

CLASS: 9

BIOLOGY

Chapter: Improvement of food resources

Answer the following:

1. What type of farming practices should be adopted for sustainable livelihood?

Ans. Over use of any natural resource may disturb the balance of nature. Hence, we have to adopt a practice by which increase in food production occurs without degrading the balance of our environment. Such a practice is called sustainable practice which needs to be applied to agriculture as well as to animal husbandry. It ensures successful management of resources for agriculture to satisfy the changing human needs, while maintaining the quality of environment.

2. What is meant by green and white revolution?

Ans. To compensate with the increasing demand of food production, we had green revolution and white revolution. Green revolution led to increased food grain production while the white revolution led to better and more efficient use as well as availability of milk. Also silver revolution and blue revolution led to increased poultry production and enhanced fish production respectively.

3. What do you meant by kharif and rabi crops? Give three examples each.

Ans. Crops which are grown during the rainy season are called kharif crops(from June to October).
Eg: paddy, soya bean, maize, cotton

The winter crops are called rabi crops . They are grown from November to April.

Eg: Wheat, gram, pea, mustard

4. Name two fodder crops.

Ans. Berseem, oats or sudan grass

5. Name three agricultural practices should be adopted for sustainable livelihood?

Ans. For sustained livelihood one should undertake mixed farming, intercropping, and integrated farming practices.

6. Define hybridisation. What are the types of hybridization?

Ans. The crossing between genetically dissimilar plants to produce a new type of plant (hybrid) is called hybridisation. Hybridisation always incorporates the desired characteristics of both parents in a newly developed variety. The different types of hybridisation are :

- a. Inter varietal (crossing between different varieties)
- b. Inter specific (between two different species of the same genus)
- c. Inter generic(between different genera).

The inter varietal hybridisation is the most common and extensively used.

7. Why is it necessary to provide the good quality seeds to the farmers?

Ans. Farmers should be provided with good quality seeds so that better crops with desired characteristics may be grown.

8. How do biotic and abiotic factors affect crop production?

Ans. Crop production may go down due to biotic factors like diseases, insects nematodes and abiotic stresses like drought, salinity, cold, logging etc under different situations. Varieties resistant to these stresses can improve crop production.

9. What are the desirable agronomic characteristics for crops improvement?

Ans. Tallness and profuse branching are desirable characters for fodder plants and dwarfness is desired in cereals, so that less nutrients are consumed by these crops.

10. How can change in maturity duration of any crop variety be helpful for the farmers?

Ans. Short duration crop varieties help the farmers :

- a) In reducing the cost of production and hence the particular crop variety will be more economical.
- b) In growing multiple rounds of crops in a year.
- c) In achieving uniform maturity and hence make the harvesting process easy and reduce losses during harvesting.

11. How do wider adaptability affect crop production?

Ans. Developing varieties for wider adaptability will help in stabilizing the crop production under different environmental conditions. One variety can then be grown in different areas under different climatic conditions.

12. What varieties of crops should be grown in case of fluctuating weather conditions?

Ans. Varieties that can be grown in diverse climatic conditions (with wider adaptability) are suited to grow in fluctuating weather conditions

13. What are macronutrients ? why are they called so?

Ans. There are 16 nutrients which are essential for the proper growth and development of the plants. Some of them are needed in large quantities where as some other are needed in very small quantities. The nutrients which are needed in large quantities are called macronutrients. Nitrogen (N), Phosphorus (P), Potassium (K), Magnesium (Mg), Calcium(Ca) and Sulphur(S) are the 6 macro nutrients.

14. Name the essential nutrients required by the plants.

Ans. Carbon, Oxygen(supplied through air), Hydrogen (supplied through water) Nitrogen, phosphorus, potassium, calcium, magnesium, sulphur (macro nutrients) iron, manganese, boron, zinc copper, molybdenum and chlorine (micro nutrients) are nutrients required by plants.

