



## 15. Improvement in Food Resources

### Check Point 01

#### 1. Question

Why India cannot increase the area of cultivable land?

#### Answer

Despite of having large area of land in India, it cannot increase its cultivation because of various factors like illiteracy among farmers-they are not aware of new methods and techniques for crop production, increasing population, soil problems, lack of crop disease control prevention methods etc.

#### 2. Question

How is green revolution different from white revolution?

#### Answer

Green revolution means more green fields and agriculture which resulted from the introduction of high-yield varieties of seeds, use of pesticides, fertilizers and improved techniques and white revolution mean increase in production of milk and dairy products in developing countries.

#### 3. Question

Classify the following crops as Rabi and Kharif:

Paddy, Wheat, black gram, cotton, gram and peas.

#### Answer

RABI crops- Wheat, gram and pea.

KHARIF crops: Paddy, black gram, cotton.

Kharif crops are planted in the start of rainy season as they need huge amount of water and rabi crops are planted during winter season as they need cold climate to grow.

#### 4. Question

Identify the cross performed between two plants belonging to different species.

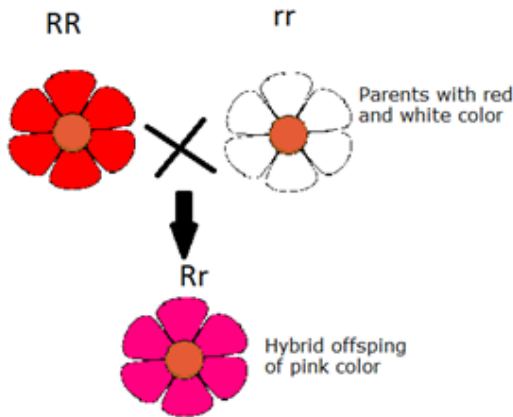
#### Answer



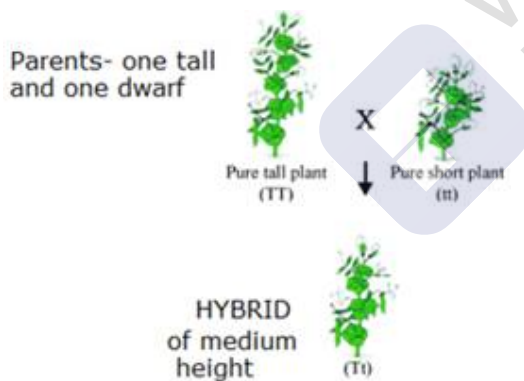
The cross performed between two plants belonging to different species(having different characters) is referred to as **cross pollination(hybrid)** as both the plants are heterozygous for two different traits.

For example: Let's look at the two different traits we're examining are color and height separately. In other words, each plant has:

One allele **R** for red color and one allele **r** for white color, produces a pink flower.



One allele **T** for long height and one recessive allele **t**, which produces a dwarf pea plant.



## 5. Question

Name three factors for which crop variety is improved.

### Answer

The three factors for improving crop variety are:

**Resistance:** Various biotic factors like insects, parasites, diseases, etc. and abiotic factors like hot, cold, drought, salinity, etc. affect the crop production. Developing resistance to both living and non-living factors can give a high yield.



**Maturity period:** The short growth period of crops helps farmers in multiple rounds of cultivation in less expenditure. Also, the uniform maturity of crops makes them easy to harvest.

**Adaptation:** It will develop tolerance and allows the crops to grow under different climatic conditions and in different areas. (All points are with Explanation)

## Check Point 02

### 1. Question

Name the nutrients provided by air and water.

#### Answer

Nutrients supplied by air:-Oxygen( $O_2$ )-Carbon(C)  
Nutrients supplied by water:-Hydrogen (H)-oxygen( $O_2$ )

### 2. Question

Micronutrients are required by plants in smaller quantities. From the list given below, select only micronutrients required by plants.

