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Harvest and Post-Harvest Management.



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- The inherent quality of produce can not be improved after harvest, only maintained for the expected window of time characteristic of the commodity. Part of successful postharvest handling is knowing what this window of opportunity is under your specific conditions of production, season, method of handling, and distance to market. As a general approach, the following practices can help to maintain quality:



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- Harvest during the coolest time of the day to maintain low product respiration.
- Avoid unnecessary wounding, bruising, crushing, or damage from humans, equipment, or harvest containers.
- Shade harvested product in the field to keep it cool. Covering harvest bin sorters with a reflective pad greatly reduces heat gain from the sun and reduces water loss and premature senescence.



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- If possible, move product in to a cold storage facility or post harvest cooling treatment as soon as possible. For some commodities, such as berries, tender green and leafy herbs, one hour in the sun is too long.
- Don't compromise high quality product by inter mingling damaged, decayed, or decay-prone product in a bulk or packed unit.
- Only use cleaned and, as necessary, sanitized packing or transport containers.



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Post harvest storage

- **Room cooling:** An insulated room or mobile container equipped with refrigeration units. Room cooling is slow compared with other options. Depending on the commodity, packing unit, and stacking arrangement the product may cool too slowly to prevent water loss, premature ripening, or decay.
- **Forced air cooling:** Fans are used in conjunction with a cooling room to pull cool air through packages of produce. Although the cooling rate depends on the air temperature and the rate of airflow, this method is usually 75–90% faster than room cooling.



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- **Hydro cooling:** Showering produce with chilled water is an efficient way to remove heat, and can serve as a means of cleaning at the same time. Use of a disinfectant in the water is essential and the some of the currently permitted products are discussed in the following section.
- **Top or liquid icing:** Icing is an effective method to cool tolerant commodities and is equally adaptable to small or large-scale operations.
- **Vacuum cooling:** Under vacuum, water with in the plant evaporates and removes heat from the tissues. This system works well for leafy crops Water may be sprayed on the produce prior to placing it vacuum.



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- **Sanitation and water disinfection**

For both organic and conventional operations, liquid sodium hypochlorite is the most common form used. For optimum anti microbial activity with a minimal concentration of applied hypochlorite, the water pH must be adjusted to 6.5 to 7.5.



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Importance of optimum storage temperature and shipping temperature

- Exposure of bagged or tightly wrapped produce to direct sunlight will rapidly raise the internal temperature.
- Specialized films, that create modified-atmospheres(MA) when sealed as a bag or pouch, are available for many produce items that have well-characterized low oxygen and elevated carbon dioxide tolerances.
- Approved fruit and vegetable waxes are effective at reducing water loss and enhancing appearance.



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Symptoms of ethylene injury

- Russet spotting of lettuce
- Yellowing or loss of green color (ex. cucumbers, broccoli, kale, spinach)
- Increased toughness in turnips and asparagus spears
- Bitterness in carrots and parsnips
- Yellowing and abscission (dropping) of leaves in Brassicas



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- Softening, pitting, and development of off-flavor in peppers, summer squash, and watermelons.
- Browning and discoloration in eggplant pulp and seed
- Discoloration and off-flavor in sweet potatoes
- Increased ripening and softening of mature green tomatoes