

FREEZING VEGETABLES

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Following the guidelines in this publication will help ensure that your frozen vegetables remain nutritious and high in quality.

Fresh, tender vegetables right from the garden are best for freezing.

If vegetables cannot be frozen immediately after harvesting, store them in the refrigerator to preserve freshness until they can be prepared and frozen.

Not all vegetables freeze well.

For example, cabbage, green onions, lettuce and other salad greens, radishes, cucumbers and tomatoes (except as juice or to use in cooking) do not freeze well. Uncooked potatoes often develop an uncharacteristic sweet flavor when frozen.

Contact your local office of the NDSU Extension Service for information on recommended varieties of vegetables for North Dakota to assure a good crop to fill the freezer or visit this Web site: www.ag.ndsu.edu/horticulture

Containers for Freezing

Choose containers that are made for freezer storage, and label with contents and date. Containers should be moisture-vapor resistant, durable and leak-proof. These preserve the quality of the vegetables by keeping moisture in and air out. Loss of moisture causes brownish-white spots on food known as freezer burn. Freezer burn actually does not spoil the food but can cause toughness and often results in off-flavors.

Plastic freezer bags and rigid freezer containers are convenient for freezing vegetables. Plastic sandwich bags, bread wrappers and cartons from dairy products such as cottage cheese, sour cream or milk are not suitable for long-term freezer storage.

Blanching

Blanching is scalding the vegetables in water or steam for a short period of time. It is a very important step in freezing vegetables because it slows or stops the action of enzymes. These enzymes are essential for growth and maturation of the plant.

If the enzyme action is not stopped before freezing, the vegetables may discolor, toughen or develop off-colors, so they may be unappetizing in a few weeks. Proper blanching also brightens color and helps prevent loss of nutrients.

Blanching times vary with the size and kind of vegetable. The times recommended are just long enough to stop or destroy the enzymes. Be sure to follow the recommended blanching times. In underblanched vegetables, enzyme action continues. Overblanching vegetables can lead to changes in color, flavor and nutrients. Overblanched vegetables have a "leftover look" when served.

Blanching in boiling water

Use a blancher, which has a blanching basket and cover, or fit a wire basket into a large kettle with a cover. Use at least 1 gallon of water for each pound of vegetables. Put the vegetables into the basket and lower the basket into the boiling water. Cover. Using a high heat setting, water should return to boiling in about one minute. Use an accurate timer and blanch for the time specified for individual

vegetables. If boiling is not resumed in a minute, you are blanching too large a quantity at one time.

Blanching in steam

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 the rapidly boiling water. Cover, keep the heat on high and steam blanch vegetables the time recommended in Table 1.

Blanching in the microwave

Microwave blanching may not be effective, since research shows that some enzymes may not be inactivated. This could result in off-flavors and loss of texture and color. Those choosing to run the risk of low-quality vegetables by microwave blanching should be sure to work in small quantities, using the directions for their specific microwave oven. Microwave blanching will not save time or energy.

Cooling

After vegetables are heated, they should be cooled quickly and thoroughly to stop the cooking. After heating, plunge the basket of vegetables immediately into a large quantity of cold water. Change water frequently or use cold running water or iced water. If ice is used, you'll need about 1 pound of ice for each pound of vegetables. It takes about as long to cool the vegetables as it does to heat them. When vegetables are cool, remove from water and drain thoroughly.

Methods of Packing Vegetables

When using rigid containers, leave a half-inch of head space. Food expands when it freezes and the top may pop off the container if it is too full. When using freezer bags, press air out of the unfilled part of the bag, seal and freeze. If the bag has a twist closure, be sure to twist the bag and fold it back in a gooseneck before securing the twist. If this is not done, air will rush back into the bag.

Vegetables can be packed a number of ways.

Solid pack: Put drained vegetables into freezer containers. Pack tightly to cut down on the amount of air in the container or bag. Seal and freeze.

