

Wise Methods of Canning Vegetables

Aren't you proud when you look on your pantry shelf and see all those jars of pretty canned food? Or, are you one of those whose canned food has begun to turn dark or perhaps is starchy looking? If that's you, then you'd better get busy and practice wise methods of canning vegetables.

After gathering, preparing, and processing vegetables, you want your family to enjoy eating them. They won't if the peas and lima beans are too starchy, the snap beans tough, the okra stringy. No one wants food like that. Not only is it tasteless, but it lacks the nutrients you should get from good vegetables. You know the importance of good nutrition for your family's health. Canned food, if properly gathered, prepared, processed, and stored, is very nutritious. There is little, if any, difference in the nutritive content of cooked vegetables—frozen or canned. Every member of your family should eat two or three vegetables *every* day, and at least every other day one of these should be a dark green or deep yellow vegetable.

Many people prefer some canned vegetables to frozen ones. Nearly everyone who has a home freezer cans some food, too.

Importance of Canning Right

First of all, you should understand what takes place in the canning process. Unless you know this, you won't understand why you must use certain equipment and be so careful about canning temperatures and time limits.

Foods spoil because they are constantly under attack by microorganisms—bacteria, yeast, mold, etc. These are always present in the air, water, and soil.

Then, too, vegetables contain chemical substances called enzymes. These help to bring about normal ripening and maturing. Enzyme action, unless halted, can cause overripening, undesirable changes in flavor, color, and texture, and even spoilage.

When you can vegetables, you must heat them at high enough pressure and long enough *to destroy spoilage microorganisms and to stop enzyme action.*

The main point to remember is that each step in the canning process is important. *One step depends on another.*

Let's see just what these steps are.

Choose the Right Variety

Varieties that are good to cook for a meal are generally good to can. Some families like one variety; others like another.

Pick at the Right Stage

It is very important that vegetables be gathered at the right stage of maturity. If the vegetable is not mature, it will not have the characteristic flavor; if too mature, it will be tough and lack flavor. The important thing is to gather the vegetable when it is just mature and tender. Then it has a good color, flavor, and texture. It is also richer in minerals and vitamins.

Prepare Correctly

Regardless of what vegetable is being canned, a good rule to follow is: "From the garden to the canner in 2 hours." As soon as the vegetable is brought from the garden, spread it out in the coolest place available. A refrigerator is excellent, but often there isn't enough room. If you put ice over the vegetable and leave it too long, the pieces in the bottom of the pan will get waterlogged. This is not desirable.

Wash the vegetable thoroughly—enough for one canner load. Wash small amounts at a time under running water or through several changes of water. Lift vegetable from the water each time so dirt that has been washed off won't collect on the food again. Do not let vegetables soak.

Sort pieces of vegetable by size or maturity. This aids in filling the jars. Beans, for example, can be sorted as you remove the ends. Some people

snap beans while others cut them. Most families prefer beans $\frac{3}{4}$ to 1 inch long; you can have them any length you wish. Remove strings on beans as you go. If the string is tough, generally the bean is too mature to can for best flavor and texture.

Choose Your Method

The next step is to use either the raw pack or the hot pack method. Either is good. The quality of the product is about the same, but you may prefer one method over the other. However, raw packing of *tomatoes* is no longer recommended. It has been found that a highly heat-resistant mold is able to survive during the processing. When this mold grows, it changes the pH of the tomatoes from a high-acid to a low-acid product. The canned tomatoes then become susceptible to the growth of *Clostridium botulinum*. This microorganism produces a toxin that can cause death.

Table 1. Timetable for Canning Vegetables (HOT PACK METHOD)

Vegetable	How To Precook	Minutes At 10 Pounds Pressure (240°F.)	
		Pints	Quarts
Beans, lima	Heat to a boil	40	50
Beans, snap	Boil 5 minutes	20	25
Beets	Boil till tender, remove skin. Let come to a boil again	30	35
Carrots	Heat to a boil	25	30
Corn (whole kernel)	Heat to a boil	55	85
Corn (cream style)	Heat to a boil	85	Not recom.
Corn (on cob)	Not recommended for canning		
Okra	Boil 1 minute	25	40
Peas, black-eyed	Heat to a boil	35	40
Potatoes, Irish (cubed)	Boil 2 minutes	35	40
Potatoes, sweet (wet pack)	Cook till skin slips, remove skin	55	90
Pumpkin (cubed)	Cook till tender, simmer till heated through	55	90
Soup mixture	Cook to consistency of thick soup	Same time as ingredient requiring longest processing	
Spinach; other greens	Heat until well wilted	70	90
Tomatoes	Boil 5 minutes	10	10

Most homemakers use the hot pack method. More food can be packed in a standard canning jar, and the time the food stays in the pressure canner is generally less. Vegetables sometimes “float” if they are not preheated before being packed. This is not harmful but is unattractive.

