AGRICULTURE IN UGANDA

Agriculture is the growing of crops and the rearing of live stock. About 90% of Uganda's population directly depends on agriculture for its livelihood i.e. some people are employed in agricultural processing industries or factories and therefore they are said to be depending on agriculture indirectly while the farmers are direct beneficiaries of agriculture.

THE STATUS OF AGRICULTURE IN UGANDA.

Agriculture is poorly developed and the sector is mainly for subsistence purpose. Commercial agriculture is dominated by foreigners in Uganda. The level of productivity is still very low. The sector is characterized by low levels of technology e.g. use of the hand hoe in Kayunga, Masaka, Mukono and Wakiso. It employs over 90% of the total population contributing 40% with the Gross Domestic Product.

IMPORTANCE OF AGRICULTURE

Agriculture is positively and negatively important in the economic development of Uganda as follows,

Positives

- It is a source of government revenue e.g. kasaku tea plantation and Kakira sugar plantation pay a lot of taxes to government which is used to develop the country.

- Agricultural exports e.g. coffee exportation by Kyagalanyi coffee factory earns the country foreign exchange. This is besides other crops exported like tea, fruits and vanilla.

- Agriculture has led to the growth of Agro – based industries which process agricultural raw materials e.g. Kasaku tea factory processes tea leaves from Kasaku tea plantation, Kakira sugar factory processes sugar from the sugar canes of Kakira sugar cane plantation. This promotes capital accumulation which can be used in other sectors of the economy. Similarly, industries which produce agricultural tools and equipments such as the ***chilling ten tool Camp*** have come up in Jinja to produce hoes and other agricultural equipments.

- Agriculture provides employment to the people in the country e.g. the agricultural engineers, accountants and semi – skilled labour who are employed by plantations like Kasaku Tea Estate and Kakira Sugar Estate including Victoria Flowers in Entebbe.

- Agriculture has led to infrastructural development in form of roads, schools e.g. Lugazi sugar cane plantation developed Lugazi Secondary School and several roads such as Namataba, Nagoja, roads with in Lugazi area.

- Agriculture also promotes economic diversification i.e. this is where more than one activity is done in the country e.g. agricultural exports from Kasaku Tea Estate supplements fish from Masese industries and other sectors resulting in to increased foreign exchange.

- Agricultural institutions have promoted the power and energy sector e.g. Kakira and Scoul sugar cane plantation produce 18maga watts and 6

megawatts of electricity respectively which is connected to the National grid supply units.

- ❖ Agriculture has improved on the international relationship between Uganda and other countries which import agricultural products e.g. China, Germany, and U.S.A from Uganda. This results in to more foreign exchange for the development of other sectors of the economy.

- ❖ Agriculture has promoted research and tourism e.g. field work studies are conducted on large plantations such as Kasaku Tea Estate, Kakonde Tea Estate in Mityana and Lugazi sugarcane plantation.

However, agriculture also has negative importance in the economic development in the following ways.

- Profit repartriation by foreign firms which are involved in agricultural practices in Uganda e.g. Madhvani family who invested in Kakira plantation and Mehta who invested in Lugazi and Kasaku Tea Estates.

- Agricultural goods such as coffee and Tea are highly affected by price fluctuations on the world market and this has led to great loss to the farmers in Masaka and Mukono who tend to invest too much in the agricultural products such as coffee.

- Agricultural practices such as monoculture whereby one type of crop in grown on the same piece of land for many years e.g. coffee in Masaka and banana in Mbarara has led to lose of soil fertility leading to soil decline or detorialation.

- Agriculture has led to encroachment on marginal lands such as wetlands and forests which affect environment in terms of reduced rainfall and

increased temperature e.g. Butamiira forest in Jinja was cut down to plant sugar cane by Kakira sugar cane plantation and also Bugala forest on Bugala island in L. Victoria were cut down to plant Oil Palm trees.

- Over grazing and bush burning by the pastoralists such as the Bahima and Basongora in Mbarara and the Karamojongs in North Eastern has led to reduced pastures and hence leading to desertification.

Question;

- ✓ **Assess the importance of the agricultural sector in Uganda.**

AGRARIAN SYSTEMS / FARMING SYSTEMS

An agrarian system refers to a set of farming activities involved in by people in a specific region and this is determined by different factors and therefore the following are some of the major farming system in Uganda.

- The banana coffee system or Buganda system found around the shores of L. Victoria, parts of Luwero, Bushenyi and also Kabarole.
- Millet Cotton agrarian systems which floristries in Gulu, Apac, Kasese, Soroti, Tororo, Lira and Kitgum is sometimes known as the **Nordan** system.
- Montane agrarian system which flourishes in Kigezi and Elgon areas where a variety of crops such as wheat, vegetables, maize, onions and Arabic coffee are grown.
- Pastoral system found in areas of Kaabong, Kotido, Moroto, Mbarara, Rakai and Sembabule where they only value cattle rearing.

- The west Nile system which does well in Nebbi, Arua, Gulu and Moyo. It emphasizes the growing of tobacco and G. nuts.
- The northern system which is dominated by millet growing and simsim. This is common in Acholi and Lango.

A SKETCH MAP OF UGANDA SHOWING THE DISTRIBUTION OF AGRARIAN SYSTEMS.

FACTORS WHICH INFLUENCE THE DISTRIBUTION OF AGRARIAN OR FARMING SYSTEMS.

These factors are both physical and human as follows;

Climate

This is the average weather condition of a place studied and recorded over a long period of time and it influences the agrarian system in a variety of ways as follows.

1. The banana coffee system has been influenced to flourish in equatorial areas which receive enough and reliable rainfall of about 1000mm per annum. Such areas require reliable and well distributed rainfall through out the year. High temperatures between 25^{o}C - 30^{o}C with low evaporation rates to facilitate the growth of these crops and this is dominant in Masaka, Mbarara and Mukono.

2. The millet and cotton agrarian system flourishes in areas of tropical climate e.g. in Gulu, Apac and Kasese. This is because such areas have conducive climate characteristics for the growth of such crops. The temperatures are relatively high between 27^{o}C – 30^{o}C, enough and fairly reliable rainfall between 700mm – 1000mm per annum.

