
AN OVERVIEW ABOUT POST HARVEST TECHNOLOGY OF VEGETABLE CROPS

Mashetty Rakesh kumar¹, Vijay bahadur ², Amit Kumar Sharma³

^{1,3} Ph.D student, ² Associate Professor, Department of Horticulture, Sam Higginbottom University of Agriculture, Technology and Sciences, Naini, Prayagraj, 211007 (U.P), India.

Corresponding email: rakhirocks7777@gmail.com

Introduction

Fresh vegetables are highly perishable and subject to the active process of senescence. Losses in fresh vegetables can be caused by high temperature, low atmospheric humidity and physical injury. Such injury often results from careless handling, causing internal bruising, splitting and skin breaks, thus rapidly increasing water loss.

Post-harvest Technology can be defined as methods and techniques applied to increase the shelf life of the products. Postharvest activities include harvesting, handling, storage, processing, packaging, transportation and marketing. Post-harvest system should be thought of as encompassing the delivery of a crop from the time and place of harvest to the time and place of consumption, with minimum loss, maximum efficiency and maximum return for all involved.

Post-Harvest Scenario of Vegetable crops

Agriculture contributes about 14.5% of GDP, employees 52% workforce and sustains approx. over 60% of the population.

- India ranks second in world in production of fruits and vegetables at vegetables at 16.2 crores tonnes.
- Post-harvest losses are 3-18% amounting to Rs. 45000 crores.
- Low level of processing of fruits and vegetables at only 3.5%.

- Food processing is employment intensive, creates 1.8 jobs directly and 6.4 indirectly for every Rs.10 lakh investment.

Objectives of Post-Harvest Technology: - To know the post-harvest management techniques of fresh vegetables Specific Objectives:

- To get aware about post-harvest loss & their control measures.
- To recognize marketing channel & possible losses.
- To identify the various post-harvest management techniques.

Importance of Post-Harvest Technology

- Maintain the quality of fresh vegetables.
- Reducing postharvest losses reduces poverty and food insecurity.
- Increase market share and competitiveness of smallholders.
- Stimulate agriculture production and prevent post-harvest losses.
- Provide extra foods to the consumer by reducing post-harvest losses.
- Improve human nutrition and health.
- It is difficult to increase 10% yield but it is easy to reduce 10% loss.

Reasons for Losses of Vegetables

- Handling of raw produce through many stages of middlemen.
- Very low or almost negligible management and processing which leads to losses even in valuable by products. (Like pea pods)
- Non availability of cold chain and efficient equipment and machinery for processing in catchment areas.
- Low level of entrepreneurial urge in rural areas due to constraints of finance, assured market and proper training on technology Higher the Level of Processing, proper Marketing, Better the P^H Management Lower Will Be Losses and Lower Will Be Losses.

Post-Harvest Handling Operations: - Post harvest management is pre-requisite to value addition.

- ❖ Pre-harvest maturity indication.
- ❖ Curing after harvest.
- ❖ Sorting.
- ❖ Pre-cooling before storage.
- ❖ Washing & removal of surface moisture.
- ❖ Modified atmos Packaging.
- ❖ Dehydration & Packaging.
- ❖ Crushing and packing.
- ❖ Value addition like ketchup, pickles.

Effect of Cooling on Storage of vegetable crops

Vegetable products Storage potential at optimum cold temperature optimum temperature + 10°C optimum temperature + 20°C optimum temperature + 30°C Fresh green vegetables 1 month at 0°C 2 weeks at 10°C 1 week at 20°C Less than 2 days at 30°C Potatoes 5 to 10 months at 4 to 12 °C Less than 2 months at 22 °C Less than 1 month at 32 °C Less than 2 weeks at 42°C

COMMODITY	STORAGE TEMPERATURE (°C)	RELATIVE HUMIDITY (%)	SHELF LIFE
Asparagus	0-2	95	2-3 weeks
Beans (green)	5-7	90-95	7-10 days
Carrot	0	90-95	2-5 months
Cauliflowers	0	90-95	2-4 weeks
Cucumbers	7-10	90-95	10-14 days
Cabbage	0	90-95	3-6 weeks
Pepper	7-10	90-95	2-3 weeks
Couregettes,	0-10	90	5-14 days
Eggplants, Brinjals	7-10	90	1 week
Melons	0-4.4	85-90	5-14days
Okra	7-10	90-95	7-10 days
Onion (dry)	0	65-70	1-8 months
Potatoes (white)	5-10	93	2-5 months
Potatoes (sweet)	12-16	85-90	4-6 months
Tomatoes (ripe)	7-10	85-90	4-7 days
Tomatoes (green)	12-20	85-90	1-3 weeks
Watermelons	4.4-10	90	2-3 weeks

Value addition products

Ready to Constitute Mustard Saag Ready to Constitute Mustard Saag. The green leaves are washed, drained and cut. The cut leaves are taken in the known proportion. The mixture of cut leaves and spices is cooked and then mashed to get smooth curry. The curry is then processed through various steps involving crushing, cooking, pulping, addition of edible flour, cold extrusion, drying, size reduction and packaging to attain mustard saag powder.

Green chili processing into powder and green chili processing into powder and pure. Chilies powder has higher nutrition and controlled pungency. The green chilies have more Vitamin C & A and antioxidant properties. About 130 g of green Chilies powder and 300 ml puree could be prepared from one kilogram of fresh green Chilies. The cost of the plant for the processing 200kg of green chilies per day is estimated at 71,3000/-. The breakeven point comes be 49.15% and payback period 1.91 years. 1kg of green chilies costing Rs. 15/-, the value-added product of Rs. 70/- could be marketed.

POST HARVEST EQUIPMENTS



ROOT VEGETABLE WASHER



TOMATO GRADER



VEGETABLE PACKING MACHINE



TOMATO PULP UNIT



MOBILE COOL CHAMBER



VEGETABLE PULP MACHINE



VEGETABLE SOLAR DRYER



COLD STORAGE ROOM

Conclusion & Recommendations

Lack of postharvest options has led to total loss of production. Do not let more losses mean you have contributed little more to the production. About 20 to 50% fresh vegetable losses are found during the period of time between harvesting and final retail marketing. As the numbers of marketing intermediaries increase, post-harvest losses also increase.

simultaneously. Post-harvest Technology has some constraints or issues which act as a barrier to minimize post-harvest losses of fresh vegetables. Proper post-harvest technologies can minimize the post-harvest losses. Quality cannot be improved after harvest. It is therefore important to harvest vegetables at optimum maturity. Cleaning, sorting, grading, packaging, storing and transportation are the major post-harvest activities and that should be done appropriately & timely.

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