

## **AGRICULTURE IN AFRICA.**

Agriculture refers to the art and science of growing crops and rearing animals. The way people rear animal and grow crops is referred to as agricultural systems.

Agriculture systems in Africa range from primitive / Traditional to modern/ scientific. The main types of agricultural systems in Africa include;

### **SUBSTANCE/ PRIMITIVE / TRANDITIONAL FARMING SYSTEM.**

- Shifting cultivation.
- Rotational bush fallowing
- Nomadic pastoralism.
- Hunting and fruit gathers.

### **COMMERCIAL FARMING.**

This involves;

- Plantation/ factory/ estate farming
- Dairy farming
- Market gardening - Refer to California , Rhinelands
- Irrigation farming

**SUBSTANCE FARMING;** is the type of farming where a farmer is rearing animals and growing crops for home consumption/ survival and the little surplus is sold/ bartered for basic necessities e.g. paraffin , salt, soap.

The types under substance include;

- A. **SHIFTING CULTIVATION:** This is the type of farming where farmers clear a small portion of land in the forest, cultivates it and unit it loser fertility i.e. after three to four years and it has completely lost its fertility, the famers abandons it and shift to another virgin forest to look for a fresh fertile piece of land, clear the vegetation, he burns the vegetation and sow seeds.

In Africa, shifting cultivation is practiced by the following people in Nigeria;

- Ibo of Nigeria
- Masole - DRC
- Chipanga - Zimbabwe shifting cultivation
- Chitemene—Zambia
- Azande in Northern area of DRC
- Batwa in Rwanda
- Bemba in Northern Zambia.
- Gambia
- Zimbabwe
- Liberia

### **CHARACTERISTICS OF SHIFTING CULTIVATION.**

1. Family labour is used
2. Intercropping is practiced
3. Low crop yield.
4. Forests are cleared by cutting and slashing.
5. The farms are normally very small
6. Primitive tools are used e.g. digging sticks, knives, pangas and
7. Little attention is given to the growing crops until they mature.
8. Crops are grown with sparse population with thick forest
9. There is no ownership of land that permits shifting to fresh piece
10. Much manual labour is need in clearing

### **ADVANTAGES OF SHIFTING CULTIVATION.**

- The ash and burnt vegetation enriches the soil with potash.
- The fire used in clearing vegetation reduces the work of the farmer.
- Intercropping is practiced on the same piece of land reducing on risk of diseases
- The system is flexible i.e. it is very easy to change to other when one has failed.
- The first yields are normally high because of the fertile soils.

- The cleared vegetation provides firewood , charcoal and building materials
- Little labour is required and it's provided by the family i.e.there.
- It is cheaper.
- There is little supervision hence saving time for other economic activities like fishing.
- The constant movement ensures fresh sites, which are fertile.

### **DISADVANTAGES OF SHIFTING CULTIVATION.**

1. It promotes soil erosion and exhaustion of deforestation.
2. Low crop yield are produced which can't provide food for a large population.
3. It cannot be practiced where there is dense population.
4. It leads to slow development of industries since what is produced is for home consumption.
5. The system does not contribute to the development of the economy because the produce is consumed locally..
6. It leads to frequent famine due to low crop output.
7. Burning destroys large quantities of organic matter. Hence leading to soil infertility.
8. It leaves a large piece of land idle hence underutilized.
9. Moussing from one plot to another is some and time wasting.
10. Hinders development of infrastructure due to shifting.

### **WAYS OF IMPROVING SHIFTING CULTIVATIONS.**

1. Introducing of scientific methods of farming like...
2. Establishment of permanent settlement with social services
3. Introducing cash crops e.g. coffee, cocoa, cotton, sugarcanes to settle the farmers.
4. Changing land tenure system from communal to private ownership.

5. Improving transport network which has promoted market for agricultural products.
6. Change of culture through mass education by the government.
7. Agriculture modernization using machines and carrying out research in high yielding crop varieties.

### **B. ROTATIONAL BUSH FALLOWING.**

- C. This is a little advanced from shifting cultivation and it tends to replace as pressure for land increase.
- D. Rotational bush fallowing is a system of farming where a farmer has permanent settlement and divides his land into different plots but not cultivated at the same time. A number of crops are grown on different plots and on realizing that the soil fertility had declined, the farmer leaves the plot of land to rest i.e. fallowing which happens between two to five years depending on the size of the land and the farmer keeps on rotating on different plots of land opening up those that have gained fertility naturally which is termed as fallowing and leaving to rest those that have lost fertility

### **CHARACTERISTICS OF ROTATIONAL BUSH FALLOWING.**

- Farming is based on permanent settlements
- Foods produced is mostly for home consumption
- Labour is provided by the family
- Land is divided into plots.

### **COMPARISON BETWEEN SHIFTING CULTIVATION AND ROTATIONAL BUSH FALLOWING.**

#### **SIMILARITIES**

- Both use family labour
- Both use simple tools.
- In both , farms are generally small
- They are all practiced in sparsely population.
- They depend on nature
- In both low yields are obtained.
- Both food crops and cash crops are grown
- Farming depends on natural condition

### **DIFFERENCES**

- In shifting cultivation, there is temporary settlement, but in rotational bush fallowing there is permanent.
- In shifting cultivation plots is abandoned when it has lost its fertility,, while rotational bush fallowing are well defined with a fixed system of rotation.
- In shifting cultivation fire is employed to clear dense forest while in rotational bush burning fire is occasionally used.

### **ADVATAGES OF ROTATIONAL BUSH FALLOWING**

- Land is left to regain its fertility
- Fallowing allows control of pests and disease
- Both food and cash crops are grown
- It promotes development of a monetary economy.
- It is generally cheaper because simple tools are used.
- High crop yields are maintained because cash crops and crops are crown.
- Soil fertility is maintained because not all plots are cultivated at the same time.

- Little capital is maintained as elementary tools used.
- In Africa, there is change from substance to market economy where a farmer is producing for commercial purpose. I.e. different systems have come up and they includes.

### 1. **SMALL HOLDERS FARMING (COMMERCIAL FARMING)**

This is type of farming which is termed as a transition from substance to cash crop economy.

Case study1:

### **COCOA GROWING IN GHANA**

Cocoa growing is essentially a small farming activity.

Cocoa is Ghana chief export and a major foreign exchange earner.

Most of Africa's cocoa comes from Ghana and Ivory Coast. Although A number of West Africa countries grow cocoa e.g. Togo, Cameroon, Nigeria and Liberia.

Cocoa growing in Ghana is majorly grown in two areas where the physical conditions are condusive e.g. South west of Ghana and East of Volta up to the boarder of Togo.