N, P, K, Ca, Mg, S, Zn, Cu, Mb and  $Cl^-$

#### Answer

Micronutrients required by plants are: Zn(zinc), Cu(copper),  $Cl^-$ (chlorine)and Mb(molybdenum)

### 3. Question

Why some plants like sunhemp or guar and grown and mulched by ploughing into the soil before sowing of the crop seeds?

#### Answer

The process is done to produce green manure as it acts as organic fertilizers by nourishing plants with nitrogen and phosphorous which helps in enhancing the growth of plants.

### 4. Question

In agricultural practices, instead of fertilizers, manures should be commonly employed. Give one reason.

#### Answer

In agricultural practices, instead of fertilizers, manures should be commonly employed because the Continuous use of fertilizers in an area can destroy soil fertility as the organic matter in the soil is not replenished and it also affects



various microorganisms present in the soil which are beneficial for maintaining soil quality.

## 5. Question

Organic farming is an environment friendly farming system. Mention one advantage supporting the above claim.

### Answer

In this farming system there is minimal or no use of chemicals as fertilizers, herbicides, pesticides etc and with a maximum input of organic manure along with recycled farm-wastes.

EXPLANATION- organic means use of only eco-friendly products to keep the plants healthy.

## Check Point 03

### 1. Question

Give any one advantage of irrigation.

### Answer

Poor monsoon leads to crop failure and sometimes light soil has less water retention capacity, hence irrigation ensures that the crops get water at the right stages during their growing season and will lead to increase of crop yield.

### 2. Question

Define drought.

### Answer

It is a condition of water scarcity. It is a continuous period of dry weather, when an area gets less than its normal amount of rain, over months or even years.

### 3. Question

Name the type of irrigation system used where the canal system is insufficient.

### Answer

River lift system is used in which water is drawn directly from rivers.

### 4. Question

Give two examples of mixed cropping.



## Answer

In this cropping pattern two or more crops are grown simultaneously (at the same time) on the same land. For example: Wheat + Gram, Groundnut + Sunflower.

## 5. Question

What do you understand by crop rotation?

## Answer

It determines the successive arrangement of different crops in a particular order over several years in the same growing space. This process helps maintain nutrients in the soil, reduce soil erosion, and prevents plant diseases and pests.

From the word itself it determines the use of different crops one by one on single land so that the nutrients consumed by 1<sup>st</sup> crop are not required for 2<sup>nd</sup> crop and will give time to the soil for replenishing itself with those exhausted and the remaining nutrients will help in the growth of 2<sup>nd</sup> crop.

## Check Point 04

### 1. Question

Name two factors that can cause heavy damage to crops.

## Answer

Climate change can disrupt food availability and soil factors like soil moisture, soil temperature.

### 2. Question

Name any two weeds.

## Answer

Xanthium (Gokhroo), Amaranthus (Chaulai) are the names of two weeds (these are unwanted plants in the cultivated field).

Weeds are referred to as unwanted plants growing in a land.

### 3. Question

List any two pest control measures.

## Answer

(a) By using natural insecticides. (b) Use of pesticides. (c) Crop rotation and multiple cropping methods.



Explanation- Pests are destructive insect or other animal that attacks crops, food, etc.

#### 4. Question

What factors are responsible for the losses during storage of grains?

#### Answer

There are two main types of factors responsible for the loss of grains during storage -i. Biotic factors like eating of grains by insects, rodents, mites, birds, etc.ii. Abiotic factors such as humidity, temperature, moisture, etc.Both the factors lead to the spoilage and wastage of seeds and grains.

#### 5. Question

For proper storage of grains what measures can be adopted?

#### Answer

For proper storage of grains these methods can be adopted:

- (a) Moisture content: grains should be completely dried before storing them.
- (b) Cleanliness and maintenance of hygiene.
- (c) Use of fume forming pesticides. (Gaseous form of pesticides are called fumigants).

#### Check Point 05

#### 1. Question

What purpose does animal husbandry fulfills?

#### Answer

Animal husbandry is concerned with the care and management of livestock. It includes proper feeding, breeding, health care, housing, etc

#### 2. Question

Why are indigenous breeds of cattle selected for cattle farming?

