# California SMALL FARM Food Safety Guidelines

cdfa CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

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Fruit and vegetable consumption has grown significantly in the past two decades as the health benefits of these crops have been emphasized. Unfortunately, the incidence of foodborne illnesses has also increased. In some cases, the financial impact on the growers of the crops associated with these incidents has been devastating. This means that it is important for all growers to be aware of food safety practices that minimize contamination of their crops with human pathogens. The most important disease organisms are *Salmonella*, *E. coli* O157:H7, *Listeria, Shigella* and *Bacillus cereus*. The primary pathways for these pathogens to enter the field or packing shed are: contaminated irrigation or processing water, poor field/packing shed worker hygiene, improperly aged or treated organic soil amendments (manure, etc.), domestic or wild animals entering the field, contaminated harvest equipment, inadequate or unsanitary processing and storage conditions and improper transportation.

The following checklist of recommendations should be considered during crop production, harvest, processing and transport.

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## Prior to Planting

- Keep records of all farm activity, especially food safety practices.
- If manure will be used as a fertilizer, apply untreated manure in the fallow period after the last harvest and incorporate it as soon as possible.
- Be sure that there is a buffer between the production field and manure/compost storage, concentrated animal feeding operations, grazing or open range areas, surface water, sanitary facilities and composting operations.
- Test irrigation water and, if contaminated, find the source and fix it or request that your water supplier do so.
- Train your employees about hygiene (handwashing, etc.) and other aspects of food safety that apply to them. Do follow-up training during the growing season.
- Evaluate fields for evidence of animal entry. If you see animal signs use mitigation procedures (fences, noisemakers, etc.).
- Assess adjacent lands for possible sources that might contaminate the production field, and take corrective actions if needed.

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## During the Growing Season

- Provide proper sanitation and hand-washing facilities in an area outside of the field.
- Provide an area outside of the field for eating, breaks, smoking and storage of personal items.
- Do not allow pets or other domestic animals to wander in the field and continue to look for signs of wild animals. Minimize standing water in the field because it attracts wildlife.
- If you sidedress with composted manure try to minimize manure contact with the crop and incorporate it, if possible.
- Clean and sanitize tractors and other implements that were used in manure application and incorporation prior to entering the field.
- Test irrigation water as close to point-of-use as possible at least once during the growing season, and more often if you use surface water.
- Ensure that water used for spray applications of pesticides and fertilizers is not contaminated.
- Consider using drip irrigation wherever possible. It minimizes the risk of contamination because above-ground plant parts are not directly wetted.
- Sick employees should not have direct contact with produce. Assign them other duties while they are sick or send them home. Employees who cut themselves should wear gloves and use bandages until the wound is healed.

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## Harvest

- Continue to emphasize worker hygiene, monitor employees for symptoms of illness and for wounds.
- Clean and sanitize harvesting equipment at least once a day or more often, if needed.
- High-pressure wash, rinse and sanitize all crop production bins.
- Cover clean bins to avoid contamination.
- Do not allow workers to stand or place personal items in bins.
- Remove field soil from the outside of bins prior to moving them into packing areas.
- Emphasize hygiene to U-Pick customers.
- Use clean water and ice made from clean water during field processing.
- Remove or prevent the harvest of any potentially contaminated produce if signs of animal intrusion are detected.

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## Postharvest Processing and Storage

- Clean facilities, equipment and food contact surfaces thoroughly and then sanitize just before the first use and then once a day during use or more often, if needed.
- Provide sanitary and hygiene facilities and an area for smoking, meals, breaks and personal item storage for employees away from processing and storage areas. Continue to monitor use.
- Use a potable water source for processing and use ice made from potable water.
- Wash, rinse and sanitize storage facilities.
- Fix or fill in any cracks or defects in the processing and storage building to keep out pests.
- Establish an ongoing pest control program (rodents, birds etc.).
- Ensure that refrigeration equipment is working properly. Measure and record temperatures at least once daily.
- Do not wear field clothes, especially shoes and boots, in the packinghouse.
- Use chlorinated water and other labeled disinfectants to wash produce.
- Store packaging materials in a clean, covered area.
- Do not load refrigeration rooms beyond their cooling capacity.