3. Areas with alternating wet and dry seasons such as Gulu, Soroti, Mbale and Lira have facilitated the growth of millet cotton system which constitutes cereals such as cotton, maize, millet and sorghum.

4. Areas of modified equatorial climate with low temperatures and enough reliable rainfall of over 1000mm per annum have facilitated the montane system e.g. in areas of Kabale and Mt. Elgon where Arabic coffee is grown.

5. Semi desert climatic regions with high temperature, low and unreliable rainfall of less than 600mm per annum in semi arid areas like Kaabong, Moroto and Kotido limits the growth of crop cultivation in the area.

6. Tropical climate has influenced the development of cattle rearing and pastoral system in Karamoja, Teso and Ankole. Such areas receive unreliable rainfall which doesn't encourage crop farming.

Edaphic factors

The soil characteristics influence and affect the distribution of the agrarian systems e.g. the fertile volcanic soils of Bugisu and Kigezi have influenced coffee growing in these areas. The sandy soils of Northern Uganda especially in Gulu, Lira and Soroti are good for the growth of cotton and tobacco and hence millet cotton system.

Drainage

This is very important in influencing the development of the agriculture systems e.g. sugarcane and bananas do well in areas with well drained soils and on the other hand, crops like rice and yams do well in water logged soils.

Level of technology.

E.g. the high level of technology has facilitated extensive growth of sugarcane at Lugazi, Kakira and Kinyara. Rice at Kibimba and Doho due to irrigation and machines like tractors.

Communal land ownership system. Like in karamoja has facilitated the pastoral system development in the areas. Such practices require free and abundant land to enable grazing of cattle.

Cultural factors have facilitated the development of the different agrarian system e.g. the langi, Acholi and Baganda have a culture of cultivating specific crops i.e. the Baganda prefer Robustar coffee, bananas, potatoes hence the banana coffee system on the other side of Langi and Acholi prefer millet,

sorghum and tobacco hence cotton millet system. The karamojongs are predominantly cattle keepers and therefore promoting a pastoral system.

The availability of the savannah grass land has favoured livestock keeping by pastoralists and in areas around L. Kyoga. The dominance in livestock rearing in Ankole is due to enough pasture in the region.

Transport and communication network has influenced the agrarian systems in a number of ways. Areas such as Buganda, Mbale and Kabale have improved transport network which have encouraged the growing of crops like coffee, bananas and sugarcane.

Spread of pests and diseases affect the development of agrarian systems i.e. pests like aphids, locusts and caterpillars destroy crops. Tsetse flies discourage cattle rearing in Hoima and Masindi. Foot and mouth disease, east coast fever and other diseases also affect cattle rearing but in areas with low incidences of pests and diseases such as Kabala, Buganda and Mbale have influenced the development of the different farming activities.

Government policies have also facilitated the development of different agrarian systems e.g. the colonial government promoted the growth of coffee in Buganda, Mbale and hence the Banana coffee system. Cotton and tobacco were promoted to grow in the Northern region mainly and hence the millet cotton system. Besides, the government has established schemes like Doho, Kibimba for rice growing in the country.

Basic education to farmers to change to modern systems of farming e.g. Normadic pastoralists have been advised to change to ranching and hence ranches like in Nyabushozi and Ankole Masaka ranch, Lyantonde and Mbarara. Crop cultivators are advised to practice good farming practices like crop rotation

and use of good breeds, adopt none – traditional crops such as flowers or floriculture at Entebbe by Rosebud Victoria flowers and pearl flowers in Ntungamo which have led to the development of other agrarian systems.

Altitude also facilitates the development of different agrarian systems e.g tea and Arabic coffee, flourish in areas of higher altitude with well drained soil e.g in mbale. On the other hand, robuster coffee is facilitated to grow in areas of low altitude like around the shores of l. Victoria.

Sample question

- ✓ Discuss the factors for the distribution of the different farming systems in Uganda.
- ✓ To what extent has climate influenced the different agrarian system in Uganda
- ✓ Account for the development of different farming belts in Uganda

PROBLEMS FACING THE AGRICULTURE SECTOR IN UGANDA

Uganda is a low developing country as a result it faces a number of problems in its farming sector in some of the following ways:

- ✓ Fluctuating agriculture crop prices especially coffee and vanilla which has affected farmers in mukono ,masaka and rukungiri as well as exporting companies like kyagalanyi coffee company
- ✓ Pests and diseases for example coffee wilt diseases in Masaka, cassava mosaic in Soroti, rinder pest and nagana in Hoima and Sembabule, cotton

ball weevil in lira and kamuli have affected crops and animals leading to losses to farmers.

- ✓ Weather vagaries such as drought in Kitgum, Mbarara and Kotido, hail storms and flooding in Masaka, Kyoga, Soroti, have led to death of cattle and crop failure and hence leading to poverty among the farmers.
- ✓ Low yielding variety of crops e.g. maize in Soroti, bananas in Mpigi, the ankole long horned cattle and the cows of karamoja which yield poor beef and low quality of milk.
- ✓ Steep and ragged relief in Kigezi, Bundibujo and Mbale limit mechanized agriculture and transportation of the agricultural produce.
- ✓ Soils of low productivity in Karamoja, parts of Soroti and porous soils of Torero, Fort portal and Kigezi region limit the agriculture productivity.
- ✓ Political instabilities in areas of Lira, Gulu, Apac and west Nile have affected the growth and harvest of cotton, tobacco, millet and sorghum. Kony's rebels have also stolen a lot of cattle in Pader, Moyo and Kitgum districts.
- ✓ Lack of proper storage facilities which have let to high losses to the farmers e.g. a lot of milk in Mbarara, Kotido and Soroti is lost due to lack of modern storage facilities and bananas in Mbale and Mbarara have also been lost due to poor storage.
- ✓ Cattle rustling is also a problem facing the itesots and Karamojongs i.e. cattle raids from the pokots of Kenya have led to loss of both cattle and lives in Kotido and Moroto districts.