### **CHARACTERISTICS OF COCOA FARMS IN GHANA.**

- i) Cocoa farms are located in forest areas.
- ii) Cocoa seedlings are planted with other crops e.g. yams.
- iii) The farms are owned by individual farmers.
- iv) The farms are small in size ranging between two - four hectares.

### **FACTORS WHICH HAVE FAVOURED COCOA GROWING IN GHANA.**

## **PHYSICAL FACTORS**

- Presence of rainfall of over 1500mm per annum which is well distributed suitable for cocoa growing.
- Presence of high humidity of over 70% favoring the growth of cocoa.
- Presence of hot temperature of over 21°C favoring rainfall formation and growing of cocoa.
- Presence of vast land for the establishment and expansion of cocoa farms.
- Presence of fertile well drained soils that support cocoa growing.
- Presence of sunny conditions that favours the growth and ripening of cocoa.
- Presence of numerous rivers that provide fresh water for irrigation during the dry seasons.
- Presence of a lower altitude that favours the growth of tropical cocoa plants.
- Presence of gentle relief that favours the use of machine and construction of transport routes.

## **HUMAN FACTORS (USE FRADIC)**

- Availability of adequate capital provided by the government to invest in cocoa growing for buying farm inputs like fertilizers.
- Availability of skilled labour provided by large population in Ghana to work on cocoa farms.
- Availability of ready market for cocoa both in Ghana and abroad.
- Availability of favourable government policy on developing agriculture by providing loans to cocoa farmers
- Availability of well-developed transport network based on railway and road to transport cocoa to the market.
- Availability of intensive research into cocoa growing leading to improved varieties of cocoa.
- Availability of a relative political stability which has ensured growing of cocoa and attraction of foreign investors.

### **STEPS IN CULTIVATION OF COCOA**

- Seeds are planted in a nursery bed.
- The seedlings are then transplanted to the main field which is planted in holes of 3m apart.
- The cocoa pods grow from the tree trunks and the main branches.
- They become yellow to orange when ripe.
- Harvesting is done manually by cutting off the ripe pods from the trunks using a long sharp knife.
- The pods are then transported to the nearby road or railway for delivery to the processing plants

### **COCOA PROCESSING:**

- Cocoa pods are split open with a sharp knife and the beans are scooped out by hands.
- The cocoa pod has over 40 beans.
- The beans are placed and dried on tables and frequently turned to ensure uniform drying.
- The beans turn brown on drying.
- After drying, the beans are put in sacks and transported to the buying agent.
- At the factory, it is weighed, graded and carried by Lorries to the nearest railway station and later Tema and Takoradi for export.
- Marketing of cocoa in Ghana is done by the government through marketing boards where it is exported to USA, Germany, Canada, Russia, Japan etc.



**OTHER THAN COCOA, OTHER CROPS GROWN IN GHANA INCLUDE;**

- Oil palm
- Maize
- Rubber
- Groundnuts etc.

**IN UGANDA, COCOA IS GROWN IN:**

- Bundibugyo
- Mukono
- Kayunga
- Buikwe

**USES OF COCOA**

- It is used in making chocolate.
- It is used in making sweets.
- Cocoa is used in making cornflakes.
- It is used in making cocoa butter. (Cosmetics).
- It is used in the manufacturing of drugs and other chemicals products.
- Cocoa gives a powder called cocoa which is used as a beverage.

**PROBLEM FACING COCOA GROWERS IN GHANA**

- Diseases e.g. black pod disease a fungus that attacks ripening of cocoa pods leading to low output.
- Pest e.g. cuspud that destroy tissues leading to poor quality produce.

- Stiff competition for market with other world producers of cocoa e.g. Ivory Coast leading limited demand for cocoa.
- Price fluctuation on the world market leading to losses.
- Soil exhaustion due to monoculture leading to low crop yields.
- Shortage of labour to work to work on cocoa farms leading to low output.
- Competition for market with other beverages e.g. coffee, ginger hence leading to limited demand for cocoa.
- Inadequate capital to invest in cocoa growing hence leading to low production.
- Seasonal wild fires especially during the dry season leading to destruction of cocoa farms.
- Over production of cocoa which leads to a decline in price hence losses.
- Underdeveloped transport and communication network especially the feeder roads which become flooded during the rainy season hence affecting the transportation of cocoa to the market.
- Competition of land with other farms of land use such as forestry and settlement hence reducing land for cocoa growing.
- Soil erosion due to poor farming method leading to loss of fertility and hence low crop yields.

### **STEPS BEING TAKEN TO SOLVE THE PROBLEMS ABOVE**

- Spraying using pesticides to solve the problem of pests or cutting down the infected trees.
- Spraying using agro-chemicals to solve the problem of diseases.
- Applying fertilizers to improve on soil fertility or diversifying the economy to including tourism, mining and fishing to avoid over depending on cocoa growing.

- Improving the quality of cocoa grown through planting improved cocoa varieties to out-compete other cocoa growers.
- Forming co-operation societies so as to extend and access credit facilities to solve the problem of inadequate capital.
- Using agriculture machinery/ hiring labour to work on the cocoa farms to solve the problem of shortage of labour.
- Educating farmers on better farming methods such as use of pesticides.
- Promoting use of soil erosion control measures e.g. mulching and planting of cover crops.
- Carrying out research to improve cocoa variety in terms of productivity and resistance to pests and diseases.
- Improving transport and communication to promote marketing of cocoa by upgrading and tarmacing of the feeder roads.
- Establishing the quota system to regulate price fluctuation of the world market.
- Extending loans and subsidies to farmers by providing farm inputs at subsidizing prices.

### **CONTRIBUTION / BENEFITS OF COCOA GROWING IN GHANA.**

- It is a source of income hence leading to improved standards of living.
- It is a source of foreign exchange through exporting cocoa to other countries used in foreign trade.
- Cocoa growing is a source of government revenue through taxes imposed on cocoa farmers which is used to develop other sectors such as tourism.
- It has led to development of towns and ports such as Tema and Kumasi hence bringing social services close to the people.
- It has led to the development of infrastructure such as roads and railways hence improving transport and communication.

- It has diversified the economy of Ghana hence widening the government of industries that use cocoa as a raw material hence creating employment opportunities to the people.
- It has promoted international relationship with countries that import cocoa from Ghana hence creating market for other goods
- It has provided market for other manufactured goods such as fertilizers and pesticides thus providing income to the people
- Cocoa growing is a source of employment opportunities' to the people hence leading to improved standards of livings.

**Guiding Questions.**

1. UNEB QB Qn 3 2011(a,b)
2. UNEB QB QN 2 2003

**OIL PALM GROWING IN NIGERIA:**

Oil palm is the most important crop grown in Nigeria and an important source of vegetable oil.

