



POSTHARVEST HANDLING AND COOLING OF FRESH FRUITS, VEGETABLES AND FLOWERS FOR SMALL FARMS

Part III: Handling

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The most important key to quality maintenance of fresh fruits, vegetables, and flowers is careful handling – Tender Loving Care!

Symptoms of injuries incurred during harvesting, handling, grading, and packaging usually are not evident until the products reach retail or consumer levels – too late to do anything about your quality image. Bruises and other mechanical damage not only detract from the appearance of the product, but are good avenues of entrance for decay organisms. Postharvest rots are more prevalent in fruits and vegetables that are bruised or otherwise damaged than in undamaged products. For instance, decay has been shown to be greater in bruised areas of apples than in unbruised areas. Severely bruised prunes developed 25% decay, whereas unbruised prunes developed 1.3% during storage. Mechanical damage also allows increased moisture loss. The rate of moisture loss may be increased by as much as 400% by a single bad bruise on an apple. Skinned potatoes may lose three to four times as much weight as non-skinned potatoes.

Postharvest disease management starts in the field and continues throughout harvesting, handling, and marketing. Sanitation is critical because decayed debris is an excellent source of inoculation. **Harvesting buckets, packing lines, and storage areas should be frequently cleaned up and sanitized.**

No postharvest treatments or miracle chemical exist which can overcome inferior quality resulting from poor production practices or improper handling.

Most fruit and vegetable postharvest losses can be related to improper, even abusive, postharvest handling practices. “Quality” and “condition” of fresh fruits and vegetables are major factors in market inspectors’ determination of grades and standards. “Bruising” is a major component of these factors.

Damage Reduction Recommendations

The key to damage reduction is simply TLC, tender loving care. Fresh commodities should be seen and not heard. Keep this in mind as you design and implement postharvest handling facilities and practices. Sound recommendations should include the following:

- Train harvest labor to handle products gently.
- Harvest at the proper stage of maturity; harvest dry if possible.
- Handle each fruit or vegetable no more than necessary; **field pack if possible.**
- Trim fingernails and/or wear cotton gloves.

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- Use padding in the bottoms of picking containers.
- Install padding materials on the sides and bottoms of bulk bins.
- Do not overfill bulk bins.
- Minimize drop heights when transferring products from picking containers or bulk bins.
- Packing line operations:
 - Use water dump system to float products out of bins if possible.
 - Keep lines as level as possible.
 - Minimize drop heights.
 - Use decelerator strips—to control the velocity of products.
 - Cushion (pad) all impact surfaces, and sharp edges.
 - Operate near full capacity.
 - Synchronize components.
- Use strong, standard sized packages that will adequately protect contents.
- Do not overpack (or underpack) containers.
- Palletize containers to minimize handling of individual units.
- Load containers carefully into transport vehicles.

Conclusions

Postharvest handling is the ultimate stage in the process of producing quality fresh fruits and vegetables – getting these unique packages of water (fresh commodities) to the supper table. Production costs, plus postharvest handling, packaging, cooling, transportation, and marketing costs are the same whether the fruits, vegetables, and flowers that leave the farm are sold and/or consumed or not. Considering such investments, growers should do everything they possibly can to assure the quality maintenance of their commodities—and the satisfaction of those who purchase them. **Remember, marketing is extremely competitive.**

References: See Part V, Horticulture Information Leaflet 804.