- ✓ Low technology used in farming such as the hand hoes, has also affected agricultural sector especially in Soroti, Masaka and Lira because it has led to low yields which can't support a big market.
- ✓ Poor accessibility to reach agricultural areas like Kiboga, Nebbi and Mbale have affected the agricultural sector i.e. such areas have fertile soils but have poor transport network to access the urban centers for market.
- ✓ Corruption and mismanagement of funds meant to develop the agriculture sector is another problem facing agriculture e.g. money meant for construction of valley dams and purchase of drugs was embezzled between 2001 and 2004.
- ✓ Poor farming methods which have to low agricultural productivity which is out put per unit area in some the following ways.
    - Monoculture practices such as growth of coffee and bananas in masaka, rakai, sironko and mbale, millet and cotton in soroti and katakwi year after year depletes soil nutrients making them infertile and hence resulting in to reduced productivity.
    - In the highland areas of Mbale, Kapchorua, Kisoro and Kabale, the practice of up and down slope cultivation encourages soil erosion and development of gullies which result in to poor soil and reduced agriculture productivity.
    - In areas of high population pressure such as Kisoro, Kabale, Manafa, Nebbi and Mbale, over cultivation of the land with no fallow periods of soils to regain fertility has resulted in to low agricultural productivity and this has led to scarcity of crops like maize, banana and coffee which used to be abundant in such areas.

- Overstocking has resulted in to overgrazing and consequently scarcity of pasture to support livestock in Karuhura, Kaabong, Moroto, Kotido and Bulisa districts. This has resulted in to low milk and beef yields from such areas hence low agricultural productivity.

Questions.

i. To what extent are poor farming methods responsible for the low levels of agricultural productivity in Uganda?

ii. Examine the problems facing the agriculture sector in Uganda.

STEPS BEING TAKEN TO IMPROVE ON THE AGRICULTURE SECTOR IN UGANDA.

a. The ministry of agriculture has embarked on increased agriculture education through seminars and development of demonstration farms such as Aswa ranch in Kitgum and Ankole – Masaka ranch.

b. The ministry of defense is improving security in the areas of Teso, Katakwi through the "arrow boys" and the local defense and that is why in the North, the LRA rebels have driven out to Southern Sudan.

c. Mechanization of Agriculture for great output is done at Kasaku, Kakonde tea estates, Lugazi and Kakira sugar estates.

d. The ministry of agriculture has embarked on agriculture diversification through the introduction of non-traditional crops like Vanilla which is now grown in Mukono and Kayunga and flowers in Entebbe by Victoria flowers which has helped to control price fluctuations and reduced competition on the world market.

e. Group farming is being encouraged e.g. through the "send a cow" program. High quality livestock are given to local groups emphasizing the increase in quality and quantity in Kayunga, Mukono, Wakiso, Mbarara and Kiruhura.

f. The ministry of agriculture is providing incentives to farmers e.g. seedlings of upland rice in Kakira in Wakiso, cassava planting stems in Teso and Tea seedlings in Lugazi.

g. The ministry of agriculture has introduced fish farming in Kajansi, Palisa, Rukungiri and Entebbe where Tilapia and cat fish are reared as a way of diversifying the economy.

h. The ministry of agriculture has intensified research through National Agriculture Research Organization (NARO) and National Agriculture Advisory Services (NAADS) so as to improve on both crop varieties as well as marketing in Mukono and Mbarara.

i. Improved storage facilities e.g. milk diaries; factories such as Alpha in Mbarara, Jessa and GBK have been adopted. Milk coding containers have also been imported and used in all major towns like Kampala, Mbarara and Masaka to preserve the milk.

j. Soil erosion and fertility control measures have been adopted in Kigezi, Mbale and Bundibujo where terracing, mulching and crop rotation in done i.e. both artificial and organic manure like cow dung are applied to reinstate soil fertility in Masaka, Mbale and Mbarara.

k. Spraying and use of pesticides to control pests like ticks, is done in Ankole, Karamoja and Teso i.e. the cattle are dipped in special treated water to kill the pests.

l. Liberalization of the economy and attraction of foreign investors has been done to encourage large scale production and commercial agriculture. Foreign investors like Madhivani group, Mehta and Rosebud Company dealing in flowers at Entebbe.

Questions.

a. **Examine the problems faced by the agriculture sector in Uganda.**

b. **Outline the measures that can be taken to improve on the agriculture sector in Uganda.**

PLANTATION AGRICULTURE.

Plantation agriculture refers to the planting of crops on a large piece of land through the use of scientific methods of farming and mechanization for increased output. In Uganda, plantation agriculture is practiced in Lugazi, Kinyara, Kakira where sugar canes are grown, rice plantations have been developed in several schemes like Kibimba rice scheme in Iganga and Doho rice scheme in Tororo, Tea is grown at Kasaku and Kakonde and besides this, wheat and maize are also grown on large plantations in Ssebei, Masindi and some parts of Kabale.

CHARACTERISTICS OF PLANTATION AGRICULTURE.

- ✓ The farmers normally concentrate on the production of a single crop e.g. on the Lugazi sugarcane plantation, it is only sugarcanes grown.
- ✓ Farms are usually large, extending to hundreds and sometimes thousands of hectares e.g. rice plantations at Doho is done on a 2,500h of land.

- ✓ The crops produced are normally for export or commercial purposes e.g. most of the Tea in Kasaku and Kakonde is exported to the world markets.
- ✓ A large number of workers are employed e.g. the Lugazi sugar works employs over 7,000 workers.
- ✓ A lot of capital is required to prepare land, pay workers, buy machines, transport facilities and set up infrastructure.
- ✓ Most of the plantations in Uganda are state owned or privately owned by foreigners e.g. the Kakira and Lugazi sugar cane plantations belong to Mehta and Madhivani who are Asians.
- ✓ Plantations are scientifically managed and this involves the use of machines, agricultural chemicals and fertilizers e.g. research is carried out to improve seeds in Lugazi sugarcane plantation.
- ✓ Most plantations supplement their output by buying from the out growers or local producers' e.g. local farmers in Kawoolo and Mukono supplement the Lugazi sugar cane plantation.
- ✓ Plantation management provides housing, food, medical facilities and some times education e.g. the Lugazi sugar cane plantation operates a secondary school in the area.

A SKETCH MAP OF UGANDA SHOWING AREAS WITH PLANTATION AGRICULTURE.

Advantages.

