PRACTICE PAPER 13 (2024-25)

CHAPTER 12 IMPROVEMENT IN FOOD RESOURCES (ANSWERS)

SUBJECT: SCIENCE **MAX. MARKS : 40**

CLASS : IX **DURATION : 1½ hrs**

General Instructions:

(i). **All** questions are compulsory.

(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.

(iii). **Section A** comprises of **10 MCQs** of **1 mark** each. **Section B** comprises of 4 questions of **2 marks** each. **Section C** comprises of 3 questions of **3 marks** each. **Section D** comprises of 1 question of **5 marks** each and **Section E** comprises of 2 Case Study Based Questions of **4 marks** each.

(iv). There is no overall choice.

(v). Use of Calculators is not permitted

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. 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.

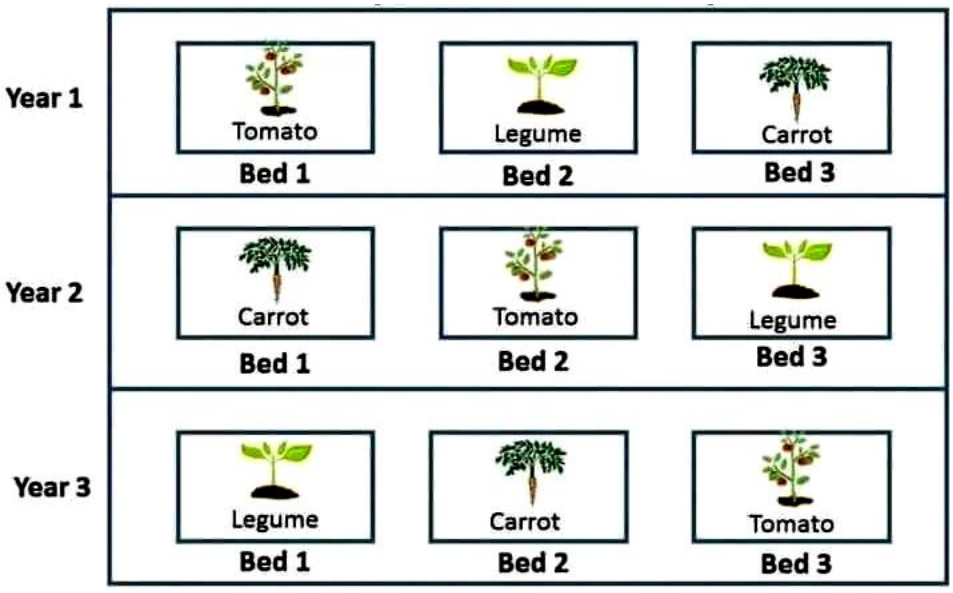
(iii) It helps in draining out of excess of water from clayey soil.

(iv) It 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)

2. The diagram shows the crop harvesting pattern followed by a farmer. Bed 1, Bed 2 and Bed 3 are different parts of the farm.



What is the common term used for this pattern of crop harvesting?

(a) Crop rotation (b) Mixed cropping (c) Intercropping (d) Organic farming

Ans. (c) Intercropping

Intercropping is the practice of growing more than one crop on the same field in a definite row pattern at the same time. It helps in increasing the productivity per unit area.

3. 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 grain.

(c) People should have money to purchase the grains.

(d) All of the above

Ans. (d) All of the above

4. A farmer in town X changed the cropping pattern of the farm. Earlier the farm had only soyabean but then the farm was divided into rows of different crops. Two rows of soyabean and alternate two rows had maize and the next two had cowpea. What would be the most likely effect of the new cropping pattern?
(a) Increase in yield
(b) Degradation of land
(c) Increased growth of weeds
(d) Reduced intake of nutrients by crops
Ans. (a) Increase in yield
This method of crop production is called intercropping. This method is useful in suppressing weeds, controlling pests and diseases and increasing the yield as sunlight, space and water is more efficiently used.

5. A crop X is to be grown in a field. It is seen that Parthenium, a type of weed usually affects crop X. What measure would help to protect crop X from Parthenium?
(a) Spraying pesticides
(b) Avoiding crop rotation
(c) Burning the field before sowing the crop
(d) Delaying the sowing of crops by a few days
Ans. (a) Spraying pesticides

6. Which of these would make a crop resistant to biotic stresses? [CBSE Question Bank]
(a) Using insecticides to kill insects and other pests.
(b) Developing crop varieties that are tolerant to high soil salinity.
(c) Developing crop varieties that can grow in scarce water conditions.
(d) Growing crops in artificial set ups with fixed temperature and moisture content.
Ans. (a) Using insecticides to kill insects and other pests.
Biotic stresses includes the harm caused to the crops by all the living organisms like insects, pests, rodents, etc.

