

# Improvement in Food Resources

## CHAPTER 15

### EXAM DRILL

### ANSWERS

1. Hybridisation is the crossing of genetically dissimilar plants to obtain better variety of crops.

2. Macronutrient-Phosphorus, Micronutrient-Zinc

3(i) Iron, Manganese, Boron, Zinc, Copper, Molybdenum and Chlorine.

3(ii) Intercropping and mixed cropping

3(iii) (d) : Potassium sulphate is a potassic fertiliser.

3(iv) (a) : Phosphorus is a macronutrient of plant whereas zinc, copper and boron are micronutrients of plant.

4(i) Hybridisation

4(ii) This process can be used to improve the plant variety for different purposes like yield improvement, disease resistance, etc.

4(iii) Hybridisation is of three types viz., intervarietal, interspecific and intergeneric.

4(iv) Genetic manipulation means the incorporation of desirable characters in an organism by various methods, such as hybridisation, mutation.

5. Crop which has been developed by introducing a foreign gene (from other source) to obtain a desired trait is called genetically modified (GM) crop. GM crop that is grown in India is Bt cotton.

OR

Factors leading to green revolution are : (i) new agricultural technologies (ii) use of high-yielding hybrid seeds (iii) use of fertilisers and pesticides (iv) improved irrigation facilities.

6. Two advantages of apiculture are :

(i) It provides honey and bee's wax.

(ii) It is a low investment, additional income generating activity for farmers.

OR

Marine fishes – Salmon, Sardines

7. Useful traits in improved crops are :

(i) High yield (ii) Improved nutritional quality (iii) Wider adaptability (iv) Desirable agronomic characteristics.

8. (c) : Gram is leguminous plant that forms nodule while nitrogen fixation in association with bacteria.

OR

(d) : Aspergillosis is fungal disease. Coryza, pullorum and cholera are bacterial diseases of poultry.

9. Organic matter is important for crop production because :

(i) It helps in improving the fertility of soil.

(ii) It helps in increasing the water holding capacity of sandy soil and drainage in clayey soil.

10. The compost prepared by using earthworms for decomposition of plants and animals refuse is called vermicompost.

11. Rabi season is from November to April.

12. Rice – Jaya

Mustard – Kranti

13. (b)

14. (c) : Cochin is Asiatic breed of chicken.

15. Biotic and abiotic factors affect the crop production in following ways :

(a) Infestation of insects (b) Weight loss

(c) Poor germination ability (d) Degradation in quality

(e) Discolouration (f) Poor market price

16. Poultry birds suffer from various diseases. These are caused by different agents found in nature and can affect the growth, quality and quantity of chicks. Fowls also suffer from nutritional deficiency. These diseases can be prevented by

(i) Providing nutritional diets to poultry birds.

(ii) Cleaning and sanitation of shelter.

(iii) Appropriate vaccination of poultry birds.

(iv) Spraying disinfectant at regular intervals in the shelter.

OR

Pesticides should be used in accurate concentration as they are very harmful to environment. Pesticides are non-biodegradable and can accumulate in organisms.

The environmental impact of pesticides consists of the effects of pesticides on non-target species. Over 98% of sprayed insecticides and 95% of herbicides reach a destination other than their target species, because they are sprayed or spread across entire agricultural fields.

Run-off can carry pesticides into aquatic environments. Wind can carry them to other fields, grazing areas, human settlements and undeveloped areas, potentially affecting other species.

**17. (a)** Two ways of fish farming are

(i) Capture fisheries : Catching of fish directly from their natural water sources.

(ii) Culture fisheries : Rearing of fish in artificial water bodies called breeding ponds.

**(b)** Major problem faced in fish farming is scarcity of availability of healthy and pure fish seeds. It can be overcome by the process of hypophysectomy in which pituitary extract containing FSH and LH hormones are injected in the fishes of good breeds to induce spawning. This provides quality seeds in desired quantity.

**18. (i)** Differences between inland and marine fisheries are as follows :

S. No.	Inland fishery	Marine fishery
(i)	It consists of fishing in freshwater and brackish water	It consists of fishing in sea water along the coastline of deep sea beyond it.
(ii)	Most of the fish production is through aquaculture.	Most of the fish production is through a practice called mariculture.

(ii) Differences between apiculture and aquaculture are :

S. No.	Apiculture	Aquaculture
(i)	It is the rearing and maintenance of honeybees for obtaining honey, wax and other substances.	It is the production of high economic value aquatic plants and animals under controlled situations by proper utilisation of available water.

OR

Honey bee colony is formed of about 40,000 to 100,000 members which include three types of castes : Queen, workers and drones. Honey bee is a social and polymorphic colony in which different castes are specialised in their structure to perform different but specific functions. But all the members exhibit team work so, are interdependent. Organisation of bee colony shows division of labour associated with morphological differentiation of the castes e.g., Queen is mainly meant to lay large number of eggs and has well developed ovaries but reduced mouth parts and no pollen collection apparatus. Workers are sterile females so they have reduced ovaries but with well developed mouth parts, strong wings, sting at the posterior end, pollen-collecting apparatus on the legs, etc. Drones are haploid males of the colony and have reduced mouth parts, and are adapted to copulate with the queen.