- Plantation farms provide employment opportunities to both semi – skilled and educated labourers e.g. Lugazi sugar works employing over 7,000 people while Kasaku Tea estate employs over 3,000 and these earn income to improve on their standards of living.
- A lot of revenue goes to the government through taxation of the income, export duties on the produce e.g. at Kakira and Kasaku which revenue can be used to develop other sectors of the economy.
- Some of the plantations' produce such as sugar from Kakira, tea from Kasaku and wheat are exported to earn the country foreign exchange.
- Such foreign exchange is re – invested in the plantations and other sectors e.g. the Madhivani and Mehta group of companies have now invested in industrialization.
- Plantation authorities like Kasaku and Kakira usually gain in research which results in to breading of improved varieties and hence high production. It results in to introduction of other none – traditional crops e.g. the Madhivani group of companies through research have introduced floriculture which is the growing of flowers for commercial purpose.
- Plantation organization such as Kakira, Lugazi and Kinyara for sugar cane encourages the development of out growers' scheme. Therefore, farmers adjust to the plantations and grow the same crop as that of the plantations because they are assured of the market.
- Plantations enable the peasant farmers to copy the improved techniques of agriculture and also avails them with credit and ready market for their

produce e.g. Kasaku tea estate trains out growers in Lugazi better techniques of harvesting tea leaves.

- Plantations have led to the development of industries e.g. sugar industries at Kakira and Lugazi and the tea factory at Kasaku. The industry processes agricultural goods thereby making them more long lasting, provide employment opportunities and industrial goods to the communities.
- Plantation agriculture provides social services to their workers e.g. at Lugazi and Kakira sugar cane plantations, health, education and entertainment facilities are provided which improve people's standards of living.
- Plantation agriculture encourages economic independence as the state facilitates herself with food stuffs which serves as the country's valuable foreign exchange which would otherwise be used to import such food stuffs e.g. Uganda imports less rice and sugar because they are produced locally at Doho and Kibimba projects while sugar is obtained from Kakira, Lugazi and Kinyara.
- Several infrastructure such as roads, railways were constructed to benefit the tea and sugar plantations at Lugazi, Kakira, and Kinyara, Scoul maintenance in Lugazi Kawoolo road and built Lugazi Secondary School and Kasaku built Kasaku Primary School.
- Some plantations engaged in the generation of both thermal and Hydro Electric Power (HEP) to be used in the processing of their produce but the surplus power is sold to the National grid for National consumption e.g. Kakira generates 18 maga watts while Lugazi generates 6 mega watts of

power from the husks which is both used in the firm and sold to the national grid.

Disadvantages

- Plantation farms usually concentrate on the plantation of a single crop on the same piece of land year after year e.g. at Kakira, Kinyara and Lugazi where sugar canes are grown and this has led to a decline in the quality of soil.
- Plantations such as Kakira sugar cane plantations results in to the movement of people from the rural areas to plantations e.g. the workers at Kasaku Tea estate are from Palisa, Moyo and Arua. This results in to family neglect and farming is left to the people in the rural areas, which in turn cause a reduction in food supply.
- Plantation agriculture leads to displacement of people because it requires large land areas e.g. Olweny rice project has displaced 600 families so far.
- Plantation agriculture leads to profit repatriation because most of them are owned by foreigners e.g. Kakira and Lugazi sugar cane plantations belong to Asians.
- Plantation agriculture such as Kakira sugar canes are vulnerable to unfavourable natural hazards e.g. prolonged drought, hail storms and the outbreak of diseases and pests e.g. in 2005, Victoria flowers at Entebbe were destroyed by heavy rains.
- It takes a lot of capital to start a plantation farm, i.e. this is required to buy machinery, marketing facilities, pay labour, purchase seeds and chemicals and yet the price of agricultural pruducts is always subjected to

sudden fluctuations on the world market which results in to great lose on the side of the farmers.

- Plantation agriculture leads to encroachment on the forests and wetlands e.g. parts of Butamira and Mabira forests were cleared to provide land for sugarcane plantation at Lugazi and Kakira, Bugala Island forests on L. Victoria were cut down for palm oil plantation eventually affecting the climatic conditions.

Question.

- ✓ **Asses the role of plantation agriculture in the economic development of Uganda.**

LIVESTOCK FARMING

The livestock industry is mainly made up of ranching and nomadic pastoralism. Cattle are the major animals that are kept including others like sheep, goats, rabbits, pigs and poultry.

Note: Livestock is reared under various methods namely; traditional pastoralism, modern ranching, diary farming and zero grazing.

Diary farming is practiced in central Uganda especially in Mityana, Wakiso, Mpigi and Mbarara where exotic breeds of cattle like the Frisians are kept and cross breeds.

Some of the major ranches include; Maruzi, Jesa, Singo, Ankole – Masaka, Nyabushozi, Kisozi, Gomba, Afoyo in West Nile, Buruli e.t.c. these ranches are characterized by cross breeding, large sums of capital, use of padlocking among others. Nevertheless, in Nomadic pastoralism, large numbers of cattle are kept like in Karamoja and Mbarara consisting of mainly Zebu and the long horned cattle of Ankole.

Zero grazing is practiced in mountainous areas of Mbale, Bududa, along the slope of Mt. Elgon, Kasese along the slopes of Mt. Rwenzori where a few heads of cattle are also kept on a small scale by several individuals.

THE STATUS OF LIVESTOCK INDUSTRY IN UGANDA.

The industry is poorly developed because of diseases like rinder pests and nagana which affect the cattle.

Livestock products like milk and beef are not widely processed or packed. Livestock industry is dominated by ignorant people like the pastoralists who aim at home consumption rather than commercial purpose.

Local and low quality livestock such as the Zebu and Ankole – Masaka long horned cattle dominate the livestock sector.

A SKETCH MAP OF UGANDA SHOWING AREAS OF LIVESTOCK KEEPING.

Factors that have led to the low levels of development of the livestock industry or problems facing the livestock industry in Uganda.

