Improvement in Food Resources

Assess Yourself

Q. 1. Name two fertilizers supplying N, P, K to crops.

Answer: Fertilizers are chemically synthesized plant nutrients.

Nitrogen (N), Phosphorus (P) and potassium (K) are macronutrients and are required in large amounts by plants. So, farmers use fertilizers in order to supply these nutrients. Genesis NPK 15:15:15 + 8S, NPK A 20:20:20 are example of fertilizers used to supply N, P, K to crops.

Q. 2. What are the factors on which irrigation requirements depend?

Answer: Following are the factors on which irrigation requirements depend:

•Type of the crop that is sown in the fields.

•Type of the soil in which soil is grown.

•Water requirements of that particular crop.

•The season in which crop is grown and weather of particular place also affects the irrigation requirements. Because if plenty of water is available through rain then we do not need to rely on different methods of irrigation.

Q. 3. What are the various irrigation systems adopted in India?

Answer: Mainly people rely on rain for feeding crops but there are some methods used for irrigation.

The following chart gives the major types:

Following are the irrigation systems adopted in India:

•Wells: Through dug wells and tube wells water is lifted and used for irrigation through pumps.

•Canals: In this system various distributaries are formed from the canals which are used for the irrigation in fields.

•River lift system: In this system water from rivers is used for irrigation.

•Tanks: These are water reservoirs of small-scale which are sometimes used for the irrigation.

Q. 4. How are diseases transmitted in crops?

Answer: Diseases are transmitted in crops through bacteria, fungi, and viruses etc.

These pathogens like bacteria, fungi, and viruses remain present in the soil, water, air and through this they enter the plant body and cause various diseases.

Q. 5. How do weeds damage crops?

Answer: Weeds are unnecessary and unwanted plants which grow by themselves in the fields.

For example- Xanthium, Parthenium are some examples of weeds.

They cause damage to the crops because they compete with the crops for space, nutrition, water, sunlight and in this manner affect the growth of our crops and thus damage them.

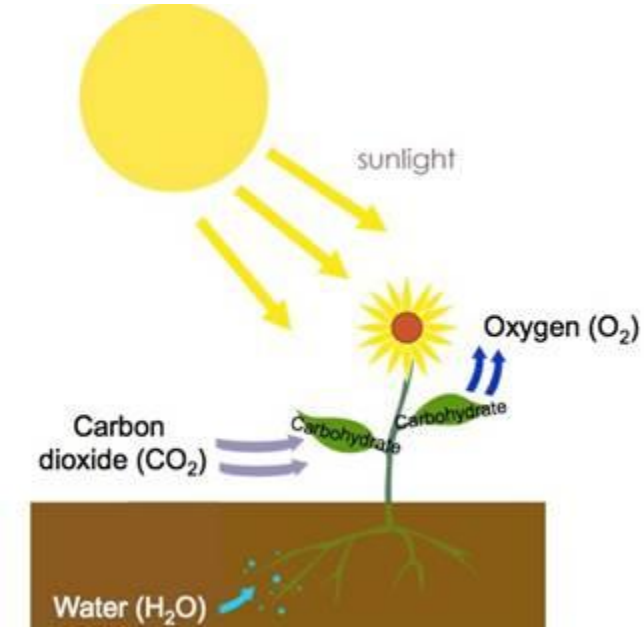
Q. 6. Which crops are grown in green manured field? Give examples.

Answer: Crops like sunhemp, guar is grown in the fields before growing another crop seeds in the fields. These crops are then ploughed and turn the soil into green manure. Due to this process amount of nitrogen and phosphorus are increased into the soil.

Q. 7. From where do the plants get carbon, oxygen and hydrogen?

Answer: Plants get carbon and oxygen from air, some amount of oxygen and hydrogen is received by the plant from the water.

The diagram is given below:



Q. 8. What is common in poultry, fisheries, and bee-keeping with respect to the increase in production of animals?

Answer: Cross breeding is common in poultry, fisheries, and bee- keeping with respect to the increase in production of animals.

Cross breeding is the process in which the two organisms of a different breed with desired traits are allowed to breed.

For example- Cross breeding between foreign and Indian cows.

