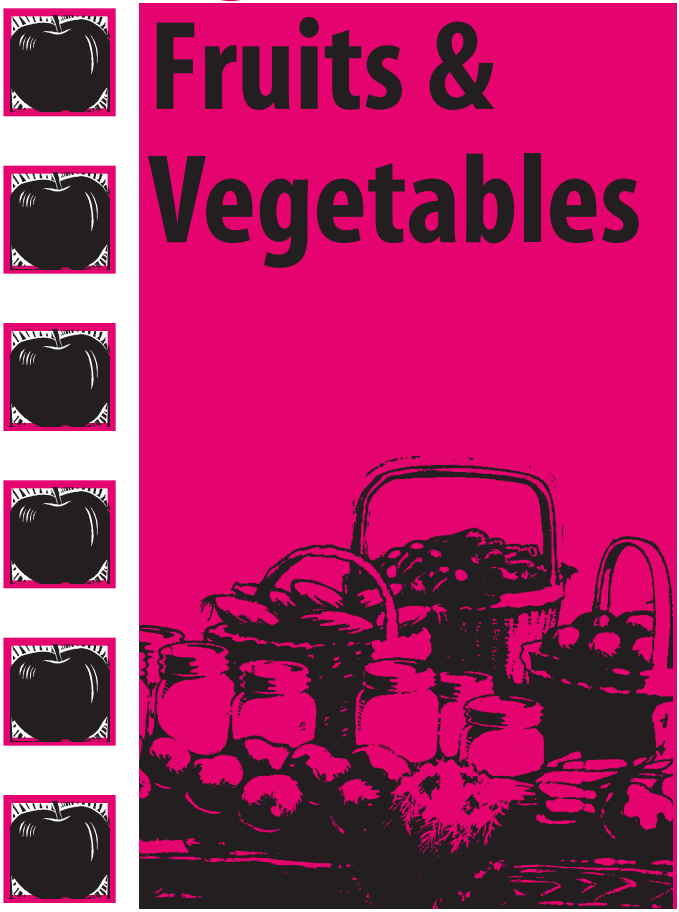
B3278
University of Wisconsin-Extension ▪ Cooperative Extension

Wisconsin Safe Food Preservation Series

Freezing Fruits & Vegetables



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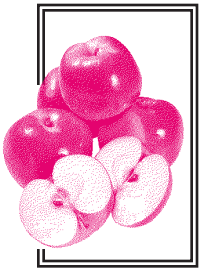


Would you like to enjoy bright, crisp garden green beans all year long? How about ripe juicy raspberries? **Freezing fruits and vegetables** can be an easy way to enjoy the bounty of your garden and orchard all year round. Follow these guidelines for safe preparation and preservation of peak-of-the season fruits and vegetables.

Compared with other preservation methods, freezing saves time and nutrients, and keeps fruits and vegetables fresh-tasting and colorful. The ease of using frozen food in family meals adds to their appeal.

To ensure **high-quality products,** carefully complete each step in the freezing process. All fruits and vegetables contain **enzymes** that can destroy nutrients and change the color, flavor and texture of food during frozen storage.

Natural acids in most fruits, plus antioxidants and sugars, help block enzyme action in fruits. To stop enzyme action, most vegetables need a brief heat treatment — **blanching in boiling water or steam** — before freezing.

Freezing stops the growth of microorganisms such as bacteria, yeast and molds, but does not destroy them. Therefore, cleanliness and **sanitary methods** of handling foods for freezing are important.

Freezing does not improve food quality. So start with high-quality fruits or vegetables harvested at their peak. If you cannot freeze them within a few hours after harvest, store them in the refrigerator to preserve freshness until they can be frozen.

Some vegetables like sweet corn lose flavor rapidly because their natural sugars turn to starch after harvest. Broccoli and green peppers can lose a good deal of vitamin C if allowed to stand at room temperature for several hours before freezing. Berries and other soft fruits can lose flavor or become overripe, so freeze these quickly.

Freeze fruits and vegetables harvested at peak quality. Ideally, you should freeze produce the day it is harvested. Freeze only limited amounts of food at any one time. Usually, 2 to 3 cubic feet of food is all a home freezer can freeze quickly enough for best quality.

Plan ahead to manage your time and maintain food quality in home freezing tasks. Freeze limited amounts at one time. This way, you can spread the work over several days. And your freezer can quickly freeze the foods, ideally within 24 hours.

Quick freezing maintains the best possible quality. For most home freezers, this means freezing no more than 2 to 3 cubic feet of food such as meat, vegetables or fruit at any one time. Slow freezing causes large ice crystals to form in the food, damaging the texture.

Packaging materials

Choose containers designed for freezer storage with tight-fitting lids that keep moisture in and air out. **Freezer burn** — brownish-white spots on food — results from moisture loss, and produces off-flavors or toughness. Exposure to air during frozen storage causes nutrient loss and flavor changes.

Choose packaging designed for frozen storage: rigid plastic freezer boxes, heavy plastic freezer bags, straight-sided or wide-mouth glass jars, and wraps of heavyweight aluminum foil, plastic film or waxed freezer paper.

Rigid freezer containers of plastic, glass or wax-coated paper are convenient for storing tomatoes, juices or purées, or fruits packed in syrup or juice. If you use glass jars, it's easier to remove partially thawed food from **straight-sided** or **wide-mouth jars**.

Plastic boxes stack well and take up less freezer space than round containers. Plastic containers from frozen whipped topping, whipped margarine and dairy products can be used **IF** lids fit tightly and are undamaged, **and** containers are absolutely clean. Milk cartons are **not recommended** because it's too hard to properly clean them.

