Harvest & Post-harvest Handling

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Introduction

• Why is proper harvest/post-harvest handling important?
• 4 Key things about Harvesting
• 5 Key things about Post-Harvest Handling
• Top vegetables for the pantry
• Resources
• Questions??
Why is proper harvesting and post harvesting important?

QUALITY!!

**Quality** cannot be improved after harvest, it can only be maintained!**

- Quality:
  - Visual appeal
  - Storability & Shelf life
  - Taste
  - Food safety
4 Key Things About Harvesting

1. Produce Type
   - Type-appropriate harvest plan
     - Needs from harvest to wash to transport to pantry
     - Proper cutting, washing, bunching, cooling, packing, etc.
   - What stresses can this type of produce endure in the field?
     - Lettuce vs. onions

2. Crop Maturity
   - Harvesting at peak maturity
     - Visual inspection, info on seed packet, extension service publications, web, taste test, etc.
4 Key Things About Harvesting

3. **Time of Day & Weather**
   
   Use these to your advantage!!
   
   - Early morning is best, then evening, then midday.
   - Cloud cover and cool temps give greater flexibility.
   - Avoid exposing harvest to direct sun.

   **Rain & Dew**
   
   - Wetness can spread disease and cause crop damage if harvested wet.
   - Soil can also become compacted.
     - i.e. beans, tomatoes, cucurbits, lettuce.
   - **Excessive dryness** may cause difficulty getting root crops out of the ground (damage), but is also great for curing.
4 Key Things About Harvesting

4. Harvesting technique
   - What tools are needed? Are they clean?
     • Knives, clippers, forks, gloves, rubber bands/ties?
     • Containers – wooden boxes, crates, bags, liners, etc.
     • Dirty tools and containers can spread disease.
   - What is the best way to harvest?
     • Be gentle. Damage diminishes quality.
   - Are you doing any bunching or trimming in the field?
     • Topping and trimming leeks, bunching greens, etc.
   - Where does the produce go next?
     • Into a water tub, on a cart, to the car?
     • Needs to be clean, cool and out of direct sun.
5 Keys to Post Harvest Handling

1. **Removing Field Heat/Pre-Cooling**
   **Cooling is the most important factor in post-harvest handling for maintaining quality.**

   - **Pre-cooling**
     - Hydro-cooling = cold water bath.
       - Dunk to remove field heat, remove produce and wipe clean.
       - Also doubles as washing!
       - Water needs to be cold and clean.
     - Get produce to the shade ASAP
       - Use old sheets/towels to shade harvest baskets in field until they can be moved elsewhere.
   - Use time of day & weather to your advantage!
2. Cleaning

- Several types (type-appropriate):
  - Washing – dunking, spraying, wiping.
  - Dry brushing – no water, just brush.
  - Don’t wash – washing/extra handling can cause damage, decreasing quality

- What equipment is needed?
  - Bins/buckets, towels, sanitizer, etc.
  - Sanitary washing area and tools.
  - Personal hygiene
  - open wounds = not in my wash water!
5 Keys to Post Harvest Handling

3. Packing
- Pack your produce for **appearance** and **storage**.
  - Types of packing
    - Plastic bags, clam shells, crates, boxes, rubber bands, ties, etc.
  - Pay attention at the grocery store and at farmers markets to how produce is displayed, what looks good to you?

4. Transport
- How is produce getting from here to the pantry/cooler?
- Is the vehicle clean?
  - Think about points of contact between produce and vehicle.
- Is the vehicle cool?
  - Park in the shade.
  - Use a sheet to keep produce out of sun.
5 Keys to Post Harvest Handling

5. **Storage**
   - Produce must be stored in ideal temperature and humidity ranges for maximum prolonging of quality and shelf life.
   - Recommended ranges vary per type of produce.
   - What we do...
Lettuce & Salad Mix

- Harvest in morning.
- Heads should be well formed, but not bolting (bitter) typically 6-8 weeks
- Leaf/Baby: typically ready at 4 weeks
- Use field knives or scissors. Cut heads at base, cut leaf/baby leaving ½”. Put into harvest bin.
- Remove from field immediately; wash gently 2-3 times in cool water; removing damaged/bad leaves and weeds.
- Spin dry in spinner, mesh bag, washing machine. Can also put onto a towel and fluff to dry.
- Needs to be dry before storage or rot can occur.
- Store in bags to keep humidity up.
- Pack heads with butts out to avoid milky staining.
- Keep in fridge.
Tomatoes

