**AGRICULTURAL SCIENCE JSS 1**

**THIRD TERM**

## SCHEME OF WORK

**WEEK TOPIC**

1. Revision (Weed And Pest Control)
2. Factors of Production (Land)
3. Factors of Production (Labour)
4. Factors of Production (Capital)
5. Factors of Production (Management)
6. Field Trip
7. Farm Manager (Definition and Function)
8. Problems of Farm Managers
9. Revision
10. Examination

**REFERENCE BOOKS:**

1. JUNIOR SECONDARY AGRICULTURAL FOR NIGERIAN SCHOOLS, Book 1, by Anthony Youdeowei et al.
2. ESSENTIAL AGRICULTURAL SCIENCE FOR SENIOR SECONDARY SCHOOL by O. A. IWENA.

**WEEK ONE**

**TOPIC: REVISION (WEEDS AND PEST CONTROL)**

**CONTENT**

* Definition of Weed of Pest
* Types and Classification of pests
* Physical control, Chemical control and Biological control

**REVISION QUESTIONS**

1. What is a pest?
2. Mention two classes of pests.
3. What are weeds?
4. List five examples of weeds
5. State three features of weeds.
6. Describe four methods of controlling weeds
7. What is a pest?
8. State two types of insect-pests with two examples of each.
9. Mention five possible damage done by pest to crop

**WEEKEND ASSIGNMENT**

1. Herbicides are applied to the soil or to weed plants with machines known as \_\_\_ A. Spreader B. Sprayers C. Tractors D. weeders.
2. Chemicals which are can help to kill weeds are best known as A. larvicides B. Insecticide C. Herbicide D. Rodenticides.
3. Which of these is very difficult to use if the number of pest is high? A. chemical control B. physical control C. biological control D. cultural control.
4. The following are effects of weed except A. They make land cultivation difficult B. Weeds compete with cultivated crops for the nutrients in the soil C. Transmission of insects, fungi and other organism harmful to crops D. They results in the increase in value and quality of farm produce.
5. \_\_\_ involve the use of natural enemies of insect pests and weeds against them A. physical control B. chemical control C. cultural control D. biological control.

**THEORY**

1. Define pest.
2. List four methods of controlling weeds.

**WEEK TWO**

TOPIC: FACTORS OF PRODUCTION - LAND

Content

Introduction:

Production is the process of combining and converting inputs into outputs. This process relies on several critical resources known as factors of production, which include Land, Labour, Capital, and Management (Entrepreneurship). In agriculture, these factors are vital in ensuring the production of goods.

Definition of Land:

Land in the context of agriculture refers to the physical space where productive activities like crop cultivation, animal rearing, and farm infrastructure establishment take place. It stands as one of the most pivotal assets for farmers.

Acquiring land for agricultural purposes can occur through various means:

1. Purchase: This involves outright buying of the land, assuming full ownership.

2. Lease/Rent: Farmers can opt to lease or rent land, paying the landowner (individual or government) a stipulated amount for a specified duration.

3. Gift: Land may be acquired as a gift.

4. Inheritance: Inheritance is another way to obtain land.

The availability of land for agricultural practices is determined by several factors, including:

1. Population Growth: An increase in population reduces the available land for agriculture.

2. Land Tenure System: The method of land acquisition varies and influences its availability.

3. Topography: The physical characteristics of the land.

4. Ecological and Soil Fertility Status:\*\* The suitability of the land for cultivation.

5. Economic Factors: This includes land cost, capital availability, cultivation expenses, transportation, and legal regulations.

6. Socio-Cultural Factors: Religious and traditional beliefs may influence land use.

7. Climatic Factors: The climate of the geographical area plays a role in land suitability.

Characteristics of Land:

1. Natural Resource: Land is a gift of nature, a fundamental natural resource.

2. Immobile (Fixed Factor): Land is immovable, making it a fixed factor in production.

3. Subject to the Law of Diminishing Returns: Like other factors of production, the productivity of land is subject to diminishing returns.

4. Yields Rent: Land's reward comes in the form of rent collected from tenants.

5. Availability Governed by the Land Use Act:\*\* In Nigeria, land availability is regulated by the Land Use Act.

6. Limited Supply: Particularly in densely populated areas, the supply of land is limited.

7. Suitability Influences Output: The suitability of land affects agricultural output.

8. Quality Improvable: Various methods can be employed to enhance land quality.

9. Value Determined by Location: The location of land influences its value.

10. Appreciation/Depreciation Possible: Land can appreciate or depreciate in value over time.

Uses of Land:

Land use can be categorized into two main groups:

1. Agricultural Uses of Land:

- Forestry

- Establishment of game reserves/wildlife conservation

- Livestock production (e.g., fish farming, apiculture, pig farming)

- Crop farming

- Use as collateral for loans

2. Non-Agricultural Uses of Land:

- Construction (e.g., roads, airports)

- Social or recreational purposes (e.g., stadia, schools, markets)

- Residential buildings

- Industrial buildings

- Mining (e.g., extraction of petroleum, gold)

Appreciation of Land:

Land can appreciate (increase) in value through various methods, including fallowing, use of fertilizers, clean inputs, proper soil tillage, irrigation, good access roads, drainage, and increased population density.

