertilizers/Manure/mulching to improve soil fertility e.g. at Kasaku tea estate for tea in Buikwe and for Bananas in Bushenyi.
- Spraying using pesticides and herbicides to reduce pests and diseases in maize in Mukono and ticks in cattle in Kotido etc.
- Encouraging irrigation farming to reduce crop failure due to drought at Mubuku irrigation scheme to grow mangoes, oranges in Kasese and rice in Bugiri at Tilde rice irrigation scheme
- Contour ploughing/Strip cropping to promote crop growing in hilly areas such e.g. Irish potatoes in Kanungu, Kabale and Bushenyi.
- Formation of cooperatives/reviving of cooperatives to extend incentives to farmers and help in marketing e.g. Tororo fruits and vegetable farmers' co-operative society to promote the growing of oranges and mangoes in Tororo, Bugisu Cooperative Union for coffee in Mbale, Bududa, Manafwa, Sironko etc.
- Educating/sensitization of farmers about better methods of crop growing and animal rearing e.g. Through NAADS to promote the growing of cassava in Arua and Bananas in Mukono.
- Promoting security through disarming cattle keepers in Moroto, Kotido and deploying security personnel in Kasese to encourage growing of rice, maize, and mangoes at Mubuku irrigation scheme in Kasese.
- Improving storage facilities through establishment of community stores to reduce post-harvest losses e.g. for maize and groundnuts in Gulu and Kitgum.
- Rehabilitation of roads to encourage transportation of crop products to market centres.eg. Kayunga – Mukono road for pineapples from Kayunga.
- Increasing government support through projects like NAADS that provides seeds to farmers dealing in maize in Mukono.
- Rural electrification to establish to enable establishment of processing facilities to add value on the crop produce e.g. in Mbale to encourage the growing of Bananas and coffee.
- Market research through advertising to widen the market for the crop and animal produce such as maize in Mukono and Irish potatoes from Kabale etc.

- Training of labour at higher institutions of learning like Busitema University to produce skilled labour in research at SCOUL to promote sugar cane growing in Buikwe.
- Increasing research in disease control at NARL- Kawanda to promote the growing of Bananas in Bukomansimbi.
- Improving technology through introduction of combined harvesters to ease work on the farms e.g. for rice at Tilda rice scheme in Bugiri
- Establishment of on-site processing factories to reduce post-harvest losses for rice at Tilda rice scheme in Bugiri.
- Liberalization/Privatization of the agricultural sector to attract foreign harvesters in the agricultural sector e.g. at Tilda scheme for rice growing in Bugiri

Contributions of the agricultural sector to the development of Uganda

Positives:

- The sector provides employment opportunities to farmers who earn income leading to improved standards of living.e.g. Water melon farmers in Kayunga.
- It's a source of government revenue through taxes imposed on farmers and the money got is used to provide social services e.g. from farmers who grow rice at Doho rice scheme in Butaleja.
- The sector earns foreign exchange through exportation of coffee from Mbale and the money got is used to provide social services.
- The sector provides food leading to a healthy labour force e.g. Bananas from Bukomansimbi.
- The agricultural sector is a source of market for other sectors; such as the fertilizer making industries that produce fertilizers for sugarcane growing at SCOUL in Buikwe.
- It has led to development of infrastructure in form of roads, hospitals, schools that produce services to people e.g. Mehta Senior Secondary school due to sugar cane growing at SCOUL in Buikwe.
- The sector has led to a positive international relationship between Uganda and countries where agricultural produce are exported hence promoting peace and trade e.g. due to exportation of coffee from Kapchorwa to Britain.
- The sector promotes education/research/tourism hence equipping people with knowledge e.g. Tilda rice Irrigation scheme for rice growing in Bugiri.
- It has diversified the economy of Uganda hence reducing over reliance on mining, fishing. etc. e.g. due to Banana growing in Bushenyi.
- The sector provides raw materials to agro-based industries hence promoting industrialization e.g. sugar making industries like Kinyara sugar Industry due to sugar cane growing in Masindi
- It has stimulated the growth of urban centres that provide social services to people e.g. Namagunga town due to tea growing at Kasaku tea estate in Buikwe etc.
- Animals that are reared provide their droppings that are used as manure.e.g. Cows in Masaka.

Negatives:

- It has led to profit repatriation by foreigners hence leading to capital out flow e.g. the growing of tea at Kasaku tea estate in Buikwe.
- It has led to destruction of vegetation/swamp reclamation when opening up land for farming hence leading to soil erosion and loss of bio diversity e.g. due to the growing of rice at Tilda rice scheme in Bugiri etc.
- It has led to soil pollution due to continuous use of artificial fertilizers hence leading to decline in land productivity e.g. due to rice growing at Tilda rice scheme in Bugiri.
- It has led to soil exhaustion due to over cultivation hence reducing land productivity e.g. due to pineapple growing in Kayunga.
- It has led to competition for land with other land uses hence making land expensive e.g. due to sugar cane growing in Kamuli.
- It has led to competition for labour with other sectors hence making labour expensive due to sugar cane growing in Kamuli.

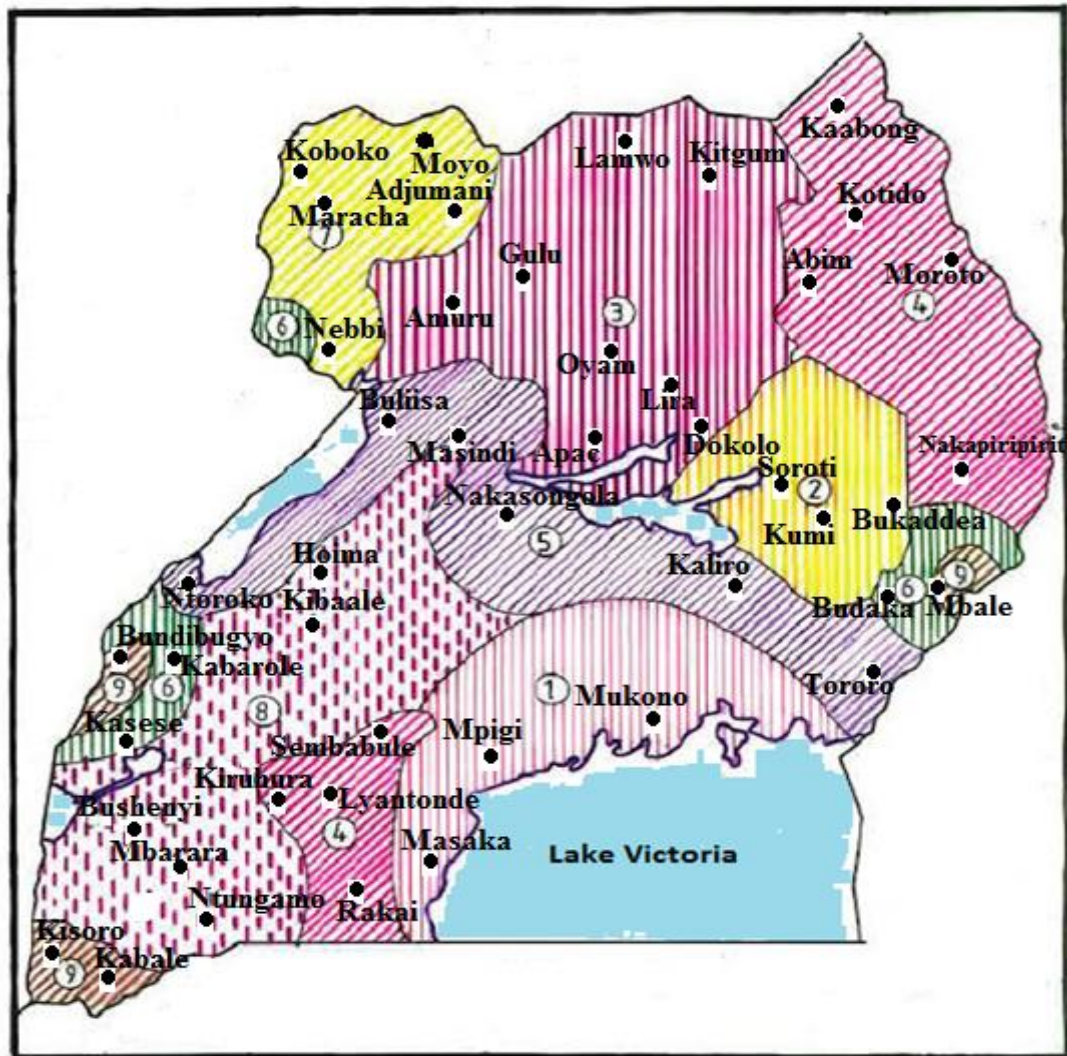
AGRARIAN SYSTEMS IN UGANDA

Agrarian systems are different forms of crop growing and animal rearing carried out in different parts of Uganda as a result of changing/dynamic economic and technological factors.

Agrarian systems in Uganda are:

- Intensive Banana – coffee system
- Western Banana – Coffee – cattle system
- Eastern system - Teso system (Annual crop and cattle)
- Montane system
- Pastoral and Annual crop system
- Northern system
- West Nile system
- Medium Altitude Banana-Coffee System
- Banana-millet-cotton System

A sketch of Uganda showing agrarian systems



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THE INTENSIVE BANANA – COFFEE SYSTEM

This system is practiced in areas around the lake shores of Lake Victoria like Masaka, Mpigi, Wakiso, Mukono, Jinja etc.

It is characterized by;

- Growing of perennial crops such as coffee, tea and Bananas.
- Growing of annual crops such as beans, maize, cassava and g. nuts.
- Labour intensive techniques of production are used.
- It mainly relies on family labour and hired labour.
- Intensive use of the land is represented by inter-cropping of annual and perennial crops.
- Most of the agricultural activities are on small holdings owned by individual farmers.
- Simple tools like hand hoes, pangas, slashers are used.
- The major cash crop grown is coffee but other cash crop grown includes tea.
- The major food crop grown is banana and other crops include potatoes, beans, cassava, yams etc.
- Plantation farming is carried out; where crops grown include sugar canes, oil palms, tea and they are both labour and capital intensive.
- Small holders grow plantation crops like out growers e.g. sugarcane and tea.
- Plantation crops are processed for export and some are sold locally.
- Each small holder grows both food and cash crops.
- The marketing system is dominated by middle men who pay very little to farmers.
- The farmers also sell at roadside markets and at trading centres, town and institutions.
- Intensive use of manure and crop residues to increase soil fertility.
- Keeping of animals alongside crop growing to enable production of crops and animal products for self-sufficiency.
- Mainly two annual crops are grown on a farm.
- There are permanent settlements due to settled growing etc.

PASTORAL AND ANNUAL CROP SYSTEM

This is practiced in Moroto, Kaabong, Nakapiripirit, Nakasongola, Kiruhura, Kotido, Sembabule etc.

- It is dominated by cattle keeping where numbers are preferred to quality.
- Animals and crops are kept for subsistence.
- Nomadic pastoralists move from place to place with their animals in search for pasture.
- Grazing lands are characterized by poor quality pastures due to prolonged drought and over grazing.
- Annual bush burning is practiced to regenerate good pastures.
- There is communal ownership of land and therefore communal grazing.
- Drought resistant annual crops are grown like millet.
- Temporary shelters are usually constructed due to movement of nomadic pastoralists from one place to another.
- Large pieces of land are used.
- There is over dependence on animal products like milk, meat and blood.
- Dominant animals are cattle. Other animals include goats and sheep.
- Local breeds of animals are kept such as zebu cattle and the long horned Ankole cattle.
- It's mainly dependent on natural conditions such as rainfall.
- Animals and animal products are usually exchanged for food crops.

NORTHERN SYSTEM

This system is practiced in Apac, Gulu, Lira, Kitgum, Pader, Amuru, Oyam etc.

It is characterized by;

- Planting of annual crops like Simsim, millet, cotton, g. nuts and cassava.
- There is also rearing of animals like cattle, goats and sheep.
- Subsistence farming on small holdings is practiced.
- Ex-ploughing is also practiced.
- There are two planting seasons i.e. March to May and September to November
- The major food crops are millet, sorghum and cassava.
- The major cash crop is cotton while others include sunflower, simsim etc.
- There is heavy use of family labour.
- Land is left to fallow for a short period of time.
- There are permanent settlements due to settled farming.
- There is dependency on natural factors such as rainfall.
- There is customary ownership of land (land owned by indigenous people/community in accordance to the customs of the people).

WESTERN BANANA – COFFEE – CATTLE SYSTEM

It is practiced in Mbarara, Bushenyi, Sheema, Hoima, Masindi, etc.

It is characterized by;

- Growing of perennial crops like coffee, tea and bananas.
- Growing of annual crops like bananas, Irish potatoes, millet, and g.nuts etc.
- Relies mainly on family labour.
- Simple tools like hoes are used.
- Major cash crop is coffee while tea is also grown as the other cash crop.
- Plantation farming is also carried out where crops like tea and coffee are grown.
- There are permanent settlements due to settled farming.
- Major animals reared are cattle. Others include; goats, sheep and pigs.
- The system depends on natural factors like rainfall.
- There is keeping of animals alongside crop growing.
- Small holders grow crops and rear animals mainly for subsistence purposes etc.

EASTERN SYSTEM -TESO SYSTEM

This is practiced in Soroti, Kumi, Ngora, Katakwi, Pallisa, Kaberamaido, Serere etc.

It is characterized by;

- Use of simple tools like pangas, hoes during cultivation.
- Small holder farmers grow for subsistence purposes.
- Largely dependent on natural factors like rainfall.
- Ox – ploughing is practiced.
- Major foods are millet, sorghum, sweet potatoes. Others crops are g. nuts, beans etc
- Cash crops grown are sunflower and simsim etc.
- Cattle rearing also takes place.
- There are permanent settlements due to settled farming.
- Dependence on family labour.
- Other animals reared include goats, sheep and poultry.
- There is keeping of animals alongside crop growing.

MONTANE SYSTEM

This is practiced in mountainous areas of Uganda including; Bududa, Kabale, Rubirizi, Kanungu, Ntungamo, Kapchorwa, Mbale, Sironko, Kisoro etc.

It is characterized by;

- There is subsistence farming for small holder farmers.
- Major cash crops grown include coffee, cocoa, wheat, Barley etc.
- Food crops include Irish potatoes, bananas, beans, maize etc.
- Animal rearing takes place where animals like cattle, goats, and donkeys are kept.
- Dairy farming also takes place due to conducive cool conditions.
- There are permanent settlements due to settled farming.
- Small holder farmers use simple tools like hoes.
- Family labour is also largely relied on where small scale farming is carried out.
- Plantation crops like cocoa are grown and sold both locally and for export.
- There is continued use of fertilizers to improve soil fertility.
- Contour ploughing is practiced to control soil erosion.

WEST NILE SYSTEM

This is practiced in areas like Nebbi, Adjumani, Arua, Yumbe, Moyo, Zombo, Pakwach, Maracha, Koboko, madi Okolo, Obongi and Terego.

- The major food crop grown is cassava.
- Other crops grown include sorghum, millet, beans, g.nuts and simsim.
- The major cash crop is tobacco. Others include; cotton.
- Tobacco is grown both on plantation farming and small holder farms by out growers.
- Tobacco is grown for both export and local use in cigarette industries.
- Animal rearing also takes place where cattle, goats and sheep are kept.
- Poultry farming is also carried out dominated by chicken rearing. Ducks are reared on small scale.
- There is settled farming hence permanent settlements exist.
- Small holder farmers grow for subsistence purpose.
- Family labour is relied on; while for plantation farming hired labour is used.
- Simple tools like hoes and pangas are also used by small holder farmers. etc.

Factors influencing agrarian system in Uganda

These factors are both physical and human i.e.

Physical factors:

- Nature of climate
- Nature of drainage
- Nature of relief/altitude
- Nature of biotic factors
- Nature of vegetation
- Nature of soils

Human factors:

- Differences in culture
 - Influence Government policies
 - Nature of Transport
 - Influence of Capital size
 - Influence of Land tenure system
 - Nature of Labour
 - Differences in Levels of technology
 - Nature of Market size/Urbanization
- Etc.

1. The nature of soils influences agrarian system in a way that; areas with clay–sandy soils have encouraged the growing of rice at Tilda rice scheme in Bugiri, Doho rice scheme in Butaleja; while areas with fertile volcanic soils have encouraged the growing of Bananas, coffee and beans leading to the Montane system in Kapchorwa, Mbale, Bududa, Sironko and Bulambuli.

QN: To what extent does the Nature of soil/ soil characteristics influence agrarian system in Uganda?

2. Nature of climate i.e. Areas that receive low and unreliable rainfall have encouraged the rearing of animals like cattle, goats leading to the pastoral system in Moroto, Kotido, Nakapiripirit, Kiruhura and Sembabule while areas that receive heavy rainfall usually 1500mm and above that is well distributed throughout the year have encouraged the growing of crops like bananas, coffee, beans, vanilla, maize hence leading to the intensive banana – coffee system in Mukono, Mpigi, Kayunga, Buikwe and Masaka. Etc.
3. The nature of drainage i.e. Areas that are well drained have encouraged the growing of Banana and coffee leading to the intensive banana-coffee system in Mukono and Bukomansimbi etc. while areas that are poorly drained have encouraged rice growing at Doho rice scheme in Butaleja
4. The nature of relief/ altitude i.e. areas on a high altitude with cool conditions have led to the growing of wheat, Barley, Irish potatoes etc. leading to existence of the Afro-Montane system in Mbale, Bududa and Kapchorwa etc. while areas low lying areas with hot temperature have encouraged the growing of beans, vanilla, maize, bananas leading to the intensive banana coffee system in Mukono, Bukomansimbi etc.
5. Influence of biotic factors i.e. areas with threats of pests and diseases like tsetse flies in Mayuge, Kamuli, have discouraged pastoral farming for growing of crops like maize, beans g.nuts etc.

while areas with limited cases of pests and diseases like Kabale, Mbarara have promoted dairy farming.

6. Nature of vegetation i.e. Areas with dense vegetation promote the existence of heavy rainfall hence encouraging the growing of perennial crops like coffee, bananas leading to the intensive banana – coffee system in Buikwe, Mukono etc. while areas with grasslands are used for rearing of cattle, sheep, goats leading to the pastoral system in Moroto, Kiruhura, and Sembabule etc.
7. Cultural differences influence agrarian systems in a way that culture promotes growing of different crops and rearing of different animals i.e. areas like Buganda region like Mukono, Bukomansimbi have promoted the growing of Bananas because culturally it's a staple food while certain types of bananas are used for brewing alcohol; coffee culturally is used during introductions, blood pacts and in shrines hence leading to the intensive Banana-coffee in Bukomansimbi, Mpigi, Masaka while areas occupied by the Banyankole where cattle is used for paying dowry, getting milk; millet used as food leading to the western – coffee cattle system in Mbarara and Bushenyi etc.

QN: Discuss the role of culture towards the existence of different Agrarian systems in Uganda.

8. Influence of land tenure system i.e. Areas where land is owned communally have encouraged the rearing of animals under nomadic pastoralism hence leading to the pastoral system in Kotido, Nakapiripirit etc. While areas where land is privately owned have encouraged settled farming in form of dairy farming in Kabale and Mbarara etc.
9. Influence of Government policy i.e. Government policies such as provision of land to investors has encouraged establishment of plantation farms hence leading to plantation farming e.g. Tilda rice scheme in Bugiri, Kasaku tea estate in Buikwe etc. while areas where the colonial government dictated upon the growing of certain crops due to research and available soil characteristics have promoted the growing of Tobacco hence the West Nile system in Arua, Maracha and Zombo etc.
10. Nature of Labour i.e. Areas with skilled labour have encouraged modern farming leading to existence of plantation farming at Nakigalala tea estate in Entebbe (Wakiso) while areas with shortage of skilled labour have promoted the continued rearing of local breeds of cattle, pigs, poultry hence leading to the pastoral system in Kiruhura and Moroto etc.
11. Nature of Market size/ Urbanization i.e. Areas with ready market such as towns have promoted market gardening with vegetables, cucumber and cabbages from Kayunga; while areas with limited market have encouraged continued rearing of cattle under nomadic pastoralism for subsistence purpose hence leading to the pastoral system in Kotido, and Moroto etc.
12. The differences in level of technology i.e. Areas with modern technology in form of combined harvesters, water pumps and tractors have promoted irrigation farming at Olweny irrigation scheme in Lira, Tilda rice scheme in Bugiri, Mubuku irrigation scheme in Kasese etc. while areas where crop growing is majorly for subsistence purposes on small holder farms have promoted the growing of millet, sorghum, beans using simple tools like hoes hence leading to the Northern system in Gulu, Kitgum etc.
13. Nature of Capital size i.e. Areas with foreign investors who have adequate capital have promoted the establishment of modernized farms under plantation farming e.g. at Nakigalala tea estate in Wakiso while areas where farmers have limited capital have led to nomadic pastoralism and annual crop growing with drought resistant crops like sorghum hence leading to the pastoral and annual crop system in Kotido and Nakapiripirit etc.

14. Influence of transport i.e. Areas that are easily accessed with better roads have promoted modernized farming under plantation farming e.g. Kasaku tea estate along Kampala – Jinja road in Buikwe; while areas with inefficient transport have discouraged farming to small holder farms for subsistence purpose with crops like millet, sorghum, simsim, g. nuts leading to the Northern system in areas like Pader and Apac etc.

AGRICULTURAL PRODUCTIVITY

This is the output per unit area. It's measured as a ratio of agricultural outputs to agricultural inputs. Several strategies have been put forward to increase agricultural productivity i.e.

NB: Use the sketch map for the agrarian system but the title changes i.e. showing the areas where there is increased agricultural productivity or low productivity (Depending on the question) emphasized.