#### Answer

Indigenous breeds(local breed of a region) of cattle is known for its disease resistance, good milk yield around 1200-1900 per lactation. Despite being lethargic and slow they can also be used for road and field works.

#### 3. Question



Name one external and one internal disease caused due to parasites in cattle's.

**Answer**

External parasitic disease: scabies caused by tick mites.

Internal parasitic disease: gastroenteritis caused by worms.

**4. Question**

Name an India and a foreign breed of poultry.

**Answer**

Indian breed: Aseel

Foreign breed: White leghorn

**5. Question**

How poultry birds are prevented from diseases? Suggest any two.

**Answer**

(a) By providing proper housing, cleanliness, sanitation and healthy diet.

(b) Proper vaccination against various infectious diseases.

**Check Point 06**

**1. Question**

Name two most popular marine fishes.

**Answer**

Pomphret and Tuna are most popular (more preferable by humans) marine fishes.

**2. Question**

As a part of fishery industry, why oysters are also cultivated?

**Answer**

Oysters are cultivated for the pearls they make inside them as they are of high economic value.

**3. Question**

Why composite fish culture is a preferred method of fish culture? Give one reason.



## Answer

Composite culture is highly advantageous as:

(a) These fishes do not compete for food as six different types of fishes are reared together and all fishes have different food preferences.

(b) It gives very high yield.

## 4. Question

What is the term used for bee farms?

## Answer

The place where bees are raised is called apiary or bee farm.

## 5. Question

Give the scientific name of the following:

(i) Little bee

(ii) Rock bee

## Answer

(i) *Apis flourae*

(ii) *Apis dorsata*

## Chapter Exercise

### 1. Question

Name the inorganic substances, which a plant absorbs from the surrounding.

## Answer

Carbon dioxide and water.

Plants are able to take two inorganic chemicals, carbon dioxide gas and water, to make an organic chemical, glucose. ..

### 2. Question

Name two macronutrients of plants.

## Answer

Carbon(C) and Hydrogen (H)





Macronutrients are those nutrients which are used by the plants in large amounts.

### 3. Question

Name a farming system with minimal or no use of chemical fertilizers.

#### Answer

Organic farming.

Organic farming is a method of producing crops that do not involve the use of pesticides, artificial fertilizers etc.

It relies upon crop rotations, crop residues, animal manures, off-farm organic waste to produce good quality crops.

### 4. Question

Write the factors on which irrigation requirements depend.

#### Answer

Ensuring that the crop gets water at the correct stage and soil is able to take enough water according to its requirement.

### 5. Question

Which crop is generally grown between the cultivation of two cereal crops to restore the fertility of soil?

#### Answer

Leguminous crops like pulses, peas, beans, ground nut etc.

Leguminous plants contain Rhizobium bacteria in their roots. These bacteria convert atmospheric nitrogen to a form which can be used by plants. This decreases nitrogen deficiency in the soil and makes it fertile.

### 6. Question

Why are Jersey and Brown Swiss popular cattle breeds?

#### Answer

Jersey and Brown Swiss are popular cattle breeds because they are having higher period of milk production (lactation period).

### 7. Question

What is common in poultry, fisheries and bee-keeping with respect to the increase in production of animals?



### **Answer**

- i. Regular cleaning of farms.
- ii. Prevention and cure of the diseases.

### **8. Question**

What is green manure?

### **Answer**

Green manure is an organic fertilizer consisting of growing plants that are ploughed back into the soil for enriching it with nitrogen and phosphorus.

### **9. Question**

Why is a chemical method of controlling pests not considered good?

### **Answer**

Though the chemical ways like pesticides kills the unwanted foreign element they leave a layer of poison on the outer surface of the plant which may be hazardous to the plant but even more hazardous to the organisms which consume the plant without proper cleaning. These pesticides may also get mixed with water and be a threat to aquatic life.

### **10. Question**

What is the basic objective of crop rotation?

### **Answer**

Fertility of soil is maintained for a longer period and helps in pest and weed control.

### **11. Question**

Why is proper cleaning and sanitation required in the shelter of animals?

