

## **AGRICULTURE IN UGANDA**

### **Current status of agriculture sector in Uganda**

- Agriculture is the largest contributor of GDP contributing approximately 22.9% of the total Gross Domestic Product.
- It employs the largest population, where about 65.6% of working population is engaged in agriculture.
- It is mainly subsistence in nature
- Most large scale plantations are owned by foreigners for example Kakira sugarcane plantation in Jinja.
- Agriculture in Uganda is highly dependent on nature for example soil fertility and rainfall.
- Farmers normally use rudimentary tools for agriculture.
- Some of the main traditional cash crops of Uganda include: Coffee, tea, cotton and tobacco.
- Coffee forms a major source of revenue for the country since it dominates the exports in terms of value
- Coffee is the main foreign exchange earner contributing about 15.8%
- The government through plan for modernization of agriculture (PAM) is encouraging agricultural modernization.

## **FARMING SYSTEMS/AGRICULTURAL SYSTEMS IN UGANDA**

The major agrarian systems in Uganda include;

Intensive banana-coffee system. here, perennial crops like bananas and coffee are the dominant crops grown due to heavy rainfall received and fertile soils for example in Masaka, Mukono,, Buikwe and Wakiso.

Western banana-coffee-cattle systems. Here, perennial crops like bananas and coffee are the dominant crops for example in Mbarara and Bushenyi.

Afro montane system. This is practiced in mountainous areas and the major crops grown are Arabic coffee and bananas due to heavy rainfall received for example in Mbale and Sironoko of mountain Elgon, Bundibugyo and Kasese on mountain Rwenzori

Teso system. Here, mainly cereal crops like millet, sorghum and simsim are grown together with the rearing of Zebu cattle due to moderate rainfall received for example in Kumi, Soroti and Kaberemaido.

Northern cereal cotton-cattle system. Here, the major crops grown include seasonal crops like cotton, millet and sorghum due to moderate rainfall received and soils of medium productivity for example in Iira, Gulu and Kitgum.

West Nile Tobacco cereal system. Here, the major crops grown include tobacco, cassava, millet, maize and sorghum due to moderate rainfall received and soils of medium productivity for example in Arua, Koboko and Nebbi.

Pastoral system. Here the major activity carried out is nomadic pastoralism with very minimal crop cultivation due to dry conditions and dusty soils for example in Kaabong, Kotido and Mororto.

## **A SKETCH MAP OF UGANDA SHOWING AGRARIAN SYSTEMS**

### **Factors influencing agrarian systems in Uganda.**

#### **1. Climate**

Areas with equatorial type of climate receive heavy rainfall of over 1500mm per annum which is well distributed throughout the year leading to the growth of perennial crops like bananas and coffee which leads to intensive banana-coffee system in Mukono, Masaka, Wakiso and Kayunga district.

Areas with tropical climate receive moderate rainfall of between 750mm and 1500mm per annum leading to the growth of seasonal crops like sorghum, millet alongside rearing of cattle leading to the Teso system in Kumi, Soroti and Kaberamaido and northern cereal-cattle system in Gulu, Lira and Kitgum.

Areas with montane climate receive heavy relief rainfall throughout the year which encourages the growth of Arable coffee and bananas leading to afro-montane system in Mbale and Bulambuli on mountain elgon and Bundibugyo on mountain Rwenzori.

Areas with semi-desert climate receive low amount of rainfall of less than 500mm per annum with hot temperatures of about 30oc which encourage nomadic pastoralism leading pastoral system in Kaabong, Kotido and Moroto.

## 2. Soils

Soils of high productivity for example tropical soils encouraged the growth of crops such as coffee and bananas leading to intensive banana-coffee system in Mukono, Wakiso and Masaka and western banana-coffee-cattle system in Mbarara.

Soils of medium productivity have encouraged the growth of seasonal crops like millet, simsim and sorghum leading to Teso system in Soroti, Kumi and kaberamaindo and northern cereal-cotton-cattle system in Gulu, Lira anf Kitgum.

Soils of law productivity have encouraged the growth of dry bush savanna which encourages nomadic pastoralism encouraging pastoral system in Kaabong and Moroto.

## 3. Drainage

Poorly drained soils with impended drainage especially swampy soils have promoted the growth of cereal crops like rice and millet leading to Teso system in Kumi and Soroti.

Well drained soils have encouraged the growth of crops like coffee and bananas leading to intensive banana-coffee system in Masaka and Wakiso.

## 4. Relief

Mountainous areas receive heavy relief rainfall on their windward sides leading to the growth of crops like bananas and Arabic coffee leading to afro- mountain system in Mbale and Manafwa.

Plateau land receives moderate rainfall which has promoted the growth of seasonal crops like millet, sorghum leading to Teso system in Kumi, Soroti and Kaberaido.

Lowland areas in the rift valley region receive low amount rainfall with hot temperatures leading to growth of dry bush savannah which supports nomadic pastorialism leading pastoral system in Kasese and Ntoroko.

## 5. Nature of vegetation.

Areas with tropical rainforests receive heavy rainfall leading to the growth of perennial crops like coffee and bananas leading to intensive banana-coffee system in Mukono, Masaka and Wakiso.

Areas with savanna grassland support the growth of seasonal crops and animal rearing leading to Teso system in Soroti and Kumi.

Areas with dry bush savannah have encouraged pastorism leading to pastoral systems in Kababong, Kotido and Moroto.

6. Land tenure system. Areas where land is communally owned have provided a large grazing land leading to the pastoral system in Kaabong , Kotido, Moroto.
7. The population density. Sparsely populated areas of Uganda have encouraged communal ownership of land encouraging the pastoral system in Kotido, Moroto and Kaabong while in areas with a dense population; land is intensively cultivated on small holdings leading to intensive banana-coffee system in Mukono, Wakiso and Masaka.
8. Availability of market. Remote areas with limited market have encouraged subsistence agriculture leading to pastoral system in Kotido, Moroto and the Teso system in Kumi and Soroti, while areas with large markets have promoted the growth of the coffee and bananas leading to intensive banana-coffee system in Mukono , Wakiso and Masaka.
9. Availability of labour. Areas with adequate labour supply have encouraged the growth of perennial crops like coffee and bananas leading to intensive banana-coffee system in Masaka, Mukono and Wakiso while areas with limited labour supply have encouraged the pastoral system in Kotido, Moroto and Kaabong.
10. Availability of capital. Areas where people have large capital have encouraged investment in the growth of perennial crops like coffee and bananas leading to intensive banana-coffee system in Mukono and Masaka and western banana-coffee-cattle system in Mbarara and Bushenyi while areas with poor people have encouraged subsistence agriculture leading to Teso system in Soroti and Kumi.
11. Government policy. Sometimes the government of Uganda has influenced the agrarian system through dictating particular agricultural practices in a given region for example the colonial government allocated cotton growing to northern Uganda and Teso region leading to northern cereal-cotton-cattle system in Gulu and Lira and coffee and Teso system in Kumi and Soroti while coffee was given to central Uganda leading to intensive banana-coffee system in practiced in Masaka, Mukono, Rakai and Buikwe.
12. Cultural and tradition. Certain groups of farmers practice a particular agricultural system according to their culture for example the pastoral system is practiced in Moroto, Kaabong and Kotido because cattle is traditionally kept by the Karamongs while intensive banana-coffee system is practiced in Masaka, Mukono and Wakiso because bananas and coffee are grown as part of culture of the Baganda.
13. Availability of transport network. Areas which are poorly served with infrastructure have encouraged subsistence agriculture leading to the pastoral system in Moroto, Kaabong and

kotido, while areas with are well served with transport network have encouraged commercial agriculture leading to intensive banana-coffee system in Masaka, Mukono and Wakiso and western banana-coffee system in Masaka, Mukono and Wakiso.

