



Extension FactSheet

Human Nutrition, 1787 Neil Avenue, Columbus, OH 43210

Basics for Canning Vegetables

Pressure canning is the only safe method for home canning vegetables. *Clostridium botulinum* is the bacterium that causes botulism food poisoning in low-acid foods, such as vegetables. The bacterial spores are destroyed only when the vegetables are processed in a pressure canner at 240 degrees Fahrenheit (F) for the correct amount of time.

Understanding *Clostridium Botulinum*

Clostridium botulinum is the bacterium commonly found in vegetables and meats. It is harmless until it finds itself in a moist, low-acid, oxygen-free environment or a partial vacuum. Under these conditions, the bacterium can grow and produce toxins dangerous to people and animals.

Do not process vegetables using the boiling water bath because the botulinum bacteria can survive that method.

Do not taste or use home canned vegetables until they have been held at a rolling boil for at least 10 minutes (spinach and corn need 20 minutes.) Add one additional minute for each 1,000 feet above sea level.

Equipment

Pressure canner—Make sure the pressure canner has a tight-fitting lid, clean exhaust vent or petcock and safety valve, and an accurate pressure gauge. Check with your local Extension office for information on this service.

Use a rack in the canner to keep the jars from touching canner's bottom.

Do not use small pressure cookers that hold less than 4 quart jars for canning. Processing times on this fact sheet are not adequate for smaller cookers.

Canning jars and lids—Use standard canning jars. Commercial food jars, such as mayonnaise and coffee jars, are not recommended because the failure rate will be greater. Check jars, ringbands, and lids for defects. Look for chips, cracks, dents, rust, and anything else that will prevent airtight seals. Wash jars in hot soapy water and rinse well.

Prepare two-piece metal lids according to manufacturer's directions. Ringbands may be reused if they are not rusted, dented, or damaged. Use lids only once.

Preparing the Produce

Select only fresh, young tender, vegetables. For best results, can them within a few hours of harvesting. Rinse all produce thoroughly but do not soak to prevent loss of flavor and nutrients. Handle gently to avoid bruising.

Filling Jars

Hot pack method—The hot pack method is recommended for all vegetables. Heat vegetables in water or steam and then place in the jars. Add enough boiling water or cooking liquid to cover the food. Pack the hot food loosely; a food funnel is helpful. Leave headspace between the jar rim and the liquid according to the chart included in this fact sheet.

Raw pack method—Fill jars tightly with freshly prepared, unheated vegetables. Add boiling water to the jars, leaving headspace between the jar rim and liquid.

Using salt is optional in home-canned vegetables.

Closing Jars

Remove trapped air bubbles before closing jars. Run a non-metallic spatula along the inside edge of the jar. Move the spatula up and down along the inside wall. Add more boiling liquid if needed. Wipe the jar rim with a clean damp paper towel to remove any food particles.

Place a prepared lid on the jar and adjust the metal ringband according to manufacturer's directions.

Using a Pressure Canner

If available, use the manufacturer's directions for a pressure canner. Otherwise, put 2 to 3 inches of hot water in the canner. Place filled, closed jars on the rack using a jar lifter. Fasten canner lid securely and leave vents and petcocks open. Heat at highest setting until steam flows freely. Maintain the high heat and exhaust steam for 10 minutes. Then close the petcock or place the weight on the vent port.

Begin timing the process when the dial gauge or weighted gauge indicates the recommended pressure has been reached. When the timed process is completed, turn off heat and remove canner from the heat source. Allow the canner to depressurize. Do not force-cool the canner. This could result in loss of liquid from the jars and seal failures.

When pressure is at zero wait 1 to 2 minutes, open the petcock, or remove the weight. As you remove the lid, direct the remaining trapped steam away from you. Use a jar lifter to remove the jars from the canner and place on rack, dry towel, or newspapers. Let jars cool 12 to 24 hours before testing seals.

Checking Seals and Storing

Listen for the familiar “ping” as the jars cool. Look for the slight depression in the lid’s center. Remove the ringbands, wipe jars with a damp cloth, and add labels. Store in a cool, dry, dark place.