### **Answer**

It is required for humane farming for the health of animals and production of food. The shelter protects animals from rain, heat, and cold.

### **12. Question**

How can poultry and fish farming help in solving the food and nutrition problem?

### **Answer**



In poultry, the improved varieties are developed for improving the quality and quantity of chicks. And among fishes, composite fish cultures should use so that they do not compete for food among them having different types of food habits.

### 13. Question

Farmers use bee-keeping as an additional income generating activity. Give two reasons.

#### Answer

Bee keeping requires low investment and honey has become an agricultural enterprise which generated additional income.

### 14. Question

What were the reasons behind the occurrence of green and white revolutions?

#### Answer

The need is develop an agricultural system like green and white revolutions that aims to meet the needs of present generation without endangering the resources of future generation and without causing degradation in the present environment and without disturbing the natural balance.

### 15. Question

Explain the need of irrigation in India.

#### Answer

The purpose of irrigation:

- The supply of water by irrigation is regular and reliable, where as rainfall is often seasonal or unpredictable.
- Irrigation of crops makes the soil moist, which is required for the germination of seeds.
- Also irrigation loosens the soil and thus helps in elongation and growth of roots. With this, cultivation can be done round the year and during the rainy season only.

### 16. Question

Write the factors for selecting crops for mixed cropping, as well as intercropping.

#### Answer

Criteria for crop selection:



- Crops should have different maturation time.
- Both crops should have different water requirements.
- The nutrient requirement of one crop should be lesser than the other.
- If one crop is deep rooted, the other has shallow roots.
- If one crop is tall, other should be dwarf.

### 17. Question

In last few decades, the production of food from animal sources has increased. Justify this statement.

#### Answer

With the increase in human population there is a growing demand for food resources which resulted in white revolution. Increased maintenance and hygiene of animals in their food and living lead to higher production. Also new animal variety improvement methods lead to more animal production with better qualities.

### 18. Question

A farmer wants to improve the cattle for getting higher yield and increased resistance to diseases. Name the method he should adopt to get animals of desired qualities. Illustrate it for the cows.

#### Answer

Exotic (foreign) breed of cattle's are preferred for long lactation period while indigenous (local) breeds are highly disease resistance. Hence cross breeding of the different breed cattle's will generate the cattle with both the desirable needs.

### 19. Question

What is bee-keeping? Which variety of bee is commonly used for commercial honey production?

#### Answer

The practice of keeping or rearing, caring and management of honey bee on a large scale for obtaining honey and wax is called apiculture or bee-keeping. The local variety of bee used for commercial honey production is *Apis cerana indica* also known as Indian bee.

### 20. Question

Differentiate between pathogens and pests. How does an insect-pest attack the plants?



## Answer

Difference between

Pests	Pathogen
It is a multicellular organism that causes harm in one way or another.	It is a biological agent that causes a disease to its host
They could be rats or spotted bollworms of cotton.	They can be bacteria, fungi, virus, protists, and parasite

Insect-pests attack the plants in three ways:

- They cut the root stem and leaves.
- They suck the cell sap from various parts of the plant.
- They bore into stem and fruits.

## 21. Question

Explain composite fish culture system with examples. State the major problem associated with this system. Can fish culture be done in any type of combination? If yes, explain.

## Answer

Intensive fish farming can be done in composite fish culture system.

- Both local and imported fish species are used in such systems.
- In such a system, a combination of five or six fish species is used in a single fishpond. These species are selected so that they do not compete for food among them having different types of food habits.
- For example: Catlas are surface feeders, Rohu feeds in the middle zone of the pond, Mrigal and Common Carps are bottom feeders and Grass Carps feed on the aquatic weeds now they will not compete for the food.

The problem was that most of these fishes breed only during rainy season. Hence the obstacle is to collect good quality seed, so that it can be collected and mixed with other species as well.

To solve this problem hormonal stimulation is performed which involves the activities that lead to the maturation of the fish sex cells to breed these fishes in pond.

## 22. Question

(i) What are the common names of *Apis dorsata*, *Apis florae* and *Apis cerena indica*?