15. What is the effect of nutrient deficiency in plants?

Ans. Deficiency of nutrients affects the physiological process in the plants including growth, reproduction, and susceptibility to diseases.

16. How do fertilizers change the nature of the soil?

Ans. Fertilizers are natural or synthetic chemical substances used to enrich soil so as to promote plant growth. But, continuous use of fertilizers in an area can destroy the soil fertility because the organic matter in the soil is not replenished and the micro organisms in the soil are harmed by the fertilizers.

17. Explain with the help of an example, how the excessive use of chemical fertilizers drastically alters the soil chemistry?

Ans. The excessive use of fertilizers over a long period may affect the alkalinity or acidity of the soil and may adversely affect the crop production. Eg: The excessive use of nitrogenous fertilizers concentrates nitrates in the soil and water. Nitrate rich water is unfit for drinking and is rather difficult to treat.

18. What is eutrophication?

Ans. Eutrophication is the process by which a water body becomes enriched in dissolved nutrients that stimulate the growth of aquatic plant life resulting in the depletion of dissolved oxygen. Eutrophication destroys the life supporting environment in lakes and ponds.

19. What are the disadvantages of excessive use of chemical fertilizers?

Ans. The disadvantages of excessive use of chemical fertilizers are:

- a) Affects the acidity or alkalinity of the soil
- b) Destroys the soil fertility
- c) Causes eutrophication

20. What is meant by organic farming? What type of materials are used for organic farming?

Ans. Organic farming is a farming system with minimal or no use of chemical fertilizers, herbicides, pesticides etc. In organic farming, nutrient supply, control of pests, insects and weeds occur in a biological or natural way.

21. What is multiple cropping? What is its advantage?

Ans. Mixed cropping or multiple cropping is a practice of growing two or more crops simultaneously in the same piece of land. In this farming system, farmers mix the seeds of two crops and then sow them in the field. The mixed cropping combinations are:

- a) Wheat+ gram+ mustard
- b) Groundnut+ sunflower or cotton
- c) Maize+ black gram

22. What is crop rotation? Mention its advantages.

Ans. The process of growing different types of crops alternately in the same land is called crop rotation. Crop rotation is done for a year or for a longer period.

Eg: Leguminous crops like pulses are grown in a season alternating between cereal crops.

23. Which crop is generally grown in between two cereal crops to restore the fertility of the soil? Why?

Ans. The leguminous crops like pulses, ground nuts etc are grown in between two cereal crops. These crops restore the soil fertility through nitrogen fixation.

24. Discuss a natural way of soil improvement.

Ans. Crop rotation is the natural way of soil improvement. It has the following advantages:

- a) Crop rotation reduces the need of fertilizers as nitrogen supply is maintained in the crop field when legume crops are altered with other crops.
- b) With the help of crop rotation, the life cycles of weeds, insects and pathogens can be controlled naturally.
- c) By alteration, between deep and shallow rooted crops, the soil may be utilized more effectively.
- d) Alternated cropping yields a greater produce.

25. How do pests affect the food production?

Ans. Various organisms such as rats, insects, bacteria, virus, fungi, etc which damage the crops and reduce their yield are called pests. They attack the plants in different ways:

- a) They cut the root, stem and leaves
- b) They suck the cell sap from various parts of the plant

c) They bore into stem and fruits. Thus they affect the health of the crop and reduce yields.

26. What is the hazard of use of pesticides?

Ans. Almost all the pesticides are toxic to man and other animals; however they differ in their degree of toxicity. Therefore, improper and excessive use of pesticides may be hazardous to man and domestic animals. They may also cause environmental pollution.

27. Name any three methods of weeds control.

Ans.a) Physical methods- hand weeding, tilling, burning, mowing, etc

b) Chemical methods- spraying weedicides (herbicides) like 2,4-D, Diurone

c) Biological methods: destroying the weeds using its natural enemy. Eg: prickly pear is eradicated by using cochineal insects.