7. A soil sample has adequate water holding capacity but is deficient in phosphorous and potassium. Which of these would improve the quality of crops grown in that field?
(a) Removing weeds
(b) Applying fertilisers
(c) Modifying irrigation system
(d) Growing two different crops at the same time
Ans. (b) Applying fertilisers
Fertilisers are rich in nitrogen, phosphorus and potassium.

8. Crop Y is grown only in few areas due to specific temperature requirements. To increase the productivity of crop Y, it is recommended to develop its different varieties. Which feature should be included while developing the different varieties of crop Y in order to increase its productivity?
(a) Developing varieties with strong biotic resistance.
(b) Developing varieties with less dependence on water.
(c) Developing varieties with extended maturity duration.
(d) Developing varieties adaptable to different climatic conditions.
Ans. (d) Developing varieties adaptable to different climatic conditions.
Since the cultivation of crop Y is restricted to few regions due to specific temperature requirements, the varieties developed should be able to grow in varied climatic conditions.

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.

(a) Both A and R are true and R is the correct explanation of A.
(b) Both A and R are true and R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

9. Assertion (A): Some weeds produce substances toxic for the crops.
Reason (R): Chenopodium is a toxic weed.
Ans. (c) A is true but R is false.
Chenopodium despite being grown in some areas, the plant is regarded as a weed in others. It is mostly found in sugar beet, potatoes, maize and cereals. It is not a harmful weed.
Weeds compete for food, space, and sunshine. They absorb the nutrients from the plants and slow down crop growth. They could occasionally create poisonous compounds that could hinder crop growth. Weeds are mixed in with the crop during harvest, lowering the quality.

10. Assertion (A): Fungicides and pesticides increase crop output.
Reason (R): Manure and fertilizers produce chemicals that improve soil fertility.
Ans. (c) A is true but R is false.

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. Cultivation practices and crop yield are related to environmental condition. Explain.
Ans. Different crops and cultivation practices require different climatic conditions, temperature, photoperiod for their growth and completion of life cycle. There are some crops which are grown in rainy season (Kharif crops) while some others are grown during winter season (Rabi crops).

OR

Which method is commonly used for improving cattle breed and why?
Ans. The commonly used method for improving cattle breed is cross-breeding two cattles having the desired qualilties.
For e.g., by crossing Brown Swiss having long lactation period with Red Sindhi having disease resistance to get a breed having both qualities.

12. What are macronutrients and why are they so called?
Ans. Sixteen nutrients are essential for plants, out of which thirteen are supplied by the soil. Among these, six are required in large quantities. As these are required in large quantities, they are called macronutrients. They are: (i) nitrogen, (ii) phosphorus, (iii) potassium, (iv) calcium, (v) magnesium and (vi) sulphur.

13. How do biotic and abiotic factors affect crop production?
Ans. Biotic factors like diseases, insects and nematodes, and abiotic factors like drought, salinity, waterlogging, heat, cold and frost have a negative impact on crop production, i.e., the crop yield decreases due to these factors.

OR

What factors may be responsible for losses of grains during storage?
Ans. The following factors are responsible:
(i) Abiotic factors like inappropriate moisture and temperature.
(ii) Biotic factors like insects, rodents, birds, mites and microorganisms.

14. Why should preventive measures and biological control methods be preferred for protecting crops?
Ans. Preventive measures and biological control methods are preferred because:
(i) They are simple.

(ii) They are more economic.
(iii) They minimise pollution without affecting the soil quality.

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. (a) Why should preventive methods and biological control methods be preferred for protecting crops?
(b) Name the farming system in which only such above mentioned methods are followed.
(c) How does manure improve the soil structure of sandy and clayey soil?
Ans. (a) Since they are not poisonous in nature.
(b) Organic farming.
(c) Manure helps in enriching soil with nutrients and organic matter in manure helps in improving the soil structure. This involves increasing the water-holding capacity in sandy soils. In clayey soils, the larger quantities of organic matter help in drainage and in avoiding water logging.

16. What is genetic manipulation? How is it useful in agricultural practices?
Ans. Incorporating desirable characters by hybridisation, mutation, DNA recombination, etc., is called genetic manipulation. By genetic manipulation, we get improved varieties of seeds having desired characters like pest and disease resistance and high yield. Their seeds not only give higher yield but also reduce the input cost.

OR

Enumerate the advantages of mixed farming.
Ans. Following are the main advantages of mixed farming:
(i) Farmyard manure is made available from livestock which is used again in agricultural farms.
(ii) Organic waste materials like straw, husks and chaffs of grains, household kitchen waste, etc., are converted into human food through the agency of cattle, sheep, poultry, pigs, etc., as per the choice of farmer.
(iii) It provides work to all the members of a family throughout the year, thus providing subsidiary occupation without the need of employing special labour.
(iv) Adopting exact combination in mixed farming, income can be increased, e.g., the number of animals can be increased (as per the food/crop available) to enhance milk production.

