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Freezing Vegetables

Freezing is a simple, easy, and convenient way to preserve vegetables. The process takes little time but the cost of a freezer and the utility costs make it one of the more expensive ways to preserve food. The freezing process preserves nutrients and provides a fresher flavor than canning or drying foods.

Freezing foods retards the growth of the microorganisms and slows down chemical changes that may cause food to spoil. While freezing slows down spoilage, when the food is thawed the growth of bacteria, yeasts, or mold will continue. Proper handling of vegetables is important before freezing.

Selecting and Washing Vegetables

Choose young, tender vegetables to freeze. Over-mature vegetables may be hard, tough, or flavorless.

To remove dirt, bacteria, and pesticide residue, wash vegetables thoroughly in cold water. Drain and rinse several times with cold water. Lift vegetables from water to prevent redepositing of dirt and residues. Peel, trim, and cut into pieces as directed for each vegetable on the chart included in Table 1.

Blanching Vegetables

Blanching vegetables to inactivate the enzymes that change the flavor or color and nutrients is im-

portant. Blanching helps to destroy microorganisms on the surface of the vegetable. Blanching also makes vegetables like broccoli or spinach be more compact and take less room in the freezer. The process of blanching takes place when a vegetable is exposed to boiling water or steam for a short time to retard enzyme growth. As soon as the blanching process is complete, the vegetables must be cooled rapidly in ice water. This stops the cooking from continuing. Change water frequently or use cold running water or ice water.

Blanching is important for top quality frozen vegetables. Recommended guidelines for blanching times are used to ensure the vegetables are not overcooked and do not lose flavor, texture, color, and nutrients. Under blanching will cause the enzymes to continue ripening the food.

Boiling Water Blanch

Use 1 gallon of water per 1 pound of vegetables (2 gallons for leafy greens). Place vegetables in wire basket or mesh bag; immerse in boiling water. Cover. Water should return to boiling within 1 minute, or you are using too much vegetable for the amount of boiling water. Start counting blanching time as soon as water returns to a boil.

Steam Blanch

Place one layer of vegetables in a wire basket. Suspend in steamer above several inches of rapidly boiling water and cover. Start counting steaming time as soon as lid is on. Steam 1½ times longer than boiling water blanch time.

Microwave Blanching

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 microwave blanch and risk low-quality vegetables should work with small quantities and follow directions given by microwave manufacturer. This method will not save time or energy.

Packaging Vegetables

Pack vegetables tightly in freezer bags or rigid containers. Squeeze air from bags before sealing. Leave 1/2 to 1 inch headspace for expansion in rigid containers. Excess air leads to flavor loss or off-flavors in frozen foods. If moisture evaporates, frozen food becomes dry, tough, and may develop grayish spots called “freezer burn.” To prevent air exposure and moisture loss, use only moisture-proof, vapor-proof packaging designed for freezing. Examples are “can or freeze” glass jars, plastic freezing containers, heavyweight aluminum foil, plastic-coated freezer paper, and polyethylene wrap and bags. Only tape designated for freezing will adhere at freezing temperatures. Freezer bags can be placed in rigid containers for easy stacking.

DO NOT use cardboard cartons; they are not sufficiently moisture-resistant and vapor-resistant for long-term frozen food storage. Also, DO NOT reuse plastic containers from cottage cheese, ice cream, whipped topping, margarine, etc. These containers are not designed to protect foods in long-term freezer storage.

For loose pack, freeze vegetables pieces in a single layer on a tray until frozen solid. Package at once. Label and date product and return it to freezer immediately.

Freezing

Because water in vegetables expands during freezing and breaks cell walls, thawed vegetables may “leak” and have a soft texture. To retain quality, freeze vegetables quickly at lowest possible freezer setting. Freeze only 2 to 3 pounds of food per cubic foot of available freezer storage space in 24 hours.

Storage

Maintain freezer at 0 degrees F or less to best protect the quality of foods, including vegetables. If power fails, keep freezer closed; food should stay frozen 24 to 48 hours. If available, protect food with 25 pounds of dry ice per 10 cubic feet of freezer space. Food can be safely refrozen if it still contains ice crystals. Some loss of quality and food value will occur.

The more food put into a freezer in a year, the less the operating cost per pound. Keep an inventory and use the oldest foods first. Use frozen vegetables within one year.

