Improvement in Food Resources

12 Chapter

1. What do we get from cereals, pulses, fruits, and vegetables?

Ans: (i) Cereals are a rich source of carbohydrates. They help meet the energy requirements of the body.

(ii) Pulses provide us with proteins. It can be also used as an energy source that helps to build and

repair muscles and bones.

(iii) A rich source of vitamins and minerals is fruits and vegetables. Moreover, they contain antioxidants that reduce the risk of many diseases.

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

Ans: Biotic factors including pests, nematodes, diseases, etc. affect net crop production in a variety of ways. A pest feeding on the leaves or stems of the crops causes damage and reduces crop productivity. For example, bollworms are a pest on cotton. Thus, its yield gets reduced when attacked by cotton pests. Weeds are unwanted plants that grow with the main crop and compete for nutrients, light, and space.

Crop productivity gets resisted by abiotic factors in many ways. Abiotic factors like salinity, temperature, etc. lead to loss of grain yield. Natural calamities such as droughts and floods are unpredictable and can destroy the entire crop causing huge losses as water becomes unavailable to meet the requirement of the plants for growth, photosynthesis, and transpiration.

3. What are the desirable agronomic characteristics for crop improvements?

Ans: Agronomic characters refer to the basic plant characters which are required for crop productivity and improved quality of the plant.

The desirable agronomic characteristics for crop improvements are:

In the case of fodder crops, tallness and profuse branching are considered.

Dwarfness in cereals.

(iii) About stem branching, legumes should have more pods.

Developing crop varieties with desirable agronomic characters helps in increasing crop productivity.

4. What are macronutrients and why are they called macronutrients?

Ans: Nutrients that are required by plants in larger quantities for their growth are called macronutrients. There are six macronutrients required by plants - nitrogen, phosphorus, potassium, calcium, magnesium, and Sulphur. Physiological processes including reproduction, growth, and susceptibility to diseases in plants are affected by the deficiency of these nutrients.

5. How do plants get nutrients?

Ans: Nutrients are provided to plants by air, water, and soil. Mainly, sixteen essential nutrients are required, out of which thirteen are available from the soil. The remaining three nutrients including carbon, oxygen, and hydrogen are obtained from air and water. Thus, the soil is the sink of major nutrients for plants.

6. Compare the use of manure and fertilizers in maintaining soil fertility.

Ans: Manure is formed by the decomposition of plant waste and animal excreta which contain large quantities of organic matter. Soil fertility is increased by enriching the soil with organic matter and nutrients. Thus, the long-term use of manures is considered while aiming for a good yield in crop production. Fertilizers are inorganic compounds. They are commercially produced which supply mainly nitrogen, phosphorus, and potassium. Since these contain chemicals, their excessive use is harmful to microorganisms living in the soil. Their excessive use also reduces soil fertility. Thus, fertilizers are considered good for only short-term use.

7. Which of the following conditions will give the most benefits? Why?

a.Farmers use high-quality seeds, do not adopt irrigation or use fertilizers.

b.Farmers use ordinary seeds, adopt irrigation and use fertilizer.

c.Farmers use quality seeds, adopt irrigation, use fertilizer and use crop protection measures.

Ans: Option (c) will benefit the most.

(c) Farmers using good quality seeds, adopting irrigation, using fertilizers, and using crop protection measures will derive the most benefits.

(i) If a farmer is using good quality seeds, then the majority of the seeds will germinate properly, and give a good crop.

(ii) Crop yield gets reduced due to lack of proper water supply. Different types of crops have different water requirements. So, proper irrigation methods would help in the improvement of the water availability to crops. Drought poses a threat to rain-fed farming areas, where farmers do not use irrigation for crop production and get dependent only on rain. Thus, crops get adversely affected by drought conditions. To avoid these

conditions, proper irrigation practices are required which would help improve water availability to crops.
(iii) Fertilizers supply nutrients such as nitrogen, phosphorus, and potassium. They are used to ensure good vegetative growth (leaves, branches, and flowers) thus, giving rise to healthy plants.
(iv) Various Crop protection measures should be adopted to control weeds, pests, and infectious agents. Generally, health is affected by pests and infectious agents. Crop growth is also affected by the weeds that compete for light, space, and nutrients. Therefore, if crop protection measures like the use of pesticides, weedicides, etc. are taken care of by a farmer, the overall production of crops will increase.