- Increased research in plant breeding, resistant crop varieties, and quick maturing crop species at NARL (National Agricultural Research Laboratories) - Kawanda, Mukono Zonal Agricultural research and Development institute (Mukono-ZARDL) to increase production of maize, coffee and bananas in Mukono, Kayunga, and Masaka. etc.
- Increased government support through financing research, establishment of projects like operation wealth creation, liberalization of the agricultural sector and others has led to increased production of maize, coffee and the rearing of exotic breeds of cattle in Mbale, Jinja, Iganga, Masindi etc.
- Increased use of fertilizers through National fertilizer Policy has increased agricultural productivity under horticulture in Wakiso, Maize production in Mukono and tea growing at Nakigalala tea estate in Wakiso etc.
- Liberalization/ Privatization of the agricultural sector has attracted foreign investors in the agricultural sector with adequate capital and access to large tracts of land leading to increased production of sugar canes at Kinyara in Masindi and rice at Tilda Rice scheme in Bugiri.
- Improved storage facilities have boosted production hence leading to increased agricultural productivity e.g. the maize stores constructed by the world food programme have boosted maize production in the sub counties of Kyabarungira and Kitswamba in Kasese.
- Increased sensitization of the farmers through seminars, demonstration farmers, tours and agricultural shows has increased agricultural productivity e.g. the National Agricultural and Food security forum often held in Kampala has educated farmers; leading to increased production of rice like the upland rice farmers in Namulange in Wakiso.
- Increased campaigns towards adoption of irrigation farming has increased agricultural productivity because crop growing takes place throughout the whole year hence boosting the growing of passion fruits in Masaka and Kasese etc.
- Skilled labour that works on the farms in research among other activities has increased agricultural productivity e.g. skilled labour that is trained in Busitema University and works at NARL – Kawanda has increased productivity of improved variety of crops like the “improved Masaka variety” Passion fruits also known as the Uganda passion fruit (UPF) in Masaka.
- Improved technology that involves the use of tractors that ease work and plough large hectares of land and the combined harvesters have increased productivity for rice at Tilda rice scheme in Bugiri.
- Adequate capital raised through co-operatives, loans and other sources has increased agricultural productivity e.g. Kwapa farmers Association has increased Onion production in Tororo.
- Wide Market for agricultural produce has increased farmers' morale towards production leading to increased agricultural production e.g. the wide market for vanilla locally and abroad has increased vanilla production in Mukono and Kayunga etc.
- Improved transport due to rehabilitation of rural roads has increased access to the market centres hence increasing morale for farmers of maize in Mukono and Buikwe leading to increased agricultural productivity.

- Rural electrification has promoted establishment of processing factories that have reduced post-harvest losses hence encouraging increased agricultural productivity e.g. coffee in Mbale, Bududa etc.
- Increased security has attracted both local and foreign farmers to settled agriculture hence leading to increased growing of maize in Mukono and Buikwe.
- Land reforms/ Land consolidation/ vast land has encouraged establishment of plantations hence leading to increased agricultural productivity at Doho rice scheme in Butaleja.

Factors contributing to the decline in agricultural productivity in Uganda

Human Factors:

- Limited market/ Price fluctuation/ competition for market has demoralized farmers leading to decline in agricultural productivity for vanilla, coffee in Masaka and maize in Bukomansimbi etc.
- Shortage of skilled labour has resulted into poor quality production leading to a decline in agricultural productivity e.g. among rice growers in Kibuku, Budaka and Namutumba etc.
- Limited power supply/fluctuation in power supply has led to shortage of processing factories leading to post-harvest losses among cattle farmers in Kotido and Moroto.
- Limited government support has led to poor roads, shortage of capital, limited research hence leading to decline in agricultural productivity for millet, sorghum and simsim in Gulu, Kitgum etc.
- Limited research has led to poor quality seeds leading to low agricultural productivity for beans in Mbale, Kasese and Kabale etc.
- Insecurity has scared away investors with the required capital hence leading to small scale production e.g. among cattle farmers in Kotido and Kaabong.
- Limited capital has led to continued use of simple tools like hoes leading to low agricultural productivity for maize in Kiboga, Mukono and Iganga etc.
- Inefficient transport in form of slippery feeder roads has led to limited access to market centres leading to decline in agricultural productivity for onions in Bududa and Bulambuli.
- Shortage of modern storage facilities has led to post harvest losses for beans, maize, tomatoes leading to decline in agricultural productivity in Mpigi and Bududa.
- Corruption in NAADS and other government projects has led to provision of poor quality seeds leading to decline in agricultural productivity for cassava in Arua, Mbale, and Iganga.
- Over stocking leading to shortage of pasture and water for the cattle and goats has led to poor quality breeds leading to low agricultural productivity in Moroto, Kotido and Nakapiripirit.
- Shortage of processing factories has led to post harvest losses leading to loss of morale among farmers leading to decline in agricultural productivity in maize, beans and tomatoes in Mukono, Pader, Nebbi and Mbarara etc.

Physical factors:

- Soil exhaustion/decline in soil fertility has led to decline in agricultural productivity for millet and sorghum in Soroti and Pallisa.
- Pests and diseases i.e. Pests like Army worm that destroys maize in Mukono; Banana wilt for Bananas in Masaka has led to decline in the productivity for Bananas.
- Climatic changes in form of drought and hailstorms destroy farms leading to decline in production of bananas in Ntungamo, Buikwe and Mpigi.
- Shortage of land has led to decline in the productivity of Irish potatoes in Kabale and Kisoro.
- Landslides destroy farms in mountainous areas leading to decline in production of coffee, bananas, beans and onions in Mbale and Bududa.
- Floods destroy farms leading to decline in productivity e.g. for rice in Kibuku and rice at Doho rice scheme in Butaleja.

NB: Steps being taken to promote increased agricultural productivity (Refer to the factors for increased agricultural productivity)

AGRICULTURAL MODERNISATION IN UGANDA

- Agricultural modernization is the transformation of agricultural activities from traditional based agriculture to technology based agriculture.

NB: The Sketch map that is used is for the agrarian systems but the title changes i.e. showing areas where agricultural modernization takes place in Uganda.

Problems limiting agricultural modernization in Uganda

- Limited market/Price fluctuation/competition for market has demoralized farmers hence limiting modernisation for vanilla, coffee in Masaka and maize in Bukomansimbi etc.
- Shortage of skilled labour has resulted into poor quality production hence limiting modernization e.g. among rice growers in Kibuku, Budaka and Namutumba etc.
- Limited power supply/fluctuation in power supply has led to shortage of processing factories leading to post-harvest losses hence limiting modernization among cattle farmers in Kotido and Moroto.
- Limited government support has led to poor roads, shortage of capital, limited research hence limiting modernization for millet, sorghum and simsim in Gulu, Kitgum etc.
- Limited research has led to poor quality seeds hence limiting agricultural modernisation for beans in Mbale, Kasese and Kabale etc.
- Insecurity has scared away investors with the required capital hence limiting modernization e.g. among cattle farmers in Kotido and Kaabong.
- Limited capital has led to continued use of simple tools like hoes thus limiting modernization for maize in Kiboga, Mukono and Iganga etc.
- Inefficient transport has led to limited access to market centres thus limiting modernization for onions in Bududa and Bulambuli.
- Shortage of modern storage facilities has led to post harvest losses for beans, maize, tomatoes hence limiting modernisation in Mpigi and Bududa.
- Corruption in NAADS and other government projects has led to provision of poor quality seeds thus limiting modernization for cassava in Arua, Mbale, and Iganga.
- Overstocking leading to shortage of pasture and water for the cattle and goats has led to poor quality breeds hence limiting modernization in Moroto, Kotido and Nakapiripirit.
- Shortage of processing factories has led to post harvest losses leading to loss of morale among farmers thus limiting modernization in maize, beans and tomatoes in Mukono, Pader, Nebbi and Mbarara etc.

Physical factors:

- Soil exhaustion/decline in soil fertility has limited modernisation for millet and sorghum in Soroti and Pallisa.
- Pests and diseases i.e. Pests like Army worm that destroys maize in Mukono; Banana wilt for Bananas in Masaka has limited modernization for Bananas.
- Climatic changes in form of drought and hailstorm destroy farms hence limiting modernization in bananas in Ntungamo, Buikwe and Mpigi.
- Shortage of land has led to limited modernization for Irish potatoes in Kabale and Kisoro.
- Landslides destroy farms in mountainous areas leading to limited modernization of coffee, bananas, beans and onions in Mbale and Bududa.

- Floods destroy farms leading to limited modernization. E.g. For rice in Kibuku and rice at Doho rice scheme in Butaleja.

Steps taken to promote agricultural modernization

- Increased research in plant breeding, resistant crop varieties, quick maturing crop species at NARL- Kawanda, Mukono Zonal Agricultural research and Development institute (Mukono-ZARDL) to modernization in the growing of maize, coffee and bananas in Mukono, Kayunga, and Masaka etc.
- Increased government support through financing research, establishment of projects like operation wealth creation, liberalization of the agricultural sector and others has led to modernization in the growing of maize, coffee and the rearing of exotic breeds of cattle in Mbale, Jinja, Iganga, Masindi etc.
- Increased use of fertilizers through National fertilizer Policy as part of the Abuja Declaration has modernization in horticulture in Wakiso, Maize production in Mukono and tea growing at Nakigalala tea estate in Wakiso etc.
- Liberalization/Privatization of the agricultural sector has attracted foreign investors in the agricultural sector with adequate capital and access to large tracts of land has to modernisation in sugar cane growing at Kinyara in Masindi and rice at Tilda Rice scheme in Bugiri.
- Improved storage facilities have boosted production hence leading to modernisation in the maize production in Kasese.
- Increased sensitization of the farmers through seminars has led to acquisition of knowledge for modernisation of agriculture in Mukono.
- Irrigation farming has led crop growing throughout the whole year hence modernising the growing of passion fruits in Masaka and Kasese etc.
- Skilled labour that works on the farms in research among other activities has led to agricultural modernisation e.g. skilled labour that is trained in Busitema University and works at NARL – Kawanda has increased productivity of improved variety of crops like the “improved Masaka variety” Passion fruits also known as the Uganda passion fruit (UPF) in Masaka.
- Improved technology that involves the use of tractors that ease work and plough large hectares of land and the combined harvesters has led to modernization in the growing of rice at Tilda rice scheme in Bugiri.
- Adequate capital got through co-operatives, loans and other source has encouraged agricultural modernization in Onion production in Tororo.
- Wide Market for agricultural produce has increased farmers’ morale towards production hence promoting agricultural modernization e.g. the wide market for vanilla locally and abroad has increased vanilla production in Mukono and Kayunga etc.
- Improved transport due to rehabilitation of rural roads has increased access to the market centers hence increasing morale for farmers of maize in Mukono and Buikwe leading to agricultural modernisation.
- Rural electrification has promoted establishment of processing factories that have reduced post-harvest losses hence encouraging agricultural modernisation e.g. coffee in Mbale, Bududa etc.
- Increased security has attracted both local and foreign farmers to settled agriculture hence leading to increased agricultural modernization in maize growing in Mukono and Buikwe.
- Land reforms/ Land consolidation/ vast land has encouraged establishment of plantations hence lead to agricultural modernization at Doho rice scheme in Butaleja.

MARKET GARDENING IN UGANDA

Market gardening is the relatively small scale production of fruits, vegetables and flowers for sale while still fresh in or near urban centres.

The growing of fruits, flowers and vegetables is known as *horticulture*.

Horticulture is broadly defined as the growing of fruits, vegetables and flowers.

The word Horticulture is derived from the Latin word Hortus meaning “enclosure” (garden) and culture - meaning, cultivation. Thus Horticulture means cultivation of garden crops.

Its sub divided into:

1. **Pomology** –deals with cultivation of fruits.
2. **Olericulture**- deals with cultivation of vegetable crops.
3. **Floriculture**- deals with cultivation flowers.

Vegetable growing in Uganda

There are very many species of local vegetables in Uganda. A number of them are indigenous to the country while others have been introduced into the country. Some of the vegetables are located in specific districts while others are widely spread in the country.

The most common vegetable species that are available in Uganda include;

- Amaranthus Dubius (Doodo) grown in Mukono, Mbale, Soroti, Arua, Iganga. etc.
- Solarium aethiopicum (Nakati – salty and bitter greens) Grown in Kayunga, Mukono, Masaka. etc.
- Bitter berries (Katunkuma) grown in Mukono, Mbale, Bukomansimbi, Masaka, Mpigi. Etc.



Red spinarch - Ebbuga



Bitter egg plants-Entula



Egg plant/Arberrigine:



Okra:

NB: These local vegetables either grow on their own or are inter cropped with other crops.

Other vegetables include;

- Cabbages grown in Mukono, Iganga, Mbale, Kayunga. etc.
- Carrots grown in Mbale, Rukungiri. etc.

Fruit growing in Uganda

Fruits grown commonly include;

- Pineapples in Kayunga, Mukono. Etc.
- Jack fruits in Mukono, Kayunga, Mbale, Jinja, Iganga, and Bugiri. etc.
- Mangoes in Arua, Budaka, Soroti, Kamuli, Mukono. etc.
- Citrus in Soroti, Pallisa, Kumi. etc.
- Water melons in Mukono, Kayunga, Mityana, Luwero. etc.

Current fruit production is purely in the hands of small holder farmers in the southern, central and eastern Uganda regions. Pineapples are by far the most developed and widely grown commodity in the fruit crop range and value chain in Uganda.

Production is largely in Luwero and Kayunga where the pineapples are grown as a sole crop or intercropped with bananas in Uganda

Mangoes are by far the most common fruit. They grow wild while others are planted. Production has been increasing over the years with increasing demand on the local and export markets.

Floriculture in Uganda

Flowers are grown under what is commonly known as floriculture.

The Uganda flower sector is quite small. Farmers grow flowers in custom – built green houses. Most flower farms are located near the shores of Lake Victoria because of permanent supply of fresh water and because of strategic location near Entebbe International Airport.

Flower growers are:

- | | |
|----------------------|-------------------------------|
| • Kajjansi roses Ltd | • Oasis Nurseries |
| • Fresh handling Ltd | • African agro Industries Ltd |
| • Venu farmers | • Royal Van Zanten Ltd |

- Party services, florists and Decorators
- Jackson Uganda Ltd
- Rosebud Ltd
- Plants Africa
- Sulma Foods
- Wagagai Ltd
- Fiduga Ltd
- Flower place
- Uganda flowers Ltd
- Blessed Events
- Rusadia Florists
- Uganda Heritage Roots
- Uganda hotech limited in Lugazi
- Nimu Designs
- Holiday Ltd
- Aurum Roses Ltd
- Jambo Roses
- Mairye estate limited
- Victoria flowers ltd
- Ugarose flowers Ltd etc

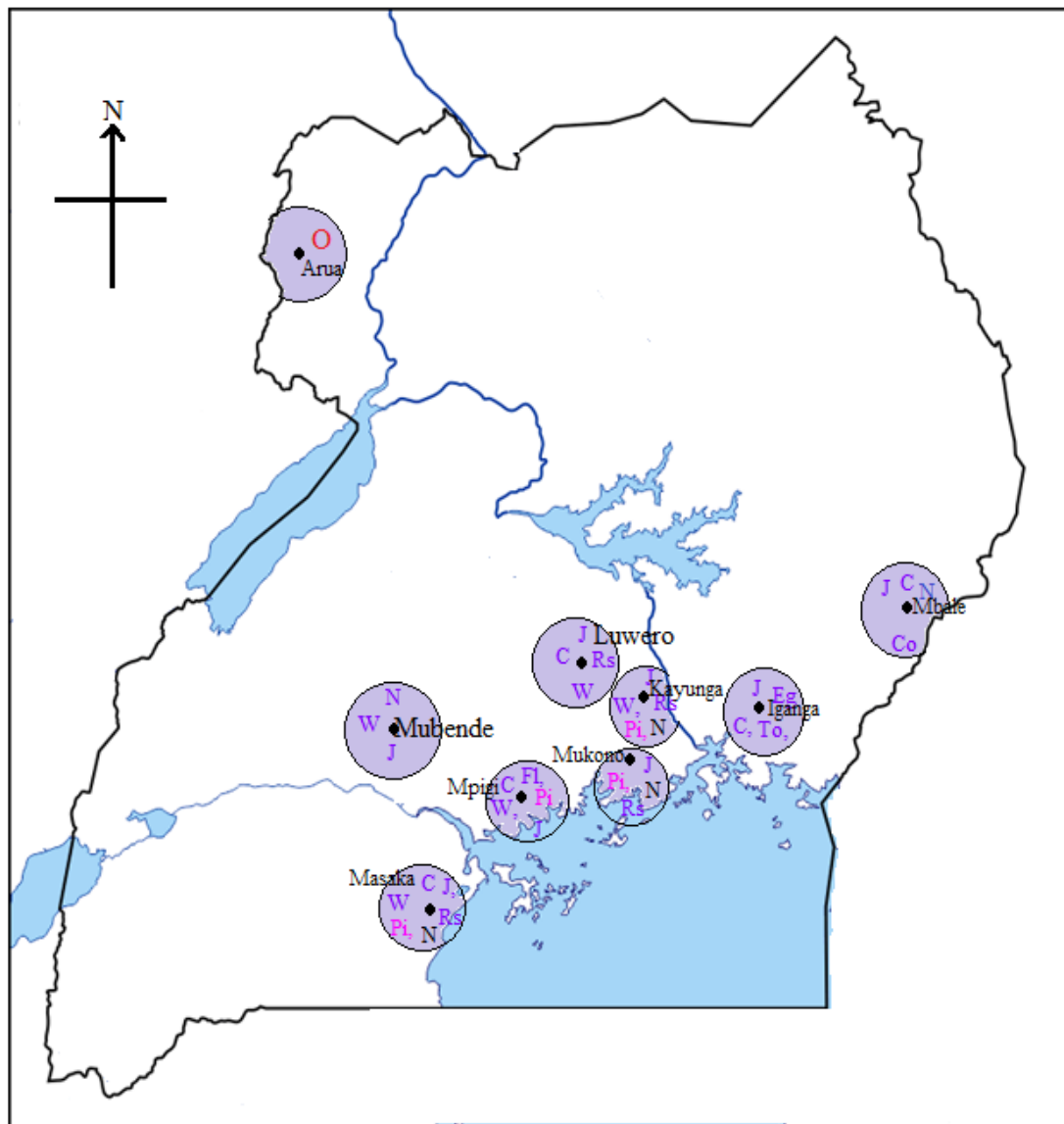
Uganda is now the third largest supplier of small roses to the Dutch auctions and also exports to other countries such as;

- Sudan
- Kenya
- Switzerland
- Rwanda
- UAE
- DRC
- UK
- Netherlands
- Germany
- Etc.

Characteristics of Market Gardening

- The types of crops grown are perishable including tomatoes, onions and flowers etc.
- Emphasis is on the use of scientific means of production e.g. Use of green houses, intensive use of fertilizers etc.
- It's carried out in or near market centres for items to be sold while still fresh e.g. in towns etc.
- Farms are usually small but require high investment.
- They are privately owned by well off farmers due to need for high investment.
- The gardens are labour intensive i.e. require a lot of labour during planting, weeding and harvesting.
- Land is intensively worked throughout the whole year due to the need to ensure continuous supply.
- There is intensive cultivation leading to high yields.
- Farms are established near transport routes to easily access market because the products are perishable.
- Crops harvested are sold while still fresh.

**A sketch Map of Uganda showing areas where market gardening is practiced and the crops
grown**



KEY

W	- Water melon
N	- Onions
J	- Jack fruit
Pi	- Pineapples
Rs	- Red spinarch
C	- Cabbage

To	- Tomatoes
Eg	- Egg plants
Fl	- Flowers
Co	- Carrots
O	- Okra

Factors favouring market gardening in Uganda

Physical factors:

- Regular supply of water for irrigation e.g. Water from L. Victoria is used to grow flowers by Rosebud Ltd in Entebbe-Wakiso.
- Conducive climate characterized by hot temperature of about 28⁰C during day for ripening passion fruits in Masaka, flowers in Wakiso, cabbages in Luwero and the heavy and well distributed rainfall ideal for growing of fruits like pineapples in Kayunga.
- Large tracts of land where market garden farms are established hence encouraging the growing of water melons in Kayunga, Mpigi, Luwero, Bugerere, Mayuge, Masaka, Mubende etc.
- Fertile well drained sandy-loam soils that are ideal for the growing of fruits like water melons in Kayunga, Mpigi etc.
- Gently sloping land that allows easy movement by farmers during cultivation and use of tractors during ploughing hence encouraging large scale growing of pineapples in Kayunga and flowers in Wakiso and Mpigi etc.

Human factors:

- Skilled labour that does research in disease control and discovery of disease resistant species has encouraged growing of pineapples in Kayunga
- Wide and ready market for market gardening crops like cabbages from Mukono in towns like Kampala and Wakiso.
- Increased research in disease control has encouraged the growing of flowers in Wakiso,
- Improved technology that involves use of greenhouses has encouraged growing of flowers in Wakiso.
- Relative political stability has attracted investment in market gardening leading to growth of water melons in Masaka.
- Improved transport by air and roads to processing centres and market centres has encouraged, market gardening e.g. Kampala – Entebbe road that connects to Kampala town and Entebbe Airport has encouraged the growing of flowers by Rosebud Ltd in Entebbe Wakiso.
- Supportive government policy through leasing land has encouraged flower growing in Wakiso.
- Improved storage facilities in form of refrigerated rooms have encouraged flower growing by Rosebud Ltd in Wakiso.
- Regular supply of power used for lighting in greenhouses and maintaining refrigerated rooms for flowers in Wakiso.
- Large sums of capital got through loans, Sacco's by private investors used to purchase land, paying workers has encouraged the growing of mangoes in Kasese, tomatoes in Mbale flowers in Wakiso.
- Liberalization of the agricultural sector has encouraged foreigners with the required capital for market gardening hence promoting the growers of flowers in Kampala and Wakiso etc.

