

HOME CANNING

Fruits and Vegetables

Points to Remember

- The cleaner your product, the more effective will be your canning process. Wash all vegetables well. Handle them gently to prevent bruising.

- Spoilage organisms may develop on utensils as they are being used, especially if the product is starchy or milky. When you can vegetables that have these characteristics (such as corn), wash, rinse, and scald utensils and work surface between loads.

- Salt adds flavor only. It does not help preserve the canned product. When canning vegetables never add sugar. You can add both salt and sugar when the vegetable is reheated for serving.

- Canning powders and drugs such as boric acid and aspirin should never be used in canning. The canning powders are ineffective and unreliable as preservatives unless used in amounts which at least change flavor and which may be harmful. Boric acid and aspirin are **not** preservatives.

Heat is the only preservative you can depend on in canning. But some foods need more heat than others. While foods containing acid (fruits, tomatoes, and pickled vegetables) may be processed in boiling water, temperatures hotter than boiling are required for all other canned products (meats, fish, vegetables). Use a pressure cooker to get temperature over 212°.

- If canning for public use, consult State Department of Agriculture, Dairy and Food, State Office Building, St. Paul 1, Minnesota.

PRELIMINARY DETAILS

PLANT the varieties recommended for canning.

ASSEMBLE AND WASH equipment and containers before vegetables and fruits are gathered. Examine jars and covers and discard those with nicks, cracks, rough edges, or other irregularities. Use new rubber jar rings or new metal lids.

GATHER PRODUCTS EARLY, when they are at top quality, and gather only as much as you can handle within two or three hours.

PREPARE as for table use. Keep them cold until you are ready to begin the actual canning.

HOW TO PACK GLASS JARS

(If using tin, follow manufacturer's instructions for filling and sealing. Follow time and pressure tables in this folder.)

- Scald the washed jars and keep them hot. If salt is used put it into the jar before the vegetable. Allow $\frac{1}{2}$ teaspoonful to each pint.

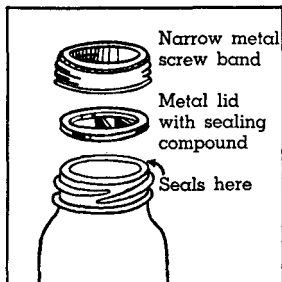
- There are two methods of packing fruits or vegetables, hot pack and raw pack. If you use hot pack, you can get more food into the jar. When canning fruits which tend to discolor, hot pack results in less browning. Packing green beans raw is said to retain flavor and food value better. Try either way, and take your choice.

Before putting on the lid, wipe rim of the jar with a piece of muslin dipped in hot water.

As the jars are filled, keep them hot in either a boiling-water bath canner or a steam-pressure canner. Process, following timetables 1 and 2.

COMMON TYPES OF CLOSURES

Self-seal closure (fits any standard mason jar); a metal disc or lid is held on the jar with a **narrow**

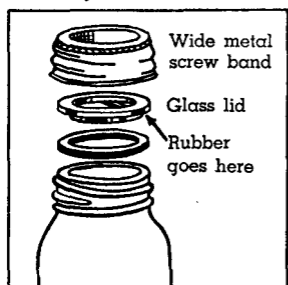


screwband. Pick up the lid with tongs and dip in boiling water—unless the manufacturer's directions state otherwise. Place lid on filled jar, center it carefully, and hold in place with finger. Then screw the band down **firmly tight**. Do not use great force. As the jar cools after

processing a vacuum will form and this creates the seal. Do not turn screwband after processing or you may break the seal. After the jar is cold the screw-

band may be removed for testing and washing the jar, as the seal will be complete without the band.

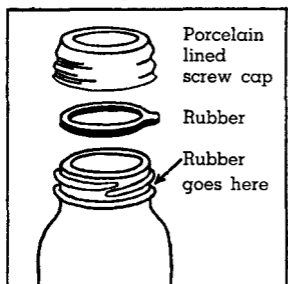
Glass lid with top-seal rubber and wide screwband (fits any standard mason jar): place wet rubber jar



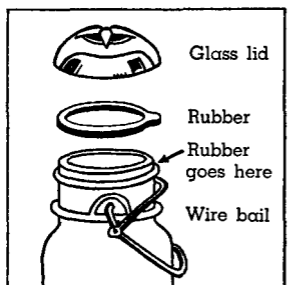
ring so that it lies flat on the ledge at rim of lid. Place lid on jar. Center it carefully and hold with finger while you screw the band down firmly tight. Then turn the screwband back almost a quarter turn. When jar is taken from canner after proces-

sing, turn the screwband firmly tight. When jar is cold, screwband may be removed.

