



15

Improvement in Food Resources

In the Chapter

- There are thirteen nutrients necessary for crops. Of these, six are required in large quantities and are called macro-nutrients whereas seven nutrients are required in small quantities and are called micro-nutrients.
- Fertilizers and Manure are the main sources of nutrient supply to crops.
- Organic farming is a farming system with minimal or no use of chemicals as fertilizers, herbicides, pesticides, etc. and with a maximum input of organic manures, recycled farm wastes, and bio-agents, with healthy cropping systems.
- Mixed farming is a system of farming on a particular farm which includes crop production, raising of livestock, etc.
- Growing of two or more crops simultaneously on the same piece of land is known as Mixed cropping.
- Growing two or more crops in definite row patterns is known as inter-cropping.
- The growing of different crops on a piece of land in pre-planned succession is known as crop rotation.
- Varietal improvement is required for higher yield, good quality, biotic and abiotic resistance, shortening the maturity duration, wider adaptability and desirable agronomic characteristics.
- Farm animals require proper care and management like feeding, shelter, breeding and disease control. This is known as animal husbandry.
- Poultry farming is done to raise domestic fowls. Poultry production involves egg production and broiler production for poultry meat.
- To enhance poultry production, cross breeding is done between Indian and exotic breeds for variety improvement.
- Fish may be obtained from marine resources and inland resources.
- To increase production of fish, they can be cultured in marine as well as inland ecosystems.
- Marine fish capture is done by fishing nets guided by echosounders and satellites.
- Composite fish culture system is commonly used for fish farming.
- Bee-keeping is done to get honey and wax.

Intext Exercises**Page No. 204****1. What do we get from cereals, pulses, fruits and vegetables ?**

Ans. Food grains : We obtain carbohydrates which provide energy.

Pulses : Pulses give us protein.

Fruits and vegetables : We obtain vitamins and minerals from fruits and vegetables.

Page No. 205**1. How do biotic and abiotic factors affects crop production ?**

Ans. Various biotic factors like insects, pests, damage crops thereby reduces crop production. Some nematodes help in increasing soil fertility thus increase crop production.

Optimum level of various factors in necessary for good crop yield. Some of the factors like drought salinity, water logging, heat, cold, frost, etc. are the factors that determine crop production.

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

Ans. Following are the desirable agronomic characteristics for crop improvements.

(i) For fooder crops—tallness and profuse braneling.

(ii) Cereal crops—dwarfness is useful because such crops need less nutrient to grow and develop.

Page No. 206**1. What are macro-nutrients and why are they called macro-nutrients?**

Ans. The elements which are very essential for the growth of plants are called macronutrients. These nutrients are required in fairly large quantity so, they are called macronutrients.

2. How do plants obtain their nutrients?

Ans. Plants obtain their nutrition from manures and fertilizers.

Page No. 207**1. Compare the use of manures and fertilizers in maintaining soil fertility.**

Ans. If we supply only manures to the field then its fertility increases slowly and not instantly. But, the fertility is sustained for a longer time.

If only fertilizers are supplied to the field, there will be high crop yield because, they provide nutrients instantly. But, the fertility of the soil does not remain for a longer time.

Page No. 208**1 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. The farmers shall be most benefitted when they follow conditions given in (c) i.e. they use quality seeds, adopt irrigation and use of fertilizer and crop protection measures. Use of good quality seeds increases crop production. Use of fertilizer also helps in obtaining high yield. If crops are protected from pests, they must give good yield.

Page No. 209

1. Why should preventive measures and biological control methods be preferred for protecting crops?

Ans. For protection of crops, preventing measures and biological control method are employed because these cause harm neither to the crop nor to the environment. Pesticides and other chemical substances cause harm to crops and pollute the environment.

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

Ans. Loss causing factors—

(i) **Biotic factors**—Insects, rodents, fungi and bacteria, etc.