Problems faced under market gardening in Uganda

- Pests and diseases attack and destroy crops leading to low yields e.g. diseases like black rot and fruit collapse destroy pineapples in Kayunga; leaf spot and powdery mildew fungus for carrots in Rukungiri and Mbale etc.
- Limited capital for some market garden crops leading to low profits e.g. for flowers in wakiso
- Competition for market/price fluctuation/limited market leading to low profits e.g. for flowers in Wakiso, pineapples in Mukono and water melons in Mpigi.
- Inefficient transport in rural areas which makes transport to market centres delay hence leading to post harvest losses e.g. for tomatoes from Mbale.
- Unfavourable government policies such as taxing agricultural inputs have hindered large production of flowers in Wakiso, Onions in Mbale, passion fruits in Masaka and Mbale etc.
- Inadequate storage facilities have resulted into post-harvest losses for onions from Mbale and carrots from Rukungiri.

- Inadequate power supply/fluctuations of power has hindered the establishment of processing factories hence leading to postharvest losses for mangoes in Kasese and pineapples in Kayunga etc.
- Profit repatriation by foreigners has led to massive capital flow hence hindering the expansion of the market gardening sector e.g. by flower growers like Rosebud Ltd in Wakiso.
- Low levels of technology involving use of simple tools like hoes has led to small scale production of water melons in Mpigi, onions in Mbale, Okra in Arua and Nebbi.
- Shortage of skilled labour required for research has led to growing of diseases prone species that yield low yields e.g. by onion farmers in Mbale and eggplant farmers in Kayunga.
- Limited research has led to low yields e.g. for egg plants in Kayunga.
- Insecurity scares away investors hence limiting production of mangoes in Kasese.
- Unfavourable climatic conditions such as drought and hailstorms which destroy crops leading to losses e.g. for pineapple farmers in Kayunga.
- Natural hazards like floods destroy market garden farms like those under flowers in Wakiso, onions in Mbale etc.
- Soil exhaustion leading continued use of fertilizers that are expensive e.g. for flowers by Rosebud Ltd in Wakiso.
- Competition for land with other land uses/shortage of land leading to small scale production of vegetables like Okra in Wakiso, Arua
Etc.

Steps Being Taken to Improve Market Gardening in Uganda

- Application of fertilizers to improve soil fertility to promote growing of flowers at Rosebud flowers in Wakiso.
- Spraying using pesticides to control pests so as to promote growing of passion fruits in Masaka.
- Specialization to ensure quality production to compete favourably on the world market e.g. Rosebud in Wakiso specializes in growing of cut roses (Flowers) for export.
- Introduction of improved technology in form of green houses, use of modern automated water pumping units used for flower growing by Rosebud in Wakiso.
- Training of labour to promote the growing of vegetables like Okra, carrots in Arua, Wakiso, Mukono etc.
- Promoting security through fighting riots, strikes; deploying security personnel to encourage investment in market gardening for eggplants in Kayunga etc.
- Formation of co-operatives to help in marketing and provision of extension of credit facilities e.g. Tororo fruits and vegetable farmers' co-operative society to promote growing of tomatoes, mangoes, oranges in Tororo.
- Introduction of modern storage facilities such as refrigerated rooms used to preserve flowers at Rosebud in Wakiso etc.
- Rural electrification to promote establishment of processing factories that add value to crop produce such as pineapples from Kayunga.
- Importation of high yielding seeds to ensure high quality production e.g. for water melons in Mayuge, Masaka, Mubende etc.
- Rehabilitation of transport routes to ease transport to market centres e.g. Mukono – Kayunga road has eased transportation of pineapples from Kayunga.
- Increasing research in disease control and discovery of resistant species has encouraged growing of resistant flowers at Rosebud in Wakiso

Contributions of market gardening to the development of Uganda

Positive contribution:

- It provides employment opportunities to farmers who earn income leading to improved standards of living e.g. farmers of egg plants in Buikwe.
- It's a source of government revenue through taxes from workers and the money got is used to provide social services e.g. from workers at Rosebud Ltd for flowers in Wakiso.
- Market gardening earns foreign exchange through exportation of flowers from Rosebud in Wakiso, mangoes from Kasese, onions from Mbale to South Sudan and other countries and money got is used to provide social services.
- It has diversified the agricultural sector hence reducing over reliance on growing of maize, beans, and coffee e.g. the growing of vegetables like cabbages in Mbale and pineapples in Kayunga.
- It's a source of food rich in vitamins and other diets hence leading to a healthy labour force e.g. passion fruits from Kayunga and okra from Arua etc.
- It has led to development of infrastructure in form of roads hence simplifying movement of goods and services e.g. rehabilitation of feeder roads in Masaka and the Kampala – Masaka due to growing of passion fruits in Masaka.
- Market gardening has led to development of urban centres due to provision of food to urban dwellers e.g. Cabbages from Buikwe and Mbale; and the urban centres produce social services.
- It has led to development of a positive international relationship between Uganda and countries like Netherlands, South Sudan where onions from Mbale, passion fruits from Kayunga are exported hence leading to peace and trade.
- The sector attracts tourists/ helps in education/ used for research hence equipping people with knowledge e.g. flower growing by Wagagai Ltd in Wakiso.
- It provides raw material in processing industries hence promoting industrial development e.g. red/ hot paper growing from Budaka and other areas provides raw materials for Reco industry in Kampala for making Chilli sauce etc.
- Market gardening provides market for other sectors such as fertilizer making industries hence promoting industrial development e.g. pineapple growing in Kayunga etc.

Negative Contribution:

- It has led to profit repatriation where market garden farms are owned by foreigners hence leading to capital out flow e.g. the growing of flowers by Rosebud in Entebbe in Wakiso.
- It has led to destruction of vegetation/swamp reclamation when opening up land for farming hence leading to soil erosion e.g. due to the growing of cabbages in Iganga, mangoes in Namutumba and onions in Mbale etc.
- It has led to soil pollution due to continuous use of artificial fertilizers hence leading to decline in land productivity e.g. due to flower growing under Aurum Roses Ltd in Wakiso
- It has led to soil exhaustion due to over cultivation hence reducing land productivity e.g. due to pineapple growing in Kayunga.
- It has led to competition for land with other land uses hence making land expensive e.g. due to flower growing in Wakiso by Rosebud.
- Market gardening has led to competition for labour with other sectors hence making labour expensive e.g. Due to flower growing under Aurum Roses in Wakiso.
Etc.

IRRIGATION FARMING IN UGANDA

Irrigation is the application of controlled amounts of water to plants at needed intervals to supplement rainfall. Irrigation is usually used in areas where rainfall is irregular. However, as a way of encouraging crop growing throughout the whole year, it is done as a supplement even in areas that receive regular rainfall.

There are many types of irrigation systems in which water is supplied to the fields. Irrigation water can come from ground water, through spring wells, surface water, through rivers, lakes or reservoirs and other sources.

Types of irrigation Systems

There are many different types of irrigation systems depending on how the water is distributed throughout the fields. These include;

- **Surface irrigation** – This is the type of irrigation system where water is distributed over and across land by gravity. In this system no mechanical pump is involved. In Uganda it's commonly used at; Kibuku, Budaka, Namutumba, Doho rice scheme in Butaleja, Mubuku irrigation scheme in Kasese etc.
- **Sprinkler irrigation** – This is the type of irrigation where water is distributed by overhead high pressure sprinklers or guns from a central location in the field or from sprinklers on moving platforms. It's used in areas like Kakira sugar plantation in Jinja, Onion farmers in Kapchorwa, SCOUL Sugar plantation in Lugazi etc.
- **Drip Irrigation** – This is the type of localized irrigation in which drops of water are delivered at or near the roots of plants. It's used on small scale in areas like Mukono, Kabale, Kasese, Bushenyi, Rosebud limited for flowers in Entebbe etc.
- **Manual Irrigation** – This is the type of irrigation where water is distributed across land through manual labour using watering cans and other means e.g. in Kampala, Mukono, Gulu, Kitgum etc.

IRRIGATION SCHEMES IN UGANDA

Mubuku Irrigation Settlement Scheme

It was started in the 1960's by the government to settle people and encourage them to engage in meaningful farming, farm together, produce together, market together and sell together with help of an irrigation scheme. The scheme is located in Kasese and it's under gravity irrigation using water from rivers like Sebwe and Mubuku. Crops grown are several including Rice, Maize, Millet, beans, sweet potatoes, mangoes, groundnuts, pepper, oranges etc.

Today the scheme is managed by the Ministry of Agriculture Animal Husbandry and Fisheries.

Doho Irrigation Scheme

Doho rice scheme was established by the government with funding from the Chinese government in 1976. The scheme was originally run by Chinese in the 1970's up to 2003 when they quit. It is located in Butaleja district. Water used during irrigation is from River Manafwa. The scheme has more than 1000 farmers involved as both out growers and part of the scheme growers.

Initially it was affected by a calamity of floods. Huge volumes of water used to burst banks of river Manafwa; destroying property in villages of Kachonga, Himutu, Butaleja and Nawanjovu. However, this has reduced due to rehabilitation of the scheme. Rice is the major crop grown.

Kibimba Rice Scheme/Tilda Rice Scheme

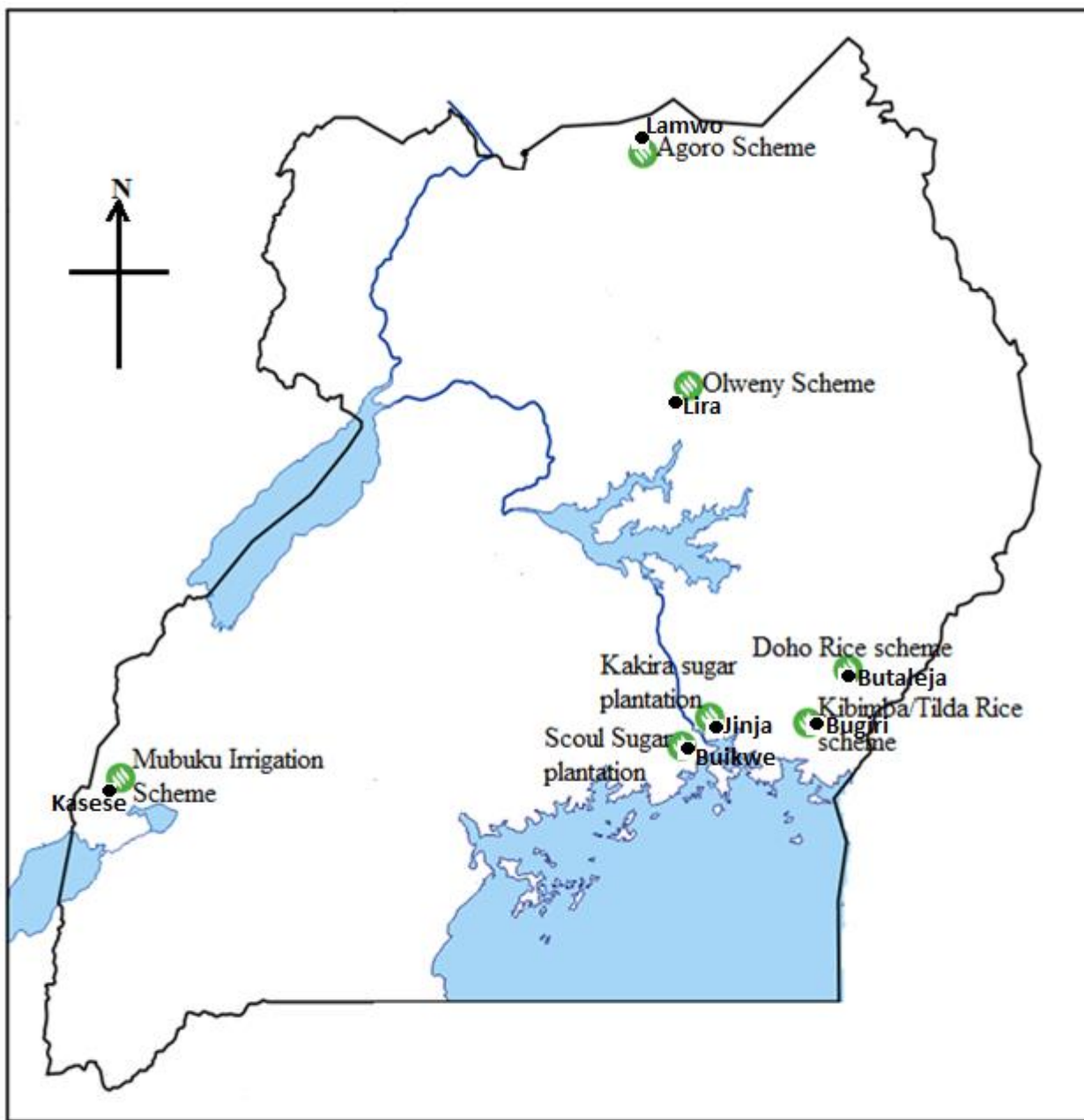
Kibimba Rice scheme is located on the either side of the main Jinja – Tororo highway near the town of Bugiri in Bugiri District. It was established in 1973 as a government venture to increase food production. The scheme was formed when a dam was put in place on Kibimba River. Kibimba dam was constructed and this blocked Kibimba River. This formed a manmade lake; lake Kibimba that is a source of water for irrigation under gravity.

In 1996, Tilda limited acquired the property. Tilda is the major rice grower in Uganda; Tilda sells basmati rice in blue plastic bags. Etc.

Other irrigation schemes include:

- Olweny Rice scheme Dokolo.
- Kakira sugar plantation in Jinja
- SCOUL sugar plantation in Buikwe
- Agoro Irrigation scheme in Lamwo for maize, vegetables, rice
- Mubuku irrigation scheme in Kasese
- Uganda hotech flowers in SCOUL in Lugazi etc.

A Sketch map of Uganda showing areas under irrigation farming



KEY



- Irrigation Schemes

Factors Favouring Irrigation farming in Uganda

- Availability of regular supply of water for irrigation e.g. from R. Sebwe for Mubuku irrigation scheme in Kasese and R. Manafwa for Doho irrigation scheme in Butaleja.
- Fertile alluvial soils ideal for crop growing e.g. in the river Kibimba valley hence attracting the establishment of Kibimba Rice scheme in Bugiri.
- Gently sloping relief that eases mechanization and easy flow of water under the influence of gravity e.g. at Mubuku hence leading to the establishment of the Mubuku irrigation scheme in Kasese.
- Very hot temperature which leads to high evaporation rates has led to use of irrigation as an alternative e.g. irrigation schemes for vegetables have been set up using solar – powered micro irrigation systems in Nabokotom village in Amudat.
- Existence of semi – arid conditions characterized with low and unreliable rainfall has called for irrigation farming e.g. under Nabokotom farms in Amudat.
- Improved technology involving the use of sprinklers has encouraged irrigation farming at Kakira sugar plantation in Jinja.
- Skilled labour used to do research has promoted irrigation farming e.g. by water engineers at Kibimba/Tilda rice scheme in Bugiri.
- Improved transport by roads has made accessibility to market centres easy e.g. the existence of Jinja – Iganga – Tororo road has promoted irrigation farming at Kibimba rice scheme in Bugiri.
- Supportive government policy through funding the rehabilitation of the irrigation schemes e.g. at Doho rice scheme in Butaleja and Olweny rice scheme in Lira.
- Relative political stability has attracted investment in irrigation farming e.g. At Kibimba Rice scheme in Bugiri.
- Wide market for the crops produced has encouraged irrigation farming e.g. for basmati rice from Tilda rice scheme in Bugiri.
- Adequate capital by foreigners used to produce irrigation equipment, pay workers etc.; has led to development of irrigation farming e.g. by Indians at Tilda rice irrigation scheme in Bugiri.
- Intensive research in discovery of new crop varieties has promoted development of irrigation farming e.g. at Doho rice scheme in Butaleja
- Vast land for establishment of irrigation farms and expansion has led to development of irrigation farms e.g. in Kibimba valley hence leading to Kibimba /Tilda rice scheme in Bugiri.
- Improved storage facilities in form of ware houses has encouraged irrigation farming e.g. at Doho rice scheme in Butaleja.
- Establishment of on–site processing factories has reduced postharvest losses e.g. at Kibimba rice scheme in Bugiri.
- Formation of co-operative societies that help in marketing has encouraged irrigation farming e.g. Abashaija Kweyamba co-operative society at Mubuku irrigation scheme in Kasese.

Problems faced by irrigation farming in Uganda/factors limiting irrigation farming in Uganda

- Soil exhaustion e.g. at Kibimba Rice scheme in Bugiri
- Floods e.g. at Doho rice scheme in Butaleja.
- Pests and diseases e.g. at Mubuku irrigation scheme in Kasese.
- Limited land/competition for land/expensive land rent e.g. at Mubuku irrigation scheme in Kasese.
- Limited skilled labour e.g. at Olweny rice scheme in Lira.
- Insecurity e.g. at Mubuku irrigation scheme in Kasese.
- Inefficient transport e.g. for Olweny rice scheme in Lira.
- Climatic changes such as drought, hailstorms e.g. at Mubuku irrigation scheme in Kasese.
- Low levels of technology e.g. at Agoro irrigation scheme in Lamwo.

- Limited market/competition for market/price fluctuation e.g. at Agoro irrigation scheme in Lamwo.
- Limited research e.g. at Olweny rice scheme in Lira.
- Profit repatriation e.g. at Tilda Rice scheme in Bugiri.
- Siltation of the canals e.g. at Mubuku rice scheme in Bugiri.
- Soil salinity due to high rate of evaporation e.g. at Nabokotom irrigation farms in Amudat.
- Limited capital e.g. at Agoro irrigation scheme in Lamwo.
- Poor storage facilities e.g. at Mubuku irrigation scheme in Kasese
- Water borne diseases e.g. at Doho rice scheme in Butaleja.
- Corruption e.g. at Doho rice scheme in Butaleja etc.

Steps being taken to promote irrigation farming in Uganda

- Spraying pests and diseases e.g. at Tilda Rice Scheme in Bugiri.
- Introduction of machines such as tractors and combined harvesters e.g. at Tilda Rice scheme in Bugiri.
- Specialization of farming activities to produce quality products e.g. at Tilda rice scheme in Bugiri.
- Use of fertilizers/manure/organic manure e.g. at Tilda rice scheme in Bugiri.
- Constant dredging of canals to allow efficient water flow e.g. at Tilda rice scheme in Bugiri.
- Market research to widen market e.g. at Tilda rice scheme in Bugiri.
- Improving research in better yielding and fast maturing crop varieties e.g. at Tilda rice scheme in Bugiri.
- Importation of labour/hiring of labour during harvesting seasons e.g. at Mubuku irrigation scheme in Kasese.
- Formation of co-operatives to give loans to farmers e.g. Abashaija Kweyamba co-operative society at Mubuku irrigation scheme in Kasese.
- Recycling of water/water treatment to reduce pollution e.g. at Rosebud flowers in Entebbe Wakiso.
- Construction of water reservoirs to supply for irrigation e.g. at Tilda rice scheme in Bugiri.
- Reclaiming of dry land for crop growing e.g. at Tilda rice scheme in Bugiri.
- Liberalization/privatising of agriculture to attract investors with adequate capital e.g. at Tilda rice scheme in Bugiri.
- Construction of health centres to treat water borne diseases e.g. Kibimba health centre for Tilda rice scheme in Bugiri.
- Rehabilitation of roads to promote irrigation farming e.g. Mubuku – Kasese town road to access Mubuku irrigation scheme in Kasese
- Promoting security through deploying security personnel to promote irrigation farming at Mubuku irrigation scheme in Kasese.
- Establishment of on – site processing factories to reduce post-harvest losses e.g. at Tilda rice scheme in Bugiri.
- Establishing modern storage facilities to reduce post-harvest losses e.g. at Tilda rice scheme in Bugiri.
- Construction of dams and embankments to control floods e.g. at Doho rice scheme in Butaleja.
- Rural electrification to encourage establishment of processing factories/installation of solar to help run irrigation systems e.g. at Nabokotom farms in Amudat.
- Diversification of crops grown to reduce losses due to price fluctuation e.g. at Mubuku irrigation scheme in Kasese etc.

Contributions of irrigation farming to the development of Uganda

Positive:

- Employment opportunities e.g. to farmers at Tilda rice scheme in Bugiri.
- Source of foreign exchange from rice exports to South Sudan e.g. for rice from Tilda rice scheme.
- Source of government revenue through taxing farmers e.g. At Olweny rice scheme in Lira.
- Source of raw materials hence promoting industrialization e.g. mangoes from Mubuku irrigation scheme in Kasese.
- Source of food hence leading to a healthy labour force. e.g. rice from Tilda Rice scheme in Bugiri
- Source of market for other sectors e.g. at Tilda rice scheme in Bugiri.
- Has led to infrastructure development e.g. Kibimba health centre due to Tilda Rice scheme in Bugiri.
- Has led to growth of urban centres that provide social services to people e.g. Mubuku town due to Mubuku irrigation scheme.
- Has led to diversification of the economy hence reducing overreliance on other sectors like mining e.g. at Mubuku irrigation scheme.
- Has led to a Positive international relationship hence promoting trade e.g. Tilda rice scheme in Bugiri.
- Source of tourism/education/Research hence equipping people with knowledge e.g. Tilda Rice scheme in Bugiri
- Helps in flood control through use of river waters for irrigation e.g. at Doho irrigation scheme in Butaleja.