Preparing Frozen Vegetables

Most frozen vegetables can be cooked without thawing; corn on the cob should be partially thawed. Cook vegetables in 1/2 cup or less water per pint package to maintain nutrients. Drain and season as desired.

Recommendations for Vegetables to Freeze

Some vegetables do not make satisfactory products when frozen, including green onions, lettuce, and other salad greens, radishes, and tomatoes (except as juice or cooked). These vegetables can be stored for short periods in the refrigerator. Contact your local Ohio State University Extension office for information on proper storage.

Information about growing various vegetables in Ohio can be found on OSU Extension’s web site Ohioline at <http://ohioline.osu.edu>.

Table 1. Preparation and blanching times for common vegetables

<i>Vegetable</i>	<i>Blanching time in minutes</i>		<i>Preparation</i>
	<i>Boiling Water</i>	<i>Steam</i>	
Asparagus Small Stalk Medium Stalk Large Stalk	2 3 4	3 5 6	Wash thoroughly and sort by size. Leave whole or cut into 2-inch lengths. Blanch, cool promptly, drain, package, and freeze.
Beans — Snap, Green or Wax	3	5	Snip tips and sort by size. Cut or break into suitable pieces. Small beans can be frozen whole. Blanch, cool promptly, drain, package and freeze.
Beans — Fresh Lima, Butter, Pinto Small Medium Large	2 3 4	3 5 6	Shell and sort according to size. Wash thoroughly. Blanch, cool promptly, drain, package, and freeze.
Beets	Cook until tender. Small: 25 to 30 minutes; medium: 45 to 50 minutes.		Remove all but 2 inches of top; wash. Cook, chill, remove skins. Slice or dice if desired. Pack and freeze.
Broccoli and Cauliflower — 1½ inch flowerets	3	5	Trim. Separate into individual pieces. Cut broccoli stalk lengthwise. Soak ½ hour in salt brine (4 teaspoons of salt to 1 gallon cold water) to drive out small insects. Rinse and drain. Blanch, cool promptly, drain, package, leaving no headspace, and freeze.
Brussels Sprouts Small Medium Large	3 4 5	5 6 7	Trim, removing coarse outer leaves. Wash thoroughly. Blanch, cool promptly, drain, package, and freeze.
Cabbage Shredded Wedges	1½ 3	2½ 5	Discard coarse outer leaf. Cut into wedges or shred coarsely. Blanch, cool promptly, drain, package, and freeze.
Carrots Diced/sliced Whole	2 5	3 8	Wash, scrape, trim, and wash again. Dice or slice if desired. Blanch, cool promptly, drain, package, and freeze.
Corn — Sweet on-the-cob Small (1¼ inch diameter) Medium (1¼ to 1½ inch diameter) Large (over 1½ inch diameter)	7 9 11	10 13 16	Husk, remove silks, and trim ends. Sort by size. Use large kettle for blanching. Chill in ice water for same time as blanching or corn may become mushy and develop cob flavor. Drain, package, and freeze.
Corn — Sweet cut	4	6	Husk, remove silk, and trim ends. Blanch ears then chill in ice water. Cut corn from cob, package, and freeze.
Kohlrabi Whole Cubes or slices	3 1	— —	Cut off tops and roots. Wash and peel tough bark. Wash again and slice ¼ inch thick, dice in ½ inch cubes, or leave whole. Blanch, cool promptly, drain, package, and freeze.

