All changes need to be indicated by italics in the final manual.

Crop Profiles

Links on page 82 have been checked and are good.

Rather than provide all text, I have only included text where a change is recommended. If text is not included in this document leave as is. Replacement text is in red.

For every profile in the manual change the category “Washing” to “Cleaning”

**Basil pg .99**

Harvest Tips:

* Be gentle. Damage to the leaves at harvest can lead to discoloration and increased susceptibility to decay.

Cleaning: Never ice. Generally basil is not washed. Basil can be washed if necessary. Be certain the water temperature is above 55° or chilling injury can occur, and water should not be more than 10° F cooler than the basil. Handle gently. Basil bruises easily.

Damage Potential: Water loss can be a serious cause of quality loss. Basil is highly sensitive to loss of essential oils and aroma—critical components of fresh culinary herb quality—the visual shelf life is generally longer than culinary shelf life. Harvest basil as close to shipping as possible and avoid chilling temperatures, which reduce aroma quality.

**Beans, Green and Snap Varieties, pg. 100**

Harvest tips:

• *~~Dump field containers directly into boxes for shipping.~~ Shipping boxes can be filled directly from harvest containers if beans are clean.*

• *~~Beans can handle being warm much more than other crops.~~* *Beans can tolerate being picked in the heat of the day better than many crops can.*

Cooling:

• Hydro-cool. Dry on screen table before packing.

• Forced-air

• Room Cooling

Cleaning: Washing can be avoided if beans are picked clean. If necessary, wash in water tank with sanitizer and dry on screen table before packing.

**Beets pg. 101**

Cooling: Green top beets are highly perishable and must be cooled as quickly as possible. Bulk beets are not highly perishable.

Bunched green top beets

* Hydro-cool inwater with sanitizer after roots have been spray cleaned.
* Top-ice

Topped beets

* Room cool

Cleaning:

Bunched green top beets

* Wash bunched beets with sprayer on screen table. Pressure washer can be used on roots only. Can be packed damp.

Topped beets

* Barrel wash, or clean with a sprayer or pressure washer on screen table or in harvest tote.

**STORAGE**

Damage potential: Low for bulk beets. Green-top beets are sensitive to warm temperatures and loss of moisture.

**Weights**:

* Bulk Beet are packed in waxed boxes with polyethylene liners.
  + 25 lb. in a 5/9 carton
  + 40 lb. in a 11/9 carton
* Storage Beets: 44 lb. polyethylene lined crates, or bins of 1100-1320 lb. capacity
* Green-top bunched beets are packed in waxed boxes with waxed paper liners on top and bottom
  + 12 bunches in a 1 1/9 carton
  + 24 bunches per case in a leafy greens box

**Bok Choy pg 105**

Cleaning: Wash in water tank with sanitizer; drain upside down (NOTE- this is in italics in present edition and other cleaning instructions are not. De-italicize)

**Broccoli pg. 107**

**HARVEST**

*Rewritten entire paragraph*

Quality: Firm, compact heads with closed beads. Central heads should be dark or bright green and 4-8” in diameter. Cut main head with 5-9” of stem. Larger heads may have the stem trimmed off and packed as “crowns.” Side shoots can be bunched or sold in bulk. Good temperature management is crucial to quality broccoli. Harvest as cool as possible, preferably in early morning, remove field heat as quickly as possible, maintain the cold chain in storage and transport. Harvest with care, rough handling during harvest and packing can damage florets and lead to increased decay.

Harvest tips:

*DELETE ~~Varieties with high domes that shed water better are preferable.~~*

* Select cultivars with care. Use heat tolerant cultivars for summer months, cold tolerant cultivars for fall. Look for bead and head tightness, color, ability to hold quality in field, and amount of side shoot production. Cultivars with domed rounded heads shed water, reducing the development of bacterial soft rot.

Delete *~~If care is taken not to dirty broccoli, it will not need to be washed.~~*

* *If care is taken during harvest to keep broccoli clean it will not need to be washed.*
* *Consistent water during head formation has a large impact on quality and sweetness.*

Cooling: Broccoli is highly perishable and must be cooled as quickly as possible to 32° F (0\* C) to 35.6° F (2° C). ~~Injecting liquid ice~~

* Top ice in waxed cartons
* Hydro-cool in water with sanitizer.
* Forced-air cooling can be done but care must be taken to avoid loss of moisture.
* Room cooling is generally too slow.

Cleaning: Harvest clean. Can be washed in water tank with sanitizer if necessary.