Plastic freezer bags are convenient for freezing many vegetables and fruits. For best protection, select heavyweight bags specifically designed for frozen storage. Some heat-sealable freezer bags have a multi-layer construction and provide a good moisture-vapor barrier. Seal or fasten bags securely with a twist-tie, freezer tape or heat seal.

Place lightweight plastic freezer bags in a waxed paper carton to improve their effectiveness. Plastic sandwich or general-use food storage bags are **not recommended** for freezing fruits or vegetables.

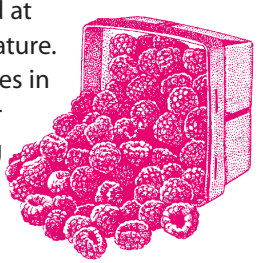
Heavyweight aluminum foil, plastic film or waxed freezer paper can be used for wrapping products like corn on the cob. Seal with freezer tape.

Filling containers and freezing

Pack cold fruit or vegetables tightly into containers to reduce the amount of air in the package. If the food is packed in bags, press air out of the unfilled part of the bag and tie or seal immediately.

Foods packed dry in rigid containers need little headspace. Fruits packed with syrup or juice need at least 1/2-inch space at the top of the container to expand on freezing. For fruits that darken, place a small piece of crumpled plastic wrap between the lid and fruit to keep fruit submerged in syrup or juice.

Label packages clearly with the date and type of pack. Freeze as soon as you pack them. Do not let fruits or vegetables prepared for freezing stand at room temperature. Space packages in the freezer for quick freezing at 0°F or below.



Pack cold fruit or vegetables tightly into containers. Foods packed dry need little headspace, but fruits packed in syrup or juice need at least 1/2-inch space at the top to expand. Clearly label and date each package. Freeze quickly at 0°F or below.

If the power fails

If power is out or the freezer fails to cool properly, open the door only when necessary. If the freezer is well-stocked with food and you keep the door closed, very little will thaw for 15 to 20 hours. Even the top layers will not rise above safe refrigerator temperature — 40°F — for 48 hours. In a freezer less than half full, food may thaw within 24 hours.

Check any food carefully. Food may still be safe to eat if it contains ice crystals. Refreeze or discard thawed food (see the refreezing section on page 4).

If your freezer will be out for more than 1 or 2 days — and if you store high-value foods there — consider putting dry ice in your freezer to keep the temperature below freezing, and to keep frozen food from spoiling.

In a 10-cubic-foot food cabinet less than half full, 25 pounds of dry ice should hold the temperature below freezing for 2 to 3 days. Dry ice will keep the temperature of a loaded freezer cabinet below freezing for 3 to 4 days.

Handle dry ice carefully. Do not touch dry ice with bare hands, or let it rest directly on food or appliance surfaces. Place dry ice on boards or heavy cardboard on top of packages in the freezer.

Open the freezer only when necessary. Once the dry ice has evaporated, food will slowly begin to thaw. But until the freezer temperature rises above 40°F, the food will be safe to eat.

If you cannot get dry ice, contact a locker plant and move food there in insulated boxes.

If the power fails, food in a well-stocked freezer should remain safe — below 40°F — for 48 hours. In a freezer less than half full, food may thaw within 24 hours. Check any food carefully. Food may still be safe to eat if it contains ice crystals.

Refreezing

Occasionally, frozen foods are partially or completely thawed before you discover the freezer is not operating. The critical factors that determine whether you can refreeze thawed food are:

- how long the food is thawed, and
- how high the temperature becomes.

You may safely refreeze fruits or vegetables IF:

- They still contain ice crystals.
- They are cold — 40°F or below.
- They have been held no longer than 1 or 2 days at refrigerator temperature (40°F) after the freezer went off.

Partial thawing and refreezing reduces vegetable quality even if they are still safe to eat. Fruits ferment quickly at 40°F or above. If their temperature has not risen above 40°F, fruits can be refrozen — but they are likely to change color and flavor.

Thawed fruits in acceptable condition can be made into jams, jellies or preserves. If their condition is poor or questionable in any sense, dispose of them.

Partially or completely thawed fruits and vegetables may be safely refrozen *IF* they still contain ice crystals or are still cold (40°F) *and* they have been held no longer than 2 days at 40°F since the freezer went off.

Removing freezer odor

Sometimes food spoils in a freezer that is not working. Spoiled food may leave a persistent odor in the freezer.

To remove odor from your freezer, use **one** of the following cleaning solutions:

- **Vinegar** — 1 cup per gallon of warm water
- **Household ammonia** — 1 cup per gallon of warm water
- **Chlorine bleach** — 1/2 cup per gallon of warm water

Caution: Do not combine cleaning solutions, as toxic fumes may result.

Wash the inside of the freezer with the solution. Rinse with clear water, and dry.

A more thorough way to remove odor is to clean the freezer and use one of the following to absorb moisture that contains the odor:

- **Activated charcoal**
- **Silica gel**
- **Kitty litter**
- **Chloride of lime** (slack lime)

These products may be available at pet shops, hobby shops, farm supply or hardware stores.

Follow these steps to remove persistent odor:

- Unplug the freezer.
- Wash the inside of the freezer with a solution of 2 tablespoons baking soda per gallon of warm water.
- Place charcoal, silica gel, kitty litter or chloride of lime on paper plates in the freezer.
- You will need heat and forced air circulation, such as that provided by a heater fan or hair dryer. Place the heater fan or hair dryer in the freezer; be certain it does not come into contact with water.
- Leave the freezer door open. Turn on the fan and heater or hair dryer.

To remove odor, wash your freezer out with a solution of vinegar, ammonia *or* bleach in warm water. If that doesn't work, try a solution of baking soda, then add heat, forced air and a product that absorbs moisture. If that still doesn't get rid of the odor, contact the manufacturer.

