

UNIT-VI: PLANTS, MICROBES AND HUMAN WELFARE

13. STRATEGIES FOR ENHANCEMENT IN FOOD PRODUCTION

$(1 \times 2) + (1 \times 8) = 10$ Marks

ROOT POINTS

- Strategies for enhancement** of food production are developed due to **rapid increase in World population**.
- Plant breeding** and animal husbandry are two such major strategies.
- New techniques like **mutation breeding, tissue culture, rDNA technology** play a vital role in enhancing food production.
- Single Cell Protein (SCP)** is an alternate protein source for animal and human nutrition from certain micro-organisms like Spirulina.
- Tissue Culture:** The technique of growing, culturing and maintaining cells, tissues & organs in vitro is known as tissue culture. [IPE]

Plant tissue culture techniques:

- Preparation of nutrient culture medium.
 - Sterilization of the culture medium.
 - Preparation of explant.
 - Inoculation of explant.
 - Incubation for growth
 - Acclimatization of plantlets and transfer to pots.
- Various steps to release new genetic variety of crop:** [IPE]
 - Collection of variability.
 - Evaluation and selection of parents.
 - Cross hybridisation among the selected parents.
 - Selection and testing of superior recombinants.
 - Testing, release and commercialization of new cultivars.

FRUITY Qs OF IPE

$(1 \times 2) + (1 \times 8) = 10$ Marks

- Name two semi-dwarf varieties of rice developed in India.
- Give two examples of fungi used in SCP production.
- What is meant by germplasm collection?
- You are a Botanist working in the area of plant breeding. Describe the various steps that you will undertake to release a new variety.
- Describe the tissue culture technique and what are the advantages of tissue culture over conventional method of plant breeding in crop improvement programmes?

SCENT BOXES- MEMORY HINTS

FOR SELECTIVE QUESTIONS

128. Give two examples of fungi used in SCP production.

[AP 15,17,23][TS 17]

- A:** 1) *Candida utilis* (Torula Yeast)
2) *Saccharomyces cerevisiae* (Baker's yeast)

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Candies contain
Saccharides
which give SCP

129. Which two species of sugarcane were crossed for better yield?

[TS 23]

- A:** *Saccharum barberi* and *Saccharum officinarum*
were crossed to get better yield.

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Saccharum works in
Barbers office