(ii) Name one Italian bee variety. Also, justify the use of the Italian bee for honey production giving two reasons.

(iii) State one factor, which affects the quality of honey produced.

### Answer

(i) *Apis dorsata*: the rock bee; *Apis florea*: the little bee; and *Apis cerana indica*: the Indian bee.

(ii) An Italian bee called *Apis mellifera* has been used to increase the yield of honey because:

a) They have high honey collection capacity.

b) They can stay in a beehive for the much longer period and show a higher rate of breeding.

(iii) The value(taste) of honey depends on the pasturage or, the flowers available to the bees for nectar and pollen collection.

### 23. Question

There is a water reservoir (river) near a village. Due to insufficient rain, farmers are worried about their crops. Suggest and explain the irrigation practice that can be adopted to supply water to the entire agricultural land in the village.

### Answer

Canals are human-made channels with sources of water at a higher level can deliver water to a destination such as a village where water is needed.

In case if there is inadequate water release from the reservoir then the river lift irrigation system can also be used. In this water is lifted with pumps to ensure proper water distribution.

### 24. Question

A farmer is advised to use manure instead of fertilizer in his fields. List any two advantages that the farmer will get if he accepts this advice. How is the use of manure particularly useful for clayey and sandy soil?

### Answer

Functions or advantages of manure:

i. Manure helps in enriching the soil with nutrients and organic matter and increasing soil fertility.

ii. The bulk of organic matter in manure helps in improving the soil structure. This involves increasing the water holding capacity in sandy soil.



iii. Manures contain substances which act as stimulants for seed germination and plant growth.

Manures make the clayey soil aerated because of their small pores and increase the water holding capacity of the sandy soil due to their large pore size.

## 25. Question

Mention any two desirable agronomic characters for crop improvement. Explain how farmers get desired characters incorporated into the new varieties produced. List two conditions necessary for the new varieties to be accepted.

### Answer

Desirable agronomic characteristics are:

- i. Tallness and profuse branching are desirable characters for fodder crops.
- ii. Dwarfness is desired in cereals so that fewer nutrients are consumed by these crops.

Varietal improvement means combining desirable characteristics in one and multiplying it. Farmers select plant varieties with the desired character and cross them. The developed offspring have the qualities of both the plants. These varieties are multiplied and then used for cultivation.

The conditions required for the acceptance of new varieties are:

- i. Resistance to various biotic and abiotic stresses in different situations.
- ii. Changes in maturity duration: In some of the short duration crops, early maturing varieties can make the crop fit into double and multiple cropping systems.

## 26. Question

A group of eco-club students made a compost pit in the school. They collected all biodegradable waste from the school canteen and used it to prepare the compost.

- (i) Name two wastes that can be used for compost and two wastes that cannot be used for compost.
- (ii) What values of eco-club students are reflected this act?

### Answer

- (i) Two wastes that can be used for compost are old vegetables and coffee bags(made from burlap sacks).



Things which cannot be used for compost are cooking oil and plastic containers or bags.

(ii) They spread the strong idea of reduce, reuse and recycle for a better and sustainable environment. In this way they are adding organic material to the soil to help the plants grow.

## 27. Question

Rakesh visited a fish farm and saw that a combination of five or six species of fishes is present in the single pond.

- (i) Name the type of farming observed by Rakesh.
- (ii) Mention the advantage of using such farming.
- (iii) What are the values shown by Rakesh?

## Answer

- (i) Composite fish culture farming system.
- (ii) Advantages are:
  - a) These fishes do not compete for food.
  - b) The food available in all the part of the pond is used.
  - c) Six different types of fishes are reared together.
  - d) It gives a very high yield.

(iii) Rakesh has concern for decreasing number of fishes as they are an important part of the ecosystem and marine environment. Doing this he is intended to increase the natural productivity of the pond without doing any harm neither to the environment nor to the marine life.

## Challengers

### 1. Question

Which one of the following is a micronutrient for the crop plants?

