

Harvest & Post-harvest Handling



By Liz Birkhauser
Farm Manager, Birch House Farm

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??

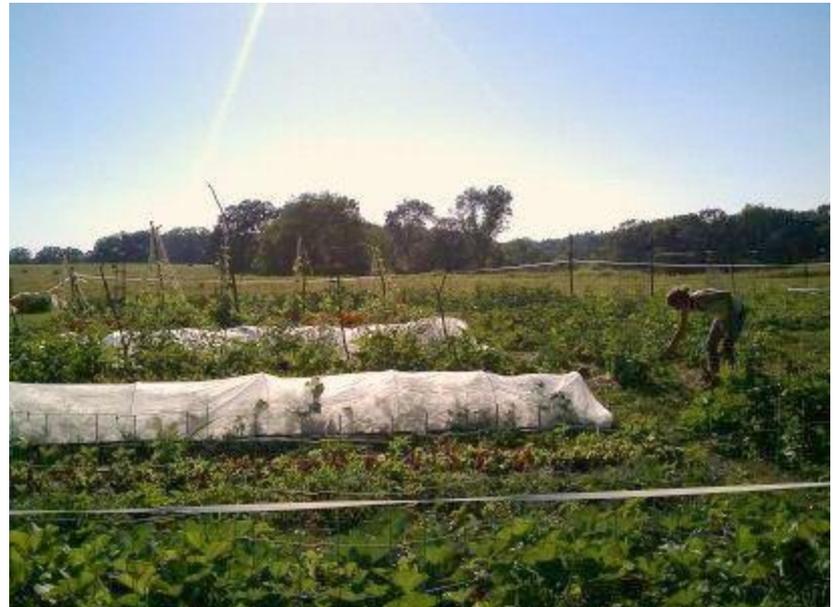


Why is proper harvesting and post harvesting important?

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!

5 Keys to Post Harvest Handling

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

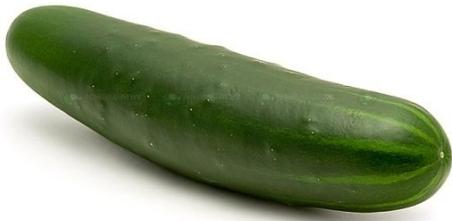
- Can be harvested at any time (try for cooler times); avoid wet conditions to prevent spread of Powdery & Downy Mildews
- Should be harvested when skin is shiny; fruit should be firm and free from damage.
- Typically zucchini, yellow and crookneck 5-7", pattypan 3-4".
- Harvest frequently!
- Use knife 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.



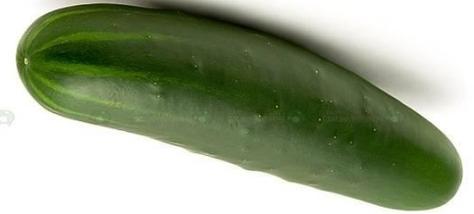


Green & Snap Beans

- 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
- Bachmann, Janet & Richard Earles. Postharvest Handling of Fruits and Vegetables. 2000
www.attra.ncat.org/attra-pub/postharvest.html
- Powell, Tom & Maud, et al. Western SARE Farm Internship Curriculum Handbook. 2010
http://attra.ncat.org/intern_handbook/farm_records.html

Birch House Farm

www.BirchHouseFarm.com

Liz@BirchHouseFarm.com

Happy Spring!!

Picture sources

<http://cucumbers.uea.ac.uk/>

<http://www.cooperseeds.com/vegetables.php3?cat=Beans>

<http://www.foodsubs.com/Squashsum.html>

<http://www.buttermilkpress.com/blog/lemon-broccoli-recipe/>

http://commons.wikimedia.org/wiki/File:Charleston_Hot_peppers_white_background.jpg

<http://www.ultimaterecipesonline.com/>

<http://recipes.terra-organics.com/2010/08/storage-preparation-green-beans-lacinato-kale-celery/>