Short Answer Type Questions

1. Distinguish between macronutrients and micronutrients. Give suitable examples.

Answer

Macronutrients	Micronutrients
• These are required in large quantities	• These are required in small quantities
• These do not indulge in enzyme activity and transport of electrons	• These indulge in enzyme activity and transport of electrons
• Example: Calcium and Nitrogen	• Example: Iron and Zinc

2. Classify nutrients according to their sources.

Answer

Based on the sources nutrients can be classified in the following manner:
(i) Air: Some of the nutrients are directly obtained from the atmosphere or air present in the environment. They are: Carbon dioxide, Oxygen and Hydrogen.

(ii) Water: Some of the nutrients are obtained from the water body in the surroundings or by watering the plants. The nutrients that are obtained from water are: Nitrogen, Phosphorus, Calcium, etc.

(iii) Soil: Some of the nutrients are obtained from the soil in which the plant is present. Soil varies from place to place and hence the crop is grown depending on the type of soil. The nutrients that are obtained from the soil are: Iron, Manganese, Sulphur, etc.

3. How plants get nutrients?

Answer

Plants get nutrients from air, water and soil.

4. Name the three most important nutrients required for plant growth.

Answer

The three most important nutrients required for plant growth are Nitrogen, Phosphorus and Potassium.

5. Choose the micronutrients and macronutrients from the following:

Iron, Chlorine, Sulphur, Copper, Nitrogen, Calcium, Manganese, Potassium, Zinc, Magnesium, Molybdenum, Phosphorous.

Answer

Micronutrients: Iron, Chlorine, Copper, Manganese, Zinc, Molybdenum

Macronutrients: Sulphur, Nitrogen, Calcium, Potassium, Magnesium, Phosphorous

6. What are the advantages of using manure?

Answer

- These are a good source of macronutrients.
- Improves soil fertility.
- Cost-effective.
- Reduces soil erosion and leaching.
- Improves the physical properties of the soil and aerates the soil.
- Improves the water and nutrient holding capacity of the soil.

7. Give two limitations of using manure.

Answer

- It is less rich in nutrients.
- It may lead to spreading of some harmful bacteria

8. Compare the use of manures and fertilizers in maintaining soil fertility.

Answer

Manure	Fertilizer

Contains organic substance	Contains a large amount of chemicals
It is biodegradable	It is non- biodegradable
Increases soil fertility for long duration	Increases soil fertility for short duration

9. Write down two advantages of fertilizer over manure.

Answer
Advantages of fertilizer over manure:

- Improves the structure of the soil.
- Increases its ability to hold water and nutrients.
- Improves water movement into the soil.

10. During the downpour in a village, the rainwater carried away excess of nitrogenous and other compounds present in the soil to a pond. How will they affect the growth of algae and phytoplankton in the pond?

Answer

Once the nutrients get absorbed in the pond water, it would acquire a high concentration of nitrates and phosphates which would result in the excessive growth of algae and phytoplankton in the pond.

11. Explain the term eutrophication with suitable example.

Answer

The process in which water bodies like lake or slow-moving streams receive an extra amount of nutrients that help in the growth of plants such as algae, plant weeds. This type of plant growth is called algal bloom and this whole process is termed as eutrophication.

Example: During heavy rainfall nutrients from fields are washed away and is accumulated in the nearest water body.

12. How does the chemical nature of the soil change due to continued use of chemical fertilizers?

Answer

The chemical nature of the soil changes due to the continued use of chemical fertilizers because it decreases the soil fertility of that particular area and the crop will not get adequate nutrients for its growth.

13. Explain various methods of fertilizer application.

Answer

Various methods of fertilizer application are:

Broadcasting

1. It refers to spreading fertilizers uniformly all over the field.
2. Suitable for crops with dense stand, the plant roots permeate the whole volume of the soil, large doses of fertilizers are applied and insoluble phosphatic fertilizers such as rock phosphate are used.

