

SCHEME OF WORK

WEEK 1: AGRICULTURAL LAWS AND REFORMS

1. Definition of land ownership and tenure systems.
2. Land ownership and tenure systems in Nigeria.

WEEK 2: LAND USE ACT OF NIGERIA

1. Features of the Act
2. The need for the government to enforce the law.

WEEK 3. ROLE OF GOVERNMENT IN AGRIC PRODUCTION

1. Meaning of roles of government in agricultural production
2. Roles of government in in Agricultural production (i) Formulation of policies (ii) Drawing up of programmes and so on.

WEEK 4. FOREST MANAGEMENT TECHNIQUES

1. Definition of forest management
2. Techniques: Forest regulation, Selective exploitation, Deforestation, Regeneration, Afforestation, Taungya system.

WEEK 5: DISEASES OF CROPS

1. Diseases of major crops. Examples; Cereals: Cornsinut, Rice blast, Leaf rust.
2. Legumes: Cercospora, Leafspot, Rosette.
3. Beverages: Cocoa black pod disease.

WEEK 6: DISEASES OF CROPS CNT'D

1. Tubers and Roots: Cassava bacteria blight,
2. Mosaic virus disease.

WEEK 7: SYMPTOMS AND ECONOMIC IMPORTANCE OF CROP DISEASE.

1. Examples of symptoms of crop diseases; Yellowing, Rots, Wilting, Stunting or Stuntedness
2. Economic importance of crop diseases

WEEK 8: PREVENTIVE AND CONTROL MEASURES

1. Cultural methods
2. Biological methods
3. Chemical methods

WEEK 9: PESTS OF CROPS

1. Important insects pests of major cereals; Stem borers, armyworms, earworms
2. Legumes; Pod borers, Aphids, Sucking bugs, Beetles

WEEK 10: REVISION

WEEK 11: EXAMINATION

TOPIC: AGRICULTURAL LAWS AND REFORMS

Agricultural laws and reforms refers to the laws put in place to regulate the processes and modes of acquisition of agricultural resources.

Land ownership on the other hand means the condition and arrangement under which land is acquired and held by individuals or group of persons.

There are several systems of land ownership practiced in Nigeria. The main systems are;

1. Communal ownership of land
2. Private individual ownership
3. Tenant ownership which is grouped into:-
 - a. Cash tenant or Leasehold
 - b. Tenant at will of government
 - c. Individual Inheritance.

1. COMMUNAL OWNERSHIP SYSTEM:

This is a land tenure system where the land is collectively held in trust by the present generation of a community for their future generation or ones. In this system, every adult citizen of the community is entitled to a piece of land for the cultivation of his crops but such a piece of land could be given to another person by the subsequent planting season. The individual using the land has no right to sell it to another person since it is a communal land.

Some of the merits of this system of land ownership include:-

- (i). Fair treatment and equal opportunity of giving land to every adult member of the community who is interested in farming.
- (ii). Land can be used as collateral to obtain loan from bank by the community
- (iii). It is easier to modernize agricultural production on communal land.
- (iv). Government find it easier to access communal land for developmental project than land held by private individuals.

The demerits of communal system of land ownership include:-

(i). Nonchalant treatment of land by individuals while holding it for use knowing fully well that land may not fall to him in the next farming season.

(ii). Some individuals who do not want to farm may collect their portion of the land and keep it idle to fallow without anyone using it.

(iii). Since the land is often fragmented by sharing among individual farmers, farm mechanization is almost impossible.

2. PRIVATE INDIVIDUAL OWNERSHIP:

In this system of land ownership, the right of tenure and usage of land is recognized as being given to a specific individual. Such land can be acquired by purchasing or given out as a gift of land owning community especially in areas where the demand for land is not great.

This system has the following merits;

(i). The private owner can use the land as collateral to obtain loans from banks.

(ii). The land could be leased or sold out rightly by the owner.

(iii). It encourages the development of land especially if the owner is an industrialist. However, some demerits are observed to be associated with this system and include:-

(i). It may lead to land shortage with increasing population and give rise to landless workers.

(ii). Rent on land or price of sales might sky rocket due to high demand for land.

(iii). Land fragmentation result at the long run.

