

CBSE NCERT Solutions for Class 12 Science Chapter 9

Back of Chapter Questions

1. Explain in brief the role of animal husbandry in human welfare.

Solution:

Animal husbandry involves feeding, breeding and health care of animal livestock to get maximum benefits.

Animal husbandry includes cattle farming, poultry, fisheries, apiculture, etc.

These provide various food products such as meat, eggs, milk, honey, wool, etc. to the growing human population.

Animal husbandry provides millions of people with employment and income.

Animal breeding through Interspecific Hybridisation, Artificial Insemination and Multiple Ovulation Embryo Transfer technologies are some advancements which have improved the genotypes of livestock so that they become more useful to humans.

2. If your family owned a dairy farm, what measures would you undertake to improve the quality and quantity of milk production?

Solution:

The below-mentioned measures shall be undertaken to improve the quality and quantity of milk production:

- i. Dairy animals used should be of good breeds.
- ii. Clean and hygienic conditions must be maintained while milking and handling of milk products.
- iii. Animals should be provided with a balanced diet.
- iv. Regular visits by a veterinary doctor shall be ensured.
- v. Farm animals shall be kept in a well-ventilated house with adequate water supply and maintenance of a disease-free environment.

3. What is meant by the term 'breed'? What are the objectives of animal breeding?

Solution:

A group of animals which are related by descent and are similar in most characters such as features, general appearance, size, etc. is termed as a breed.

The main objectives of animal breeding are:

- i. Improvement in growth rate.

- ii. Increase in production of milk, meat, eggs, silk, wool, etc.
 - iii. The superior quality of meat, milk, eggs, wool, etc. to be maintained.
 - iv. Improvement in resistance to various diseases.
 - v. Increase in a productive life and acceptable reproductive rate.
4. Name the methods employed in animal breeding. According to you, which of the methods is best? Why?

Solution:

Methods employed in animal breeding are:

- i. Inbreeding
- ii. Out-crossing
- iii. Cross-breeding
- iv. Interspecific hybridisation
- v. Artificial insemination
- vi. Multiple ovulation embryo transfer technology (MOET)

Cross-breeding is the best method among all because the desirable qualities of the two different breeds are combined, which results in the production of new animal breeds, which provide better resistance to diseases and high yield.

5. What is apiculture? How is it important in our lives?

Solution:

Apiculture is the rearing of honey bees for the commercial production of honey and beeswax.

Uses:

- i. It has high nutritive value and has uses in medicine.
- ii. Honeybees produce beeswax. It is used in preparing cosmetics and polishes of different kinds.
- iii. Due to an increased demand for honey, it has become an income generating industry.

6. Discuss the role of a fishery in the enhancement of food production.

Solution:

A fishery plays an immense role in the enhancement of food production. A large portion of the Indian population consumes fish and other aquatic animals like crabs, lobsters, prawns, etc. as food. Fish serves as a cheap source of protein, has very little fat content and carries an adequate quantity of vitamins, and several minerals.

Aquaculture and pisciculture techniques have increased the production of aquatic animals and plants, both freshwater and marine. Indoor hatcheries and nurseries have been established for rearing and stocking of fish. Fish eggs are introduced into nurseries in which young ones hatched from eggs are fed, nursed and harvested till they are fully developed. This has led to the development and flourishing of the fishery industry in our country.

7. Briefly describe various steps involved in plant breeding.

Solution:

Steps in plant breeding:

- i Collection of variability: Collecting and preserving all the different types of wild varieties, species, and relatives of the cultivated species is a prerequisite for the effective exploitation of natural genes available in a population.

The entire collection of plants/seeds with all the diverse alleles for all genes in a given crop is known as germplasm collection.
- ii Evaluation and selection of parents: Evaluation of germplasm is done to identify plants with a desirable combination of characters. The selected plants are multiplied and are used for hybridisation. Pure lines are created wherever it is desirable and attainable.
- iii Cross-hybridisation among the selected parents: The characters desired often have to be combined from two different plants (parents). For example, the high protein quality of one parent needs to be combined with the disease resistance from another parent. This is possible by cross-hybridising the two plants (parents) to produce hybrids which genetically have the combined desired characters in one plant.
- iv Selection and testing of superior recombinants: It consists of selecting those plants which have the desired character combination among the progeny of hybrids. The selection process is very crucial to the success of the breeding objective. It needs a careful scientific evaluation of the progeny, which yields plants that are superior to both of the parents. They are self-pollinated for several generations till they reach a state of uniformity or homozygosity so that the desired characters will not be segregated in the progeny.
- v Testing, release, and commercialisation of new cultivars: The newly selected lines are evaluated for their yield and other agronomic traits of quality, disease resistance, etc. Evaluation is done by growing these lines in research fields along with recording their performance under ideal fertiliser application, irrigation and other crop management practices. The assessment in research fields is followed by testing of the materials in farmers' fields for at least three growing seasons at different locations in the country, representing all of the agroclimatic zones where the crop is usually

grown. The material is then evaluated in comparison to the best available local crop.

8. Explain what is meant by biofortification.

Solution:

Breeding the crops with higher levels of vitamins and minerals or a higher amount of protein and healthy fats is called biofortification. For example, the wheat variety 'Atlas 66' with high protein content has been used as a donor to improve cultivated wheat. Biofortification is done with the primary goal as the improvement of public health.

9. Which part of the plant is best suited for making virus-free plants and why?

Solution:

The regions of the plants such as the apical and axillary meristems are the best-suited to produce virus-free plants. These parts are usually free from viruses because vascular tissues, through which viruses are transported, are absent.

10. What is the major advantage of producing plants by micropropagation?

Solution:

- i. Several varieties of plants within a relatively short period and limited space from a single individual plant.
- ii. Virus-free and healthy plants can be produced from the shoot apical meristem.
- iii. It can overcome the dormancy of seeds and helps in the production of viable plants.
- iv. It can be used to derive and multiply disease-free stocks.
- v. It can be used to multiply sexually derived sterile hybrids as well as haploid plants.

11. Find out what the various components of the medium used for propagation of an explant in vitro are?

Solution:

The major components of the medium used for in vitro propagation are water, inorganic salts, sucrose (source of carbon and energy), vitamins, amino acids and growth hormones like auxins, cytokinins, etc.

Other compounds like casein, coconut milk, yeast extract, etc. may be added for specific purposes. A gelling agent agar is also added to the liquid medium for its solidification if required.

12. Name any five hybrid varieties of crop plants which have been developed in India.

Solution:

Crop	Varieties
i. Wheat	Himgiri
ii. Brassic	Pusa Swarnim
iii. Rice	Basmati, Surya
iv. Chilli	Pusa Sadabahar
v. Cowpea	Pusa Komal

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