

FARM FOOD SAFETY FACT SHEET

Reducing Risks from Animals and Manure

Animal manure is a significant source of human pathogens. Dangerous pathogens such as *E. coli* O157:H7, *Listeria*, and *Cryptosporidium* are found in cattle, sheep, and deer feces. Droppings from poultry, wild birds, and even pets are a potential source of *Salmonella* bacteria. When raw manure is not handled and applied correctly or if wild or domestic animals have access to growing areas, your produce could be contaminated.

For example, in 2011 in Oregon 15 people became ill and one died from eating strawberries grown in a field where deer feces were found. During the investigation, public health officials found the same strain of *E. coli* O157:H7 in deer feces on the suspected farm as was found in people who were sick. In the Colorado-grown cantaloupe outbreak of *Listeria* that killed 34 people, one of the possible sources of contamination was a truck parked next to the packing facility that was used to haul culled cantaloupe to a cattle feeding operation.

This fact sheet will help you recognize the risks associated with animals and animal manure and provide tips on how to reduce farm food safety risks.

Wild and Domestic Animals

It is not possible to exclude all animal life from fresh produce growing areas. But it is important that you consider the risks and set up procedures to limit potential contamination.

- Have a written plan and take measures to limit wild/domestic animal access to production fields.
- Do not locate production areas adjacent to dairy, livestock, or fowl production facilities unless adequate barriers exist.
- Fence in livestock to exclude them from fresh produce fields.
- If using working animals, confine them to lanes outside growing areas close to harvest. Have procedures in place to remove and dispose of droppings.
- Make sure workers in animal holding areas check their shoes for contamination before entering fruit and vegetable fields.
- Monitor for signs of animal entry such as the presence of feces, damage to the crop, or evidence of deer trails in or around fields.



Don't allow your pets in the produce field!

Theresa DePinto, Penn State Extension

- Have procedures in place to limit entry of animals into production areas.
- If wild animal populations become excessive, consider using streamers, spinners, plastic owl and snake models, netting, chemical repellents, or air cannons to discourage them from entering fields.

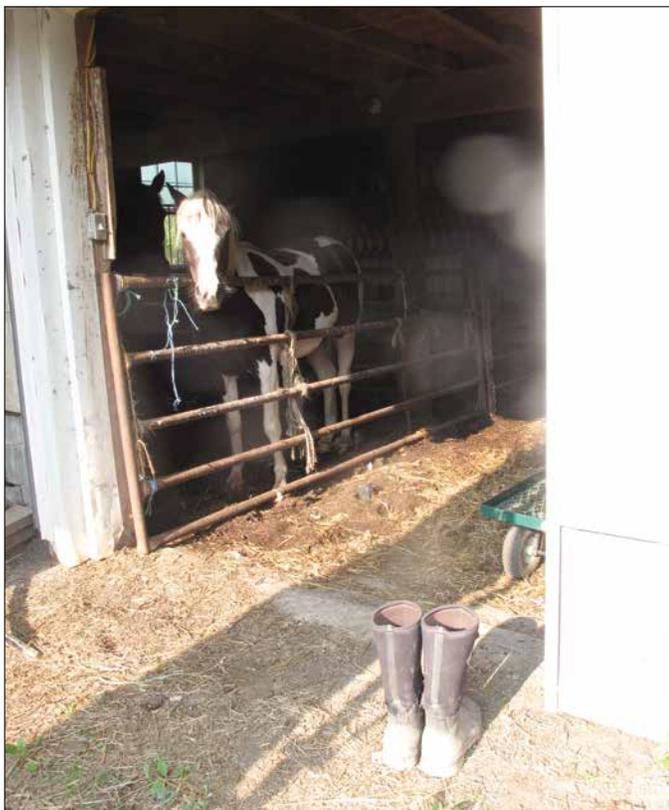
Manure Storage

Many produce growers also raise livestock. Animal manure should be stored in a manner that will prevent it from contacting fresh produce.

- Locate manure storage and treatment sites as far away as practical from fresh produce growing and handling areas.
- Locate manure storage where wind or rain will not readily transport pathogens into produce fields, packhouses, or water sources.
- Cover stock piles with tarps, use dry stack systems with concrete floors, or use properly constructed liquid manure storage to reduce and contain runoff.
- Keep manure runoff out of surface waters by planting vegetative buffers or constructing soil diversion berms.
- Prevent manure from leaching into groundwater systems by maintaining at least a 100-foot radius between storage sites and wells.



To limit risk from wildlife, every day before the crew arrives one Pennsylvania farmer takes a drive on the tractor to inspect the field. He looks for signs of deer grazing or tracks, and records any signs. If he sees any animal feces or other obvious animal activity, he flags the area five feet in each direction. The crew knows from their operating procedures not to harvest in flagged areas.



An example of a good practice to limit potential hazards from manure is to designate a pair of boots for use in the barn and change your shoes before going in to the field or packhouse.

Animal Manure as a Soil Supplement

Raw and composted animal manure is a valuable soil conditioner and source of nutrients. However, the shorter the time between raw manure application and harvest, the greater the risk of pathogens being present in the soil at the time of harvest.

- Do not apply raw manure on fresh produce fields during or immediately preceding the growing season. Never sidedress produce crops using raw manure.
- Never apply raw or farm-composted human feces to produce fields.
- Maximize the time between application of manure to production areas and harvest.

- If raw manure is applied, it should be incorporated at least two weeks prior to planting or a minimum of 120 days prior to harvest.
- Incorporate manure into the soil as soon as possible. Soil microorganisms can reduce pathogens.
- Consider treatment of manure by composting in order to reduce potential pathogens. To reduce pathogen loads, maintain compost at high temperatures with good aeration, moisture, and mixing. The pile internal temperature must be maintained at 131 to 170°F for three days using an in-vessel or static-aerated pile system, or 15 days if using a windrow. When using a windrow composting system, the materials must also be turned a minimum of five times in the 15-day period.
- Properly store compost to minimize recontamination from fresh manure and bird droppings by tarping, using buffer zones, etc.

References

Goetz, Gretchen. "Did Deer Cause Oregon's Strawberry Outbreak?" *Food Safety News*, August 9, 2011. www.foodsafetynews.com/2011/08/epis-pinpoint-strawberries-in-or-e-coli-outbreak/#.UR0d0h3kt_c. Accessed February 5, 2015.

Lactaon, Derek. "FDA Announces Investigation Results from Listeria-Contaminated Cantaloupe." *ConsumerBell*. blog.consumerbell.com/2011/10/19/consumer-recall-safety-fda-announces-investigation-results-from-listeria-contaminated-cantaloupe. Accessed February 5, 2015.

Neuman, William. "Listeria Outbreak Traced to Cantaloupe Packing Shed." *New York Times*, October 19, 2011. www.nytimes.com/2011/10/20/business/listeria-outbreak-traced-to-colorado-cantaloupe-packing-shed.html?_r=1&. Accessed February 5, 2015.

Prepared by the Penn State Extension Farm Food Safety team; Tianna DuPont, Penn State Extension; and Luke LaBorde, Penn State Department of Food Science. Reviewed by Lee Stivers and Thomas Ford, Penn State Extension.

This publication was supported in part by funding from the Pennsylvania Department of Agriculture and the Reinvestment Fund.

Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.

This publication is available in alternative media on request.

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to minorities, women, veterans, individuals with disabilities, and other protected groups. Nondiscrimination: <http://guru.psu.edu/policies/AD85.html>

Produced by Ag Communications and Marketing

© The Pennsylvania State University 2015

Code EE0139 2/15pod