Zinc cap with porcelain lining and removable jar



ring (fits any standard mason jar): place wet jar ring on shoulder of jar. Make it lie flat by pressing with side of knife blade. Screw cap down tight, and then turn it back $\frac{1}{4}$ inch. When processing is complete, tighten the cap again as soon as the jar is taken from the canner.



Wire-bail type closure

(glass lid with rubber jar ring): fit wet rubber jar ring to ledge at top of jar. Make it lie flat. Put on lid, with groove in lid at right angle to wire bail. Push long bail into groove; leave the short wire up. Then pull down the bail when jars are taken from canner.

PROCESSING METHODS

Pressure Canner Method

Get your pressure canner in good condition before the canning season starts. Have pressure gauge and safety valve tested, all parts cleaned, and broken or missing parts replaced. Your county extension service may have a plan for checking pressure canners.

The State Bacteriologist, Dr. G. A. Vacha, has consented to test gauges and safety valves as a service to the people of Minnesota. Parts to be tested

should be sent before May 15 or after October 15 of any year. Remove pressure gauge and safety valve, taking out the entire assembly. Wrap carefully. **Insure the package and prepay postage. Enclose stamps for return postage and insurance.** Write your name and address plainly. Send to:

Dr. G. A. Vacha

State Department of Agriculture, Dairy and Food

State Office Building

St. Paul 1, Minnesota

When parts have been returned to you, replace carefully so that you will not strip threads.

Order new parts from manufacturer or hardware dealer. Gauges, safety valves, and petcocks are usually interchangeable among different makes of pressure cookers, but make sure before you buy.

Follow the manufacturer's instructions for opening and closing the pressure cooker. Follow pressure and timetables as given in this folder.

Have 2 to 3 inches boiling water in pressure canner. Stand the jars on a rack so that they do not touch each other or sides of canner. Fasten the lid to the pressure canner, open the petcock, and close safety valve.

Turn heat on full until steam flows from petcock in a steady stream (10 minutes or more after it first appears). At first a mixture of steam and air is released and this appears as a white vapor or cloud. When air is all driven out, the steam becomes almost invisible for 1 to 2 inches from the petcock. It is then time to close petcock.

Raise pressure rapidly to 2 pounds less than required, reduce heat, and bring up the last 2 pounds slowly to avoid overpressure. Hold at 10-pound pressure—fluctuating pressure is one cause of loss of liquid.

When processing time is up, remove canner from heat and let cool. When the pressure registers zero, wait a minute or two, then slowly open the petcock. Unfasten the cover and tilt the far side up so the steam escapes away from you. Remove each jar with jar tongs or lift them out in the wire basket.

If petcock is not opened a few minutes after the pressure has dropped to zero, a vacuum may form inside the cooker. This may draw liquid from jars and may seal the lid to the canner.

Cooling the Jars

Place jars upright on perfectly dry, nonmetallic surface (towel, board, or newspapers may be used) spaced for free circulation of air.

Test seals when jars are thoroughly cool. Wash, dry, and label. Store where cold and dark but not freezing.