**OTHER PALM OIL GROWING COUNTRIES IN AFRICA INCLUDE;**

- ❖ Democratic Republic of Congo
- ❖ Ivory Coast.
- ❖ Cameroon
- ❖ Ghana
- ❖ Guinea Bissau
- ❖ Togo.
- ❖ Equatorial Guinea.

**NB:** Conditions / Factors favouring oil palm growing in Nigeria refer to factors favouring cocoa growing in Ghana.

## **CULTIVATION OF OIL PALM**

- ❖ The seeds are planted in a nursery bed
- ❖ The seedlings are transplanted to the main field where they grow to areas of arable height.
- ❖ Regular weeding is done as well as inspection.
- ❖ Pruning is also done to avoid excessive growth.
- ❖ The fruits are harvested after 3 1/2 Or 4years.

## **HARVESTING OF OIL PALM**

### **I. TRADITIONAL METHOD:**

A man has to climb the tree up to where the branches grow and uses along belt to support himself as he climbs.

- ❖ The branches are cut using knives and pangas.

### **II. MODERN METHOD:**

- ❖ Harvesting is done by use of harvesting hook mounted on along pole.
- ❖ There is also use of a diesel machine with along sharp cutting edge.

## **PROCESSING OF OIL PALM.**

### **III. TRADITIONAL METHOD:**

- ❖ The fruits are stored in a house for four days to enable them ferment after harvesting.
- ❖ Women pound the fruits in wooden mortars.
- ❖ The pulp is boiled until the orange colour of palm oil flats on the surface.
- ❖ The oil is creamed off and put into containers for future use.
- ❖ They crack the nutshell and take out kernel palm oil.

### **IV. MODERN METHOD:**

- ❖ The branches of fruits are first put under higher pressure in an oven.
- ❖ It is taken to the thrashing machine which strips off the branches.
- ❖ It is then taken to the digester which turns it in to pulp.
- ❖ It is then taken to the press to squeeze out oil.
- ❖ The nuts are taken to the crushing machine to break them, open them and attract kernel oil.

### **USES OF PALM OIL**

- ❖ Kernel palm oil is used in manufacturing of soap.
- ❖ Palm oil is used in making of shoe polish.
- ❖ It is used as cooking oil.
- ❖ It is used in making palm wine.
- ❖ It is used in making margarine.
- ❖ The pericarp fibres and the net shell are a source of fuel.
- ❖ It is used to make baskets. And looping materials from palm oil.
- ❖ Palm oil is used in manufacturing of palm oil.

### **THE ESTATE PRODUCTION MARKETING BOARD:**

- ❖ Controls the export of palm oil to the market and uses licensed agents to purchase palm oil from local farmers.
- ❖ Palm oil is transported in large drums for storing drugs at Port Harcourt and then transported to Belgium, Italy, Netherlands, Germany and other European countries.

**NB** The contribution of oil palm growing in Nigeria Refer to benefits of cocoa growing in Ghana.

### **PROBLEMS FACING OIL PALM GROWERS IN NIGERIA.**

- ❖ Growth of weeds such as srum which compete for soil nutrients hence leading to low oil palm yields.

- ❖ Stiff competition for market with other vegetables oils e.g. sunflower and simsim.
- ❖ Refer to problems facing cocoa, growing in Ghana.

**NB 2 OTHER & CROPS GROWN IN NIGERIA INCLUDE;**

- ❖ Cassava
- ❖ Yams
- ❖ Grains
- ❖ Cocoa
- ❖ Rice
- ❖ Rubber

**N.B:** Physical factors and human factors favouring palm oil in Nigeria use the same factors for Cocoa growing in Ghana.

**GURDING QUESTION**

Question: Explain the problems and solutions to the economy of Nigeria.

1. UNEB QB 2014 Qn.2
2. UNEB QB 2008 Qn.3
3. UNEB QB 2006 Qn.2

**COMMERCIAL FARMING.**

## **PLANTATION FARMING / ESTATE FARMING/ FACTORY**

### **FARMING**

Plantation farming refers to the growing of a single perennial crop on a large piece of land using scientific and efficient methods of farming.

Plantations in Africa are usually owned by foreigners or companies.

### **CHARACTERISTICS OF PLANTATION FARMING.**

- ✓ Crops are grown on a large scale over 100 hectares
- ✓ Crops are grown for commercial purposes.
- ✓ Plantations usually specialized in the production of a single crop (monoculture).
- ✓ Large number of workers are employed i.e. agriculture engineers, harvestors etc.
- ✓ A great deal of capital is usually involved and most of the plantations own processing factories.
- ✓ There is a large output obtained.
- ✓ The crops grown are mainly for export.
- ✓ Scientific methods of farming are mostly used.
- ✓ Usually, perennial crops are grown e.g. rubber, sugarcane etc.
- ✓ Most of the plantations have out growers who grow and sell their crops.

### **ADVANTAGES OF PLANTATION FARMING.**

- ✓ There is no wastage as the wastes are used as fertilizers.
- ✓ The methods employed in cultivation are scientific therefore leading to high crop yields.



- ✓ Loss time is taken in ploughing , sewing and processing as machines are used
- ✓ Plantations usually provide many additional benefits to the workers e.g. schools, free medical services, better medical facilities and such benefits increase production on the plantation.
- ✓ Many people are employed on the plantation e.g. legumes engineers, drivers, harvestors leading to improved standards of living.
- ✓ They lead to development of towns / urbanization thus bringing social services closer to people
- ✓ Plantations are source of income to the workers thus leading to improved standards of living.
- ✓ They are a source of foreign exchange though exportation of the crop to other countries which is used in foreign exchange.
- ✓ Plantation is source of government revenue through taxing the workers which is used for developing infrastructure.
- ✓ Plantation farming reduces rural -urban migration hence increasing an agricultural production.

### **DISADVANTAGES OF PLANTATION & FARMING.**

- ✓ Uncertainties e.g. drought for much rainfall can spoil the crop yields leading to total losses.
- ✓ Pests and diseases are more likely to run through a single crop on the plantation leading to total loss.
- ✓ It is economically risky to rely on a single crop because of price fluctuation that can lead to losses.
- ✓ A single crop on the plantation exhausts soil fertility.
- ✓ Outbreak of fire can lead to total loss.
- ✓ The crops grown have a very long gestation period.
- ✓ There is profit repatriation as most of the plantations in Africa are owned by foreigners.
- ✓ Mismanagement of the plantation may lead to total losses.

### **OUTGROWERS:**

These are people who live near the plantation and grow the same type of crop to supplement the plantation farmer.

