

Good Agricultural Practices for Food Safety of Fresh Produce

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This checklist of good management practices will help reduce the potential of exposing fresh produce to pathogenic microbes.

What are the guiding principles of food safety for fresh produce?

- Once contaminated, removing or killing pathogens on produce is very difficult.
- Preventing microbial contamination at all steps, from production to distribution, is strongly favored over treatments to eliminate contamination that may have occurred.
- Document the implementation of prevention programs, and educate workers at all levels of the agricultural and packing environments on food safety.

Key Signatures of a Credible Food Safety Program

The following is a condensed checklist of practices and conditions that reduce the potential for fresh produce to be exposed to pathogenic microbes. Review your farm practices and identify those areas where you can take actions that will increase the safety of the food you produce. Then, develop a written plan of appropriate good agricultural practices for your farm.

Water Sources Are Safe

- Wells are protected from outside contamination.
- Drinkable water supply and/or wells are tested at least once a year.
- Records of all water tests are on file.

Water for Irrigation and Drinking (Potable Water)

- Water source(s) used for washing produce are located the distance required by local/state regulations [100 ft] from a manure storage facility, livestock area, pesticide storage area, and/or septic system drainage field.
- Water used to clean and sanitize produce meets the EPA Drinking Water Standard.
- Records of all water tests are on file.
- Backflow devices and air gaps are installed at appropriate locations.

Worker Health and Hygiene in the Field

- A worker food safety training program is in place.
- Workers and supervisors practice good personal hygiene.
- Field workers have easy access to toilet and hand-washing facilities.
- Supervisors are aware of the symptoms of foodborne illnesses.
- Sick employees are reassigned to duties in which there is no direct contact with produce.

Field Microbial Safety

- Harvest storage containers are cleaned prior to use.
- Clean containers are kept covered until used in the field.
- Harvesting equipment is kept clean and in good working order.
- Harvested produce does not come in contact with manure or biosolids, nonpotable water, workers with poor hygiene and/or dirty boots and clothing, or unclean packaging or storage containers.
- Farm livestock, including poultry and pets, is restricted from fields or orchards where crops are being grown and harvested.

Good Manure/Biosolids Management Practices in the Field

- Storage and treatment facilities are located as far as practical and possible from growing and handling areas.
- Storage and treatment facilities include physical barriers that prevent leakage, runoff, or wind spread.
- There is a manure treatment plan in place. Use of manure in any form during the growing season should be in accordance with USDA and/or state or organic regulations.
- Equipment that comes in contact with manure/biosolids *in any form* is cleaned thoroughly prior to use for harvest/transportation of fresh produce.
- Biosolids are applied in accordance with local regulations/processor instructions.
 - Apply manure in the early fall or at the end of the season to all planned vegetable ground or fruit acreage, preferably when soils are warm and when soils are unsaturated.
 - Incorporate manure immediately after application.
 - DO NOT harvest vegetables or fruits until at least 120 days after manure application.
 - For extra precaution, use the practices listed above for application of any compost that includes animal wastes, regardless of composting method.

Sanitation During Transportation from the Field

- Workers loading and transporting produce practice good personal hygiene.
- Harvested produce is loaded and stored in such a way that physical damage is minimized, risk of contamination during transport is reduced, and air is allowed to circulate.
- Vehicles used to transport fresh produce to market are well-maintained and cleaned.
- Vehicles used to transport produce are **not** used to transport animals or animal products.

Safe Water for Post-Harvest Handling of Produce and Personal Hygiene

- Backflow devices and air gaps are installed at appropriate locations.
- Restrooms and hand-washing sinks are supplied with potable water and single-use (disposable) paper towels.
- Produce is washed and/or cooled with potable water.
- Adding chlorine or peroxide to wash water is recommended.
- Wash water is changed when dirty or after several hours, and is maintained at a temperature of *no more than 10°F cooler than the produce* to ensure that pathogenic and decay organisms are not sucked into the tissue.