3. TENANT OWNERSHIP OF LAND:

This system defines land right as limited only to the right to use the land. In this system, the tenure belongs to one person or group of persons (the landlord) who for one reason or the other (money or other reward) allows another person (the tenant) the right to use the piece of land for a specific period.

There are three important types of tenancy ownership of land;

i. Cash tenancy

ii. Land pledging and

iii. Share cropping, all of which have their respective advantages and disadvantages.

4. TENURE BASED ON INDIVIDUAL INHERITANCE

This system is the most commonly practiced in West Africa. It is an ascribed ownership provision by nature. Qualification to own land by this system is membership of land owning community or family.

It has its merits and demerits

An observation of all land tenure systems call for regular review by the government in order to create dynamic tenure that cope with the rapid changes of time and population.

ASSIGNMENT:

Write concise notes on:-

- i. Private ownership of land
- ii. Tenant ownership of land
- iii. Individual inheritance.

TOPIC: LAND USE ACT OF NIGERIA

In 1978, the then Head of States and Commander in Chief of Nigerian Armed Forces of the Federal Republic of Nigeria, Lt. General Olusegun Obasanjo made a legal pronouncement binding on all Nigerians as regards ownership or uses of land within Nigeria's territorial integrity. This decree is tagged "Land Use Act of 1978". The sequences of the decree are as follows:-

1. Objectives of the Act.

To mobilize land from its redundancy or inappropriate uses to the accessibility of intending and practicing farmers for large scale agricultural production.

2. Terms of the Decree

(a). All land in the country are vested in the Federal Government of Nigeria to be held in trust for the people i.e the acquisition and use of land for whatever purpose are to be controlled by the Federal Government.

(b). The Decree empowers each State to act on behalf of the Federal Government in all matters related to land in the State.

(c). Before anybody could be legally recognized as owning any piece of land, he/she must have applied to government, paid for the land and thereafter be issued with a certificate of occupancy on the acquired land.

(d). Every Nigerian is qualified to acquire land for use one he/she has obtained the age of 21years.

The advantages of the land use act of 1978 include:-

1. The decree makes it easier to acquire large parcel of land for agricultural production.
2. It encourages commercial agriculture.
3. It makes it possible for anybody to acquire land and use it purposefully.
4. It helps to excesses of land speculators.

Disadvantages of land use Act of 1978:-

1. It makes land held by inheritance insecure.
2. Privileged individuals in the society and government can exploit the decree to acquire excessive amount of land.

3. The serious bureaucratic administrative bottle necks common with government machinery often makes it difficult to obtain land from the government sources.

ASSIGNMENT:

Write short notes on Advantages and the Disadvantages of the Land Use Act of 1978 of Nigeria.

TOPIC: ROLES OF GOVERNMENT IN AGRICULTURAL PRODUCTION

There are several roles which the government plays in facilitating agricultural production. These roles can be grouped into two major categories, namely:-

1. Formulation of agricultural policy
2. Drawing up of agricultural programmes

Agricultural programmes are practical undertakings directed at mobilizing people and existing resources to achieve agricultural growth and development.

The following programmes have been put in place and sustained in Nigeria;

1. National Accelerated Food Production Programme (NAFPP).
2. Operation Feed the Nation (OFN).
3. River Basin and Rural Development Authority (RBRDA).
4. Green Revolution
5. Agricultural Insurance Scheme (AIS)
6. Agricultural Development Programme (ADP)
7. The National Agricultural Land Development Authority (NALDA)
8. Establishment of Agricultural Loan/Credit Scheme
9. Establishment of Subsidies Scheme
10. Establishment of Livestock Vaccination Scheme (LVS)
11. Establishment of extension services
12. Establishment of Agricultural Specialized Institutions and Teaching of Agricultural Education in Schools.
13. Establishment of Farm Settlement Schemes
14. Agro-Service Centres
15. Establishment of necessary regulations
16. Establishments of Research Grants.

Government give grants to the research institutes and higher institutions in order to offer latest information or practices on:-

(a) Improved and high yielding production materials such as seeds, seedlings, fingerlings and so on.

(b) The appropriate technologies as in the areas of land preparation, planting, harvesting. Processing and storage of farm produce which are not only efficient and economics but also capable of reducing the usual drudgery of farming.

(c) The development of appropriate technologies for optimum utilization of farm inputs.