Loose pack: This enables you to pour out as much as you want from a large package. Spread the drained vegetables in a single layer on a tray and freeze. As soon as they are frozen, pour into rigid freezer containers or freezer bags, seal and return to freezer. Remove as you need them.

Dry pack: After you have blanched, cooled and drained the vegetable, package it quickly. Remove as much air as possible. Allow proper head space and seal.

Tray pack: After you have blanched, cooled and drained the vegetable, spread in a single layer on shallow trays or pans. Place in the freezer just long enough to freeze firm. After the first hour, check often. Long exposure will result in loss of moisture. Package quickly, leaving no head space, then seal. Tray-packed vegetables remain loose and can be poured from the container and the package re-closed.

Freezing Vegetables

Put the packaged vegetables in a freezer as soon after packing as possible. Put no more unfrozen food into the home freezer than it will freeze within 24 hours. This is about 2 to 3 pounds per cubic foot of freezer capacity. Overloading slows the rate of freezing and foods can lose quality. To promote rapid freezing, leave a small space between packages so air can circulate freely. After the vegetables are frozen, packages may be stored close together. Maintain freezer temperature at 0 F or lower.

How to Use Frozen Vegetables

Most frozen vegetables should be cooked without thawing them first. Corn on the cob is an exception — it should be thawed partially so the cob is heated through by the time the corn is cooked. This takes about 10 minutes.

Do not overcook vegetables. Cook only until tender. Most vegetables have been partially cooked when blanched, so less cooking time is required than for fresh vegetables. Cook in a small amount of water or use steam.

Note: The microwave oven does an excellent job of cooking frozen vegetables. Follow the manufacturer's recommendations for times and power selections.

Storage Life

For best quality, use frozen vegetables within 12 months.