14. Political situation. Political stability encourages commercial agriculture leading to intensive banana-coffee system in mukono, Masakaand Wakiso and western banana-coffee-cattle system in Mbarara and Bushenyi.

### **ARABLE FARMING IN UGANDA**

Arable farming is the growing of crops either for subsistence or commercial purposes.

Subsistence arable farming is divided into shifting cultivation; bush fallowing and small holding farming and commercial arable farming is divided into plantation farming, irrigation farming and market gardening.

### **CASH CROP GROWING IN UGANDA**

Some of the main traditional cash crops of Uganda include; tea, cotton and tobacco.

Coffee forms a major source of revenue for the country since it dominates the exports in terms of value.

### **A SKETCHMAP OF UGANDA SHOWING MAJOR TRADITIONAL CASH CROPS**

**The table showing coffee, tea and tobacco production in 2011 and 2012**

Crop	Coffee	Tea	Tobacco
2011 metric tones	191,371	35,194	28,444
2012 metric tones	186,126	50,195	30,091

## **COFFEE GROWING IN UGANDA**

Current status of coffee growing in Uganda

Uganda majorly produces two kinds of coffee that is; Robusta and Arabic coffee also known as mountain coffee.

Over the years, Robusta coffee has been procured in much more wuantities compared to Arabic coffee. Robusta coffee is grown in lowland areas which receive heavy rainfall of above 1000mm per annum such as Mukono, Buikwe , Masaka, Luwero, Wakiso, Mityana and Mubende.

Arabic coffee is grown in highland areas like mbale, Manafwa, Sironko and Bududa on mountain Elgon and kasese and Bundibugyo on mountain Rwenzori.

The Uganda coffee Development Authority has been formed to manage the production and marketing of coffee.

Many factories have been set up to establish coffee in Uganda

Coffee growing is mainly dominated by private farmers, buyers and processing companies like KAWACOM.

Coffee is mainly produced foe export.

The areas where coffee is grown in Uganda include;

Mukono, Buikwe, Wakiso, Masaka, Mubende, Mityana, Kayunga , Nakaseke and Luweere for Robusta coffee

Mbale, Manafwa, Bududa, Sironko, kasese and Bundibugyo for Arabica coffee.

### **Conditions which have favoured coffee growing in Uganda**

- The presence of deep, fertile well-drained soils have encouraged the growth ot Robusta coffee in Mukono and Wakiso and Arabica coffee in Mbale and Bundibugyo.
- The presence of heavy rainfall of above 1000mmm per annum has encouraged the growth of Robusta coffee in Buikwe and Masaka and Arabica coffee in Budada and kasese.
- The presence of tropical rainforest trees which provided shade to coffee seedlings and protect the coffee plants strong wings for example Robusta coffee in mukono.

- The presence of extensive land to promote extensive growing of Robusta coffee in Mukono, Buikwe, Masaka, Wakiso, and Mubende and Arabica coffee in Mbale and Bududa.
- Availability of skilled and semi-skilled labour in weeding, harvesting and marketing of Robusta coffee in Mukono, Wakiso and Mubende and Arabica coffee in Mbale.
- The relatively stable political atmosphere has encouraged investment in growing of Robusta coffee in Masaka, Wakiso and Mubende and Arabica coffee in Mbale.
- The presence of large market both locally in Japan for Robusta coffee in Buikwe, Masaka, and Mubende and Arabica coffee in Mbale and Bundibugyo.
- Favorable government policy for example in construction of supportive infrastructure like roads and market research for Robusta coffee in Masaka and Wakiso

## **CONTRIBUTION OF COFFEE GROWING IN UGANDA.**

### **Positive**

1. Source of employment opportunities for people who are employed in weeding, harvesting and marketing of Robusta coffee in Masaka and Mubende and Arabica coffee in Mbale.
2. Source of foreign exchange through exportation of coffee for foreign countries for example Robusta coffee from Wakiso and Mubende and Arabica coffee in Mbale exported to Japan.
3. Source of government revenue through taxes charged on coffee farmers and exporters for Robusta coffee in Mukono and Mubende and Arabica coffee in Buganda.
4. It has led to the development of coffee processing industries for example Kyagalanyi and Zigoti coffee factory in Mityana for Robusta coffee from Mityana.
5. It has led to Urbanisation of areas where coffee is processed for example Kyagalanyi and Zigoti in Mityana processing Robusta coffee from Mityana.
6. It has created international relation between Uganda and countries where coffee is exported for example Robusta coffee from Masaka and Mubende and Arabica coffee in Mbale exported to Japan.
7. It has led to diversification of the economy and reduce over dependence on one sector like mining for example Robusta coffee Wakiso and Arabica coffee in Mbale .
8. It is a source of food to the people in form of beverage coffee and dried boiled Robusta coffee in Masaka and Mubende and Arabica coffee in Mbale and Bududa.
9. Coffee is used for cultural purposes among the Baganda for cementing the relationships by sharing Robusta coffee in Mukono, Buikwe, Masaka, Wakiso and Mubende.
10. Coffee growing has helped in soil conservation for example Arabica coffee in Mbale and Bududa secure the soil against soil erosion and adds humus to the soil.
11. It has led to the development of transport infrastructure to support the distribution of coffee to market centres for example Kampala-Masaka road for Robusta coffee in Masaka.

12. It has led to development of power and energy in form of firewood used for domestic and industrial use for example Robusta coffee in Mukono and Arabica coffee in Bududa.

### **Negative contribution**

1. It has led to the industrial pollution from coffee processing industries for example at Zigoti and Mbale for Robusta coffee, Mityana and Mubende.
2. It has led to urban related problems in urban areas which have developed from coffee growing like high crime rates and unemployment for example in Mityana for Robusta coffee and Mbale with Arabica coffee.
3. Coffee growing is highly to the neglect of the growth of food crops like maize and cassava since large tracts of land is occupied by Robusta coffee in Mukono and Wakiso.
4. Coffee growing highly affected natural factors like drought, pests and diseases which attacks the plants leading to losses for example Robusta coffee in Mukono.
5. It has led to soil exhaustion due to monoculture for example Robusta coffee in Mukono and Wakiso and Arabica coffee in Kasese and Bundibugyo.
6. It has led to competition for labour from other sectors like fishing and forestry affecting their growth for example Robusta coffee in Wakiso, and Mubende and Arabica in coffee in Mbale.
7. It has led to distribution of vegetation to establish coffee gardens hence affecting the micro-climate of the areas for example Robusta coffee in Mubende and Arabica coffee in Mbale.