- Harsh climate of low and unreliable rainfall, high temperatures in Kotido, Moroto, and Masindi have limited the development of pastures and water for animals which has in the long run caused poor quality livestock due to poor feeding.
- Poor and low quality local cattle breeds such as the Ankole long horned cattle in Mbarara and Zebu in Kotido dominate the livestock industry. This naturally yields less milk and poor quality beef.
- Lack of market for livestock products like milk and beef e.g. in Karamoja and Soroti since they are remote areas, have limited the development of the livestock industry e.g. $^1/_2$ liter of milk is 600/= in Kampala while in Kotido, a liter of milk is sold at 400/= but there is no market for all the milk produced.
- Political instability since 1980 has affected the livestock sector in Luwero, Kitgum and many other areas whereby during war, cattle were stolen by soldiers and local village thieves.
- Inadequate veterinary services due to limited extension staff to advice farmers on modern farming methods and as a result, it has led to death of livestock in Kotido, Moroto, and Nakasongola.
- Competition with imported dairy and beef products from Denmark, Netherlands, France and Britain has limited the development of livestock industry e.g. the Jesa products, GBK and Alpha dairy products.

- Lack of enough capital to purchase drugs, exotic breeds, milking machines and diary processing technology especially in areas of Kiruhura, Nakasongola and Mbarara has led to low levels of development of the livestock industry.
- Communal ownership of land and overgrazing in Mbarara, Kotido and Moroto has led to easy spread of diseases like foot and mouth diseases and brucellosis which has killed a number of people.
- Mountainous areas like the slopes of Mt. Rwenzori and Mt. Elgon discourage animal keeping e.g. the Fresians and jersey cattle find difficulty in staying along such high slopes.
- Shortage of land in some areas like Kabale and Kampala has affected livestock farming in Uganda.
- Cultural beliefs have led to pastoralists like the Bahima, Itesots and the Karamojongs to keep large numbers of cattle for subsistence purpose at the expense of quality animal keeping such as ranching.

Steps being taken to improve the livestock industry.

- The ministry of agriculture has imported high quality dairy and beef cattle like the Fresians from India, jersey from Britain and Germany which yield more milk per day and have better quality beef.
- Cross breeding between the indigenous breeds and exotic breeds is carried out on many ranches such as Nyabushozi, Ankole – Masaka and Maruzi ranch to improve the quality and quantity of milk and beef.

- The government is training more veterinary doctors at Makerere University, Kabanyoro and Kawanda research centers to treat livestock. Veterinary doctors are being deployed in pastoral regions to teach better farming techniques.
- The ministry of works, transport and communication is upgrading and constructing feeder roads in the pastoral areas like Soroti, Moroto to create access for livestock products like milk e.g. the Mbale Soroti road.
- The government of Uganda has constructed valley dams and boreholes in Kotido, Moroto and Nakapiripiriti to provide water for livestock.
- Government has established demonstration ranches in pastoral and livestock areas to teach better farming practices to farmers e.g. Ankole – Masaka ranch, Aswa, Kawanda and Kabanyoro research centers.
- The ministry of agriculture has constructed dipping and spraying centers in Moroto, Mbarara and Kotido to control pests and diseases such as ticks.
- Development of meat and diary processing industries to create demand for livestock products e.g. top cuts and quality cuts in Kampala for beef, Uganda diary cooperation for milk and also Alpha and GBK in Mbarara which process and pack milk for the local market.
- The government is providing security in pastoral areas to control cattle rustling by deploying local security groups in Soroti as well as disarming of the pastoralists by the UPDF.
- The ministry of agriculture has introduced nutritious livestock feeds such as Alfa – Alfa, maize brand and cattle cakes and cattle salt used widely in Mbarara, Mpigi, Ntungamo and Mityana.

- Diversification of livestock in Mbarara, Rukungiri and Mpigi where cattle, goats, pigs, sheep and rabbits are reared to increase chances of profit maximization as well as minimizing losses.
- Promotion of zero grazing and rotational grazing especially in Mbarara, Mpigi and Masaka to solve the problem of land scarcity. In Kampala, cattle are also kept and are fed on banana peels collected from markets like Kalerwe, Wandegeya and major hotels.
- There is extension of credit facilities to farmers by government and non-government organization through micro finance institutions like send a cow, Heifer international in Mbarara, Mpigi and Mukono.
- The ministry of agriculture, animal industry and fisheries has embarked on restocking of livestock in Sironko, Lango, Teso and Ssembabule.
- Development of research and scientific methods of livestock rearing such as artificial insemination, training of staff and offering extension services to farmers in Nakasongola, Mpigi and Mbarara.
- Mixed farming has been adapted in Mbarara, Mityana and Rukungiri where animals are kept and at the same time crops are grown and the crops provide feeds to the livestock as the animals provide manure to the plants.
- Non-government organizations from Denmark such as DANIDA have given dairy farms in Mbarara, Ntungamo, Kiruhura and Lyantonde milk processing facilities such as milk coolers to reduce the loss of milk due to poor storage facilities.

- External market for dairy products like cheese, milk, butter have been sought by dairy farmers and diary processing industries like paramount cheese, Alpha diaries and GBK.

DIARY FARMING

Milk is the major diary product in Uganda and often obtained from diary farms such as Jesa farm in Mityana belonging to Professor Mulwana, Beatrice farms formally known as Batuma farm in Kabale belonging to the late Dr. Batuma Bugerere farm belonging to Haji Katongole and many other diary farms in Nyabushozi and Rukungiri. At times it is also collected from some ranches e.g. Kisozi ranch in Mpigi and Rwakitura ranch in Mbarara which belongs to the president of Uganda. Milk is also collected from individuals who carry out zero grazing in Mbarara, Ntungamo, Mbale and Soroti. Nevertheless, there are other diary products like cheese from paramount diaries in Mbarara, butter, yoghurt from GBK and Alpha diaries in Mbarara.

Status of milk production in Uganda.

Milk has greatly increased since 1990 as indicated by the following statistical data i.e. in 1994 Uganda produced 446 million liters, 1995 – 487ml, 1996 – 540ml, 1997 – 584ml, 1998 – 619ml, 1999 – 718ml and in 2001 – 800million liters.

A SKETCH MAP SHOWING DIARY PRODUCTION AREAS IN UGANDA

Reasons for increased production of diary products in Uganda.

1. Modern diary firms such as Beatrice or Batuma farms in Kabale, Bugerere in Kayunga and Jessa in Mityana i.e. adopted exotic breeds like the Frisian and jersey from India and Britain which produce more milk and tend to mature quickly which has eventually led to increase in diary production.

2. Diary farms of Beatrice in Kabale, Bugerere in Kayunga e.t.c. As well as demonstration farms such as Kabanyoro and Namulonge have adopted intensified research and scientific methods of livestock rearing such as artificial insemination and training of veterinary doctors resulting in to increase in dairy products.