**Weights**: (keep the weight information already in manual. Add the two bullets below)

• Crown cuts are packed loose in 20 lb. boxes.

• Side shoots or individual florets are packed in 5.5 or 11 lb. plastic bags for hotel, restaurant and institution use.

**TRANSPORT**

Maintaining cold temperature is crucial during transport. Ship in refrigerated truck at 32\* F or use ice and insulation to maintain cold produce.

**PESTS/DISEASES (keep existing info- add the below bullet points)**

* Cabbage loopers, cabbage worms, and diamondback moth caterpillars can be controlled with the bacterium Bacillus Thuringiensis (BT), a microbial insecticide that can be very effective in controlling young larvae. Formulations are available for organic producers.
* Summer production in hot climates can be challenging. Hot temperatures can result in poor quality. Avoid planting in hot southern or western exposures or areas with high winds.
* Spring temperatures below 40\* can cause initiate early flower development—budding.
* Boron deficiency can cause brown hearts and hollow stems.

**Cabbage pg 109**

**PESTS/DISEASES**

* Cabbage loopers, cabbageworms, and diamondback moth caterpillars can be controlled with the bacterium Bacillus Thuringiensis (BT) a microbial insecticide that can be very effective in controlling young larvae. Formulations are available for organic producers.
* Boron deficient soils can cause water-soaked, brown heads—the pith may be hollow with a dark lining.

**Cantaloupe pg 111**

**PESTS/DISEASES**

*Avoid high amounts of irrigation during final weeks as it can create mushy texture, and reduce sweetness.*

**Carrots pg. 114**

~~Cooling: • Hydro-cooling to less than 41oF (5oC) • Ice after cooling~~

~~Washing:~~ *~~Barrel wash.~~*

Cooling:

Bunched green top carrots

* Hydro-cool inwater with sanitizer after roots have been spray cleaned.
* Crushed ice

Topped carrots

* Room cool
* Crushed ice optional

Cleaning:

Bunched green top carrots

* Wash bunched carrots with sprayer on screen table. Pressure washer can be used on roots only. Can be packed damp.

Topped carrots

* Barrel wash
* Clean with a sprayer or pressure washer on screen table or in harvest tote.

**Cauliflower**

**PESTS/DISEASES**

* Boron deficiency can cause browning of leaf tips and spots on curds; the spots can enlarge and cover the entire head. Stems can become water-soaked and develop small cracks.
* Cauliflower requires consistent water and nitrogen to produce quality heads.

**Celeriac**

Cleaning:

Green top: Wash with sprayer on drain table, pressure washer can be used on roots only; allow to dry before packing.

Bulk Roots: Celeriac for storage should have tops removed and should not be washed until after storage.

* Clean with a sprayer or pressure washer on screen table or in harvest tote.
* Barrel wash

Carton sizes:

* 24 in a 1 1/9 bushel box
* 25 lb. in a 5/9 waxed carton

**Chard**

Cooling:

• Hydro-cool inwater with sanitizer

• Top-ice

Cleaning: Wash in water tank with sanitizer.

Damage Potential: High. Sensitive to dehydration and warm temperatures.

**Corn**

**HARVEST**

Cooling: Sweet Corn is highly perishable and must be cooled as quickly as possible to 32° F (0\* C) to 35.6° F (2° C). Maximum quality is retained by pre-cooling …

* Hydro-cool in cold water with sanitizer. Top with crushed ice after cooling.
* Package ice and top-ice ~~if pre-cooling facilities are unavailable~~
* Forced air. Be careful of dehydration; wetting down leaves can help.
* DELETE ~~Injection of slush ice into cartons: as effective as hydro-cooling and more effective than vacuum cooling.~~

**Cucumbers**

**HARVEST**

Harvest tips:

* *Harvest when dry; it doesn’t matter if it’s hot outside. Touching wet plants can increase disease.*

**Dates**

Cooling:

 Forced-air cooling is recommended

 Hydro-cooling can be used to cool khadal dates to near 32oF (0oC) in 10-20 min. but requires

effective sanitizing ~~disinfection~~ of water and removal of excess moisture before packing.

**Eggplant**

Cooling:

* Do Not Ice (add this – keep the three already there.)

Cleaning: Can be washed in water tank with sanitizer or dry brushed to remove field dust.

**Kohlrabi**

Cooling:

• Hydro-cool inwater with sanitizer

• Ice

• Forced-air cooling

Cleaning: Wash with sprayer. Pressure washer can be used on roots only.

