

Home Canning Vegetables

Home canning vegetables from your garden or local farmers market can help you save money and gain control over what's in your food while preserving the bounty of summer for your family's year-round enjoyment. To ensure safe, high quality home-canned products, always follow research-based recommendations when canning.

Ingredients

Select fresh, firm, young vegetables with no signs of spoilage and process them as soon as possible after harvesting. Canning will not improve the quality of produce. If you buy the vegetables you are going to can, try to get them from a local farm or farmers market, since spoilage and loss of vitamins can begin right after harvest. Wash vegetables well, whether or not they will be peeled before processing. Soil may contain many bacteria, including the spores of *Clostridium botulinum*. For ease of packing, uniform cooking, and even heat penetration during processing, vegetables should be sorted or cut into uniformly sized pieces.

Salt is optional in canning vegetables. It is used only for seasoning and does not help to preserve the food. If salt is used, canning salt is recommended to prevent cloudiness in the canned product.

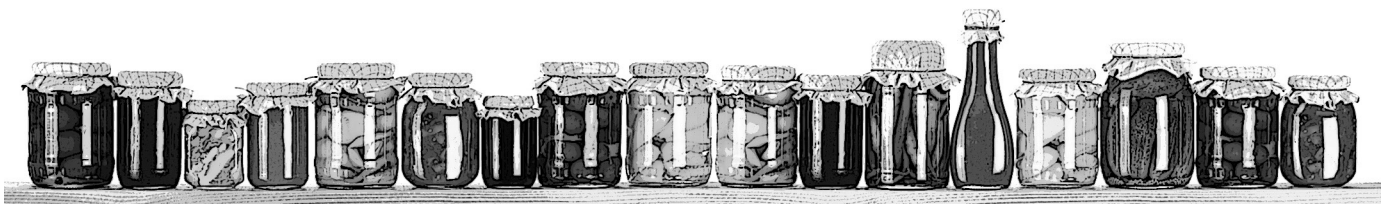
Filling Jars

There are two methods that can be used for packing food into the jars—raw pack and hot pack. Raw pack means putting raw, unheated food into the jars. When using this method, most vegetables should be packed tightly because the raw vegetables will shrink during processing. However, some starchy raw vegetables (corn, lima beans, potatoes, and peas) will expand during processing, and these should be packed loosely into the jars.

Hot pack involves cooking or heating the food for a specified length of time before packing it into the jars. This practice helps to remove the air from food tissues, shrinks the food, increases the vacuum in sealed jars, and improves shelf life. When using this method, the hot vegetables should be packed loosely into the jars, since shrinkage has already taken place.

Some recipes have directions for both raw and hot packs. Others specify one or the other, depending on which method is most suitable for

To prevent the risk of botulism, all home-canned vegetables must be processed in a pressure canner.



Some vegetables, including broccoli, cauliflower, cabbage, zucchini, summer squash, kohlrabi, and Brussels sprouts, are not suitable for home canning. Try freezing, pickling, or drying these vegetables for long-term storage. When preserving food, always use research-based recipes, such as those found on the National Center for Home Food Preservation website at <http://nchfp.uga.edu/>, or in the University of Georgia's *So Easy to Preserve*.

the specific vegetable being canned. Always use the type of pack specified in the recipe and the processing time that goes with that pack. If given a choice, the hot pack usually yields better color and flavor.

The size of the jar will affect the rate of heat penetration into the food. To ensure that all of the food in the jar receives the full heat treatment needed to destroy spores of harmful bacteria that may be present, use only the jar sizes specified in the recipe and the processing time given for each jar size. Do not use jars that are larger than those specified in the recipe.

Why Do I Need to Use a Pressure Canner?

High-acid foods (those with a pH of 4.6 or lower) contain enough acid to help control the growth of harmful bacteria and can be safely processed in a boiling water canner. However, all fresh vegetables are low-acid foods, with pH levels ranging from 4.9 to 7.3. They do not contain enough acid to prevent the growth of the bacterium *Clostridium botulinum*, which produces the toxin that causes botulism. For these foods, the high temperatures reached in a pressure canner (240 to 250°F at 10 to 15 pounds of pressure) are necessary to destroy any spores of *Clostridium botulinum* that might be present. This method prevents the spores from growing into bacterial

cells in the canned product and producing the deadly botulism toxin. The high temperature must be maintained for a specified length of time, depending on the vegetable being canned, the way it is prepared and packed into the jar, and the size of the jar. It is important to always use the full processing time and pressure specified in each recipe.