3. There has been an increase in the demand of dairy products e.g. fidodido and simka ice cream in Kampala and neibouring areas, paramount diaries in Mbarara process paramount cheese, butter and yoghurt which have also got a high demand due to increased population.

4. There has been an increase in the cattle population both local and imported breeds in the cattle corridor stretching from Mbarara, Ssembabule, Kiruhura, Hoima, Masindi, Apac up to Kaabong and Moroto. This has led to an increase in the diary production.

5. The ministry of agriculture, animal industry and fisheries has constructed valley dams and boreholes in areas with low rainfall such as Mbarara, Nakasongola to provide water for livestock.

6. The ministry of agriculture, animal industry and fisheries has embarked on animal restocking in Lango, Soroti which has led to increase in diary production in form of milk, cheese and butter.

7. Relative political stability of Kasese, Gulu, Lira, Soroti and Amuria due to elimination of rebel activities by the UPDF and the arrow boys has led to stability and increase in dairy farming.

8. Use of milk coolers, refrigerated trucks e.g. Kazo diary farmers' association in Mbarara and rural electrification by Uganda electricity distribution company in the cattle areas such as Ssembabule and Mbarara has led to increase in diary production.

9. There has been an improvement in the transportation network to transport milk and dairy products from the cattle corridors such as Mbarara, Kiruhura e.t.c and such roads include Kampala – Mbarara – Kabale high way which connect to Ankole – Masaka ranch and Beatrice dairy farm in Kabale.

10. Introduction of better livestock feeds such as Alfa – Alfa grass and cattle cakes on diary farms e.g. Jessa in Mityana, Ankole – Masaka ranch etc have led to increase in diary production.

11. Extension of credit facilities in form of cash for livestock to livestock farmers by micro finance institutions like send a cow, in Kampala, Luwero and Mukono, Heifer international projects in Kayunga and Plan international in Tororo have led to a success of the dairy farms in Uganda.

12. Diary farmers in Mbarara, Kiruhura and Nakasongola are being sensitized about better farming practices e.g. cattle dipping, cross breeding by organizations like national agricultural advisory services (NAADS).

13. Different diary farmers associations have been formed to improve dairy farming through market research, better farming practices and acquisition

of better livestock breeds e.g. Kabarole diary farmers' association, Rubale diary farmers' association in Ntungamo and Kazo diary farmers in Mbarara.

Challenges or problems faced by dairy farmers.

- Shortage of land in densely populated areas such as Kabale, Mbale, Sironko have limited the expansion of dairy farms e.g. Beatrice dairy farm in Kabale and Jessa in Mityana.
- Dominace of the poor quality local breeds such as the Zebu cattle in Kaabong, Kotido and the Ankole long horned cattle in Mbarara, Kiruhura, Ssembabule have limited expansion of the diary sector because such cattle take long to mature and also yield less milk.
- Poor roads in the cattle corridors such as Kiruhura, Mbarara, Sironko, Soroti and Moroto especially during the rainy seasons limits transportation of milk and other dairy products to market centers like Kampala, Mbarara and Jinja.
- Inadequate surface water in Kiruhura, Mbarara, Nakasongola and Kotido results in to less milk yields per cow or death of cattle because of little or no water especially during the dry seasons when there is water shortage.
- Pests and diseases especially in Mbarara, Isingiro, Kasese and Kotido districts. There has been insignificant loss of cattle due to foot and mouth disease, Nagana, east coast fever and tick fever. In the 1960's, over 90% of the livestock was lost due to Nagana in the Ankole cattle corridor.
- In Mbarara, Kiruhura and Kotido districts, there are inadequate veterinary services due to limited extension staff to advise farmers on better farming

ways as well as treating their cattle and consequently, there has been significant loss of cattle or rearing of low quality cattle which yield less milk.

- Relief features such as the hilly landscape in some parts of Kabale, Sironko and Mbale tend to discourage dairy farming and as a result, a few farmers have adopted dairy farming in these areas.
- In Mbarara, Kiruhura and Kotido districts, there are few milk collecting centers e.g. there are about 70 milk collecting centers owned by Uganda diary corporation which can't collect all the milk from the areas around.
- Inadequate capital by milk traders e.g. Maddo diary in Jinja, Kazo diary farmers association in Mbarara, Jesa in Mityana to purchase refrigerated milk transport vehicles, hire skilled labour and purchase high quality exotic breeds.
- Limited pasture during the dry season in Nakasongola, Kiruhura and the rising costs of cattle feeds are challenges facing dairy farmers like Jessa diaries in Mityana and Beatrice dairy farmers in Kabale and even farmers practicing zero grazing in Kampala, Wakiso and other areas.
- Political instability / insecurity in Gulu, Pader, Kitgum, Kasese, Bulisa due to war or land conflicts and cattle rustling in Kaabong and Kotido are challenges to dairy farming in Uganda.

Questions.

1. **Discuss the factors responsible for the expansion of the diary industry in Uganda.**
2. **What challenges are facing the diary industry in Uganda?**

NOMADIC PASTORALISM

It is a form of subsistence farming practiced in areas of low land and unreliable rainfall involving the movement of people together with their livestock in search for grass and water for their cattle. The people practicing it are referred to as pastoralists and depend on livestock for their livelihood.

In Uganda, examples of nomads include the Karamojongs of North East region i.e. areas of Kaabong, Kotido and Moroto, the Basongora in Kasese, Rukungiri and Bushenyi, the Balalo pastoralists in areas of Bulisa, Hoima and Kiboga, the Bahima of Ankole – Masaka. The animals kept are cattle and those provide food mainly in form of milk and blood. Nevertheless, a few goats and sheep are also kept.

A SKETCH MAP OF UGANDA SHOWING THE LOCATION OF NOMADIC AREAS.