8. Why should preventive measures and biological control methods be preferred for protecting crops?
Ans: Excessive use of chemical fertilizers and weedicides or pesticides can damage crops and the environment. Soil fertility also gets adversely affected because organic matter which is present in the soil is not replenished and soil microorganisms are killed. All the preventive measures including proper seedbed preparation, timely sowing of crops, intercropping, and crop rotation help in weed control, and biological control methods should be adopted for protecting crops. Pest prevention is also required. It is handled by using resistant varieties of crops. Biological control methods include the usage of biopesticides and biofertilizers that are less toxic for the environment. One of the examples of bio-pesticides is *Bacillus thuringiensis*, which is an insect pathogen that kills a wide range of insect larvae.
Therefore, both preventive measures and biological control methods can be effectively used for protecting crops without harming the environment.

9. What factors may be responsible for the losses of grains during storage?
Ans: Factors responsible for loss of grains or crops during storage are:
(i) Biotic factors including an attack by insects, rodents, mites, fungi, bacteria.
(ii) Abiotic factors like inappropriate moisture, temperature, lack of sunlight, flood, etc. also affect crop productivity.
All these factors are acted upon stored grains and it ends in degradation, poor germination, discolouration, etc.

10. Which method is commonly used for improving cattle breeds and why?
Ans: Cattle husbandry is required for two purposes –
(i) to increase the production of milk and
(ii) draught labour for agricultural work.

For maintenance and for producing milk, dairy animals are required, whereas draught animals (males) are engaged in agricultural fields for labour work such as carting, irrigation, tilling, etc. Crossbreeding between two good varieties of cattle i.e., high milk yielding female and a tough draught male can give a new improved variety with the best qualities of both parents. One of the examples given is the cross which is done in between foreign breeds such as Jersey Brown, Swiss (having long lactation periods), and Indian pieces of breed such as Sahiwal, Red Sindhi. It produces a new variety having qualities of both breeds.

11. Discuss the implications of the following statement:
"It is interesting to note that poultry is India's most efficient converter of low fibre foodstuff (which is unfit for human consumption) into highly nutritious animal protein food."
Ans:
(a) In India, poultry is the most efficient converter of low fibre foodstuff into highly nutritious animal protein food.
(b) In poultry farming, domestic fowls are raised to produce eggs and chicken.
(c) For this, the fowls are given animal feeds in the form of roughage, which mainly consists of fibres.
(d) Thus, by feeding animals a fibre rich diet, the poultry gives highly nutritious food in the form of eggs and meat.

12. What management practices are common in dairy and poultry farming?
Ans: Common management practices which are required in dairy and poultry farming are:
Proper shelter facilities are available with regular cleaning.
Maintenance of Proper hygienic conditions such as clean water, nutritious food, etc.
Spacious, airy, and ventilated places should be provided to animals.
Preventive measures should be taken.
Diseases should be cured at the right time.
Proper vaccination of animals should be done.
All balanced rations should be provided with all nutrients in appropriate proportions to cattle.

13. What are the differences between broilers and layers and in their management?
Ans: The differences between broilers and layers are:

Broilers	**Layers**
Nutritional, environmental, and housing conditions are required by broilers.	No such conditions are mandatory for layers.
The daily food requirement for broilers is protein-rich with adequate fat and extra care and maintenance is required.	The daily food requirement for layers is less protein-rich food and fat.

14. How are fish obtained?

Ans: Fish is considered to be a cheap source of animal protein for our food. Generally. There are two ways of obtaining fish.

(i) Capture fishing, which is obtained from natural resources.

(ii) Culture fishery, which is done by fish farming.

Various kinds of fishing nets are required to catch marine fish. from fishing boats. Some marine fish that are of high economic value are farmed in seawater. Mariculture is used for meeting the requirements for marine fish. Aquaculture is undertaken for providing freshwater fish.

15. What are the advantages of composite fish culture?

Ans: The culture of growing five or six different species of fish together in a single fish pond is called a composite fish culture system. In this system, both local and imported fish is required. Advantages of composite fish culture are:

(i) It increases the yield of fish.

(ii) Complete utilization of food resources in the pond as fishes with different food requirements are taken into account which avoids the competition of food among themselves.

(iii) Increase in the survival rate of fishes.

16. What are the desirable characteristics of bee varieties suitable for honey production?

Ans: The desirable characters of bee varieties that are suitable for honey production are:

(i) They should yield honey in great amounts.

(ii) They should not sting much.

(iii) They should be kept in the beehive for long durations.

(iv) They should breed very well.

17. What is pasturage and how is it related to honey production?

Ans: The flowers which are available to the bees for nectar and pollen collection are called pasturage. It is related to the production of honey as the taste and quantity of honey are determined by pasturage.