Table 1. Preparation table for freezing vegetables

VEGETABLE	PREPARATION	BLANCHING TIME <i>(in boiling water unless otherwise stated)</i>
ARTICHOKE HEARTS	Select those with uniformly green color, compact globes and tightly adhering leaves. Remove all leaves and choke, or fuzzy portion. The portion that is left at the base is the heart. Wash hearts in cold water and drain. Water blanch. Cool, drain and pack, leaving no head space. Seal and freeze.	7 minutes
ASPARAGUS	Wash thoroughly; sort by size. Cut into 2-inch lengths or leave in spears. Blanch, cool and drain. Package, seal and freeze.	Small stalks – 2 minutes Medium stalks – 3 minutes Large stalks – 4 minutes
BEANS, lima	Select beans ready for table use with slightly rounded, bright green pods. Shell, wash and sort according to size. Blanch, cool and drain. Package, seal and freeze.	Small beans – 2 minutes Medium beans – 3 minutes Large beans – 4 minutes
BEANS, green or wax	Select young, tender beans. Wash and remove ends. Leave whole, slice or cut into 1- to 1½-inch lengths. Blanch, cool and drain. Package, seal and freeze.	3 minutes
BEETS	Wash and sort according to size. Trim tops, leaving ½-inch of stem. Cook in boiling water until tender. Cool, peel and cut into slices or cubes. Package, seal and freeze.	Cook: Small beets – 25 to 30 mins Medium beets – 45 to 50 mins
BROCCOLI	Wash and trim. If insects are present, soak ½ hour in a solution of 4 teaspoons salt to 1 gallon of cold water. Split lengthwise into pieces no more than 1½ inches across. Blanch, cool and drain. Package, seal and freeze.	In water – 3 minutes In steam – 5 minutes
BRUSSELS SPROUTS	Select green, firm, compact heads. Make sure no insects are present. Trim, removing coarse outer leaves. Wash and sort. Blanch, cool and drain. Package, seal and freeze.	Small – 3 minutes Medium – 4 minutes Large – 5 minutes
CABBAGE <i>(for cooked dishes)</i>	Select fresh, compact heads. Remove coarse outer leaves. Cut into medium or coarse shreds, thin wedges or separate leaves. Blanch, cool and drain. Package, seal and freeze.	1½ minutes
CARROTS	Select tender, mild-flavored carrots. Remove tops. Wash and peel. Leave small carrots whole. Cut others into ¼-inch cubes, thin slices or lengthwise strips. Blanch, cool and drain. Package, seal and freeze.	Small, whole – 5 minutes Diced, sliced or strips – 2 minutes
CAULIFLOWER	Choose tender, firm, snow-white heads. Break into pieces about 1 inch across. Wash. If insects are present, soak ½ hour in a solution of 4 teaspoons salt to 1 gallon of cold water. Drain. Blanch, cool and drain. Package, seal and freeze.	3 minutes
CELERY	Select crisp, tender stalks free from coarse strings. Wash thoroughly, trim and cut stalks into 1-inch lengths. Water blanch. Cool promptly, drain and package, leaving no head space. Seal and freeze.	3 minutes
CORN, sweet whole kernel and creamed	Select ears with plump kernels and thin, sweet milk. Husk ears, remove silk and wash. Blanch, cool and drain. For whole-kernel corn, cut corn off cob about ⅔ the depth of kernels. For cream-style corn, cut at ½ the depth of kernels and scrape cob with back of knife to remove juice. Package, seal and freeze.	4 minutes
on the cob	Sort ears according to size: small ears – 1¼ inches or less in diameter; medium ears – 1¼-1½ inches in diameter; large ears – more than 1½ inches in diameter. Blanch, cool and drain. Package, seal and freeze.	Small ears – 7 minutes Medium ears – 9 minutes Large ears – 11 minutes
EGGPLANT	Wash, peel and slice into slices ⅓-inch thick. Water blanch four minutes in 1 gallon of boiling water containing ½ cup lemon juice, then cool and drain. Package, seal and freeze.	4 minutes
GREENS, beet greens, collards, chard, kale, mustard greens, spinach, turnip greens	Select tender leaves. Wash and remove stems. Blanch, cool and drain. Package, seal and freeze.	Collards – 3 minutes Other greens – 2 minutes
KOHLRABI	Select young, tender, mild-flavored kohlrabi. Remove tops and roots. Wash, peel and leave whole or dice into ½-inch cubes. Blanch, cool and drain. Package, seal and freeze.	Whole – 3 minutes Cubes – 1 minute
MUSHROOMS	Choose mushrooms free of spots. Sort by size; wash and trim ends. Blanch, cool and drain. Optional method: saute in butter or margarine in an open frying pan until almost tender. Cool in air or set pan in which mushrooms were cooked in cold water. Package, seal and freeze. Mushrooms to be steamed have better color if given anti-darkening treatment first. To do this, dip for five minutes in a solution containing 1 teaspoon lemon juice or 1½ teaspoons citric acid to a pint of water. Then steam, cool, drain and package.	In steam: Whole – 5 minutes Button or quarters – 3½ minutes Slices – 3 minutes