### **Problems facing coffee growing in Uganda**

1. Pests and diseases which affect the growth of coffee plants for example coffee wilt which destroys Robusta coffee in Wakiso and Mubende and Arabica coffee in Bududa.
2. Soil exhaustion due to monoculture has led to low yields of Robusta coffee in Mukono and Buikwe and Arabica coffee in Kasese and Bundibugyo.
3. Unfavourable climatic conditions like prolonged drought which lead to low yields for example Robusta coffee in Mukono, Buikwe, Masaka, Wakiso and Mubende.
4. The rugged relief of mountainous areas discourage mechanization of coffee growing for example Arabica coffee in Mbale, and Bundibugyo.
5. Shortage of land use increased population leading to land fragmentation hence discouraging large scale growing of Robusta coffee in Mukono and Mubende.
6. Price fluctuation on the world market due to competition with foreign countries for example Brazilian coffee outcompetes Robusta coffee in Masaka and Arabica coffee in Bududa.
7. Poorly developed transport network for distribution of coffee to market centres for example Robusta coffee in Wakiso and Mubende and Arabica coffee in Kasese.



8. Inadequate skilled labour to ensure quality coffee production for example Robusta coffee in Wakiso and Arabica coffee in Mbale.
9. Inadequate capital to be invested in buying land and establishing processing plants for Robusta coffee in Mubende and Arabica coffee in Bududa.
10. Insecurity has discouraged investment in growing of Arabica coffeese in Kasese and Bundibugyo.
11. Limited research conducted regarding improved quality production of Arabica coffee in Mbale and Robusta coffee in Masaka.
12. Unfavourable government policy like charging high taxes on coffee exporters and coffee processing industries for Arabica coffee in Mukono and Robusta coffee in Mukono.

### **Measures being taken to improve on coffee growing in Uganda**

1. Conducting research for example regarding improvement of coffee varieties and market for example by UCDA for Robusta coffee in Mukono, Buikwe, Masaka, and Mubende.
2. Liberization of coffee growing which has led to the processing and exporting companies like UGACOF and KAWACOM for Robusta coffee in Mukono and Luweero.
3. Construction of transport network like roads to link coffee growing areas to market centres for example Kampala-Masaka road for Robusta coffee in Masaka.
4. Establishment of institutions to ensure high quality and quantity of coffee produced for example Uganda Coffee Development Authority (UCDA) for Robusta coffee in Masaka.
5. Providing soft loans to farmers through financial institutions for example banks like centenary bank to act as capital for the growth of robusta coffee in Masaka and Mubende and Arabica coffee in Mbale.
6. Improving in security by using the national army UPDF so as to encourage investment in coffee growing for example Robusta coffee in Buikwe and Arabica coffee in Bundibugyo.
7. Establishing coffee processing plants in many parts of Uganda to increase the demand for Robusta coffee in Mukono and Mubende and Arabica coffee in Mbale.
8. Education and training of coffee farmers concerning improvement in quality of coffee to promote the growth of Robusta coffee in Wakiso and Arabica in Mbale.
9. Application of fertilizers and manure to improve soil fertility for Robusta coffee in and Mityana and Arabica coffee in Mbale and Bundibugyo.
10. Spraying with chemicals to control pests and diseases for Robusta coffee in Mukono, Buikwe, Masaka and Arabica in Mbale, Kasese and Bundibugyo.
11. Expanding the size of the market for coffee through regional economic intergration like EAC and COMESA for Robusta coffee in Masaka and Arabica coffee in Mbale.

### **Tea growing**

Tea is the third foreign exchange earner in Uganda

It is mainly grown on plantations like Kasaku tea estate in Buikwe, Finlay's tea estate in Bushenyi and kabarole, Rwenzori and Rukunjiri.

Tobacco growing in Uganda

Tobacco growing is supervised by British American Tobacco (BAT) in areas like Arua, Moyo, Gulu, Kitgum, Hoima, Masindi, Mubende, Rukunjiru, Kisoro and Kabale.

### **Cotton growing in Uganda**

#### **Current status of cotton growing in Uganda**

- Cotton production has been fluctuating over the years despite the fact that the government has put in place many programmes to revive the sector.
- The government has liberalised and privatized growing, buying and selling
- New cotton varieties have been introduced by National Agricultural Research Organization (NARO).
- Uganda cotton Development Organisation (CDO) is responsible for the management of cotton production and marketing.
- Cotton ginneries are being rehabilitated for example Rhino Camp in Arua by Corecot company, Nyakatonzi in Kasese, Iki-Iki in Budaka, Lukhonge in Manafwa etc.

#### **The major cotton growing areas in Uganda include;**

- Katakwi, Amuria, Soroti, Kaberamaido and Kumi (Teso region).
- Budaka, Pallisa and Tororo (Bukedi region)
- Kamuli, Bugiri and Jinja (Busoga region).
- Gulu, Kitgum, and Pader (Lango region)
- Masindi, Hoima, and Kibaale (Bunyoro region).
- Arua, Nebbi, Moyo, Adjumani, and Yumbe (west Nile region)

### **A SKETCH MAP OF UGANDA SHOWING COTTON GROWING AREAS**

## **FACTORS FOR THE LOW LEVEL OF COTTON PRODUCTION IN UGANDA**

1. Completion for land with other lucrative non-traditional crops like Maize flowers, fruits etc for example in Soroti, Lira, Apac and kamuli.
2. Low levels of technology for example use of hand hoes and pangas which are highly inefficient leading to poor quality output for example in Jinja.
3. Constant price fluctuations in both domestic and international markets which discourage cotton farmers in Arua, Kasese and Masindi.
4. The collapse of the co-operative movements which used to provide market for cotton , for example lint marketing board discouraging cotton farmers in Gulu, Lira and Apac.
5. Limited capital to invest in cotton growing among the farmers in Kamuli, Jinja and Kaberamaido.
6. Soil exhaustion due to over cultivation leading to low cotton output for example in Kamuli, jinja and Kaberamaido.
7. Limited research conducted by the cotton farmers in terms of market research, and biological research for example in Kamuli, Jinja and Gulu.
8. Pests and diseases for example cotton weevils which destroy cotton affecting the quantity of cotton for example in Gulu Jinja and Apac.
9. Insecurity in some parts of Uganda, discouraging investment in cotton for example in Lira and Gulu.
10. Climatic changes for example prolonged drought which affects the growth of cotton in Arua, Kamuli and Apac and heavy rainfall in Jinja which affects the harvesting of cotton.
11. Poorly developed transport network has limited the distribution of cotton to market centres for example in Kamuli, Jinja and Apac.
12. Poor storage facilities leading to post harvest losses for example in Jinja , Kamuli and Gulu.
13. Limited power supply which limits cotton processing for example in Lira, Kamuli and Arua.
14. Unfavourable government policy for example closure of ginneries in Lira and Soroti.
15. Corruption and embezzlement of funds meant to develop the cotton growing sub-sector in Jinja, kamuli.

### **Measures being taken to improve cotton production in uganda.**

1. Introduction of government reform programmes for example agricultural rehabilitation projects and establishment of the Cotton Development Organization (CDO) for cotton growing in Jinja, Kamuli and Apac.
2. Conduction research for example by NARO and individual farmers regarding markets for cotton and improvement in quality of output for example in Jinja, Kamuli andK.
3. Formation of cotton export associations like the Uganda cotton ginneries and exporters association for cotton from Jinja Kamuli and Kaberamaido.