Negative/Problems resulting from irrigation farming:

- Profit repatriation leading to capital out flow e.g. at Tilda Rice scheme.
- Soil pollution due to frequent use of artificial fertilizers hence leading to decline in land productivity e.g. at Tilda rice scheme
- Loss of vegetation leading to loss of bio diversity. e.g. by Doho rice scheme in Butaleja
- Has led to high school dropout leading to increase in illiteracy rates. E.g. due to Doho rice scheme in Butaleja.
- Has led to competition for land with other land uses hence making land expensive e.g. at Mubuku irrigation scheme.
- Has increased the spread of water borne diseases leading to high costs of treatment e.g. at Doho rice irrigation scheme.
- Has increased soil salinity due to high evaporation rates hence leading to decline in land productivity e.g. at Nabokotom farms in Amudat.
- Has led to competition for labour hence making labour expensive. e.g. due to Doho irrigation scheme in Butaleja.
- Has led to high costs of maintenance of canals leading to low profits.eg. At Tilda rice scheme in Bugiri.
- Has led to rapid growth of weeds due to irrigation and these compete with crops for nutrients .e.g. at Tilda rice scheme in Bugiri

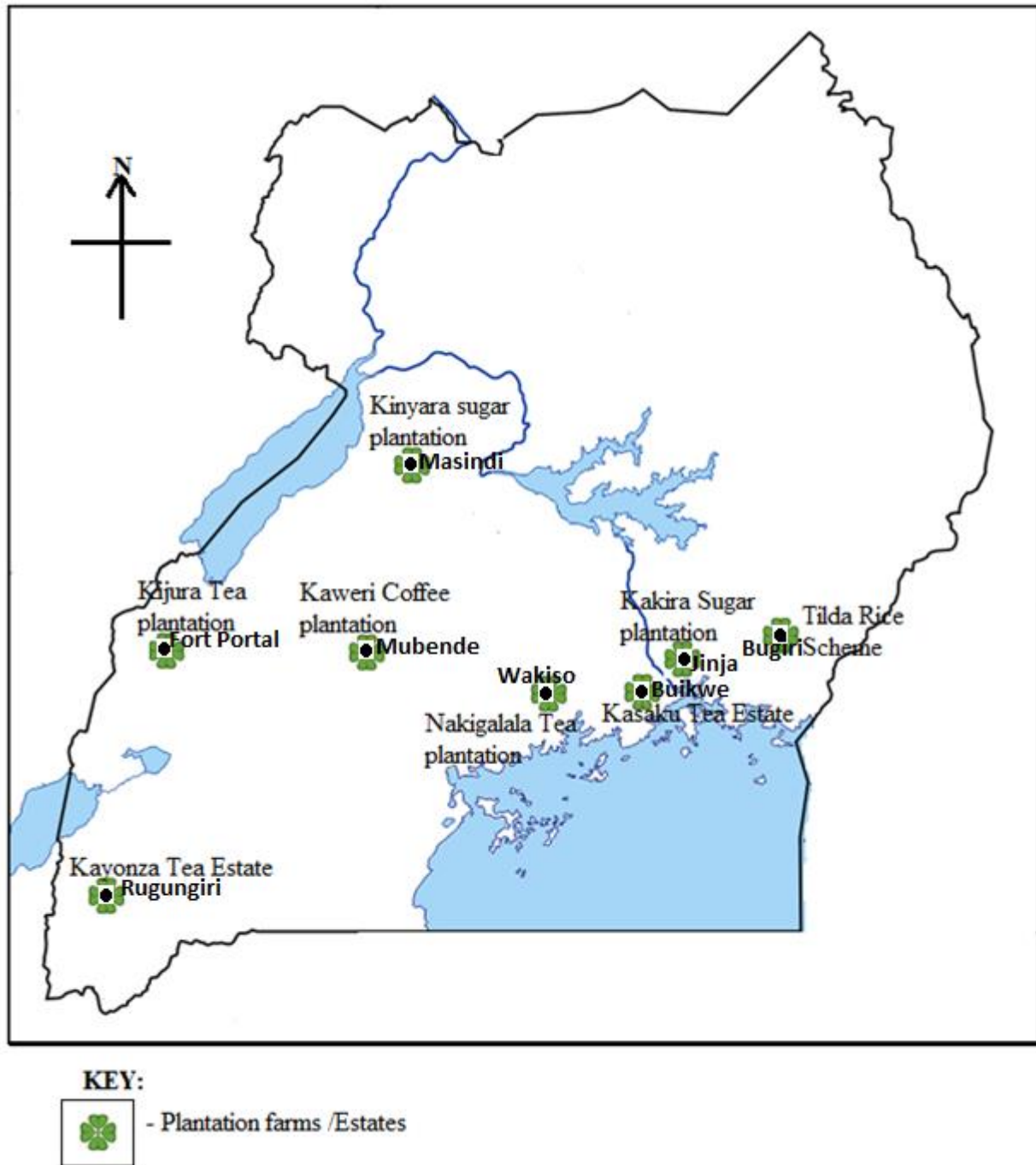
PLANTATION FARMING/ESTATE FARMING IN UGANDA

This is a form of farming that involves the growing of crops on a large piece of land for commercial purposes. A plantation is an estate or large piece of land in which a certain type of crop is grown and processed. Plantation farming in Uganda specialises in cash crops that include cotton, coffee, tea, Sugarcane, cocoa, oil palms etc.

Plantation farms in Uganda include;

- Kasaku tea estate in Buikwe.
- Kakira sugarcane plantation in Jinja.
- SCOUL sugar cane plantation in Lugazi (Buikwe)
- Kinyara sugarcane plantation in Masindi
- Kijura tea estate in Fort portal.
- Kayonza tea estate in Rukungiri
- Mpanga tea plantation in Kabarole
- Kaweri coffee plantation in Mubende.
- Nakigalala tea plantation in Wakiso etc.

A sketch map of Uganda showing plantation farms/areas under estate farming



Characteristics of plantation farming

- Plantation estates are very large; covering thousands of hectares of land.
- Normally run by huge foreign or local private companies.
- There are on – site processing factories.
- Requires large capital for investment.
- Usually specialise in production of single crop i.e. practice monoculture.
- Output is increased by buying the same product from out growers.
- Management provides social services to workers inform of housing, food, medical facilities and education.
- Crops grown are majorly for commercial purposes.
- Employs large number of workers usually from different parts leading to plural societies i.e. societies made up of different ethnic groups.
- They have their own infrastructure in form of roads for transportation of harvested crops to the factory and the market.

Factors encouraging the development of plantation farming in Uganda

- Presence of Acidic soils encourage the growing of tea at Kasaku tea estate in Buikwe, Nakigalala tea estate in Wakiso, Kijura tea estate in Fort portal, Kayonza tea estate in Rukungiri, Mpanga tea estate in Kabarole, Nyambya tea estate in Kyenjojo etc.
- Conducive climatic conditions in form of heavy and well distributed rainfall of 1500mm and above per year have encouraged the growth of perennial crops like oil palms in Buvuma and tea at Nakigalala tea estate in Wakiso.
- Presence of large tracts/vast land has encouraged the establishment of plantations such as Kasaku tea plantation for tea growing in Buikwe.
- Well drained areas have encouraged the growth of tea at Kasaku tea estate in Buikwe.
- Gently sloping relief that allows easy use of machines at Kasaku tea estate in Buikwe.
- Permanent water supply for irrigation and washing equipments eg at Kasaku tea estate in Buikwe.

Human Factors:

- Wide market for tea has led to the growth of Kasaku tea estate in Buikwe.
- Supportive government policies through rehabilitating of roads have encouraged plantation farming e.g. at Kibimba rice scheme in Bugiri.
- Adequate capital in form of loans provided by government, SACCOS and foreign investors; that is used to pay workers, purchasing agricultural inputs has encouraged the growing of crops like rice at Tilda rice scheme in Bugiri, sugar cane at Sugar Cooperation of Uganda Limited in Buikwe.
- Improved research in diseases control, discovery of resistant crop species has promoted the growth of plantation farming e.g. at SCOUT sugar cane plantation in Buikwe.
- Improved transport by road has encouraged the transportation of agricultural produce from farms to market centres e.g. by Kasaku tea estate in Buikwe.
- Presence of improved storage facilities has reduced post-harvest losses e.g. for rice at Kibimba rice scheme.
- Improved technology that involves the use of combined harvesters that ease work has encouraged large scale crop growing such as rice at Tilda rice scheme in Bugiri.
- Existence of skilled labour from training institutions like Busitema University used at Rosebud flower plantation in Wakiso.

- Increased supply of power in form of HEP due to Rural electrification; has encouraged the establishment of processing factories that add value to the harvested produce e.g. at Kasaku tea estate in Buikwe.
- Privatization/Liberalisation of the agricultural sector has attracted foreign investors with the required capital leading to the establishment of large scale plantations such as Tilda rice scheme for rice in Bugiri etc.
- The establishment of processing factories that add value to the produce has encouraged continuous growing of crops like tea at Kasaku tea estate in Buikwe, Rice at Tilda rice scheme in Bugiri.

Contributions of plantation farming to the development of Uganda

Positives:

- The sector provides employment opportunities to farmers who earn income leading to improved standards of living.e.g. Kasaku tea estate in Buikwe.
- It's a source of government revenue through taxes imposed on farmers and the money got is used to provide social services e.g. at SCOUL Sugar plantation in Buikwe.
- The sector earns foreign exchange through exportation of crop produce the money got is used to provide social services.e.g. Sugar from Kinyara sugar cane plantation.
- The sector provides food leading to a healthy labour force e.g. sugar from SCOUL sugar plantation in Buikwe.
- Plantation farming is a source of market for other sectors; such as the fertilizer making industries that produce fertilizers for sugarcane growing at SCOUL in Buikwe.
- It has led to development of infrastructure in form of roads, hospitals, schools that produce services to people e.g. Mehta Senior Secondary school due to sugar cane growing at SCOUL in Buikwe.
- The sector has led to a positive international relationship between Uganda and countries where agricultural produce is exported hence promoting peace and trade e.g. due to exportation of tea from Kasaku tea estate in Buikwe to Britain.
- The sector promotes education/research/tourism hence equipping people with knowledge e.g. Tilda rice Irrigation scheme for rice growing in Bugiri.
- It has diversified the economy of Uganda hence reducing over reliance on mining, fishing. etc. e.g. due to oil palm growing in Buvuma.
- The sector provides raw material to agro-based industries hence promoting industrialisation e.g. sugar making industries like Kinyara sugar Industry due to sugar cane growing in Kinyara sugarcane plantation inMasindi.
- It has stimulated the growth of urban centres that provide social services to people e.g. Namagunga town due to tea growing at Kasaku tea estate in Buikwe etc.

Negatives:

- It has led to profit repatriation by foreigners hence leading to capital out flow e.g. the growing of tea at Kasaku tea estate in Buikwe.
- It has led to destruction of vegetation/swamp reclamation when opening up land for farming hence leading to soil erosion and loss of bio diversity e.g. due to the growing of rice at Tilda rice scheme in Bugiri etc.
- It has led to soil pollution due to continuous use of artificial fertilizers hence leading to decline in land productivity e.g. due to rice growing at Tilda rice scheme in Bugiri.
- It has led to soil exhaustion due to over cultivation hence reducing land productivity e.g. due to tea growing at Nakigalala tea estate in Wakiso.
- It has led to competition for land with other land uses hence making land expensive e.g. due to sugar cane growing by SCOUL in Buikwe.
- It has led to competition for labour with other sectors hence making labour expensive due to sugar cane growing at Kinyara sugar cane plantation in Masindi.
Etc.
- Has led to growth of urban centres with related problems like school dropout e.g. in Lugazi town due to SCOUL sugar cane plantation in Buikwe.

- Has led to creation of hide outs for criminals hence leading to insecurity e.g. Kakira sugarcane plantation in Jinja.

CASH CROP PRODUCTION IN UGANDA

Uganda has traditional and non – traditional cash crops.

- Traditional cash crops include those crops that have been grown for commercial purpose and export since the colonial era. These are; coffee, cotton, tea, tobacco and sugarcane.
- Non – traditional cash crops include those crops that have joined the export market of recent; maize, beans, groundnuts, Flowers, rice etc.

PRODUCTION OF TRADITIONAL CASH CROPS IN UGANDA

THE COFFEE SECTOR

Coffee has been Uganda's most important cash crop. The Uganda Coffee Development Authority coordinates the country's coffee industry. The UCDA is a government agency mandated to promote and oversee the coffee industry by supporting research, promoting production, controlling the quality and improving the marketing of coffee in Uganda.

The Status of the coffee sector in Uganda is as follows;

- Coffee is Uganda's top earning export crop.
- Households strongly rely on family labour for production.
- The Uganda coffee Development Authority oversees the coffee industry.
- Coffee output has been fluctuating over the years.
- Coffee is still the major traditional export crop for Uganda.
- The coffee industry has been liberalized e.g. marketing is done by middle men.
- Local coffee consumption is limited.
- Annual coffee production is made up of 15% Arabica and 85% Robusta (ugandainvest.go.ug)
- Mostly grown in mixed farms where it's intercropped with the food crops.
- Coffee export volumes have grown in recent years.
- Much of the coffee is exported to the European Union i.e. UK, Netherlands, Spain etc.
- Government supplies coffee seedlings through Operation Wealth Creation.
- Mainly grown by small holder farmers.
- Kaweri coffee plantation is the only large scale and most modern coffee plantation in Uganda located in Mubende.

The types of coffee grown in Uganda include Robusta coffee, clonal coffee and Arabica coffee. However annual production is determined by Robusta coffee. Robusta coffee is grown in low altitude areas of central, eastern, western and south eastern Uganda i.e. mainly round the shores of L. Victoria in districts of Mukono, Masaka, Wakiso, Mpigi, Bukomansimbi, Mubende, Mityana, Luwero, Lwengo, Kalungu etc.

Arabica coffee was introduced from Ethiopia. It is grown in highland areas along slopes of Mt. Elgon in Mbale, Bududa, Manafwa, Sironko, Kapchorwa etc. It's also grown along slopes of Mt. Rwenzori in Kasese, Bundibugyo etc.

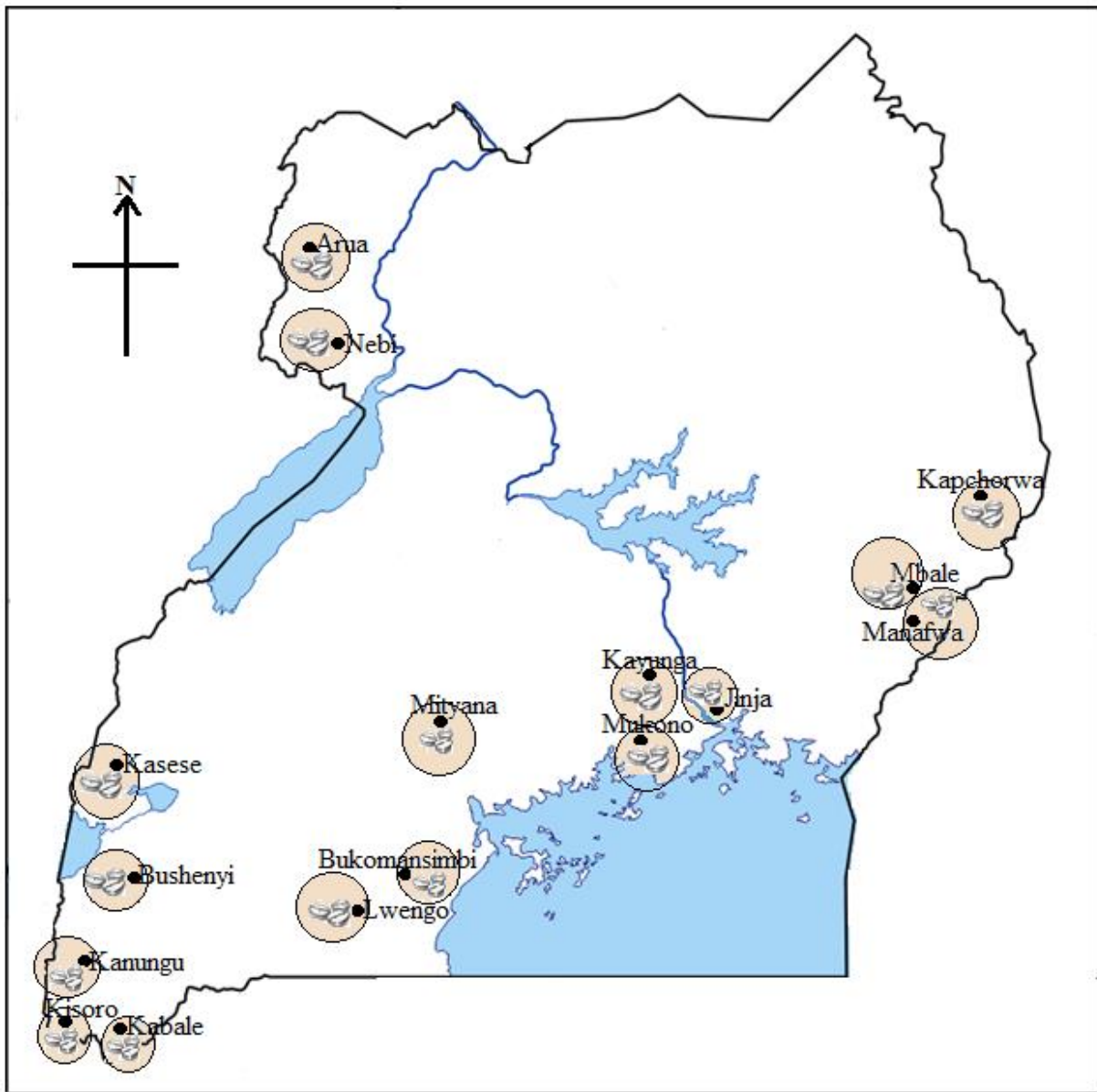
Clonal coffee: the word clonal means that the coffee plants have been multiplied asexually from a single parent plant or clone. Plant breeders under the National Agricultural Research Organisation (NARO) identified six Robusta coffee clones. Farmers get clonal coffee plantlets from well-established coffee

nurseries that are also recognized by the Coffee Development Authority (UCDA). Clonal coffee is grown in Masaka, Bukomansimbi, and Lwengo among other places in Uganda

Generally, coffee growing areas of Uganda are;

- Central region: Luwero, Mpigi, Mukono, Mityana, Kayunga, Masaka, Rakai, Mubende, Kiboga, Lwengo, Kalungu, Bukomansimbi etc.
- Western: Bushenyi, Ntungamo, Mbarara, Kasese, Ibanda, Rukungiri etc.
- South western: Kabale, Kisoro, Kanungu, Rubirizi etc.
- West Nile region: Nebbi, Arua etc.
- Eastern region: Buwenge, Jinja, Iganga, Kamuli, Mbale, Sironko, Kapchorwa, Bududa, Manafwa etc.

A sketch map of Uganda showing Coffee growing areas



KEY:



- Coffee growing areas

Factors favouring the development of the coffee sector in Uganda

- Existence of deep mature fertile/volcanic soils has encouraged the growth of coffee in Masaka, Bukomansimbi and Mbale respectively.
- Conducive climatic conditions in form of heavy and well distributed rainfall of; 1500mm and above per year has encouraged the growth of coffee in Mbale, Mukono, Masaka, Bukomansimbi, and Mpigi etc.
- Presence of large tracts/vast land has encouraged the establishment of coffee farms in Mbale.

- Well drained areas such as Mukono, Mpigi, and Bukomansimbi have encouraged the growing of coffee.
- Wide market for coffee from Mbale
- Supportive government policies through rehabilitating of roads, provision of funds through NAADS, promoting research through NARO (National Agricultural research organization); has encouraged the growing of coffee from Bududa, Mukono.
- Adequate capital in form of loans provided by the government and SACCOS that is used to pay workers, purchasing agricultural inputs has encouraged coffee growing in Mbale and Kapchorwa.
- Improved research in diseases control, discovery of resistant coffee species has encouraged the growing of improved coffee varieties in Mukono, Mpigi, and Bukomansimbi etc.
- Improved transport by road has encouraged the transportation of coffee from farms to market centres e.g. Coffee from Mbale and Sironko etc.
- Presence of improved storage facilities has reduced post-harvest losses e.g. for coffee in Mbale.
- Improved technology that involves the use of tractors during tilling of the land e.g. for coffee in Masaka.
- Existence of skilled labour that is used for research e.g. For coffee in Kapchorwa.
- Increased supply of power in form of HEP due to Rural electrification; has encouraged the establishment of coffee processing factories that add value to the harvested produce e.g. Kyagalanyi coffee processing facility in Mbale and Wakiso for coffee and Budadiri Arabica coffee factory for coffee in Mbale etc.
- Privatization/Liberalisation of the agricultural sector has attracted private farmers with the required capital leading to the establishment of large scale coffee farms in Mbale and Masaka.
- The establishment of processing factories; like Kyagalanyi coffee factory that adds value to the produce has encouraged continuous growing of coffee in Mbale.

