



# Farm Food Safety

KEEP FRESH PRODUCE SAFE USING  
**GOOD AGRICULTURAL PRACTICES  
(GAPs)**



## Food Safety Begins on the Farm

### INTRODUCTION

Pennsylvania fresh produce growers can be proud of the wholesome and nutritious fruits and vegetables they grow. Unfortunately, recent food borne disease outbreaks traced to fresh produce have caused consumers to question the safety of our fresh food supply. Most produce related illnesses have been traced to crops grown in other parts of the U.S. or in other countries. But microbial contamination can happen anywhere—even in Pennsylvania. Every grower (small, medium, or large) has a responsibility to minimize food safety risks on the farm. All growers should evaluate their farm practices and begin to implement and train workers in Good Agricultural Practices.

### THE CONSEQUENCES OF FOODBORNE ILLNESS

You may have read in the news about food contaminated with Salmonella, E. coli O157:H7, Listeria, or Hepatitis A. These and other pathogenic microbes cause over 75 million people to get sick each year. Most cases are not very serious—an upset stomach, vomiting, or diarrhea. But the very young, the elderly, and people with impaired immune systems can become seriously ill.

There is no way to know for sure how much foodborne illness originates on the farm. But we know that the number of illnesses traced to fresh produce has grown faster than any other type of food. Bad publicity and consumer lawsuits have caused some farms to shut down and many grocery stores and restaurants now demand proof that the fresh produce they buy has

been grown under the safest possible conditions. Some buyers are now requiring independent farm food safety inspections, known as third party audits, as a condition of sale.

There is no way to guarantee that every fruit or vegetable is free of harmful microbes. But one of the most important things you can do to protect consumers, and your business, is to do all that is possible to prevent microbial contamination from occurring.

### GOOD AGRICULTURAL PRACTICES (GAPs)

Farmers can prevent on-farm contamination of fruits and vegetables using “Good Agricultural Practices” or “GAPs.” GAP’s is a new way of thinking about food safety. It’s not about waiting for a bad situation to occur and then fixing the problem. It’s about learning where food safety hazards can occur and taking preventative steps before your product leaves the farm. GAP’s protect the public from harm and your farm business from the economic consequences of food contamination.

If your buyers ask you to submit to a farm inspection, help is available. The Pennsylvania Department of Agriculture in association with USDA offers a voluntary Good Agricultural and Handling Practices third party audit program. Businesses or individuals may receive up to \$400 per year to reimburse the costs of a successful initial PDA/USDA GAP audit.

Use the following recommendations to minimize contamination of fresh produce.

### For more information

#### PENN STATE COOPERATIVE EXTENSION

Contact the Penn State Cooperation Extension office in your county for GAPs information that will help you prepare for an audit or visit [www.foodsafety.psu.edu/GAPs](http://www.foodsafety.psu.edu/GAPs).

#### PENNSYLVANIA DEPARTMENT OF AGRICULTURE

Learn more about the PDA/USDA third party audit program by contacting:

Donald Wellbrock  
Pennsylvania Department of Agriculture  
Bureau of Food Safety and Laboratory Services  
Eggs Fruits and Vegetables Division  
2301 North Cameron Street Room 112  
Harrisburg, PA 17110-9408  
Phone: **717-787-4315**  
Email: [dwellbrock@state.pa.us](mailto:dwellbrock@state.pa.us)

For information about the Pennsylvania Department of Agriculture GAP audit cost share reimbursement program, contact Jared Grissinger at **717-705-9513** or [jgrissinge@state.pa.us](mailto:jgrissinge@state.pa.us).

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# Minimize Fresh Produce Contamination from Planting to Harvest

## BEFORE PLANTING

### Consider previous use, topography, and wind patterns when selecting a growing site

- Avoid sites where dumping occurred or that were recently used as animal grazing or holding areas
- Review land history for prior use or storage of toxic chemicals
- Choose growing sites that are uphill, upstream, and upwind from areas where animals graze or are housed
- Be aware of the presence of feed lots, animal pastures, poultry farms, or dairy operations on neighboring properties and their potential to contaminate your crop
- Know upstream uses of surface water used for irrigation
- Avoid sites that regularly flood or where excessive run-off occurs
- If run-off or flooding is likely, construct physical barriers such as berms or swails, or plant non-food crop vegetative buffer areas

### Manure and biosolids can contain harmful microorganisms and should be treated before application

- Store manure as far away as practical from areas where fresh produce is grown and handled
- Where possible, erect physical barriers or wind barriers to prevent runoff and wind drift of manure
- If raw manure is applied to fields, incorporate it into the soil at least 120-days before harvesting, preferably in the fall when soils are warm (>50°F), non-saturated, and cover cropped
- For applications closer to harvest, use aerobic composting techniques that raise core temperatures to above 130°F for at least 5 days. Turn the pile several times to ensure even heat exposure to all parts of the pile
- If manure is not composted, age the manure to be applied to produce fields for at least six months prior to application