If there is any question as to whether or not home canned foods were processed according to USDA guidelines, it is recommended that low-acid and tomato foods be boiled in a saucepan for at least 10 minutes before consuming even if there are no visible signs of spoilage.

Altitude affects processing times and pressures. The processing times and pressures given in this publication are based on canning at or below 1,000 feet above sea level. If you live at an altitude greater than 1,000 feet, please consult the website for the National Center for Home Food Preservation located at <http://nchfp.uga.edu>.

For more information on safe home canning and the pressure canner method, please see *Home Canning Basics* (FCS3-578).

Step-By-Step Canning

Pressure Canner Method

1. Assemble all equipment and utensils.
2. Visually examine jars, lids and bands for defects. Wash in hot, soapy water and rinse well. Place the jars in simmering water to keep hot until filled. Dry the bands and set aside. Follow the manufacturer's instructions for preparing the lids. Many no longer require preheating before use. Do not boil the lids
3. Use top-quality ingredients; wash fresh vegetables well. Prepare the recipe, following the directions given.
4. Fill the hot jars, leaving the headspace specified in the recipe. Remove air bubbles and adjust headspace, if necessary. Wipe jar rims with a dampened clean paper towel. Center lids on jars and apply bands fingertip tight. Do not over tighten.
5. Following your manufacturer's instructions, place one to two inches of hot water in the pressure canner. Load filled jars into the canner, using a jar lifter. Keep jars upright at all times. Fasten the canner lid securely. Leave the weight off the vent port or open the petcock.
6. To vent the canner, heat on high until the water boils and generates steam that can be seen escaping in a funnel shape through the open vent port or petcock. Set a timer for 10 minutes. After 10 minutes of continuous steam, close the petcock or place the counterweight or weighted gauge over the vent port to begin building pressure in the canner. The canner should pressurize within three to ten minutes.
7. Start timing the process when the pressure reading on the dial gauge indicates that the recommended pressure has been reached, or when the weighted gauge begins to jiggle or rock as the manufacturer describes. Regulate the heat under the canner to maintain a steady pressure at, or slightly above, the correct gauge pressure for the whole processing time.
8. When the processing time specified in the recipe is complete, turn off the heat to allow the canner to cool naturally and return to zero pressure. After the canner is completely depressurized, remove the weight from the vent port or open the petcock. At this point, the canner and its contents will still be hot. Wait 10 minutes, then unfasten the lid and remove it carefully, with the underside away from you so that the steam coming out of the canner does not burn your face.
9. Remove jars from canner, keeping them upright. Carefully place them onto a towel, leaving a one-inch space between the jars for proper cooling.
10. After 12 to 24 hours, test seals and remove bands.
11. Wash outside of jars and lid surfaces. Label and store sealed jars in a cool, dark, dry place for up to two years.
12. Enjoy your very own canned vegetables.

Recipes

Beans—Green (Snap, Wax or Italian)

Ingredients

- 2 pounds beans per quart
- 1 teaspoon canning salt per quart (optional)
- water to cover

Directions

Hot Pack

- Prepare beans: Select filled but tender, crisp pods. Remove and discard diseased and rusty pods. Wash beans and trim ends. Leave whole or cut or snap into 1-inch pieces.
- In a large saucepan, cover beans with boiling water; boil 5 minutes.
- Pack hot beans loosely into hot pint or quart jars, leaving 1-inch headspace.
- Add ½ teaspoon salt to each pint jar or 1 teaspoon salt to each quart jar, if desired.
- Ladle boiling hot cooking liquid over beans, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint jars 20 minutes, quart jars 25 minutes, at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Raw Pack

- Prepare beans: Select filled but tender, crisp pods. Remove and discard diseased and rusty pods. Wash beans and trim ends. Leave whole or cut or snap into 1-inch pieces.
- Pack raw beans tightly into hot pint or quart jars, leaving 1-inch headspace.
- Add ½ teaspoon salt to each pint jar or 1 teaspoon salt to each quart jar, if desired.
- Ladle boiling water over beans, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint jars 20 minutes, quart jars 25 minutes, at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Yield: An average of 14 pounds is needed per canner load of 7 quarts; an average of 9 pounds is needed per canner load of 9 pints.