Problems faced by the coffee sector in Uganda

- Pests and diseases that attack crops and animals leading to decline in the yields e.g. coffee wilt disease for coffee in Mbale.
- Soil exhaustion due to over cultivation hence leading to decline in the coffee yields e.g. In Kasese and Mbale.
- Unfavourable climatic conditions like drought, very heavy rainfall, hailstorms etc. destroy crops leading to low coffee yields e.g. Ibanda and Mbale.
- Steep relief that makes mechanization difficult and expensive hence leading to continued use of rudimentary tools like hoes to cultivate coffee in Mbale and Kapchorwa.
- Natural hazards like floods and landslides destroy coffee farms in Mbale and Bududa.
- Limited capital has led to use of rudimentary tools such as hoes hence leading to low coffee output e.g. In Mbale.
- Limited research in disease control has led to low coffee output e.g. In Mbale.
- Low levels of technology have encouraged continued use of tools like pangas, hoes hence leading to low coffee output in Mbale.
- Shortage of skilled labour has led to low quality coffee yields e.g. In Masaka.
- Corruption in government projects like NAADS, Operation Wealth Creation and others has resulted into provision of poor quality coffee seeds leading to low coffee output in Masaka.
- Price fluctuation /limited market /competition for market for coffee with other countries like Brazil has demoralized farmers leading to decline in production e.g. in Mbale and Kapchorwa.
- Fluctuation in power supply has hindered the establishment of processing factories leading to post harvest losses e.g. In Ibanda and Bududa.
- Insecurity in form of political unrests scares away foreigners hence leading to low output in Mbale and Masaka.
- Limited government support has hindered rehabilitation of rural roads hence leading to limited access to coffee market centres in Kapchorwa.

- Inefficient transport in rural areas has limited the extension of services to coffee farmers in Kapchorwa and Mbale.
- Poor storage facilities have led to post harvest losses for coffee in Mbale.
- Land tenure system/competition for land/limited land has hindered expansion hence leading to small scale farms that yield low profits.eg. In Masaka.
- Profit repatriation by foreign investors in the coffee sector leading to increased capital out flow e.g. at Kaweri coffee plantation in Mubende under Neumann Koffe Gruppe based in Hamburg in Germany.

Steps being taken to improve the coffee sector in Uganda

- Application of fertilizers/Manure/mulching to improve soil fertility e.g. at Kaweri coffee plantation in Mubende.
- Spraying using pesticides and herbicides to reduce pests and diseases for coffee at Kaweri coffee plantation in Mubende.
- Encouraging irrigation farming to reduce crop failure due to drought at Kaweri coffee plantation in Mubende.
- Contour ploughing/Strip cropping to promote coffee growing in hilly areas such e.g. Mbale and Kapchorwa.
- Formation of cooperatives/reviving of cooperatives to extend incentives to farmers and help in marketing e.g. Bugisu cooperative union for coffee in Mbale, Bududa, and Manafwa.
- Educating/sensitisation of farmers about better methods of coffee growing e.g. at Kaweri coffee plantation in Mubende.
- Promoting security through deploying police and soldiers in Kasese to promote coffee growing.
- Improving storage facilities through establishment of stores to reduce post-harvest losses e.g. for coffee in Bududa and Masaka.
- Rehabilitation of roads to encourage transportation of coffee to market centres.eg. Kayunga – Mukono road for coffee from Kayunga.
- Increasing government support through projects like NAADS that provides seeds to farmers dealing in coffee in Mukono.
- Rural electrification to establish to enable establishment of processing facilities to add value on the coffee produce e.g. Kyagalanyi coffee factory in Mbale.
- Market research through advertising to widen the market for coffee in Mukono and Masaka.
- Training of labour through demonstration farms and modern plantations.eg. At Kaweri coffee plantation in Mubende.
- Increasing research in disease control at NARL- Kawanda to promote the growing of coffee in Bukomansimbi.
- Improving technology through introduction of tractors to ease work on the farms e.g. At Kaweri coffee plantation in Mubende.
- Establishment of on-site processing factories to reduce post-harvest losses for coffee.E.g.at Kaweri coffee plantation in Mubende.
- Liberalization/Privatization of the coffee sector to attract foreign investors e.g. At Kaweri coffee plantation in Mubende.

Contributions of the coffee sector to the development of Uganda

Positives:

- The sector provides employment opportunities to farmers who earn income leading to improved standards of living.eg. Coffee farmers in Kayunga.
- It's a source of government revenue through taxes imposed on farmers and the money got is used to provide social services e.g. from farmers who grow coffee in Mbale.

- The sector earns foreign exchange through exportation of coffee from Mbale and the money got is used to provide social services.
- The sector provides coffee as food and medicinal purposes leading to a healthy labour force e.g. coffee from Bukomansimbi.
- The coffee sector is a source of market for other sectors; such as the fertilizer making industries that produce fertilizers for Kaweri coffee plantation in Mubende.
- It has led to development of infrastructure in form of roads, hospitals, schools that produce services to people e.g. Boda Boda stage shelters established by Kaweri coffee plantation in Mubende.
- The sector has led to a positive international relationship between Uganda and countries where coffee is exported hence promoting peace and trade e.g. due to exportation of coffee from Kapchorwa to Britain.
- The sector promotes education/research/tourism hence equipping people with knowledge e.g. At Kaweri coffee plantation in Mubende.
- It has diversified the economy of Uganda hence reducing over reliance on mining and fishing e.g. Due to coffee growing in Masaka.
- The coffee sector provides raw materials to agro-based industries hence promoting industrialisation e.g. coffee from Mbale to Kyagalanyi coffee factory in Mbale.
- It has stimulated the growth of urban centres that provide social services to people e.g. Nonve, Kyamutuma, Kitagweta and Luwunga centres due to Kaweri coffee plantation in Mubende.

Negatives:

- It has led to profit repatriation by foreigners hence leading to capital out flow e.g. the growing of coffee at Kaweri coffee plantation in Mubende.
- It has led to destruction of vegetation/swamp reclamation when opening up land for farming hence leading to soil erosion and loss of bio diversity e.g. due to the growing of coffee in Mbale and Masaka.
- It has led to soil pollution due to continuous use of artificial fertilizers hence leading to decline in land productivity e.g. due to coffee growing at Kaweri coffee plantation in Mubende.
- It has led to soil exhaustion due to over cultivation hence reducing land productivity e.g. due to coffee growing in Kayunga and Mubende.
- It has led to competition for land with other land uses hence making land expensive/ leading to evictions e.g. due to coffee growing at Kaweri coffee plantation in Mubende.
- It has led to competition for labour with other sectors hence making labour expensive due to coffee growing at Kaweri coffee plantation in Mubende.

COTTON SECTOR IN UGANDA

Cotton production in Uganda is dominated by small holder farmers whose productivity is often affected by lack of resources necessary for cotton production.

Status of the cotton sector:

- Cotton ginneries are being rehabilitated e.g. Iki – Iki in Budaka.

Cotton growing areas are;

- Teso region: Katakwi, Amuria, Soroti, Kaberamaido, Kumi, Serere, Ngora etc.
- Busoga region: Kamuli, Bugiri, Jinja, Iganga etc.
- Bukedi region: Budaka, Pallisa, Tororo etc.
- Lango region: Lira, Oyam, Dokolo, Apac, Otuke, Kole, Alebtong etc.
- Bunyoro region: Masindi, Hoima, Kibaale etc.
- West Nile region: Arua, Nebbi, Moyo, Adjumani, Yumbe etc.

LIST OF COTTON PRODUCING AND EXPORTING COMPANIES

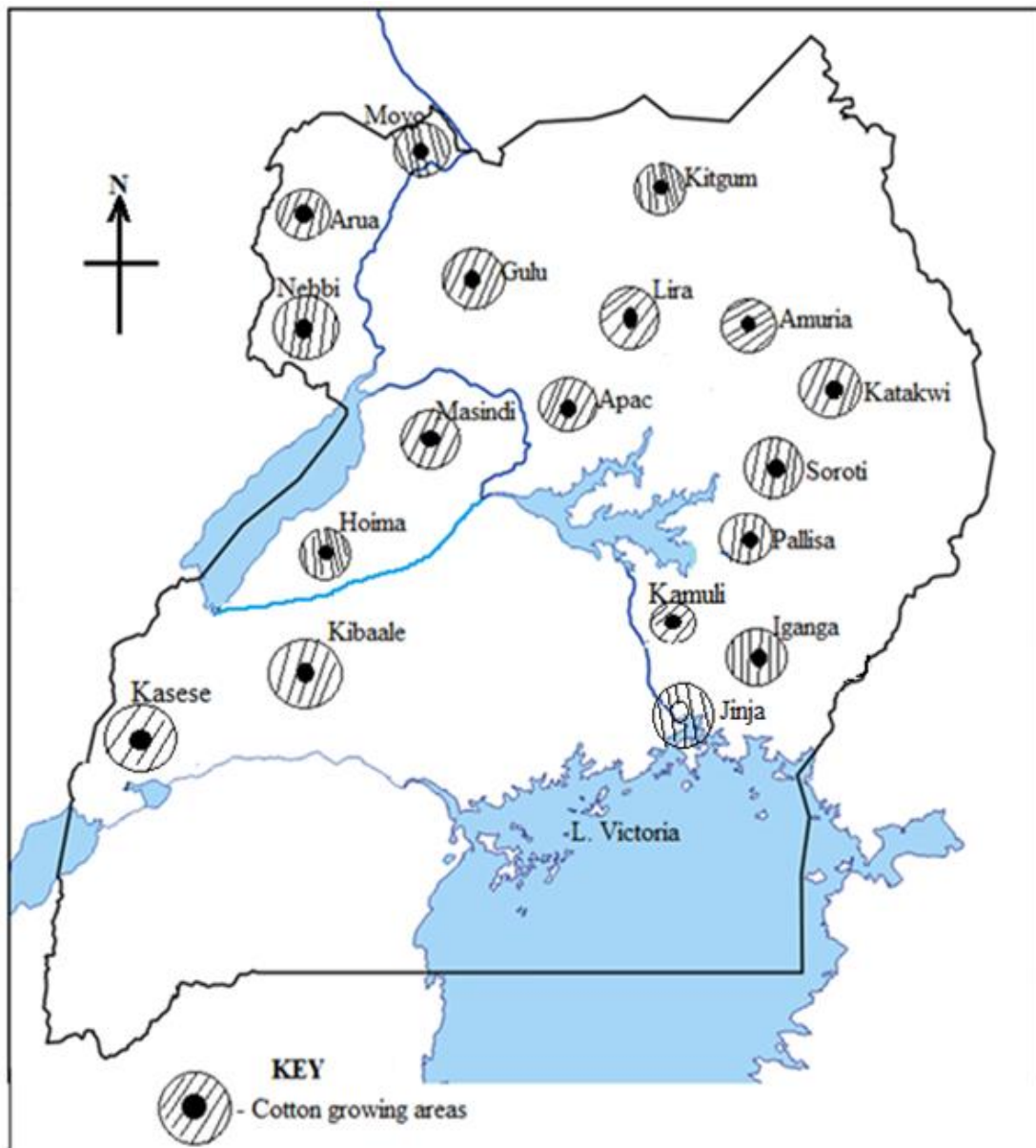
NB: These are ginneries at specific locations country wide owned by specific companies that process and export cotton.

Ginnery	Company name	Location
Aboke	Rafiki cotton industry	Apac
Aduku	Twin brothers limited	Apac
Balawoli	Ajay cotton limited	Kam ,,,,,,,,,,,,,,,,,,,,,uli
Bugema	Africot Trading company	Mbale
Bulangira	Cottfield E.A(U)Ltd	Kibuku
Bulumba	Busoga growers Co-op Union	Kaliro
Busembatya	Pramukh Agro industries Ltd	Iganga
Bushenyi	Bushenyi Cotton Co Ltd	Bushenyi
Busolwe	South Base Agro Industries Ltd	Butaleja
Coo-rom	West Acholi Co-op Union	Gulu
Dabani	Dabani Ltd	Busia
Hoima	Olam Uganda Ltd	Hoima
Icheme	Dunavant (U) Ltd	Apac
Iki-Iki	North Bukedi Cotton Company	Budaka

Jaber	South Base Agro Industries Ltd	Oyam
JITCO	Rwenzori cotton Ginners Ltd	Lira
Kabulubulu	Meena industries Ltd	Kaberaido
Kachumbala	CN cotton Ltd	Bukedea
Kasese	Nyakatonzi Growers co-op Union	Kasese
Kibuku	Olam Uganda Ltd	Kibuku
Kitgum	East Acholi Co-op Ltd	Kitgum
Kiyunga	Mutuma Commercial Agencies	Luuka
Ladoto	Lukonge cotton Co.Ltd	Pallisa
Lukhonge	Lukonge cotton Co.Ltd	Manafwa
Luzinga	Bon Holdings Ltd	Jinja
Mukhongoro	CN cotton Ltd	Kumi
Nakivumbi	Bon Holdings Ltd	Iganga
Ngetta	Lango Co-op Union	Lira
Nyakesi	Novo Enterprises Ltd	Tororo
Odokomit	MMP Agro industries Ltd	Lira
Parombo	Rwenzori Cotton Ginners Ltd	Nebbi
Pakwach	Mansons	Nebbi
Rhino Camp	UNACOFF Ltd	Arua
Rwenzori	Rwenzori Cotton Ginners Ltd	Kasese
Soroti	Country Farm cotton Co.Ltd	Soroti
Western Uganda	Western Uganda Cotton Co.	Kasese

Source:<http://2017businessfriends.blogspot.com/2017/06/list-of-cotton-producing-and-exporting.html>

A sketch map showing cotton growing areas in Uganda



Factors favouring the development of the cotton sector in Uganda

- Existence of fertile sandy-loam soils has encouraged the growth of cotton in Soroti and Kitgum.
- Conducive climatic conditions in form of moderate rainfall and hot temperature have encouraged the growth of cotton in Gulu.
- Presence of large tracts/vast land has encouraged the establishment of cotton farms in Lamwo and Gulu.
- Wide market for cotton in the textile industries like Southern Range Nyanza Ltd and Fine spinners has encouraged cotton growing in Kasese and Pallisa.
- Supportive government policies through rehabilitating of roads, provision of funds through promoting research through NARO (National Agricultural research organization); has encouraged the growing of cotton in Kasese and Kamuli.
- Adequate capital in form of loans provided by the government and SACCOS that is used to pay workers, purchasing agricultural inputs has encouraged cotton growing in Pallisa.
- Improved research in diseases control, discovery of resistant cotton species has encouraged the growing of improved cotton varieties in Gulu and Lamwo.
- Improved transport by road has encouraged the transportation of cotton from farms to market centres e.g. Cotton from Kitgum.
- Presence of improved storage facilities has reduced post-harvest losses e.g. for cotton from Gulu.
- Improved technology that involves the use of tractors during tilling of the land e.g. for cotton in Kitgum.
- Existence of skilled labour that is used during planting and harvesting. For cotton in Pallisa.
- Increased supply of power in form of HEP due to Rural electrification; has encouraged the establishment of coffee processing factories that add value to the harvested produce e.g. Iki Iki in Budaka.
- Privatization/Liberalisation of the agricultural sector has attracted private farmers with the required capital leading to the establishment of large scale cotton farms in Kamwenge and Kamuli.
- The establishment of cotton ginning industries has reduced losses e.g. Iki-Iki in Budaka.

Problems faced by the cotton sector in Uganda

- Pests and diseases that attack crops and animals leading to decline in the yields e.g. cotton boll worm in Kamuli.
- Soil exhaustion due to over cultivation hence leading to decline in the cotton yields e.g. In Kasese.
- Unfavourable climatic conditions like drought, very heavy rainfall, hailstorms etc. destroy cotton leading to low cotton yields e.g. Kasese and Kitgum.
- Natural hazards like floods destroy cotton farms in Soroti and Pallisa.
- Limited capital has led to use of rudimentary tools such as hoes hence leading to low cotton output e.g. In Kamwenge.
- Limited research in disease control has led to low cotton output e.g. In Gulu.
- Low levels of technology have encouraged continued use of tools like pangas, hoes hence leading to low cotton output in Kasese.
- Shortage of skilled labour has led to low quality cotton yields e.g. In Gulu.
- Corruption in government projects like NAADS has resulted into provision of poor quality cotton seeds leading to low cotton output in Gulu.
- Price fluctuation /limited market /competition for market for cotton with other countries like Brazil has demoralized farmers leading to decline in production e.g. in Kitgum.
- Fluctuation in power supply has hindered the establishment of cotton ginneries leading to post harvest losses e.g. In Kamwenge and Kasese.
- Insecurity in form of political unrests scares away foreigners hence leading in Kasese.
- Limited government support has hindered rehabilitation of rural roads hence leading to limited access to market centres in Lamwo and Kamwenge.

- Inefficient transport in rural areas has limited the extension of services to cotton farmers in Kapchorwa and Mbale.
- Poor storage facilities have led to post harvest losses for cotton in Kitgum.
- Land tenure system/competition for land/limited land has hindered expansion hence leading to small scale farms that yield low cotton profits.eg. In Lira.
- Profit repatriation by foreign investors dealing in buying in the buying of cotton leading to increased capital out flow e.g. in Lira and Pallisa.

Steps being taken to improve the cotton sector in Uganda

- Application of fertilizers/Manure/mulching to improve soil fertility e.g. by cotton farmers in Gulu.
- Spraying using pesticides and herbicides to reduce pests and diseases for cotton in Pallisa.
- Encouraging irrigation farming to reduce crop failure due to drought.eg. By cotton farmers in Gulu.
- Formation of cooperatives/reviving of cooperatives to extend incentives to farmers and help in marketing e.g.
- Educating/sensitisation of farmers about better methods of cotton growing.eg. In Gulu.
- Promoting security through deploying police and soldiers in Kasese to promote cotton growing.
- Improving storage facilities through establishment of stores to reduce post-harvest losses e.g. for cotton in Pallisa and Kitgum
- Rehabilitation of roads to encourage transportation of cotton to market centres.eg. Gulu-Kitgum road for cotton from Gulu and Kitgum.
- Increasing government support through projects like NAADS that provides seeds to farmers dealing in cotton in Pallisa and Kasese.
- Rural electrification to enable establishment of ginneries e.g. In Mbale.
- Market research through advertising and launching of policies like Buy Uganda Build Uganda (BUBU) to widen the market for textiles in Gulu and Lira.
- Training of labour through demonstration farms.eg. In Gulu and Soroti.
- Increasing research in disease control at Serere research institute to promote the growing of cotton in Gulu and Lira.
- Improving technology through introduction of tractors and re-introduction of ox- ploughs to ease work on the farms e.g. in Soroti
- Reviving of ginneries to process cotton.eg. Iki-Iki in Budaka.
- Liberalization/Privatization of the cotton sector to attract private farmers and traders.eg. In Soroti and Gulu.
- Prompt payment of the farmers so as to encourage the growing more cotton.eg. In Soroti.
- Formation of cotton export associations like the Uganda cotton ginneries and exporters association to help in maintaining quality and marketing.eg. In Gulu and Lira.

Contributions of the cotton sector to the development of Uganda

Positives:

- The sector provides employment opportunities to farmers who earn income leading to improved standards of living.e.g. To cotton farmers in Soroti.
- It's a source of government revenue through taxes imposed on farmers and the money got is used to provide social services.e.g. from farmers who grow cotton in Gulu and Lira.
- The sector earns foreign exchange through exportation of cotton from Pallisa and the money got is used to provide social services.
- The coffee sector is a source of market for other sectors; such as the fertilizer making industries that produce fertilizers used at cotton farms in Lira.
- It has led to development of infrastructure in form of roads that produce services to people e.g. in Lira and Kasese.
- The sector has led to a positive international relationship between Uganda and countries where cotton is exported hence promoting peace and trade e.g. due to exportation of cotton from Lira.
- The sector promotes education/research/tourism hence equipping people with knowledge e.g. cotton growing in Lira.
- It has diversified the economy of Uganda hence reducing over reliance on mining and fishing e.g. Due to cotton growing in Lira.
- The cotton sector provides raw materials to textile industries like southern Range Nyanza Limited in Njeru hence promoting industrialisation e.g. cotton from Lira.
- It has stimulated the growth of urban centres that provide social services to people e.g. in Soroti and Pallisa.

Negatives:

- It has led to profit repatriation by foreigners in the sector hence leading to capital out flow e.g. dealing in the growing and buying of cotton from Lira.
- It has led to destruction of vegetation/swamp reclamation when opening up land for farming hence leading to soil erosion and loss of bio diversity e.g. due to the growing of cotton in Pallisa.
- It has led to soil pollution due to continuous use of artificial fertilizers hence leading to decline in land productivity e.g. due to cotton growing in Lira.
- It has led to soil exhaustion due to over cultivation hence reducing land productivity e.g. due to cotton growing in Lira.
- It has led to competition for land with other land uses hence making land expensive/ leading to evictions e.g. due to cotton growing Lira.
- It has led to competition for labour with other sectors hence making labour expensive due to cotton growing in Soroti.

TEA GROWING IN UGANDA

Tea is commonly grown on the slopes of Mt. Rwenzori and along the shores of L. Victoria in areas of Bushenyi, Hoima, Kabarole, Kanungu, Kibaale, Kisoro, Mbarara, Mukono, Mityana, Rukungiri, Wakiso, and Buikwe etc.