17. What are the advantages of intercropping and crop rotation?
Ans. Advantages of intercropping:
(i) In intercropping, two or more crops are simultaneously grown on the same field in a definite row pattern—a few rows of one crop and adjoining to that a few rows of another crop. This practice reduces intraspecific competition.
(ii) This ensures that both crops can give better yield.
(iii) There is maximum utilisation of nutrients and minimum spread of pests.
Advantages of crop rotation:
(i) It makes the soil fertile and helps in the increase of crop yield.
(ii) It also decreases the demand of nitrogenous fertilisers as leguminous plants grown during crop rotation fix the atmospheric nitrogen.
(iii) The selected rotation of crops also helps in pest control, as pests do not find their favourite crop in the next season and it becomes difficult for them to survive there.

OR

Discuss why pesticides are used in very accurate concentration and in very appropriate manner.
Ans. Pesticides are used in very accurate concentration and in a very appropriate manner because if used in excess it
(i) harms the soil and causes loss of fertility,
(ii) checks the replenishment of organic matter,
(iii) kills the microorganism of soil,
(iv) causes air, water and soil pollution.

SECTION – D

Questions 18 carry 5 marks each.

18. Why is crop variety improvement important in cultivation? Describe the important factors for which variety improvement is done.

Ans. Weather conditions, soil quality and availability of water are the main factors on which crop yield depends. As weather conditions like drought and flood situation are unpredictable, it is important to have varieties that can grow in adverse climatic conditions. In the same way, varieties that are tolerant to high soil salinity have also been developed. Some of the factors for which crop variety improvement is done are as follows:

(i) High Yield: To increase the productivity of the crop per acre.

(ii) Improved Quality: Quality considerations of crop products vary from crop to crop. For instance, baking quality is important in wheat, protein quality in pulses; oil quality in oilseeds and preserving quality in fruits and vegetables.

(iii) Biotic and Abiotic Resistance: Crop production can fall due to biotic and abiotic stresses under different situations. Thus, varieties resistant to these stresses can improve crop production.

(iv) Change in Maturity Duration: The shorter the duration of the crop from sowing to harvesting, more economical is the variety. It reduces the cost of crop production and allows the farmers to grow multiple crops in a year.

(v) Wider Adaptability: Developing varieties for wider adaptability helps in stabilising the crop production under different environmental conditions. Also, one variety can then be grown under different climatic conditions in different areas.

(vi) Desirable Agronomic Characteristics: Height and profuse branching are desirable characteristics for fodder crops. Dwarfness is desired in cereals such that fewer nutrients are consumed by these crops. Thus, developing varieties of desired agronomic characters also help in higher yield.

OR

What are weeds? Enlist the methods employed to control weeds.

Ans. The unwanted plants in a cultivated field are called weeds. They compete for food, space and light with the main crop plants. They germinate and grow faster, and thus effect the quality and yield of the crop. For these reasons, weed plants need to be removed from the cultivated field in early stage of crop. The methods employed for weed control are as follows:

(i) Mechanical Method: The weed plants are removed from the field either manually or with the help of agricultural implements like uprooting or hand hoeing or weeding with khurpi, ploughing, etc.

(ii) Cultural Method: This method includes:

(a) Proper seed bed preparation (b) Timely sowing of crops

(c) Intercropping (d) Crop rotation

(iii) Chemical Method: By spraying chemicals that do not harm crop plants but destroy only the weed plants, the latter can be controlled. These chemicals are called weedicides, e.g., 2, 4-D and Atrazine.

(iv) Biological Method: As we know, some insects feed on particular weeds. Thus, we use these insects as biological weed-controlling agents like the use of cochineal insect to control Opuntia weed and the use of the grass carp fish to control aquatic weeds.

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

19. Read the following information and answer the questions based on information and related studied concepts.

Animal protein for our meals can be found at low cost in fish. The finned real fish as well as invertebrates like prawns and molluscs are all produced as fish. Fish can be obtained in two different methods. One comes from catching fish, a type of natural resource. The other method is cultural fishery or fish farming. The fish's water source can be either fresh or saltwater, like

those found in ponds and rivers. Fish can thus be caught or raised in freshwater and marine ecosystems for use in fishing.

Fish are occasionally raised in water in paddy fields when a rice crop is also being cultivated there. Composite fish culture techniques enable more intense fish farming. In such systems, fish species which are both domestic and imported are utilised.