Nutritional Analysis (½ cup): 19 calories, 0 g fat, 3 g carbohydrate, 1 g protein

Beans or Peas—Shelled, Dried (All Varieties)

Ingredients

- ¾ pound shelled beans or peas per quart
- 1 teaspoon canning salt per quart (optional)
- water to cover

Directions

Hot Pack

- Prepare beans: Select mature, dry beans or peas. Sort out and discard discolored seeds. Wash beans or peas.
- Rehydrate dried beans or peas by using one of the following soaking methods:
 - » Place dried beans or peas in a large saucepan and cover with water. Soak 12 to 18 hours in a cool place. Drain water.
 - » Place dried beans or peas in a large saucepan and cover with boiling water. Boil 2 minutes. Remove from heat; soak 1 hour. Drain water.
- In a large saucepan, cover soaked, drained beans or peas with fresh water and boil 30 minutes.
- Add ½ teaspoon salt to each hot pint jar or 1 teaspoon salt to each hot quart jar, if desired.
- Fill hot jars with hot beans or peas and cooking water, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint jars 75 minutes, quart jars 90 minutes, at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Yield: An average of 5 pounds is needed per canner load of 7 quarts; an average of 3¾ pounds is needed per canner load of 9 pints.

Nutritional Analysis (½ cup): 98 to 149 calories, 0 to 1 g fat, 18 to 28 g carbohydrate, 6 to 10 g protein (depending on variety)

Carrots—Sliced or Diced

Ingredients

- 2½ pounds carrots (without tops) per quart
- 1 teaspoon canning salt per quart (optional)
- water to cover

Directions

Hot Pack

- Prepare carrots: Select small carrots, preferably 1 to 1¼ inches in diameter. Larger carrots are often too fibrous. Wash, peel, and rewash carrots. Slice or dice.
- In a large saucepan, cover carrots with boiling water; bring to a boil and simmer for 5 minutes.
- Pack hot carrots into hot pint or quart jars, leaving 1-inch headspace.
- Add ½ teaspoon salt to each pint jar or 1 teaspoon salt to each quart jar, if desired.
- Ladle hot cooking liquid over carrots, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint jars 25 minutes, quart jars 30 minutes, at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Raw Pack

- Prepare carrots: Select small carrots, preferably 1 to 1¼ inches in diameter. Larger carrots are often too fibrous. Wash, peel, and rewash carrots. Slice or dice.
- Pack raw carrots tightly into hot pint or quart jars, leaving 1-inch headspace.
- Add ½ teaspoon salt to each pint jar or 1 teaspoon salt to each quart jar, if desired.
- Ladle hot water over carrots, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint jars 25 minutes, quart jars 30 minutes, at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Yield: An average of 17½ pounds (without tops) is needed per canner load of 7 quarts; an average of 11 pounds is needed per canner load of 9 pints.

Nutritional Analysis (½ cup): 18 calories, 0 g fat, 4 g carbohydrate, 0 g protein

Corn—Cream Style

Ingredients

- 2¼ pounds sweet corn per pint
- ½ teaspoon canning salt per pint (optional)
- 1 cup boiling water per pint

Directions

Hot Pack

- Prepare corn: Select ears containing slightly immature kernels, or of ideal quality for eating fresh. Husk corn, remove silk, and wash ears.
- In a large saucepan, blanch ears 4 minutes in boiling water.
- Cut corn from cob at about the center of kernel. Scrape remaining corn from cobs with a table knife.
- To each pint of corn and scrapings, in a large saucepan, add 1 cup of boiling water. Heat to boiling.
- Add ½ teaspoon salt to each pint jar, if desired.
- Fill hot pint jars with hot corn mixture, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint jars 1 hour 25 minutes at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Yield: An average of 20 pounds (in husks) is needed per canner load of 9 pints.

Nutritional Analysis (½ cup): 92 calories, 1 g fat, 23 g carbohydrate, 2 g protein

Caution. Quart jars are not recommended due to the denseness of the canned product.