- Packing lines, conveyer belts, and any other food contact surfaces are washed, rinsed, and sanitized at the end of the day using potable water and an appropriate sanitizing solution.

Worker Health and Hygiene in the Packing Area

- Worker food-safety training is in place.
- Workers practice good personal hygiene.
- Sick employees and those with uncovered open wounds, sores, cuts, etc., are assigned to other duties in which there is no direct contact with fresh produce.
- Restrooms are accessible, are cleaned regularly, and are well-supplied with water, soap, and paper towels.
- Harvested produce does not come in contact with workers with poor hygiene and/or dirty hands, boots, or clothing (avoid cross-contamination).

Sanitation in the Packing/Processing Facility

- Approved sanitizers are used to sanitize food contact surfaces.
- Area and equipment are cleaned and sanitized at least once per day.
- Used and new packing containers are stored protected from contamination.
- A pest-control system is in place.
- Produce waste is removed daily.
- Grounds are maintained in good condition.

Sanitation During Storage in the Barn/Packing House

- Storage areas are clean and free of contamination.
- Storage areas are used exclusively for food crops and their containers.
- Produce is stored at least 6 inches off the floor, depending on the nature of the crop.

Temperature Control in the Barn/Packing House

- Refrigerated storage is maintained at the correct temperature.
- Refrigeration units are not loaded beyond capacity.
- If ice is used for cooling, it is made from potable water.
- Wash water is changed when dirty or after several hours, and is maintained at a temperature no more than 10 degrees cooler than the produce.

Customer Health and Hygiene for Pick-Your-Own Operations

- Toilet facilities and hand-washing stations are clean and regularly serviced and maintained in good working order: Soap, water, and single-use paper towels are available for customer use.
- Produce picked by customers is not accepted for sale.
- There is an opportunity for customers to clean hands after coming in contact with farm animals (petting zoo) prior to entering pick-your-own area.

Sanitizer for hard surfaces that come in contact with fresh produce:

1 tablespoon household chlorine bleach per gallon of water. Other sanitizers *if approved for food contact surfaces* can be used following label directions.

Considerations in On-Farm Food Safety

Fresh produce can become contaminated at any point along the farm-to-table food chain. The major source of microbial contamination of fresh produce is associated with human or animal feces.

Whenever water comes in contact with produce, its source and quality dictates the potential for contamination. Minimize the potential of microbial contamination from water used with fresh fruits and vegetables.

Worker hygiene and sanitation practices during production, harvesting, sorting, packing, and transport play a critical role in minimizing the potential for microbial contamination of fresh produce.

Follow all applicable local, state, and federal laws and regulations for agricultural practices. A product used in growing and handling food for human consumption may have different application rates, timings, preharvest intervals, or other restrictions than when the product is used for a commodity crop. Read and follow all instructions on the label.

Accountability at all levels of the agricultural environment (farm, packing facility, distribution center, and transport operation) is important to a successful food-safety program. There must be qualified personnel and effective monitoring to ensure all elements of the program function correctly, and to help track produce back through the distribution channels to the producer.

Additional Information

Food Safety for Farmers Market Vendors available online at www.ianrpubs.unl.edu/sendIt/g1706.pdf or by contacting your local Extension office and requesting a copy of NebGuide G706.

Water Quality, Wells, Inspections, Testing
Nebraska Department of Health and Human Services
Division of Public Health, Office of Drinking Water and Environmental Health
(402) 471-2541
www.hhs.state.ne.us/puh/enh/brochures.htm
www.hhs.state.ne.us/enh/ProperWellConstruction.pdf

Details on Good Agricultural Practices (GAP)
www.gaps.cornell.edu/educationalmaterials.html
sfc.ucdavis.edu/pubs/articles/foodsafetybeginsonthefarm.pdf
www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/ProduceandPlanProducts/ucm064574.htm

For an example of a GAP audit document, see
www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELPRDC5050869

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