Characteristics of Nomadic Pastoralism.

a. Pastoralists occupy areas f low and unreliable rainfall e.g. Karamoja with a total rainfall of 400 – 600mm per annum.

b. Livestock are kept for subsistence purpose. The animals provide food in form of milk, meat and blood.

c. Grazing is carried out on natural pastures and it is communal because there is no ownership of land among the nomads.

d. Large numbers of animals are kept as insurance against epidemics or prolonged drought which usually results in to death of large numbers of animals.

e. There are no permanent settlements among the nomads because they are ever on the move in search for good pasture and water supply.

f. There are no scientific methods of cattle rearing applied among the nomads like controlled grazing and spraying against pests and diseases.

g. Pastoralism is normally confined in the dry regions because of being interfered with cultivators.

h. They are also characterized by cattle raiding from the neibouring societies because they believe that all the cattle are supposed to be theirs.

i. The nomads rear poor quality animals partly because they are interested in quantity not quality and especially the Zebu and the Ankole – Masaka long horned cattle.

Why Nomadic pastoralism has persisted in respective areas of the causes of nomadic pastoralism.

a. These areas e.g. Karamoja are conditioned with problems of seasonality of precipitation and therefore there is little rainfall in the region which does not encourage the growing of crops especially in areas of Kaabong and Kotido. This forces pastoralists to move searching for water for their cattle. These areas are sparsely populated and therefore there is a large expanse of land where migration takes place with limited interference by the cultivators e.g. in Ankole – Masaka dry corridor and Kaabong.

b. These palaces are remotely located away from the centers of modernity and there they are poorly served with transport network making it less attractive for other economic activities e.g. Kotido and Kaabong.

c. Usually, soils in these areas are poor e.g. in Karamoja and so cannot support crop growing and thereby remaining less attractive to farmers.

d. In most cases, the central government have tended to neglect nomadic pastoralists because they are looked at as a group that is anti – development and therefore making them to move from place to place.

e. Karamojongs in Kaabong and Moroto have a culture and tradition of cattle herding i.e. they look at nomadic pastoralism as the best form of life and so unwilling to change their way of life.

f. The land tenure system whereby land is owned communally is also a cause of nomadic pastoralism. ***This is because Kotido individuals are free the land to encourage them to move from one place to another.***

g. The social value attached to large number of cattle as a source of prestige, basis for paying bride price, symbol of wealth and power in society is another cause of nomadic pastoralism.

h. The grassland nature of vegetation in Kaabong and Moroto pastoral areas favours pastoralism. It facilitates easy movement of both livestock and herdsmen hence promoting nomadic pastoralism.

i. Pests and diseases in areas like Kiruhura, Isingiro, Kotido and Moroto have promoted pastoralism because settlement of people is discouraged and besides diseases like east coast fever, foot and mouth diseases and Nagana leads to massive loss of cattle which have necessitated keeping large numbers of cattle as insurance of loss of cattle due to diseases.

j. Nomads are ignorant e.g. in Kaabong and Moroto and as a result, they are not willing to change to modern ways of looking after animals such as ranching and therefore they have continued moving with animals from one place to another.

Question.

- **Discuss the causes of nomadic pastoralism in Uganda.**

PROBLEMS FACED BY NOMADS IN UGANDA.

The problems faced by nomads in Uganda are both by their own making and circumstances beyond their control.

Problems of their own making.

- The Bahima, Karamojongs and Itesots keep a large number of cattle for prestige purposes. This leads to overstocking and overgrazing which leads to soil erosion in the nomadic areas.

- The Karamojongs and the Itesots believe that all cattle belongs to each group which is wrong because it has led to cattle rustling and raiding of which loss of life and cattle has been witnessed.
- The Karamojong pastoralists in Kaabong district practice communal grazing and in Kotido, different individuals combine their cattle to graze communally but this makes the spread of diseases such as east coast fever, foot and mouth disease easy and hence loss of cattle.
- In Karamoja and Moroto, there is burning of grass at the end of the dry season in anticipation of better pasture during the wet season but this leads to soil erosion because the soil cover is destroyed.
- The Karamojongs in Kaabong and Kotido are conservative and therefore not willing to change their traditional ways of keeping large herds of cattle which has also caused soil erosion and compelled them to constantly move long distances in search for water and pasture for the large cattle herds.
- Karamojongs in Kotido are negligent and as a result, they have failed to maintain the valley dams constructed by the government and non-government organizations (NGOs) in Kotido and Kaabong. i.e. they have failed to cope with better farming practices and use of advice from extension veterinary workers which has made them face other related problems.
- Some of the pastoralists particularly in Kaabong are hostile to foreigners and this has hindered the development of the area. I.e. the government also tends to ignore them because of such attitudes.
- There is a problem of persistent famine among the nomads and this is partly caused by prolonged droughts and because of the fact that they can

never settle down to practice farming in order to avoid famine e.g. in Kaabong and Moroto.

- Tribal and clan conflicts are common among the nomads because they keep moving from one place to the other thereby conflicting with a few settled farmers at the water points.

Problems beyond their control.

- The Karamojongs occupy areas which have poor climate e.g. in Kotido, there is low rainfall ranging between 250 – 400mm per annum and high temperatures between 27^{o}C to 30^{o}C which has led to high evaporation rates i.e. the North Eastern trade winds in the areas drop all the moisture around the Ethiopian highlands and by the time they reach North Eastern Uganda, they are basically dry winds causing aridity.
- The low rainfalls in Nakapiripiriti and Kotido results in to shortage of pasture and therefore the animals are underfed and tend to be of poor quality taking a long period to mature.
- Shortage of pasture and water necessitates the Itesots and Karamojong pastoralists to move long distances and consequently the cattle lose weight and the weak die on the way.
- Pests and diseases such as ticks, tsetse flies, foot and mouth disease, east coast fever and others affect pastoralism in Kotido. Locusts invade and eat all the grass thereby creating scarcity of the pasture for animals.

- Pastoral areas like Kaabong and parts of Moroto are remote and lack well developed transport routes and other health and social economic facilities which have made it difficult to market the products from the cattle.
- Government has also ignored them for a long time i.e. from the beginning, there was no comprehensive plan to develop Karamoja by the government and that is why it has lagged behind.
- The Karamojongs in Kaabong share their boundaries with Kidepo National park and therefore Lions and leopards are major predators to their livestock and pastoralists themselves and even the Basengora are at the danger of animals from Queen Elizabeth National park.
- There is lack of milk collecting centers to take up the produce from the pastoralists in Karamoja and Teso and this has led to wastage of a lot of milk.

Question.

✓ **To what extent are the problems facing the nomadic pastoralists of their own making?**

Ways of solving the problems or measures.