Corn—Whole Kernel

Ingredients

- 4½ pounds sweet corn per quart
- 1 teaspoon canning salt per quart (optional)
- 1 cup hot water per quart

Canning of some sweeter varieties or too immature kernels may cause browning. Can a small amount; check color and flavor before canning large quantities.

Directions

Hot Pack

- Prepare corn: Select ears containing slightly immature kernels, or of ideal quality for eating fresh. Husk corn, remove silk, and wash ears.
- In a large saucepan, blanch ears 3 minutes in boiling water.
- Cut corn from cob at about $\frac{3}{4}$ the depth of kernel. **Caution: Do not scrape cob.**
- In a large saucepan, add 1 cup boiling water to each quart of clean kernels. Heat to boiling and simmer 5 minutes.
- Fill hot pint or quart jars with hot corn, leaving 1-inch headspace.
- Add 1 teaspoon salt to each quart jar or $\frac{1}{2}$ teaspoon salt to each pint jar, if desired.
- Ladle hot cooking liquid over corn, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint jars 55 minutes, quart jars 1 hour 25 minutes, at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Raw Pack

- Prepare corn: Select ears containing slightly immature kernels, or of ideal quality for eating fresh. Husk corn, remove silk, and wash ears.
- In a large saucepan, blanch ears 3 minutes in boiling water.
- Cut corn from cob at about $\frac{3}{4}$ the depth of kernel. **Caution: Do not scrape cob.**
- Fill hot pint or quart jars with raw kernels, leaving 1-inch headspace. Do not shake or press down.
- Add 1 teaspoon salt to each quart jar or $\frac{1}{2}$ teaspoon salt to each pint jar, if desired.
- Ladle fresh boiling water over corn, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint jars 55 minutes, quart jars 1 hour 25 minutes, at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Yield: An average of 31½ pounds (in husks) is needed per canner load of 7 quarts; an average of 20 pounds is needed per canner load of 9 pints.

Nutritional Analysis ($\frac{1}{2}$ cup): 65 calories, 1 g fat, 15 g carbohydrate, 2 g protein

Peas—Green or English (Shelled)

Ingredients

- 4½ pounds peas (in pods) per quart
- 1 teaspoon canning salt per quart (optional)
- water to cover

It is recommended that sugar snap and Chinese edible pod peas be frozen for best quality.

Directions

Hot Pack

- Prepare peas: Select filled pods containing young, tender, sweet seeds. Discard diseased pods. Shell and wash peas.
- In a large saucepan, cover peas with boiling water. Bring to a boil; boil 2 minutes.
- Fill hot pint or quart jars loosely with hot peas, leaving 1-inch headspace.
- Add ½ teaspoon salt to each pint jar or 1 teaspoon salt to each quart jar, if desired.
- Ladle hot cooking liquid over peas, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint or quart jars 40 minutes at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Raw Pack

- Prepare peas: Select filled pods containing young, tender, sweet seeds. Discard diseased pods. Shell and wash peas.
- Fill hot pint or quart jars with raw peas, leaving 1-inch headspace. Do not shake or press down peas.
- Add ½ teaspoon salt to each pint jar or 1 teaspoon salt to each quart jar, if desired.
- Ladle boiling water over peas, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint or quart jars 40 minutes at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Yield: An average of 31½ pounds (in pods) is needed per canner load of 7 quarts; an average of 20 pounds is needed per canner load of 9 pints.

Nutritional Analysis (½ cup): 59 calories, 0 g fat, 11 g carbohydrate, 4 g protein

Potatoes (White)—Cubed or Whole

Ingredients

- 2½ to 3 pounds potatoes per quart
- 1 teaspoon canning salt per quart (optional)
- water to cover

Directions

Hot Pack

- Prepare potatoes: Select small to medium-size mature potatoes of ideal quality for cooking. Potatoes stored below 45°F may discolor when canned. Choose potatoes 1 to 2 inches in diameter if they are to be packed whole. Wash and peel potatoes. If desired, cut into ½-inch cubes. Place in ascorbic acid solution (1 teaspoon per gallon) to prevent darkening. Drain.
- In a large saucepan, cook cubed potatoes 2 minutes in boiling water. For whole potatoes, boil 10 minutes. Drain and discard cooking liquid.
- Fill hot pint or quart jars with hot potatoes, leaving 1-inch headspace.
- Add ½ teaspoon salt to each pint jar or 1 teaspoon salt to each quart jar, if desired.
- Ladle fresh hot water over potatoes, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint jars 35 minutes, quart jars 40 minutes, at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Yield: An average of 20 pounds is needed per canner load of 7 quarts; an average of 13 pounds is needed per canner load of 9 pints.