(ii) **Abiotic factors**—Moisture content and temperature, etc.

Page No. 210

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

Ans. Artificial insemination is supposed to be a good method for improving cattle breed because, it is easy and incurs low cost and can also fertilize more than 3000 females from the sperms of a single male. This method is more reliable.

Page No. 211

1. Discuss the implications of the following statement—“It is interesting to note that poultry is India's most efficient converter of low fibre food stuff (which is unfit for human consumption) into highly nutritious animal protein food.”

Ans. This statement means that inferior food available in India, which is not fit for human consumption, is a good food for hens. In return, hens produce quality eggs having good amount of nutritional elements and proteins. Thus food with low nutritional value is converted into food with high nutritional value for hens.

Page No. 211

1. What management practices are common in dairy and poultry farming?

Ans. (i) Proper arrangement for housing

(ii) Proper arrangement for light

(iii) Proper nutritional arrangement

(iv) Timely vaccination

(v) Use of improved variety

(vi) Proper arrangement for cleaning and sanitation.

2. What are the differences between broilers and layers and in their management?

Ans. Layers need more space than the broiler. Foods of the layer must be rich in vitamins and minerals while, that of broiler must be rich in protein and fat.

Page No. 213

1. How are fish obtained ?

Ans. Fishes are obtained from water. These are found in both types of water i.e., sea water and brackish water.

2. What are the advantages of composite fish culture?

Ans. Following are the advantages of composite fish culture—

(i) Fish can be grown in crop fields especially paddy.

(ii) Intensive fish farming is possible because plenty of water is available during crop seasons.

(iii) In this system both local and imported fish species can be cultivated.

Page No. 213**1. What are the desirable characters of bee varieties suitable for honey production?**

- Ans.** (i) Ability to collect nectar.
(ii) Ability to protect itself against enemy.
(iii) Queen's ability to produce healthy eggs.
(iv) Affection to the nature.

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

- Ans.** Pasturage of flora is the type of crop or other plants from which bee collects nectar and pollen to produce honey.
It affects the quality and quantity of honey because different flora produce nectar and pollen of different types. For example, almond honey of Kashmir is very tasty.

Exercise**1. Explain any one method of crop production which ensures high yield.**

- Ans.** The method of cross breeding of two genetically different plant species is a method of crop production through which we can obtain high yield.

2. Why are manures and fertilizers used in fields?

- Ans.** Manure and fertilizers are used to increase the soil fertility so that crop yield can be obtained.

3. What are the advantages of inter-cropping and crop rotation?

- Ans.** Advantages of inter cropping—When two or more than two crops are grown in the same field in definite rows, the chance of crops getting damaged becomes low. Since, these crops use different nutrients the overall productivity increases—

Advantages of Crop Rotation—

- (i) Fertility of soil increases
- (ii) Less amount of fertilizer is needed
- (iii) Yield increases
- (iv) Helps in controlling pests and weeds affecting crops.

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

- Ans.** Genetic manipulation includes hybridization of desired characters, recombination of DNA and growth by polyploidy.
It helps in growing crops of desirable characters and obtaining high yield.

5. How do storage grain losses occur?

- Ans.** Storage grain losses occur due to biotic and abiotic factors like temperature in the following ways—
- (i) decrease in quality
 - (ii) decrease in weight
 - (iii) decrease in ability to germinate
 - (iv) decrease in market demand

6. How do good animal husbandry practices benefit farmers?

- Ans.** A good animal husbandry benefits in the following way—
- (i) lessens cost
 - (ii) increases productivity
 - (iii) develops good reproducing capacity.

7. What are the benefits of cattle farming?

- Ans.** Cow and buffalo both are dairy animals. Their males are used for carrying goods and in

agricultural works. Cattle farmers are involved in rearing cattle for obtaining milk, using them in agriculture work and for obtaining useful materials.

- 8. For increasing production, what is common in poultry, fisheries and bee-keeping?**

Ans. Selection of improved variety is equally important in these three cases.