ASSIGNMENT:

Mention ten roles of government on agricultural production.

TOPIC: FOREST MANAGEMENT TECHNIQUES.

Definition of terms:

1. Forest: A forest is a large expanse of land which is predominantly covered with trees, shrubs, lower plants, wildlife animals as well as other lower animals. Where forest is man-made, the natural forest trees are felled and systematically replaced with desired trees species.
2. Forestry on the other hand refer to a body of knowledge which deals with the study of forest and forest resources and its usefulness to man and the environment.
3. Forest management techniques means time-tested measures which can be taken to manage forest land and forest resources.

IMPORTANCE OF FOREST TO THE WEST AFRICAN COUNTRIES

The forest are beneficial to man in the following ways:

1. They serve as a source of edible fruits, bush meat and wood for fuel.
2. Timber is obtained from the forest and is used in building and furniture construction.
3. Mechanical herbs are sourced from the forest.
4. Forest establishment, management and exploitation offer gainful employment to people.
5. Forest serve as tourist or recreational centres.
6. Sales of forest products such as timber generate foreign exchange earning to a nation.
7. Forest trees have great influence on the prevailing climate of any location.
8. Forest trees serve as wind break for such crops like cocoa, plantain crops.
9. Forest trees provide shade, food and shelter for wild animals.
10. Forest trees and plants recycle soil nutrients effectively, add organic matter to the soil, improve soil physical properties, conserve soil moisture and protect soil against erosion.

The forest trees draw their nutrients from the lower soil horizons and bring them up through leaf fall.

FACTORS THAT INFLUENCE FOREST ESTABLISHMENT.

There are some factors that affect forest establishment since forest establishment is not a haphazard affair. It is therefore guided by a number of factors which include:-

1. Choice of site: Forest trees takes time to mature. The site to be chosen must be such that it guarantees the tree undisturbed growth from establishment to the point of exploitation. Choose a site that is level or undulating.
2. Accessibility: The site to chosen should be accessible for easy establishment and maintenance of the forest trees.
3. Easy access to water supply.
4. Nature of forest: A forest could consist of single species of tree (pure plantation) or multiple species (mixed plantation) forest. This has to be decided on the particular forest species to establish by the farmer.
5. Spacing: The spacing for the forest trees is determined by the forest trees species and purpose for which the trees were established.
6. Nature and type of soil: A good soil with good internal and surface drainage is desired. Water-logged soil does not favor forest establishment.

MAINTENANCE MEASURES FOR FOREST

Where the forest are man-made, efforts are made to maintain them with a view to improving the productivity of the forest trees. The measures include:-

1. Weeding: Regular and timely weeding at the early stages of forest trees. Herbicides may be used in controlling weeds at such an early stage.
2. Thinning and Pruning: Forest trees develop rapidly to the required height and shape if they are appropriately thinned and pruned.
3. Pest control: The forest trees has to be protected from pest and disease pathogens. Pesticides like insecticides, nematicides, fungicides etc may be used in controlling common pests and disease pathogens.
4. Prevention of fire outbreaks.
5. When matured trees are felled, care should be taken to prevent damage to young trees or immature ones.
6. Reseeding of aged species.
7. Supplying
8. Fertilizer application especially at the early stages.

9. Practicing taungya system.

ASSIGNMENT:

Write short notes on the following;

- i. Factors affecting forest establishment
- ii. Methods or measures for maintaining forest.

TOPIC: DISEASES OF CROPS.

Crop diseases refer to the abnormal condition created within the body of crop plants due to the presence and activities of pathogens or diseases causing organisms.

The presence of disease pathogens is usually manifested in crops by some external signs and symptoms. For example, tip-die back, leaf chlorosis and distortion, root galls and so on are symptoms of some crop diseases.

ECONOMIC IMPORTANCE OF CROP DISEASES

These include;

1. Crop disease leads to loss of seed viability. For example, diseases infected seeds, stems or stem cuttings and tubers often fail to germinate.
2. Diseases reduce the yields of crops
3. They can even cause total crop failure.
4. Diseases infected crops or their products suffer loss of quality.
5. Low quality of crop produce due to disease infection leads to farmers recording or earning less profit.
6. Crop diseases destroy crops in the field or destroy their products in store.
7. Control of crop disease contributes to increasing the cost of crop production.
8. Crop diseases cause deformities in products and render the affected parts unattractive to consumers.

