

Freezing Vegetables

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Freezing is a convenient method for preserving foods at home. Frozen foods will maintain most of their nutritional value and fresh flavor if frozen properly.



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Safety is the top priority

The United States Department of Agriculture (USDA) food preservation guidelines used in the MontGuide are based on extensive research to prevent potential foodborne illnesses caused by bacteria and molds which can grow in improperly home-preserved foods. The guidelines presented here will also help prevent food spoilage in your home-preserved food caused by other bacteria, molds and yeast. Reduced spoilage is important to assure effective use of time, energy and resources.

This MontGuide is best suited for intermediate and advanced food preservers. A listing of resources for beginning food preservers is found on page 4.

Advantages of Freezing Vegetables

Freezing is a convenient method for preserving foods at home. Frozen foods will maintain most of their nutritional value and fresh flavor if frozen properly. Freezing acts to preserve food by almost completely stopping growth of bacteria and other microorganisms that cause foodborne illness or spoilage, at least while the food is completely frozen.

Freezing causes texture changes when the water inside the vegetables expands and ruptures the cells. This results in soft vegetables after defrosting.

Selecting and Preparing Vegetables

Use vegetables at peak flavor, maturity and texture and if possible, freeze vegetables within two hours of harvest. Wash vegetables in cold water, using small quantities of vegetables. Do not let vegetables soak.

Selecting Containers

Select freezing containers that meet the following characteristics:

- Moisture/vapor resistant (waterproof)
- Should not become brittle or crack at low temperatures
- Straight or flared sides to easily remove food before thawing
- Square or rectangular flat-sided containers use space economically

Examples include: freezer bags, plastic freezer containers, freezing/canning jars, or freezer wrapping. If using glass jars, choose wide-mouth jars tempered to withstand temperature extremes. If narrow mouth canning jars are used, leave extra

head space. Freezer-strength (or freezer specific) plastic bags and wrappings (moisture/vapor resistant) work well for dry packed vegetables.

Do not use: paper cartons, glass jars (other than canning or freezing jars), non-waterproof plastic bags, or any container with a capacity over one-half gallon.

Blanching Vegetables

Blanching time (scalding vegetables for a short period of time) is very important and varies among vegetables. Follow the correct blanching time according to vegetable. Under-blanching stimulates enzymes, which is worse than no blanching. Overblanching causes loss of flavor, color, vitamins and minerals. Blanching and prompt cooling will extend the overall quality of the vegetable by slowing enzyme action that can cause loss of quality, flavor, texture, and nutrients and will destroy some bacteria that can cause spoilage and remove additional dirt. Blanching will cause some wilting or softening of vegetables, making them easier to pack.

Blanching and Cooling Methods

Water Blanching

- In a blancher or large kettle with lid, bring at least one gallon of water to a rapid boil per pound of vegetable.
- Place vegetables in a metal basket or cheesecloth and lower into boiling water and cover with lid.
- Water should return to boil within one minute or too many vegetables are being used.
- Start counting time as soon as the water returns to a boil.
- Keep the heat on high for the total blanching time. It is very important to follow the recommended blanching time for each vegetable.
- Follow cooling directions to stop the cooking process and follow directions for packing and freezing.

Microwave Blanching (*not recommended*)

Blanching in the microwave is not recommended because research has shown that some enzymes may not be inactivated.

Cooling Methods

- Cool by plunging the basket or bag of vegetables immediately into a large quantity of cold water (60°F or lower).

- Change cold water frequently or use cold running water or ice water.
- Cooling vegetables should take as long as blanching time.
- Drain vegetables thoroughly after cooling as extra moisture can cause loss of quality.

Packing Methods

Headspace is required for most vegetable packs except tray pack. This is the amount of empty space between food and the top of the container that should be left and is necessary for expansion of food as it freezes.

Dry Pack

- Tightly pack the blanched, cooled and drained vegetables leaving ½ inch of headspace for rigid containers.
- Leave three inches of head space for freezer bags and push out air in the bag. Keep the zippered spaces and channels completely dry and free of moisture, or frozen crystals can break the seal in storage.
- Headspace is not necessary for foods such as broccoli and asparagus that do not pack tightly.