- 9. How do you differentiate between capture fishing, mariculture and aquaculture?**

Ans. Difference

Capture fisheries

Catching fishes from natural resources is called capture fisheries, e.g. from rivers or seas.

Mariculture

Production of fishes in ponds, lake, etc. like fresh water resources is called inland mariculture.

Aquaculture

Production of fish and other sea-food in any resources like lagoon is called aquaculture.

Additional Questions

- 1. Name two fodder crops.**

Ans. (1) Berseem, (2) Lucerne.

- 2. Name a farming system with minimal or no use of chemical fertilisers.**

Ans. Ecological farming or organic farming.

- 3. What is "white revolution"?**

Ans. White revolution means better and more efficient use as well as availability of milk.

- 4. What type of crop is generally grown between two cereal crops to restore the fertility of soil?**

Ans. To maintain the fertility of soil in the field of cereal crops we should grow legumes crops.

- 5. What is the daily food requirement for broilers?**

Ans. Broilers require vitamin-rich supplementary food for good growth rate and better feed efficiency.

- 6. Which revolution is associated with increased food-grain production?**

Ans. Green revolution is associated with increased food-grain productions.

- 7. Name the method commonly used for improving cattle breeds.**

Ans. Cross-breeding.

- 8. Define crop rotation.**

Ans. Crop rotation is the process of growing different types of crops alternately in the same field. Growing of different crops on a piece of land in a preplanned succession is termed as crop rotation.

- 9. Give one example each of a macro-nutrient and micro-nutrient.**

Ans. Phosphorus and zinc are examples of macro-nutrient and micro-nutrient, respectively.

- 10. Name an exotic variety of honey bee grown in India.**

Ans. Apis mellifera.

- 11. Give an example of mixed cropping.**

Ans. Groundnut and sunflower are grown together in mixed cropping.

- 12. Why is excessive use of fertilizers not so good for our environment?**

Ans. Excess use of fertilizers causes environmental pollution as their residual and unused amounts will become pollutants for air, water and soil.

- 13. What is the use of mixed cropping?**

Ans. This reduces risk and gives some insurance against failure of one of the crops.

14. Give two examples of weeds which are commonly found in crop fields.

Ans. Xanthium (gokhroo) and parthenium (gajar ghas).

15. On what factors does the growth of plants and flowers depend?

Ans. Temperature and photoperiods (duration of sunlight).

16. What are those crops called which are grown in rainy season?

Ans. Rabi season crops or just 'Rabi Crops'. These are grown in the month of June and harvested in October.

17. What is the advantage of inter cropping? Explain giving one example.

Ans. Advantage of inter cropping :

(i) Increases productivity

(ii) Helps to maintain soil fertility.

Example : Wheat and chick pea which need different nutrients can be sowed in different rows in the same field.

18. (a) What is the term used for the scientific management of livestock?

(b) What do you mean by the terms 'apiary' and 'pasturage'?

(c) Mention any two desirable traits for which cross-breeding programmes between Indian and foreign breeds are undertaken in Poultry farming?

Ans. (a) Animal husbandry

(b) **Apiary:** The farms where bee-hives are kept for the commercial production of honey are called apiaries.

Pasturage: The regions where flowers are available to the bees for nectar and pollen collection is called pasturage. Pasturage can be different as per the geographical regions. The quality and taste of honey depends upon pasturage.

(c) The cross-breeding programme between Indian and foreign breeds are focussed on the following desirable traits :

(i) number and quality of chicks.

(ii) low maintenance requirements.

19. What is the amount of work done in the following cases? Justify your answer by giving the appropriate reason.

(a) by an electron revolving in a circular orbit of radius 'r' around a nucleus.

(b) by the force of gravity, when a stone of mass 'm' is dropped from the top of a multistoreyed building of height 'h'.

