Freezing Fruits and Vegetables

Janie Burney, PhD, RD Professor and UT Extension Nutrition Specialist
Department of Family and Consumer Sciences

When gardens are abundant, and farmers' markets are stocked with fresh fruits and vegetables, consider freezing to preserve their flavor and nutrition. It is often less expensive than canning and much simpler. Freezing foods and thawing them correctly will ensure that food is safe to eat and will maintain good quality over time.

Food Safety

It is important to remember that frozen food is not free from bacteria that can make you sick. Freezing stops the growth of bacteria in food because it freezes the water needed by bacteria to multiply.

Always rinse fruits and vegetables thoroughly. Rinse under cool, running water to remove soil and as many bacteria as possible before freezing. Use a clean vegetable brush on produce with tough skin.

Thaw frozen food safely. When food begins to thaw, the water becomes available to bacteria again. Food can be thawed safely using one of these methods:

- **In the refrigerator** - During thawing the food should stay below 40 F, a temperature that makes it difficult for most bacteria to grow. This is the best method, especially for produce.
- **In the microwave oven** - Follow your manufacturer's instructions on how long and at what power level to thaw. Once food is thawed, it should be cooked or eaten right away.
- **In the sink** - In a leak-proof container, covered in cold water. Change the water every 30 minutes.

Food Quality

Freezing cannot improve the flavor or texture of food but can preserve most if its quality if done correctly.

Some fruits and vegetables do not freeze well because they have too much water. These include the following: cabbage, celery, cress, cucumbers, endive, lettuce, parsley, radishes, Irish potatoes (baked or boiled). Cucumbers and cabbage can be frozen as marinated products such as freezer slaw or freezer pickles. These do not have the same texture as regular slaw or pickles.

Control the size of ice crystals to preserve quality. To create small ice crystals:

- Freeze your food quickly to prevent formation of large ice crystals. If you plan to freeze a large quantity of food at one time, turn your freezer down to -10 F or lower about 24 hours before freezing.
- Freeze foods as soon as they are packaged and sealed.
- Place foods in the coldest part of the freezer.
- Leave a little space between packages so that cold air can circulate. When frozen, store packages close together.

Use food containers that protect the flavor, color, moisture content and nutritive value. Plastic bags made for freezing work well. Be sure to press out as much air as possible when sealing the bags. Rigid containers such as plastic or glass designed for freezing also work well. It is important that containers are: 1) sealed tightly, 2) moisture-vapor resistant, 3) leakproof, 4) easy to seal and 5) easy to mark with the name of the food and date. Be sure to leave enough headspace between the packed food and closure. Always allow adequate headspace, the space between packed food and the closure, to allow for expansion of food as it freezes. The following are recommendations for headspace for freezing fruits and vegetables.

Headspace

Type of Pack	Container with **wide top** opening		Container with **narrow top** opening	
	Pint	Quart	Pint	Quart
Liquid Pack* Dry Pack**	½ inch ½ inch	1 inch ½ inch	¾ inch*** ½ inch	1½ inches ½ inch

* Fruit packed in juice, sugar, syrup or water, crushed or pureed fruit or fruit juice.

** Fruit or vegetable packed without added sugar or liquid.

***Headspace for juice should be 1½ inches.

Freezing Fruit

Packing Fruit

Fruit can be frozen using a syrup pack, sugar pack, dry pack or unsweetened packs. Most fruits have a better texture and flavor if packed in sugar or syrup, but sugar is not necessary for safety. Below is a chart for preparing syrups for freezing fruits. Chill syrup before using and use just enough syrup to cover the fruit (about 1/4 to 2/3 cup of syrup per pint). Add a small piece of crumpled parchment paper on top of the fruit to keep fruit down into syrup before sealing.

Syrups for Use in Freezing Fruits

Type of Syrup	Percent Syrup*	Cups of Sugar**	Cups of Water	Yield of Syrup in Cups
Very Light	10%	½	4	4½ cups
Light	20%	1	4	4¾ cups
Medium	30%	1¾	4	5 cups
Heavy	40%	2¾	4	5⅓ cups
Very Heavy	50%	4	4	6 cups

* Approximate

**Up to one-fourth of the sugar may be replaced by corn syrup or mild-flavored honey. If a very bland, light-colored syrup is desired, a larger portion of corn syrup may be used.

Sugar can also be sprinkled over the fruit and mixed gently until dissolved with liquid from fruit. Allow to stand about 15 minutes if needed to release juice if needed.

Small whole fruits such as berries can be packed without sugar. Pack the fruit into a container, seal and freeze. You can also use a tray pack, which makes the fruit easier to remove from the container. Spread a single layer of prepared fruit on shallow trays and freeze. Pack lose fruit into containers and seal.