Tray Pack

- Place blanched, chilled and well-drained vegetables in a single layer in shallow trays or pans.
- Place in freezer until firm (check after one hour), then remove and quickly fill containers or bags.
- Headspace is not a consideration for tray pack.
- Quickly close rigid containers. If using freezer bags, quickly press out air and close. Freeze immediately.
- Keep the zippered spaces and channels completely dry and free of moisture, or frozen crystals can break the seal in storage.
- Pack tray vegetables loosely so the desired amount can be poured from the container and the package reclosed.

Labeling, Thawing and Storing

- Leave space between packages so air can circulate while the vegetables are freezing. After the product is frozen, store packages close together.
- Use freezer tape to seal the lids of loose fitting containers.
- Label each package with the following information: vegetable and form (sliced, whole, etc.), added ingredients, date, and amount. Label with tape, marker or gummed labels – all made specifically for freezing.
- Freezer should be 0°F. Lower freezer to -10°F 24 hours prior to freezing foods to facilitate quick freezing. Storing frozen foods above 0°F increases the deterioration of food.
- Keep vegetables frozen for no longer than 12 months for best quality.

- If the freezer stops, vegetables can be safely refrozen – usually resulting in reduced quality – if they still contain ice crystals or if they are thawed but are still cold (40°F) for no longer than one or two days.
- Safely thaw foods in refrigerator (best), microwave on defrost, or submerge container in cold water.

Vegetable Freezing Guide

NOTE: Blanching times given are for elevations 5,000 feet or lower. Add one minute to times given for altitudes above 5,000 feet.

Asparagus

Select young, tender stalks with compact tips. Remove or break off tough ends and scales. Wash thoroughly. Sort by size. Cut to fit containers or in 2 inch lengths. Water blanch small stalks 2 minutes, medium stalks 3 minutes and large stalks 4 minutes. Dry pack with no headspace, or tray pack.

Beans – Green

Select young, tender stringless beans. Wash thoroughly, remove ends and sort for size. Cut into 2 to 4 inch pieces, leave whole, or slice into lengthwise strips. Water blanch 3 minutes. Cool and drain. Dry pack with ½ inch headspace, or tray pack.

Beets

Select tender, young beets. Trim tops, leaving ½ inch of stems and tap root. Wash; sort for size. Cook in boiling water until tender – 25 to 30 minutes for small beets, 45 to 50 minutes for medium-sized beets. Cool and drain; remove top and tap root, peel, slice or cube. Dry pack with ½ inch headspace or tray pack.

Broccoli

Select tender, dark green stalks. Wash, peel and trim stalks. To remove insects from heads, soak 30 minutes in salt solution – 4 teaspoons salt per gallon water. Rinse and drain. Split lengthwise into pieces not more than 1½ inches across. Water blanch 3 minutes. Cool and drain. Dry or tray pack without headspace.

Brussels Sprouts

Select green, firm and compact heads. Wash and trim. Water blanch small heads 3 minutes, medium heads 4 minutes, and large heads 5 minutes. Cool and drain. Dry or tray pack without headspace.

Cabbage

Wash. Trim coarse outer leaves off solid heads. Cut heads into medium or coarse shreds, thin wedges or separate into leaves. Water blanch 1½ minutes. Cool and drain. Dry pack with ½ inch headspace or tray pack.

Carrots

Select tender, mild-flavored carrots. Remove tops, wash and peel. Leave whole if small; dice or slice larger carrots ¼ inch thick. Water blanch whole carrots 5 minutes, diced or sliced carrots 2 minutes. Cool and drain. Dry pack with ½ inch headspace or tray pack.

Cauliflower

Choose firm, tender white heads. Break or cut into pieces 1 inch across. Wash well. Soak 30 minutes in salt brine (see broccoli), if needed to drive out insects. Rinse and drain. Blanch 3 minutes in boiling water containing 4 teaspoons salt per gallon water. Cool and drain. Dry pack without headspace or tray pack.