Placement

1. It refers to the placement of fertilizers in soil at a specific place with or without reference to the position of the seed.
2. Placement of fertilizers is normally recommended when the quantity of fertilizers to apply is small, development of the root system is poor, the soil has a low level of fertility and to apply phosphatic and potassic fertilizer.

Foliar application

1. It refers to the spraying of fertilizer solutions containing one or more nutrients on the foliage of growing plants.
2. Several nutrient elements are readily absorbed by leaves when they are dissolved in water and sprayed on them.
3. The concentration of the spray solution has to be controlled, otherwise serious damage may result due to scorching of the leaves.
4. Foliar application is effective for the application of minor nutrients like iron, copper, boron, zinc and manganese. Sometimes insecticides are also applied along with fertilizers.

14. Distinguish between farmyard manure and compost manure.

Answer

Farmyard manure- It is the decomposed mixture of the cattle excreta and urine along with the litter and leftover organic matter such as fodder. It is highly rich in nutrients.
Compost manure- It is the process in which farm waste material like livestock excreta, vegetable waste,

domestic waste are decomposed in pits.

15. Define manure. What are different manures and how do they affect the soil?

Answer
Manure is an organic matter derived from the solid animal wastes, used to improve the soil quality and increase the yield of healthy crops. It is a natural form of fertilizer and is cost-effective. The livestock manure is rich in nitrogen, phosphorus, and potassium.

There are different types of manures: Farmyard manure (FYM), Compost, Green manures and Vermicompost.
They affect soil in the following ways:

- These are a good source of macronutrients.
- Improves soil fertility.
- Cost-effective
- Reduces soil erosion and leaching.
- Improves the physical properties of the soil and aerates the soil.
- Improves the water and nutrient holding capacity of the soil.
- It helps in killing weeds and pests.
- It can be transported easily.

16. What is green manuring? Give suitable example for green manures.

Answer

The process in which growing, ploughing and mixing of green crops along=g with soil to improve the physical and chemical structure of the soil is called green manure. Green manure increases the percentage of organic matter in the soil. The roots of such manures go deep into the soil. These help in the suppression of weeds and the prevention of soil erosion.
Example: Sunn hemp (Crotalaria juncea).

17. What are fertilizers? Classify fertilizers.

Answer
Fertilizers are chemical substances supplied to the crops to increase their productivity. The fertilizers contain the essential nutrients required by the plants including nitrogen, potassium, and phosphorus. They enhance the water retention capacity of the soil and also increase its fertility.

Fertilizers are divided into the following four groups:

(i) Nitrogenous fertilizers - These fertilizers supply the macronutrient nitrogen. Example - Urea, $CO(NH_2)_2$

(ii) Potassic fertilizers - These fertilizers supply potassium which is one of the essential macronutrients of the plants.Example - Potassium sulphate, K_2SO_4.

(iii) Complex fertilizers - These fertilizers contain two or more nutrients. Example – Nitrophosphate

18. Give a short account of biofertilizers.

Answer

Biofertilizers are the substance that contains microbes, which helps in promoting the growth of plants, trees by increasing the supply of essential nutrients to the plants. It comprises living organisms which include mycorrhizal fungi, blue-green algae, and bacteria. Mycorrhizal fungi preferentially withdraw minerals from organic matter for the plant whereas cyanobacteria are characterized by the property of nitrogen fixation.

19. Explain why a legume crop does not require nitrogenous fertilizers?

Answer

The nitrogen-fixing bacteria reside in the root nodules of the leguminous plants. They convert atmospheric nitrogen into soluble nitrogenous compounds. These nitrogenous compounds make the soil fertile. Hence a legume crop does not require nitrogenous fertilisers.

20. Why is irrigation essential?

Answer

Irrigation helps to cultivate superior crops with the water supply as per the need of the crops. Ultimately it helps in economic development. Irrigation water improves water conditions in the soil, increases the water content of plant fibres, dissolves nutrients & makes them available to plants.