Signs of Spoilage

If a jar does not seem completely normal before or after

opening, do not use. This includes leaking jars, bulging lids, and jars that spurt when opened. If the food looks spoiled, foams, or has an off odor during preparation, discard it.

Boil all spoiled low-acid canned foods for 30 minutes before disposing of them. This destroys any toxin present and prevents its spread. Sanitize all containers and equipment that may have touched the food.

References

Complete Guide to Home Canning, United States Department of Agriculture, Agriculture Information Bulletin No. 539.

Making Pickles and Relishes, Ohio Cooperative Extension Service, form 576A.

Preparation and processing directions for canning vegetables in a pressure canner at 240 degrees F

Pressure required to reach 240 degrees F for all vegetables. Use this chart for all processing times listed below.				
Elevation	Pounds pressure			
	Dial gauge	Weighted gauge		
0–1,000 ft.	11 lb.	10 lb.		
1,000–2,000	11	15		

Vegetables	Prepreparation	Pack	Processing time	
			Pints	Quarts
Asparagus (spears or pieces)	Use tender, tight-tipped spears, 4 to 6 inches long. Wash and remove tough scales. Break off tough stems and wash again. Cut in 1-inch pieces or leave whole.	Raw pack —Fill jars with raw asparagus, pack tightly (but avoid crushing), then cover with boiling water, leaving 1-inch headspace. Hot pack —Cover asparagus with boiling water. Boil 2 or 3 minutes. Loosely fill jars with hot asparagus and cover with boiling water, leaving 1-inch headspace.	30 min.	40 min.
Beans or peas, dry (all varieties)	Sort and wash dry seeds. Cover with cold water and let stand 12 to 18 hours in cool place. Drain.	Hot pack only —Cover soaked beans with fresh water and boil 30 minutes. Fill jars with beans or peas and cooking water, leaving 1-inch headspace.	75	90
Beans (fresh lima, butter, or shelled)	Can only young, tender beans. Shell beans and wash thoroughly.	Raw pack —Pack raw beans loosely into jars. For small beans, fill 1 inch from top for pints and 1-1/2 inches for quarts. For large beans, fill 1 inch from top for pints and 1-1/4 inches for quarts. Do not press or shake down. Fill jars with boiling water, leaving 1-inch headspace. Hot pack —Cover with boiling water, bring to a boil. Pack hot beans loosely in jars and cover with boiling water, leaving 1-inch headspace.	40	50
Beans (green, snap, wax, Italian)	Wash, trim ends. Cut or snap into 1-inch pieces or leave whole.	Raw pack —Fill jars tightly with raw beans, leaving 1-inch headspace. Add 1 teaspoon of canning salt per quart, if desired. Add boiling water, leaving 1-inch headspace. Adjust lids and process. Hot pack —Cover with boiling water; boil 5 minutes. Fill jars loosely, leaving 1-inch headspace.	20	25