28. What factors may be responsible for losses of grains during storage?

Ans. Damage of stored food grains occurs by various factors. These factors cause degradation in quality, loss in weight, poor germinability, discolouration of the produce and poor marketing of the food grains. These factors can be divided into types:

a) Biotic factors - includes living organisms such as insects, micro organisms and rats.

b) Abiotic factors- includes non living factors like temperature, moist content in food grains, moisture in the air, and material of the container used for storage.

29. Which method is commonly used for improving cattle breeds and why?

Ans. Cross breeding is commonly used for improving cattle breeds because it helps to raise species with desired qualities like excellent resistance to disease, high milk production etc.

30. Comment upon the statement “poultry is India’s most efficient converter of low fibre food stuff into highly nutritious animal protein food”

Ans. The basic aim of poultry farming is to raise domestic fowl or egg production and chicken meat. These poultry birds are not only the effective converters of agricultural by-products (fibrous wastes not fit for human consumption) into high quality meat and also help in providing eggs, feathers and nutrient rich manure. for this reasons, it is said that poultry is India’s most effective converter of low fibre food stuff into highly nutritious animal protein food.

31. How layers and broilers are different from each other?

Ans. The chickens which are used for egg production are called layers. But broilers are the fowls which are used for producing meat. The housing, environmental and nutritional requirements of broilers are different from those of egg layers. The daily food requirement of broilers is protein rich with adequate fat so that to improve the growth rate. The levels of vitamin A&K should be high in poultry feeds.

32. What type of care should be followed for poultry farming?

Ans. Poultry birds always require good management practices for food, shelter and disease control:

- a. Maintenance of normal temperature in their place of living.
- b. To avoid diseases, maintenance of hygienic conditions in housing is required.
- c. Appropriate vaccination help to prevent the occurrence of infectious diseases.
- d. Properly balanced poultry feed should be provided to avoid nutritional deficiency.

33. Describe various cropping patterns in detail.

Ans. Different ways of growing crops can be used to give maximum benefit. Different cropping patterns include;

- a. **Mixed cropping or multiple cropping:**

It is a practice of growing two or more crops simultaneously in the same piece of land. In this system, the farmers mix the seeds of two or more crops and sow them in the field. Mixed cropping helps to reduce the risk of crop failure due to certain weather conditions and it also helps in humus formation. It helps to increase the yield due to complementary effect of the crops on the other. Also it helps farmers to earn more .

- b. **Intercropping:**

It is the practice of growing two or more crops simultaneously in the same piece of land in a definite pattern. It is an improved version of mixed cropping. In this system a few rows of one crop alternate with a few rows of another crop. It helps to increase the productivity per unit area. Both crops can be harvested separately. It reduces the chances of spread of diseases.

- c. **Crop rotation:**

It is the practice of growing different types of crops alternately in the same soil. Depending upon the duration, crop rotation is done for different crop combinations. It helps to reduce the need of supply of nitrogenous fertilizers. It is a natural method of improving the soil fertility.

34. What is apiculture? What are its advantages? Describe various management practices to be adopted for obtaining higher yield of honey.

Ans. The practice of bee- keeping is called apiculture. The major advantages of bee- keeping are:

- a. Farmers use it as an additional source of income as it needs low investments.
- b. In addition to honey, bee-hives are a source of wax which is used in various medicinal preparations.

To improve the commercial honey production, bee farms and apiaries are established. Italian bees, with high honey collection capacity are used in such apiaries.

35. What is meant by Polyculture of fish? Describe it in detail along with the problems faced for this culture system. Also write its another name.

Ans. Poly culture or composite fishing is a very intensive fish farming system. In this system, a combination of 5 or 6 species is kept in a single fish pond. Both local and imported species are kept in such systems. The species are selected in such a way that, they should not compete for food, so that food available in all parts of the pond is used. The lack of availability of good seeds is the major problem faced for this culture system.