Vegetable	Blanching time in minutes		Preparation
	Boiling Water	Steam	
Mushrooms Whole Buttons or quarters Slices	— — —	5 3½ 3	Sort according to size. Wash thoroughly in cold water. Trim off ends of stems. Cut mushrooms larger than 1 inch across into slices or quarters. For better color, mushrooms to be steam blanched should be dipped for 5 minutes in a solution of 1½ teaspoons citric acid per 1 pint water. Then steam, cool promptly, drain, package, and freeze. To sauté , heat small quantities of mushrooms in butter for 3 minutes. Cool, package, and freeze. No blanching required.
Okra Small pods (4 inches or less) Large pods	3 4	5 8	Sort by size and wash. Cut off stems without opening seed cells. Blanch, cool promptly, and drain. Leave whole or slice crosswise. Package and freeze.
Peas — green	1 ½ to 2 ½	3 to 5	Harvest when pods are filled with young, tender peas that have not become starchy. Wash, shell, and sort. Rinse peas again. Blanch, cool promptly, drain, package, and freeze.
Peas — Field (blackeye)	2	—	Select pods when seeds are tender and well-filled. Wash pods. Shell and discard over-mature and immature seeds and those injured by insects. Wash shelled peas. Blanch, cool promptly, drain, package, and freeze.
Peas — Edible pod — sugar snap, Chinese Small pods Large pods	2 3	4 5	Wash; remove stems, blossom ends, and any strings. Leave whole. Blanch, cool promptly, drain, package, and freeze. (NOTE: If the peas have started to develop or are already developed, shell and follow directions for green peas.)
Peppers — Sweet green or red Halves Strips	3 2	5 3	Wash, remove stem and seeds. Half, chop, or cut into 1/2 inch strips or rings. May be frozen without blanching for use in uncooked foods; will have crisper texture. For use in cooking, blanch, cool promptly, drain, package, and freeze.
Peppers — Hot	—	—	Wash and stem peppers. Package, leaving no headspace. Seal and freeze. (Caution: Wear food handling gloves while handling hot peppers or wash hands thoroughly with soap and water before touching face.)
Pimento	—	—	Peel by roasting in oven at 400–450 degrees F for 6 to 8 minutes or until skins can be rubbed off. Wash off charred skins, cut out stems, and remove seeds. Package and freeze.
Potatoes — Irish new Small Medium	3 5	5 8	Select smooth new potatoes directly from the garden. Scrub, peel, and wash again. Blanch, depending on size. Cool promptly, drain, package, and freeze.
Potatoes — Sweet	—	—	Choose potatoes that have been cured for at least one week. Sort to size and wash. Cook until almost tender (in water, pressure cooker, or oven). Cool at room temperature, peel, and cut in halves or slices, or mash. To prevent darkening: Dip whole potatoes or slices in a solution of 1/2 cup lemon juice to 1 quart water for 5 seconds. To prevent mashed sweet potatoes from darkening: Mix 2 Tablespoons orange juice or lemon juice with each quart of potatoes.

Vegetable	Blanching time in minutes		Preparation
	Boiling Water	Steam	
Spinach — other greens Collard Other	3 2	5 3	Select young, tender leaves. Wash thoroughly and cut off tough stems. Blanch, cool promptly, package, and freeze.
Squash — Summer and Zucchini	3	5	Choose young squash with tender skin. Wash and cut into 1/2 inch pieces. Blanch, cool promptly, package, and freeze. Grated zucchini for baking — steam blanch 1 to 2 minutes until translucent. Pack in measured amounts into containers; freeze.
Squash — Winter	—	—	Select firm, mature squash with a hard rind. Wash, cut into cooking-size sections and remove seeds. Cook until soft (in boiling water, steam, pressure cooker, or oven). Remove pulp from rind and mash. Cool by placing pan of pulp in cold water and stir occasionally. Package, leaving 1/2 inch headspace. Seal and freeze.
Tomatoes	—	—	Select firm, ripe tomatoes with deep red color. Wash thoroughly; sort and trim. Raw: Wash and dip in boiling water for 30 seconds to loosen skins. Peel, freeze whole, or core and cut in pieces. Package and freeze for use for cooking or seasoning only. Juice: Cut into quarters or eighths. Simmer 5 to 10 minutes. Press through sieve. If desired, add 1 teaspoon salt per quart. Pour into containers, leaving 1/2 inch headspace for pints or 1 inch for quarts. Freeze. Stewed: Prepare as instructed for juice. Cover and cook until tender, 10 to 20 minutes. Cool by placing pan of tomatoes in cold water. Pack into containers, leaving 1/2 inch headspace for pints or 1 inch for quarts. Freeze.

References

- Andress, E., & Harrison, J. (2006). *So Easy to Preserve*, (5th ed.). Cooperative Extension, The University of Georgia.
- Ball/Alltrista Corporation. *Ball Blue Book* (Vol. 1). (1995). Muncie, Indiana.
- Green, J., Hertzberg, R., & Vaughn, B. (1998). *Putting Food By* (4th ed.). The Stephen Greene Press, Lexington, Massachusetts.
- Kuhn, G. D., & Resurricon, A. V. A. *How to Freeze Food the Right Way*. Cooperative Extension Service, The Pennsylvania State University.
- Michigan State University Cooperative Extension Service, *Preserving Food Safely* (Version 3.0). Home Economics Library Program.

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