The diagram given below shows cross-breading in horses:

Q. 9. Name the organism used in the preparation of vermicompost.

Answer: Earthworm is the organism used in the vermicompost. It degrades the waste and converts it into manure. It increases the rate of degradation of the waste material.

Compost worms will eat the kitchen garbage. This will reduce the amount of waste and weekly garbage pickup.

Q. 10. (i) What are the harmful effects of pesticides and fertilizers over a long period of time on soil?

(ii) Define Humus.

Answer: (i) Following are the harmful effects of pesticides and fertilizers over a long period of time on soil:

•The microorganisms present in the soil get harmed due to excessive use of fertilizers as chemicals in the fertilizers affect the life processes of microorganisms. Microorganisms being an integral part of the soil plays role in improving the fertility of soil and harm to them reduces the fertility of soil.

•Soil fertility is also reduced as there is no organic replenishment due to excessive use of fertilizers in soil.

•When fertilizers are supplied in excess amounts and when are washed due to excessive irrigation, it causes water pollution as chemicals of fertilizers to affect the unique nature and properties of water.

(ii) Humus is the soil which is rich in decayed organic content i.e. in this degraded organic material is also present along with the soil. This kind of soil favours the growth of crops as they are rich in organic material and nutrients.

Q. 11. State two disadvantages of fertilizers.

Answer: Following are the disadvantages of fertilizers:

•Water pollution: When excess fertilizers are supplied to the soils and excess irrigation is performed, the fertilizers get washed away and get accumulated in different water sources. By affecting the natural properties of water, fertilizers cause water pollution.

•Fertility of soil: Fertilizers also affect fertility of soil in an adverse manner. They don't allow any organic replenishment and also kills microorganisms present in soil which plays important role in improving fertility of soil. Due to this the fertility of soil gets reduced due to excessive use of fertilizers.

Q. 12. What is hybridisation in plants? Mention any two desired characters for which it is done.

Answer: Hybridisation in plants refers to the process when two plants which are not genetically similar and have difference in their traits due to different genetic patterns are crossed or allowed to reproduce.

Hybridisation crosses can be between two different species i.e. interspecific, between two different varieties i.e. intervarietal and it can be between two different genera i.e. intergeneric according to the requirement of the desired traits.

Following are the two desired characters for which it is done:

•Resistance to different diseases is the most desirable trait as it provides ability to the plant to be disease free.

•High yield is another desirable trait as the main purpose is fulfilled here. If some variety or species have high yields it will provide benefit to us and therefore is one of the desired traits.

Q. 13. How does the use of fertilizers improve crop production?

Answer: Fertilizers improve the crop production by following ways:

•There are certain nutrients required by plants in certain fixed amounts. Fertilizers play important role in improvement of crop production by providing these nutrients to the crops. They supply nitrogen, potassium and phosphorus to the plants.

•Fertilizers by providing appropriate nutrients ensure healthy growth of plants.

•They also increases yield of the plants by ensuring healthy growth.

Q. 14. Though fertilizers increase crop production, they are to be used in limited amount. Why?

Answer: Fertilizers need to be use in appropriate dose always because there excess use causes certain disadvantages which are as follows:

•Excess use of fertilizers affects the fertility of soil. They don't allow any organic replenishment and also kills microorganisms present in soil which plays important role in improving fertility of soil. Due to this the fertility of soil gets reduced due to excessive use of fertilizers.

•Excess use of fertilizers is also responsible for water pollution. When excess fertilizers are supplied to the soils and excess irrigation is performed, the fertilizers get washed away and get accumulated in different water sources. By affecting the natural properties of water, fertilizers cause water pollution.

•Also, use of fertilizer is a kind of small term benefit as by affecting the fertility of soil it causes long term harm.

So, due to above mentioned reasons fertilizers always need to be use in specified amounts.

Q. 15. Why is chemical method of controlling pests not considered good?

Answer: Chemical method of pest control is not considered good because it can cause various harms which are as follows:

•These chemical can also those microorganisms which are useful to the plants.

•These chemicals being so hazardous can also affect plant in an adverse manner. It can cause damage to plant also.

•Also, as these chemicals get mixed with air, soil and water they cause changes in their unique properties and affecting them cause their pollution.