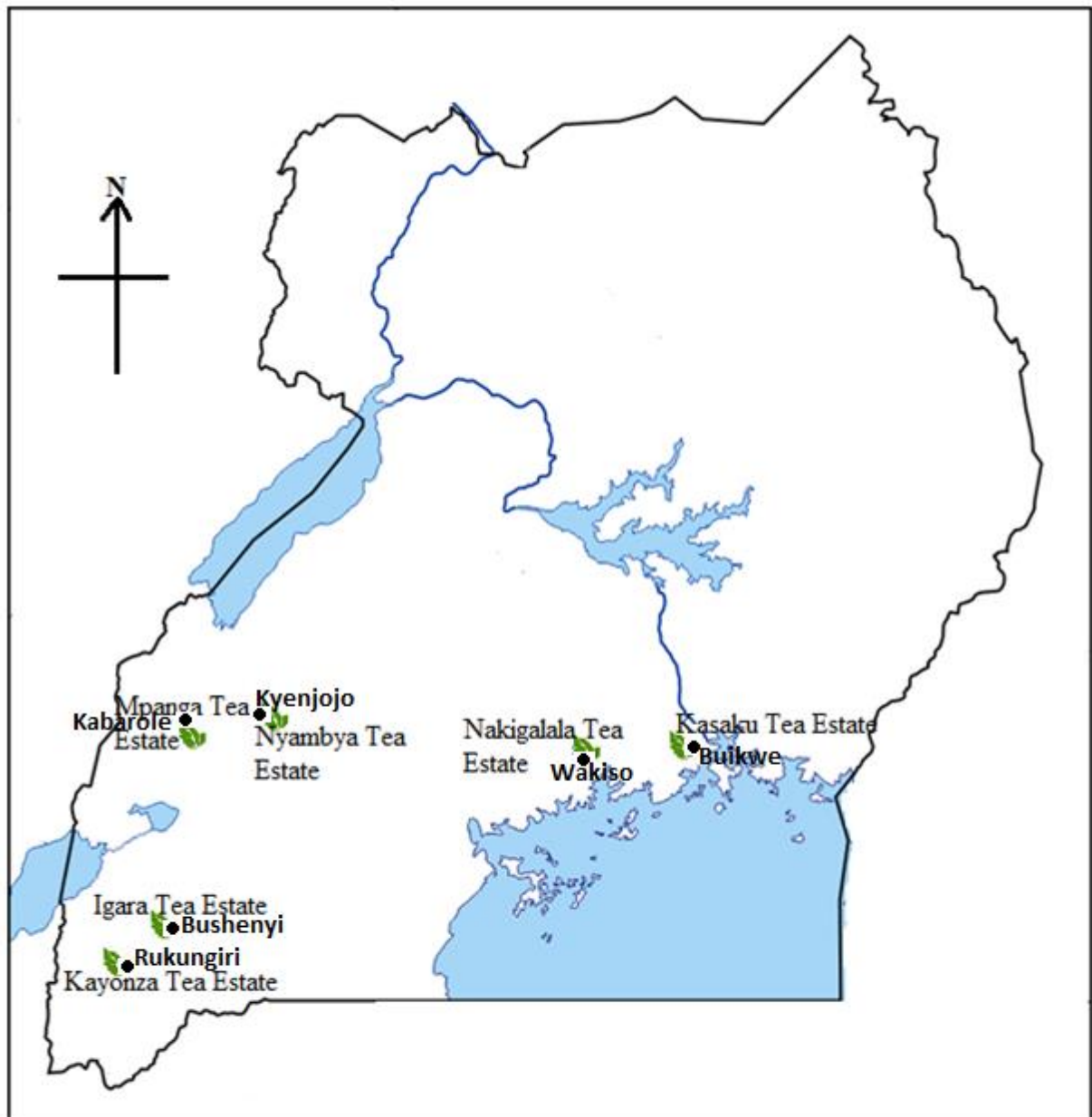
Tea growing plantations include;

- Nakigalala tea estate in Wakiso
- Kasaku tea estate in Buikwe
- Mpanga tea estate in Kabarole
- Kayonza tea estate in Rukungiri
- Kayira tea estate in Fort portal
- Nyambya tea estate in Kyenjojo
- Igara tea estate in Bushenyi.
- Bugambe estate in Hoima.
- Kyamuhunga tea estate in Bushenyi.


Status of the tea sector in Uganda is as follows:

- 90% of the tea grown is exported.
- Tea production has fluctuated over time
- Largely dominated by foreigners
- Tea sector has been liberalized
- Small holder farms produce about 20% of the tea in Uganda.
- Large scale tea farms are owned by the foreigners.
- Tea processing is highly mechanised.
- Tea is grown mainly on plantations.
- Tea picking is highly labour intensive.

A sketch map showing tea growing areas in Uganda



KEY:

 - Tea Estate

Factors favouring the development of the tea sector in Uganda

- Existence of fertile acidic soils has encouraged the growth of tea at Kasaku tea estate in Buikwe.
- Conducive climatic conditions in form of heavy rainfall above 1500mm and chill temperature all round has encouraged the growing of tea at Kasaku tea estate in Buikwe.
- Existence of well drained soils has encouraged the growing of tea at Kayonza tea estate in Rukungiri.
- Existence of areas with an altitude at 1500mm above sea level provides ideal conditions for tea growing.eg. At Kasaku tea estate in Buikwe.
- Presence of large tracts/vast land has encouraged the establishment of tea estates.eg. At Nakigalala tea estate in Wakiso.
- Wide market for tea as a beverage in Uganda and abroad has encouraged the growing tea at Igara tea estate in Bushenyi.
- Supportive government policies through rehabilitating of roads have encouraged the growing of tea at Kasaku tea estate in Buikwe.
- Adequate capital provided by the foreign investors that is used to pay workers, purchasing agricultural inputs has encouraged tea growing at Kasaku tea estate in Buikwe.
- Improved research in diseases control, discovery of resistant tea species has encouraged the growing of improved tea varieties at Kasaku tea estate in Buikwe.
- Improved transport by road has encouraged the transportation of tea from farms to market centres and processing centres like Kampala-Jinja road for tea from Luwala tea estate in Buikwe.
- Presence of improved storage facilities has reduced post-harvest losses e.g. for tea at Kasaku tea estate in Buikwe.
- Improved technology that involves the use of tractors during tilting of the land.eg. at Kasaku tea estate in Buikwe.
- Existence of skilled labour that is used during tea picking.eg. At Luwala tea estate in Buikwe.
- Increased supply of power in form of HEP due to rural electrification; has encouraged the establishment of tea processing factories that add value to the harvested produce e.g. at Kasaku tea estate in Buikwe.
- Privatization/Liberalisation of the agricultural sector have attracted private farmers with the required capital leading to the establishment of tea estates like Nakigalala in Wakiso.
- Existence of on-site processing factories has reduced post-harvest losses.eg. At Kasaku tea estate in Buikwe.

Problems faced by the tea sector in Uganda

- Pests and diseases that attack tea leading to decline in the yields e.g. black root rot disease at Nakigalala tea estate in Buikwe.
- Soil exhaustion due to over cultivation hence leading to decline in the tea yields e.g. at Igara tea estate in Bushenyi.
- Unfavourable climatic conditions like drought destroy tea leading to low tea yields e.g. at Luwala tea estate in Buikwe.
- Limited capital has hindered the establishment of large scale tea farms hence leading to low tea output e.g. at Nagojje tea estate in Mukono.
- Limited research in disease control has led to low tea output e.g. at Luwala tea estate in Buikwe
- Low levels of technology have encouraged continued use of tools like pangas, hoes hence leading to low tea output at Nagojje tea estate in Mukono.
- Shortage of skilled labour has led to low quality tea yields.eg. At Nagojje tea estate in Mukono.
- Corruption in government projects like NAADS has resulted into provision of poor quality tea seeds leading to low quality tea leaves at Nagojje tea estate in Mukono.
- Price fluctuation /limited market /competition for market for tea with other countries has led to decline in the profits e.g. at Luwala tea estate in Buikwe

- Fluctuation in power supply has hindered the establishment of tea processing plants leading to post harvest losses .e.g. At Nagojje tea estate in Mukono.
- Insecurity in form of political unrests scares away foreigners hence leading to few tea estates like at Luwala tea estate in Buikwe.
- Limited government support has hindered rehabilitation of rural roads hence leading to limited access to market centres at Nagojje tea estate in Mukono.
- Inefficient transport in rural areas has limited the extension of services to tea estates.E.g.at Nagojje tea estate in Mukono.
- Poor storage facilities have led to post harvest losses for tea at Nagojje tea estate in Mukono.
- Land tenure system/competition for land/limited land has hindered expansion hence leading to small scale farms that yield low tea profits.eg. At Nagojje tea estate in Mukono.
- Profit repatriation by foreign investors leading to increased capital out flow e.g. At Kasaku tea estate in Buikwe.

Steps being taken to improve the tea sector in Uganda

- Application of fertilizers/Manure/mulching to improve soil fertility e.g. At Kasaku tea estate in Buikwe.
- Spraying using pesticides and herbicides to reduce pests and diseases at Kasaku tea estate in Buikwe.
- Encouraging irrigation farming to reduce crop failure due to drought.e.g.AtKayonza tea estate in Rukungiri
- Formation of agencies like Uganda tea Development Limited (UTDL) owned by Igara and Kayonza tea factories to provide specialized services to small holder farmers of Igara and Kayonza.
- Educating/sensitisation of farmers about better methods of cotton growing.eg. At Kasaku tea estate in Buikwe and Kayonza tea estate in Rukungiri and Kanungu.
- Promoting security through deploying police and soldiers to promote growing.eg. At Kayonza tea estate in Rukungiri
- Improving storage facilities through establishment of stores to reduce post-harvest losses e.g. atKayonza tea estate in Rukungiri
- Rehabilitation of roads to encourage transportation of tea to market centres and processing plants.eg. Ntungamo-Rukungiri road to boost tea growing at Kayonza tea estate in Rukungiri.
- Increasing government support through rehabilitating of roads.eg. Ntungamo-Katunguru road for Igara tea estate in Bushenyi.
- Rural electrification to enable establishment of tea processing factories.eg. At Kayonza tea estate in Rukungiri.
- Market research through advertising and launching of policies like Buy Uganda Build Uganda (BUBU) to widen the market for tea at Kayonza tea estate in Rukungiri.
- Training of labour through demonstration farms.eg. At Kayonza tea estate in Rukungiri.
- Increasing research in disease control to promote the growing of tea at Kayonza tea estate in Rukungiri.
- Improving technology through introduction of tea drying machines to ease work on the factories e.g. at Kayonza tea estate in Rukungiri.
- Establishing of on-site processing factories to avoid losses.E.g.at Kasaku tea estate in Buikwe.
- Liberalization/Privatization of the tea sector to attract private farmers.eg. At Kasaku tea estate in Buikwe.
- Prompt payment of the farmers so as to encourage the growing more tea.eg. To small holder farmers of Igara and Kayonza.

Contributions of the tea sector to the development of Uganda

Positives:

- The sector provides employment opportunities to farmers who earn income leading to improved standards of living. E.g. at Kasaku tea estate in Buikwe.
- It's a source of government revenue through taxes imposed on farmers and the money got is used to provide social services. e.g. At Kasaku tea estate in Buikwe.
- The sector earns foreign exchange through exportation of tea from and the money got is used to provide social services from Kasaku tea estate in Buikwe
- The tea sector is a source of market for other sectors; such as the fertilizer making industries that produce fertilizers used at Kasaku tea estate in Buikwe.
- It has led to development of infrastructure in form of roads that provide services to people e.g. Ntungamo-Katunguru road partly due to Igara tea estate in Bushenyi.
- The sector has led to a positive international relationship between Uganda and countries where tea is exported hence promoting peace and trade e.g. due to tea exports from Kasaku tea estate in Buikwe.
- The sector promotes education/research/tourism hence equipping people with knowledge e.g. through Kasaku tea estate in Buikwe.
- It has diversified the economy of Uganda hence reducing over reliance on mining and fishing. e.g. Due to tea growing at Kasaku tea estate in Buikwe.
- The tea sector provides raw materials used in beverage industries hence promoting industrial development. e.g. Moniko tea estate at Lugazi for Eagle investment Limited that Manufactures Chai garden tea leaves.
- It has stimulated the growth of urban centres that provide social services to people e.g. Namagunga town due to Kasaku tea estate in Buikwe.

Negatives:

- It has led to profit repatriation by foreigners in the sector hence leading to capital out flow e.g. At Kasaku tea estate in Buikwe.
- It has led to destruction of vegetation/swamp reclamation when opening up land for farming hence leading to soil erosion and loss of bio diversity e.g. At Kasaku tea estate in Buikwe.
- It has led to soil pollution due to continuous use of artificial fertilizers hence leading to decline in land productivity e.g. At Kasaku tea estate in Buikwe.
- It has led to soil exhaustion due to over cultivation hence reducing land productivity e.g. At Kasaku tea estate in Buikwe.
- It has led to competition for land with other land uses hence making land expensive. e.g. Due to Kasaku tea estate in Buikwe.
- It has led to competition for labour with other sectors hence making labour expensive due to Kasaku tea estate in Buikwe.
- Frequent use of fertilizers has resulted in water pollution leading to loss of aquatic animals e.g. Due to Kasaku tea estate in Buikwe.

LIVE STOCK FARMING IN UGANDA

It is a branch of agriculture that involves the rearing of animals such as cows, goats, sheep, pigs, and poultry. Livestock is reared under various methods i.e.

- Traditional pastoralism/Nomadic pastoralism in Kotido, Moroto etc
- Ranching in Nakasongola and Mbarara etc
- Dairy farming Kabale and Wakiso etc
- Zero grazing in Wakiso and Gulu etc
- Piggery in Mukono and Buikwe etc
- Poultry in Wakiso etc

Characteristics of livestock farming in Uganda

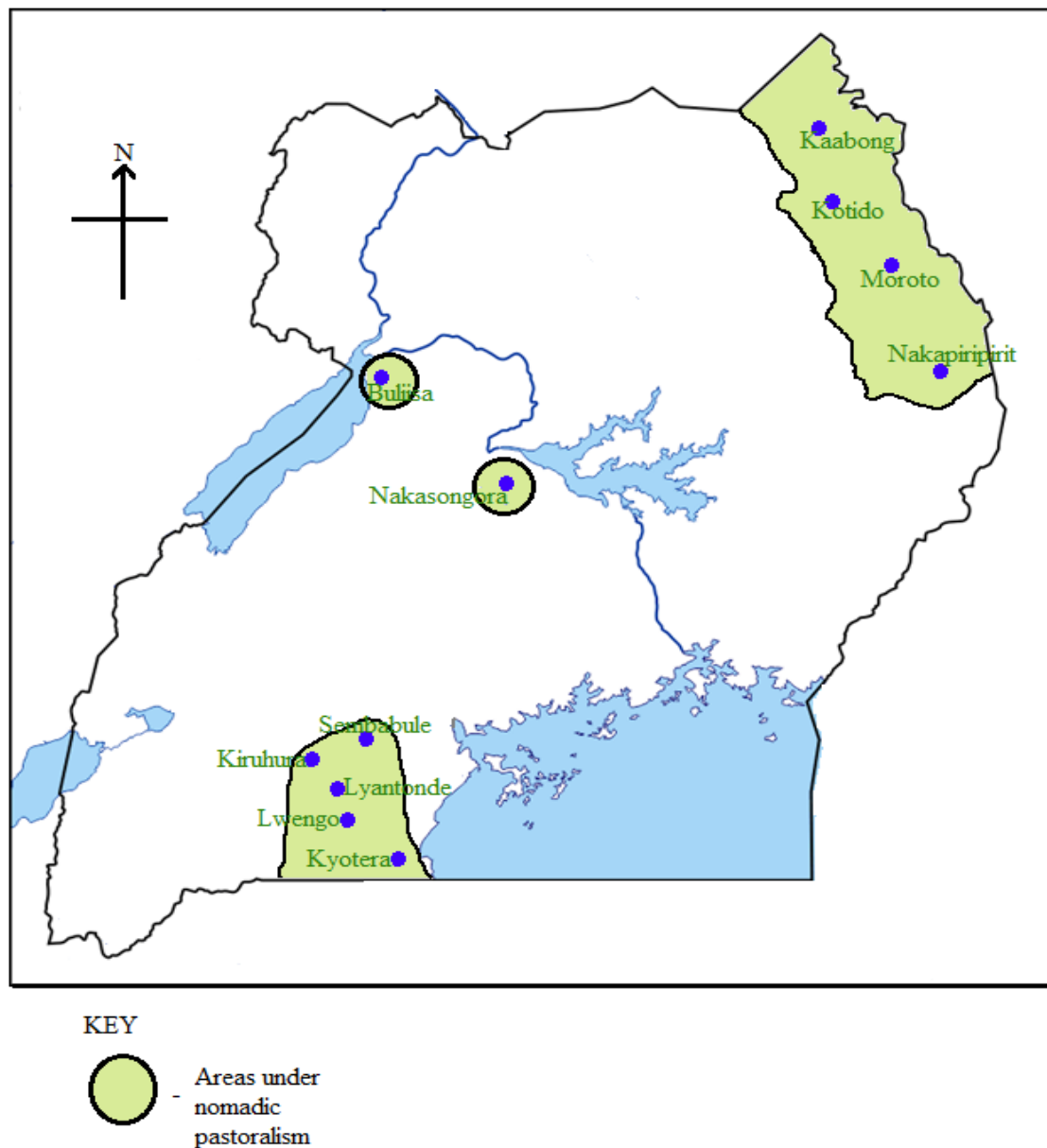
- Number of goats is more than that of cow.
- Partial quarantines are put in place to control disease spread.
- Animal rearing is both in confinements and at free range.
- Smaller holder farms hold biggest number of animals.
- Majority of the cattle are owned by pastoral community grazers.
- Majority of farmers keep indigenous breeds of animals.
- Generally, livestock production has increased.
- Improved breeds in Zero grazing are kept and fed under stalls.
- The sector is largely subsistence.
- Livestock exports are dominated by dairy products and eggs.
- Majority of national poultry flock are used for meat.
- Chicken rearing dominates the poultry sector.
- Rearing of hybrid species is capital intensive.
- etc

NOMADIC PASTORALISM IN UGANDA

It's a form of animal rearing that involves movement of herdsman and their animals from one place to another in search for fresh pasture and water.

It is carried in areas like Kotido, Nakapiripirit, Kaabong, Moroto, Abim, Amudat, Napak, Kiruhura, Sembabule, Kiboga, Nakasongola, Lyantonde etc

A sketch map showing areas under Nomadic pastoralism



This form of animal husbandry is not economically viable but rather environmentally destructive. Pastoralists can recognize which pasture is where and available when and which pasture is good and for what type of animal. Major animals include; goats, cattle and sheep.

Characteristics of nomadic pastoralism

- Land ownership is communal and thus allows communal grazing.
- There are no permanent settlements because of frequent movements from one place to another
- Livestock depends on natural pastures.
- Local breeds of animals are reared.
- Livestock is kept for subsistence purposes for meat, milk, and blood.
- Pastoralists burn grass at the end of the dry season as they prepare for new pastures in the wet season.
- There are frequent raids by neighbouring communities or amongst themselves.
- Normally practiced in areas of low and unreliable rainfall.

- Different types of animals are kept.
- Quantity as opposed to quality is emphasized.
- Movement is determined by availability of water, pasture, and insects like tsetse flies. Etc.

Reasons for persistent nomadic pastoralism in Uganda/conditions promoting nomadic pastoralism.

- The land tenure system i.e. communal land ownership encouraging communal grazing and movement from one place to another in Kotido.
- Low and unreliable rainfall discourages crop growing for animal rearing in search for water and pasture.eg. In Kotido.
- Existence of Infertile soils that discourage crop growing for animal rearing.eg. In Amudat.
- Culture attached to animal rearing as a source of prestige has encouraged rearing of animals in large numbers.eg. In Moroto.
- Insecurity/cattle rustling by neighbouring communities forces pastoralists to move in search for safer areas.eg. In Kaabong.
- Occurrence of pests and diseases like tsetse flies forces pastoralists to move from one place to another.eg. In Kotido.
- Occurrence of drought forces nomadic pastoralists to move in search for fresh pastures and water.eg. In Kiruhura.
- Existence of short savannah grasslands encourages movements as it provides natural pastures.eg. In Kiruhura.
- Existence of vast land/range lands (large non cultivated areas in the arid or semi land zones) allows free movements.eg. In Kotido.
- Conservatism i.e. nomadic pastoralists resist development initiatives and thus choose to continuously carry out over grazing.eg. In Moroto.
- Attacks/threats from wild animals force nomadic pastoralists to move in search for safe places.eg. In Moroto.

Problems faced by nomadic pastoralists in Uganda

- Limited surface water leading to death of animals e.g. in Moroto.
- Innutritious pastures leading to poor cattle breeds e.g. in Kotido.
- Pests and diseases leading to low quality cattle e.g. in Kiruhura
- Movements for long distances leading to death of cattle e.g. in Abim.
- Conflicts over grazing grounds leading to death of pastoralists.eg. in Kotido
- Cattle rustling leading to death of pastoralists e.g. in Kotido and Kaabong.
- Over stocking leading shortage of pasture hence low yields e.g. in Amudat.
- Attacks from wild animals like hyena leading to loss of animals e.g. in Kiruhura
- Prolonged drought leading to shortage of water and death of animals e.g. in Nakasongola.
- Limited market for animal products leading to losses e.g. for milk in Napak
- Infertile soils leading to shortage of food hence starvation and famine e.g. in Moroto.
- Inefficient transport hindering the access to market centres e.g. in Kaabong etc.
- Low quality animals leading to low yields e.g. in Kotido.

Steps being taken to solve the problems faced by nomadic pastoralists in Uganda

- Use of quarantines to reduce the spread of diseases e.g. in Kiruhura.
- Digging of valley dams/boreholes to provide water e.g. in Nakasongola and Kaabong.
- Introduction/planting of drought resistant grasses/use of supplementary feeds e.g. in Sembabule.
- Irrigation to encourage crop growing to produce food e.g. in Kotido.
- Introduction/planting of drought resistant crops like millet and sorghum e.g. in Nakapiripirit.
- Cross breeding to improve animal breeds e.g. in Kiboga.
- Provision of extension services to control pests and diseases e.g. in Kiboga
- Establishment of demonstration farms to teach about better farming practices e.g. in Nakasongola.