## PRODUCTION

### Keep animals and manure away from growing areas

- Domestic animals should be fenced so they cannot enter produce fields or have access to surface water used for irrigation
- Inspect fences regularly to make sure they are in good condition and that animals cannot burrow underneath them
- Keep dogs, cats, and other pets out of fields and orchards during the growing season
- Be aware of wild animals in the area and discourage them from entering fields using fences, soil buffer strips, noisemakers, or other practical means
- Make sure manure lagoons and sewers do not leak or overflow into fields during heavy rains

### Do NOT side-dress with manure, manure “tea”, or mulches containing fresh manure

- If side-dressing is required, use only well-composted or well-aged (greater than one year) manure
- Manure applied to nearby fields should be covered while stored, and applied on a schedule that does not interfere with the produce-growing schedule

### Consider the safety of water you use that comes into contact with the edible part of the crop

- Surface water has the highest food safety risks
  - Avoid using surface water for overhead irrigation or sprays close to harvest
  - Use drip or furrow irrigation methods, if possible, since they minimize contact with the edible part of the crop
- Private well water is a safer alternative if you are sure of its quality
  - Locate wells away from flood zones and animal holding areas
  - Test well water before each season for harmful bacteria
  - Inspect wells annually to make sure they in good condition
- Municipal drinking water is the safest source and can be applied at any time using any irrigation or spray method

## HARVEST

### Provide employees with adequate, readily accessible, and sanitary toilet and restroom facilities

- Toilet facilities should be adequate for the number of workers, easily accessible, and have self-closing doors
- Keep them clean, well maintained, and supplied with toilet paper
- Each toilet facility should have a hand washing station that has running water, soap, disposable towels, a trash container, and a hand washing sign to reinforce correct behavior

### Promote good hygiene practices for produce harvesters and handlers

- Do not allow workers who show signs of diarrhea, vomiting, fever, sudden yellowing of the skin, or infected wounds to handle fresh produce
- Prohibit eating, chewing gum, and tobacco use in growing areas
- Dispense drinking water in single-use cups or by fountains— not in common cups or dippers
- Make sure workers use the toilet facilities provided
- Teach them when to wash their hands before starting to work—after each break, after handling unsanitary items such as animals, manure, or decayed produce, and after using the toilet facilities

### Use field sanitation practices

- Keep harvest equipment and tools clean and in good repair
- Check harvest machinery to see if fluids are leaking or if there are loose or damaged parts
- Protect exposed glass on equipment with plastic or wire fixtures
- Use harvest containers and tools that are easy to clean
- Clean containers before each use and repair or discard damaged ones
- Remove as much dirt as practical from produce before moving it to packing areas
- Handle produce carefully to avoid bruising and damage and do not overfill containers
- Remove harvested produce from the field quickly and protect it from sources of contamination

## POST-HARVEST

### Protect harvested produce from contamination

- Keep harvest containers covered to prevent overhead contamination
- Handle produce carefully during unloading to prevent bruising and damage
- Do not allow boxes of washed produce to directly contact the floor
- Cool produce quickly to minimize microbial growth
- Do not overload coolers and monitor temperatures regularly

### Use only potable water for transporting, washing, waxing, or cooling harvested produce

- Change water in tanks regularly to prevent buildup of soils
- Add a sanitizer to tank water and monitor concentration and pH as necessary
- Install vacuum breakers on hoses and maintain air gaps to prevent back flow of water
- Keep tank water temperatures at least 10°F warmer than internal produce temperature to avoid uptake of microbes into the produce

### Keep areas inside and outside packing houses clean and free of pests

- Regularly remove litter, trash, and unused equipment that can attract and hide pests
- Keep grass short and remove tall weeds regularly
- Clean loading, staging, and packing areas and sanitize food contact surfaces each work day
- Keep doors and loading docks closed when not in use
- Place rodent traps at entrances and eliminate perching sites for birds

### Make sure toilet, handwashing and personal practices rules are followed

- Enforce health and hygiene practices
- Make sure restrooms are well ventilated, cleaned each day they are used, and do not open directly into packing areas
- Confine eating and drinking to designated break areas

### Minimize opportunities for contamination and microbial growth during shipping

- Inspect trucks for cleanliness and pre-cool refrigerated vehicles before loading
- Load carefully to avoid damage to the product
- Lock or seal the truck door to keep secure
- Keep records of where each product was grown and when it was packed and shipped