Celery

Select crisp, tender stalks and wash thoroughly, trim and cut stalks into 1 inch lengths. Water blanch 3 minutes. Cool and drain. Dry pack with no headspace or tray pack. Use in cooked products.

Corn – Cut

Husk, remove silk, trim ends and wash. Water blanch 4 minutes. Cool and drain. Cut kernels from cob, but cut only $\frac{2}{3}$ depth of kernels. Dry pack with $\frac{1}{2}$ inch headspace, or tray pack.

Corn – Cream Style

Water blanch 4 minutes, cool and drain. Cut kernel tips and scrape cobs with the back of a knife to remove juice and heart of kernel. Dry pack with $\frac{1}{2}$ inch headspace.

Corn on the Cob

Husk, remove silk, wash and sort for size. Water blanch small ears 7 minutes, medium ears 9 minutes and large ears 11 minutes. Cool and drain. Pack in plastic freezer bags with $\frac{1}{2}$ inch headspace.

Eggplant

Peel, cut into slices $\frac{1}{3}$ inch thick. Water blanch 4 minutes in 1 gallon of boiling water containing $\frac{1}{2}$ cup lemon juice. Cool and drain. Dry pack, leaving $\frac{1}{2}$ inch headspace, or tray pack in layers separated by sheets of freezer paper.

Greens

Wash young, tender leaves well. Remove tough stems and imperfections. Cut in pieces, if desired. Water blanch collards for 3 minutes, all others for 2 minutes. Cool and drain. Dry pack with $\frac{1}{2}$ inch headspace.

Herbs

Wash and drain; trim or chop. Wrap a few sprigs or leaves in freezer wrap and place in freezer bag and seal. Use in cooked dishes as product becomes limp when thawed.

Mushrooms

Select mushrooms free of spots or decay. Sort for size. Wash and drain. Trim off ends of stems. Slice or quarter mushrooms larger than 1 inch across. Mushrooms will have a better color if given anti-darkening treatment before blanching. For anti-darkening, dip mushrooms to be blanched for 5 minutes in solution of 1 teaspoon lemon juice or $1\frac{1}{2}$ teaspoons citric acid per pint water. Mushrooms need to be steamed, not water blanched. For steam blanching, use a pot with a tight lid and basket that holds the food 3 inches above the bottom of the pot. Put one to two inches of water in the pot and bring to a boil and place mushrooms in basket in a single layer so steam reaches all parts quickly. Cover the pot, leave heat high and start counting steaming times as soon as the lid is on.

Steam blanch whole, buttons or quarters 9 minutes; sliced mushrooms should be steam blanched for 5 minutes. Cool and drain. Mushrooms also may be lightly sautéed in butter or margarine. Dry pack with $\frac{1}{2}$ inch headspace after cooling mushrooms.

WARNING: The toxins of poisonous varieties of mushrooms are not destroyed by drying or cooking. Only a certified expert can differentiate between poisonous and edible varieties. Morrell mushrooms are especially hard to differentiate from the poisonous false morrell. Please contact your county Extension agent for determining the procedure needed to verify if the mushroom is safe to consume.

Onions – Whole, Green

Wash and peel onions. **Whole onions:** water blanch 3 to 7 minutes until center is heated; cool and drain. Dry pack with $\frac{1}{2}$ inch headspace. **Chopped green onions;** green onions can be chopped for soups and salads and frozen without blanching. Dry pack with $\frac{1}{2}$ inch headspace.

Parsnips

Remove tops, wash, peel and cut in $\frac{1}{2}$ inch cubes or slices. Water blanch 3 minutes. Cool and drain. Dry pack with $\frac{1}{2}$ inch headspace or tray pack.

Peas – Green

Harvest pods when seeds are tender and well-filled. Wash, shell and discard any over-mature and immature seeds or insect damaged peas. Water blanch 2 minutes. Cool and drain. Dry pack with $\frac{1}{2}$ inch headspace.

Peas – Sugar, Edible-Podded, Chinese or Snow

Wash, remove stems, blossom ends and any strings. Leave whole. Water blanch 2 minutes for small pods and 3 minutes for large pods. Cool and drain. Dry pack with $\frac{1}{2}$ inch headspace or tray pack.