Caution: **Do not combine cleaning solutions, as toxic fumes may result. Be sure the freezer is unplugged and dry when circulating hot air with a heater fan or hair dryer. Do not leave a heater or hair dryer unattended — this can be a fire hazard.**

Caution: Be sure the freezer is unplugged and dry when the fan and heater or hair dryer is in use. Do not leave a heater or hair dryer unattended — this can be a fire hazard.

If the odor still remains after trying one or more of these methods, write to the manufacturer. The address should be on the appliance name plate or in the instruction book.

Freezing fruits

Most fruits can be frozen satisfactorily, but their quality will vary with stage of maturity and type of pack. A few fruits freeze well **without sweetening** — blueberries, cranberries, currants, elderberries, gooseberries, rhubarb. But most will have better color, texture and flavor if frozen with some sugar.

Fruits packed in syrup are usually best for dessert; those packed in dry sugar or unsweetened are best for cooking. For making jelly or jam later, freeze fruits without sugar so you can measure amounts accurately when making preserves.

Wash all fruits in running water. Handle delicate berries and fruits in small quantities. Lift washed fruits out of the water and drain immediately.

For a list of recommended fruits to plant, request *Home Fruit Cultivars for Northern Wisconsin* (A2488) or *Home Fruit Cultivars for Southern Wisconsin* (A2582). These are available from your county UW-Extension office or Cooperative Extension Publications at learningstore.uwex.edu.

Antioxidants

Many fruits will darken rapidly after peeling exposes them to oxygen. This is called **oxidation**. Here are three ways to prevent this color change using **antioxidants**:

Ascorbic acid — vitamin C — is effective in preventing oxidation of most fruits. Ascorbic acid is most readily available in tablets. Pharmacies, groceries and health food stores all sell vitamin C tablets of various strengths measured in milligrams (mg). Fillers in these tablets may make syrup cloudy, but they are not harmful.

To use vitamin C tablets, first crush or grind to a fine powder. **To pack unsweetened or with dry sugar,** use three 500 mg tablets (1500 mg total) per quart of water as a dip to hold sliced apples, apricots, peaches, pears or similar fruits while you get them ready. Dip for 1 minute, then drain and pack.

Ascorbic acid may also be crushed and added to:

- **syrup for syrup packs** — 1500 mg per quart of cold syrup.
- **fruit purées and juices** — 500 mg per quart.

Ascorbic acid mixtures can be purchased at grocery and cooking stores. These are often a mixture of ascorbic acid and citric acid, or ascorbic acid and sugar. Follow the manufacturer's directions.

Lemon juice or citric acid can help prevent some fruits from darkening — but not as effectively as ascorbic acid. Use 3 tablespoons bottled lemon juice per quart of water as a dip. Place the prepared fruit in the dip for 1 or 2 minutes, then drain and pack.

Dry pack or loose pack — Unsweetened

If you choose to do so, you can freeze almost any fruit without sugar. However, the frozen product may lose color and flavor during storage. Treat fruits that darken with an antioxidant before packing (see antioxidants, above).

For a dry pack, pack fruits firmly or crush them slightly to create their own juice. No sugar or syrup is added.

Some fruits such as apples, apricots, peaches and pears darken quickly when exposed to air and during freezing. You can prevent darkening by dipping in a solution of vitamin C (1500 mg per quart of water), by sprinkling with a commercial ascorbic acid mixture, or by dipping in a solution of bottled lemon juice (3 tablespoons per quart of water).

For a loose pack, spread small whole fruits such as blueberries, raspberries and sweet cherries in a single layer on shallow trays, and freeze. Then remove them from the trays and package in freezer containers. Label with the type of pack and date, and quickly return to the freezer.

Dry sugar pack

You can use a dry sugar pack for many juicy fruits left whole, sliced or crushed. Using a dry sugar pack instead of syrup gives you flexibility on how much sugar to use, and does not dilute flavor with water.

For a dry sugar pack, slice or crush about 1 quart of fruit into a bowl or shallow pan. If the fruit is one that darkens readily — such as apples, apricots, peaches or pears — dip the fruit in one of the antioxidant solutions, or sprinkle with dissolved ascorbic acid or other antioxidant (see antioxidants, on page 7).

Sprinkle sugar over the fruit and mix very gently. Add sugar to suit your taste. Sugar will draw juice out of the fruit to form a syrup, even though you do not add water.

Syrup pack

Thin syrup — 30 percent sugar — will work well and will not mask the taste of mild-flavored fruits.

Medium syrup — 40 percent sugar — is recommended for whole fruits and those that tend to darken.

Heavy syrup — 50 percent sugar — may be needed for very sour fruits.

To prepare syrup, dissolve sugar in cold or hot water. If you use hot water, chill the syrup before using. Replacing one-fourth of the sugar cup for cup with light-colored corn syrup or honey may improve the texture, flavor and color of fruits.

Each pint container of fruit takes 1/2 to 2/3 cup syrup. Leave 1-inch headspace to allow syrup to expand on freezing.

Most fruits can be frozen satisfactorily, with or without sugar. Fruits packed in syrup are usually best for dessert; those packed dry or unsweetened are best for cooking.

Syrups for freezing fruits

Type of syrup	Percent sugar	Amount of water	Amount of sugar	Yield of syrup	Calories per cup
Thin	30%	4 cups	2 cups	5 cups	308
Medium	40%	4 cups	3 cups	5 1/2 cups	420
Heavy	50%	4 cups	4 3/4 cups	6 1/2 cups	563

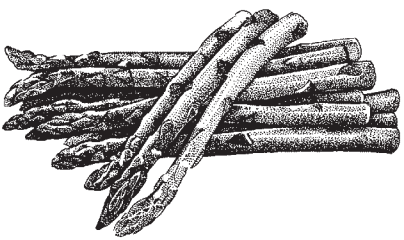
Freezing vegetables

Freshly picked, tender vegetables are best for freezing. Freeze them immediately after harvesting, or store in the refrigerator to preserve freshness until they can be prepared and frozen.