•In some manner or the other these chemicals start becoming a part of particular crop and start entering the food chain. Their entrance in the food chain and consumption by the others is harmful for the other organisms.

Due to above mentioned reasons chemical method of pests control needs to be avoided.

Q. 16. Give two reasons why fertilizers have to be regularly used in agriculture.

Answer: Following are the reasons due to which fertilizers need to be used in agriculture regularly:

•According to nature of soil, different type of soil lacks in different type of nutrients due to which plant do not get the nutrients in appropriate amounts. Regular use of fertilizer

supplies these nutrients to the plants and since they come in appropriate ratio, specified dosage provides plants provide nutrients to plant as they require.

•Since fertilizers provide nutrients to the plants which they are not supposed to get through soil, they ensure healthy growth of the plants due to which the yield of the crop also improves.

Therefore, it is advised to use fertilizers regularly in agriculture.

Q. 17. How are fertilizers grouped?

Answer: Fertilizers are grouped in different groups according to different basis which are as follows:

•According to way of action:

Straight fertilizers- These fertilizers contain mostly one or the other nutrient and supply directly to the plant.

Auxillary fertilizers-These fertilizers by affecting the environment metabolism of the plant provide them nutrients. They do not provide direct nutrients.

•According their phase-

Liquid fertilizers- Some fertilizers come in liquid phase. These are considered as liquid fertilizers.

Solid fertilizers- These fertilizers come in powdered granular form and are considered as solid ones.

Q. 18. Explain how excessive use of nitrate fertilizers in agricultural fields affect human life.

Answer: Excessive use of fertilizers in agricultural fields affects human life in an adverse manner. The ways in which affects are listed below:

•Excessive use of nitrate fertilizers does not allow any organic replenishment of the soil, they completely depend on those fertilizers for nitrate due to which activities like nitrogen fixation gets affected and no such process take place as farmers don’t grow legumes for organic replenishment of the soil and land start becoming infertile.

•As these fertilisers are used in excess and when are washed away and enters the water bodies also affects the aquatic life and is also responsible for their killing.

•These fertilizers being used in excess enters the food chain and starts accumulating at some level and thus harms the complete ecosystem.

Q. 19. Why do we irrigate our crops?

Answer: We irrigate our crops so that growth of our crop is not affected due to lack of water. Water is an essential requirement of plants which supports its growth and if

plants did not receive water at the stages where they require water, crops will be destroyed. Water is required in photosynthesis process (process of making food by the plants in the presence of sunlight, carbondioxide and water) also. Since, water is an integral part of the growth of the plants we need to irrigate our crops otherwise they will die and we will suffer from loss of crops.

In order to get a high yield we must ensure that crops remain healthy and it is only possible when we irrigate our crops at the stages where they require water.

Therefore, irrigation is quite important and we must irrigate our crops at right stages.

Q. 20. Differentiate between fumigation and spraying.

Answer:

Fumigation	Spraying
In this in a sealed area a highly lethal gas is sprayed which is quite harmful.	In these gases that are used are not lethal to a very high extent.
In this area is sealed after the fumigation process and entry of persons is banned for a certain period of time.	In this area is not sealed and it also allows entry of people just after few time.
This is performed in many laboratories or factories at a very large scale where biosafety is a major concern.	It is performed in houses, fields just to control pests.
For example- Ethylene dibromide is used in fumigation process.	For example- Malathion is used as a chemical in spraying.

Q. 21. Mention any one difference in external features of weeds and wheat plant. How do weed affect crop yield? Describe how weeds are removed.

Answer: Weeds contain different spines secreting poisonous and toxic substances but same thing does not happen in case of weeds.

Weeds affect crop yield in an adverse manner. They compete with the crop for space, sunlight, nutrients, water and thus affect the growth of crop in an adverse manner. Since, crops do not get enough space, nutrients; water due to weeds their growth is retarded and thus yields is also reduced.

Weeds are removed by the following ways:

•By using herbicides weeds can be removed.

•By mechanical method of removing weeds manually.

•By adopting crop rotation and growing crops timely.

Q. 22. (i) Write any two exotic (foreign) breeds of cow.

(ii) Write the names of any two popular varieties of marine (salt water) fish.

(iii) Name one indigenous and one exotic breed of fowl.