### **ADVANTAGES OF OUT GROWERS.**

- ❖ Limited capital is required to set up out grower's scheme
- ❖ They boast the production of the plantation.
- ❖ It promotes the spirit of reliance.
- ❖ extra costs of labour , housing are not incurred housing are not incurred because family labour is used
- ❖ Losses are not so great incase of natural disaster.
- ❖ It is easy to organize out growers to form co-operatives because they have similar problems.
- ❖ In Africa, plantation farming is practiced by the following countries
- ❖ Malawi-tea
- ❖ Cameroon - rubber, coffee, tea, oil palm
- ❖ DRC- sugarcane , coffee , oil palm
- ❖ Ivory Coast - coffee, rubber, palm oil.
- ❖ South Africa - Sugarcane, vines.
- ❖ Liberia - rubber ,coffee

### **CASE STUDY 1: RUBBER GROWING IN LIBERIA**

#### **RUBBER:**

Is an agricultural produced by a tree crop under plantation farming.

The biggest part of Liberia is devoted to rubber growing.

There are also many out growers but the major plantations are owned by fire stone tyre company from USA which has two major plantation i.e.Harbel (34000Ha) near

Monrovia cavalla 4000Ha.

**Other companies that own plantations of rubber include:**

- ❖ Bf good rich.
- ❖ Allan- l- Grant
- ❖ Salala rubber company
- ❖ Pirreli Tyre Company.

**RUBBER TREE SPECIES GROWN INCLUDE;**

- ❖ Manihot.
- ❖ Ceara trees.
- ❖ Havea Braziliensis

**FACTORS FAVOURING RUBBER GROWING IN LIBERIA.**

**REFER TO HALF SWAG**

- ❖ Presence of numerous trees that provide shed for the young rubber trees.
- ❖ Nearness to the coastal areas for easy importation of agriculture input and exportation of output from rubber plantation.
- ❖ Gently sloping land scape.
- ❖ Deep fertile well drained soils
- ❖ Low altitude
- ❖ Heavy rainfall of over 2000mm per year.
- ❖ Hot temperatures of over 26<sup>0</sup>c
- ❖ High humidity 75%.
- ❖ Presence of extensive land for establishment of large rubber plantations.

## **HUMAN FACTORS**

(Research)

## **OTHER COUNTRIES PRODUCING RUBBER IN AFRICA INCLUDE;**

- ❖ Democratic Republic of Congo.
- ❖ Cameroon.
- ❖ Nigeria.
- ❖ Ivory Coast.

## **CULTIVATION OF RUBBER**

Seeds are planted in nursery bed.

After germination, seedlings are transplanted to the main garden /fields.

- ❖ Rubber trees take six years to mature.
- ❖ Weeding and pruning are done during the process of growing.
- ❖ When it is mature, harvesting starts which is tedious.

## **TAPPING:**

- ❖ Tapping is done in the morning where the tapper makes a slanting V-shaped cut on the tree trunk.
- ❖ A Milky substance called latex flows out of the cut and it fills up a cup fixed at the bottom of the cut on the tree trunk.

## **PROCESSING OG RUBBER;**

- ❖ At the factory, latex is diluted in water and poured in to tanks where acetic acid is added to make it spongy.
- ❖ It is then passed through rollers and is rolled into flat sheets to squeeze out moisture.
- ❖ The sheets is cut into standard sizes, dried, graded and then packed ready for export to Britain, France, Germany, and USA through Monrovia port.

### **USES OF RUBBER:**

- ❖ Rubber is used for making condoms
- ❖ Rubber used to for making balloons.
- ❖ Rubber is used for making rubber bullets.
- ❖ Rubber is used for making rubber bands.
- ❖ Manufacture of floaters.
- ❖ Manufacture of carpets Used in making toys.
- ❖ Used for making tyres.
- ❖ Rubber is used for making insulating cables.
- ❖ Used in making shoe soles
- ❖ Used in making scholastic materials e.g. erasers.

### **PROBLEMS FACING RUBBER GROWERS IN LIGERIA.**

- ❖ Competition from synthetic fibre leading to low income.
- ❖ Stiff competition for market with other &rubber growing countries reducing profits.
- ❖ Wild fires leading to destruction of rubber plantations.
- ❖ Price fluctuations leading to lose and low returns.
- ❖ Diseases that attack rubber trees leading to low quality output.
- ❖ Long gestation period of rubber.
- ❖ Soil exhaustion due to monoculture leading to low output.
- ❖ Pest that attack rubber trees leading to low output.

### **SOLUTIONS TO THE PROBLEMS.**

- ❖ Spraying using pesticides to control pests.
- ❖ Patrolling to detect the dangers of wild fires.
- ❖ Training of labour in modern farming skills.
- ❖ Application of manure to improve on soil fertility.
- ❖ Production of High quality products to compete favourably at the world market.
- ❖ Diversification of crops grown i.e. food crops in order to control loss of soil fertility.
- ❖ Carrying out market research through advertisement to expand on the market.
- ❖ Encouraging out growers schemes to increase output.
- ❖ Regional cooperation to expand the international market.
- ❖ Mechanization of some farming activities

Question: Study table 2 showing Rubber export from Liberia (1976-1980) and answer the questions that follow.

YEAR	EXPORT
1976	502,000
1977	599,000
1978	880,000
1979	880,000
1980	702,000

- a) Draw a line graph to show the trend of Rubber export.
- b) i) Describe the trend of Rubber export.
- ii) Explain the causes of the trend in (b) I above
- c) Describe the physical conditions that have favoured Rubber growing in Liberia.
- d) i) Mention the largest Rubber plantation in Liberia.
- ii) Outline the challenges facing Rubber growing in Liberia

## **CASE STUDY 2 SUGARCANE GROWING IN NATAL PROVINCE OF SOUTH AFRICA.**

- ❖ Natal is one of the provinces in Natal where sugarcane is grown on plantation farming
- ❖ Most of Natal's sugarcane grown from Margate in the south coastal plain and lake St. Lucia in the North , a distance of about 400km.
- ❖ The sugarcane belt also extends inland as far as 25km to places like Piet Maritz burg which is the most important sugarcane growing areas in South Africa.
- ❖ The sugar cane industry in South Africa is administered by South Africa Sugar Association (SASA) which is one of the biggest Co-operatives in the world.

### **SASA PERFORMS THE FOLLOWING ACTIVITIES.**

- ❖ It organizes marketing and negotiates prices.
- ❖ It gives advice to farmers.
- ❖ It carries out research into new varieties of cane.
- ❖ It supplies farming equipment to farmers.

### **FACTORS WHICH FAVOURED SUGARCANE GROWING IN NATAL.**

- ❖ Presence of warm Mozambique Ocean current and modified on shore winds which bring ideal conditions for sugarcane growing.
- ❖ Presence of vast land for the establishment of sugarcane growing.
- ❖ Presence of heavy rainfall of over 1500mmm per annum suitable for the growing of sugarcanes.
- ❖ Presence of well drained alluvial fertile soils especially at the mouth of rivers favouring the growth of sugarcanes.