- A. Calcium
- B. Iron
- C. Magnesium
- D. Potassium

## Answer





Iron is a micronutrient, the essential element which is used by plants in small quantities.

## 2. Question

Pusalerma is an improved variety of

- A. rice
- B. wheat
- C. maize
- D. soyabean

## Answer

Pusa Lerma is an improved variety of wheat.

## 3. Question

Growing two or more crops in definite row pattern is

- A. mixed farming
- B. mixed cropping
- C. inter-cropping
- D. crop rotation

## Answer

The practice of growing two or more crops simultaneously in the same field in definite row pattern is called intercropping.

## 4. Question

'Organic farming' does not include.

- A. green manures
- B. chemical fertilisers
- C. crop rotation
- D. compose and farmyard manures

## Answer

It does not include the usage of chemical fertilizers, pesticides, etc.

## 5. Question



The common biofertilisers used in organic farming are

- A. Marfosa
- B. Pyrethrum
- C. green manure
- D. nitrogen-fixing bacteria and cyanobacteria

**Answer**

Nitrogen-fixing bacteria and cyanobacteria (Biofertilisers are prepared from effective strains of some microorganisms like bacteria, fungi, and algae alone.)

**6. Question**

Maximum milk yielding breed of buffalo is

- A. Nagpuri
- B. Surti
- C. Mehsana
- D. Murrah

**Answer**

Murrah (Average lactation yield is varying from 1500-2500 kgs).

**7. Question**

The principal cereal crop of India is

- A. wheat
- B. rice
- C. maize
- D. sorghum

**Answer**

Rice is the principal cereal crop in India.

**8. Question**

Fill in the blanks by choosing correct option from the following

- I. Puccinia causes ..... disease in wheat.



II. Blast is a ..... disease of paddy.

III. Chemical used to kill weeds are called ..... .

IV. Pesticides are ..... chemicals.

Choose the correct option.

A. rust, fungal, weedicides, toxic

B. fungal, rust weedicides, toxic

C. rust, viral, pesticides, toxic

D. rust, bacterial, weedicides, toxic

### Answer

rust, fungal, weedicides, toxic

### 9. Question

Match the following columns and choose the correct option from the codes given below:

Column-I		Column-II	
P.	Ganga-5	I.	Rice
Q.	Kasturi	II.	Maize
R.	Green manure	III.	Brown-swiss
S.	Exotic breed	IV.	Guar

A. P-I, Q-III, R-II, S-IV

B. P-II, Q-I, R-IV, S-III

C. P-IV, Q-III, R-I, S-II

D. P-IV, Q-II, R-I S-III,

### Answer

Ganga-5 is a double cross hybrid seed used for crop cultivation

Kasturi rice is scientifically developed and combines high-yield potential, excellent milling quality, resistance to blast & tolerance to stem border.

Guar is a good fodder cum green manuring crop in the dry regions of north-western India where it grows even on poor soils.

Brown swiss is an exotic breed of cattle.

### 10. Question



Match the following and choose the correct option from the codes given below.

Column-I		Column-II	
P.	Nosema apis	I.	New castle disease
Q.	Aspergillus fumigates	II.	Nosema disease
R.	Bererelina virus	III.	Pebrine
S.	Nosema bombycis	IV.	Grasserie
T.	Paramyxo virus	V.	Stonebrood

A. P-V, Q-IV, R-III, S-II, T-I

B. P-I, Q-II, R-IV, S-III, T-V

C. P-II, Q-V, R-IV, S-III, T-I

D. P-V, Q-III, R-IV, S- II, T-I

### Answer

Nosema apis was the historic species infecting *A. mellifera* honey bee, causing nosema disease.

*Stonebrood* is caused by *Aspergillus flavus* and *Aspergillus fumigatus* and affects both the brood and adult bees.

*Grasserie* is caused by a *virus* called *Borrelina*.

Pébrine, or "pepper disease," is a disease of silkworms, which is caused by protozoan microsporidian parasites, mainly *Nosema bombycis*.

Newcastle disease is a contagious viral bird disease affecting many domestic and wild avian species; caused by a genus of Paramyxovirus.