

1. What do you understand by food irradiation? Highlighting some of its unique applications, examine its relevance for India.

Answer :

Food irradiation means treatment of raw or processed food items with short wave radiation energy to preserve it. The radiant energies include gamma radiation, infrared, microwave radiation etc. The application of irradiation to preserve food is not new as meat, fish, fruits and vegetables have been preserved for centuries by the sun's energy.

Numerous applications of irradiation include extension of shelf life, disinfestations, elimination of food borne pathogens, sterilization etc. Besides being an easy and precise procedure, it provides unique advantages in food preservation such as:

- Products of any shape can be sterilized using gamma rays, which penetrate right through the package and products.
- Being a cold process, heat sensitive food materials can also be sterilized safely.
- Since sterilization is affected after final packaging, products sterility is retained indefinitely provided the package is undamaged.
- The treated product can be used immediately.
- No significant alteration in nutrition value, flavor texture and appearance of food.
- It does not leave any harmful or toxic residues on foods as is the case with chemical fumigants.

For a country like India, irradiation has much relevance due to :

- **Food and Nutritional security :** It is very effective in treating agricultural produce to enhance its shelf life. It is essential especially for a hot and humid country like India which is quite favorable for growth of numerous insects and microorganisms that may cause spoilage of food every year.
- **Facilitate distribution from production centers to consumption centers :** During storage and distribution grains worth of thousand of crores of rupees are wasted due to insect infestation and related problems. To preserve it through long distances between production and consumption centres, irradiation is required.
- **Increasing Exports :** Recently, the harmonization of food irradiation rules with the international regulation has taken place in India. This would enable more food exports by overcoming non-tax barriers.
- **Developing new crop varieties :** Department of Atomic Energy (DAE) has developed 42 new varieties of crops using radiation induced mutation (and conventional) breeding. These crops have desirable traits including higher yield, early maturity, resistance to biotic and abiotic stresses etc. Several of these varieties enjoy high patronage among the farming community.
- **Promoting health :** Sea-foods, meat and poultry may carry harmful microbes and parasitic organisms that cause illnesses associated with their consumption.
- **Better returns to farmers and price stabilization :** as farmers would have longer time in hand to bargain a deal at good prices. It also provides economic stability as well as self-reliance to the nation.

Though irradiation can play an important role in reducing post-harvest losses and reducing the use of toxic chemical fumigants, it alone cannot solve the problem of food preservation. It has to be complemented with infrastructure development like warehouses, transportation and packaging facilities etc.

PRACTICE QUESTIONS

Answer the following Questions

1. Whereas misuse of technology has abetted the spread of fake news, it is with the aid of technology that this menace can be curbed. Elaborate.

(150 words)
2. Explain the salient features of the recently established Defence Planning Committee. How can it help in credible defence preparedness ?

(150 words)