- Establishment of milk and meat collecting centres to provide market to pastoralists e.g. in Kiboga
- Establishment of weekly markets to enable pastoralists sell their products e.g. in Moroto.
- Rehabilitation of feeder roads to improve access to market centres e.g. in Nakasongola.
- Disarming pastoralists to reduce cattle rustling e.g. in Kotido
- Sensitisation of the pastoralists through village meetings about dangers of overstocking e.g. in Moroto.
- Promoting agricultural diversification including crop growing to reduce over reliance on animals e.g. in Moroto.
- Formation of co-operatives to provide loans to pastoralists e.g. in Moroto
- Promoting zero grazing with feeds provided to animals eg. In Kiruhura

Importance of nomadic pastoralism in Uganda

Positive:

- Employment opportunities to herdsmen who earn income.eg. To farmers in Kotido.
- Source of food in form of milk, blood and meat e.g. in Kaabong.
- Raw materials in form of hides e.g. From cattle in Kiruhura.
- Source of prestige and wealth e.g. among pastoralists in Moroto.
- Stimulated infrastructure development in form of feeder roads e.g. In Kiruhura.
- Source of government revenue from taxes during market days.eg. In Kotido.
- Source of market for other sectors.eg. among famers in Moroto
- Animals are used for cultural rituals.eg. In Kyotera.
- Growth of urban centres that act as market places.eg. Lokiteleabu in Kotido.
- Animal products like meat, milk are sold hence a source of livelihood e.g. milk from farmers in Kiruhura.
- Animals provide cow dung used as manure.eg. In Kiruhura.

Negative:

- Accelerated soil erosion through over grazing e.g. In Kotido.
- Increased spread of diseases as animals move from place to place. E.g. In Kiruhura.
- Led to insecurity due to cattle rustling.eg. In Kotido.
- Has led to shortage of food due to over reliance animal rearing.eg. In Amudat.
- Led to competition for land with other land loses/land conflicts.eg. In Nakapiripirit.
- It's difficult to provide social services due to lack of permanent settlements.eg in Kotido.
- Has led to bush burning in preparation for wet season hence leading to loss of bio diversity eg. In Moroto

NB: Examples are in form of areas with Nomadic pastoralists.

DAIRY FARMING IN UGANDA

Dairy farming is a form of animal husbandry that involves rearing of animals for production of milk; usually from dairy cows but also from goats and sheep.

The dairy sector in Uganda is regulated by the DDA (Dairy Development Authority). This is a statutory body under the Ministry of Agriculture Animal Husbandry and fisheries created under the Dairy industry act of 1998.

The central and western regions in Uganda; account for almost 50% of the national milk production. However, production is gradually spreading from central and south western to the rest of Uganda. The milk production is as follows;

- South western 25%
- Central 24%
- Eastern 21%
- Mid-western 12%
- Northern 11%
- North eastern 7%

Source: Dairy cattle – Fortune of Africa

The Status of the dairy sector in Uganda is as follows;

- Modern technology/scientific methods are being employed.
- Most dairy farms are managed by private individuals.
- The dairy sector is managed by the Dairy Development Authority (DDA)
- There is increased processing of dairy products for local and external markets to reduce post-harvest losses.
- The sector is not well developed though plans for modernization are under way.
- Milk production has increased due to introduction of improved breeds.
- At least 80% of the milk is traded in the informal sector.
- Indigenous and low yielding types still make up 90% of the national herd.
- Milk production is gradually spreading from the south western and central areas to the rest of the country.
- The central and western regions account for about 50% of the national milk production.

Dairy farms in Uganda include:

- | | |
|---|--|
| • Sameer Dairy farm in Kampala. | • Kyaninga dairy farm in Kabarole. |
| • Jesa Dairy farm in Busunju in Wakiso. | • Gulu country dairy project farm in Gulu. |
| • White Nile dairy in Jinja. | • Beatrice/Batuma dairy farm in Kabale. |
| • GBK dairy in Mbarara. | • Njeru stock farm in Buikwe. |
| • Birunga dairy in Kisoro. | • Bwendero dairy farm in Hoima-Lato. |
| • Teso fresh dairy in Soroti. | • Bunyikivu dairy farm in Mukono. |
| • Maddo dairies in Masaka. | • Wabiswa dairy farm in Namayumba–Wakiso. |
| • Gouda Gold dairy in Kampala. | • Kabanyolo dairy unit in Wakiso. |
| • Paramount dairy in Mbarara. | • Muyomba dairy farm in Wakiso. |
| • Nirma dairy in Entebbe – Wakiso. | • Rwamutonga dairy farm in Hoima. |
| • AGDI dairy farm in Kiruhura. | • Gaza dairy farm in Luwero |
| • Trust dairy farm in Buikwe. | |
| • Pearl dairy farm in Mbarara. | |

There is a high demand for dairy products in urban centres of Uganda, hotels, schools, hospitals and dairy processing industries; and thus milk has the ready market.

The following are the key dairy processing plants with their location, capacities, and product range.

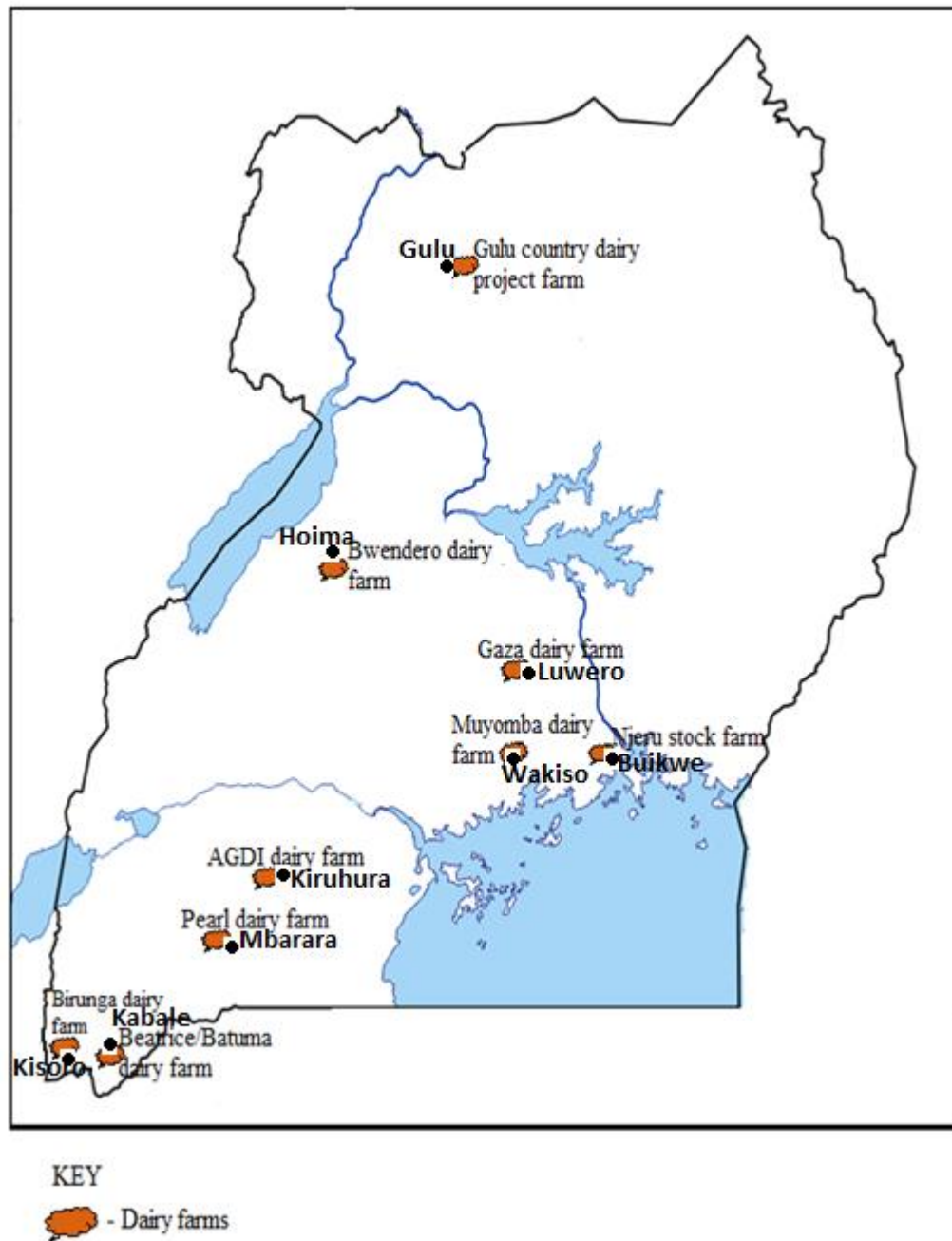
Name	Location	capacity (Litres per day)	Year established	Product produced
Fresh Dairy	Kampala	500,000	1964	Fresh milk, butter, ghee, yoghurt, and milk powder.
GBK Dairy	Mbarara	50,000	1996	UHT Processed milk and yoghurt.
Jesa Dairy farm	Kampala	80,000	1994	Fresh milk, yoghurt.
White Nile dairies	Jinja	6000		Pasteurized milk, yoghurt
Nirma dairies and foods industry ltd	Entebbe (Wakiso)	5000		Cheese, yoghurt.
Toro dairy co–operative society ltd	Fort portal	4000		Pasteurized milk, yoghurt
Maddo dairies	Masaka	2000		Pasteurized milk, yoghurt
Paramount dairies ltd	Kakoba-Mbarara	200		Cheese, yoghurt

Mini processing plants include;

Name	Location	Utilized Capacity	Products
Cream of Uganda	Bweyogerere (Wakiso)	2000	Ice cream
Fido dido ice cream	Kampala	1,600	Ice cream
Mack ice cream	Namugongo (Kampala)	400	Ice cream
Rainbow industries	Mukono	2000	Yoghurt, ice cream
Zinellos ice cream	Kamwokya		Yoghurt, ice cream
Quest dairy products	Kampala	400 per week	Ice cream
Piccadilly	Kampala	180 per week	Ice cream
Snowman's	Kampala	400	Yoghurt, ice cream
Rick ice cream	Muyenga (Kampala)	400	Yoghurt, ice cream

Variety of products are processed and marketed from milk i.e. ice cream, yoghurt, UHT milk, butter, cheese, ghee among others. Therefore the market for milk is available. In the past years, storage was a challenge and a lot of losses were incurred by farmers. However today, milk coolers have been introduced. Uganda has over 600 milk coolers across the country with a total of more than 1 million Litres per day. This has improved the income got from the dairy sector as well as milk production. However the biggest percentage of the milk goes unprocessed i.e. only 20% of the country milk output is processed.

A sketch map showing areas under dairy farming in Uganda



Factor favouring dairy farming in Uganda

- Existence of abundant pastures used to feed animals.e.g. Beatrice dairy farm in Kabale.
- Conducive climatic conditions in form of cool temperatures have promoted dairy farming at Beatrice dairy farm in Kabale.
- Presence of large tracts/vast land has encouraged the establishment of dairy of dairy farms.e.g. Beatrice Dairy farm in Kabale.
- Wide market for milk and milk products in Uganda and abroad has encouraged the dairy farming.e.g. at Beatrice dairy farm in Kabale
- Supportive government policies through rehabilitating of roads have encouraged dairy farming at Beatrice dairy farm in Kabale.
- Adequate capital provided by banks in form of loans has encouraged the establishment of dairy farms.e.g. Beatrice dairy farm in Kabale.
- Improved research in improved cattle breeds has encouraged dairy farming at Beatrice dairy farm in Kabale.
- Improved transport by road has encouraged the transportation milk and milk products from farms to market centres and processing centres like Mbarara-Kabale road for Products from Beatrice dairy farm in Kabale.
- Presence of improved storage facilities through introduction milk coolers has reduced losses.e.g.at Beatrice dairy farm in Kabale.
- Improved technology that involves the use of milking machines eases work.e.g. At Beatrice dairy farm in Kabale.
- Existence of skilled labour that is used at the farms has encouraged dairy farming at Beatrice dairy farm in Kabale.
- Increased supply of power in form of HEP due to rural electrification; has encouraged the establishment of milk coolers and processing plants.e.g. At Gulu country dairy project farm in Gulu.
- Privatization/Liberalisation of the agricultural sector has attracted private farmers with the required capital leading to the establishment of dairy farms like Kyaninga dairy farm in Kabarole.
- Existence of on-site processing factories has reduced post-harvest losses.e.g. At Pearl dairy farm in Biharwe in Mbarara.

Problems faced by the Dairy sector in Uganda

- Pests that attack dairy cattle leading to decline in milk yields.e.g. River flukes at Gulu country dairy project farm in Gulu.
- Diseases that attack dairy cattle leading to low milk output e.g. foot and mouth disease at Kyaninga dairy farm in Kabarole.
- Unfavourable climatic conditions like drought leading to shortage of water .e.g. At Kyaninga dairy farm in Kabarole.
- Limited capital has hindered the establishment of large scale dairy farms hence leading to low milk output e.g. at Pearl dairy farm in Mbarara.
- Limited research in disease control has led to low milk output e.g. at Kyaninga dairy farm in Kabarole.
- Low levels of technology have encouraged continued use of hands hence leading to low milk output at Kyaninga dairy farm in Kabarole.
- Shortage of skilled labour has led to low quality yields.e.g. At Beatrice/Batuma dairy farm in Kabale.
- Corruption in government projects like NAADS has resulted into provision of poor quality dairy cattle leading to low yields in Mbale and Nakasongola.

- Price fluctuation /limited market /competition for market with other countries that have a developed dairy sector like Kenya and Netherland has led to decline in the profits e.g. at Beatrice/Batuma dairy farm in Kabale.
- Fluctuation in power supply has hindered the establishment of milk processing plants leading to post harvest losses.e.g. In Nakasongola and Luwero.
- Insecurity in form of political unrests scares away foreigners hence leading to few dairy farms like at Beatrice/Batuma dairy farm in Kabale.
- Limited government support has hindered rehabilitation of rural roads hence leading to limited access to market centres by Maddo dairies in Masaka.
- Inefficient transport in rural areas has limited the extension of services to dairy farms.eg. Maddo dairies in Masaka.
- Poor storage facilities have led to post harvest losses milk at Maddo dairies in Masaka.
- Land tenure system/competition for land/limited land has hindered expansion of dairy farms hence leading to small scale farms that yield low milk profits.eg. At Njeru stock farm in Jinja.
- Profit repatriation by foreign investors leading to increased capital out flow e.g. at Pearl dairy farm in Mbarara under Mid Land Group of Companies with headquarters at the Island of Guernsey in Britain.

Steps being taken to improve the tea sector in Uganda

- Spraying using pesticides and herbicides to reduce pests and diseases at Njeru stock farm in Jinja.
- Formation of agencies like the Dairy Development Authority to promote milk quality at Beatrice dairy farm in Kabale.
- Educating/sensitisation of farmers about better methods of animal rearing.eg. Beatrice dairy farm in Kabale.
- Promoting security through deploying police and soldiers to promote dairy farming.e.g. At Gulu country dairy project farm in Gulu.
- Improving storage facilities through establishment of milk coolers to reduce post-harvest losses e.g. At Gulu country dairy project farm in Gulu.
- Rehabilitation of roads to encourage transportation of milk to market centres and processing plants.eg. Mbarara-Kampala road for milk products from GBK diary in Mbarara.
- Increasing government support through rehabilitating of roads.eg. Mbarara-Kampala road for milk products from GBK diary in Mbarara.
- Rural electrification to enable establishment of milk processing factories.eg. GBK diary in Mbarara.
- Market research through advertising and launching of policies like Buy Uganda Build Uganda (BUBU) to widen the market for milk at GBK diary in Mbarara.
- Training of labour through modern dairy farms and agricultural shows like Harvest money expo.eg. Labour at Beatrice dairy farm in Kabale.
- Increasing research in disease control to promote the dairy farming at Beatrice dairy farm in Kabale.
- Improving technology through introduction of milking machines to ease work on the farms e.g. At GBK diary in Mbarara.
- Establishing of processing factories to avoid losses.eg. At Beatrice dairy farm in Kabale.
- Liberalization/Privatization of the tea sector to attract private farmers.eg. At Beatrice dairy farm in Kabale.
- Prompt payment of the farmers so as to encourage dairy farming.eg. At Beatrice dairy farm in Kabale.

Contributions of the dairy sector to the development of Uganda

Positives:

- The sector provides employment opportunities to farmers who earn income leading to improved standards of living.g.At Beatrice dairy farm in Kabale.
- It's a source of government revenue through taxes imposed on farmers and the money got is used to provide social services.e.g. at Beatrice dairy farm in Kabale.
- The sector earns foreign exchange through exportation of milk and the money got is used to provide social services from Beatrice dairy farm in Kabale.
- The dairy sector is a source of market for other sectors; such as the pesticide making industries that produce pesticides used at Beatrice dairy farm in Kabale.
- It has led to development of infrastructure in form of roads that produce services to people e.g. due to Beatrice dairy farm in Kabale
- The sector has led to a positive international relationship between Uganda and countries where milk is exported hence promoting peace and trade e.g. due to milk exports Beatrice dairy farm in Kabale.
- The sector promotes education/research/tourism hence equipping people with knowledge e.g. through Beatrice dairy farm in Kabale
- It has diversified the economy of Uganda hence reducing over reliance on mining and fishing.e.g. Due to Beatrice dairy farm in Kabale.
- The sector provides milk as a raw material for ice cream industries hence promoting industrial development.e.g. Milk from Beatrice dairy farm in Kabale.
- It has stimulated the growth of urban centres that provide social services to people e.g. Kabale due to Beatrice dairy farm in Kabale.

Negatives:

- It has led to profit repatriation by foreigners in the sector hence leading to capital out flow e.g. due to Pearl dairy farm in Mbarara.
- It has led to destruction of vegetation/swamp reclamation when establishing farm structures hence leading to soil erosion and loss of bio diversity e.g. Pearl dairy farm in Mbarara.
- It has led to competition for land with other land uses hence making land expensive.e.g. Due to Pearl dairy farm in Mbarara.
- It has led to competition for labour with other sectors hence making labour expensive due to Pearl dairy farm in Mbarara.

RANCHING IN UGANDA

This is a form of animal husbandry that involves rearing of animals majorly for meat/beef production.

The Status of the ranching sector in Uganda is as follows;

- Cattle are the main source of meat.
- Small holder farms represent 94% of the national herd
- The Ankole cattle are the main supplier of meat.
- Uganda's beef industry is under halaal slaughter with independent halaal certifiers as a requirement for market of the Middle East and Arab countries.
- Consumption of beef is increasing due to increasing income.
- Middle East and Arab countries offer a wide market for Uganda's beef because of the special halaal requirements compatible with Uganda's beef industry.
- 80% of the beef cattle population is in the south west.
- Production of beef has been rising in the recent years.
- Majority of the animals sold for commercial purposes are steers (Castrated bulls).
- 90% of the national cattle herd is kept under pastoral and mixed small holder systems.
- Commercial ranching is limited.
- Beef production uses predominantly indigenous breeds.

Ranching schemes in Uganda

- Zziwa ranches in Nakasongola.
- Rainbow ranches in Sembabule and Kiruhura.
- Nshaara ranches in Mbarara.
- Aswa ranchers in Pader.
- Lubbobbo ranchers in Nakasongola.
- Kisombwa ranching scheme in Mubende.
- Kibwejana ranch in Mubende.
- Kisozi ranch in Gomba.
- Namalire mixed farm in Nakasongola.
- Banuti ranchers in Lwengo.

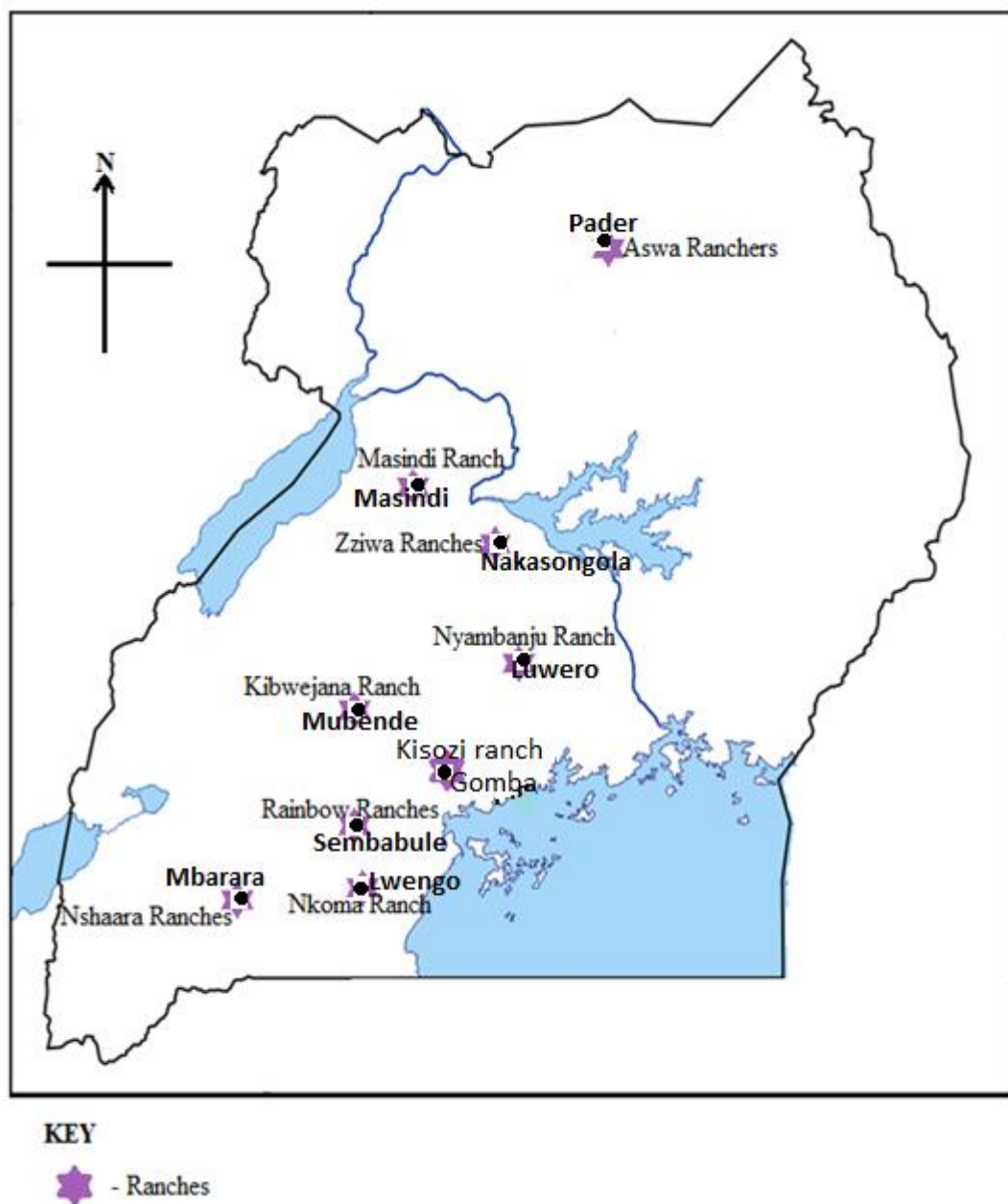
Banuti Ranchers has five ranches .i.e.