Answer: (i) Exotic (foreign) breeds are those which do not belong to our country and are of foreign origin.

Jersey, Brown swiss are two exotic foreign breeds. They have long lactation periods.

(ii) Marine fishes are the fishes which live in salt water or we must say live in the sea.

Pomphret, tuna are two popular varieties of marine fishes.

(iii) Indigenous breed refers to the breed which belongs to our country and the origin of the species is from here only.

Aseel is an example of the indigenous breed.

Exotic breeds are those who are foreign and do not have their origin here.

Leghorn is an example of exotic breed.

Q. 23. What are the differences between broilers and layers with respect to their purpose of breeding and daily food requirement? What necessary steps have to be taken to prevent the occurrence of infectious diseases in poultry farm?

Answer: Difference between the broilers and layers with respect to their purpose of breeding and daily food requirement is listed below:

Broilers	Layers
These are developed for the production of meat.	These are developed for the production of eggs,
They are fed with vitamin-rich supplementary food. Their food is rich in vitamin A and K, proteins and fats.	Vitamin and protein-rich food are also provided to layers but their food is not as rich in vitamin and protein as a diet given to the broilers.

Poultry fowl suffer from a number of infectious diseases caused by bacteria, fungi, viruses, and parasites. In order to avoid this infectious disease in a poultry farm, there are some essential steps that are needed to be taken. These steps are the following:

•There should be proper cleaning of farms in order to avoid the growth of disease-causing bacteria.

•There should be a proper sanitation system in the poultry farm in order to ensure cleanliness and to avoid disease-causing organisms.

•There should be spraying of disinfectants at regular time intervals.

•Appropriate vaccination should be provided to the poultry fowls in case of any infectious disease.

All the above-mentioned steps needs to be implemented as they prevent infectious disease in poultry farms.

Q. 24. What is the composite fish culture? Give its two advantages.

Answer: Composite as the name suggests of different nature or variety. The same thing happens in the case of composite fish culture; in composite fish culture, five to six fishes of different species whether they are local or imported are allowed to be in a single fishpond.

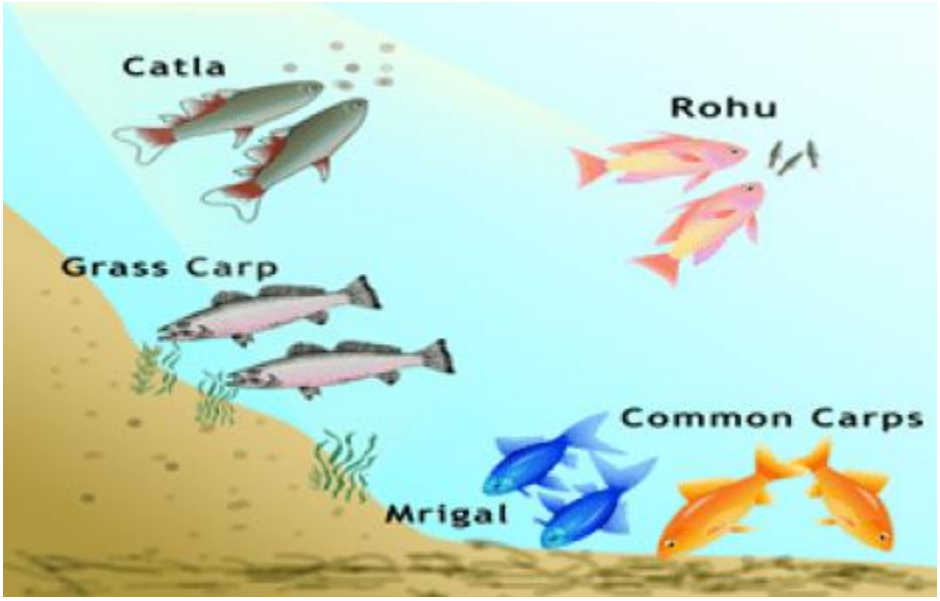
Following are the two advantages of composite fish culture:

•As in composite fish culture fishes of different species are selected, they are selected on the basis that each species will have different food habits. Due to this different food habits, all the food present in the pond are consumed by different fishes.

For example- Catlas feed at the surface, Rohu feeds in the middle, Common carps feed at the bottom surface, and grass carps feed on the weeds.