• Can be picked at any time, but avoid touching plants when they are wet to prevent spread of disease.
• Can be harvested when starting to show some color; overripe tomatoes can damage easily and won’t last long in storage – harvest frequently to avoid over-ripeness.
• Twist & pull to leave stem; use pruners/clippers to keep in a cluster or to keep stem on.
• If rain is coming you may want to over-harvest to avoid cracking from the increase in water; cracked tomatoes should go home with you or into the compost.
• Wipe tomatoes in the field with a soft cloth; do not squeeze tomatoes.
• Should be packed into a sturdy container to avoid damage. Do not stack tomatoes more than 2-3 layers high.
• Cherry and other small tomatoes can be packed into clam shells.
• Keep tomatoes cool, but not cold.
Summer Squash & Zucchini

- Can be harvested at any time (try for cooler times); avoid wet conditions to prevent spread of Powdery & Downy Mildews
- Should be harvested when skin is shiny; fruit should be firm and free from damage.
- Typically zucchini, yellow and crookneck 5-7”, pattypans 3-4”.
- Harvest frequently!
- Use knife to cut from stem, avoid twisting.
- Wear soft gloves to avoid damaging/cutting skin.
- Place in a smooth harvest container – ridges and sharp edges can cause bruising and damage.
- Wipe clean with a soft, damp cloth. Or dunk in a water bath to loosen stuck on flower remains and dirt.
- Gently place in box or bag for storage.
- Keep cool – 40-50 degrees, 95% humidity.
Green & Snap Beans

- Harvest during morning before midday sun; do not harvest when wet.
- Avoid hydro-cooling; wetting beans can cause rust and water damage.
- Ready to harvest at about 50-60 days, typically 8-10 days after flowering.
- Harvest when pods are still young and tender, should be bright in color, snap when bent and seed should still be small – pods with larger seeds will be fibrous.
- Pick by hand, keeping stem ends on.
- Pack into boxes, or bags.
- Because beans shouldn‘t be hydro-cooled keep out of the sun and get into a cooler within 1-2 hours of harvest.
- Keep cool 41-46 degrees, 95-100% humidity; avoid very cold temps – they will cause damage.
Cucumbers

- Can be harvested at any time, but needs to be dry – moisture spreads disease.
- Should be shiny, firm and dark green – yellowing is an indication of over-maturity which can cause fruit to become bitter and seeds to be large.
- Cut stem with knife or clippers, avoid twisting.
- Harvest fairly frequently
- Hydro-cool and wipe with a soft cloth to remove spines.
- Pack into boxes or a sturdy container to avoid damage.
- Keep cool – 40-50 degrees, high humidity.
Broccoli

- Harvest in the cool part of the day to avoid wilting.
- Head or shoots should be firm and buds tight.
- Use knives to cut heads leaving several inches of stalk; bunch side shoots in field. Trim leaves.
- Look for cabbage worms – they hide easily!
- Hydro-cool broccoli and shake heads dry.
- Pack in boxes or bags – try to avoid damage of heads from stems.
- Keep cold - 32 degrees, 98-100% humidity
Peppers

- Harvest when dry and cool.
- Peppers should be firm, bright and the color of the variety - make sure green peppers are mature green.
- Use knife or clippers to cut stem from plant.
- Peppers can be wiped with a clean, soft cloth if dirty.
- Cool quickly to avoid water loss/wrinkling.
- Pack in boxes or crates.
- Store at 45 degrees, 90-95% humidity.
Bunching Greens – Kale, Collards, Chard

- Harvest in cool parts of the day
- Leaves should be turgid and bright in color, some insect damage ok.
- Avoid heavily damaged leaves (compost)
- Use knife to cut leaves at leaf base – leaving younger leaves at the top to mature.
- Bunch in field – typically about 10 -20 stems to bunch, depends on leaf size.
- Small leaves can be bagged for braising mix.
- Harvest into buckets with water in bottom
- Gently dunk bunches into cool water and shake dry – some water is ok for storing.
- Keep cold 32 degrees, 95-98% humidity.
Herbs

• Harvest in morning when aromatic oils are at peak - just after dew dries.
• Avoid harvest when wet – can cause damage – especially to basil!
• Cut with clippers, snips or a knife.
• Bunch in field typically 5-10 stems (depends on variety) and put into a bucket with water in the bottom – avoid getting leaves wet
• Keep out of sun.
• May want to wrap in newspaper for delivery to pantry to avoid damage and sunlight. Label!
• Keep cool.
• Basil is sensitive to cold temps – it can turn black.
Resources

• Salma, Jim. Wholesale Success: a Farmers guide to Selling, Postharvest Handling and Packing Produce. 2010

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