Frozen vegetables not only taste and look good, they are very nutritious as well. Freezing preserves their nutrients at a level as near to that of fresh vegetables as any preservation process can attain.

However, some vitamins are lost due to trimming, drying, exposure to air, and blanching. You can keep such losses to a minimum by following the procedures in this publication, and by working quickly with fresh vegetables.

Not all vegetables freeze well. Those that **do not** include green onions (scallions), lettuce and other salad greens, radishes and tomatoes (except for cooking or as juice or purée). Uncooked potatoes often develop an uncharacteristic sweet flavor when frozen.



Vegetables frozen at home freeze much slower than those frozen in a commercial processing plant. Because of this, some vegetables that are acceptable when frozen commercially may not be when frozen at home. Vegetables such as carrots, cauliflower and zucchini may have a softer, more rubbery texture when frozen at home.

Blanching

Blanching is briefly heating the vegetable in boiling water or steam. This is a very important step in freezing vegetables because it stops or slows enzyme action. While enzymes are essential for plant growth, their action must be stopped before freezing to prevent off-flavors, discoloration, toughness, and destruction of nutrients in the vegetable.

Helpful information can be found in *Storing Fruits and Vegetables from the Home Garden* (A3823) and *Harvesting Vegetables from the Home Garden* (A2727). These are available from your county UW-Extension office or Cooperative Extension Publications at learningstore.uwex.edu.

Blanching times vary with the kind of vegetable and size of pieces. The times recommended are just long enough to stop the action of heat-resistant enzymes. In under-blanched vegetables, enzyme action continues. Over-blanched vegetables appear cooked, and will look and taste over-cooked when served.

Blanching in boiling water is the most convenient method, particularly if you are processing a lot of vegetables. Use a blancher that has a cover and perforated basket, or fit a wire basket into a large kettle with a cover.

To properly blanch vegetables, the water used for blanching should continue to boil even after the vegetables are added. Blanch only a small amount of vegetables at a time. Use at least 1 gallon of water for each pound of vegetables.

Most vegetables require blanching before freezing. *Blanching* is briefly heating the vegetables in boiling water or steam. Blanch only a small amount of vegetables at a time. To prevent overcooking, chill immediately after blanching by plunging vegetables into a bowl of ice water. Drain and freeze.

Put the vegetables into the basket and immerse them in actively boiling water. Cover, and start counting the blanching time immediately — this assumes that the water continues to boil after the food is added. If not, start timing once the water returns to a boil. Keep the heat high enough to continue boiling for the time specified in the Vegetable Freezing Guide (pages 16–22).

Steam blanching is another method. Put 1 to 2 inches of water in a kettle and bring to a rolling boil. Suspend a thin layer of vegetables in a wire basket or cheesecloth over rapidly boiling water. Cover, keep the heat high, and steam for the time specified in the Vegetable Freezing Guide.

A microwave oven can blanch vegetables for freezing. But microwave-blanched vegetables do not look or taste as good as either water- or steam-blanched vegetables. Using the microwave does not save much time, since blanching times are longer for most vegetables, and only small amounts of food can be blanched at any one time.

Follow the manufacturer's recommendations for blanching vegetables in a microwave.

Chilling

After vegetables are blanched, cool them quickly to prevent overcooking. Plunge the basket of vegetables immediately into a large quantity of cold or ice water. When vegetables are cold, drain thoroughly before packing.

A good rule of thumb: Cool for the same amount of time as blanched. For instance, if you blanch carrot slices for 2 minutes, then cool for 2 minutes; if you blanch green beans for 3 minutes, then cool for 3 minutes.

Solid or loose pack

Vegetables can be packed solid or loose.

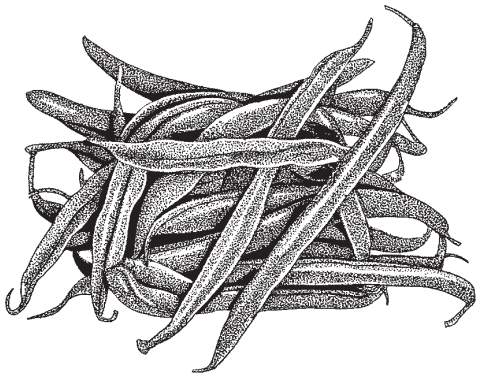
For a solid pack, put well-drained vegetables into freezer containers or bags. Pack tightly to cut down on the amount of air in the container or bag. Seal, label and date, and freeze.

For a loose pack, spread drained vegetables in a single layer on trays and freeze solid. As soon as they are frozen, pour into rigid freezer containers or bags. Seal, label and date, and return to the freezer. A loose pack will enable you to pour out just as much as you want from a large package.

Cooking frozen vegetables

Most vegetables should be kept frozen until cooked. Corn on the cob is an exception — partially thaw so the cob is heated through by the time the corn is cooked.

Cook frozen vegetables in a small amount of boiling water only until they are tender. The microwave oven does an excellent job of cooking frozen vegetables. Follow the manufacturer's recommendations for times and power levels.