4. Privatization and liberalization of cotton growing which has led to the establishment of private cotton processors for cotton in Apac, Lira and Gulu.
5. Establishment and rehabilitation of cotton ginneries Rhino Camp in Arua by corecot company, Nyakatonzi in Kasese, Iki-iki in Budaka, Lukhonge in Manafwa.
6. Ensuring education and awareness programmes for cotton producers regarding improved quality production of cotton for example in kamuli, jija and gulu.
7. Re-introduction of the use of ox-ploths to increase the acreage of cotton farms for example in Soroti and kaberamaido.
8. Provision of extension services through NAADS programmes to teach farmers modern methods of farming for example in Jinja, Kamuli and Gulu.
9. Extntion of power to rural areas through the rural electrification programme to allow processing of cotton for example in Kasese, Lira and Gulu.
10. Construction and rehabilitation of feeder roads to encourage marketing of cotton for example in Lira, Gulu and Apac.
11. Use of scientific methods for example pesticides to fight pests and ensure quality cotton production for example in Lira, Arua and kitgum.
12. Improving security through deploying of solidiers encouraging investment in cotton growing for example in Gulu and Lira.

## **PLANTATION AGRICULTURE IN UGANDA**

Plantation agriculture is the growing of one or two perennial crops like tea, sugarcane, and coffee on a large scale using scientific methods of farming and mainly for commercial purposes.

Examples of plantations in Uganda include Kasaku tea estate in Buikwe, Lugazi sugarcane plantation in Masindi, Finlay's tea estate in Bushenyi, Rwenzori product tea estate in Kabarole and Kaweeri coffee plantation in Mubende.

## **ASKETCH MAP OF UGANDA SHOWING AREAS WHERE PLANATION AGRICULTURE IS PRACTICED**

## **Characteristics of plantation agriculture**

- ❖ Mainly one or two perennial crops like tea, sugarcane and coffee are grown.
- ❖ There is use of modern methods of farming like application of fertilizers and use of tractors.
- ❖ Plantations are both labour intensive and capital intensive.
- ❖ Plantations are self sustaining in that they have their own infrastructures like roads, schools, hospitals etc.
- ❖ They carry out intensive research regarding improvement of crop varieties and markets.
- ❖ They are located in areas where there is large tracts of land since they co-operate on large scale
- ❖ They mainly outgrowers who supply them with the related crop grown on the plantation.

## **Contribution of plantation agriculture in Uganda**

### **Positive contribution**

1. Source of foreign exchange through exportation of agricultural products to foreign countries for example sugar from Kakira sugarcane plantation in Jinja exported to South Sudan.
2. Source of government revenue through taxing people employed on plantations such as Kasaku tea estate in Buikwe and Lugazi sugarcane plantation in Buikwe.
3. Source of employment opportunities to the people in planting, harvesting and processing and therefore earning income for example workers at Kasaku tea estate in Buikwe.
4. Plantation agriculture has led to urbanization with its associated advantages due to increased population of workers for example Lugazi town near Lugazi sugarcane plantation.
5. Plantation agriculture has promoted the development of transport infrastructures to link farmers to market centres for example roads in Kakira sugar plantations.
6. Plantation agriculture has promoted industrialization by providing raw materials used in industries like tea processing industry at Kasaku tea estate.
7. Plantation agriculture has promoted international relationship between Uganda and countries where agricultural products are exported for example South Sudan where sugar from Kakira sugarcane plantation in Jinja is exported.
8. Plantation agriculture has encouraged diversification of the economy which has reduced overdependence on one sector like fishing by generating alternative income from plantations like Kasaku tea estate in Buikwe and Kakira sugarcane plantation in Jinja.
9. Plantation agriculture has boosted research and education/tourism by students pursuing Agricultural related courses for example tea from Kakira sugar cane plantation in Jinja.
10. Plantation agriculture has led to the development of power and energy used in running machines hence promoting industrialization for example electricity from Bagasse from the sugar mills at Kinyara, Lugazi and Kakira sugarcane plantations.

### **Negative contributions**

1. Plantations agriculture has led to the environmental pollution from agro-based industries caused by industrial wastes and fumes for example Kasaku tea factory due to Kasaku tea estate in Buikwe.
2. Plantation agriculture has led to urban related problems like high rates of crime, shortage of accommodation in areas like Kinyara sugarcane plantation in Buikwe.
3. Plantation agriculture has led to destruction of forests to acquire land for large scale agriculture for example Mabira destroyed by Lugazi sugarcane plantation in Buikwe.
4. Plantation agriculture has led to land degradation due to monoculture for sugarcane plantation in Buikwe.
5. Plantation agriculture has led to profit repatriation by foreigners owning farms and plantations in Uganda for example Kakira sugarcane plantation in Jinja owned by Madhvan Group of companies.
6. Plantation agriculture has led to land conflicts with other land use types like wildlife conservation for example Lugazi sugarcane plantation in Buikwe with Mabira forest.
7. Plantation agriculture has led to competition for labour with other sectors of the economy like mining hence affecting their growth for example tea from Kasaku tea estate in Buikwe
8. Plantation agriculture has highly affected by pests and diseases leading to massive losses for example tea from Kasaku tea estate in Buikwe and sugarcane from Kakira sugarcane plantation in Jinja.
9. Plantation agriculture has highly affected by price fluctuation leading to instability in farmers's income for example the growing of tea at Kasaku tea estate in Buikwe.

### **IRRIGATION FARMING IN UGANDA**

Irrigation farming is the artificial application of water to crops in semi-arid and arid areas to supplement to the natural rain water.

Examples of irrigation schemes in Uganda include Doho in Butalaja and Kibimba tilde in Bugiri for rice, Mubuku irrigation scheme for vegetables like onions and cabbages Kakira sugar plantation in Jinja and Lugazi sugarcane plantation in Buikwe for sugarcane, Olwenyi in Lira, Acoro in Kitgum, Atera in Apac and Odina in Soroti..

### **A SKETCH MAP OF UGANDA SHOWING IRRIGATION SCHEMES.**

### **Factors which have favoured irrigation farming in Uganda.**

1. The presence of large quantity of water for irrigation for example from lake Victoria for irrigation at Kakira sugarcane plantation and river Sebwe for Mubuku irrigation scheme.
2. The presence of fertile well-drained soils has encouraged the growth of crops like rice at Doho irrigation scheme in Butaleja and Mubuku irrigation scheme for vegetables.
3. The presence of low amount of rainfall of less than 750mm has necessitated irrigation farming for example at Doho in Butaleja and Kibimba Tilda in Bugiri for rice.
4. The presence of a gently sloping landscape which encourages the construction of irrigation channels and gentle flow of water under gravity for example at Doho and Butaleja.
5. The presence of extensive land to promote extensive growing of crops for example at Doho in Butaleja and Kibimba Tilda in Bugiri for rice, Mubuku irrigation scheme in Kasese for vegetables
6. Availability of adequate capital invested in buying land, cultivation and harvesting at Doho in Butaleja and Kibimba Tilda in Bugiri for rice and Mubuku irrigation scheme.
7. Availability of skilled and semi-skilled labour in weeding, harvesting and constructing of irrigation channels at Doho in Butaleja and Kakira sugar plantation in Jinja.
8. The relatively stable political atmosphere has encouraged investment in irrigation farming at Doho in Butaleja for rice and Kakira sugar plantation in Jinja.
9. The presence of a large market both locally and abroad for agricultural products in Jinja rice from Doho in Butaleja and Kakira sugarcane plantation in Jinja to market centres
10. Intensive research conducted by the Uganda concerning improved quality production and marketing at Doho in Butaleja for rice and Kakira sugar plantation in Jinja and Lugazi sugarcane plantation in Buikwe for sugarcane.