continued

Table 1. Preparation table for freezing vegetables – continued

VEGETABLE	PREPARATION	BLANCHING TIME <i>(in boiling water unless otherwise stated)</i>
OKRA	Select young, tender pods and separate into small pods (4 inches or smaller) and large pods. Wash. Remove the stems at the end of the seed cells, being careful not to expose the seed cell. Water blanch. Cool promptly and drain. Leave whole or slice crosswise. Package, leaving ½-inch head space. Seal and freeze. For frying, wash and remove stems. Blanch. Cool promptly and drain. Slice crosswise and dredge with meal or flour. Spread in a single layer on shallow trays. Place in freezer just long enough to freeze firm. Package quickly, leaving ½-inch head space. Seal and freeze.	Small pods – 3 minutes Large pods – 4 minutes
ONIONS	Choose mature bulbs and clean as for eating. Water blanch until center is heated. Cool promptly, drain and package, leaving head space. Seal and freeze. Young green onions may be used without blanching, but they will not be crisp. Peel, wash and chop. Loosely pack and freeze in large freezer bags. Take out as needed.	3-7 minutes or no heat treatment needed
PARSNIPS	Choose tender small to medium parsnips. Remove tops, wash, peel and cut into ½-inch cubes or slices. Blanch, cool and drain. Package, seal and freeze.	2 minutes
PEAS, green snow, sugar or Chinese freeze	Pick sweet and tender table-ready peas. Shell, blanch, cool and drain. Package, seal and freeze. Choose table-ready, tender pods. Wash, remove blossom ends and strings. Leave whole. Blanch, cool and drain. Package, seal and freeze.	1½ minutes Small pods – ½ minutes Medium pods – 2 minutes
PEPPERS, green or hot	Select tender, crisp peppers. Wash, cut off stems, remove seeds. Water blanch. Cool promptly, drain and package. Leave ½-inch head space, seal and freeze. Unheated peppers are good for use in uncooked foods due to their crisper texture. Cut into rings or slices as desired. Package raw, leaving no head space. Seal and freeze.	Halves – 3 minutes Strips or rings – 2 minutes No heat treatment needed for unheated pepper
POTATOES	Wash, peel and cut into ½-inch cubes. Blanch and cool. Package, seal and freeze. For hash browns: cook in jackets until nearly done. Peel, grate and form into desired shape. Freeze. For french fries: select mature potatoes that have been stored 30 days. Peel and cut into strips. Rinse in cold water, then dry thoroughly. Fry in small amounts in deep, hot fat (360 F) for about five minutes or until light golden brown. Drain, cool. Package and freeze. To serve, heat in 475 F oven until golden brown.	3-5 minutes, depending on size
PUMPKIN and WINTER SQUASH	Select mature squash or pumpkins. Wash, remove seeds and cut into small pieces. Cook until soft in boiling water, steam or 350 F oven. Remove pulp from rind. Mash cool, package and freeze.	Cook until tender
RUTABAGAS	Select young, medium-sized rutabagas. Cut off tops, wash and peel. Cut into cubes and water blanch. Cool, drain and pack, leaving ½-inch head space. Seal and freeze.	3 minutes
SUMMER SQUASH (ZUCCHINI)	Select young, tender squash. Wash and cut into ½-inch slices. Blanch, cool and drain. Package, seal and freeze.	3 minutes
ZUCCHINI, grated	Steam in small quantities until translucent. Pack in amounts used in recipes, allowing head space. Put containers in cold water to cool. Seal and freeze. Drain before using in baking.	In steam – 1 to 2 minutes
TOMATOES, juice	Wash, sort and trim tomatoes. Cut in quarters or eighths. Simmer 5 to 10 minutes. Press through a sieve. Cool. Pour into freezer containers. Leave 1½-inch head space. Seal and freeze.	
stewed	Wash and dip in boiling water for 30 seconds to loosen skin, core and peel. Cut into quarters. Cover and cook until tender (10 to 20 minutes). Place pan containing tomatoes in cold water to cool. Pack into freezer containers. Leave 1-inch head space. Seal and freeze.	
raw	Peel and core tomato as above. Cut into quarters or smaller. Put into freezer containers. Press down with wooden spoon to release juice to cover. Leave 1-inch head space. Seal and freeze. Use in cooking because tomatoes won't be solid.	
TURNIPS	Select small to medium, firm, mild-flavored turnips. Wash, peel and cut into ½-inch cubes. Blanch, cool and drain. Package, seal and freeze.	2 minutes

Source: *USDA Center for Home Food Preservation – University of Georgia Cooperative Extension Service. www.uga.edu/nchfp/*

For information about food preservation, contact your local office of the NDSU Extension Service or visit our Web site:
www.ag.ndsu.edu/ndsuaq/food

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For more information on this and other topics, see www.ag.ndsu.edu

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