Timetable 1—Processing Low-acid Vegetables

PRODUCT	Work rapidly. Raw pack or hot pack foods following directions, adding if desired ½ teaspoon salt for pints and 1 teaspoon for quarts. Place jars on rack in pressure cooker containing 2 to 3 inches of boiling water. Fasten canner cover securely. Let steam escape 10 minutes or more before closing petcock.	USE 10-POUND PRESSURE				
		PRESSURE CANNER				PRESSURE SAUCEPAN
		Glass jars		Tin cans		Glass jars
		Pints	Quarts	# 2	# 2½	Pints
Asparagus	Raw Pack Wash asparagus; trim off scales and tough ends and wash again. Cut in 1-inch pieces. Pack asparagus tightly as possible without crushing to ½ inch of top. Cover with boiling water leaving ½ inch at top.	min.	min.	min.	min.	min.
	25	30	20*	20*	45	
	Hot Pack Prepare as for raw pack; then cover with boiling water. Boil 2 or 3 minutes. Pack asparagus loosely to ½ inch of top. Cover with boiling water leaving ½ inch at top.	25	30	20*	20*	45
Beans, dry with tomato or molasses sauce	Hot Pack Sort and wash dry beans. Cover with boiling water; boil 2 minutes, remove from heat and let soak 1 hour. Heat to boiling and drain, saving liquid for sauce. Fill jars ¾ full with hot beans. Add small piece of salt pork, ham, or bacon. Fill to ½ inch of top with hot tomato or molasses sauce. (Recipes in folder)	65	75	65*	75*	85
Beans, fresh lima	Raw Pack Shell and wash beans. Pack loosely small type to 1 inch of top of jar for pints and 1½ inches for quarts; for large beans fill to ¾ inch of top for pints and 1¼ inches for quarts. Fill jars to top with boiling water.	40	50	40*	40*	60
	Hot Pack Shell the beans, then cover with boiling water, and bring to boil. Pack beans loosely in jar to 1 inch of top. Cover with boiling water, leaving 1 inch at top.	40	50	40*	40*	60
Beans, snap	Raw Pack Wash beans. Trim ends and cut into 1 inch pieces. Pack tightly in jars to ½ inch of top. Cover with boiling water, leaving ½ inch at top.	20	25	25*	30*	40
	Hot Pack Prepare as for raw pack beans. Then cover with boiling water and boil 5 minutes. Pack beans in jars loosely to ½ inch of top. Cover with boiling-hot cooking liquid and water, leaving ½ inch at top.	20	25	25*	30*	40
Beets	Hot Pack Sort beets for size. Cut off tops, leaving 1 inch stem, also root; and wash. Boil until skins slip easily. Skin, trim, cut, and pack into jars to ½ inch of top. Cover with boiling water, leaving ½ inch at top.	30	35	30‡	30‡	50
Carrots	Raw Pack Wash and scrape carrots. Slice, dice, or leave whole. Pack tightly in jars to 1 inch of top. Fill to top with boiling water.	25	30	25*	30*	45
	Hot Pack Prepare as for raw pack, then cover with boiling water and bring to boil. Pack carrots in jars to ½ inch of top. Cover with boiling-hot cooking liquid and water, leaving ½ inch at top.	25	30	20*	25*	45
Corn—cream style	Raw Pack Husk corn and remove silk. Wash. Cut corn from cob at about center of kernel and scrape cobs. Pack corn loosely in pint jars to 1 inch of top. Fill to top with boiling water.	95		105†		115
	Hot Pack Prepare as for raw pack. Add 1 pint boiling water to each quart of corn. Heat to boiling. Pack hot corn to 1 inch of top.	85		105†		105
Corn—whole kernel	Raw Pack Husk corn and remove silk. Wash. Cut from cob at about ⅔ the depth of kernel. Pack corn loosely to 1 inch of top and fill to top with boiling water.	55	85§	60†	60†	75
	Hot Pack Prepare as for raw pack. To each quart of corn add 1 pint of boiling water. Heat to boiling. Pack loosely to 1 inch of top with mixture of corn and liquid.	55	85§	60†	60†	75
Peas, green	Raw Pack Shell and wash peas. Pack peas loosely in jars to 1 inch of top. Cover with boiling water, leaving 1 inch at top.	40	40	30*	35*	60
	Hot Pack Prepare as for raw pack. Cover with boiling water and bring to boil. Pack peas loosely in jars to 1 inch of top. Cover with boiling water, leaving 1 inch at top.	40	40	30*	35*	60
Pumpkin or Winter Squash cubed	Hot Pack Wash pumpkin or winter squash, remove seeds, and pare. Cut into 1 inch cubes. Add just enough water to cover. Bring to boil. Pack cubes in jars to ½ inch of top. Cover with hot cooking liquid and water, leaving ½ inch at top.	55	90	50‡	75‡	75
Pumpkin or Winter Squash strained	Hot Pack Wash pumpkin or winter squash, remove seeds, and pare. Cut into 1 inch cubes. Steam until tender (about 25 minutes). Put through food mill or strainer. Simmer until heated. Pack hot in jars to ½ inch of top.	65	80	75‡	90‡	85
Spinach and other greens	Hot Pack Pick over and wash thoroughly. Cut out tough stems and midribs. Place about 2½ pounds of spinch in cheesecloth bag and steam about 10 minutes or until well wilted. Pack loosely to ½ inch of top. Cover with boiling water, leaving ½ inch at top.	70	90	65*	75*	90

* Use plain tin.

† Use C enamel cans.

‡ Use R or sanitary enamel.

§ Dr. Vacha recommends all corn canned in pints rather than quarts since processing time for quarts would tend to make it over-processed.