**19.** Genetic manipulation is a process of transferring (genes) characters that are desirable from one plant to another plant for production of varieties with desirable characteristics like profuse branching in fodder crops, high yielding varieties in maize, wheat, etc.

It is useful in agricultural practices in following ways :

- It helps to increase the yield
- Provides better quality of crops.
- Crops have shorter and early maturity period.
- Crops have better adaptability to adverse environmental conditions.
- It helps to obtain desirable characteristics.

**20.** India's population is increasing alarmingly, so to meet the ever increasing demand for food, we need to improve the crop varieties for food production. Crop improvement is to improve the characteristics of plants to make it agronomically superior. Crop variety improvement in food production is beneficial to human kind in following ways :

- increased yield of crop production.
- production of disease resistant crops.
- increased nutrient quality of the crops.

**21.** The different types of irrigation systems are as follows :

(i) Wells : Wells are constructed wherever exploitable ground water is present. These are of two types :

- Dug well : Water is collected from water bearing strata. These wells have their bottom below the ground water table. Water from these wells is lifted by mechanical means.
- Tube well : Water is collected from deeper strata. Water from these wells is lifted by diesel or electricity run pumps.

(ii) Canals : Canals are extensive irrigation system and receive water from one or more water reservoirs or rivers.

(iii) River lift system : In areas where canal flow is insufficient or irregular due to inadequate reservoir release, this system is more rational. Water is drawn directly from rivers for supplementing irrigation in areas close to rivers.

**22.** Intercropping is a method of growing two or more crops simultaneously on the same field in a specific pattern, e.g., soybean + maize.

Advantages of intercropping are as follows :

- (i) Intercropping ensures maximum utilisation of the nutrients present in soil or supplied from outside.
- (ii) It also prevents pests and diseases from spreading to all the plants belonging to one crop in a field.

**23.** The economic importance of fishes are as follows :

- (i) Fish meat is rich in proteins (13-20%), vitamins and iodine but has less fats.
- (ii) Their liver oil is a rich source of vitamin A and D.

- (iii) Fish meal is a good feed for domesticated animals.
- (iv) Fish wastes can be used as manure for coffee, tea and tobacco plantations.

**24. (a)** Herbicides, insecticides and fungicides.

**(b)** Various problems related to excess use of pesticides are :

- (i) Pesticides contain chemicals and its excessive use creates problems for living beings.
- (ii) It leads to many diseases like abdominal problems, respiratory problems, etc.
- (iii) It causes environmental pollution and thus causes environmental hazards.

**OR**

The improved poultry breeds are developed for obtaining following desirable traits :

- (i) Quantity and quality of chicks.
- (ii) Dwarf broiler parent for commercial chick production for summer adaptation capacity/tolerance to high temperature.
- (iii) Low maintenance requirements.
- (iv) Reduction in the size of the egg-laying bird with ability to utilise more fibrous, cheaper diets formulated using agricultural by-products.

**25.** The factors for which varietal improvement is done are:

- (i) To get higher yield : To increase the productivity of the crop per acre.
- (ii) To get improved quality : Quality considerations of crop products vary from crop to crop. Baking quality is important in wheat, protein quality in pulses, oil quality in oilseeds and preserving quality in fruits and vegetables.
- (iii) To get biotic and abiotic resistance : Crop production can go down due to biotic (diseases, insects and pests) and abiotic (drought, salinity, water logging, heat, cold and frost) stresses under different situations. Varieties resistant to these stresses can be improved by crop production.
- (iv) To get early and uniform crop maturity : The shorter the duration of the crop from sowing to harvesting, the more economical is the variety. Such short duration allows farmers to grow multiple rounds of crops in a year. Short duration also reduces the cost of crop production. Uniform maturity makes the harvesting process easy and reduces losses during harvesting.
- (v) To get wider adaptability : Developing varieties for wider adaptability will help in stabilising the crop production under different environmental conditions. One variety can be grown under different climatic conditions in different areas.
- (vi) To get desirable agronomic characteristics: Tallness and profuse branching are desirable characters for fodder crops. Dwarfness is desired in cereals, so that less nutrients are consumed by these crops. Thus developing varieties of desired agronomic characters help in giving higher productivity.

**OR**

**(a)** Manures help in increasing productivity of crops in the following ways :

- (i) Manure enriches the soil with nutrients.
- (ii) Manure adds organic matter (humus) to the soil which restores soil texture for better retention of water and for aeration.
- (iii) Manure also avoids water logging in clayey soils.

**(b)** The type of biological material used in the production of manure forms the basis for classifying manure. Two types of manure are as follows :

- (i) Compost : It is prepared from the farm waste, vegetable waste, animal refuse, domestic and sewage waste which are decomposed in pits.
- (ii) Farmyard manure : It is the decomposed mixture of cattle excreta and urine along with litter and left over organic matter such as roughage and fodder.