- ❖ Presence of sunny conditions which increase the sugar content and ripening of the crops.(cane)
- ❖ Presence of gently sloping land which allows use of agricultural machinery.
- ❖ Presence of frost free conditions throughout the year hence favouring the growing of sugarcane.
- ❖ Presence of numerous rivers which provide large volumes of water for irrigation e.g. R. Umgen, R Mkuse.
- ❖ Presence of warm temperatures of about 150c for ripening of the sugarcane

### **HUMAN FACTORS.**

- ❖ Availability of ready market for sugar both in South Africa and abroad.
- ❖ Availability of adequate capital provided by the government to invest in sugarcane growing through buying pesticides.
- ❖ Availability of skilled labour provided by South Africans and neighbouring countries like Zimbabwe, to work on sugarcane plantations.
- ❖ Availability of advanced technology used in growing of sugarcane e.g. use of tractors and sprinkles.
- ❖ Availability of many co- operatives that assist in marketing and transported of sugar.
- ❖ Availability of well-developed transport network based on road and railway used to transport sugar cane.

### **CULTIVATION OF SUGARCANE.**

- ❖ Disinfected sugarcane of 40cm is planted in nursery beds and after one year, they are transplanted into the main field after being dipped in fungicides.



- ❖ Fertilizers are added, constant weeding, and spraying are also done to allow percolation.
- ❖ The crop takes one and a half years to mature and several crops are possible to grow from the same plant.
- ❖ The first crop is called the plant cane and after cutting, the roots will sprout and these canes are known as **RATTOON CROPS**.
- ❖ Harvesting is done by hand i.e. the cane is cut by hand using pangas.
- ❖ The leaves are removed and the canes are put on the ground neatly in bundles.
- ❖ The cut leaves are called trash and are left on the ground to avoid moisture loss.
- ❖ Controlling the growth of weeds.
- ❖ Prevent soil erosion.
- ❖ Provide humus to the soil when it rots.
- ❖ Tractors and trailers are used to transport the canes to the mills at Tangaat north of Durban.
- ❖ At the mill, the cane is chopped and then passed through series of contra 0 rotating rollers that squeeze out juice.
- ❖ The fibre waste is called bagasse which is used to fire the mills boilers.
- ❖ Lime is mixed with juice to help purify it and the impurities sink to the bottom and this is called mud which is returned to the field as fertilizers.
- ❖ The remaining juice is boiled until when sugar crystals are produced.
- ❖ At the finish, the only remaining things are the molasses which are used for making alcohol, animal feeds and fertilizers.
- ❖ The raw sugar is transported to Hulett's in Durban for the last refining process before export.
- ❖ Sugar from South Africa is exported to Britain, Japan, Canada and USA.

### **USES OF SUGAR.**

- ❖ It is used in electroplating.
- ❖ It is used in making dairy products
- ❖ It is used in making explosives. E.g. ice cream.
- ❖ It is used in lather tanning.
- ❖ It is used in pharmaceuticals e.g. drugs and medicine.
- ❖ It is used in making acids.
- ❖ It is used in making confectionaries e.g. cakes.
- ❖ It is used in making shoepolish.
- ❖ Mollases are used in making spirits and animal feeds.
- ❖ Bagasse is used for making papers
- ❖ Bagasse is used as fuel.

### **PROBLEMS FACED BY SUGAR CANE GROERS IN AFRICA:**

- ❖ Inadequate capital for investment.
- ❖ Under developed transport network.
- ❖ Shortage of labour during harvesting period.
- ❖ Stiff competition for market with other sugarcane growing countries e.g. Cuba, Brazil
- ❖ Drought which leads to crop failure.
- ❖ Price fluctuation on the world market.
- ❖ Soil erosion.
- ❖ Soil exhaustion
- ❖ High cost of production.
- ❖ Wild fires
- ❖ Pests e.g. leaf hoppers, army worm.
- ❖ Disease such as ratoon stunting disease.

### **SOLUTIONS TO THE ABOVE PROBLEM**

- ❖ Spraying using pesticides to control pests.
- ❖ Spraying agrochemicals to combat diseases.

- ❖ Applying fertilizers and leaving the land under fallow.
- ❖ Diversifying the economy to include mining and industries to void over depending on sugarcane growing.
- ❖ Use of labour from the neighbouring countries such as Zimbabwe, Botswana.
- ❖ Carrying out research on improved varieties of sugarcane that are drought and disease resistant.
- ❖ Using soil conservation measure e.g. mulching and contour ploughing.
- ❖ Carrying out irrigation farming during the dry season.
- ❖ Promoting co-operatives to provide loans to farmers.
- ❖ Using the quota system to check over production and price fluctuation on the world market.

**BENEFITS OF SUGARCANE GROWING TO SOUTH AFRICA.**

- ❖ It has satisfied the local demands for sugar in South Africa hence saving foreign exchange the government would use in importing sugar.
- ❖ Sugarcane plantations act as tourist attractions thus earning the country foreign exchange used to development of industries that use sugar as a raw material hence aerating employment opportunities to the people.

**NB:** Refers to the benefits of cocoa growing in Ghana.

**GUIDING QUESTION**

1. Study the table below showing sugar export.

<b>Year</b>	<b>sugar exports (metric tones)</b>
1998	1,230,000
1999	1,140,000

2000	1,147,000
2001	1,540,000
2002	1,170,000
2003	1,000,000

- a) Draw a line graph to show the sugar export in South Africa.
- b) Describe the trend of sugar exports shown in the table above trend:  
 Between 1998 to 1999, sugar exports slightly decreased by 90,000 metric tonnes. From 1,230,000 to 1,140,000  
 Between 2000 to 2001, sugar exports slightly increased by 7000 metric tonnes from 1,140,000 to 1,147,000.  
 Between 2002 and 2003, the sugar exports rapidly decrease by 170,000 to 1,000,000 metric tonnes.
2. Study table 1 below showing sugar production in the republic of South Africa and answer the questions that follow.

YEAR	'000 metric Tonnes
2005	17000
2006	16000
2007	16000
2008	15500
2009	15000
2010	14000
2011	14000

- a) Draw a bar graph to show the information in the table.
- b) i) Describe the trend in sugar production in the republic of South Africa between 2005 and 2011.  
 ii) Explain the causes of the trend in sugar production in the republic of South Africa between 2005 and 2011.
- c) Explain the contribution of sugar production to the development of the republic of South Africa.
- d) i) Name any one province in the republic of South Africa which is important for sugar cane growing.

ii) Suggest the measures that should be taken to improve sugar production in the republic of South Africa.