<i>Vegetables</i>	<i>Prepreparation</i>	<i>Pack</i>	<i>Processing time</i>	
			<i>Pints</i>	<i>Quarts</i>
Beets (whole, cubed or sliced)	Sort for size. Cut off tops, leaving tap root and 1 inch of stem. Wash.	Hot pack only —Boil beets until skins slip easily (15 to 25 minutes, depending on size). Cool, remove skins, stems, and roots. Can baby beets whole. Cut medium and large beets in 1/2-inch slices or cubes, or halve or quarter. Fill jars with hot beets and cover with fresh hot water, leaving 1-inch headspace.	30 min.	35 min.
Carrots (sliced or diced)	Wash, peel, and rewash. Can baby carrots whole. Slice or dice larger ones.	Raw pack —Pack carrots tightly into jars to 1 inch of jar tops and cover with boiling water; leave 1-inch headspace.	25	30
		Hot pack —Cover carrots with boiling water; simmer 5 minutes. Fill jars loosely and cover with hot cooking liquid, leaving 1-inch headspace.	25	30
Corn, cream-style	Husk corn, remove silk, and wash. Cut corn from cob at about the center of kernel. Scrape cob.	Hot pack —To each quart of corn and scrapings in saucepan, add 2 cups boiling water. Heat to boiling. Fill pint jars with hot corn mixture, leaving 1-inch headspace.	85	Not recommended
Corn, whole-kernel	Husk corn, remove silk, and wash. Blanch 3 minutes in boiling water. Cut from cob at about 3/4 depth of kernel. Do not scrape cob.	Raw pack —Pack corn in jars, leaving 1-inch headspace. Do not shake or press down. Add fresh boiling water, leaving 1-inch headspace.	55	85
		Hot pack —To each quart of kernels in saucepan, add 1 cup hot water. Heat to boiling and simmer 5 minutes. Fill jars with corn and cover with cooking liquid, leaving 1-inch headspace.	55	85
Mushrooms (whole or sliced)	Use only high quality, small to medium-sized domestic mushrooms with short stems. DO NOT CAN WILD MUSHROOMS. Trim stems and discolored parts and soak in cold water for 10 minutes to remove dirt. Rinse in clean water. Leave small mushrooms whole; cut large ones.	Hot pack only —Cover mushrooms with water in a saucepan and boil 5 minutes. Fill jars with hot mushrooms. Add 1/8 teaspoon of ascorbic acid powder or a 500-milligram tablet of Vitamin C to each jar to prevent discoloration. Add fresh hot water, leaving 1-inch headspace.	45	Not recommended
Greens (including spinach)	Sort and wash thoroughly. Cut tough stems and midribs. Remove any discolored or damaged portions.	Hot pack only —Steam greens, 1 pound at a time, for 3 to 5 minutes or until wilted. Fill jars loosely with greens; add fresh boiling water, leaving 1-inch headspace.	70	90
Peas (green or English-shelled)	Select filled pods containing young, tender, sweet seeds. Shell and wash peas.	Raw pack —Fill jars tightly with raw peas, add boiling water; leave 1-inch headspace.	40	40
		Hot pack —Cover peas with boiling water; boil 2 minutes. Fill jars loosely with hot peas and add cooking liquid, leaving 1-inch headspace.	40	40

<i>Vegetables</i>	<i>Prepreparation</i>	<i>Pack</i>	<i>Processing time</i>	
			<i>Pints</i>	<i>Quarts</i>
Peppers (hot or sweet)	Select firm yellow, green, or red peppers. Wash and drain. (Caution—wear plastic gloves while handling hot peppers or wash hands thoroughly with soap and water before touching face.) Small peppers may be left whole. Large peppers may be quartered. Remove cores and seeds.	Hot pack only —Slash 2 or 4 slits in each pepper. Blanch in boiling water or blister skins by placing peppers in hot oven (400 degrees F) or broiler for 6 to 8 minutes. Place blistered peppers in pan and cover with damp cloth. Let cool several minutes, then peel. Flatten whole peppers. Fill jars loosely with peppers and add boiling water, leaving 1-inch headspace.	35 min.	Not recommended
Potatoes, white	Wash, pare. Leave whole if 1 to 2 inches in diameter or cut into 1/2-inch cubes. Dip potatoes into solution of 1/2 teaspoon ascorbic acid per quart of water to prevent darkening. Drain.	Hot pack only —Place potatoes in saucepan and cover with boiling water. Boil cut potatoes for 2 minutes; whole for 10 minutes. Drain. Fill jars with hot potatoes and cover with fresh hot water, leaving 1-inch headspace.	35	40 min.
Pumpkin and winter squash (cubed)	Wash; remove seeds and pare. Cut into 1-inch cubes.	Hot pack only —Place in saucepan and cover with boiling water. Boil 2 minutes. DO NOT MASH OR PUREE. Fill jars with cubes and cover with cooking liquid, leaving 1-inch headspace.	55	90
Sweet Potatoes (pieces or whole)	Choose small to medium sized potatoes. Wash well.	Hot pack only —Boil or steam until partially soft (15 to 20 minutes). Remove skins. Cut medium potatoes, if needed, to make pieces uniform in size. DO NOT MASH OR PUREE. Fill jars and cover with fresh boiling water or syrup, leaving 1-inch headspace.	65	90

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Keith L. Smith, Director, Ohio State University Extension.

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