CBSE Test Paper 05

Ch-9 Strategies for Enhancement in Food Production

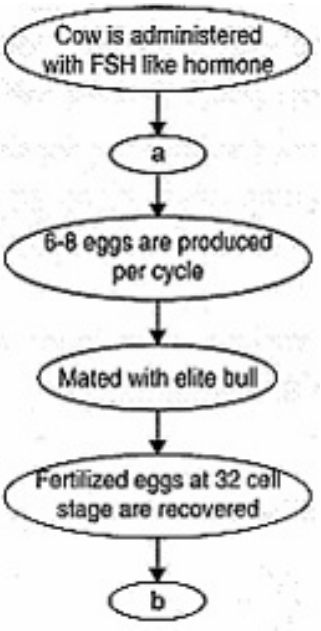
1. Match the following crop plants with their variety in the given table:

	Crop plant		**Variety**
(i)	Wheat	a	Pusa Komal
(ii)	Chilli	b	Pusa Swarnim
(iii)	Brassica	c	Himgiri
(iv)	Cowpea	d	Pusa Sadabahar
(v)	Okra	e	Pusa Shubhra
(vi)	Cauliflower	f	Pusa Sawani

   a. (i)-(e), (ii)-(f), (iii) - (a), (iv) - (b), (v) - (c), (vi) - (d)
   b. (i)-(d), (ii)-(b), (iii) - (a), (iv) - (c), (v) - (f), (vi) - (e)
   c. (i)-(c), (ii)-(d), (iii) - (b), (iv) - (a), (v) - (f), (vi) - (e)
   d. (i)-(f), (ii)-(c), (iii) - (a), (iv) - (b), (v) - (e), (vi) - (d)
2. "Jaya" and "Ratna" developed for green revolution in India are the varieties of
   a. Bajara
   b. Wheat
   c. Maize
   d. Rice
3. One of the alternate sources of proteins for animal and human nutrition is
   a. Fortified protein
   b. Single germ protein
   c. Single cell protein
   d. Hybrid protein
4. Heterosis cannot be maintained in sexually reproducing plants as it disappear on
   a. Inbreeding
   b. Cross breeding
   c. Out breeding
   d. Mutation
5. Which of the following can yield a completely haploid plant

a. Stem apical meristem
b. Carpel
c. Anther
d. Root tip

6. Heterosis means
   a. Pollen sterility
   b. Hybrid vigour
   c. Pollen-pistil incompatibility
   d. Hybrid compatibility
7. Name some vegetables released by IARI, New Delhi. Which have high nutritional value.
8. Write the name of the following: The most common species of bees suitable for apiculture.
9. To which product, following projects are related:
   a. Blue revolution
   b. White revolution
   c. Green revolution.
10. What is meant by plant breeding?
11. Following methodology has been used for cattle improvement:



i. Complete the steps a and b in this method.

ii. What is the name of this method?
iii. What is the importance of this method?

12. Explain what is meant by biofortification.

13. What are the main factors on which the diseases development in a plant depends?

14. Scientists have succeeded in recovering healthy sugarcane plants from a diseased one.

    a. Name the part of plant used as explain by the scientists.

    b. Describe the procedure the scientists followed to recover the healthy plants.

    c. Name this technology used for crop improvement.

15. Samir planned to introduce MOET in his farm. He purchased one high milk yielding exotic breed of cow. Within a few years he earned lot of money by selling calves but the mother cow met with a premature death. Raghavan objected to Samir earning money by this way.

    i. What values in life did Raghavan possess?
    ii. Expand MOET.
    iii. Briefly describe the process.