### **MARKET GARDENING**

Market gardening is the intensive growing of crops such as fruits, flowers and vegetables near market centres such as urban areas, industrial centres and mining areas.

Market gardening in Uganda is practiced in areas like Kampala with tomatoes and mangoes, Entebbe with flowers, Kabala with cabbages, apples and oranges, Mbale with tomatoes, oranges and cabbages.

### **A SKETCH MAP OF UGANDA SHOWING AREAS WHERE MARKET GARDENING IS PRACTICED**

## **CHARACTERISTICS OF MARKET GARDENING**

- It is carried out within the vicinity of urban areas, industrial centres or mining areas
- The types of crops grown are perishable crops such as onions, cabbages and tomatoes.
- There is artificial application of scientific methods such as crop rotation, application of fertilizers, herbicides and pesticides.
- The farms are usually small
- The market gardens are labour intensive
- The land is intensively worked throughout the year.
- The yields per unit area are high
- Farms are located near quick means of transport
- Most of the farms are privately owned.
- The crops grown fetch high prices.

### **Problems facing market gardening in Uganda**

1. Soil exhaustion due to intensive cultivation of the land leading to low productivity for example tomatoes and mangoes in kampala,, flowers in Entebbe and cabbages in Mbale
2. Poor storage facilities and limited proper preservation facilities leading to losses for example in tomatoes in Kampala, flowers in Entebbe and coranges in Kabaale.
3. Competition for market from the foreign countries engaged in market gardening like USA and the Netherlands limits demand for flowers in Entebbe, apples and orrages in Mbale.
4. Low levels of technology used which is inefficient and lead to ow yields for tomatoes and mangoes in Kampala, flowers in Entebbe, cabbages , apples and oranges in Kabaale.
5. Limited land for expansion of farms due to dense population in ubarn areas for tomatoes and mangoes in Kampala, flowers in Entebbe, cabbages, apples and oranges in Kabaale.
6. Inadequate s capital to invest in paying labour and purchasing machinery for tomatoes and mangoes in kampala, flowers in Entebbe, cabbages,apples and oranges in Kabaale.
7. Inadequate supply of skilled and semi-skiled labour to carry out weeding, harvesting and research in growing tomatoes and mangoes in kampala anf flowers in Entebbe.
8. Inadequate government support in form of extention services for the growth of tomatoes a nnd mangoes in kampala, flowers in Entebbe, cabbages, apples and orages in Kabaale.
9. Poorly developed transport network leading to high transportation costs and wastage of crops like tomatoes and mangoes in kamapala, flowers in Entebbe.
10. Unreliable weather conditions such as drought affects the growth of crops like tomatoes and mangoes in Kampala, flowers in Entebbe and orages inin Kabaale.
11. Insecurity I peri-urban areas of Uganda discourages investment in growing of criops like tomatoes and mangoes in Kampala, flowers in Entebbe and oranges in Kabaale.
12. Profit repatriation by foreign owned farms leading to low re-investment affects the growth of tomatoes and mangoes in Kampala and flowes in entbbee.



## **LIVESTOCK FARMING IN UGANDA**

- Live stock farming is the rearing of animals such as cattle, goats, pigs, rabbits and chicken for subsistence or commercial purposes.
- The major forms of livestock farming in Uganda include;
- Dairy farming in Kabaale, Mbarara, Kampala, Jinja and Mbale.
- Nomadic pastoralism in Kotido, Kaabong, Nakapiripirit and Moroto
- Zero grazing in Kabaale, Kampala and Mbale
- Rearing in Nakasongola, Masindi, Mbarara and Bushenyi.
- Piggery in Soroti, Gulu, Jinja and Mukono.
- Poultry in Kasese, Masindi, Soroti, Lira, Gulu and Kampala.

### **The table showing livestock numbers 2010-2012 in Uganda**

Livestock	2010	2011	2012
Cattle	12,104,000	12,467,000	12,841,000
Sheep	3,621,000	3,730,000	3,82,000
Goats	13,3208,000	13,604,000	14,012,000
Pigs	3,378,000	3,480,000	3584,000
Poultry	42,766,000	44, 306,000	45,901,000

Source Statistical Abstract 2013 Uganda bureau of statistics (UBOS), pg42

## **A SKETCH MAP OF UGANDA SHOWING MAJOR FORMS OF LIVESTOCK FARMING**

### **Nomadic pastoralism**

Nomadic pastoralism is a form of rearing animals like cattle, sheep and goats which involves constant movement of farmers from place with their herds in search of water and pasture for their animals.

In Uganda, the system is practiced by the Karamongs of Moroto, Kaabong and Kotido, the Bahima of Mbarara, Lyantonda and Kiruhura, the Sasongora of Kasese and some Iteso of Kumi and Ngora.

### **Characteristics of nomadic pastoralism**

- Pastoralists keep on moving from place to place and there is no permanent settlement.
- The system is practiced in areas with sparse population of less than 50 people per square kilometer.
- Pastoralists keep local breeds of cattle like the long-horned cattle and short horned Zebu.
- Pastoralists keep large number of animals for prestige
- Animals feed on natural pasture especially dry bush savannah
- The system is practiced in arid areas and semi-arid areas of Uganda
- There is communal ownership of land
- Livestock is mainly kept for subsistence purpose for example milk, meat and blood.
- Some pastoralists grow some crops especially seasonal crops like millet and sorghum.
- Bush burning during dry season is a common phenomenon.

## **DAIRY FARMING IN UGANDA**

Dairy farming is the rearing of livestock especially cattle for milk production.

Current status of the livestock industry of Uganda.

- The industry is not well developed compared to other sectors. However, the dairy farming is increasing under government policies of plan for modernization of agriculture (PAM)
- Modern technology/scientific methods are being employed in dairy farming activities.
- Most dairy farms are managed by private individual for example Jessa farm in Wakiso.
- The dairy industry is managed by dairy Development Authority (DDA)
- There is increased processing of dairy products for local and external markets to reduce on post-harvest losses and value addition.
- The major dairy farms in Uganda include; Jesa Farm and Muyomba Dairy farm in Wakiso, Beatrice farm in Farm in Kabaale farm in Mbale, Rubona farm in Kabarole.

