**SOIL FERTILITY II (IN ORGANIC FERTILIZERS)**

1. four advantages of applying lime in clay soil

* Lower soil acidity
* Increase calcium content
* Hastens decomposition of organic matter
* Improve soil structure/ improve drainage
* Facilitates availability and absorption of nitrogen and phosphorous
* Improve legume nodulation and nitrogen fixation

Increase multiplication of micro- organisms

2. a) i) Sulphur- SO₄²⁻,SO₂

 ii) Nitrogen-NO₃⁻,NH₄

 iii) Carbon-CO₂

 iv) Magnesium-mg²⁺

b) three effects of nitrogen to plants (1 1/2mks)

* delayed maturity
* excessive succulence
* excessive vegetative growth
* weak stems
* lodging

3. a) The quality of sulphate ammonia fertilizer the farmer will need for 10 hectares (1mk)

100kg SA supplies 21kg N

1ha requires 150kg SA

10ha requires (150x10) kg SA

 = 1500kg SA in 10ha

b) The number of 50kg bags of fertilizer he will purchase (1mk)

 50kg fill 1 bag

1. 1 x 1500=30bags (1)

 50

4. two disadvantages of using farm yard manure

 - It’s bulky hence difficult to apply by one laborer.

 - It may spread weeds.

 - It may spread diseases.

 - It releases nutrients slowly.

5. four factors which influence the stage at which the crops are harvested.

 - Purpose of the crop / maturity.

 - Moisture content.

 - Concentration of certain chemicals.

 - Water condition.

 - Market demand.

6. a) - Calcium Ammonium Nitrate CAN.

 b)- Knee high

 - 30 – 45 cm height.

 c) Calculate the amount of K2O contained in 400 kg of a compound fertilizer 25 : 10 : 5.

 5 kg of K2O is in 100 kg of 25 : 10: 5

 ∴ 400 kg of compound fertilizer

 400 x 5 = 20 kg of K2O

 100

7. Two pieces of information that soil sample should have before being taken to the laboratory

 for testing are:-

- Name of the farmer

* Address of the farmer
* The type of test to be carried out

- Date of sampling

8. A compound fertilizer bag has the labels 20-20-10. What do the figures stand for

* 20 – 20% Nitrogen (N)
* 20 – 20% Phosphorous Pentoxide (P2O5)

- 0- 0% Potassium Oxide (K2O)

9. Four functions of sulphur in crops are:-

* Amino acids/protein synthesis
* Formulating enzymes and hormones
* Increase oil content and hormones
* Needed for formation of chlorophyll

Needed in carbohydrate metabolism

10. - Improves soil PH hence microbial activities

* Allows wide production of different crop varieties
* Improves soil aeration
* Improves drainage

Improves soil structure

11. -Liming

* use of alkaline fertilizer (2 ½ = 1mk)

12. a) -Type of crop

* Fertilizer characters
* Type of soil
* Environmental condition ( ½ x3=1 ½ mks)

b) - Avoid unique sites e.g. compost, along fence

* Remove all vegetation parts
* Mix the samples thoroughly

Make as many samples as possible

13. three functions of nitrogen in crops (1 1//2mks)

* Protein synthesis/formation
* Forms part of chlorophyll molecule
* Encourages vegetative growth
* Regulate availability of phosphorus and potassium in plant
* Increase to size of grains and protein content increases

14. Fertilizer ratio is the proportion of various nutrients in a fertilizer grade is the percentage of

nutrients in a fertilizer;

(b)- Nitrogen

- Calcium

- Potassium

- Magnesium

- Sulphur

15. (a) Diagonal/transverse method; (1x1=1mk)

(b) – Avoid contamination/use sterilized container;

- Avoid sampling soil from unusual sites e,g ant hills

- Avoid mixing top soil with sub-soil; (3x1=3mks)

(c) – To determine the nutrient status of te soil;

- To determine the soil PH/type of fertilizer to add to the soil/lime to add to the soil;

- To determine the type of crop to grow;

- May help in diagnosing low crop yield/mineral deficiency;

16. Area – 10x20 =200m² (1mk)

 100,000m² require 80kgs of 20-20-10

 200m² will require

 200 x 80

 10,000

 ═ 1.6kgs (1mk)

17. a) A compound of fertilizer has a fertilizer grade of 25:10:5.calculate the a mount

 of phosphorus fore sent in 400kg of this fertilizer

N:P:K

25:10:5

If 10kg P2O5√1 = 100kg NPK

 ? = 400kg NPK√1

 = 400 x 10

 100

 = 40kg P2O5√1 (3 steps x 1=3mks)

 b) i) - zigzag method

 ii) xx –traverse/diagonal

 iii) State three importance of carrying out soil sampling and testing

* determine the type of crop to grow
* determine the type of fertilizer to be used
* determine type of nutrients in the soil (3x1=3mks)

18. (a) Lacks one of the major fertilizer NPK elements

 (b) – The soils could be very acidic

 - Too much rainfall.

19. (a) Random/zigzag soil sampling

 (b) – old manure heaps

 - Ant hills

 -Dead furors

 -Fence lines

 -Cattle bomas

 (c) - Clear vegetation

 - Mark points using pegs

 Collect top soil and sap soil n different paper bag.

 - Dry the soil and mix thoroughly

 - Sent dispatch to laboratory for fasting