•There is an increase in the yield of fish production due to composite fish culture because the competition is minimized due to different nature of different species and due to this production is maximized.

Following picture represents the composite fish culture and different nutritional habits of fishes:



Q. 25.A. Explain plant breeding.

Answer: Plant breeding is the process in which two plants of two different varieties, species, and genera with desired traits are crossed to get those desired traits in a particular plant species. This process of plant breeding is also referred to as

hybridization as the new plant formed is a hybrid of the two different plants having desired characteristics into it.

This crossing is called intervarietal when it is in two different varieties, interspecific when it is in two different species and intergeneric when it is in between two different genera.

The desired characteristics that are seen before breeding are resistance towards diseases, high yield, good absorption of fertilizers, quality of the product etc.

Q. 25.B. Why should we adopt crop rotation?

Answer: Crop rotation is a process in which different crops are grown on the same piece of land according to a previous set model. In this type of crops to be grown are decided according to different environmental conditions like temperature, sunlight, irrigation facilities etc.

The benefit that we have in crop rotation is that we can have more than two crops in a year with good yield.

Also, as different crops are grown there will be replenishment of the nutrients as a nutrient requirement of each crop differs from the other. Growing same crop, again and again, makes land deficient in that particular nutrient. So, in order to keep the land nutrient rich and having a good yield of different crops, we must adopt crop rotation.

Q. 25.C. Why are legumes desired in crop rotation?

Answer: Legumes are desired in crop rotation because leguminous plants form a symbiotic association with the Rhizobium and this symbiotic association help in nitrogen fixation. These leguminous plants replenish the nitrogen in the soil and thus reduce the amount of fertilizers that need to be used.

Since, leguminous plants improve the amount of nitrogen present in soil; it is always desired to grow legumes in crop rotation.

Q. 26. Describe the role of fertilizers and irrigation in improving crop yield. Mention any one effect of each if it used in excess.

Answer: Role of fertilizers in improving crop yield is as follows:

•There are certain nutrients required by plants in certain fixed amounts. Fertilizers play important role in the improvement of crop production by providing these nutrients to the crops. They supply nitrogen, potassium, and phosphorus to the plants.

•Fertilizers by providing appropriate nutrients ensure healthy growth of plants.

•They also increase the yield of the plants by ensuring healthy growth.

Effect of using fertilizers in excess can cause water pollution. When excess fertilizers are supplied to the soils and they are not absorbed by the plants and when irrigation is

performed, the fertilizers get washed away and get accumulated in different water sources. By affecting the natural properties of water, fertilizers cause water pollution.

Role of irrigation in improving crop yield is as follows:

Plants require water at some stages and providing water for them at that duration keeps the plant healthy. Water is the basic requirement of the plant as it also helps in food making process i.e. photosynthesis.

If we will completely rely on rain for providing water to the plant's crops might get affected because rain is a probable kind of thing which is not fixed. So, due to this, the plant will not grow in a healthy manner as it will not get water at an appropriate time.

Since different irrigation method help in providing water to the plants at appropriate time irrigation plays important role in maintaining healthy growth of crops.

Effect of excess irrigation is as follows:

Excess irrigation is also harmful as due to this crop will get harmed due to excess water and water logging.

Q. 27. Raghu had a poor yield due to the failure of the crop. His father Rajan suggested that he should grow two or more crop simultaneously in his field as this would reduce the risk of loss. He suggested two crops that can be grown together.

(i) Write the name of the cropping pattern which his father suggested.

(ii) Write the names of the examples of crops given by his father.

(iii) Mention any two values that are worth appreciation in his father's behaviour.

Answer: (i) The cropping pattern suggested by his father is mixed cropping because his father had advised him to grow two or more crops simultaneously which is a mixture of different crops and therefore is termed as mixed cropping.

(ii) Following are the names of the crops given by his father as an example:

•Wheat along with the gram.

•Wheat along with the mustard.

•Groundnut along with the sunflower.

(iii) Following are the two values that are worth appreciation in his father's behaviour:

•His father shows a sense of awareness by suggesting a good method for increasing the yield.

•His father is also environment-friendly because he suggested a method which is environment-friendly. He doesn’t ask him to use fertilizers which harm the environment.