## **A SKETCH MAP OF UGANDA SHOWING DAIRY FARMS**

### **Factors for the development of the dairy industry in Uganda**

- Cool climatic conditions which favour rearing of dairy animals for example in the highland areas of Kabaale for Beatrice Farm and around Lake Victoria for Jesa farm in Wakiso.
- Availability of rich natural and exotic pasture for feeding dairy cattle for example at Beatrice Farm in Wakiso and Jesa farm in Wakiso.
- The presence of gently sloping relief conducive for the movement of dairy animals and construction of supportive infrastructures like roads for example at Jesa farm in Wakiso.
- The presence of extensive land for large scale rearing of dairy animals for example on Jesa Dairy farm in Wakiso and Beatrice farm in Kabaale.
- Abundant and constant water supply from natural and man-made source for feeding animals for example at Jesa farm in Wakiso.
- The presence of improved exotic breeds which are high yielding for example Friesian cows at Jesa farm in Wakiso.
- Availability of improved technology of rearing dairy animals like use of milking machines and milk preservation for J8esa farm in Wakiso and Beatrice farm in Kabaale.
- Establishment of various milk collecting and processing centres for quick preservation to reduce wastage of milk for Jesa farm in Wakiso.
- Improved storage and preservation methods for example the use of refrigerated trucks to avoid losses resulting from perishability of milk for example at Jesa farm in Wakiso and Bearice in Kabaale.
- Availability of a large domestic and foreign market for milk and milk products encouraging investment in dairy farming at Jesa farm in Wakiso.
- Availability of adequate capital in form loans/credit facilities from financial institutions like banks which is invested in paying labour and purchasing the necessary equipment at JESA farm in Wakiso.
- Improved transport network in form roads which is used in the delivery of milk and milk product to processing centres and markets for Kampla Mityana road for Jesa in Wakiso.
- Intensive research conducted in dairy farming concerning the breeding of dairy animals as well as Market research which is conducted by DDA and farms like Jesa Farm in Wakiso District.
- The relative political stability which has encouraged large scale investment in the dairy industry for example at JESA farm in Wakiso.
- Supportive government policy of liberalizing the dairy industry and putting in place the Dairy Development Authority to support dairy farming by farm like at Jesa farm in Wakiso and Bearice in Kabaale.
- Availability of skilled labour in rearing dairy animals for example herdsmen and transporters of dairy products for at JESA farm in Wakiso.

- Availability of abundant power supply especially HEP for processing of milk and dairy products from at JESA farm in Wakiso.

### **Ranching in Uganda**

Ranching is the keeping of animals mainly cattle on large scale for beef or milk production and for commercial purposes using modern animal husbandry techniques.

The most important ranching schemes in Uganda include Aswa cattle ranch in Gulu, Maruzi ranch in Apac, Singo ranch in Kiboga, Nyabushozi in Mbarara, Kisozi ranch in Gomba, Kajara cattle in Mbarara, Lubbobbo and Ekitangaala ranch Nakasongola.

### **Zero grazing**

This is a method of farming in which few cattle are fed in a small area on food supplements like banana peelings, cotton seeds, cotton cakes etc. it is mainly practiced in densely populated areas like Mpigi, Jinja, Kisoro, Kabale, Kampala and Mbale.

### **Contribution of livestock farming in Uganda**

#### **Positive contribution**

1. Source of food in form of meat and milk rich in proteins hence reducing malnutrition disease for example pastoralisms in Kaabong rearing goats in Nakasongola and piggery in Soroti
2. Source of foreign exchange through exportation of livestock products to foreign countries like Kenya, South Sudan for cattle in Kaabong goats in Nakasongola.
3. Source of government revenue through taxing people employed to livestock rearing for example pastoralism in Kaabong, rearing goats in Nakasongola and piggery in Soroti.
4. Source of employment opportunities where people are employed as herd's men and researchers for example by rearing cattle in Kaabong and Mbarara, goats in Nakasongola.
5. Livestock farming has promoted industrialization by providing raw materials used in industries for example milk hides and skins from cattle in Kaabong, goats in Nakasongola and sheep in Moroto.
6. Livestock has led to urbanization with its associated advantages for example ranching in Mbarara and Nakasongola and poultry farming in Wakiso
7. Livestock has the development of transport infrastructure to link farms to market centres for example rearing of cattle in Mbarara and Nakasongola.
8. It has promoted international relationship between Uganda and countries where livestock products are exported like South Sudan for cattle from Mbarara and Nakasongola
9. It has encouraged diversification of the economy which has reduced over dependence on one sector like fishing by generating alternative income from cattle in Mbarara.
10. Livestock farming has boosted research and education/tourism by students' pursuing Agricultural related courses for example cattle rearing in Mbarara and Kaabong.

11. It has led to the development of power and energy used for domestic purposes for example biogas from cattle in Mbarara and Kiruhura.
12. Source of manure in form of decomposed cow dung and chicken dropping hence favouring arable farming for example cattle in Mbarara, poultry in Wakiso and pigs in Soroti.
13. Animals are used for ploughing hence encouraging large scale arable agriculture for example cattle in Soroti, Kumi and Palisa.
14. Animals are used to fulfil cultural obligations such as dowry during marriage and sacrifices by offering cattle in Mbarara, Kaabong and Nakasongola.
15. Livestock provides building materials in form of hides and skins and cow dung hence providing shelter to the pastoralists for example cattle in Mbarara and Kaabong.
16. Livestock farming encourages effective use of the rangelands which would not be productive for other land use type for example pastoralism in Kaabong and Moroto.

### **Negative contributions**

1. Livestock farming has led to industrial pollution from industrial wastes and fumes for example milk processing and abattoirs for cattle in Mbarara and Nakasongola.
2. It has led to urban related problems like high rates of crime, shortage of accommodation in areas towns that emerge as a result of rearing cattle in Mbarara and Nakasongola.
3. It has led to destruction of forests to acquire land for large scale livestock farming and due to overgrazing of cattle in Kaabong and Nakasongola and sheep in Moroto.
4. It has led to land degradation due to over grazing which has accelerated soil erosion in areas with animals like cattle in Kaabong and Nakasongola and Sheep in Moroto.
5. It has led to profit repatriation by foreigners owning farms and livestock processing industries for ranching in Nakasongola.
6. It has led to land conflicts with other land users types like wildlife conservation and cattle rearing in Kaabong and Kiruhura.
7. It has led to withdrawal of labour from other sectors of the economy like mining leading to their underdevelopment for example pastoralism in Kaabong, ranching in Nakasongola.
8. It is highly affected by pests and diseases leading to massive losses of cattle in Kaabong, goats in Nakasongola.
9. It is highly affected price fluctuation leading to instability in farmer's income for example cattle in Kaabong, goats in Nakasongola, pigs in Soroti and sheep in Moroto.
10. It is highly affected by pests and diseases leading to massive losses of cattle in Kaabong, Goats in Nakasongola, and pigs in Soroti and sheep in Moroto.
11. It has led to spread of diseases to humans for examples foot and mouth disease for cattle in Kiruhura and swine fever for pigs in Soroti.
12. Animals destroy crops leading to losses in arable agriculture for cattle in Kaabong, goats in Nakasongola, pigs in Soroti and Sheep in Moroto.

