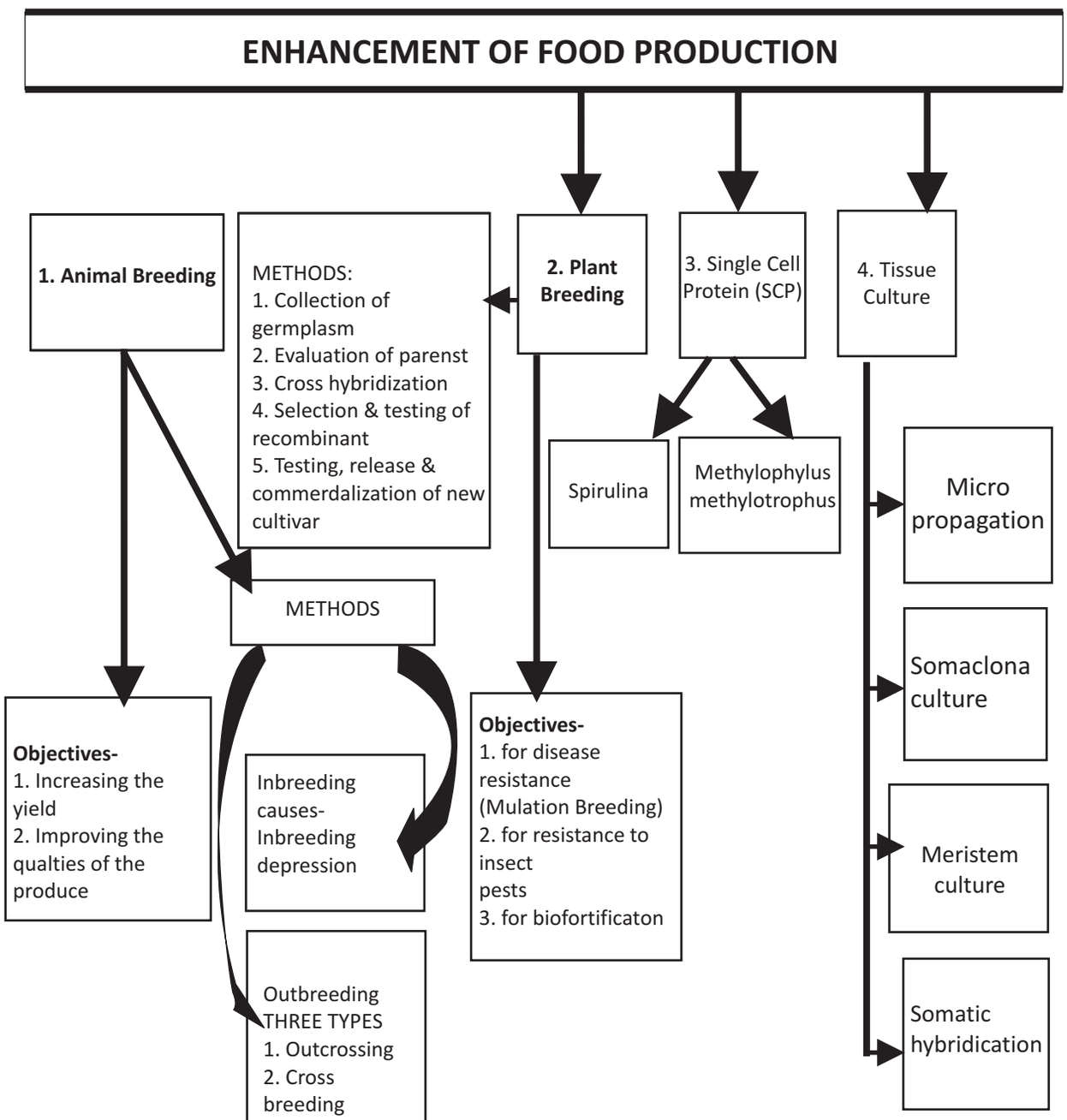
CHAPTER: 9 - STRATEGIES FOR ENHANCEMENT IN FOOD PRODUCTION
(CONCEPT MAP)



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(QUESTION BANK)

1. Why is inbreeding necessary in animal husbandry?
2. Name two fungal diseases of Crop plants.
3. Which product of Apiculture is used in cosmetics and polishes?
4. Semi-dwarf varieties of a crop plant were derived from IR-8. Name that crop.
5. Write two qualities of Saccharum officinarum (Sugarcane) grown in South India.
6. A new breed of sheep was developed in Punjab by crossing two different breeds of Sheep. Name the two breeds which were crossed and the new breed developed.
7. Study the table given below and fill in the blanks marked A, B, C and D

CROP	VARITY	Resistant to diseases
Wheat	Himgiri	(A
Brassica	(B)	White rust
©	Pusa Komal	Bacterial blight
Chilli	(D)	Chilly mosaic Virus, Tobacco mosaic Virus and leaf curl

