

INFRASTRUCTURE

Modern infrastructure includes transporting fruits and vegetables in appropriate transport to ensure occurrence of least damage, and post-harvest handling system comprising of desapping, sorting, washing, fungicide treatment, drying, grading and packing, pre cooling, cold storage, etc. Quality infrastructure is not only required for reducing post harvest losses due to rots, etc. but also to maintain and enhance the quality of fresh fruits and vegetables.

1 - Packhouses and Packing Lines

In last few years significant advances have been made in all aspects of post harvest management of fresh fruits and vegetables. With regard to handling of fruits in the pack houses, packing lines equipped with sensors to reject unwanted fruits at sorting stage itself are available; also packing lines with automatic grading and packing of the required size fruits are available in advanced countries.

2 - Storage Systems

Recently improvements have been observed in pre cooling, storage and packaging. In pre cooling, forced air cooling is available for fresh fruits, and hydro cooling for fresh vegetables.

In storage, new developments like controlled atmosphere and modified atmosphere storage have emerged. Some companies in foreign countries have developed DYNAMIC CONTROL SYSTEMS for storage. The controlled atmosphere storage is most technologically advanced process that is used to precisely control the atmosphere in the container and make adjustments during the shipment. These systems also record changes in the atmospheric composition during journey and provide data for quality control purposes.

More recently, modified atmosphere packaging has come into prominence. In this system, permeability of the packaging film to oxygen and carbon dioxide plays important role resulting in equilibrium modified atmosphere, popularly called EMAP. Equilibrium modified atmosphere packaging has unique advantage as it slows down the normal respiration of the product and prolongs the shelf life.

The essential technology is to pack vegetables by gas flushing or by compensated vacuum. In gas flushing the package or carton is flushed with desired gas mixture, whereas in compensated vacuum technique, the air is removed from the pack totally and desired gas mixture is then inserted. A successful example in this one is MAP carton for shipment of bell peppers. This packaging is less expensive and enables to

export bell peppers by sea to U.S.A from Netherlands. Similarly, mangoes are exported by Brazil by sea in MAP cartons.

3 - Importance of Packaging

Packaging plays an important role in the transportation and marketing of products and also protection and maintenance of their quality. The package is often called “THE SILENT SALESMAN”. In hyper markets and superstores, the package is the only interface of consumers with the product. Thus, new packaging concepts are being developed where packaging design; properties of packed product and packaging material are integrated.

4 - Government Efforts

(a) Initiative of APEDA for Post Harvest Infrastructure development

With the creation of Agricultural and Processed Food Products Export Development Authority (APEDA), under Ministry of Commerce, Government of India, a number of initiatives have been taken for promotion of export of fresh fruits and vegetables. The details of various schemes floated by APEDA for enhancing exports are given in Appendix - A.

The assistance support under these schemes has definitely boosted the momentum for creation of post harvest infrastructure for various fruits and vegetables. This has created better value addition opportunities and export potential.

(b) Recent initiatives under National Horticulture Mission

National Horticulture Mission (NHM) has also ambitious programme for post- harvest infrastructure development. NHM has embarked upon to create a network of infrastructure facilities for transportation, packaging, grading, storage and export. Details of specific programmes which are being taken up under the NHM are given in Appendix - B.

(c) MSAMB Promoter Scheme for Cold Storage of Fruits and Vegetables

Maharashtra State Agricultural Marketing Board (MSAMB), Pune has also launched various schemes for promoting exports and the details are given in Appendix - C.

(d) Availability of infrastructure for export of fresh fruits and vegetables

Promotional schemes of assistance of APEDA and Ministry of Agriculture under the aegis of NHM (National Horticulture Mission) have led to creation of basic infrastructure in post - harvest handling for export of fruits and vegetables.

Above efforts have created more and more awareness/enthusiasm among packers/exporters for the requirement of quality, appropriately finished and attractive products in foreign markets. Now reefer vans, reefer containers and CA containers are available on demand for transport of sensitive products from farm to packhouse and to destination.

Post harvest handling infrastructure so far created is mostly specific to certain fruits and are available at locations where it is grown extensively. The details of the available infrastructure for specific product are given at Appendix – D.