18. Explain any one method of crop production which ensures high yield.

Ans: Crop rotation is the method of growing crops alternatively on the same land. A legume crop is sown between two successive cereal crops in this method. The root of legume plants harbours *Rhizobium* bacteria in their root nodules which help to fix nitrogen in the soil and make it available to the plants. Thus, Nutrients are replenished in the soil by growing a legume crop. This way soil fertility is maintained and land gets utilized in a better way. The need for fertilizers is reduced by this method, which increases the overall yield of crops and decreases soil pollution.

19. Why are manures and fertilizers used in fields?

Ans: The use of manures and fertilizers in the fields helps in the enrichment of the soil with the required nutrients. Manure helps in enriching the soil with organic matter and nutrients and provides a lot of humus to the soil. This helps in the improvement of the fertility and structure of the soil. Fertilizers are manufactured in factories and are a good source of nitrogen, phosphorus, and potassium. Manure is considered to be better than a fertilizer in terms of soil health, as it adds humus and improves fertility and overall soil quality. On the contrary, although quicker in action, fertilizers are bad for soil health in the long run because of their chemical nature. To get an optimum yield, it is advisable to use a balanced combination of manures and fertilizers in the soil.

20. What are the advantages of intercropping and crop rotation?

Ans: Intercropping involves the cultivation of two or more crops at once on the same field in a specific pattern. Maximum utilization of nutrients by plants is ensured, pests and diseases which are spreading to all the plants are prevented in Intercropping. Crop rotation is the method of growing crops alternatively on the same land. Crop rotation increases soil fertility and reduces soil erosion. Both these methods reduce the Requirement for fertilizers. It also helps in controlling Weeds, Growth of pathogens, Pests in crops are controlled by this method.

21. What is genetic manipulation? How is it useful in agricultural practices?

Ans: Genetic manipulation is a process where the gene for the desired character from one plant can be introduced in another plant (cell). The plants formed as a result of genetic manipulation are called transgenics. This transgenic plant has a new gene in its DNA and exhibits characters governed by the newly introduced gene. Genetic manipulation of crops is desirable for producing better yielding varieties, disease, and pest-resistant plants. Scientists have also developed plants resistant to drought and nutrient-rich crops. Golden rice is vitamin A-rich rice that was developed with genetic manipulation. To fight vitamin A deficiency, it was developed. Thus, In agricultural processes gene manipulation plays an important role. It helps in the improvement of crop variety, ensures food security and insect-resistant crops.

22. How do storage grain losses occur?

Ans: During the storage of grains both biotic and abiotic factors cause losses to grains.
(a) Biotic factors such as insects, rodents. These cause damage to grains
by directly feeding on them and rendering them unfit for human consumption.
(b) Abiotic factors like moisture, temperature affects the grains.
(c) Lack of sunlight also affects the grains.

23. How do good animal husbandry practices benefit farmers?
Ans: Cattle husbandry is taken into account for two purposes— milk and draught labour for agricultural work such as tilling, irrigation, and carting. Good animal husbandry practices like keeping the cattle clean, providing the cattle with proper food, providing them with food additives, keeping the cattle healthy, etc. Proper diet should be given which leads to increased milk production. Proper care helps in the improvement of the overall health of cattle and produces sturdy animals for agricultural work. By hybridization, i.e., the crossing of superior breeds, better breeds of draught animals can be produced.

24. What are the benefits of cattle farming?
Ans: The benefits of cattle farming are:
(i) Better quality of milch cattle can be obtained.
(ii) Good health of draught animals can be maintained
(iii) New breeds that are resistant to diseases can be produced by crossing two varieties with the desired traits.

25. For increasing production, what is common in poultry, fisheries, and bee-keeping?
Ans: The common factor for increasing production in poultry, fisheries, and beekeeping is the proper management techniques that need to be followed are:
(i) Regular cleaning of farms.
(ii) Maintenance of hygiene.
(iii) Proper and timely feed, nutritious feed is of utmost importance.
(iv) Maintenance of proper living conditions like ambient temperature and proper ventilation keeps the cattle healthy.
(v) Timely vaccination of animals is required for the prevention and cure of diseases.

26. How do you differentiate between capture fishing, agriculture, and aquaculture?
Ans: The difference between capture fishing, agriculture, and aquaculture are:

Capture fishing	**Mariculture**	**Aquaculture**
It refers to the method of obtaining fish from natural resources.	It is the culture of marine fish which is required for commercial use.	It involves the cultivation of aquatic animals that are of high economic value such as prawns, lobster, crab, etc.