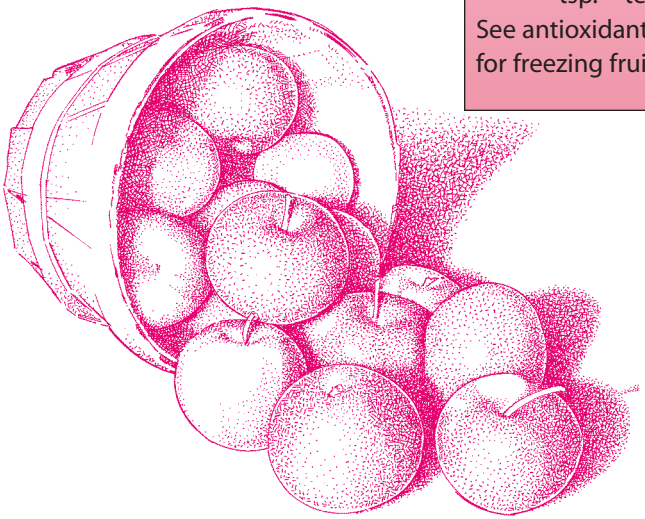


Yield of frozen fruit from fresh

For 1 pint frozen	Pounds of fresh
Apples	1 1/4 to 1 1/3 lb.
Apricots	11 to 13 oz.
Berries, firm	3/4 to 1 lb.
Cherries	1 1/4 to 1 1/2 lb.
Cranberries	1/2 lb.
Peaches, nectarines	1 to 1 1/2 lb.
Pears	1 to 1 1/4 lb.
Plums, prunes	1 to 1 1/2 lb.
Raspberries	1 lb.
Rhubarb	1 lb.
Strawberries	14 to 16 oz.

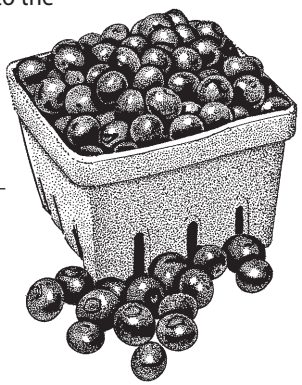
Note: lb. = pound
mg. = milligram
oz. = ounce
tbsp. = tablespoon
tsp. = teaspoon

See antioxidants on page 7, syrups for freezing fruits on page 8.



FRUIT FREEZING GUIDE

Fruit	Preparation and pack
Apples, firm, crisp variety, not mealy	Wash, peel, quarter and core. Slice as desired. Dip in antioxidant; drain well. Pack dry, with or without sugar. If using syrup pack, add antioxidant to syrup, and leave 1-inch headspace.
Applesauce	Prepare with or without sugar. Chill and pack in rigid containers, leaving 1-inch headspace.
Apricots	Wash. If you intend to peel, dip fruit in boiling water for 1 minute until skins peel easily. May be frozen unpeeled. Cut in half and remove pits. Dip in antioxidant. For fruit to be served uncooked, pack in thin syrup with antioxidant added, leaving 1-inch headspace. For cooked products, use dry sugar pack. For crushed or puréed, add antioxidant and sugar.
Berries, soft — blackberries boysenberries raspberries strawberries	Sort berries and wash gently. Drain well. For an unsweetened loose pack, place on trays in a single layer, freeze for 1 to 2 hours, then pack in freezer bags and return to the freezer. For sugar pack, sprinkle sugar on berries and gently mix until sugar is dissolved. Slice strawberries or crush other berries and mix with sugar. Pack in freezer containers. Syrup pack may be used; leave 1-inch headspace.
Berries, firm — blueberries cranberries currants elderberries gooseberries huckleberries	Wash and sort berries. Drain. These berries all freeze well without sweetening. Drain and package, or place on trays in a single layer, freeze for 1 or 2 hours, then package and return to the freezer. Berries to be served uncooked can be packed in syrup; leave 1-inch headspace. Berries can be crushed and packed with sugar. Antioxidant is not necessary.

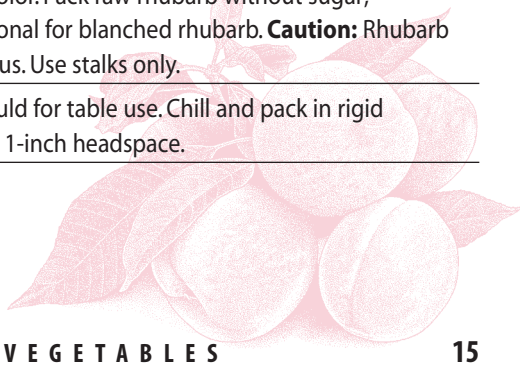


FRUIT FREEZING GUIDE

Fruit	Preparation and pack
Cherries, sour or sweet	Stem, sort and wash. Drain and pit. Sweet cherries lose color quickly, so add antioxidant to sugar or syrup pack. A sugar pack is recommended for all cherries to help maintain flavor and color. Pack crushed or puréed cherries with sugar and antioxidant. Syrup pack with antioxidant may be used; leave 1-inch headspace.
Citrus	Select firm, tree-ripened fruit heavy for its size and free from soft spots. Wash and peel. Divide fruit into sections, removing all membranes and seeds. Slice oranges if desired. For grapefruit with many seeds, cut fruit in half and remove seeds; cut or scoop out sections. **Syrup pack**—Pack fruit into containers. Cover with cold 40 percent syrup made with excess fruit juice or water. Leave 1-inch headspace. Seal and freeze. **Juice**—Select fruit as directed for sections. Squeeze juice from fruit, using squeezer that does not press oil from rind. Sweeten with 2 tablespoons sugar for each quart of juice or pack without sugar. Pour juice into containers immediately. To avoid development of off-flavors, pack juice in glass jars. Leave 1-inch headspace. Seal and freeze.
Fruit, mixed	Peaches, melon balls, orange or grapefruit sections, whole seedless grapes, sweet cherries and pineapple wedges can be mixed together and frozen in a thin or medium syrup. Unsweetened or dry sugar packs are **not recommended**. Prepare each fruit as directed in this guide, mix, pack in freezer containers and add syrup; leave 1-inch headspace.
Grapes	Wash, sort, and leave whole or cut in halves. Remove seeds from seeded varieties. For loose pack, freeze in a single layer on trays for 1 to 2 hours, then package and return to the freezer. For best quality, freeze in thin or medium syrup, leaving 1-inch headspace. Freeze grapes for juice or jelly without sweetening.
Juices	Prepare juice from fruit by squeezing (citrus) or by heating crushed fruit, straining or allowing to drip through a jelly bag. Add antioxidant to juices of fruits that darken easily. Sweetening is optional. Package in rigid containers, leaving 1-inch headspace.