Nutritional Analysis (½ cup): 54 calories, 0 g fat, 12 g carbohydrate, 1 g protein

Pumpkins and Winter Squash—Cubed

Ingredients

2¼ pounds pumpkin or winter squash
per quart
water to cover

Caution. Do not mash or puree pumpkin or squash before packing into jars. For making pies, drain jars and strain or sieve the cubes at preparation time.

Directions

Hot Pack

- Prepare pumpkin or squash: Pumpkins and squash should have a hard rind and stringless, mature pulp of ideal quality for cooking fresh. Small size pumpkins (sugar or pie varieties) make better products. Wash, remove seeds, cut into 1-inch wide slices, and peel. Cut flesh into 1-inch cubes.
- In a large saucepan, add pumpkin or squash cubes to boiling water. Boil 2 minutes. **Caution: Do not mash or purée.**
- Pack hot cubes into hot pint or quart jars, leaving 1-inch headspace.
- Ladle hot cooking liquid over cubes, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint jars 55 minutes, quart jars 1 hour 30 minutes, at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Yield: An average of 16 pounds is needed per canner load of 7 quarts; an average of 10 pounds is needed per canner load of 9 pints.

Nutritional Analysis (½ cup): 42 calories, 0 g fat, 10 g carbohydrate, 1 g protein

Mixed Vegetables

Ingredients

- 6 cups sliced carrots
- 6 cups cut, whole kernel sweet corn
- 6 cups cut green beans
- 6 cups shelled lima beans
- 4 cups whole or crushed tomatoes
- 4 cups diced zucchini
- 7 teaspoons canning salt

You may change the suggested proportions or substitute other favorite vegetables *except* leafy greens, dried beans, cream-style corn, squash, or sweet potatoes.

Directions

Hot Pack

- In a large saucepan, combine all vegetables. Add enough boiling water to cover pieces and return to boil. Boil 5 minutes.
- Fill hot vegetables into hot pint or quart jars, leaving 1-inch headspace.
- Add ½ teaspoon salt to each pint jar or 1 teaspoon salt to each quart jar, if desired.
- Ladle hot cooking liquid over vegetables, leaving 1-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal caps.
- Process pint jars 1 hour 15 minutes, quart jars 1 hour 30 minutes, at 10 pounds pressure in a weighted-gauge pressure canner or at 11 pounds pressure in a dial-gauge pressure canner.

Yield: 14 pint jars or 7 quart jars

Nutritional Analysis (½ cup): 45 calories, 0 g fat, 9 g carbohydrate, 2 g protein

References

- Address, E.L., and J.A. Harrison (2011). *So Easy to Preserve* (5th ed.). Athens, GA: Cooperative Extension, University of Georgia.
- FDA/Center for Food Safety & Applied Nutrition: Approximate pH of Foods and Food Products (2007). Retrieved January 30, 2014, from <http://www.foodscience.caes.uga.edu/extension/documents/fdaapproximatephoffoodslacfpbs.pdf>.
- Jarden Home Brands (2012). *Ball Blue Book Guide to Preserving*. Daleville, IN: Hearthmark.
- National Center for Home Food Preservation, University of Georgia (n.d.). How Do I?...Can Vegetables. Retrieved January 30, 2014, from http://nchfp.uga.edu/how/can4_vegetable.html.
- United States Department of Agriculture (2013). National Nutrient Database for Standard Reference, Release 26. Retrieved January 31, 2014, from <http://ndb.nal.usda.gov/ndb/search/list>.
- United States Department of Agriculture (2009). *USDA Complete Guide to Home Canning* (Agriculture Information Bulletin No. 539). Retrieved January 30, 2014, from http://nchfp.uga.edu/publications/publications_usda.html.

Additional Information

The recipes in this publication are from the *USDA Complete Guide to Home Canning*. They are used with permission for educational purposes only. Complete instructions for canning other fresh vegetables are available in the *USDA Complete Guide to Home Canning* or on the National Center for Home Food Preservation website.

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