Timetable 2—Processing Fruits, Tomatoes, Pickled Vegetables in Boiling-water Bath

PRODUCT	Raw pack or hot pack foods following directions. Put filled glass jars into canner containing hot or boiling water: For raw pack have water in canner hot but not boiling; for all other packs have water boiling. Add boiling water to bring water 1 inch or two over tops of jars but don't pour boiling water directly on glass jars. Put on cover of canner. Count processing time when water in canner comes to a rolling boil.	GLASS JARS		TIN CANS	
		Pints	Quarts	# 2	# 2½
Apples	Hot Pack 1. Pare, core, cut into pieces. To keep from darkening, place in water containing 2 tablespoons each of salt and vinegar per gallon. Drain, then boil 5 minutes in thin sirup or water. Pack apples in jars to ½ inch of top. Cover with hot sirup or water, leaving ½ inch at top.	min. 15	min. 20	min. 10*	min. 10*
	2. Make apple sauce, sweetened or unsweetened; pack hot to ¼ inch of top.	10	10	10*	10*
Beets, pickled	Hot Pack Cut off beet tops, leaving 1 inch of stem and root. Wash beets, cover with boiling water and cook until tender. Remove skins and slice. For pickling sirup use 2 cups vinegar to 2 cups sugar. Heat to boiling. Pack beets in jars to ½ inch of top. Add ½ teaspoon salt to pints, 1 teaspoon to quarts. Cover with boiling sirup, leaving ½ inch at top.	30	30		
Berries, except strawberries	Raw Pack Wash berries and drain. Fill jars to ½ inch of top, shaking berries down gently. Cover with boiling sirup (thin or medium recommended) leaving ½ inch at top.	10	15	15†	20†
	Hot Pack Wash berries and drain well. Add ½ cup sugar to each quart fruit. Cover pan and bring to boil. Pack berries to ½ inch of top.	10	15	15†	20†
Cherries	Raw Pack Wash; remove pits if desired. Fill jars to ½ inch of top, shaking cherries down gently. Cover with boiling sirup (thin or medium) leaving ½ inch at top.	20	25	20†	25†
	Hot Pack Wash; remove pits if desired. Add ½ cup sugar to each quart of fruit. Add a little water to unpitted cherries. Cover pan and bring to boil. Pack hot to ½ inch of top.	10	15	15†	20†
Fruit juices	Hot Pack Wash; remove pits if desired and crush fruit. Heat to simmering. Strain through cloth bag. Add sugar if desired—about 1 cup to 1 gallon juice. Reheat to simmering and fill jars to top.	10	10	10†	10†
Fruit puree	Hot Pack Use sound, ripe fruit. Wash; remove pits if desired. Cut large fruit in pieces. Simmer until soft, add a little water if needed. Put through strainer or food mill. Add sugar to taste. Heat to simmering and pack to ¼ inch of top.	10	10	10†	10†
Peaches or Apricots	Raw Pack Wash peaches or apricots and remove skins. Remove pits. To keep from darkening place in solution (same as apples). Drain, pack fruit in jars to ½ inch of top. Cover with boiling sirup (light or medium) leaving ½ inch at top.	25	30	30*	35*
	Hot Pack Prepare fruit as for raw pack. Heat fruit through in hot sirup. If fruit is very juicy you may heat it with ½ cup of sugar to 1 quart of raw fruit adding no liquid. Pack fruit to ½ inch of top.	20	25	25*	30*
Pears	Peel, cut in halves, and core. Follow directions for peaches either raw pack or hot pack using same timetables.				
Plums	Raw Pack Wash. To can whole, prick skins. Freestone varieties may be halved and pitted. Pack fruit in jars to ½ inch of top. Cover with boiling sirup, leaving ½ inch space at top.	20	25	15†	20†
	Hot Pack Prepare as for raw pack. Heat to boiling in sirup or juice. If fruit is very juicy, you may heat it with sugar, adding no liquid. Pack hot fruit to ½ inch of top. Cover with boiling sirup, leaving ½ inch at top.	20	25	15†	20†
Rhubarb	Hot Pack Wash and cut into ½ inch pieces. Add ½ cup sugar to each quart rhubarb and let stand to draw out juice. Bring to boiling. Pack hot to ½ inch of top.	10	10	10†	10†
Sauerkraut	Hot Pack Heat well-fermented sauerkraut to simmering (185°-210° F.). Pack hot kraut to ½ inch of top. Cover with hot juice, leaving ½ inch at top.	15	20	20*	25*
Tomatoes	Raw Pack Use only perfect, ripe tomatoes. Scald just long enough to loosen skins; plunge into cold water. Drain, peel, and core. Leave tomatoes whole or cut in halves or quarters. Pack tomatoes to ½ inch of top, pressing gently to fill spaces. Add ½ teaspoon salt to pints and 1 teaspoon to quarts.	35	45	45*	45*
	Hot Pack Quarter peeled tomatoes. Bring to boil and pack to ½ inch of top. Add salt as for raw packed tomatoes.	35	45	45*	45*
Tomato juice	Hot Pack Use ripe, juicy tomatoes. Wash, remove stem ends, cut into pieces. Simmer until softened and put through strainer. Add 1 teaspoon salt to each quart juice. Reheat to just boiling. Fill jars with juice to ¼ inch of top.	30	30	35*	35*