- The government of Uganda should emphasize mass education to the pastoral people because it has a number of advantages as follows
    - Pastoralists through education will be taught about their environment, its values and how to protect and appreciate it.

- Through education, the nomads can be taught how to keep a limited number of animals that can yield more instead of having a large herd that brings about other environmental problems like soil erosion.

- Through education, pastoralists can be able to realize the importance of living a settled life because in the long run. This can help them to be able to grow some more food crops thereby minimizing on the problem of constant famine.

- Through education, there should be a breakthrough of the norms and values of the nomads and this could help them to adopt modern ways of living and keep developed animals e.g. spraying against pests and diseases and practice controlled grazing.

- Through education, hygiene and nutrition of foods eaten by nomads improve so that they can avoid malnutrition and malnourishment.

- The government policy of Uganda towards the nomads should aim at the following.

    - Evolving of the policy of how to enrich the animals in order to gain the support of the nomads e.g. through introducing demonstration ranches where the nomads can acquire skills about how to improve their animals.

    - Modification of land ownership especially demarcating of land among the existing clans instead of letting the land to be owned communally as a way of minimizing on the seasonal movements.

- Construction of boreholes and valley dams in nomadic areas like Kotido and Kaabong in order to reduce on the problem of severe lack of water.
- Providing veterinary services in nomadic areas like in Kaabong and Ankole – Masaka in order to reduce on the problem of pests and diseases in these areas.
- Establishment of market centers with in nomadic areas together with government infrastructures such as roads in nomadic areas like Kaabong and Moroto.
- Establishment of education programs that aim at integration of traditional values of the nomads so that these nomads can be able to appreciate the value of education especially in Kaabong and Moroto.
- Carrying out the conservation of the environment e.g. afforestation programs and soil conservation in order to improve on the local climate of nomadic areas like Kaabong and Ankole – Masaka dry corridor

MODERNISED AGRICULTURE.

Agricultural modernization refers to the use of scientific method of crop and animal husbandry such as agro chemicals and machinery in an attempt to increase production and productivity.

In Uganda, agricultural modernization has been undertaken in various areas. There has been an attempt to improve the quality and quantity of crops grown in Uganda with reference to areas like Doho, Kibimba and Olwenyi rice schemes, Kakira, Lugazi and Kinyara for sugarcanes, Kakonde in Mityana and Kasaku for tea.

Attempts have also been undertaken to improve quality and quantity of animals especially cattle along Ankole – Masaka ranching schemes and Kabale, Jesa diary farm and Nyabushozi ranch. Besides this, demonstrations and research stations have been established with an aim of improving the quality and quantity of animals and crop e.g. the Kawanda research station, Namulonge research station and Mukono district farm institute.

A SKETCH MAP OF UGANDA SHOWING AREAS WITH MODERNISED AGRICULTURE.

FACTORS LIMITING MODERNISED AGRICULTURE.

Modernized farming in Uganda is limited by both physical and social factors in some of the following ways.

a) Land tenure system has limited agriculture modernization e.g. the mailo land system of Buganda i.e. Mukono, Wakiso and Masaka where many people have been left landless while others have large pieces of land some of which is left un used.

b) In Kigezi, Mbale, inheritance system has had to cause land fragmentation which is the dividing up of land among members in the family until such a time when the farm land becomes so small and with less productivity. This system limits the use of farm machinery, increase soil decline because of the continues use with out rest period.

c) The nature of the terrain (relief), in hilly areas like Mt. Elgon in Mbale, Kigezi and Kapchorwa and others discourage mechanized agriculture and hence low land productivity. Steep slopes usually have thin soils which are easily eroded and this is very common in the kigezi highlands and the Elgon slopes.

d) On the other hand, wet low land planes and valleys like Kiruruma in Kigezi, Lombuye and Naigombwa in Iganga have poorly drained soils which make them unsuitable for agriculture because of floods as well.

e) High altitude areas such as Rwenzori and Elgon have cold temperatures which do not support modernized agriculture. This limits the average land which would be under agriculture.

f) The low level of education and awareness on modernization techinique is one of the most limiting factors to agriculture modernization e.g. the coffee wilt disease affects the production and coffee some times because of lack of education and awareness especially in areas of Mt. Elgon.

g) The existing low level of technology has restricted agricultural out put in many parts of Uganda like inkigezi, mbale and westnile where elimentary tools like hoes pangas are used for agriculture instead of the use of tractors.

h) The high population in kigezi, elgon and along the shores of lake Victoria has limited expansion of agricultural activities because it has resulted into land use conflicts among the farmers hence limiting agricultural mordernisation.

i) Political instability particularly in gulu, lira, kitgum andkasese discourages the farmers to concentrate in their farms ie the rebels at times steal the cattle and crops and hence limiting mordernised agriculture eg in luwero triangle, 1980-1985 guerilla war necessitated abandoning of farms and more than 10000 heads of cattle were lost.

j) Inadequate market, low prices and delays in payments to farmers have limited production of crops like coffee, cotton, beans and dairy products. The fluctuating prices of agriculture products such as vanilla in mukono and kayunga and coffee in masaka reduce the farmers efforts and confidence in the system.

k) Natural harzards like hail storms in ntingamo, prolonged drought in kitgum and mud floods in bududa have limited agriculture mordernisation. In

northern Uganda un reliable rainfall affects cotton production in lira and like wise prolonged drought in Karamoja brings about scarcity of pasture.

l) Lack of skilled labour to direct farm operations, maintain and operate farm machines i.e the biggest percentage of the available labour force is unskilled and therefore of less productivity.

m) Poor soils have limited agricultural modernization e.g. in Buganda, the larentic soils have been heavily leached and therefore hinder farming. In some parts of North Western Uganda like Atyak and Eastern Kotido have poor soils which are sandy and therefore discourage agriculture.

n) There is lack of adequate research facilities to control diseases and introduce high yielding exotic breeds and hybrid seeds through genetic engineering i.e. there are a few research centers in the country and these include Kawanda research station, Namulonge research station and Mukono district demonstration farm.

o) Embezzlement of agricultural funds, pesticides, farm implements, drugs and other facilities by government officials from the ministry of agriculture has denied farmers the opportunity to undertake agriculture modernization.

QUESTION.

- Examine the factors that have limited agricultural modernization in Uganda.