

## PRESERVATION TECHNOLOGY

**Preservation** - “the techniques of extending the storage life of the produce without deteriorating its edible quality for further use”.

Horticultural produce is biological entity with various physiological activities like transpiration and respiration continuing even after harvesting. This process leads to the bio-chemical breakdown and cause spoilage of the produce. Spoilage is initiated by enzymes present inside the produce, involvement of micro organism, infestation of insect-pest and invasion of pathogens. By taking care of these factors, food products can be stored for longer period.

**Processing** - the application of techniques to prevent losses through preservation, processing, packaging, storage and distribution.

The processed foods have now become more of a necessity than a luxury. It has an important role in the conservation and better utilization of fruits and vegetables. It is necessary in order to avoid glut and utilize the surplus during the peak seasons. It is employs modern methods to extend storage life for better distribution and also processing technique to preserve them for utilization in the off season.

*Problems faced in establishment of processing unit are identified as follows.*

- Insufficient demand
- Weak infrastructure
- Poor transportation
- Perishable nature of crops and
- Grower sustains substantial losses

The market for many ‘exotic’ crops has increased many folds over traditional ones. Every year new crops are being offered for sale in the markets and it demands innovation in the handling methods and study of their quality factors.

The process which deals with handling of parts of the plants, such as fruits, vegetables, root crops, spices, foliage and flowers which are often collectively referred to as perishable crops, is called postharvest management. Perishables are botanically and physiologically very diverse and therefore behave in very different ways and require a variety of different treatments and conditions.

Post harvest handling is the stage of crop production immediately following harvest, including cooling, cleaning, sorting and packing. The instant a crop is removed from the ground, or separated from its parent plant, it begins to deteriorate. Post-harvest treatment largely determines final quality, whether a crop is sold for fresh consumption, or used as an ingredient in a processed food product. Effective handling decreases post harvest losses.

- **Methods of preservation used to extend shelf life includes:**
- Removal of moisture

- Temperature control
- pH control
- Use of chemical preservatives
- Irradiation

**Primitive and tedious methods**

- **Drying:** Used to preserve fruit, vegetables, meats, and fish. Mainly used in the south—warmer climate. Causes the loss of many natural vitamins and texture.
- **Salting:** Used extensively for pork, beef, and fish. Costly due to high price of salt. Done mainly in cool weather followed by smoking.
- **Sugaring:**Used to preserve fruits for the winter. Jams and jellies. Expensive because sugar is a costly commodity.
- **Pickling:** Fermenting, used to preserve vegetables. Use of mild salt and vinegar brine. It increases the salt content and reduces the vitamin content of the food. Oldest form of food preservation.
- **Cold storage:** Used extensively in the northern U.S. Root cellars were used to store vegetables at 30-40°F. Root cellars were replaced by ice boxes in the mid 1800’s.

<b>Physical</b>	<b>Chemical</b>	<b>Biological</b>
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Chilling and cooling		
Freezing		
Blanching	Preservatives e.g benzoates, nitrites	
Pasteurization		Fermentation:
Canning	Sugar	Alcoholic
Drying/Dehydration	Salt	Acetic
Separation/Filtration	Acids	Lactic
Concentration	Spices	
Irradiation	Additives e.g. antioxidants	
Modified/Controlled Atmospheric Packaging		