- ✓ **Nkoma Ranch**, Lwengo District - Friesian pure breed cattle for dairy
- ✓ **Kabarungi Farm**, Lwengo District- Sahiwal and Angus pure breed cattle, and Sahiwal x Friesian
- ✓ **Nijwara Ranch**, Sembabule District- Boran pure breed cattle, Boran x Sahiwal and South African Boer and local goats
- ✓ **Nyambanju Ranch**, Luwero District- Boran, Sahiwal, Angus for beef
- ✓ **Masindi Ranch**, Masindi District- Ankole, Sahiwal, Boran, Friesian pure breed, all our varieties of crossbreeds of Boran, along with South African Boer and local goats

Source of meat:

1. **Cattle:** Uganda's beef is mainly from cattle and is ranked among the best in the world because of its yellow fat that does not contain cholesterol; mainly because the cows are naturally grazed. Common cattle breeds include; Zebu and the Ankole – Watusi cattle. Exotic breeds include; Boran and Black Angus.
2. **Goats:** Goats are on demand today due to increased demand for goat's meat. Traditional goats are very good in production of lean meat (meat with relatively low fat content). Cross breeding of local goats with imported goats is being done to improve on the gestation period and animal size. Goat rearing areas generally include; Kasese, Bushenyi, Kabale, Kisoro, Rukungiri, Mubende, Luwero, Mukono etc.
3. **Sheep:** Sheep farming for production of meat (mutton) is very low due to many traditional taboos against eating sheep meat. However there is a belief that mutton is mixed with goats' meat and sold together because ordinarily it's not easy to identify mutton.

A Sketch map showing areas with ranches in Uganda



Factor favouring Ranching in Uganda

- Existence of abundant pastures used to feed animals.e.g. Kisozi ranch in Mpigi.
- Presence of large tracts/vast land has encouraged the establishment of ranches.e.g. Kisozi ranch in Gomba.
- Wide market for meat in Uganda and abroad has encouraged ranching .e.g.Kisozi ranch in Mpigi.
- Supportive government policies through rehabilitating of roads have encouraged ranching at Kisozi ranch in Gomba.
- Adequate capital provided by banks in form of loans has encouraged the establishment of ranches.eg. Lubbobbo ranchers in Nakasongola.
- Improved research in improved cattle breeds has encouraged ranching at Lubbobbo ranchers in Nakasongola.
- Improved transport by road has encouraged the transportation animals to town abbatoirs.eg. Kampala –Nakasongola road for Lubbobbo ranchers in Nakasongola.
- Improved technology that involves the carrying out of embryo implant.eg. Banuti ranchers in Lwengo.
- Existence of skilled labour that is used at the farms has encouraged ranching at Lubbobbo ranchers in Nakasongola.
- Increased supply of power in form of HEP due to rural electrification; has encouraged the establishment of ranches.eg. At Kisozi ranch in Gomba.
- Privatization/Liberalisation of the agricultural sector has attracted private farmers with the required capital leading to the establishment of ranches like Lubbobbo ranchers in Nakasongola.
- Improved security has encouraged investment in the ranching sector e.g. at Lubbobbo ranchers in Nakasongola.

Problems faced by the Ranching sector in Uganda

- Pests that attack animal leading to low meat quality.eg. River flukes at Kisozi ranch in Gomba.
- Diseases that attack dairy cattle leading to low meat quality e.g. Lubbobbo ranchers in Nakasongola.
- Unfavourable climatic conditions like drought leading to shortage of water .e.g. Lubbobbo ranchers in Nakasongola.
- Limited capital has led the establishment of a few large scale ranches such as Namalire mixed farm in Nakasongola hence leading low supply of improved animal.
- Limited research in disease control has led to low meat quality.eg. at Namalire mixed farm in Nakasongola
- Low levels of technology have hindered research on ranches hence leading to low meat quality at Namalire mixed farm in Nakasongola.
- Shortage of skilled labour has led to low quality animals.eg. At Kisombwa ranching scheme in Mubende.
- Corruption in government projects has hindered the extension of services at ranches like Kisombwa ranching scheme in Mubende.

- Price fluctuation /limited market /competition for market with other countries that have a developed ranching sector like Argentina has led to decline in the profits e.g. Kisombwa ranching scheme in Mubende.
- Insecurity in form of political unrests scares away foreigners hence leading to few ranches like Aswa ranchers in Pader.
- Limited government support has hindered rehabilitation of rural roads hence leading to limited access to market centres by Aswa ranchers in Pader.
- Inefficient transport in rural areas has limited the extension of services to ranches.eg. Aswa ranchers in Pader.
- Poor storage facilities have led to post harvest losses of meat Aswa ranchers in Pader.
- Land tenure system/competition for land/limited land has hindered expansion of ranches hence leading to small scale farms that yield low meat profits.eg. At Aswa ranchers in Pader.

Steps being taken to improve the Ranching sector in Uganda

- Dipping to reduce pests and diseases at Kisozi ranch in Gomba.
- Formation of agencies like the Uganda Beef Producers Association to promote quality from animals at Aswa ranchers in Pader.
- Educating/sensitisation of farmers about better methods of animal rearing.eg. at Namalire mixed farm in Nakasongola
- Promoting security through deploying police and soldiers to promote ranching.E.g.at Kisozi ranch in Gomba.
- Rehabilitation of roads to encourage transportation of animals to abattoirs.eg. Mbarara-Kampala road for animals from Banuti ranchers in Lwengo.
- Increasing government support through rehabilitating of roads.eg. Mpigi-Gomba road for Kisozi ranch in Gomba.
- Rural electrification to enable establishment of Ranches.eg. Kisozi ranch in Gomba.
- Market research through advertising and launching of policies like Buy Uganda Build Uganda (BUBU) to widen the market for meat for animals from Banuti ranchers in Lwengo.
- Training of labour through modern ranches.eg. Banuti ranchers in Lwengo.
- Increasing research in disease control to promote ranching at Banuti ranchers in Lwengo.
- Improving technology through introduction of machines e.g. At Banuti ranchers in Lwengo.
- Establishing of processing factories to improve the quality of meat for from animals from Banuti ranchers in Lwengo.
- Liberalization/Privatization of the livestock sector to attract private farmers.eg. Banuti ranchers in Lwengo.
- Prompt payment of the farmers so as to encourage ranching.eg. At Banuti ranchers in Lwengo.

Contributions of the Ranching sector to the development of Uganda

Positives:

- The sector provides employment opportunities to farmers who earn income leading to improved standards of living e.g. At Aswa ranchers in Pader.
- It's a source of government revenue through taxes imposed on farmers and the money got is used to provide social services e.g. at Aswa ranchers in Pader.
- The sector earns foreign exchange through exportation of meat and the money got is used to provide social services from Banuti ranchers in Lwengo.
- The sector is a source of market for other sectors; such as the pesticide making industries that produce pesticides used at Banuti ranchers in Lwengo.
- It has led to development of infrastructure in form of roads that provide services to people e.g. due to Banuti ranchers in Lwengo.
- The sector has led to a positive international relationship between Uganda and countries where meat is exported hence promoting peace and trade e.g. due to meat exports from animals at Banuti ranchers in Lwengo.
- The sector promotes education/research/tourism hence equipping people with knowledge e.g. through Banuti ranchers in Lwengo.
- It has diversified the economy of Uganda hence reducing over reliance on mining and fishing e.g. Due to Banuti ranchers in Lwengo.
- The sector provides meat as a raw material for sausage industries such as Fresh cuts in Seguku in Wakiso hence promoting industrial development e.g. Meat from animals at Banuti ranchers in Lwengo.
- It has stimulated the growth of urban centres that provide social services to people e.g. Lwengo due to Banuti ranchers in Lwengo.

Negatives:

- It has led to destruction of vegetation/swamp reclamation when establishing farm structures hence leading to soil erosion and loss of bio diversity e.g. Banuti ranchers in Lwengo.
- It has led to competition for land with other land uses hence making land expensive e.g. Due to Banuti ranchers in Lwengo.
- It has led to competition for labour with other sectors hence making labour expensive due to Banuti ranchers in Lwengo.

POULTRY FARMING IN UGANDA

Poultry farming is the rearing of domesticated birds such as chicken, turkeys, ducks, pigeons, guinea fowls, geese and other birds for the purpose of meat or eggs.

Poultry is one of the major livestock kept in Uganda. Chicken are the most kept poultry. The production systems are mainly two i.e. commercial intensive; where the birds are kept in confinement and mostly found in urban centres with exotic and cross breeds.

The other is free range for local breeds in rural areas. Most of the poultry is kept in the backyard.



CHICKEN REARING IN CONFINEMENT:

Poultry are farmed in large numbers with chicken being the most numerous. More than 50 billion chickens are raised annually as a source of food both for meat and eggs. Chicken raised for eggs are often called “Layers” while those for meat are called “Broilers”

The status of the poultry sector in Uganda is as follows;

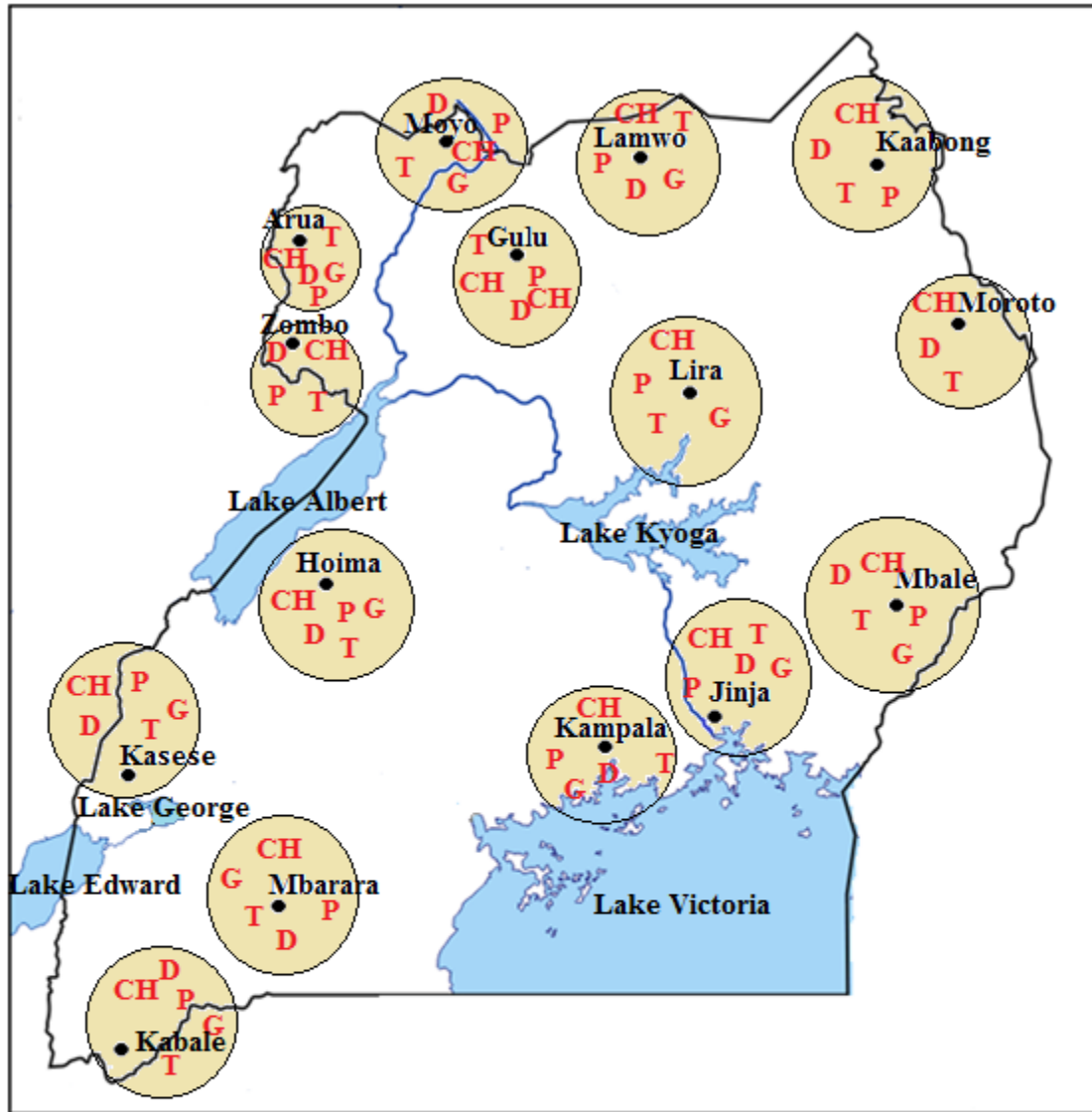
- Chicken are the most numerous birds reared.
- Exotic breeds have been introduced on market i.e. Kuroilers from India.
- Indigenous chickens are predominant in villages.
- Rearing is both at free range and in confinements.
- Poultry population has increased in the recent years.
- Eastern region has the highest number of free range birds followed by the Central.
- Commercial rearing is mainly composed of exotic breeds.
- Central region has most hybrid breeds.
- Rearing of hybrid birds is capital intensive.

- Local birds are kept mainly at free range basis

Birds reared are:

- Chicken in Mukono
- Pigeons in Iganga
- Ducks in Gulu
- Guinea fowls in Buikwe
- Turkeys in Moroto etc

A Sketch map showing birds reared under Poultry Farming in Uganda



KEY

T	-Turkey
CH	- Chicken
D	-Ducks
P	-Pigeons
G	-Guinea Fowl

Factors favouring the development of the poultry sector in Uganda

1. Wide market for eggs in towns in Uganda and abroad has promoted the rearing of chicken in Mbale, Kampala, and Soroti.
2. Supportive government policies through rehabilitating of roads has eased the transportation of turkeys, chicken and ducks from Gulu, Iganga, Mbale to market centres.
3. Adequate capital in form of loans provided by government and through SACCOS used to construct chicken coops e.g. in Mbale, Arua, and Kumi.
4. Improved research in discovery of quick maturing birds e.g. Kroilers reared in Kampala and Buikwe.
5. Improved transport by road has encouraged the transportation of eggs from farms to market centres e.g. eggs from chicken in Mbarara, Ntungamo and Jinja.
6. Presence of improved storage facilities in form of refrigerators where chicken meat is kept e.g. for chicken from Ugachick in Magigye in Wakiso.
7. Improved technology that involves the use of incubators to hatch eggs for chicken by Biyinzika poultry farm in Mukono.
8. Existence of skilled labour used to pick eggs and in treating the sick chicken the farms e.g. at Ugachick in Magigye in Wakiso.
9. Increased supply of power in form of HEP due to rural electrification; has encouraged the establishment of poultry farms e.g. for chicken at Ugachick in Magigye in Wakiso.
10. Privatization/ Liberalisation of the agricultural sector has attracted investors with the required capital leading to the establishment of poultry farms e.g. for chicken at Ugachick in Magigye in Wakiso.

Problems faced by the poultry sector in Uganda

- Diseases affect poultry leading to decline in the death of the bird e.g. Newcastle in turkeys from Soroti.
- Unfavourable climatic conditions like very heavy rainfall break down of the chicken coops. E.g. for chicken from Iganga.
- Natural hazards like floods carry away poultry birds e.g. for chicken and turkeys in Bududa.
- Limited capital has led to rearing of local breeds that provide less eggs e.g. chicken in Mbale
- Limited research in disease control has led to death of poultry birds e.g. Ducks in Gulu.
- Low levels of technology have encouraged free range grazing leading to easy spread of diseases e.g. in Mbale and Mbarara.
- Shortage of skilled labour has led to limited research in the poultry sector e.g. for Ostriches in Moroto.
- Corruption in government projects has led to increased fake medicines on market leading to increased death of poultry birds e.g. chicken in Kabale and Lamwo.
- Price fluctuation /limited market /competition for market for chicken has led to decline in the profit margin for chicken in Kampala.
- Fluctuation in power supply has hindered the establishment of large scale poultry farms leading to continued subsistence poultry farming e.g. for rearing of ducks in Mubende and Kitgum.
- Insecurity due to riots has led to use of tear gas leading to death of chicken in Wakiso.

- Limited government support has hindered rehabilitation of rural roads hence leading to limited market for chicken in Kaabong.
- Inefficient transport in rural areas has limited the extension of services to farmers for chicken in Kotido and Sheema etc.
- Poor storage facilities have led to post harvest losses for eggs from chicken in Luuka.
- Land tenure system/competition for land/limited land has hindered establishment of large scale poultry farms for chicken in Kampala.
- Poultry vices like egg eating leading to losses eg. In chicken in Mukono
- Poor housing structures leading to death of birds eg. Chicken in Buikwe

Steps being taken to improve the poultry sector in Uganda

- Vaccination against diseases to reduce death of ducks, turkeys and chicken in Mbale and Kabarole.
- Formation of village groups to increase access to loans to expand the rearing of chicken in Kaliro.
- Educating/sensitization of farmers about better ways of rearing chicken in Mbale and Busia
- Promoting security through deploying security personnel to promote access to market centres e.g. for chicken from Kasese.
- Improving storage facilities through use of refrigerators to keep chicken meat to avoid losses e.g. for chicken at Ugachick in Magigye in Wakiso.
- Rehabilitation of roads to encourage transportation of chicken products to market centres.eg. Kayunga – Mukono road for eggs from Kayunga.
- Increasing government support through projects like NAADS that provides chicks to farmers dealing in chicken rearing in Mukono.
- Rural electrification to establish to enable establishment of processing facilities to add value on the poultry sector e.g. for chicken at Ugachick in Magigye in Wakiso.
- Market research through advertising to widen the market for the eggs and chicken meat from Ugachick in Magigye in Wakiso.
- Training of labour at to treat poultry birds at poultry farms e.g. for chicken at Ugachick in Magigye in Wakiso.
- Increasing research in disease control at poultry farms e.g. for chicken at Ugachick in Magigye in Wakiso.
- Improving technology through introduction of hatcheries for chicken at Ugachick in Magigye in Wakiso.
- Establishment of on-site processing factories to reduce post-harvest losses for chicken at Ugachick in Magigye in Wakiso.
- Liberalization/Privatization of the agricultural sector to attract foreign harvesters in the poultry sector e.g. for chicken at Ugachick in Magigye in Wakiso.

Contributions of the poultry sector to the development of Uganda

Positives:

- The sector provides employment opportunities to farmers who earn income leading to improved standards of living.e.g. For turkeys from Budaka.
- It's a source of government revenue through taxes imposed on farmers and the money got is used to provide social services e.g. chicken farmers in Mukono.
- The sector earns foreign exchange through exportation of eggs from chicken inKampalao South Sudan and the money got is used to provide social services.
- The sector provides food leading to a healthy labour force e.g. eggs and chicken meat from Bukomansimbi.
- The agricultural sector is a source of market for other sectors like the industrial sector that provides feeds for chicken from Kampala.
- The sector has led to a positive international relationship between Uganda and countries where agricultural produce is exported hence promoting peace and trade e.g. due to exportation of eggs from Kampala to South Sudan.
- The sector promotes education/research/tourism hence equipping people with knowledge e.g. for chicken at Ugachick in Magigye in Wakiso.
- It has diversified the agricultural of hence reducing over reliance on crop growing e.g. due to the rearing of turkeys in Namutumba.
- The sector provides raw materials like egg shells to crafts sector hence providing employment to the artisans e.g. eggs from chicken in Kampala.
- It has stimulated the growth of urban centres that provide social services to people e.g. Magigye town due chicken at Ugachick in in Wakiso.
- Poultry birds that are reared provide droppings that are used as manure e.g. Chicken in Masaka.

Negatives:

- It has led to profit repatriation by foreigners hence leading to capital out flow e.g. by Quantum foods located in Kampala and Mukono is owned by South African dealing in breeding of chicks.
- It has led to destruction of vegetation/swamp reclamation when opening up land for farming hence leading to soil erosion and loss of bio diversity e.g. due to chicken rearing at Ugachick in Magigye in Wakiso
- It has led to competition for land with other land uses hence making land expensive e.g. due chicken rearing at Ugachick in Magigye in Wakiso.
- It has led to competition for labour with other sectors hence making labour expensive due to chicken business in Namutumba.
- Air pollution through poultry dropping for chicken in Mukono

QTN:

1. a) Describe the status of the poultry sector in Uganda
b) Outline the problems faced by the poultry sector in Uganda.