

FORM THREE END OF TERM III 2024

AGRICULTURE PAPER 1

MARKING SCHEME

SECTION A

1. Reasons for intercropping

- conserve soil/water;
- Maximise production;
- maximise utilization of nutrients in the soil;
- control weeds;
- control pests/diseases;
- diversification/spread risks;
- maximise labour utilization/save costs on labour;
- improves soil fertility if legumes are included;
- maximises utilization of land;

(4x ½ =2mks)

2 Advantages of intensive farming

- increases production per unit area;
- farm supervision is easy;
- maximises utilization of available land;
- ideal for densely populated areas/small land holdings;
- utilizes technology to increase production;

(4x ½)=2mk

3.(a)mixed cropping:-is the growing of two or more crops on the same field but on different sections

(b)Mono-cropping:-is the growing of only one type of crop.

4. Advantages of row planting

- field operations can be mechanized;
- easy to establish crop population;
- low seed rate than broadcasting;
- facilitates cultural practices/accept any specific cultural practice;
- ensures proper spacing;
- ensures uniform germination of seeds;

(4x1/2=2mks)

5. How nitrogen is lost from the soil

- Volatilisation
- Leaching
- Combustion
- Denitrification
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(Any 4x ½=2 mks)

6. Methods of harvesting water

- i. Roof catchment
- ii. Rock catchment

- iii. Weir/Dam
 - iv. Retention ditches/level terraces
 - v. Micro-catchment
 - vi. Water pans/pond
7. **Benefits of mulching in soil anter conservation**
- Reduces speed of run-off
 - Reduces rate of evaporation
 - Prevents splash erosion
 - Increase water retention
 - Increases water infiltration
 - Increases organic matter thus improving drainage
- (Any 4 x ½ mk) = 2mks
8. **Records kept by poultry farmer**
- i. Egg production/weight gain
 - ii. Labour records
 - iii. Feeding records
 - iv. Health records
 - v. Marketing records
 - vi. Inventory records(2mks)
9. **Disadvantages of organic manures**
- Spread of diseases, pests and weeds
 - Bulky to transport and apply
 - Labourious in application and transportation
 - Loses nutrients if poorly stored
 - Do not benefit crops if used when not fully decomposed
- (Any 4 x ½ mk) 2mks
10. (i) Opportunity cost is the returns from the best alternative forgone (W.T.E) 1mk
- (ii) Types of inventory records
- Permanent goods inventory
 - Consumable goods inventory
- (2 x ½ mk) = 1mk
11. **Importance of sub-soiling**
- Encourages gaseous exchange in soil (aeration)
 - Breaks hard pans
 - Brings leached minerals to the surface
 - Improves soil drainage
- (Any 2 x ½ mk) = 1
12. **Sillage losses**
- Surface spoilage
 - Seepage losses
 - Gaseous losses
- (3 x ½ = 1 ½ mk)
13. **Classification of pastures**
- i)Pasture stand; Pure/mixed
 - ii)Pasture establishment; natural/artificial
 - iii) Ecological zone/altitude
- (2x1/2=1mk)
14. **Harvest time (Factors that determine stage at which a crop is harvested)**
- i. Market price
 - ii. Weather conditions
 - iii. Market demand
 - iv. Purpose/intended use
 - v. Concentration of required chemicals

15. Land Reforms (ways in which land reform can be influenced in Kenya)

- i. Land consolidation
- ii. Land adjudication and registration
- iii. Land settlement and resettlement
- iv. Tenancy reform
- v. Redistribution of land
- vi. Improved land legislation
- vii. Subdivision

16. Factors that determine the number of Secondary Cultivations

- i. Type of crop to be established/size of seed
- ii. Moisture content of soil
- iii. Type of soil
- iv. Conditions of land after primary cultivation
- v. Amount of organic matter on the surface
- vi. Vulnerability to soil erosion

17. Reasons why seed propagation is encouraged in crop production .(2 marks)

- i) Encourages variation hence hybrid vigour
- ii) Easy to store and handle
- iii) Easy to control pests and diseases
- iv) Planting can easily be mechanized

