



FACT SHEET

Family and Consumer Sciences

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Safe Handling of Fruits and Vegetables

Fruits and vegetables are an important part of the American diet. It is recommended that consumers eat at least five servings or more of fruits and vegetables each day. It is everyone's responsibility to make sure the food they eat is safe and wholesome.

Each year, people get sick from foods that have not been properly handled, refrigerated, or cooked. If food is not handled properly, germs can grow to levels that make people sick.

Providing consumers with safe, wholesome fruits and vegetables is the first priority of farmers and produce managers. Fruits and vegetables can pick up dust and soil as they are being harvested, handled, packed, and shipped. Consumers play an important role in making sure the food they eat is good for them and their families. The following are suggestions for safe handling of fruits and vegetables.

At the store: Trust your senses. Look for fresh-looking fruits and vegetables that are not bruised, shriveled, moldy, or slimy. Do not purchase anything that smells bad, and do not buy packaged vegetables that look slimy.

Buy only what you need that can be used within a few days. Apples, potatoes, and citrus fruits can be stored longer. Handle produce gently at the store. Keep produce on top in the cart (putting groceries on top of produce can bruise it).

At home: Put produce away promptly. Do not wash fruits or vegetables before storage. Keep most

of your produce in the crisper. It has a slightly higher humidity than the rest of the refrigerator, which is better for fruits and vegetables. Throw away any produce that has been kept too long, or if it is moldy or slimy. Germs can adhere to the surface of produce and can be passed to the flesh when cut (cross contamination). The most important thing you can do is wash all fruits and vegetables in clean drinking water before eating, even if you do not plan to eat the skin, such as melons or oranges. Wash the produce just before you plan to use it, not when you put it away. If you don't plan to use all of the produce you purchased, such as a head of lettuce or bag of spinach, only wash the amount you need for the meal you are preparing. If washed or if you have leftovers, be sure to store dry. Pat with paper towels or use a salad spinner. If you are storing firm produce, like peppers or cucumbers, cut off the portion you will use and store the remainder. When you use the remaining produce, first make a clean cut to remove the exposed surface. If there are other cuts or bruises, remove those also. Bacteria thrive on wet produce and in the cut or bruised areas where the produce juices feed the bacteria.

Temperature: All firm fruits and vegetables, such as apples, pears, tomatoes, peppers, cucumbers, and avocados, should be washed in water between 80 and 110 degrees Fahrenheit.

Spraying: The best method for washing ripe or fragile berry fruits—strawberries, raspberries, blackberries, and blueberries—is by spraying with a kitchen sink sprayer. Use a colander so you can gently turn the fruit as you spray.

Immersion: If you do not have a sink sprayer, berries and soft fruit should be placed in a wire basket or colander into a 5 to 8 quart pot of warm water. Move the basket in and out of the water several times. Change the water until the water remains clear. Do this process quickly. If the fruit absorbs too much water, it will lose flavor, texture, and aroma.

Dry: Dry with a paper towel. Greens, such as spinach, chard, kale, and collards should be cooked while wet, immediately after washing.

Cold Water Washing: Produce used in salads, such as lettuce, radishes, carrots, etc., should be washed in the coldest tap water available to maintain crispness. Do not use detergent when washing fruits and vegetables. The detergent residues will be left on the fruits and vegetables. Produce items are porous and will absorb the detergent. The Food and Drug Administration has not labeled detergent to be used on foods.

In addition to washing, you should:

- Peel and discard outer leaves or rinds. Scrub hearty vegetables, such as potatoes and carrots, just before preparation if you want to eat the fiber and nutrient rich skin.
- Clean surfaces, utensils, and hands after touching raw meat and poultry and before you use them on fresh produce.
- Keep refrigerators clean and cold. Cover and refrigerate produce you have cut.
- Wash your hands thoroughly after using the toilet or changing diapers, and before preparing food.
- Read and follow label instructions such as “Keep Refrigerated” or “Use By” (a certain date).
- Discard cut produce items if they have been out of the refrigerator for more than four hours. It is best for food safety to not purchase cut

fruit or to store it very long. If you prepare cut fruit for a meal, either discard leftovers, or eat within a day. Then, discard the leftovers.