Depreciation of Land:

Land can depreciate (decrease) in value or use due to factors like erosion, weed and pest infestation, disease, continuous cultivation without soil improvement, abuse, dumping of toxic materials, and water-logging.

Evaluation:

1. What is land?

2. Mention five characteristics of land.

Appreciation of Land:

1. \_\_\_ allows farmlands to rest, allowing them to regain lost nutrients.

A. Irrigation

B. Drainage

C. Crop rotation

D. Fallowing

2. Land can appreciate in value through the following, except:

A. Use of fertilizers

B. Irrigation

C. Water-logging

D. Good drainage

3. Dumping of toxic materials on land can reduce \_\_\_.

A. Soil structure

B. Soil texture

C. Soil fertility

D. Soil porosity

4. The reward of land is \_\_\_.

A. Rent

B. Wages

C. Interest

D. Loan

5. Land can be used as collateral for?

A. Profit

B. Loans

C. Debt

D. Wages

Theory:

1. What is land?

2. List five characteristics of land.

**WEEK THREE: LABOUR**

Content

Definition:

Labour encompasses all forms of productive human effort put into or utilized in the production process. It encompasses both the mental and physical exertions of individuals dedicated to aiding production.

Features of Labour:

1. Mobility: Labour is mobile and can be deployed as needed.

2. Skills and Training: Labour requires specific skills and often training, and it cannot be haphazardly applied.

3. Measurement: Labour is typically quantified in man-hours or man-days.

4. \*\*Compensation:\*\* The compensation for labour is in the form of wages and salaries.

5. Variable Asset: Labour is a variable asset that can be adjusted as needed.

6. Productivity: The size and quality of labour force significantly influence production or output.

7. Improvement: Labour output can be enhanced through training and skill development.

Evaluation:

1. What is labour?

2. State five features of labour.

Types of Labour:

The type of labour an individual provides depends on their training and education. The following are types of labour:

1. Skilled Labour: Highly educated and possess technical expertise for complex farm operations.

2. Semi-skilled Labour: Moderately educated and capable of performing simpler farm tasks.

3. Unskilled Labour: Possesses basic education and provides manual labor for farm operations.

Forms of Labour:

Forms of Labour available to farmers include:

1. Personal Labour: Labour provided by the owner of the farm.

2. Family Labour: Labour contributed by the head of the household, their spouse, and children, i.e., the farmer's family.

3. Communal Labour: Labour provided by neighbors and the community.

4. Hired or Paid Labour: Labour that is compensated either on a daily basis or with a monthly salary.

Uses/Importance of Labour in Agricultural Enterprise:

1. Labour is instrumental in utilizing other factors of production.

2. Skilled labour provides the expertise required for complex farm operations.

3. Labour is crucial for the success of any agricultural enterprise.

4. It plays a vital role in achieving various stages of agricultural production.

5. Labour is essential for converting natural resources into usable products.

General Evaluation:

1. Define Labour.

2. Mention five characteristics of labour.

3. List and explain the types of labour.

4. State five importance of labour in agriculture.

Weekend Assignment:

1. \_\_\_ is the type of labour provided by the owner of the farm.

A. Family labour

B. Personal labour

C. Hired labour

D. Communal labour

2. The mental and physical exertions of an individual in the production process are referred to as \_\_\_\_.

A. Land

B. Capital

C. Labour

D. Salary

3. \_\_\_\_ labour provides the expertise required for major farm operations.

A. Communal

B. Paid

C. Skilled

D. Skilled

4. \_\_\_\_ and \_\_\_\_ are the rewards of labour.

A. Profit and loss

B. Wages and interest

C. Loans and salaries

D. Wages and salaries

5. The unit of labour is \_\_\_\_.

A. Man-hours/days

B. Man-minutes/week

C. Man-month

D. Man-hour/year

Theory:

1. What is labour?

2. Explain any four forms of labour you know.

**WEEK FOUR**

**CAPITAL**

Content

Definition:

Capital encompasses all man-made productive assets utilized in the production process. Often, it is referred to as the financial resources used to initiate and sustain a farming venture. Capital can be broadly categorized as fixed and working (variable) capital.

Types of Capital:

1. Fixed Capital: These are assets acquired for continuous use in production and are not consumed during the production process. Examples include farm buildings, motor vehicles, farm tools, tractors, incubators, and irrigation equipment.