* Use plain tin for apples, apricots, peaches, pears, sauerkraut, and tomatoes.

† Use R enamel cans for berries, cherries, plums, rhubarb.

Pressure Saucepan Method

The pressure saucepan is made especially for cooking, but it can be used for canning small quantities of food if (1) it has a gauge or indicator which registers 10 pounds accurately and (2) it is large enough to hold pint jars on a rack with cover locked in place.

Because a pressure saucepan heats and cools rapidly, time used for pressure saucepan canning is longer (about 20 minutes) than for a large pressure canner (see table).

Prepare jars and process the same as for pressure canner. When processing is finished, allow pressure to drop naturally. Do not water-cool to reduce pressure.

Boiling-water Bath Method

(Use only for acid products such as fruits, tomatoes, and pickled vegetables.)

For boiling water bath, use a utensil that has a close fitting cover and is deep enough to allow jars standing on rack to be covered at least one inch with boiling water.

1. Use same method as for pressure cooker in packing jars and adjusting jar lids.

2. Have the water bath ready. Lower the jars quickly. If water evaporates, add boiling water to keep the level an inch or more over the top of the jars. Count time when water begins to boil; keep at rolling boil.

3. When processing time is completed, remove jars. Don't disturb lids on self-seal jars, but tighten closures at once on all others.

4. Set the jars right side up on dry surface, spaced for free circulation of air.

5. When cold examine seal, label, and store where it is cool and dark.

SIRUPS TO USE IN CANNING FRUIT

Most fruits have better color, flavor, and texture when canned with sugar or sirup, but they will keep when canned without sugar.

To prepare sirups, add sugar to water or with juice extracted from fruit. Then bring to boil and boil for 5 minutes. Skim if necessary.

Type of sirup	Sugar	Water or juice	Yield of sirup
Thin	2 cups	4 cups	5 cups
Medium	3 cups	4 cups	5½ cups
Heavy	4¾ cups	4 cups	6½ cups

SAUCES USED IN CANNING BEANS

Tomato sauce—Mix 1 quart tomato juice; 3 tablespoons sugar; 2 teaspoons salt; 1 tablespoon chopped onion; and $\frac{1}{4}$ teaspoon mixture of ground cloves, allspice, mace, and cayenne. Heat to boiling.

Or mix 1 cup of tomato catsup with 3 cups of water or soaking liquid from beans and heat to boiling.

Molasses sauce—Mix 1 quart water or soaking liquid from beans, 3 tablespoons dark molasses, 1 tablespoon vinegar, 2 teaspoons salt, and $\frac{3}{4}$ teaspoon powdered dry mustard. Heat to boiling.

Before You Eat

Before opening jars, examine them for leakage or bulging, molds, or fermentation. When jar is opened, note odor. Discard if there is any indication of spoilage.

If there is no obvious sign of spoilage, empty the jar of vegetables into a stewpan and boil. Make sure every part of the vegetable reaches the boiling point before tasting. This requires 10 minutes for most vegetables, except for corn and spinach which require 20 minutes. Vegetables to be used for salad should be boiled and then cooled. If there is any reason to suspect spoilage at any time, destroy contents of jar by burning. Fruits and tomatoes need not be reheated but should be discarded if they show mold or fermentation.

UNIVERSITY OF MINNESOTA



3 1951 D04 088400 R

UNIVERSITY OF MINNESOTA, INSTITUTE OF
AGRICULTURE, ST. PAUL 1, MINNESOTA

Cooperative Extension Work in Agriculture and Home Economics, University of Minnesota, Agricultural Extension Service and United States Department of Agriculture Cooperating, Skuli Rutford, Director. Published in furtherance of Agricultural Extension Acts of May 8 and June 30, 1914.

30M—6-57