(4x1/2=2mks)

SECTION B (20 MARKS)

18.P Thorn apple(Datura stramonium)-

(1x1=1mk)

Q Couch grass (Digitaria scalarum)

(1x1=1)

b) Why is it difficult to control.

c) Presence underground stems/rhizomes which are difficult to control; (1x1=1mk)

d)Control

– Uprooting;

-cultivation;

-slashing;

-use of herbicides;

-Mulching;

(3x1 =3mks)

19(a) Soil sample with highest acidity

(1mk)

-Sample S1

(b)Lowering pH

-Application of acidic fertilizers /sulphate of ammonia /ASN/DAP/MAP;

-Application of Sulphur;

(2x1=2mk)

(c)Soil sample suitable for growing tea

-S2, -S3, -S4; (1x1=1mk)

d) (a) P₂O₅=20% (1x1=1mk)

(b) 10,000m² require 300kg fertilizer

-(10x5)m² would require $\frac{50 \times 300}{10,000}$

=1.5kg/1500g fertilizer

(2mks)

20 a) (a) C1; Maize weevil, Maize stalk borer, pink bollworm;

(1x1=1mk)

- C2; White leaf blight, Maize streak, Rust; (1x1=1mk)
 b) . F) Single stem pruning; (1x1=1mk)
 H) Multiple stem pruning (1mk)
 (b) The main stem of seedling is capped to encourage suckers to grow, 2 or 3 healthy suckers are selected and allowed to grow while the rest are removed.
 The selected suckers should form a “ U ” shape between them to avoid splitting.
 (2x1=2mks)

21. (a) Gabion/porous dam (1mk)

- b) i) Slows down the spread of water thus reducing its erosion power
 ii) It traps the detached soil particles (2x1=2mks)

SECTION C (40 MARKS)

22(a) Factors that encourage soil erosion

- Lack of ground cover exposes soil to agents of soil erosion;
 - Steep slope increase the speed of surface run-off hence erosive power of water;
 - Light/sandy soils are easily carried away by agents of soil erosion;
 - Shallow soils are easily saturated with water and carried away;
 - High rainfall intensity
- Frequent cultivation /over cultivation pulverizes the soil making it easy to detach and carry away;
- Overstocking leads to overgrazing which destroy ground cover exposing it to agents of erosion;
 - Burning/deforestation destroys vegetation cover and exposes soil to agents of erosion;
 - Ploughing up and down the slope increases channels which speeds up and increases erosive capacity of water;
 - Cultivation along river banks destroys riparian vegetation and destroys soil structure exposing it to agents of erosion;
 - Cultivating the soil when too dry destroys soil structure making it to be eroded;
 - Long slope increases volume of surface run off and speed of surface run off hence increasing erosion;
 - High amount of rainfall leads to saturation increasing run off; (8x1=8mks)

(b) Management practices carried out on vegetables nursery after sowing

- Mulching to conserve moisture;
- Provide shade to minimise evaporation;
- Weed control to reduce competition with seedlings for nutrients, light, space, etc;
- Pests and disease control to ensure healthy and vigorously growing seedlings;
- Pricking out/thinning to minimize competition for growth elements;
- Fertilizer application to supplement nutrients in the soil;

-Hardening off/removing shade/reducing watering to acclimatize seedlings to conditions in the field;

-Remove mulch as soon as seedlings emerge; (7x1=7mks)

c) Selecting seeds for planting

-Adaptability: should be adapted to local ecological condition.

-Physical deformities/damages: should be free from physical deformities/damages.

-Health-should be free from pests and disease.

-Viability/germination percentage:-should have high viability/germination percentage.

-Parent plant-should be from high yielding/healthy parents/high quality.

-Purity-should be clean/free from impurities.

-Maturity-should be of correct maturity stage.

-Age/storage period:-seeds stored for long periods have low viability/germination percentage hence should not be selected.