Examples of major diseases of cereal crops include:-

1. Maize Rust:

Causative organism: is fungus (*puccinia polysora*)

Mode of transmission is by wind but can be spread by rain splash (water) and insects.

Symptoms are;

- i. Long and narrow blisters on the leaves, leaf sheath and stems.
- ii. Development of raised pustules

- iii. Turning brown of the brownish/rusty coloured postules
- iv. Development of fewer seeds and cobs

Control measures;

- i. Use of protection fungicides
- ii. Burning of infected plants
- iii. Breeding and use of resistance varieties
- iv. Enforcement of efficient quarantine regulations.

Other major diseases of cereal crops include;

- 2. Maize smut
- 3. Rice blast
- 4. Rice bacterial leaf blight.

Major diseases of Legumes Crops. These include:

- 1. Groundnut Rosette.

Causal organism is groundnut rosette virus (GRV)

Mode of transmission is an insect vector called Aphid. The particular Aphis is known as (aphis cracivora)

Symptoms include:

- i. Shortened internodes
- ii. Wrinkled leaflets
- iii. Reduction in leaflet size
- iv. Leaves have dark pale and green coloration.
- v. Leaves remain bunchy
- vi. Pods may be incompletely filled
- vii. Infected plants become stunted or dwarfed.

Control measures of groundnut rosette;

- i. Practice dense spacing
- ii. Spraying aphids with insecticides
- iii. Practicing early planting
- iv. Burning or burying infected plants
- v. Use of resistant groundnut varieties
- vi. Adoption of a good crop rotation

2. Bacterial wilt of groundnut:

Causal organism is a bacterium known as *Pseudomonas solanacearum*.

Mode of spread is by movement of water in the soil

Symptoms;

- i. Under water stress, the groundnut becomes chlorotic and then wilts.
- ii. There is dark brown discolouration of the xylem tissue.
- iii. Slimy exudate is produced in the vascular bundles of the stems. This could be pressed out when the stem is cut.

Control measures;

- i. Removal of alternate host plants
- ii. Long rotation without susceptible crops

3. Peanut spotted wilt

Causative agent; Peanut spotted virus vector or agent of spread is *Thrips tabaci*

Symptoms;

- i. Small rounded and rogues leaves
- ii. Ring spots and line patterns appear on leaves
- iii. Lesions that are irregular shaped develop on the leaves and petioles

- iv. Defoliation of plants
- v. Shortening of the internodes and the auxiliary shoots
- vi. Reduction in the number of flowers produced

Control Measures;

- i. Removal of alternate host plants.
- ii. Long rotation
- iii. Plant disease-free seeds
- iv. Eliminate alternate weed host
- v. Use insecticides to reduce the propagation of Thrips.

ASSIGNMENT:

Discuss the following disease of crops;

1. Rice blast 2. Maize smut 3. Groundnut rosette disease 4. Peanut spotted wilt virus disease
under the following headings;

- a. Causal organism
- b. Mode of spread
- c. Symptoms
- d. Control measures

MAJOR DISEASES OF TUBERS AND ROOTS CROPS

1. Tuber Rot of Yam

Causal organism is fungus known as *Botryodiplodia Theobromae* and *Fusarium* spp.

Mode of spread is by nematode and insect which create entry points for the fungus.

Symptoms are;

- i. Tuber tissue with the wet rot shreds into watery mash.
- ii. Infected tubers lack firmness when pressed.
- iii. The tissue appears brown and dried with the dry rot

Control Measures;

- i. Dry cut surfaces of tubers before planting
- ii. Dress tubers with appropriate fungicides e.g Aldrex-T, before planting.
- iii. Adoption of a good crop rotation practice
- iv. Use nematicides to control nematodes

2. Cassava Mosaic Disease

Causal organism is a virus called cassava mosaic virus (CMV)

Vectors: are white flies (*Bemisa tabaci*). Man is also a veritable factor of transmission.

Symptoms:

- i. Leaves are reduced in size and are distorted.
- ii. Leaves have yellow areas with normal green background.
- iii. Leaves have chlorotic areas and there is vein clearing.