### **Problems facing the livestock industry in Uganda.**

- Pests and diseases which affects the quality of animals for example foot and mouth disease for cattle in Nakasongola and Kiruhura and swine fever for pigs in Soroti.
- Climatic changes for example prolonged drought leads to loss of livestock hence affecting nomadic pastoralism in Kotido and Moroto and goats in Soroti.
- Poor pasture due to harsh climatic conditions affects the growth of livestock for example nomadic pastoralism in Kotido and Kiruhura, ranching in Mbarara.
- Shortage of water for animals affects the growth of livestock like cattle in Kaabong, goats in Nakasongola, pigs in Soroti and sheep in Moroto.
- Livestock theft and cattle rustling has led to losses in rearing cattle in Kaabong.
- Inadequate capital to be invested in purchasing farm machinery and paying labour for rearing cattle in Kaabong, goats in Nakasongola, pigs in Soroti and sheep in Moroto.
- Inadequate market for livestock products because of competition from other countries discourages rearing of cattle in Kaabong, goats in Nakasongola and pigs in Soroti.
- Poorly developed transport network hinders distribution of livestock products to market centres cattle in Kaabong, goats in Nakasongola, pigs in Soroti.
- Limited skilled labour in form of veterinary services has led to poor quality production of livestock for example cattle in Kaabong and Nakasongola, pigs in Soroti.
- Limited government support in form of heavy taxation of activities related to livestock for example the rearing of cattle in Kaabong, goats in Nakasongola, pigs in Soroti.
- Limited research conducted regarding markets and improvement in the quality of livestock products discourages rearing of cattle in Kaabong, goats in Nakasongola and pigs in Soroti.
- Poor breeds of animals which produce low quality and quantity products from cattle in Kaabong, goats in Nakasongola, pigs in Soroti and sheep in Moroto.
- The presence of dangerous wild animals which attack and kill animals and farmers affecting the rearing of cattle in Kaabong, goats in Nakasongola Soroti and sheep in Moroto.
- Limited land due to competition with other land use types like wildlife conservation discourages large scale rearing of cattle in Kaabong and Kiruhura.
- Conservation of the animal rearing communities whereby farmers are not willing to change from their traditional way of rearing animals like cattle in Kaabong and Kiruhura.

### **Steps being taken to modernize livestock industry in Uganda.**

1. Constructing water sources to provide water for livestock for example boreholes valley dams, water reservoirs for cattle in Kaabong and Nakasongola and sheep in Moroto.
2. Controlling the carrying capacity and planting fodder crops to improve on pasture for cattle in Kaabong, goats in Nakasongola and pigs in Soroti and sheep in Moroto.
3. Cross breeding is being practiced to improve on the quality of animals for example cattle in Mbarara and Nakasongola, and pigs in Mukono.
4. Livestock research is being practiced regarding improvement in Markets and quality of livestock for cattle in Mbarara and Nakasongola, pigs in Soroti and sheep in Moroto.

5. Setting up demonstration farms to teach farmers modern methods of livestock farming for cattle in Kaabong , goats in Nakasongola, pigs in Soroti and sheep in Moroto.
6. Spraying, dipping and putting quarantine to control pests and diseases for cattle in Kaabong, goats in Nakasongola, pigs in Soroti and Sheep in Moroto.
7. Market for livestock products like milk and meat is being expanded through regional intergration like EAC for cattle in Mbarara and Naksongola, pigs in Soroti.
8. Promoting peace and stability by the national army UPDF and encourage investment in rearing of cattle in Kaabong, goats in Naksasongola, pigs in Soroti and Sheep in Moroto.
9. Developing transport infrastructure to facilitate the distribution of livestock products like milk and meat to market centres for cattle in Kaabong, goats in Nakasongola, pigs in Soroti.
10. Liberalizing the livestock industry to increase private investment in rearing animals like cattle in Kaabong, goats in Nakasongola, pigs in Soroti and Sheep in Moroto.
11. Training of manpower to power in the livestock industry for example veterinary doctors to support rearing of cattle in Mbarara and Nakasongola, pigs in Soroti and sheep in Moroto.
12. Setting up of industries processing livestock products like GBK dairies in Mbarara and JESA dairy in Busunju for milk and abattoirs for cattle in Mbarara and Nakasongola.
13. Intensive advertising of livestock products to increase on the size of the market for products from cattle in Mbarara and Naksongola, pigs in Soroti and sheep in Moroti.
14. Providing capital to the farmers through microfinance institutions and banks in form of loans for promoting the rearing of cattle in and Nakasongola, pigs in Soroti.
15. \encouraging foreign investors to investors to invest in the livestock industry since they have the necessary capital and technology for rearing of cattle in Nakasongola.
16. Restocking of areas that lost livestock during periods of insecurity for example cattle in Amolatar, Palisa, Kaberamaido, Luweero and Nakasongola.
17. Setting up support institutions to ensure improvements in livestock rearing for example Uganda Dairy Development Authority (UDDA), for cattle in Mbarara and Kiruhura.
18. Encouraging land reform policies to encourages farmers to own land and improve on livestock farming like cattle in Nakasongola, pigs in in Soroti and poultry in Wakiso.
19. Subsidizing farm inputs so as to encourage farmers acquire them to improve livestock farming for example tractors, milking machines and medicines for cattle in Mbarara.
20. Improving on storage and preservation methods for milk and meat to reduce on wastages of products from cattle in Mbarara and Nakasongola, pigs in Soroti.

## **GENERAL PROBLEMS FACING AGRICULTURE IN UGANDA**

### **Physical factors**

1. Pests and diseases which lead to death of animals and affects the growth of crops for example Nagana and foot and mouth disease for cattle in Nakasongola and Karuhura, swine fever for pigs in Soroti, Jinja and Mukono, cotton wilt for cotton in Mubende, cassava mosaic for cassava in Mukono.

2. Climatic changes for example prolonged drought and heavy rainfall lead to loss of livestock and affects the growth of crops hence affecting nomadic pastoralism in Kotido and Moro, goats in Soroti and Nakasongola, Cotton in Lira, coffee in Mubende.
3. Poorly drained soils like highly leached soils of Buganda limits the growth of coffee in Mukono and Kayunga, thin sandy soils discourage the growth of sorghum in Napak, Kaabong and Moroto.
4. The rugged relief in the mountainous discourages mechanization of agriculture limiting the growth of bananas and coffee in Mbale, vegetables in Kaabale and coffee Bundibugyo.
5. Poor pasture due to harsh climatic conditions affects the growth of livestock for example nomadic pastoralism in Kotido and Kiruhura, ranching in Mbarara.
6. Shortage of water for animals affects the growth of livestock like cattle in Kaabong, goats in Nakasongola, pigs in Soroti and sheep in Moroto.
7. Natural hazards like landslides affect the growth of coffee and bananas in Bududa and Bulabuli, hailstorms affects the growth of bananas in Mbarara leading to losses.
8. Poor quality varieties of crops like coffee in Masaka, Banana in Mubende and breeds of animals which produce low quality and quantity products from cattle in Kaabong, goats in Nakasongola, pigs in Soroti and sheep in Moroto.

#### **Other effect**

9. Insecurity and livestock theft in form of cattle rustling has led to losses in rearing cattle in Kaabong, goats in Nakasongola, pigs in Soroti and sheep in Moroto.
10. Inadequate capital to be invested in purchasing farm machinery and paying labour for growing of crops like coffee in Masaka, bananas in Mubende, and rearing cattle in Kaabong goats in Nakasongola, pigs in Soroti and sheep in Moroto.
11. Inadequate market for agricultural products because of competition from other agricultural countries discourages growing of bananas in Mubende, coffee in Masaka and rearing of cattle in Kaabong, goats in Nakasongola, pigs in Soroti and sheep in Moroto.
12. Poorly developed transport network to facilitate distribution of agricultural products hence discouraging large scale growing of Masaka, bananas in Mubende rearing of cattle in Kaabong, Goats in Nakasongola, pigs in Soroti and sheep in Moroto.
13. Limited skilled labour in form of veterinary services has led to poor quality production of agricultural products like Masaka bananas, in Mubende and cattle in Kaabong, goats in Nakasongola, pigs in Soroti and sheep in Moroto.
14. Limited government support in form of heavy taxation of activities related to livestock for example in the growing of Masaka bananas in Mubende and rearing of cattle in Kaabong, goats in Nakasongola, pigs in Soroti and sheep in Moroto.
15. Limited research conducted regarding improvement in the quality of agricultural products discourages improvement in growing of Bananas in Mubende and rearing of cattle in Kaabong , goats in Nakasongola, pigs in Soroti and sheep in Moroto.