The Hot Pack Method. In the hot pack method, the vegetable is placed in boiling water and heated for a few minutes (see Table 1 for timing). This destroys some of the enzyme action and some microorganisms and shrinks the vegetable. Heat no more than 2 to 3 quarts at a time in one container. Then the water will return to a boil much more quickly. Use enough boiling water to cover the vegetable. Use this same liquid to fill the jars after the vegetable is packed.

Be sure to check your jars. Use standard canning jars—they generally have the manufacturer’s name in big letters printed on the side of the jar and/or the word MASON. Do not use peanut butter, mayonnaise, or pickle jars, etc., since they may not withstand the 10-pound (240 degrees F) pressure needed to can vegetables. Run your finger around the mouth of the jar to see if it has a nick. If it does, the jar will not seal. Another check is to turn the jar upside down and place it on a flat surface. If the jar doesn’t sit level, it will not seal.

Wash and rinse the jars to be used. Put them in the pressure canner so they will be hot when the hot food is placed in them. Preheating cuts down the time it takes for the temperature in the canner to reach 240 degrees F (10 pounds pressure).

To get a 7-quart pressure canner ready for processing, add about 3 inches of hot water. (Larger canners need more water; read the manufacturer’s instructions.) Put the rack in the bottom of the canner and place the canner on the range unit to heat.

Most homemakers use metal bands with flat metal lids. Always use new lids. Be sure the sealing compound on the lid has not been scratched or marred in any way. The sealing compound should cover the part that will fit the jar mouth. If lids are stuck together, cover with cold tap water for 15 to 20 minutes; then they can usually be separated easily. Read the manufacturer’s instructions that come with the lids. Each brand varies as to what treatment should be given the lids before using.

When the vegetable has been preheated for the recommended time, remove a canning jar from the hot water and empty it. Place salt in the jar ($\frac{1}{2}$ teaspoon per pint). Pure salt, generally called meat curing salt or pickling salt, is best; it does not have iodine or starch added as most table salt does. Iodine sometimes causes chemical reactions in canning that give food an off-color; however, this is



Figure 1. Use standard canning jars.

not harmful. Starch is put in table salt to help keep it from lumping in damp weather. In canning, it sometimes settles to the bottom of the jar and gives a slightly cloudy appearance. If pure salt is not available, use noniodized table salt. If you prefer, omit salt and add it when you are ready to serve the vegetable.

Fill the jar with hot food. For most nonstarchy vegetables, fill to within $\frac{1}{2}$ inch of the top; for starchy vegetables, 1 inch. Add the hot liquid in which the vegetable was cooked. The vegetable pieces should be loose enough to allow the liquid between them. Too tight a pack will keep the liquid from circulating around the food while it is being processed in the pressure canner.

Slide a plastic spatula down the inside of the jar on each side, all the way to the bottom. This will allow air bubbles to come to the top. Air left in the jar takes up space and can cause food to darken. Be sure the liquid completely covers the vegetable. Leave $\frac{1}{2}$ inch of headspace.

Wipe the mouth of the jar, inside and out, with a clean, damp cloth. Also, wipe the threads.

Follow the manufacturer's directions for heating the jar lid. Then place the lid on the jar and screw the band on the jar mouth firmly. Do not screw too tightly or the sealing composition may be cut—a firm closure is what you want. As soon as the lid is firmly in place, put the filled jar on the rack in the pressure canner. Leave space between the jars so water (and later steam) can circulate around them.

Adjust the pressure canner lid according to the manufacturer's instructions. Be sure the pet cock is open. Allow a steady flow of steam to escape from the pet cock at least 10 minutes for a 7-quart canner. This allows air to be pushed from the canner. If air is left in, you will not have a true

steam pressure reading. Air will also draw liquid from the jars.

After 10 minutes, close the pet cock and allow the pressure to go to 10 pounds (240 degrees F). Adjust the range unit so the gauge *will remain on exactly 10 pounds*. If the gauge reading fluctuates, liquid will be lost from the jars.

Start counting time. The time recommended for the vegetable (see Table 1) is for 10 pounds pressure; do not make any substitutions.

When the required time is up, turn the range unit off and slide the canner from the unit. Let it cool slowly—do not hurry it.

