FORAGE CROPS

This topic entails the following:

- Definition and classification of pasture crops.
- Identification of pasture corps
- Description of ecological requirements of forage crops
- Description of the establishment of pasture and fodder crops
- Description of forage utilization and conservation.

The following relevant questions and their answers in this topic will greatly motivate and help the user to comprehend and understand the required concepts and practices.

1. State **three** factors which affects the quality of standing forage given to livestock
2. Explain Napier grass production under the following sub-headings

   i) Seedbed preparation

   ii) Planting

   iii) Fertilizer application

   iv) Weed control

   v) Utilization

3. Why is it necessary to allow freshly cut nappier grass to wilt before ensiling

4. 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

5. State **two** causes of failure in pasture establishment

6. State **two** advantages of grass-legume mixture

7. List **four** factors that determine the quality of hay

8. i) Discuss the production of Guatemala grass (Trypsacum Laxum) under the following headings

   a) Ecological required

   b) Land preparation

   c) Planting

   d) (i) Utilization and defoliation

   ii) Discuss **six** effects of late defoliation of fodder

9. Give **four** factors that determine the nutrient content in hay

10. (a) Describe the preparation of the following farm materials:-

    (i) Farm yard manure
    (ii) Hay

    (b) Explain the factors considered in timely planting of annual crops

11. (a) What is topping in pasture management
    (b)State two methods used in topping in pasture management
12. Give **two** advantages of grass-legume pasture over pure grass pasture

13. Why are farmers encouraged to conserve excess forage in the farm?

14. Give **two** factors affecting the quality of hay

FORAGE CROPS

1. three factors which affects the quality of standing forage given to livestock

- Forage species
- Stage of harvesting

Mode of feeding

2. i) Seedbed preparation

- Done during dry period/ done early
- Clear vegetation/ remove stumps
- Carry primary cultivation/ harrowing to
- Make furrows/ holes
- Spacing 90cm x 50cm for cutting and 90cm x 50cm for splits

ii) Planting

- At on set of rains/ early planting/ irrigate if necessary
- Select variety for ecological condition of the area
- Use health planting material
- Place the planting material in holes/ furrows
- Cover the planting material with soil to an appropriate depth
- Use cuttings or splits
- Select cutting from mature cane/ stems
- Cutting should have 3-5 nodes

iii) Fertilizer application

- Apply phosphatic fertilizer at planting 200kg/ha
- Apply manure before planting, 7-10 tonnes/ha
- Top dress phosphorous fertilizer after 8 weeks after planting

- Apply manure after harvesting and dig it

iv) Weed control

- Cultivation/ tillage/ mechanical
- Uprooting
- Slashing
- Suitable herbicide application
- Interplanting legumes as cover crops e.g. Desmodium,

v) Utilization

- Cut and take to animals when proportion of leaf is higher than the stem/ 3-5 months after planting/ frequency 8 weeks
- Cut down excess foliage to conserve as silage or hay
- Cut and sold
- Cut when mature to get stem cuttings for planting
- Cut stems at 2.5 – 5cm above the ground surface
- Use a sharp panga for harvesting
- Chop forage into small pieces before feeding
- Na[pier grass is cut, dried and used as mulching material

3. to reduce moisture content √ which can lead to rotting instead of formation during ensiling

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

- Harrow during the dry or before the rains;
- Make the seed be 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 kh/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)

5. Two causes of failure in pasture establishment

- Poor seed germination due to wrong placement of seeds
- Poor inoculation of legume seeds
- Lack f nutrients in the soil
- Unfavourable chemical conditions in the soil
- Poor drainage
- Pest and disease attacks

14. - High nutritive value

- relieve bloat
- Higher yields of forage per unit area
- Improve soil fertility due to nitrogen fixation
  Economy in use of nitrogen fertilizers

6. four factors that determine the quality of hay

- Forage species used
- Stage of harvesting i.e. leaf-stem ratio
- Length of drying period
- Weather condition during process
- Conditions of storage structure

7. a) Altitude - High altitude

   - 2000 m above sea level

   Soils - well drained
   - deep fertile

   Rainfall High rainfall above 900mm per annum
   Well distributed throughout the growing period

   b)
   - Prepare land early enough/ during dry season/ before onset of rains
   - Carry out primary cultivation appropriately
   - Harrow to a medium tilth
   - Remove all perennial weeds

   c) - Establishment from stem cutting or splits or seeds makes furrows at a spacing 1m apart. Plant the grass 0.5m apart within the rows. Holes may also be used
   Planting is done on the onset of long rains
   Phosphate fertilizers are used as planting fertilizers
   DAP fertilizer is applied at the rate of 100 – 150kg/ ha
   Organic manure is applied at the rate 10 tones/ ha

   d)
   Utilization – chopped and fed to livestock as green fodder
   Detoliation – can be harvested when it is over 8 – 12 weeks

   ii)
   - Forage has high DM content hence high DM yield
   - High cellulose content hence it is woody and fibrous
   - High lignin cuten lannin and silia content which are all indigestible
   - It has low crude protein content
   - It has low leaf stem – ratio
   - It has low dry matter digestibility

8. – Weather conditions during dry process;

-Length of the drying period
- Stage of growth at harvesting time/leaf-stem ratio of the plant species;
- Species of the hay crop;
- Storage facilities/method of storage;
- Period of storage
- Disease and pest attack on the crop;
- Fertility of the soil;

9. (a) (i) Preparation of farm yard manure:-

- Collect animal waste/refuse/dung and urine;
- Collect animal bedding/litter and other rotten plant residues;
- Store collected materials under roof/shed to prevent leaching and oxidization of nutrients;
- Turnover the materials regularly;
- Sprinkle water if dry;
- leave the material to rote completely before use; (6x1=6mks)

(ii) Preparation of Hay

- Cut the grass /legume in the field when 50% of it is starting to flower;
- The cut forage is spread in the field for four continuous days (sunny days)
- The cut forage is turned daily for even for four uniform drying;
- Gather the dried material in a central spot;
- Bale the material;
- Properly store the baled hay (6x1=6mks)

(b) Factors to consider in timely planting of annual crops

- Escape from serious weed competition;
- Utilization of early rainfall;
- Exploitation of Nitrogen flush in the soil that has accumulated during dry season;
- Escape from serious pest + disease attack e.g. stalk borer in maize;
- Fetch high market prices when harvested early;
- Reduce competition for labour during labour peak period;
- For harvesting season to coincide with dry period to reduce losses e.g. cotton Early planting means early farming/calendar for the farmer to enable him /her to finish up other farm activities; (8x1=8mks)

10. (a)It is the constant removal of the steruny fibrous material left behind after continuous grazing

(b) -Done by slashing the whole pasture to the base, leaving only the maintenance forage.

- Burning is also done.

11. two advantages of grass-legume pasture over pure grass pasture

- More nutritious to livestock
- Improves soil fertility through nitrogen fixation
- More total yield per unit area
- Security against total pasture lose (2x1=2mks)

-to feed animals during the dry seasons
- forage species used
-Stage of harvesting / leaf to stem ratio

-Length of drying period
-Weather conditions
-Storage conditions