**Leeks**

Cooling:

• Hydro-cool inwater with sanitizer

• Package icing

Cleaning: Wash/peel tunnel. Spray wash or pressure-wash the roots to remove dirt.

**Lettuce**

Cooling:

* Hydro-cool inwater with sanitizer; set heads upside-down to drip dry. Water left in head lettuce fosters decay.

Cleaning: Wash in water tank with sanitizer; set heads upside-down to drip dry. Water left in head fosters decay.

**Onions**

Carton sizes: **Weights**:

• 20-lb. cartons

• 25-lb. or 50-lb. net bags

• Retail pack in 3# net bags with a brand label. Packout is 16/3lb. packed in cabbage boxes or large mesh bags.

**Parsley**

Cooling:

• Hydro-cool inwater with sanitizer

• Top-ice

Cleaning: Pick clean if possible. Wash in water tank with sanitizer if necessary; set upside-down to drain dry.

Damage Potential: Water evaporation can be a serious cause of quality loss

**Peas**

**HARVEST**

Cleaning:

* Wash in water tank with sanitizer.  ~~Vibrating washer (optional) with fresh water.~~

**Perennial Herbs**

Harvest tips:

Fresh Herbs are sensitive to the loss of essential oils and aroma—critical components of fresh culinary herb quality. The visual shelf life is generally longer than the culinary shelf life. Harvest herbs as close to shipping as possible and avoid chilling temperatures, which reduce aroma quality.

Cooling: Should be cooled to just above 32° F (0\* C) immediately after harvest.

* Forced Air

**Radishes**

Cooling:

Bunched green top radishes

* Hydro-cool inwater with sanitizer after roots have been spray cleaned.
* Top-ice

Topped radishes

* Room cool
* Ice
* Hydro-cool inwater with sanitizer after roots have been spray cleaned.

Cleaning:

REMOVE: ~~Washing:~~ ~~Dip in chlorinated water at 26°F (2.2°C) to restore crispness and freshness to tops and roots, as well as to remove field debris.~~

Bunched green top radishes

* Clean bunched radishes with sprayer on screen table. Pressure washer can be used on roots portion only. After cleaning, bunched radishes can be soaked in water with sanitizer to hydro-crisp. Radishes can be packed damp.

Topped radishes

* Clean with a sprayer or pressure washer in harvest tote.

**Rhubarb**

Cleaning:

* Spray clean on screen table
* Wash in tank inwater with sanitizer.

**Salad Greens**

Cooling and Cleaning: Salad greens should be cooled to 32°F (0°C) as quickly as possible after harvest.

The cooling and cleaning process are combined for baby salad greens. Double tank wash in water with sanitizer and spin dry. Water should not be more than 10° F colder than greens. Use multiple tanks to “step-down” temperature. Use mesh bags to minimize handling and reduce bruising. Spin dry.

**Spinach**

Cooling and Cleaning: Spinach should be cooled to 32°F (0°C) as quickly as possible after harvest.

Baby Spinach: The cooling and cleaning process are combined for baby spinach. Double tank wash in water with sanitizer and spin dry. Water should not be more than 10° F colder than greens. Use multiple tanks to “step-down” temperature. Use mesh bags to minimize handling and reduce bruising. Spin dry.

Bunched Spinach

* Wash and cool in water tank with sanitizer; set heads upside-down to drip-dry.

Cold Chain: Can be topped with crushed ice for further cooling and cold chain in storage and transportation.

* REMOVE ~~Liquid icing~~
* Package icing (2.2-lb. of ice per 4-lb. of product)
* Top-icing

**Turnips**

Cooling:

Bunched green top turnips

* Hydro-cool inwater with sanitizer after roots have been spray cleaned. Avoid a temperature differential of 50°F (10°C) or more to prevent cracking.
* Top-ice
* Room cool

Cleaning:

Bunched green top turnips

* Wash bunched turnips with sprayer on screen table. Pressure washer can be used on roots only. Can be packed damp.

Topped turnips

* Barrel wash or clean with a sprayer or pressure washer on screen table or in harvest tote.

**Winter Squash**

Cleaning: Brush off majority of soil in field at harvest. It is generally considered best to store winter squash unwashed and wash at time of shipment to avoid disturbing the outer wax. Some farms wash at harvest in water tanks with sanitizer and then cure and store clean. Watch for future research on which is best.

* Hand brush wash in a tank of water with sanitizer.
* Wash with a mechanical wet brush washer.