Control Measures:

- i. Use of insecticides to kill the white flies
- ii. Use resistant cassava varieties
- iii. Remove and burn or bury infected plants

iv. Adopt efficient quarantine services or practice.

3. Cassava Bacterial Blight (CBB).

Causal organism is a bacterium called (*Xanthomonas Manihotis*)

Mode of spread of CBB is by the use of infected stem cuttings, rain splash, activities of animals including man and insects, and by the use of contaminated tools.

Symptoms include;

i. Leaf spotting

ii. Leaf blight i.e leaves looking burnt

iii. Wilting of plants

iv. Tip-die back (leaves drying progress well from tip towards the base)

v. Exudation of yellow gummy droplets

vi. Necrosis of stem and root vascular tissue

vii. Defoliation

Control Measures

i. Use of bare fallowing

ii. Use of resistant cassava varieties

iii. Disinfect tools before using to cut stem

iv. Adopt a good crop rotation practice.

4. Dry Rot of Yam

Causal organism is yam nematodes called (*scutellonema bradys*)

Modes of spread are;

a. through growing points

b. damaged areas in the surface of tubers

Symptoms are;

- i. cause dry rot through cell destruction and necrosis
- ii. cracking of the skin of tubers
- iii. Lead to the complete destruction of stored tubers

Control Measures;

- i. Treat with hot water (50°C for 15-40mm)
- ii. Cold water dips in Thionozin (1250ppm)

5. Cassava Brown Leaf Spot

Causal organism is a fungus (*Cercosporidium henningsii*).

Modes of transmission are by;

- a. Rain splash
- b. wind blowing the spores

Symptoms include;

- i. Development of characteristic brown spots on both sides of leaves.
- ii. The lesions expand and become irregular.
- iii. Yellow halo appears round the lesion.
- iv. Highly infected leaves turn yellow, become dry and fall off – severe defoliation may also result.

Control Measures;

- i. Plant disease resistant varieties
- ii. Application of copper fungicides is effective but not economic.

ASSIGNMENT:

Write a concise note on the following;

- a. Yam tuber rot
- b. Cassava Mosaic virus

c. Yam dry spot

d. Cassava brown leaf spot.

TOPIC: SYMPTOMS AND ECONOMIC IMPORTANCE OF CROP DISEASES.

Generally crop diseases symptoms fall into the following groups, namely;-

1. Abnormal increase in the tissue:

This occurs as a result of excessive cell multiplication (hyperplasia) and excessive cell enlargement (hypertrophy). Symptoms that fall into this group are;

i. Cankers, scab and root

ii. Necrosis: This refers to the death of plant tissues. The necrotic tissues often appear as lesions that later turn brittle.

iii. Wilting: Wilting can be caused by interference in water uptake and use in the plant (physiological wilting). The physiological wilting can be corrected by application of enough water unless the affected plant has reached permanent wilting point. There is also what is called pathological wilting which is caused by pathogenic attack.

iv. Change in colour (yellowing or chlorosis). Break down or even impaired formation of chlorophyll (green colouring pigment in mostly green leaves) lead to chlorosis, yellowing.

v. Stunting or stuntedness. This refers to a situation whereby the leaves or plant parts fail to develop to a normal size. It is called 'hypoplasia'.

vi. Unusual change in morphology or organs – For instance maize fruits infected by smut disease have the fruits enlarged and filled with fungal spores.

vii. Gumming: This is simply massive gum formation.

viii. Rotting: This involves disintegration of plant tissues leading to exudation of cell fluids in wet rot and production of powdery mass of cells in dry rot. Some symptoms of plant diseases can only be seen when the plant internal organs are exposed.

ASSIGNMENT:

Write a concise note on the general symptoms of crop diseases.

TOPIC: CULTURAL MEASURES FOR PREVENTING AND CONTROLLING CROP DISEASES.

This refers to the age long practice which is time tested to be effective in the prevention and control of crop diseases handed down to a generation by the previous one.