2. Working or Variable Capital: This type of capital is depleted during the production process. Examples include water, feeds, drugs, cash, vaccines, litter, fertilizers, seeds, and chemicals.

Sources of Capital:

Various sources from which a farmer can obtain the funds required to start or maintain a farming venture include:

1. Personal savings

2. Gifts from friends

3. Grants or aid from government and other organizations

4. Loans from friends

5. Loans from family members

6. Loans from banks and other financial institutions

7. Loans from the government

Characteristics of Capital:

1. Capital can either appreciate or depreciate.

2. The return on capital is in the form of interest.

Evaluation:

1. What is capital?

2. Mention two characteristics of capital.

Importance of Capital in Agricultural Enterprise:

1. It is utilized to establish a farm enterprise.

2. Working capital facilitates day-to-day farm operations.

3. Working capital is employed for wage payments.

4. It is used for purchasing farm inputs, maintaining farm equipment, and feeding livestock.

5. Fixed capital, such as immovable structures and farm machinery, provides essential resources for farm operations.

6. Fixed capital generates additional funds.

7. Fixed capital supports farm expansion and increased farm size.

General Evaluation:

1. Define capital.

2. List the types of capital you are familiar with.

3. Mention two characteristics of capital.

4. State five importance of capital in an agricultural enterprise.

Weekend Assignment:

1. Working capital is used for the following except:

A. Purchase of farm inputs

B. Maintenance services on the farm

C. To achieve the various stages of agricultural production

D. Feeding of livestock.

2. The following are examples of variable capital except:

A. Vaccines

B. Fertilizers

C. Incubators

D. Chemicals.

3. Materials that are not used up during production are known as \_\_\_\_.

A. Working capital

B. Fixed capital

C. Land capital

D. Farm capital.

4. \_\_\_\_ is the reward of capital.

A. Wages

B. Rent

C. Interest

D. Salary.

5. Fixed capital is \_\_\_\_.

A. Moveable

B. Irreplaceable

C. Immovable

D. Replaceable.

Theory:

1. What is capital?

2. State five importance of capital in an agricultural enterprise.

**WEEK FIVE**

**MANAGEMENT IN AGRICULTURE**

Content

Definition:

Management refers to the organization, coordination, and control of all factors of production to ensure that the goals of the farm enterprise are met. The goals of any farm enterprise include:

1. Making a profit

2. Reducing production costs

3. Providing quality produce (finished or raw)

4. Increasing the consumer base

Characteristics of Management:

The following are the features or characteristics of management in an agricultural enterprise:

1. Its quality significantly influences output.

2. Its cost is determined by its quality and the experience of the manager.

3. It is provided by individuals.

4. The reward for effective management is profit.

Importance of Management:

Management plays a crucial role in agricultural enterprises for several reasons:

1. It ensures the smooth running of the enterprise.

2. It helps the enterprise make a profit.

3. It ensures the effective utilization of other factors of production.

4. It helps the farm enterprise achieve its goals.

5. It ensures that all records and accounts are adequately maintained.

Evaluation:

1. Who is a farm manager?

2. List three characteristics of a farm manager.

Weekend Assignment:

1. \_\_\_\_ refers to the organization, coordination, and control of all factors of production to ensure that the goals of the farm enterprise are met.

A. Management

B. Manager

C. Enterprise

D. Capital

2. The reward of management is \_\_\_\_

A. Labour

B. Profit

C. Loss

D. Interest

3. The cost of management is determined by \_\_\_\_

A. Qualification

B. Quality and inexperience

C. Quality and experience

D. Quantity

4. The goals of a farm enterprise include all but \_\_\_\_

A. To make money

B. To waste money

C. To produce at the right time

D. To increase the consumer base

5. Management as a job does not involve \_\_\_\_

A. Keeping records

B. Making uninformed decisions

C. Determining what to produce

D. Purchasing farm inputs

Theory:

1. What are the goals of a farm enterprise?

2. Define management.

**WEEK SIX**

**FIELD TRIP**

**WEEK SEVEN**

**FACTORSOFPRODUCTION** (**MANAGEMENT**)

Content

Definition:

A farm manager is one who coordinates, organizes, and controls the use of other factors of production to produce goods and services. In other words, the work of management is carried out by a farm manager. Decisions and duties such as when to produce, what to produce, the type of production, supervision of work, recruitment of workers, and determination of what and when to sell in order to make a profit depend on the farm manager's management skills.

Functions of a Farm Manager:

The functions of a farm manager can be grouped into five major categories:

1. Organization Function: This involves putting together all factors of production during productive activities. These functions include securing suitable land for farming, determining what to produce, determining the scale of production, procuring loans or capital for farming, and recruiting or employing workers for the farm, among others.

