



**POST HARVEST RESEARCH CENTRE
AYUB AGRICULTURAL RESEARCH INSTITUTE,
FAISALABAD**



Post Harvest Research Centre was established during the year 1989-90 with the assistance of ADB. This UNDP institute is meant for post harvest research on fresh fruits & vegetables in Pakistan.

Post harvest technology deals with “produce management after harvesting to consumption with appropriate technology” to maintain quality and quantity to fetch the maximum market price.

Agro-climatic conditions of Pakistan ranging from tropical to temperate allow growing 40 different kinds of vegetables and 21 types of fruits. Major vegetables grown include potato, onion, chilly, melon, cucumber, tomato, turnip, okra and pea, whereas, citrus, dates mango, guavas, apple, banana, apricot, grapes, almonds, peach, plum and pomegranate are the main fruit crops. One of major factors limiting availability of fruits and vegetables are Post harvest losses in fruits and vegetables, which ranges from 25-40 per cent. Consumer’s prices rise in addition to hidden quality losses. These losses bring low return to growers, processors and traders and country suffers in terms of foreign exchange earning. Keeping in views these problems Post Harvest Research Centre is entrusted with the following objectives:

Objectives:

- ❑ To conduct R&D work on post harvest technology of fruit & vegetables

- ❑ To develop on-farm primary storage technology of vegetables.
- ❑ To modernize cold stores
- ❑ To introduce grading & packing technology.
- ❑ To conduct local training and demonstration programmes in respect of post harvest technology of fruit & vegetable.
- ❑ To render advisory services to entrepreneurs & growers

Post Harvest Technology of Fresh Fruit & Vegetable

Maturity stage of fruit & vegetable is the basic parameter in post harvest technology of fresh fruits & vegetables.

Maturity Indices:

Though maturity indices are specific for each fruit and vegetable however following basic parameters are considered before harvest.

- ❖ Size, shape
- ❖ Colour
- ❖ Firmness
- ❖ Total soluble solids
- ❖ Sensory attributes such as taste, flavour & texture.

Crop	Index
Tomato	Green color breakdown
Mango	Develop Shoulder Flesh Color Change TSS 10-12 %
Kinnow	Color Development Sugar/Acid Ratio 11:1 Desirable Size
Guava	Firmness Decrease, Color Green to Light Yellow
Potato	Tuber Fully Developed Vines Become Down & Pale



(Checking TSS of mango) (Colour Stage of kinnow)

Harvesting

During harvesting following points must be kept in mind:

- ❖ Direct Approach to fruit and vegetable
- ❖ Avoid damaging the produce
- ❖ Gentle Digging

- ❖ Soft Picking
- ❖ Use cutter, Picking Bag & Harvesting Aids

Harvesting Aids

Harvesting must be done with following tools/equipments;

- Clipper
- Hand Gloves
- Shoulder Bags,
- Filed Box



(Clipper with internal spring) (Scissor without spring)



(Harvesting rod for mango) (Harvesting scissor for mango)

Field Handling

- ❑ Use plastic field container
- ❑ Do not use dirty container
- ❑ Avoid direct sunlight
- ❑ Place at dry & smooth surface
- ❑ Avoid dropping or throwing
- ❑ Do not over fill the container
- ❑ Do not let the produce in loose form



(Washing at field) (Primary Field boxes for citrus)

Pre-cooling:

- ❖ Essential for longer shelf life
- ❖ Help to keep the fresheners
- ❖ Recommended technology for specific crop
 - Blast Air cooling
 - Hydro cooling
 - Ice cooling
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Transportation

- ❖ Fitted to pack house
- ❖ Covered & ventilated
- ❖ Use Cool Container
- ❖ Reefer Container



(Reefer container) (Internal structure of reefer container)

Grading

Easy to consume choice, Grading could be done in many ways depending on commodity and its specific parameter such as size, colour etc;

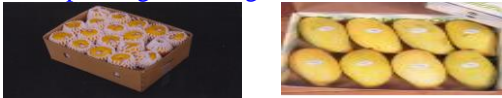


(grading for potato)

(grading for citrus)

Packaging

Easy to handle, type of journey, cushion layer adequate ventilation, avoid belly packing, loose packing & nailing



(Packaging box)

(Packed mangoes)

Labeling

Name: Address: Quantity/Nos:

Pack house Register No:

Name of exporter:

Any special display:

Cold Storage

- ❖ Prevent Rapid Decline
- ❖ Slow Down Respiration Rate
- ❖ Delay Softening
- ❖ Keep Good In Quality

ACHIEVEMENTS

DEVELOPMENT OF LOW COST ON FARM STORAGE TECHNOLOGY FOR POTATO AND ONION



ON FARM STORAGE TECHNOLOGY OF ONION



DEVELOPMENT OF HYDRO COOLING TECHNOLOGY FOR MANGO



INTRODUCTION TO GRADING PACKING OF FRUIT & VEGETABLE



R & D ACHIEVEMENTS ON SHELF LIFE EXTENSION

- Mango Samar Bahists at 17°C for 8 days
- Kinnow at 5°C for 60 days
- Carrot at 0°C for 45 days
- Cabbage at 0°C for 70 days
- Tomato at 10°C for 40 days
- De-greening of citrus
- Control of sweetening in potato

- About 10250 persons were benefited through one day local training programme on post harvest technology of fruit & vegetables.
- Mango Sindhri at 10°C for 32 days.

R&D Activities



Future Targets

- To develop storage parameters according variety
- To introduce the pre cooling technology for better shelf life
- To assist the export of fresh fruits and vegetables
- To introduce disinfection technology.
- To disseminate on farm low cost storage technology for potato & onion

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