### **LARGE SCALE IRRIGATION SCHEMES IN AFRICA**

Irrigation refers to the artificial provision transfer of regular amount of water to areas which are deficient with rainfall/ receive little rainfall and sometimes to crop that need excess water when grown e.g. sugarcane, yams, rice etc.

Water can be transferred from a river, normally or lake or any underground source. Irrigation is mostly carried out in areas with the following conditions

- ❖ Areas that receive little or no rainfall.
- ❖ Areas t experiencing high evaporation rates.
- ❖ Areas that experience seasonal lack of rainfall.
- ❖ Areas receiving unreliable rainfall.
- ❖ Where crops grown require more water than what is produced by rainfall.
- ❖ Where there is need to increase and improve on crop productivity of an area especially to produce food for the growing population.

### **METHODS OF IRRIGATION.**

#### **1. OVERHEAD IRRIGATION**

a) Sprinkling.

Under this method, water is channeled through pipes to the air and it is left to sprinkle in form of rain and water comes out at a high pressure.

b) Drip.

This involves setting up of pipes with small holes and water drops out at a low pressure.

2. **CHANNEL IRRIGATION.**

This involves construction of water channels to supply water to the growing crops.

This is mostly suitable in gently sloping areas.

**TYPES OF IRRIGATION**

A. Perennial irrigation

This type of irrigation involves supplying of water to the cultivated areas throughout the year.

It involves the construction of a huge dam across the river to create a water reservoir.

B. Basin irrigation

This depends on the annual floods of the river during the rainy season.

Water is tapped in ditches which can be used during the dry season to irrigate the crops e.g. along the Nile valley.

The following are the major irrigation schemes in Africa;

- i. Gezira irrigation scheme (Sudan)
- ii. Richard Toll irrigation scheme. (Senegal).
- iii. Awash Valley Project (Ethiopia)

**CASE STUDY I**

**GEZIRA IRRIGATION SCHEME**

- ❖ The scheme is found in Sudan South East of the Blue Nile and White Nile confluence.
- ❖ It covers a total land area of 800,000 hectares and it is fed by water from the Blue Nile and Sennar dam. The scheme lies between the Blue and White Nile.
- ❖ It was completed in 1962 and it's made up of two main irrigated blocks i.e. Gezira and Managil.
- ❖ The area receives low and unreliable rainfall of less than 500mm per annum.
- ❖ The area was initially occupied by pastoralists and subsistence cultivators who grow cereals and suffered from famine regularly.
- ❖ Irrigation was therefore essential for this area to develop hence the growth and development of Gezira irrigation scheme.

### **ASKETCH MAP SHOWING GAZIRA IRRIGATION SCHEME**

**NB** The main crop grown on Gezira is cotton

### **OTHER CROPS GROWN INCLUDE:**

- ❖ Ground nuts.
- ❖ Maize
- ❖ Dura
- ❖ Lubia
- ❖ Beans
- ❖ Rice
- ❖ Millet
- ❖ Cowpeas
- ❖ Guinea corn
- ❖ Sorghum
- ❖ Wheat etc.

### **AIMS OF GEZIRA IRRIGATION SCHEME.**

- ❖ To open up more land for farming and settlement.
- ❖ To provide water for irrigation all year round.
- ❖ To control floods of the Blue Nile.
- ❖ To diversify the agriculture sector by not only growing cotton but also food crops such as beans, sorghum to modernize agriculture / by growing a variety of crops.
- ❖ To modernize agriculture from nomadism to settled agriculture.
- ❖ To provide employment opportunities to the population.

### **CONDITIONS / FACTORS THAT FAVOURED THE ESTABLISHMENT OF GEZIRA IRRIGATION PHYSICAL SCHEME**

- ❖ Presence of large supplies of water for irrigation provided by the Blue Nile and Sennar dam.
- ❖ Presence of vast land for the establishment of the scheme and expansion of the scheme.
- ❖ Presence of gently sloping land that allows irrigation by gravity flow thus reducing costs of pumping.
- ❖ Presence of semi -arid conditions/ low and unreliable rainfall making irrigation necessary.
- ❖ Presence of sunny conditions for the ripening of the cotton and other crops.
- ❖ Presence of gently sloping land that allows irrigation by gravity flow thus reducing costs of pumping.
- ❖ Presence of fertile alluvia soils deposited by the Blue Nile during floods supporting cotton growing and other crops.
- ❖ Presence of scanty semi desert vegetation that was easy to clear for the establishment of the scheme.
- ❖ Presence of soils for easy construction of the canals.
- ❖ Presence of low unreliable rainfall that necessitated irrigation farming.



- ❖ Presence of a firm foundation ground for the construction of Sennar dams as a water reserve for the scheme.

### **HUMAN FACTORS:**

- ❖ Availability of adequate capital provided by the gov't of Sudan to buy irrigation infrastructures and other farm inputs e.g. fertilizers.
- ❖ Availability of ready market for cotton both in Sudan and abroad.
- ❖ Availability of cheap labour to work on the scheme provided by the original inhabitants

### **THE ORGANIZATION OF GEZIRA IRRIGATION SCHEME.**

The Gezira irrigation scheme is managed by the Gezira irrigation board. Cotton is transported by railway to Sudan (port) for export to Germany, France, Italy e.t.c.

The major ginneries on the scheme are at Barakat Managil and Hasaheisa.

### **OTHER IRRIGATION SCHEMES IN SUDAN INCLUDE;**

1. Kenana scheme ( sugar cane)
2. Rahad scheme(cotton)

### **PROBLEM FACING GEZIRA IRRIGATION SCHEME.**

- ❖ Soil exhaustion due to monoculture.
- ❖ Destruction of vegetation cover leading to global warming.
- ❖ Increased salinization of soil due to excessive heat.
- ❖ Siltation which leads to blockage of canals calling for expensive dredging.
- ❖ Soil erosion due to monoculture.
- ❖ Salinization due to excessive heat.
- ❖ high rates of evaporation
- ❖ Shortage of skilled labour especially during harvesting season.

- ❖ Pests that destroy growing crops leading to low productivity
- ❖ Weeds that compete with the growing crops leading to low yields.

### **SOLUTION TO THE ABOVE PROBLEM.**

- ❖ Spraying to control and diseases.
- ❖ Dredging of canals.
- ❖ Carrying out afforestation especially planting eucalyptus.
- ❖ Application of fertilizers.
- ❖ Plenty of legumes e.g. beans, cowpeas to maintain soil fertility.
- ❖ Recycle or treatment of industrial wastes.
- ❖ Carrying out deep ploughing to control the weeds.
- ❖ Introduction of land consolidation policies.
- ❖ Introduction of migrant labour /hiring workers during harvesting season.
- ❖ Prevision of loans / financial aid from developed partners.
- ❖ Diversification of agriculture to include dairy farming, growing of fruits and food crops.