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## Transportation

- Ensure that transport vehicles are clean and sanitary.
- Be sure that vehicles that have carried live animals or harmful substances (pesticides, etc.) are thoroughly washed, rinsed and sanitized before shipping produce.
- Use refrigerated trucks when possible.
- Be sure that each package leaving the packing area can be traced to the field of origin and date of packing.

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# ADDITIONAL INFORMATION

## Recordkeeping

This is very important in documenting the steps you take to ensure that you have complied with food safety recommendations. Some of the important things that need to be recorded are:

- Planting date(s) – varieties, suppliers, etc.
- Applications of fertilizer, pesticides or any other inputs.
- Water testing dates and results.
- Employee training – type of training (general safety, food safety etc.), dates, who was trained, follow-up training.
- Animal entry – dates when checked or observed, type(s) of animal signs, what action(s) you took to try to solve or mitigate the problem.
- Equipment maintenance – dates, type of maintenance, which piece of equipment, cleaning.
- Harvest date(s) – sanitation of harvest implements and harvest containers.
- Cleaning schedule for processing and storage facilities.
- Pest control program in processing and storage facilities – who does the program, treatment or trapping dates.
- Maintenance of refrigeration equipment and temperature of storage rooms.
- Dates of farmers' markets or other marketing options.
- Package identification.

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## Hygiene

To prevent field and packing shed workers from contaminating crops:

- They should be trained in hand washing - use plenty of soap and water, wash for at least 20 seconds, clean under fingernails and between fingers, rinse under clean water and dry hands with a single-use towel. Wash hands before they start work, after each break, after handling unsanitary items such as animals, manure, etc. and after using the toilet.
- They should not eat, chew gum, use tobacco, spit, urinate or defecate while in growing/processing areas.
- They should use the toilet/hand washing facilities and use them properly.
- Workers who show signs of diarrhea, vomiting, fever, jaundice or infected wounds should not handle fresh produce.
- They should use single-use cups or fountains for drinking water.
- The grower, packer or labor contractor should also provide signs that reinforce good hygiene, both in the field and in the packing shed.

## Water Testing

Water needs to be tested to know whether it is contaminated with unacceptable levels of bacteria. While there is no standard for food safety testing levels, a number of commodity groups have used the recreational water standard as a safe level. Water should be tested as near to the point-of-use as possible. All of the water used to produce and process crops should be tested (pesticide spray water, water used in processing, etc.).

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## Manure

Unprocessed manure is a perfect medium to support bacterial growth. Many food safety programs do not allow the use of unprocessed manure. Only properly composted or aged manure can be used. They also require that root crops not be grown for one year after manure application. If untreated manure must be applied shortly before planting, apply and incorporate at least two weeks before planting and don't harvest the crop for 120 days after application. If the 120 day waiting period is not feasible, apply only properly composted or aged (at least one year) manure. Composted manure use as a sidedressing is very difficult. If you must use it this way, do all you can to reduce manure-crop contact and, if possible, incorporate it as soon as you can.

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## Other sources of information

The following web sites have additional information on food safety:

http://sfp.ucdavis.edu/pubs/articles/foodsafetybeginsonthefarm.pdf

http://www.caleafygreens.ca.gov/food-safety-practices/downloads

http://www.fda.gov/Food/FoodSafety/Product-SpecificInformation/FruitsVegetablesJuices/GuidanceComplianceRegulatoryInformation/ucm171695.htm

http://agr.wa.gov/inspection/FVinspection/docs/GHP_GAP_Presentation.pdf

http://agr.wa.gov/inspection/FVinspection/GAPGHP.aspx

http://www.gaps.cornell.edu/Eventscalendar/USDA_GAP_GHP_Audit_Matrix_PP.pdf

http://oregon.gov/ODA/ADMD/gap_ghp.shtml

http://datcp.wi.gov/OnFarmFoodSafety/ResourcesTools/index.aspx

http://www.kimberly.uidaho.edu/potatoes/gap.htm

http://www.miffs.org/tools/GAPAuditVerification.pdf

## References

U.S. Food & Drug Administration Guidance for Industry: Guide to Minimize Microbial Food Safety Hazards of Tomatoes: Draft Guidance. July, 2009

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http://agr.wa.gov/inspection/FVinspection/docs/GHP_GAP_Presentation.pdf

http://agr.wa.gov/inspection/FVinspection/GAPGHP.aspx

http://www.gaps.cornell.edu/Eventscalendar/USDA_GAP_GHP_Audit_Matrix_PP.pdf

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