8. Why are proteins synthesized from Spirulina called Single celled Proteins? What is the significance of such a protein?
9. Differentiate between inbreeding and outbreeding in animals.
10. Explain the process of Somatic hybridisation .
11. What is micro propagation? Why are plants produced by this technique called somaclones? Name any two food plants which are produced on commercial scale using this method.
12. What is mutation? Explain the significance of mutation in plant breeding. Give an example of a disease resistant variety of cultivated plant induced by mutation.
13. How can we improve the success rate of fertilisation during artificial insemination in animal husbandry programmes?
14. Bio fortification is the most practical means to improve public health. Justify the statement with examples.
15. What is meant by germplasm Collection? Describe its significance in plant breeding programmes.
16. To which product, following products are related (a) Blue revolution (b) white revolution (c) Green revolution
17. Does apiculture offer multiple advantages to farmers? List its advantages, if it is located near a place of commercial flower cultivation. Name the most common species of bee which is reared in India.
18. What is somatic hybridisation? Describe the various steps in producing somatic hybrids from protoplasts. Mention any two uses of somatic hybridisation.
19. Nowadays capsules of spirulina are used as food supplements:-
    i) Do you recommend the use of these capsules? Why?
    ii) What values are expressed in the above statement?
20. Dalip has dairy farm. One day his friend Dev advises him to use artificial insemination to overcome several problems in developing better breeds of cow. Earlier his neighbour. Devinder had advised him MOET for herd improvement. Dalip is ignorant and not able to decide.
    i) Which technique should Dalip adopt?
    ii) What is the advantage of this technique?
    iii) What values are not exhibited by Dalip

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(ANSWER KEY)

Q.No	Value points	Marks
1	Inbreeding increases homozygosity	1
2	Brown rust of wheat, Smut of wheat, red rot of Sugar cane, Late blight of potato	1
3	Beewax	1
4	Paddy crop (rice)	1
5	Thicker stem and higher sugar content	1
6	By crossing Bikaneri ewes and Marino rams, the new breed Hisardale was developed	1+1=2
7	A. Leaf and Stripe rust, hill bunt. B. Pusa swarnim (Karan rai). C. Cowpea D. Pusa Sadabahar	4x1/2=2
8	The protein rich food produced by microbes is called as single called protein (SCP) Spirulina is a microorganisms which has more protein. It is a quick method of protein production because the growth rate of microbes is enormous. Hence, it provides a protein rich diet for human beings	1+1=2
9	When breeding is between animals of the same breed, it is called inbreeding, while cross between different breeds in called out breeding	1+1=2
10	(i) Isolation of protoplast of Tomato cell and Potato cell. (ii) Somatic hybridisation. (iii) Pomato (iv) Somatic hybrid	4x1/2=2
11	*The method of producing many plants through tissue culture is called micropropagation. * The plants produced through micropropagation will be genetically identical to the original plant from which they were grown, hence are called somaclones. *Tomato, banana, apple are produced on commercial scale using this method	3x1=2
12	Mutation : Sudden inheritable change in the characters of an organism due to change in the sequence of bases in the gene(s). Mutation results in a new character or trait, not found in the parental type. It can also be induced by using mutagens like gamma radiations. Such plant materials are used as such or used for breeding new	3
13	The Multiple Ovulation Embryo Transfer (MOET) technology can improve the success rate of fertilisation. In the procedure, a cow is given hormonal treatment (FSH), so that more than one ova/eggs (6-8) are produced per cycle. After mating or artificial insemination the embryos at 8-32 celled stage, are transferred to different surrogate mother cows. This technology has been successfully used for cattle sheep, rabbit, mares and buffalloes	1+2=3

14	Biofortification is the plant breeding programme designed to increase Vitamins, minerals, heigher proteins and healthier fat content in crops. This programme improves the quality of food products. It is required to prevent hidden hunger. Some of the examples of fortified crops are: (i) New hybrid of maize : has twice the amount of amino acid lysine and tryptophan. (ii) Wheat : Atlas 66, having a high protein content. (iii) Rice : 5 times iron than the normal amount. IARI Delhi has released several crops which are rich in vitamins and minerals. Consumption of such biofortified food will astly improve the public health.	1+1+1=3
15	The collection of all the diverse alleles of all the genes of crop plant is called germ plasm collection In plant breeding programmes, the germplasm provides the entire of genes and alleles, and the characterstics which they express. The plant breeders select the most favourable characters of a particular gene and manipulate its transfer to a desirable parent.	1+2=3
16	(a) Fish production (b) Milk production (c) Crop production	1+1+1=3
17	Apiculture or Bee-Keeping is the maintenance of hives of honeybees for the production f honey. Apiculture is beneficial for farmers in many ways. Honey bee also produces beewax which is used in industries, such as in preparation of cosmetics and polishes of various kinds. If Bee keeping is practiced in any area the commercial flowers are cultivated, it will be beneficial in the following ways. (i) Bees are pollinators of many crop species including flowering crops such as sunflower. (ii) It improves the honey yield, because honeybees collect the nectar from flowers formaking honey. Apis indica is the msot common species whch is reared in India	1+2+1+1=5
18	Somatic Hybridisation : The process of fusing protoplasts of Somatic cells different varieties or species of plants to produce a hybrid. derived from Steps : (i) Removal of cell wall of fusing cells by digestion with a combination of pectinase and cellulase to form protoplasts. (ii) Fusion between protoplasts of selected parents is induced by the use of poly ethylene glycol (PEG). (iii) The resulted product is cultured on a suitable medium to regenerate cell walls. (iv) The cells obtained begin to divide to produce plantlets called somatic hybrids.	1+2+2=5

	Uses/Applications : (i) Somaclonal variations can be created (ii) Lines or varieties/species of plants which can not be sexually hybridised, they can be hybridised. (iii) Allopolyploids can be raised by the method.	
19	I) Yes, these capsules are rich in proteins & can be produced in large quantities iness time,on waste water from potato processing plants,straw molasses etc, & minimising environmental pollution ii) problem solving ,awareness on environmental pollution, knowledge about recycle of wastes	2+2=4
20	I) MOET, as success rate of this technique is high ii) Herd size is increased in short time. Genetic mother is available for another round of super ovulation. Iii) critical thinking, problem solving, decision making.	1+3=4