FRUIT FREEZING GUIDE

Fruit	Preparation and pack
Melons	Select firm-fleshed ripe melons. Wash, cut in half, remove seeds and peel. Cut into uniform cubes or scoop into balls. Pack into containers and cover with thin syrup, leaving 1-inch headspace. Serve while still partially frozen for best texture. **Note:** Melons tend to develop a rubbery texture when frozen and fully thawed.
Peaches, nectarines	Wash. Blanch for 1 to 2 minutes to loosen skins. Cool in cold water and rub off skins. Cut in half or slice and remove pits. To prevent darkening, drop immediately into antioxidant dip or syrup that contains antioxidant. For dry sugar pack, drain and sprinkle with sugar, pack into freezer containers. May be packed without sugar, but quality may not be as good as in a sweetened pack.
Pears	Peel, cut in halves or quarters and remove cores. Heat for 1 to 2 minutes in boiling thin or medium syrup that contains antioxidant. Remove from syrup and cool. Pack and cover with cold syrup, leaving 1-inch headspace. **Note:** Some varieties do not freeze well, and develop a gritty texture.
Plums, prunes	Wash. Leave whole or cut in halves or quarters and remove pits. For unsweetened, pack whole fruit into freezer containers. Before serving, dip frozen fruit in cold water for 5 to 10 seconds, remove skins and cover with syrup to thaw. For cut fruit, use a syrup pack with antioxidant: thin or medium syrup for sweet varieties, heavy syrup for tart. Pack in freezer containers, leaving 1-inch containers, leaving 1-inch headspace. Dry sugar pack is less satisfactory for plums.
Rhubarb	Wash, trim, and cut stalks into 1- or 2-inch lengths. Pack raw, or heat in boiling water for 1 minute and chill in ice water to retain better flavor and color. Pack raw rhubarb without sugar; sweetening is optional for blanched rhubarb. **Caution:** Rhubarb leaves are poisonous. Use stalks only.
Rhubarb sauce	Prepare as you would for table use. Chill and pack in rigid containers, leaving 1-inch headspace.



VEGETABLE FREEZING GUIDE

Vegetable	Preparation	Blanching time*
Asparagus	Cut or break off tough ends. Wash thoroughly. Sort by stalk thickness. Leave whole or cut into 1- to 2-inch lengths. Blanch.	Small: 1 1/2 to 2 Medium: 2 to 3 Large: 3 to 4
Beans, green, wax or Italian	Select young tender beans. Sort and snip ends. Wash. Leave whole, cut into uniform lengths or slice lengthwise into strips for French style. Cut Italian beans into 1 1/2-inch lengths. Blanch.	3
Beans, lima	Select well-filled pods with beans ready for table use. Shell; discard immature, old or split beans. Sort beans by size. Blanch.	Medium: 2 Large: 3 to 4
Beets	Remove tops, leaving 1/2-inch stem. Wash. Cook until tender. Cool, peel, slice or cube.	Cooking time: Small: 25 to 30 Medium: 45 to 50
Beet greens	See directions for spinach or other greens on page 21.	2
Broccoli	Wash. To drive out insects, soak heads 1/2 hour in salt brine — 1/4 cup salt per gallon of water. Rinse, drain. To blanch uniformly, split stalks lengthwise, leaving heads about 1 to 1 1/2 inches in diameter. Blanch.	In water: 3 In steam: 5
Brussels sprouts	Discard discolored heads. Remove coarse outer leaves. Wash. To drive out insects, soak sprouts 1/2 hour in salt brine — 1/4 cup salt per gallon of water. Rinse, drain. Sort by size. Blanch.	Small: 3 Medium: 4 Large: 5
Cabbage	Remove tough outer leaves. Wash. Cut into medium to coarse shreds or thin wedges, or separate head into leaves. Blanch. **Note:** Use frozen cabbage or Chinese cabbage only as a cooked vegetable.	In water: 1 to 1 1/2 In steam: 2 to 3

** Minutes in boiling water unless noted*

VEGETABLE FREEZING GUIDE

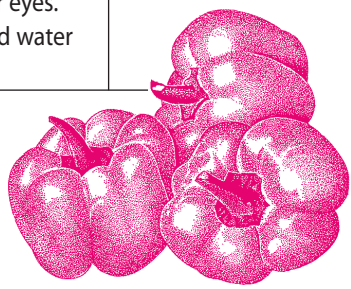
Vegetable	Preparation	Blanching time*
Carrots	Select tender, smaller carrots. Remove tops, wash and scrape. Slice lengthwise or crosswise, or dice. Small carrots may be left whole. Blanch.	Small whole: 5 Strips, sliced or diced: 2
Cauliflower	Break heads into small flowerets about 1 inch in diameter. To drive out insects, soak pieces 1/2 hour in salt brine — 1/4 cup salt per gallon of water. Rinse, drain. Blanch in salted water, or add 1 teaspoon ascorbic-citric acid mixture per gallon of water to prevent darkening.	Depending on size of flowerets: 2 to 3
Celery	Trim. Discard tough and blemished stalks. Wash. Dice or cut into 1-inch lengths. Blanch. **Note:** Use only in cooked foods.	1 to 2
Corn — cream-style	Husk, remove silks, trim ends. Blanch, chill. Cut corn at center of kernel. Scrape cobs to remove juice.	Cobs: 4
Corn — on the cob	Husk, remove silks, trim ends. Blanch, chill thoroughly or kernels may become mushy. Pat ears dry. Package whole ears individually, then into a second package. If steam forms in wrap, ears have not completely chilled.	Cobs: 6 to 8
Corn — whole kernel	Husk, remove silks, trim ends. Blanch, chill thoroughly or kernels may become mushy. Cut kernels from cob about 2/3 depth of kernel. Do not delay after harvest. Work with a small amount of freshly picked corn at a time, as corn loses quality quickly once harvested.	Cobs: 4
Cucumbers	Not recommended for freezing.	—
Edamame (Soybeans, green)	Select well-developed pods with green soybeans. Wash, blanch in pod 5 minutes and chill. Squeeze beans out of pods, sort and freeze.	Pods: 5