Peppers – Sweet Green, Red, Orange, Yellow

Select firm, crisp, thick-walled peppers. Wash; cut out stems and remove seeds. Cut into strips or rings, as desired. Freeze without blanching for use in salads and as garnishes. If used in cooked dishes, water blanch halves 3 minutes, slices or rings 2 minutes. Cool and drain. Dry pack blanched peppers with $\frac{1}{2}$ inch headspace. Tray or dry pack unblanched peppers without headspace.

Potatoes – Russet, Yukon Gold, Red, Irish

Select new potatoes. Wash and peel; remove eyes, bruises and green spots. Water blanch 3 to 5 minutes, depending on size. Drain and cool. Dry pack whole or sectioned with $\frac{1}{2}$ inch headspace, or tray pack.

Rutabagas

Cut off tops of young, medium-sized rutabagas; wash and peel. Cut into cubes and water blanch 3 minutes. Cool, drain and dry pack with $\frac{1}{2}$ inch headspace, or tray pack.

Squash, Summer – Zucchini, Yellow Straight or Crookneck, White Scallop, Spaghetti

Select young squash with small seeds and tender rind. Wash and cut in ½ inch slices. Water blanch 3 minutes. Cool and drain. Dry pack with ½ inch headspace or tray pack.

Squash, Winter (and Pumpkins) – Banana, Butternut, Hubbard, Buttercup

Wash; cut into pieces and remove seeds. Cook pieces until soft. Cool. Scoop out pulp and mash. Chill thoroughly. Dry pack with ½ inch headspace.

Sweet Potatoes

Select medium to large mature sweet potatoes that have been air-dried for at least one week. Sort for size; wash. Cook until almost tender. Cool at room temperature. Peel; cut in halves, slice or mash. To prevent darkening, dip halves or slices in solution of ½ cup lemon juice per quart water for 5 seconds. **For mashed sweet potatoes**, mix 2 tablespoons orange or lemon juice with each quart. Dry pack with ½ inch headspace or tray pack.

Tomatoes – Raw

Wash and dip in boiling water for 30 seconds to loosen skins. Core and peel. Pack into containers whole or in pieces, using 1 inch headspace. Use in cooked products only as tomatoes will not be solid when thawed.

Tomatoes – Juice, Puree

Wash, sort and trim firm tomatoes. Cut in quarters or eighths. Simmer 5 to 10 minutes. Press through sieve. Season with 1 teaspoon salt per quart juice, if desired. Pour into containers with 1½ inch headspace.

Tomatoes – Stewed

Wash ripe, blemish-free tomatoes. Scald 2 to 3 minutes to loosen skins; peel and core. Cut into quarters and simmer 10 to 20 minutes until tender. Cool and pack into containers with 1½ inch headspace.

Turnips

Select tender, firm, mild-flavored small to medium turnips or parsnips. Wash, peel and cut into ½ inch cubes. Water blanch 3 minutes. Cool and drain. Dry pack with ½ inch headspace or tray pack.

Additional Resources

This MontGuide is best suited for intermediate and advanced home food preservers. The following resources provide a wide variety of tested recipes and information, based on USDA recommendations, especially important for the beginning food preserver.

National Center for Home Food Preservation (NCHFP), USDA sponsored Web site is the most current source for publications, video clips, tutorials for the beginning home food preserver, frequently asked questions, and seasonal tips: <http://www.uga.edu/nchfp/>

USDA *Complete Guide to Home Canning*, 2006. Available on NCHFP Web site, above, click on 'publications'

So Easy to Preserve, 5th edition only. Earlier editions not recommended by MSU Extension. <http://www.soeasytopreserve.com>

The following publications are available at local stores or online at <http://www.kitchenkrafts.com>: *Ball Blue Book Guide to Preserving*, 2009 edition only; *Ball Complete Book of Home Preserving*, 2006 edition only; *Ball Blue Book of Preserving*, 2006 edition only.



To order additional publications, please contact your county or reservation MSU Extension office, visit our online catalog at www.msuextension.org/store or e-mail orderpubs@montana.edu

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