Questions and Answers

Q. I have heard that a variety of items could be used when washing fruits and vegetables. Is this true?

A. There are times when using chlorine bleach (for example, after flooding) is recommended to clean fruits and vegetables, but most homemade cleaning solutions will change the flavor of your food.

Baking soda: Baking soda may leave behind sodium which may affect the flavor of the produce. Baking soda and water mixtures vary greatly in cleaning ability.

Vinegar: Vinegar may leave a residual after-taste.

Dish Soap: Dish soap has not been approved by the FDA for cleaning fruits and vegetables. Soap has not been developed for people to eat.

Chlorine Bleach: Mixtures of chlorine bleach and water should be avoided on food because they may be toxic if too concentrated and may alter the taste of the produce.

Q. It seems like every year, just as my garden is ready for picking, we have a flood. Can I still use this food?

A. Flooded Gardens

1. If flood waters have covered a garden, most produce will be unsafe to eat. The safety of unharvested fruits and vegetables will depend on:

- Kind of produce
- Maturity of produce at the time of flooding
- Time of year flooding occurred
- Severity of flooding (depth of water and silt)
- Duration of flooding
- Bacterial content of floodwater
- Likelihood of contamination from sewage or other bacterial contaminants

2. In general, fruits and vegetables that were immature at the time of flooding should be safe to eat

by the time they are ready to harvest. For additional safety, wash thoroughly and cook it before eating.

3. Unless flooding was light and there is no danger of bacterial contamination from floodwater, do not use fruits and vegetables that were ready for harvest at the time of flooding. Some fruits and vegetables are more susceptible than others to bacterial contamination.

- Leafy vegetables (such as lettuce, cabbage, mustard, kale, collards, spinach, Swiss chard, and celery), fleshy vegetables (such as tomatoes, summer squash, and peppers), and berry fruits (such as strawberries) are highly susceptible to bacterial contamination. Silt and other contaminants may be imbedded in the leaves, petioles, stems, or other natural openings of fleshy structures and can be difficult to remove. Do not use if mature when flooded.
 - Root, bulb, and tuber crops such as beets, carrots, radishes, turnips, onions, and potatoes are less susceptible to bacterial contamination. Disinfect these vegetables (see #4 below), and peel and cook them thoroughly before eating.
 - Produce with a protected fruit or impervious outer skin such as peas, melons, eggplant, sweet corn, or winter squash should be washed and disinfected before the outer shell skin or husk is removed. Then shell, peel, or husk the produce and cook before eating.
4. Thoroughly wash and disinfect produce before eating.
- Wash in clean, potable water with a scrub brush. Remove all silt.
 - Immerse produce for 15 to 20 minutes in a weak chlorine solution. Household bleaches

contain from 2 to 6 percent chlorine. Read the label to check the concentration of the bleach. The best concentration to use for food safety is 5.25%. Do not use a brand that also contains detergents or fragrances since these may not be safe for human consumption. The amount of bleach to add to water depends on the percentage of chlorine it contains:

2 percent chlorine: use 3/4 tablespoon per quart

4 percent chlorine: use 1 teaspoon per quart

6 percent chlorine: use 1/2 teaspoon per quart

- Rinse thoroughly with safe drinking water.
- Peel if possible and cook thoroughly before eating.
- Refer any specific questions to health authorities or your county Extension educator.

Sources

Safe Handling of Fruits and Vegetables, Produce Marketing Association.

“Always wash produce, so quality won’t go down the drain.” News Release, Agricultural Information Services, Penn State’s College of Agricultural Sciences.

The Extension Agent’s Handbook for Emergency Preparation and Response. Texas Agricultural Extension Service and Hazard Reduction and Recovery Center.

Alternatives? <http://www.organicclean.com/alternatives.html#about>

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