(a) With the help of above information can you explain, what is Blue revolution? (1)

(b) Mention one merit and one demerit of the fish culture system. (2)

(c) Give examples of fish reared in culture fisheries in India. (1)

Ans. (a) The Blue Revolution programme focuses primarily on increasing the output and productivity of inland and offshore fisheries and aquaculture.

(b) Merits: Fish meat is produced by fish culture and is a highly nutritious diet that contains vitamins, beneficial fat, and the most easily absorbed protein.

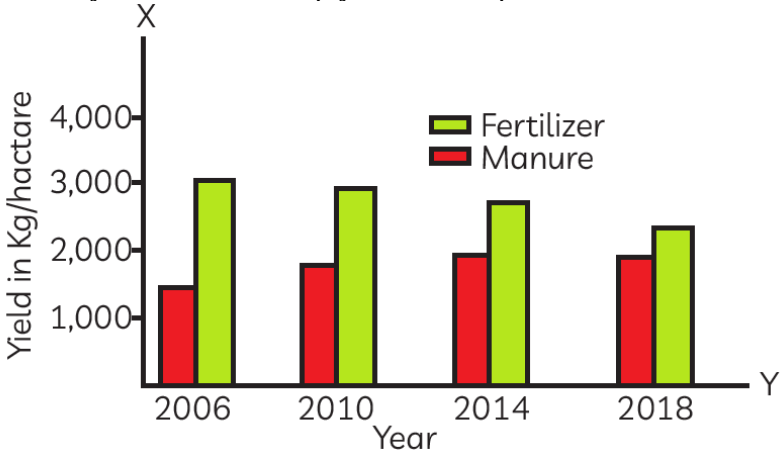
Demerits: Through fish culture, more selectively raised fish are produced while less profitable fish are discarded, endangering biodiversity and fish gene banks.

(c) The third-largest fish producer in the world is India. Rohu (Labeo rohita) and Catla (Catla catla) are two fishes, raised in culture fisheries in India. In addition to these fish, India is a major producer of Mrigala (Cirrhinus mrigala).

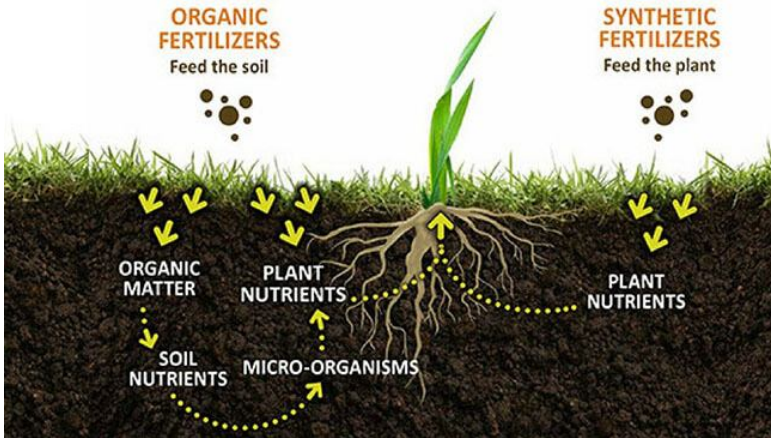
20. Read the given passage and answer the questions that follow based on the passage and related studied concepts.

Intensive farming is an agricultural system that aims to maximize yields from available land through various means, such as heavy use of pesticides and chemical fertilizers. On the other hand, organic farming is a farming system with minimal or no use of chemical fertilizers. Both the farming systems differ in the yield produced, inputs required and effect on soil characteristics like water holding capacity, soil microorganisms, aeration, etc.

The graph given below shows the effect of organic manure and chemical fertilizers used in these two types of agriculture systems on the crop yield over a period of time.



(a) Describe the trends in crop yields between 2006 and 2018. (1)
(b) Explain the effect of adding manure on the water-holding capacity of: (i) Sandy soil (ii) Clay soil (2)
(c) The picture shows how organic manure and chemical fertilizer are used by plants. (1)



Observe the picture carefully and write your observations.
Ans. (a) The trends in crop yields between 2006 and 2018 are:
When manure is used, yield increases and on the contrary, yield decreases when fertilizers are applied.
(b) The bulk of organic matter in manure helps in improving the soil structure.
(i) Organic manure helps in increasing the water holding capacity in sandy soil.
(ii) Organic manure helps in drainage and in avoiding water logging capacity in clayey soil.
(c) Organic manure provides food from the soil microorganisms. Organic manure enriches the soil with nutrients which are absorbed by the plants in the course of time. It also improves long-term fertility of the soil.
Chemical fertilizers provide nutrients that can be directly absorbed by the plants. But chemical fertilizers kill the soil microorganisms. They are not environment friendly and degrade the soil.