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Answer

1. c. (i)-(c), (ii)-(d), (iii) - (b), (iv) - (a), (v) - (f), (vi) - (e), **Explanation:**
   i. Himgiri variety of wheat is resistant to Leaf and stripe rust and Hill bunt.
   ii. Pusa Sadabahar variety of Chilli is resistant to Chilly mosaic virus, Tobacco mosaic virus and leaf curl.
   iii. Pusa swarnim variety of brassica is resistant to yellow mosaic virus.
   iv. Pusa Komal (variety of Cowpea) a product of crosses between photo insensitive line P85-2 and photosensitive P426, was tested at 9 sites throughout India during 1977 to 1984 and released in 1986.
   v. Pusa sawani is a variety of okra is fairly tolerant to yellow vein mosaic disease.
   vi. Pusa Shubhra variety of Cauliflower is resistant to Black rot.
2. c. Maize, **Explanation:** Jaya and Ratna are varieties of maize developed by Indian council of agricultural research. These varieties are high yielding and resistance to disease.
3. c. Single cell protein, **Explanation:** Protein requirement for human beings can be fulfilled by single cell protein in which algae like Spiruline is grown on large scale having high protein contents.
4. a. Inbreeding, **Explanation:** Heterosis cannot be maintained in sexually reproducing plants as it disappear on inbreeding and result into breeding depression. The traits segregate during gamete formation.
5. c. Anther, **Explanation:** Anther can yield a completely haploid plant because anther is produced by meiosis cell division contain half the number of chromosome their normal cells have.
6. b. Hybrid vigour, **Explanation:** Hybrid vigour is obtained from hybridization between two plants containing desired traits. Hybrid vigour is also called heterosis as it contains genes from different plants.
7. Carrot - High vitamin A

Beans - High protein
Spinach - High calcium
Tomato - High vitamin C

8. The honey bee Apis Mellifera, is one of several species of bees that are engaged in producing honey. Apis mellifera feed on pollen and nectar collected from blooming flowers.

9.

   a. Fish production

   b. (In India: Operation Flood) – Milk/Dairy production

   c. Food grains (crop) production

10. Plant breeding is the purposeful manipulation of plant species in order to create desired genotypes and phenotypes for specific purposes. This manipulation involves either controlled pollination, genetic engineering, or both, followed by artificial selection of progeny.
11. i. a. superovulation
    b. Transfer to surrogate mother
    ii. Multiple Ovulation Embryo Transfer Technology (MOET)
    iii. It increases the herd size in a short time.

12. Biofortification is the process by which the nutritional quality of food crops is improved through agronomic practices, conventional plant breeding, or modern biotechnology. Biofortification differs from conventional fortification in that biofortification aims to increase nutrient levels in crops during plant growth rather than through manual means during processing of the crops. Biofortification may therefore present a way to reach populations where supplementation and conventional fortification activities may be difficult to implement and/or limited.

    Examples of biofortification projects include:

    - iron-biofortification of rice, beans, sweet potato, cassava and legumes;
    - zinc-biofortification of wheat, rice, beans, sweet potato and maize;

- provitamin a carotenoid-biofortification of sweet potato, maize and cassava; and amino acid and protein-biofortification of sourghum and cassava.

13. There are three main factors:
(a) Host genotype: The development of disease in a plant community relies on the presence of individual hosts that are susceptible to that particular pathogen. If the majority of the population is susceptible to the pathotypes of a pathogen in the vicinity, an epidemic can occur.
(b) Pathogen genotype: The presence or absence of a pathogen is the main factor that determines whether disease occurs. Introduction of a pathogen to an area from which it has previously been absent can cause major outbreaks of disease in plant communities. The amount of disease that develops is often determined by the pathogenicity of the main pathogen.
(c) Environment: The presence of a pathogen against a particular plant will generally not cause serious disease unless the environmental conditions are favourable. This includes the aerial environment and the soil (edaphic) environment. Human attempts at controlling disease usually involve manipulating the environment in some way.

14. a. Meristem from shoot up
b. In the procedure, following steps are involved -
i. Initiation of culture - from an explain like shoot tip on a suitable nutrient medium.
ii. Shoot multiplication
iii. Rooting of shoot
iv. Transplantation
c. Meristem culture

15. i. Raghavan was bold, having the love for animals. He had ethics and prudence.
ii. Multiple Ovulation Embryo Transfer Technology
iii. a. The cow is administered hormones, with FSH-like activity, to induce Follicular maturation and superovulation (instead of one egg, which they normally yield per cycle, they produce 6-8 eggs).
b. The animal is either mated with an elite bull or artificially inseminated.
c. The fertilised eggs at 8–32 cells stages, are recovered non-surgically and transferred to surrogate mothers.
d. The genetic mother is available for another round of superovulation.

e. This technology has been demonstrated for cattle, sheep, rabbits, buffaloes, mares, etc. High milk-yielding breeds of females and high quality (lean meat with less lipid) meat-yielding bulls have been bred successfully to increase the herd size within a short span of time.