2. Administration Function: Ensuring the efficient and effective operation of all factors of production. Duties include supervising work on the farm, creating work schedules, directing workers in day-to-day activities, ensuring staff welfare, and organizing training for the farm's workforce.

3. Production Function: Involves optimizing yield through the right combination of factors of production. This function includes purchasing and using farm inputs, ensuring the health of animals and crops on the farm, ensuring general security of the farm, ensuring an adequate supply of feeds, and adopting modern farming techniques, among others.

4. Marketing Function: Involves meeting sales targets. To ensure this, the farmer determines the quantity of produce to sell, sets prices for products, selects the best marketing channels for maximum profit, determines optimal timing for sales, monitors market trends, and arranges for the storage and warehousing of unsold produce.

5. Evaluation Function: Ensures that other functions have been carried out appropriately. To do this effectively, the farm manager keeps records of all farm activities, supervises accounting and bookkeeping operations, analyzes farm operations in relation to targets and objectives, assesses staffing conditions, and develops new strategies for further improving farm operations.

Evaluation:

1. What is management?

2. List five functions of a farm manager.

General Evaluation:

1. Define management.

2. Briefly explain the functions of a farm manager based on:

a. Organization

b. Administration

c. Production

d. Marketing

e. Evaluation

Weekend Assignment:

1. Management on a farm determines the following except:

A. When to produce

B. What to produce

C. Type of production

D. Supervising work

E. Granting of loans

2. Procurement of loans or capital for farming activity is one of the \_\_\_\_ functions of a farm manager.

A. Administration

B. Production

C. Organization

D. Marketing

3. The supervision of accounts and bookkeeping of all operations on the farm is carried out by \_\_\_\_.

A. Farm treasurer

B. Bookkeeper

C. Farm manager

D. Farm supervisor

4. Which of the functions of a farm manager entails caring for the health of animals/crops on the farm?

A. Organization

B. Marketing

C. Administration

D. Production

5. Management determines the \_\_\_\_ of the farm.

A. Production

B. Enlargement

C. Profitability

D. Progress

Theory:

1. What is management?

2. Mention and briefly explain five major functions of a farm manager..

**WEEK EIGHT**

**PROBLEMS OF FARM MANAGER**

Challenges Faced by Farm Managers

Content

Introduction:

Farm managers play a crucial role in agricultural enterprises, but they often encounter various challenges while discharging their duties. These challenges can significantly impact the success of the farm operation.

Problems Faced by Farm Managers:

1. Inadequate Information: Farm managers may lack essential information about where to source farm inputs, acquire knowledge about new innovations, or stay informed about current market prices for agricultural produce.

2. Marketing Challenges: Determining how and where to sell agricultural produce, as well as deciding when and at what price to sell to maximize profit, can be a significant challenge for farm managers.

3. Inadequate Farm Inputs: Availability and affordability of farm inputs such as seeds, feed, fertilizers, and chemicals can pose challenges. These inputs may be scarce and expensive to acquire, affecting overall production.

4. Financial Constraints: Farm managers often face financial constraints. Difficulty in securing capital from banks or other financial institutions, coupled with the possibility of not achieving favorable prices for their produce, can limit reinvestment in the business.

5. Inadequate Personnel: Recruiting a skilled and affordable management team for the farm can be challenging. Competent personnel may come at a high cost, affecting the farm's profitability.

6. Government Policies: Unfavorable government policies, such as the importation of food items that compete with locally produced goods, can lead to losses, discourage farm managers, and even result in business closures.

7. Transportation Problems: Lack of suitable transportation means can hinder farm managers from efficiently delivering inputs and transporting farm produce to the market.

8. Administrative Challenges: Farm managers may face administrative difficulties, including a lack of technical expertise, poor relationships with staff, and health-related issues that can affect their ability to perform their duties effectively.

General Evaluation:

1. What is management?

2. List five major functions of a farm manager.

3. Briefly explain five major functions of a farm manager.

4. State eight functions of a farm manager.

5. Mention five importance of capital in an agricultural enterprise.

Weekend Assignment:

1. The following are problems faced by a farm manager except:

A. Problems of marketing

B. Inadequate personnel

C. Adequate information

D. Government policies

2. Materials that are not used up during production are known as \_\_\_\_.

A. Working capital

B. Fixed capital

C. Land capital

D. Farm capital

3. Management on a farm determines the following except:

A. When to produce

B. What to produce

C. Type of production

D. Granting of loans

4. The man's mental and physical exertions generated in the process of production are referred to as \_\_\_\_.

A. Land

B. Capital

C. Labour

D. Salary

5. The supervision of accounts and bookkeeping of all operations on the farm is carried out by \_\_\_\_.

A. Farm treasurer

B. Bookkeeper

C. Farm managers

D. Farm supervisor

Theory:

1. Briefly explain two major problems faced by a farm manager.

2. State three functions of a farm manager.