Ans. (a) Work done by an electron revolving in a circular orbit of radius 'r' around a nucleus is zero, because, here force and displacement are at right angles ($\theta = 90^\circ$)

$$\therefore W = F \cdot s \cos \theta = 0$$

(b) Work done = mgh = Decrease in potential energy.

20. (a) What are weeds? Why are they harmful to the growth of the crop ?

(b) What is meat by 'vermicompost' ?

Ans. (a) Weeds are plants that grow at places where they are not wanted. In other words, the unwanted plants growing in fields are called weeds.

(b) The compost is rich in organic matter and nutrients. When compost is prepared by using earthworms to hasten the process of decomposition of plant and animal refuse, this is called vermicompost.

21. Raj Thakur and Ram Das were given fertilizers and manure both to use in their field. Ram Das selected to use manure. Why did he not select fertilizers ?

Ans. Ram Das did not select fertilizers because the continuous use of fertilizers in an area can destroy soil fertility because the organic matter in the soil is not replenished and useful micro-organisms in the soil are destroyed by the fertilizers used. On the other hand,

manure helps in enriching soil with nutrients and organic matter and increasing soil fertility, hence he selected manure and not fertilizers.

22. Name any three factors for which crop variety improvement is done and explain each of these.

Ans. The factors for which crop variety improvement is done are:

(i) To develop varieties with produce of better quality; considerations of crop produce varies from crop to crop, like baking quality in wheat, protein quality in pulses, oil quality in oilseed crops and shelf-life of fruit and vegetable.

(ii) To develop varieties with wider adaptability, so that crop production under different environmental conditions can be undertaken.

(iii) To develop varieties with desirable agronomic characteristics; like dwarfness in cereals so that less nutrients are consumed, and tallness and profuse branching in case of fodder crops.

23. If there is low rainfall in a village throughout the year, what measures will you suggest to the farmers for better cropping?

Ans. Irrigation help to overcome the problem of low rainfall and helps to increase productivity by maintaining soil-water balance. Surface water and ground water resources are used for irrigation purposes. Several irrigation methods are used to supply water to the crop fields. These are wells, tanks, canals, rivers, sprinkler method and drip irrigation system. The nature of soil is also an important factor for determining the irrigation requirements.

24. What is 'green manuring' ? List any two commonly used green manure crops and name two macro-nutrients provided by green manure.

Ans. Prior to the sowing of the crop seeds, some plants like sun hemp or guar are grown and then mulched by ploughing them into the soil. These green plants thus turn into green manure.

Two commonly used green manure crops are sun hemp and guar.

Macro-nutrients provided by green manure are nitrogen and phosphorus.

25. What is the effect on milk production and lactation period of hybridized variety of dairy cow?

Ans. The hybridized variety of dairy cows have a longer lactation period and they produce great amount of milk.

26. Give one example of bacterial disease of cattles.

Ans. Anthrax.

27. Name the two major groups of animal food. Also name their components.

Ans. Animal depend mainly on berseem and lucerne for their food in winter. In other seasons, maize, jowar and green fodder are given to them. Animal feed contains the following substances :

(i) Roughage – Roughage has fibrous, granular grasses of low nutritional value. Green fodder and silage are the main source of roughage.

(ii) Concentrates – They have high nutritional value but are low in fibre. Wheat bran, rice bran, gram husk, oil seed cakes, etc. are the examples of concentrates.

28. What precautions should be taken in the selection of animals for selective reproduction?

Ans. To obtain good quality cross breeds, we should take care of the following qualities or characters of male and female –

(i) lactation period of the animal

(ii) gestation period

(iii) good health

- (iv) resistance against diseases
- (v) adaptability to the climate
- (vi) nutritional needs.

29. What other things do animals need in addition to a balanced ration?

Ans. In addition to balanced ration, the animals require some specific food. These additional feed must contain –

- (a) Antibiotics
- (b) Minerals
- (c) Hormone

Functions of additional feed :

- (i) Brings about growth in animals
- (ii) Increases milk production
- (iii) Protects from diseases.