In addition to sugar, fruit can be packed in water, unsweetened juice or pectin syrup. Pectin syrup is good for freezing strawberries and peaches, however regular pectin contains sugar. To make pectin syrup, combine pectin and q cup of water in a saucepan. Heat to boiling and boil 1 minutes. Remove from heat and add additional 1¾ cups water.

Sugar substitutes can be used for unsweetened packs however they do not protect the color and texture like sugar does. Add them prior to freezing or just before serving. Use the directions on the label of sweetener to determine how much to use.

Preventing Discoloration

Peaches, apples, pears and apricots darken when exposed to air when preparing fruit and during freezing. They also can lose flavor. To prevent darkening and flavor loss, try ascorbic acid (vitamin C). One-half teaspoon powdered ascorbic has 1500mg. The amount needed varies with the fruit and how it is prepared but is usually ½ to ¾ teaspoon per quart of syrup or fruit. Commercial ascorbic acid mixtures, citric acid and lemon can be used to prevent darkening as well as steaming fruits that will be cooked before using. However, ascorbic acid is one of the more effective methods for preventing discoloration.

Freezing Vegetables

It is important to blanch most vegetables before freezing. This stops enzyme actions that can cause loss of flavor, color and texture. It also cleanses the surface of vegetables, brightens the color and helps prevent some loss of vitamins. Blanching also makes vegetables easy to pack.

Use a blancher, which has a blanching basket and cover or use a wire basket lowered into a large pot with a lid. Water blanching is a preferred method however steam blanching is another option. To water blanch, use one gallon of water per pound of prepared vegetables. Put vegetables in the basket and gently lower into boiling water. Start counting blanching time as soon as the water begins boiling again. Keep heat high for the recommended time. If water does not boil within 1 minute, you have too many vegetables for the amount of water.

To steam blanch, add an inch or two of water to the pot and place vegetables in the basket in a single layer. Bring water to a boil, cover the pot and keep the temperature on high. Steam blanching takes about 1 ½ times longer than water blanching.

It is important not to over blanch because this leads to loss of flavor, color, vitamins and minerals. Under blanching stimulates the activity of enzymes and is worse than no blanching. Follow the chart on blanching for exact times for individual vegetables.

Vegetable	In Boiling Water (minutes)
Artichoke-Globe (Hearts)	 7
Artichoke-Jerusalem	3-5
Asparagus Small Stalk Medium Stalk Large Stalk	 2 3 4
Beans-Snap, Green, or Wax	3
Beans-Lima, Butter, or Pinto Small Medium Large	 2 3 4
Beets	Cook
Broccoli (flowerets 1½ inches across) Boiled Steamed	 3 5
Brussel Sprouts Small Heads Medium Heads Large Heads	 3 4 3
Cabbage or Chinese Cabbage (shredded)	 1½
Carrots Small Diced, Sliced or Lengthwise Strips	 5
Cauliflower (flowerets, 1 inch across)	 2
Celery	3
Corn Corn-on-the-cob Small Ears Medium Ears Large Ears Whole Kernel or Cream Style (ears blanched before cutting corn from cob)	 3 7 9 11

Vegetable	In Boiling Water (minutes)
Eggplant	4
Greens Collards All Other	 4 3
Kohlrabi Whole Cubes	 2 3
Mushrooms Whole (steamed) Buttons or quarters (steamed) Slices (steamed)	 4 5 3½
Okra Small Pods Large Pods	 3 3
Onions (blanch until center is heated) Rings	 4 3-7
Peas-Edible Pod	10-15 seconds
Peas-Field (blackeye)	1½-3
Peas-Green	2
Peppers-Sweet Halves Strips or Rings	 1½ 3
Potatoes-Irish (New)	2
Pumpkin	3-5
Rutabagas	Cook
Soybeans-Green	3
Squash-Chayote	5
Squash-Summer	2
Squash-Winter	3
Sweet Potatoes	Cook
Turnips or Parsnips Cubes	Cook 2

*Blanching times are for water blanching unless otherwise indicated.

Types of Packs

Vegetables can be frozen in a dry pack or a tray pack. For dry packs, cool and drain vegetables, package them quickly and remove as much air as possible. Allow adequate headspace and seal. For tray packs, spread a single layer on shallow trays or pans. Freeze them long enough to freeze firm, but do not freeze them too long or they will dry. Package them quickly, leaving no headspace and seal.

Source: “So Easy to Preserve”, 6th ed. 2014. Bulletin 989, Cooperative Extension Service, The University of Georgia, Athens.

For more information on freezing specific fruits and vegetables, refer to University of Tennessee Extension Publication 1483, “Freezing Foods.”

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