## **AGRICULTURAL PRODUCTIVITY AND MODERNISATION IN UGANDA**

Agricultural productivity refers to the quality of agricultural output per unit area.

Agricultural modernization refers to the transformation of agriculture from traditional subsistence agriculture to modern commercial agriculture.

Modernization in agriculture in Uganda is carried out by the ministry of Agriculture, Animal Industry and Fisheries (MAAIF) under the plan for Modernization of agriculture (PMA)

### **Methods or ways of increasing agricultural productivity/modernizing agriculture in Uganda.**

1. Providing water through irrigation to crops like sugarcane at Kakira sugarcane plantation and constructing water sources to provide water for livestock for example boreholes valley dams, water reservoirs for cattle in Kaabong, goats in Nakasongola, pigs in Soroti and sheep in Moroto.
2. Controlling the carrying capacity of livestock and planting fodder crops to improve on pasture for cattle in Kaabong, goats in Nakasongoola, and pigs in Soroti and sheep in Moroto.
3. Provision of Genetically modified seeds like maize in Iganga and coffee in Wakiso and cross breeding of livestock is being practiced to prove on the quality of agricultural output for example cattle in Kaabong, goats in Nakasongoola, pigs in Soroti and sheep in Moroto.
4. Conduction intensive research in agriculture regarding improvement in quality of crps and livestock and technological advancement for coffee in Mubende, tea Kasaku tea estate cattle in Kaabong, goats in Nakasongoola, pigs in Soroti and sheep in Moroto.
5. Setting up demonstration firms to teach farmers modern methods of agriculture for coffee in Mubende, cotton in Lira and cattle in Kaabong, goats in Nakasongoola, pigs in Soroti and sheep in Moroto.
6. Spraying, dipping and putting quarantine to control pests and diseases for tomatoes in Kaablae, cabbages in Wakiso and cattle in Kaabong, goats in Nakasongoola, and pigs in Soroti and sheep in Moroto.
7. Expanding the size of the market for agricultural products like milk and meat through regional intergration like EAC for maize in Kiryandongo, coffee in Mubende and cattle in Kaabong, goats in Nakasongoola, pigs in Soroti and sheep in Moroto.
8. Promoting peace and stabilkity by the national army UPDF and encourage investment in Agriculture for example growing of maize in Iganga, coffee in Mbende and rearing of cattle in Kaabong, goats in Nakasongoola, pigs in Soroti and sheep in Moroto
9. Developing transport instrustructures to facilitate the distribution opf agricultural products like milk and meat to market centres promoting the rearing of cattle in Kaabong, goats in Nakasongoola, pigs in Soroti and sheep in Moroto.

10. Liberalizing the livestock industry to increase private investment in growing of maize in Iganga, Coffee and rearing animals like cattle in Kaabong, goats in Nakasongoola, pigs in Soroti and sheep in Moroto.
11. Training of manpower to work in the agriculture for example as extension workers in growing of maize in Iganga and support rearing of cattle in Kaabong, goats in Nakasongoola, pigs in Soroti and sheep in Moroto.
12. Setting up of industries processing agricultural products like Kakira sugarcane processing industry for sugarcane at Kakira, GBK and JESA dairy for milk and abattoirs for cattle in Kaabong, goats in Nakasongoola, pigs in Soroti and sheep in Moroto.
13. Intensive advertising of agricultural products to increase on the size of the market for products for example rice from Kibimba Tilda in Bugiri cattle in Kaabong, goats in Nakasongoola, pigs in Soroti and sheep in Moroto.
14. Providing capital to the farmers through microfinance institutions and banks in form of loans for promoting the growing of maize in Iganga, coffee rearing of cattle in Kaabong, goats in Nakasongoola, and pigs in Soroti and sheep in Moroto.
15. Encouraging foreign investors to invest in the livestock industry since they have the necessary capital and technology for example Madhvan for Kakira sugarcane plantation, Mehta for Lugazi sugarcane plantation.

## REVISION QUESTIONS

1. **Assess the contribution of agriculture to the development of Uganda.**
  - Give the current status of the agriculture sector in Uganda, identify the agricultural systems in Uganda and draw a sketch map of Uganda showing agrarian system.
  - Explain the positive and negative contribution of agriculture, giving an example of agrarian system/type of animal/crop and place name on every point.
2. **Examine the influencing of agrarian system in Uganda**
  - Give the current status of the agriculture sector in Uganda, identify the agricultural systems in Uganda and draw a sketch map of Uganda showing agrarian system.
  - Explain the factors influencing agrarian system, giving an example of agrarian system and place names on every point.
3. **To what extent has climate influenced agrarian systems in Uganda**
  - Give the current status of the agriculture sector in Uganda, identify the agricultural systems in Uganda and draw a sketch map of Uganda showing agrarian system.
  - Explain the role of climate on the agrarian systems in Uganda e.g. equatorial climate, tropical climate, semi-desert climate and Montone climate) and give other factors giving an example of agrarian system and place name
4. **Explain the factors limiting coffee growing in Uganda.**
  - Give the current status of coffee growing in Uganda, identify the types of coffee grown in Uganda and draw a sketch map of Uganda to show types of coffee grown and place name.

-Explain the problems facing coffee growing, giving an example of type and coffee and where it is grown on every point.

**b) What measures are being taken to improve on coffee growing in Uganda**

-Explain the measures in present tense giving any of type of coffee and where it is grown.

**5. Assess the contribution of plantation agriculture to the development of Uganda**

- Define plantation agriculture, give the areas where is practiced in Uganda and draw a sketch map of Uganda showing areas where plantation agriculture is practiced.

- Explain the positive and negative contribution of plantation agriculture giving an example of name of plantation, crop and district on every point.

**6. Examine the factors which have favoured irrigation farming in Uganda**

- Define irrigation farming, identify irrigation schemes in Uganda and draw a sketch map of Uganda showing irrigation schemes in uganda.
- Explain the factors favouring irrigation farming, giving an example of the irrigation scheme on very point.

**7. a) Describe the characteristics of market gardening**

- ❖ Define market gardening, identify areas where market gardening is practiced in form of crop and place names and draw sketch map of Uganda showing areas where market gardening is practiced.
- ❖ Outline the characteristics in a complete sentence form.

**b) Explain the factors limiting the development of market gardening in Uganda.**

- Explain the factor giving an example of a crop and place name on every point.

**8. Examine the problems facing livestock farming in Uganda.**

- define livestock farming, identify the forms of livestock farming in Uganda and draw a sketch map of Uganda showing forms of livestock farming.

Explain the problems giving an example of form of livestock farming/type of livestock and place name on every point.