VEGETABLE FREEZING GUIDE

Vegetable	Preparation	Blanching time*
Eggplant	Peel and cut into slices 1/3-inch thick. To preserve natural color, soak 5 minutes in a solution of 1/4 cup salt per gallon of water or 1/2 teaspoon ascorbic acid in 1 quart water. Blanch, chill and drain. Package in layers with each slice separated with two pieces of plastic or freezer wrap.	In steam: 2
Herbs — basil, chives, dill, marjoram, mint, parsley, rosemary, sage & tarragon	Wash, drain, let dry in air, snip or chop. Use in cooked dishes, because herbs become limp when thawed. Excellent flavor.	No heat treatment necessary
Kohlrabi	Cut off tops and roots of small to medium kohlrabi. Wash, peel. Leave whole, slice 1/4 inch thick, or dice in 1/2-inch cubes. Blanch.	Whole: 3 Sliced or diced: 1
Mushrooms, domestic	Wash, trim, sort according to size. Leave whole or slice. Soak 5 minutes in a solution of 1 teaspoon bottled lemon juice and 1 pint water; drain. Blanch in steam **OR** sauté 2 cups of mushrooms in 1 tablespoon butter or shortening in an uncovered frying pan for 3 minutes. Air-cool and package. **Note:** Wild mushrooms freeze well if first sautéed in butter. Freeze in the sauté liquid.	In steam: Quarters: 3 1/2 Whole (1 inch): 5 Sauté: 3
Onions	Peel, wash, chop or slice. Wrap in aluminum foil or other wrap in amounts you use most — 1/4 or 1/2 cup. Place these small packages in another container. After 3 to 6 months at 0°F, onions tend to lose their flavor.	No heat treatment necessary

Vegetable	Preparation	Blanching time*
Peas, edible pods such as Chinese, snow, sugar	Wash. Remove stems, blossom ends and any strings. Leave whole. Blanch. **Note:** Pods are more tender than those of other peas. Pick quite young, just as peas begin to form.	1 to 1 1/2
Peas, edible thick-walled pods such as Sugar Snap	Wash. Remove stems, blossom ends. If desired, remove strings by pinching the tip and stripping down either side to the stem and up the other side. Blanch. **Note:** Pick when pods are filled with peas.	2
Peas, green	Wash pods, shell. To sort for maturity, place shelled peas in a salt brine — 1 1/2 cups salt per gallon of water. Peas that float will be the most tender; those that sink are more mature. Rinse after sorting, drain. Blanch.	1 1/2
Peppers, green, red, pimiento	Wash thoroughly, drain. Cut out stem ends and remove seeds of green or red peppers. Cut in half, slice or dice. To peel pimiento peppers, roast in a 400°F oven until peel is charred, about 3 to 4 minutes. Rinse pimientos in cold water to remove charred skins. A sharp knife or vegetable peeler will help.	No heat treatment necessary
Peppers, hot	Wash, drain. Freeze on trays for 1 to 2 hours, then pack into freezer containers and return to freezer. **Caution:** The volatile oils in hot peppers can cause burns. Wear rubber gloves when you cut or chop these peppers. Do not touch your face, particularly near your eyes. Wash hands thoroughly with soap and water if you do handle hot peppers.	No heat treatment necessary

** Minutes in boiling water unless noted*



VEGETABLE FREEZING GUIDE

Vegetable	Preparation	Blanching time*
Potatoes	Wash, peel and remove deep eyes, bruises and green surface coloring. Cut potatoes into 1/3- to 1/2-inch cubes. Blanch.	3 to 5
Potatoes — French fries	Wash, peel and cut into thin 3/8-inch strips. Rinse in cold water to remove surface starch, and dry thoroughly with towel. Prepare just enough potatoes to cover bottom of fryer basket. Partially fry in deep hot fat (360°F) until very light golden brown, about 4 minutes. Drain well and chill thoroughly in refrigerator before packaging in freezer containers.	Fry: 4
Potatoes — hash browns	Wash, peel and remove deep eyes and bruises. Cook until nearly done. Grate and form into desired shape. Freeze on trays, then package and return to the freezer.	No additional heating necessary
Potatoes — mashed	Wash, peel. Cook, and mash as for table. Form mounds or patties. Freeze on trays, package and return to the freezer. Separate layers with two pieces of plastic or freezer wrap.	No additional heating necessary
Rutabaga	Wash, remove tops. Peel and slice or dice into 1/4-inch cubes. Blanch. After blanching, mash or press through a sieve or ricer. **Note:** Pick young and tender for freezing.	2
Sauerkraut	Freshly cured sauerkraut can be frozen by packing in rigid freezer containers, leaving 1-inch headspace, or in freezer bags that can be heat sealed. **Note:** See *Make Your Own Sauerkraut* (B2087), available from your county UW-Extension office or the address on the back page.	No heat treatment necessary