Benefits of Gezira irrigation schemes to the people of Sudan  
(Research)

***(Leave a space for guiding question)***

### **CASE STUDY II:**

#### **RICHARCH TOLL IRRIGATION SCHEME:**

The Richard Toll irrigation scheme gets water from R. Senegal and the main crops are rice and sugarcane. And it lies in the transition zone between the tropical continental and desert margins.

The water used for irrigation is provided by R. Senegal.

The main crops grow are rice and sugarcane.

### **OTHER CROPS GROWN INCLUDE**

- ❖ sweet potato
- ❖ Beans
- ❖ Maize.

The region receives 400mm per annum necessitating the practice of irrigation farming.

### **AIMS OF RICHARD TOLL IRRIGATION SCHEME.**

- ❖ To increase crop production.
- ❖ To control floods on R.Taoue during wet season.
- ❖ To develop the area through agriculture.
- ❖ To prevent the sea water from entering R. Taoue because it is saline.

### **CONDITIONS THAT FAVOURED THE ST. OF RICHARD TOLL IRRIGATION SCHEME**

#### **PHYSICAL FACTORS:**

- ❖ Presence of large supplies of water for irrigation provided by the Blue Nile and Sennar dam.
- ❖ Presence of vast land for the establishment of the scheme and expansion of the scheme.
- ❖ Presence of gently sloping land that allows irrigation by gravity flow thus reducing costs of pumping.
- ❖ Presence of semi -arid conditions/ low and unreliable rainfall making irrigation necessary.
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- ❖ Presence of soils for easy construction of the canals.
- ❖ Presence of low unreliable rainfall that necessitated irrigation farming.
- ❖ Presence of a firm foundation ground for the construction of Sennar dams as a water reserve for the scheme.

**HUMAN FACTORS:**

- ❖ Availability of adequate capital provided by the gov't of Sudan to buy irrigation infrastructures and other farm inputs e.g. fertilizers.
- ❖ Availability of ready market for cotton both in Sudan and abroad.
- ❖ Availability of cheap labour to work on the scheme provided by the original inhabitants

3. Rahad scheme(cotton)

**HUMAN FACTORS:**

Refer to FRADIC

**BENEFITS OF THE SCHAEMES (REFER TO DREAMS FIR)**

- ❖ The schemes control seasonal floods that used to destroy farms property and people's lives.
- ❖ The dams created are sources of water for domestic and industrial use.
- ❖ Increased crop productivity through irrigation leading to food security.
- ❖ It has promoted research and scientific study leading to leading to high output.
- ❖ Provision of raw materials leading to provision development of agro-based industries.

- ❖ It has stimulated growth of urban centers thus bringing social services closer to the people.

## **PROBLEMS THAT RESULTED FROM ESTABLISHMENT OF THE SCHEMES.**

- ❖ Salinization due to high evaporation rates.
- ❖ Displacement of people for the establishment of the people.
- ❖ High costs of maintaining the irrigation schemes and facilities e.g. dams and canals.
- ❖ Rapid growth of weeds due to irrigation.
- ❖ Water-borne diseases e.g. bilharzia , malaria spread by snails and mosquitoes respectively.
- ❖ Pollution of air, water and due to use of agro-chemicals.
- ❖ Industrialization which has led to loss of vegetation cover affecting the water table.

## **LIVE STOCK FARMING IN AFRICA.**

### **DEFINATION;**

Is the rearing of animals such as cattle, goats, sheep, donkeys etc.

There are three major types of livestock farming and they include;

1. Nomadic pastoralism.
2. Livestock ranching
3. Dairy farming.

### **A. NOMADIC PASTORALISM IN AFRICA.**

This is the type of livestock rearing where farmers move from one place to another with their animals in search for water and pasture. Sometimes, this type of livestock farming is known as transhumance. I.e.The seasonal movements of herdsmen with their animals in search for water and pasture. Animals kept are cattle, sheep, Donkeys, Goats camels

## **EXAMPLES OF NOMADS IN AFRICA.**

1. The Fulani of West Africa.
2. The Somali of Somali
3. The Tuaregs of North Africa
4. Berbers of Sahara desert.
5. The Xhosa of south Africa
6. Hottentots of Botswana.

## **CHARACTERISTICS OF NOMADIC PASTORALISM**

- ❖ They have no permanent settlements.
- ❖ They keep large herds of indigenous breeds.
- ❖ Low quality yields especially milk.
- ❖ Animals depend on natural pastures only.
- ❖ They practice transhumance especially the Fulani of west Africa
- ❖ They do not practice scientific methods of cattle rearing.
- ❖ They burn grass at the end of the dry season.
- ❖ They practice overstocking leading to overgrazing.
- ❖ The move long distances in search for water and pasture
- ❖ Animals are kept for prestige i.e. the more herds you have the more respect in society.
- ❖ They practice cattle rustling.

## **FACTORS FAVOURING THE PRACTICE OF NOMADIC PASTORALISM.**

- ❖ It is their culture to move from one place to another looking for water and pasture for their animals.
- ❖ Presence of sparse population leaving vast land for grazing of animals.
- ❖ Communal ownership of land permitting nomads to move freely with their animals.

- ❖ Keeping of local breeds which are resistant to pests, drought and moving long distances.
- ❖ Shortage of pasture forcing them to move from one place to another.
- ❖ Unreliable rainfall making crop growing almost impossible hence nomadic pastoralism as the best land use alternative.
- ❖ Limited interference by the nomads to has made such areas remain remote permitting surface water especially in the long dry season forcing them to move in search for it.
- ❖ High incidences of pest and diseases forcing the nomads to move from place to another to avoid diseases infected areas.
- ❖ Presence of infertile soils that discourage crop cultivation offering cattle rearing as the land use alternative.

### **CASE STUDY I: THE FULANI OF WEST AFRICA.**

The Fulani are pastoralists who move with their animals in the whole region of West Africa.

They wonder across borders i.e. they do not respect international boundaries from Senegal to L. Chad.

The Fulani are therefore in countries like Nigeria, Senegal, Cameroon, Burkina Faso, Chad etc.

The Fulani live in the dry savanna land where grass is limited with limited rainfall to almost even month.

The movement of the Fulani follows North and south ward trend following the apparent movement of the sun which is termed as latitudinal transhumance.

The Fulani cannot stay in one place for more than two weeks in the course of the year.

The Fulani barter milk, cattle, cow dung with the settle farmers.