**26.** There are several types of aquacultures fish culture systems. Some of them are as follows :

- (i) Fish culture in cages : Large cages made of bamboo or steel are lowered into the fresh water reservoir (such as river). Some special type of fishes are cultured in these cages.
- (ii) Integrated fish culture : When culturing fish is combined with other agricultural crops (such as paddy, banana, coconut, etc.) or along with poultry farming so that the excreta of birds is used as food in fish culture ponds. The best integrated fish culture system combines growth of fishes in water of paddy field. The farmer gets benefit of both in the same piece of land.
- (iii) Composite fish culture systems : Nowadays, a combination of five or six species of fish are cultured in a single fish pond. Selection of several species of fish for culturing in a pond helps to enhance yield with the same cost and to utilise most of the available food in the water reservoir.

**27.** The prime concern of poultry farming is to develop improved breeds of poultry birds. It is generally done by cross breeding between desi or indigenous breeds (such as Aseel or Indian game, Kadaknath, etc.) and exotic or foreign breeds (such as Leghorn, Plymouth rock, Light Sussex, etc.) Desi breeds are strong and possess natural immunity against local diseases, but, they are small in size, grow slowly and lay less number of small eggs. The exotic breeds, on the other hand, lay large sized eggs and need less feed for maintenance, but they are prone to local diseases and require more care for maintenance. Therefore, cross breeding between desi and exotic breeds is done to get the hybrids possessing improved qualities. Various research programmes are going on to produce cross breeds with the desirable traits such as increased yield, adaptation to adverse conditions, less expenditure on maintenance, etc.

**28. (a)** Organic farming is a kind of environment friendly farming system in which the harmful chemicals are either not used or used only in minimum amounts. Organic manure, recycled farm wastes, biofertilisers, are used.

**(b)** Kharif crops are grown in hot and rainy conditions during the monsoon season. These are sown in the months of June-July and harvested during the months of September-October. *E.g.*, rice, maize, groundnut, etc.

**(c)** Two ways to control weeds are :

(i) Preventive methods : Proper seed bed preparation, timely sowing of crops, intercropping and crop rotation.

(ii) Chemical methods : Spraying of herbicides or weedicides. *e.g.*, Atrazine and 2, 4 - D.

**OR**

The crop protection management includes the protection of crops in field as well as in store houses.

Crop in fields are infested by a large number of weeds, insect, pests and diseases. If these are not controlled at the appropriate time, then they can damage the crops so much that most of the crop is lost. Weeds, insects and diseases can be controlled by various methods such as : use of pesticides, mechanical removal of weeds, proper seed bed preparation, timely sowing of crops, intercropping and crop-rotation. Some other preventive measures against pests includes use of resistant varieties and summer ploughing, in which fields are ploughed deep in summers to destroy weeds and pests. Crops need to be protected in store house as well.

Biotic and abiotic factors such as insects, rodents, fungi, moisture content and temperature cause degradation in quality, loss in weight, decolourisation of grains and poor germinability of seeds. So, the crops should be protected from these factors. Some of the controlling ways are :

(a) strict cleaning of the produce before storage.

(b) proper drying of the produce first in sunlight and then in shade.

(c) fumigation to kill the pests.

(d) cleaning of the warehouse and checking the biotic factors like insects, rodents, fungi, mites and bacteria.

(e) taking care of abiotic factors like inappropriate moisture and temperature control in the storage.

**29. (a)** Initiatives for increasing water availability for agriculture include :

(i) Rainwater harvesting – Rainwater is collected into ground by digging tunnels, etc. Water percolates into soil, thus maintains water table.

(ii) Watershed development - Small check dams are constructed, which stop rainwater from flowing away and also reduce soil erosion.

**(b)** Canal system : It forms an extensive irrigation system. Canal system takes water from rivers, dams, lakes or reservoirs for irrigation purposes. Canal divides into distributaries and supply water to individual field or group of fields.

River lift system : In this system, water is lifted directly from the rivers for supplementary irrigation in areas close to rivers.

**30.** Weeds are unwanted plants which grow of their own along with crop plants. Some examples of weeds are *Xanthium* (Gokhroo), *Parthenium* (Gajar ghas), *Cyperus rotundus* (Motha), etc. The growth of weeds in the field is harmful because of the following reasons :

(i) The weeds consume a lot of nutrients, sunlight, water and fertilisers thereby reducing crop production.

(ii) The weeds occupy space meant for crop plants and therefore reduce the crop yield and lower the quality of foodgrains.

(iii) The weeds spread very fast because they produce a large quantity of seeds.

**OR**

**(a)** The differences between layers and broilers are as follows :

S. No.	Layers	Broilers
(i)	Layers are egg-laying birds, managed for the purpose of getting eggs.	Broilers are maintained for getting meat.
(ii)	Layers start producing eggs at the age of 20 weeks. So they are kept for longer period depending upon laying period (approximate 500 days).	They are raised upto 6-7 weeks in poultry farms and then sent to market for meat purposes.

**(b)** Cattle can be prevented from diseases by :

(i) proper cleanliness and maintenance of cattle shed

(ii) providing nutritious feed

(iii) vaccination at regular intervals

(iv) proper disposal of wastes.



