

Important Questions for Class 12 Biology Strategies for Enhancement in Food Production **Answers at the Bottom**

Ch-9 Strategies for Enhancement in Food Production

1. Norin-10 gene is famous for
 1. Dwarfing effect
 2. Gigas effect
 3. Aromatic effect
 4. Early maturation
2. Main objective of production or use of herbicide resistant genetically modified crops is to
 1. Encourage eco-friendly herbicides
 2. Reduce herbicide accumulation in food particles for health safety
 3. Eliminate weeds from the field without the use of manual labor
 4. Eliminate weeds from the field without the use of herbicides
3. Bread wheat is
 1. Hexaploid
 2. Diploid
 3. Tetraploid
 4. Pentaploid
4. Soma clones are obtained by
 1. Irradiation
 2. Tissue culture
 3. Genetic engineering
 4. Plant breeding
5. A lake near a village suffered heavy mortality of fishes within a few days. Consider the following reasons for this.
 1. Heavy rain
 2. Change in temperature
 3. Spraying of DDT by helicopter
 4. Excess water
6. Which one of the following is linked to the discovery of Bordeaux mixture as a popular fungicide?
 1. Downy mildew of grapes
 2. Loose smut of wheat
 3. Black rust of wheat
 4. Bacterial leaf blight of rice
7. Which of the following produces single cell proteins? Sonalika, Spirulina, Saccharomyces.
8. Name the Indian variety of rice patented by an American company.

9. Write the name of the following: An improved breed of chicken.
10. How is evaluation and testing of the new variety carried out?
11. Sunita finds that after few periods of teaching classroom is littered with many small pieces of papers. Next day she delivered a speech in assembly-“if a paper is torn a branch of tree is being destroyed.” Do you agree with Sunita? Give reasons.
12. How can crop varieties be made disease resistant to overcome food crisis in India? Explain. Name one disease resistant variety in India of:
 1. Wheat to leaf and stripe rust.
 2. Brassica to white rust.
13. What is apicultural? How is it important in our lives?
14. Explain in brief the role of animal husbandry in human welfare.
15. What is somatic hybridization? Explain the various steps involved in the process. Mention any two uses of somatic hybridization.

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Answer

1.
 - a. Dwarfing effect, **Explanation:** Norin-10 gene is used to obtain dwarf varieties of crops like rice and wheat. This gene is introduced in crop plants by using technique of genetic engineering.
2.
 - b. Reduce herbicide accumulation in food particles for health safety, **Explanation:** Herbicides are chemicals that kill the herbs that grow with crop plants. Use of herbicides results into accumulation of herbicide in food and water. To overcome this problem herbicide resistant genetically modified crops are used.
3.
 - a. Hexaploid, **Explanation:** Polyploidy is a condition in which multiple sets of chromosome is present in same cell in place of usual two sets (diploid). Bread wheat is generally hexaploid.
4.
 - c. Genetic engineering, **Explanation:** Genetic engineering is the technique of manipulating the genome of an organism.
The plants produced through genetic engineering technique that are genetically identical to the original plant from which they are produced are called soma clones.

5. c. Spraying of DDT by helicopter, **Explanation:** Heavy mortality of fishes within a few days in lake is due to spraying of DDT on large scale. Excessive water and heavy rain as well as change in temperature do not cause large scale death of fishes in a lake.
6. a. (a) Downy mildew of grapes, **Explanation:** Bordeaux mixture is popular fungicide that prevents the growth of fungi. This mixture is discovered by getting clue from downy mildew of grapes. This mixture is effective against plants as well as human.
7. Single-cell protein (SCP) refers to edible unicellular microorganisms. Spirulina produce single cell protein
8. RiceTec Inc. is a private company based in Alvin, TX, and headquartered in Houston, TX, claimed a patent on basmati variety of rice
9. Leghorns are good layers of white eggs, laying an average of 280 per year and sometimes reaching 300–320. The eggs are white and weigh a minimum of 55 g.
10. The evaluation is done by growing new varieties in the research field under ideal temperature, fertilizer and irrigation conditions. After evaluation, the testing is done in the farmer's fields for three growing seasons at several locations in the country, representing all the agroclimatic zones.
11. Yes, because wood is used in manufacturing of paper.

Values

- Sense of responsibility.
 - Awareness.
12. The following steps are involved in breeding for disease resistant crop varieties:
1. Screening the germplasm for resistant sources
 2. Hybridisation of selected parents
 3. Selection and evaluation of hybrids
 4. Testing and release of new varietiesa. – Himgiri
b. – Pusa swarnim
13. **Apiculture:** Apiculture is the practice of bee-keeping for the commercial production of various products such as honey, bee's wax, etc. Honey is a highly nutritious food source and is used as an indigenous system of medicines. It is useful in the treatment of many disorders such as cold, flu, and dysentery. Other commercial products obtained from honey bees include bee's wax and bee pollen. Bee's wax is used for making cosmetics, polishes, and is even used in several medicinal preparations. Therefore, to meet the increasing demand of honey, people have started practicing bee-keeping on a large scale. It has become an income generating activity for farmers since it requires a low investment and is labour intensive.

14. Animal husbandry deals with the scientific management of livestock. It includes various aspects such as feeding, breeding, and control diseases to raise the population of animal livestock. Animal husbandry usually includes animals such as cattle, pig, sheep, poultry, and fish which are useful for humans in various ways. These animals are managed for the production of commercially important products such as milk, meat, wool, egg, honey, silk, etc. The increase in human population has increased the demand of these products. Hence, it is necessary to improve the management of livestock scientifically.
15. A hybrid produced by the fusion of somatic cells of two varieties or species is called somatic hybrid. The process of producing somatic hybrids is called somatic hybridization.

Process:

1. The cell wall of the cells of selected parents is digested with macerozymes (A combination of enzymes, pectinase and cellulose). The plant cells lacking cell wall are called protoplasts.
2. Fusion between protoplasts is induced by poly ethylene glycol (PEG) or by a very brief high voltage electric current.
3. The fused protoplasts are allowed to grow on culture medium.
4. Soon they regenerate cell wall and begin to divide forming a callus from which hybrid plantlet is formed. Uses: Somatic hybrid may be used for:
 - i. Gene transfer
 - ii. Production of useful allopolyploids.