30. What is a layer?

Ans. An egg laying poultry is called layer.

31. Name one Indian breed of fowl.

Ans. Aseel.

32. Name two exotic breeds of fowl.

Ans. (i) White leghorn, (ii) Rhode Island Red.

33. Name the popular varieties of Aseel.

Ans. Peela, Yakub, Nurie and Kajal.

Multiple Choice Questions

1. Find out the wrong statement from the following :

- (a) White revolution is meant for increase in milk production.
- (b) Blue revolution is meant for increase in fish production.
- (c) Increase food production without compromising with environmental quality is called as sustainable agriculture.
- (d) None of the above.

Ans. (c)

2. Which one is an oil yield plant among the following ?

- (a) Lentil
- (b) Sunflower
- (c) Cauliflower
- (d) Hibiscus

Ans. (b)

3. Which one of the following species of honey bee is an Italian species ?

- (a) Apis dorsata
- (b) Apis Florae
- (c) Apis cerana indica
- (d) Apis mellifera

Ans. (d)

4. To solve the food problem of the country, which among the following is necessary?

- (a) Increased production and storage of food grains.
- (b) Easy access of people to the food grains.
- (c) People should have money to purchase the grains.
- (d) All of the above

Ans. (d)

5. Which one is not a source of carbohydrate ?

- (a) Rice
- (b) Millets

- (c) Sorghum (d) Gram

Ans. (d)

6. Preventive and control measures adopted for the storage of grains include

- (a) strict cleaning (b) proper disjoining
(c) fumigation (d) all of the above

Ans. (d)

7. Which one of the following fishes is a surface feeder ?

- (a) Rohus (b) Mrigals
(c) Common caros (d) Catlas

Ans. (d)

8. Find out the correct sentence :

- (i) Hybridisation means crossing between genetically dissimilar plants.
(ii) Cross between two varieties is called as interspecific hybridisation.
(iii) Introducing genes of desired character into a plant gives genetically modified crop.
(iv) Cross between plants of two species is called as intervarietal hybridisation.
(a) (i) and (iii) (b) (ii) and (iv)
(c) (ii) and (iii) (d) (iii) and (iv)

Ans. (a) (i) and (iii)

9. Weeds affect the crop plants by

- (a) killing of plants in field before they grow
(b) dominating the plants to grow
(c) competing for various resources of crops (plants) causing low availability of nutrients
(d) all of the above

Ans. (c) competing for various resources of crops (plants) causing low availability of nutrients

10. Which one of the following species of honey bee is an Italian species ?

- (a) Apis dorsata (b) Apis florum
(c) Apis cerana indica (d) Apis mellifera

Ans. (d) Apis mellifera

11. Find out the correct sentence about manure:

- (i) Manure contains large quantities of organic matter and small quantities of nutrients.
(ii) It increases the water holding capacity of sandy soil.
(iii) It helps in draining out of excess of water from clayey soil.
(iv) Its excessive use pollutes environment because it is made of animal excretory waste.
(a) (i) and (iii) (b) (i) and (ii)
(c) (ii) and (iii) (d) (iii) and (iv)

Ans. (b) (i) and (ii)

12. Cattle husbandry is done for the following purposes.

- (i) Milk production (ii) Agricultural work
(iii) Meat production (iv) Egg production
(a) (i), (ii) and (iii) (b) (ii), (iii) and (iv)
(c) (iii) and (iv) (d) (i) and (iii)

Ans. (a) (i), (ii) and (iii)

13. Which of the following are Indian cattle ?

- (i) Bos indicus (ii) Bos domestica
(iii) Bos babalis (iv) Bos vulgaris
(a) (i) and (iii) (b) (i) and (ii)
(c) (ii) and (iii) (d) (iii) and (iv)

Ans. (a) (i) and (iii)