

CROP PRODUCTION I (LAND PREPARATION)

- Land preparation entails the following farming practices.
- Land clearing or bush clearing tools, chemicals and equipment used.
- Primary cultivation, tools and equipment as machines used.
- Primary cultivation, tools and equipment as machines used.
- Secondary cultivation, tools and equipment used.
- Tertiary operations e.g. ridging, rolling and leveling.
- Sub-soiling, tools used and reasons for the same.
- Minimum tillage and reasons for the same.

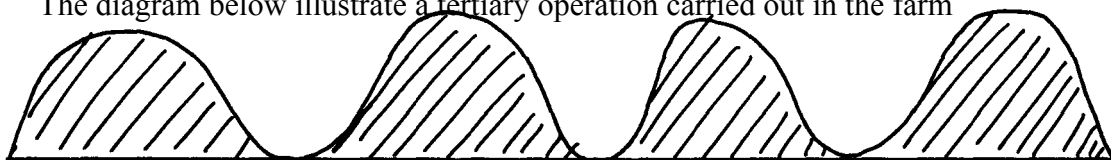
The following relevant questions and their answers in this topic will greatly help and motivate

the user to comprehend and understand the required concepts and farming practices:

1. Give **three** factors that determine depth of ploughing during land preparation
2. List **four** reasons for cultivating land before planting
3. (a) What is minimum tillage?

(b) Give four farming practices that help in achieving minimum tillage.
4. (a) Describe the establishment of grass pasture from the time the land is ploughed using a mould board plough to the time the pasture is ready for grazing

(b) Explain **five** practices that a farmer should carry out to ensure uniform germination of seeds (c) Describe **five** factors that determine the number of cultivations when preparing a seedbed
5. State **four** physical conditions of the seedbed that need to be changed to facilitate germination
6. State **four** importance of sub soiling as a tertiary operation
7. Outline **four** advantages of rolling in seedbed preparation
8. State **four** disadvantages of minimum tillage
9. The diagram below illustrate a tertiary operation carried out in the farm



a) Identify the tertiary operation

b) (i) State the importance of the tertiary operation identified in **20(a)** above

(ii) Give **two** other tertiary operations carried out in the field besides the one identified above

10. Give **two** reasons why it is advisable to cultivate the field during the dry season

11. How are hard pans caused by cultivation?

12. Give **four** factors that determine the number of secondary cultivation operations

13. Define the term minimum tillage

14. List four advantages of timely planting

15. State any **two** factors that determine the number of cultivation on a field before it is ready for

planting

17. Give **three** benefits of timely planting of annual crops

18. State **four** factors determining the depth of ploughing land

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1. three factors that determine depth of ploughing during land preparation

- Crop to be planted
- Implement available
- Type of soil

2. Four reasons for cultivating land before planting.

- To improve soil aeration.
- To improve germination.
- Destroy weeds.
- Destroy weeds.
- Incorporate organic matter in the soil.
- Increase water infiltration.

3. (a) Is a situation in which least possible cultivation operations are carried out in crop

production.

(b) - Clearing the land / bush clearing.

- Using appropriate chemicals to kill the existing vegetation.
- Weeding using herbicides.
- Planting / drilling seeds directly into the stubble of previous crop.

4. (a) - Harrow the land to a fine filth;

- Harrow during the dry or before the rains;
- Make the seed bed weed – free / ensure clean seed bed;
- Firm the seed bed using rollers after sowing;
- Select a desirable variety of seed for the ecological zone,;
- Sow seeds at the onset rains/ early planting;

- Apply phosphatic fertilizers at appropriate rate of 200 – 300 kgs/ ha at planting time;
- Drill or broadcast the seeds evenly;
- Use a recommended seed rate for the variety / seed rate of 1.5 – 2.0 kg/ha pure seeds;
- Bury seeds at 2 ½ times their diameter;
- Control weeds by uprooting/ apply a suitable herbicide;
- Apply nitrogenous fertilizers about 6 weeks after germination in split application.
- Avoid grazing when the pasture is too young.
- Practice light grazing in the field phase of pasture establishment. (10 x 1 = 10 mk)

(b) - Select seeds of the same size, variety, age and free from pests and diseases.

- Plant seeds at the same time.
- Prepare the whole field to required uniform tilth.
- Plant at the right moisture content of the soil / irrigation uniformly.
- Treat seeds before planting i.e. break dormancy.
- Plant at the correct depth.

(5 x 1 = 5 mks)

(c) - Soil moisture content.

- Type of soil.
- Cost of operation.
- Size of seed/ type of planting material/ type of crop.
- Type of machinery available / use of tractors.
- Topography / gradient of the land/ liability of soil erosion.
- Skills of the operator.
- Initial conditions of the land/ the cropping history of the land.
- Time available to carry out the operation before planting.

5. Four physical conditions of the seedbed that need to be changed to facilitate Germination

- Size of soil clods (clods made small or medium size)
- Appropriate soil depth
- Soil looseness
- Should be weed free
- Soil moisture content improved

6. Four importance of sub soiling as a tertiary operation

- Brings leached nutrients to the surface
- Breaks hard pans
- Promotes aeration of the soil
- Promotes water infiltration
- Ensures better root penetration

7. Four advantages of rolling in seedbed preparation are:
 - Press the seeds against the soil moisture
 - Controls soil erosion
 - Ensure uniform germination
 - Controls removal of small seeds by wind
 - Breaks large soil clods
8. four disadvantages of minimum tillage
 - The less porous surface increased soil erosion especially in heavy soils
 - Difficulty in weed control
 - Speed of planting to reduce due to large amount of residues in the soil and big clods
 - Leads to accumulating of soil borne pests and diseases
9.
 - a) - ridging
 - b) (i) Encourage tuber expansion
 - Allow easy harvesting of crop roots
 - (ii) Rolling
 - Leveling
10.
 - Leads to timely planting
 - Weeds are appropriately controlled especially the perennial such as couch grass
 - Farmers take advantage of availability of labour reducing the cost of labour
 - Control of soil borne pests
 - Gives time for better organic decomposition
11. - By repeated cultivation at the same depth;
- Cultivating the soil when wet using heavy machinery;
12. - Type and size of planting material;
- Topography/slope of land;
- Soil moisture content;
- (Initial) condition of land/amount of vegetation on the land;
- Capital available
- Type of implement used;
13. It is the least number of cultivation operations either during preparation of the seed bed or during the management of the crops.
14.
 - Market demand
 - Type of crop to be planted
 - Moisture condition of the soil and rainfall pattern
 - Prevalence of pests and diseases
 - Prevalence of weeds

15. two factors that determine the number of cultivation on a field before it is ready for planting

- purpose of crop
- moisture content
- concentration of desired chemical
- weather
- market demand

16. - Enables crop to benefit maximumly from available moisture

-Crops make use of nitrogen flush available at that time

-Crops fetch high market prices

-Crops escape from pests and diseases

-There is high vigour in crops that resist diseases

-Ensures timely harvesting

17. - type of crop to be planted

-Implements available

-Type of soil

-Climatic conditions