### **ACTIVITIES OF THE FULANI.**

- ❖ During the dry season, grass dries up as well as the streams forcing the Fulani to move south ward to look for water and pasture.
- ❖ During this season however they burn grass, dig wells and collect nuts
- ❖ the animals are spread out in search for water
- ❖ The south ward movement is limited by;
  1. Presence of tsetse flies
  2. Wild animals like hyenas.
  3. Too much rain fall.
  4. High humidity.
- ❖ During the wet season, the Fulani move northwards to seek tsetse fly free lands in the mountain of Cameron, Jos plateau, Fouta Djalou etc.
  
- ❖ During this period the Fulani perform the following activities;
  1. Removing ticks which are normally done by elders.
  2. Felling of trees to make kraals to protect their herds.
  3. Organizing bull fighting etc.However the northward movement is limited by;
  1. Sand storms ( towards Sahara desert)
  2. Very hot pasture.
  3. Shortage of water.



## **PROBLEMS FACED BY NOMADIC PASTORALISTS.**

- ❖ Prolonged drought leading to death of animals.
- ❖ Remoteness of pastoral areas affecting transportation of animals products to the markets.
- ❖ Poor breed of cattle leading to low yield i.e. meat and milk.
- ❖ Shortage of pasture leading to death of animals.
- ❖ Frequent attacks from wild animal especially hyenas to both the animals and pastoralist.
- ❖ Pests and diseases e.g. tsetse flies that cause nagana, these reduce the weight of animals affecting the quality.

## **B. LIVESTOCK RANCHING.**

Ranching is the commercial rearing of cattle using scientific methods of management purposely for beef.

In Africa, countries with developed ranching schemes include

- Botswana
- Zimbabwe
- South Africa
- Zambia
- Nigeria
- Angola
- Ghana

## **CHARACTERISTICS OF RANCHING.**

- ❖ Ranches are divided into paddocks.
- ❖ record keeping is done
- ❖ practice scientific methods of animal husbandry
- ❖ Selective breeding is done to ensure high quality breeds.
- ❖ The carrying capacity of land is strictly followed.
- ❖ Animals are provided permanent water source in each paddocks

- ❖ Farms are extensive covering large tracts of land. Animals are given supplementary feeds i.e. cattle cake.
- ❖ They practice artificial insemination, dehorning, castration, deworming, all these are done on a daily basis.
- ❖ Ranches are mostly established in areas with reliable rainfall.

### **PROBLEMS FACING RANCHING.**

- ❖ Overgrazing leading to soil erosion and loss of pasture.
- ❖ Diseases like rinder pest, foot and mouth disease affecting the animals leading to low yield.
- ❖ Shortage of food / famine leading to death of the pastoralists.
- ❖ Limited capital to improve on their animal's husbandry leading to low output.
- ❖ Cattle rusting that lead to loss of lives and property.
- ❖ Bush burning leads to destruction of grass exposing the land to agents of soil erosion

### **SOLUTION TO THE ABOVE PROBLEMS/ MEASURES.**

- Planting artificial grass to supplement the natural pastures.
- Establishment of processing plants to process their products within pastoral areas.
- Construction of infrastructures especially roads so that they can deliver their products to market.
- Encouraging to settle down and grow to overcome the problem of famine
- Cross breeding to improve on the quality of the animals breeds
- Regular spraying to control pests.
- Paddocking to reduce the threat of wild animals.
- Extensional workers especially veterinary doctors to help them control pests and diseases.
- Educating pastoralists modern methods of livestock rearing through setting up demonization ranches.

- Establishment of irrigation schemes for the growth of crops and fodders crop for the animals.

## **CASE STUDY I:**

### **RANCHING IN BOTSWANA.**

Apart from mining of diamonds, copper and nickel, Botswana has modernized her livestock industry and different demonstration ranches have been setup.

The major ranches in Botswana include;

1. Kenye
2. Seowe
3. Molepole
4. Mahapye
5. Lobatse and it has largest abattoir in Africa.

### **AIMS OF ESTABLISHING THE DEMONSTRATION RANCHES IN BOTSWANA.**

- To demonstrate modern beef management using government funds.
- To let interested farmers participate in their own ranches such that they can apply the same techniques used on the ranches.
- Farmers on the demonstration ranches are taught the following;
  - Record keeping
  - Deworming
  - selective breeding
  - dehorning
  - castration
  - use of simple machines e.g. burdizzo

### **N.B:**

Farmers in Botswana practice mixed farming i.e. they rear animals and grow subsistence crops like millet sorghum, maize and beans.

## **CONDITIONS THAT LED TO ESTABLISHMENT OF DEMONSTRATION RANCHES IN BOSTSWANA.**

- Presence of vast land for the establishment of demonstration ranches
- Presence of low and unreliable rain fall which could not support crop growing hence favoring establishment of demonstration ranches.
- Limited economic activities in Botswana due to rainfall soils
- Abundant pastures provided by natural vegetation that forces people into ranching.
- Limited surface water especially during the dry season which forces farmers to confine animals in one pace so as to provide the necessary food requires i.e. pasture and water.
- relatively flat land scape for easy movement of animals and construction of paddocks

## **HUMAN FACTORS.**

- Improved transport to enable distribution of animals products to distant markets especially use of railway and road transport.
- Skilled labour provided by the South Africa to work on the ranches.
- Ready market for animal products from within Botswana and neighboring countries especially south Africa.
- Adequate capital provided by the government to establish demonstration ranches and to pay workers.
- N.B: beef exported to Britain, Ghana, Nigeria South Africa Zambia, Angola etc.

Other exports from Botswana include;

1. Hide and skins

2. Diamonds
3. Asbestos
4. Copper
5. gold
6. Nickel.

### **BENEFITS OF DEMONSTRATION RANCHES IN BOTSWANA.**

- Refers to DREMS fir
- It has led to increased productivity of animal products thus leading to self-reliance.
- They have provided extension services to the farmers hence improving the quality of the animals products
- They have improved marketing conditions through Botswana meat commission which has improved profits on the side of the farmers
- It has promoted research and scientific study which has improved on the quality of the meat / animal products

### **PROBLEMS FACED BY RANCHES IN BOTSWANA.**

- ❖ Prolonged drought leading to death of animals.
- ❖ Remoteness of pastoral areas affecting transportation of animal products to the markets.
- ❖ Poor breed of cattle leading to low yield i.e. meat and milk.
- ❖ Shortage of pasture leading to death of animals.
- ❖ Frequent attacks from wild animal especially hyenas to both the animals and pastoralist.

- ❖ Pests and diseases e.g. tsetse flies that cause Nagana, these reduce the weight of animals affecting the quality.

Question: Outline the measures being taken to develop ranches in Botswana.