** Minutes in boiling water unless noted*

Vegetable	Preparation	Blanching time*
Spinach or beet greens, chard, collards, kale, mustard & turnip greens	Cut off large, tough stems. Discard all damaged leaves. Wash thoroughly several times. Blanch 1 pound greens in 2 gallons water.	Tender spinach leaves: 1 1/2 to 2 Collards: 3 Other greens: 2
Squash, summer	Wash and cut into 1/2-inch slices. Blanch, cool, drain and package, leaving 1/2-inch headspace. Steam blanch grated zucchini in small quantities 1 to 2 minutes until translucent. Pack in measured amounts into containers, leaving 1/2-inch headspace. Cool by placing the entire container in cold water. Freeze. If watery when thawed, discard the liquid before using. **Note:** Use only for baking and casseroles.	3
Squash, winter or pumpkin	Wash squash or pumpkin. Cut into uniform pieces and remove seeds. Place cut side down on baking sheet and bake at 350° to 400°F until tender. Cool. Scoop out pulp. Mash or put through a ricer. Thoroughly chill before packing in rigid containers. Leave 1-inch headspace.	No additional heating necessary
Sweet potatoes	Choose medium to large sweet potatoes that have been cured for at least one week. Sort according to size and wash. Cook until almost tender in water, in steam, in a pressure cooker or in the oven. Let stand at room temperature until cool. Peel, cut in halves, slice or mash. If desired, to prevent darkening, dip whole sweet potatoes or slices for 5 seconds in a solution of 1/2 cup lemon juice to 1 quart water. To keep mashed sweet potatoes from darkening, mix 2 tbsp. orange or lemon juice with each quart of mashed sweet potatoes. Pack into containers, leaving 1/2-inch headspace. Seal and freeze.	

Vegetable	Preparation	Blanching time*
Tomatoes, green	Select firm, sound green tomatoes. Wash, core, and slice 1/4-inch thick. For frying—Pack the slices into containers with freezer wrap between the slices. Leave 1/2-inch headspace. Seal and freeze.	
Tomato juice	Wash, core and cut into quarters. Rapidly heat to a boil and simmer 5 to 10 minutes. Press through a sieve. Season, if desired. Pour into containers, leaving 1-inch headspace. **Note**: For a complete guide to canning tomatoes, see *Tomatoes Tart & Tasty* (B2605) available from your county UW-Extension office or http://learningstore.uwex.edu.	No additional heating necessary
Tomato purée	Use 3 large or 4 medium tomatoes. Wash, peel, core and place in electric blender. Add 1/2 onion, 1 green pepper (seeded), 1 tsp. salt or 1 tbsp. sugar; blend. Use within 2 months.	No heat treatment necessary
Tomatoes, crushed	Wash. Blanch 1 minute to loosen skins, peel and core. Simmer 10 to 20 minutes until tender. Cool and pack in rigid containers, leaving 1/2 -inch headspace.	To loosen skins: 1
Tomatoes, raw	Whole tomatoes can be wrapped and frozen if you plan to use them within 3 months. Wash. Blanch 1 minute to loosen skins, peel and core. Freeze whole or in pieces. Use only for cooking or seasoning.	To loosen skins: 1
Turnips, parsnips	Remove tops, wash, peel, slice or dice in 1/2-inch cubes. Blanch.	2
Vegetables, mixed	Blanch each individual vegetable separately as directed above. Freeze on trays. Combine frozen loose pack vegetables such as lima beans, peas, carrots, sweet corn kernels, broccoli cuts and cauliflower.	See time for each vegetable.

** Minutes in boiling water unless noted*

Wisconsin Safe Food Preservation Series publications

Canning Fruits Safely (B0430)

*Canning Meat, Wild Game, Poultry and Fish Safely (*B3345)—Includes directions for freezing fish

Canning Salsa Safely (B3570)

Canning Vegetables Safely (B1159)

Freezing Fruits & Vegetables (B3278)

Homemade Pickles & Relishes (B2267)

Making Jams, Jellies and Fruit Preserves (B2909)

Tomatoes Tart & Tasty (B2605)

Using and Caring for a Pressure Canner (B2593)

Wisconsin's Wild Game: Enjoying the Harvest (B3573)

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National Center for Home Food Preservation — You can find more research-tested recipes and methods: www.uga.edu/nchfp/publications/nchfp/factsheets.html

Web sites: If you do not have a computer, most libraries have one you can use.

To start with the right ingredients, see also:

Apple Cultivars for Wisconsin (A2105)

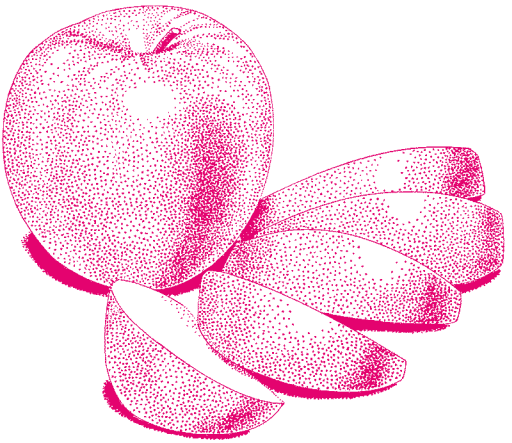
Harvesting Vegetables from the Home Garden (A2727)

Home Fruit Cultivars for Northern Wisconsin (A2488)

Home Fruit Cultivars for Southern Wisconsin (A2582)

Storing Fruits and Vegetables from the Home Garden (A3823)

These are available from your county UW-Extension office or or order from Cooperative Extension Publishing http://learningstore.uwex.edu.



NOTES

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