The many cultural measures for preventing and controlling crop diseases include among others the following:

1. Practicing bush fallowing, shifting cultivation, or land rotation: This simply means the practice of using a particular piece of land for crop cultivation over a period of two to three years and leaving the piece of land to go fallow so as to enable the lost nutrients to be replaced naturally. This practice eliminate diseases pathogens that have been observed to be prevalent in a given location.
2. Practicing crop rotation: This is simply defined as the practice of growing different crops on the same piece of land year in year out in a systematic manner. By this process, a crop disease that is wildly present in agiven area can be gotten rid of by naturally starving the pathogens by simply altering the crop planted on a particular area.
3. Early and timely planting of crops: When crops are timely panted or planted early, it helps the crops to escape the peak period of attack of a particular disease pathogen.
4. Planting disease resistant varieties: When a crop variety that is naturally resistant to a particular disease is cultivated in an area where the disease is prevalent, the crop will not be infected by the disease.
5. Practicing crop hygiene: The use of clean crop propagules always to propagate crops ensure that disease infection is avoided and so on.

ASSIGNMENT:

Write a concise note on the cultural measures for preventing and controlling crop diseases.

TOPIC: PEST OF CROPS

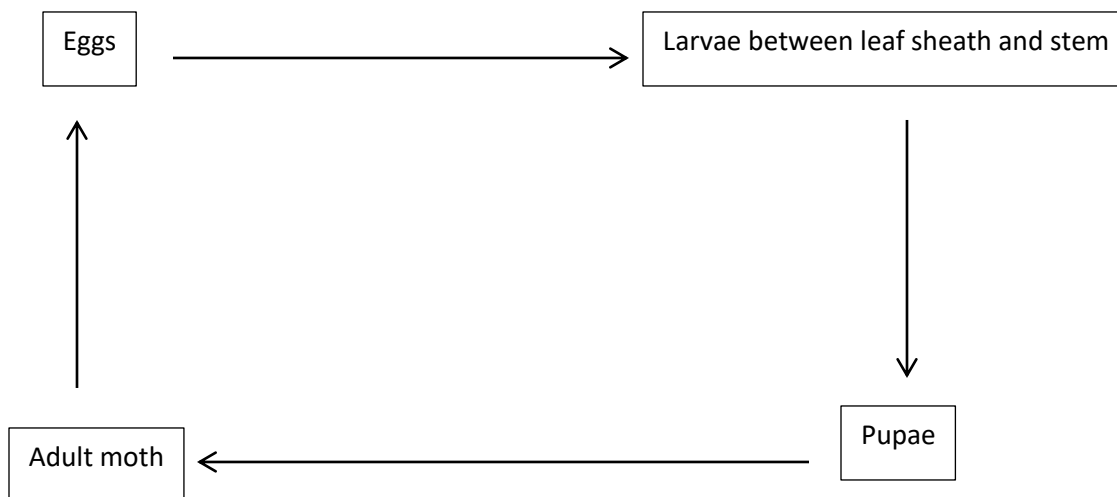
Crop pests refer to organisms which attack crops in the field or their stored produce in storage , infest them and cause significant damage to them.

The major insect pests of crops include:

1. Maize Stem Borer (*Busseola fusca*)

Life Cycle

The eggs are laid by the female moth at night between the leaf sheath and the stem. A female lays a total of about 400 eggs in batches of 30 – 400 and these hatch in 6 – 7 days. The newly hatched larvae remain under the leaf for about a day before migrating to the funnel from where they bore into the stem at about the third instar and there are about 6 – 7 instars. The average larval period is 33 days. As the dry season begins, the larvae enter diapausing (resting stage) and then take 6 – 7 months to develop. Early rains break the diapause and the larvae pupate and emerge within two weeks. In the rainy season, generation, there is no resting stage and life history is completed in two months. There are three generations in a year.



Damages:

a. The larvae feed on leaf funnels and young larvae and may cause death of the young plant destroying their growing oints.

- b. The bore into the stems and this causes stem lodging
- c. They infest and destroy the seeds and cobs

Control Measures:

- i. Use of systemic soil insecticides such as Furadan
- ii. Avoid planting late maize.

Life Cycle of Armyworm (*Spodoptera littoralis*).

Army worms occur where there is prolonged dry season. The female moths deposit egg masses on grass plants. The egg masses are covered by brown scales from their bodies. When the eggs hatch, the larvae feed on grasses initially and then migrate to maize fields. Pupation take place in the soil. The development period from egg to adult take place about one month.

ASSIGNMENT:

Write short notes on;

- i. Definition of crop pest.
- ii. Life cycle of maize stem borer.
- iii. Damages they cause
- iv. Control measures.