-Size:-should be of correct size (5x1=5mks)

23 (a) Effects of high temperature

-Increase incidence of some pests/parasites and diseases;

-Improves quality of some crops eg citrus fruits;

-Lowers quality of some crops eg pyrethrum;

-Increases rate of evaporation in plants/wilting in plants;

-Increases rate of growth for early maturity in crops;

-Limits distribution of exotic livestock breeds;

-Lowers production in livestock;

-Influences design of farm buildings and structures;

-Lowers labour productivity. (6x1=6mks)

(b) Role of magnesium

1. Important in chlorophyll formation.

2. Promotes the formation of oils in crops e.g. soya beans, sunflower, ground nuts.

3. Aids in the absorption and translocation of phosphorous.

4. Enhances the nitrogen fixing power of the legumes.

5. Activities the synthesis and translocation of carbohydrates and proteins in plants.

6. Activates enzymes in crops.(5mks)

(ii) Sugarcane harvesting

-Harvested at the correct age(13-22months for plant crop /12-18 months for ratoon crop;

-Take sugarcane samples for testing to determine maturity;

-Cut the mature cane at the base /near the ground;

-cutting off the green tops;

-Strip off leaves from the stem/burn the cane before harvesting;

-Deliver the cane to the factory within 48 hours /immediately after cutting;

-Use a cane harvesting machet; (6x1/2=3mks)

c) **Importance of Irrigation**

1. Irrigation increases crop yields and ensures a steady supply of food throughout the year.
2. Maximizes the utilization of resources e.g. in places where the soil is fertile but the water/rain is inadequate.
3. Important for the reclamation of arid and semi-arid land.
4. Provides a regular, reliable and adequate supply of water in areas with little rainfall.
5. Source of employment in areas where it is used extensively.
6. Promotes crop production for the export market and therefore contributes to a country's revenue.
7. Allow production of paddy rice.
8. Control pests. (5x1=5mks)

24 (a) Physical methods of controlling crop pests

- Trapping /picking and killing pests;
- Use of lethal temperatures to kill pests;
- Flooding to suffocate and kill pests;
- Use of physical barriers eg fences, rat guards etc to keep pest away from the crop/produce;
- Proper drying to make penetration difficult;
- Use of explosives to destroy breeding grounds and kill the pests;
- Suffocation; carbon (IV) oxide build up is use to suffocate pests in stores especially Cyprus bins; (6x1=6mks)

(b)(i) Field management of bulb onions

- Weed control through shallow cultivation to avoid damage to the shallow onion roots;
- Remove excess soil around the roots gradually to facilitate bulb expansion;
- Water regularly at the early stages to ensure adequate moisture supply;
- Top dress with nitrogenous fertilizer at appropriate rates;
- Control pests eg thrips using appropriate pesticides;
- Control diseases eg rusts, mildews using appropriate methods;

(ii) Harvesting of bulb onions

- Is done 4-5 months after planting when leaves have turned brown;
- Break and bend the tops at the neck;
- Harvesting is done by lifting/pulling/digging out the crop;
- Leave the bulbs to dry for three days and turn frequently to ensure uniform drying; (3x1=3mks)

(c) Factors influencing seed rates

- Intended use of the crop** eg fodder crop maize required high seed rate than grain maize;
- Germination percentage**; high seed rate is required for seeds with low germination percentage;
- Method of planting**; broadcasting requires high seed rate than row planting;
- Number of seeds per hole**; two or more seed rate per hole requires more seed rate than one seed per hole;
- Soil fertility**; poor infertile soils require low seed rate because crops are widely spaced compared to fertile soils;
- Growth characteristics of the crop**; tall/tillering/indeterminate variety requires low seed rate compared to short/less tillering/determinate varieties;
- Spacing**; high seed rate is required in closer spacing than wide spacing;
- Seed purity**; impure seed containing chaff and foreign materials will lead to high seed rate compared to pure seeds;
- Whether the crop is pure or mixed stand**; high seed rate for pure stand and low seed rate for mixed stand;

(6x1=6mks)

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