After the gauge has been at 0 degrees for 3 to 4 minutes, slowly open the pet cock. Usually some steam will come from the pet cock. Be sure there is no draft in the kitchen. It is safest to pull down the windows and shut the doors. Now you are ready to remove the lid. *Be very careful to open the lid away from you.* This will prevent a steam burn.

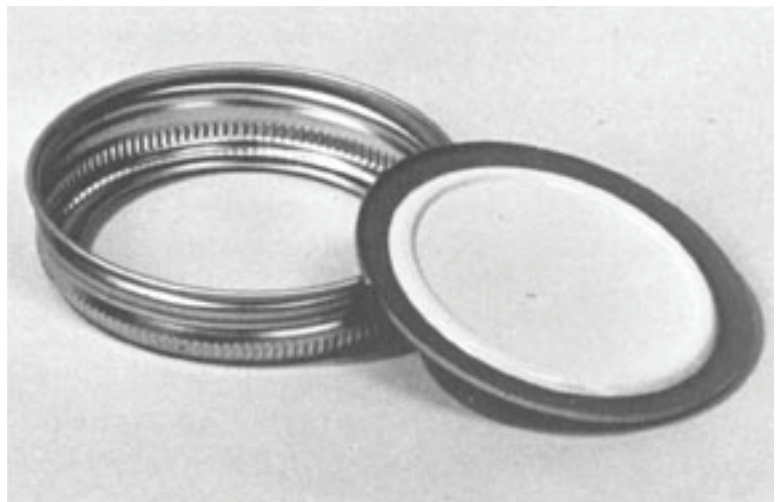


Figure 2. One of the most popular types of lid and band.

Remove the hot jars with canning tongs. If these are not available, place a heavy towel over the jar, lift it out and place it on a rack or piece of clean paper away from a draft to cool. *Do not leave the cloth on top of the hot jars.* If you do, the heat will stay in the jars, and the vegetables may have a flat or sour taste. This is not harmful, but your family won't enjoy eating the food.

Sometimes the jar band is loose when the hot jar comes out of the pressure canner. Do not tighten it unless the manufacturer specifies otherwise. Later you may hear a popping sound; this means the jar has sealed. Not all lids make this sound, however.

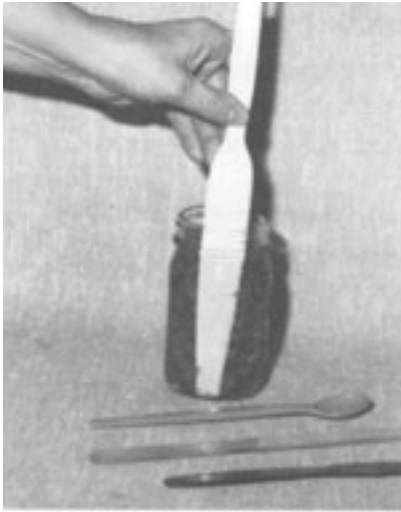


Figure 3. Removing air bubbles to be sure liquid covers food.

The next day, store the jars in a cool (80 degrees F or less), dark, dry place. The metal bands, if loose, may be removed. However, it is better to leave them on to protect the lids. You may want to loosen the bands some.

After all the jars have been removed, pour out the remaining water from the canner. Wash the inside of the canner and rack with soapy water; rinse and dry. Wipe the lid with a soapy cloth, then with a rinsed cloth. Dry it. Store the lid upside down in the canner.

The Raw Pack Method. The only difference in this method is that you don't preheat the vegetable before putting it in the canning jar. Generally, the recommended canning time is different. See a recent edition of Extension publication HE-0001, *Home Food Preservation*, for this information. *Tomatoes should never be raw packed.*



Figure 4. Wipe jar mouth inside, outside, and on top before putting on lid.

Use a Pressure Canner

All vegetables, except tomatoes, should be canned in a pressure canner at 10 pounds pressure (240 degrees F). You may can tomatoes in either a waterbath canner or a pressure canner, but you should always hot pack them. Have your gauge checked for accuracy at your county Cooperative Extension System office. There is no charge.

In a waterbath canner the temperature never gets higher than 212 degrees F. Vegetables (except tomatoes) are nonacid foods and require the higher temperature to kill the food spoilage microorganisms, such as *Clostridium botulinum*. This microorganism is generally killed if held at 240 degrees F for a certain period of time.

All home canned vegetables should be boiled for at least 10 minutes after they are removed from the jar or can for serving. This destroys any toxin that may be present. *Never open a canned vegetable and taste it; boil for at least 10 minutes and then taste. Boil starchy and leafy vegetables for 20 minutes.* If the food looks spoiled, foams, or has an off-odor during heating, destroy it.

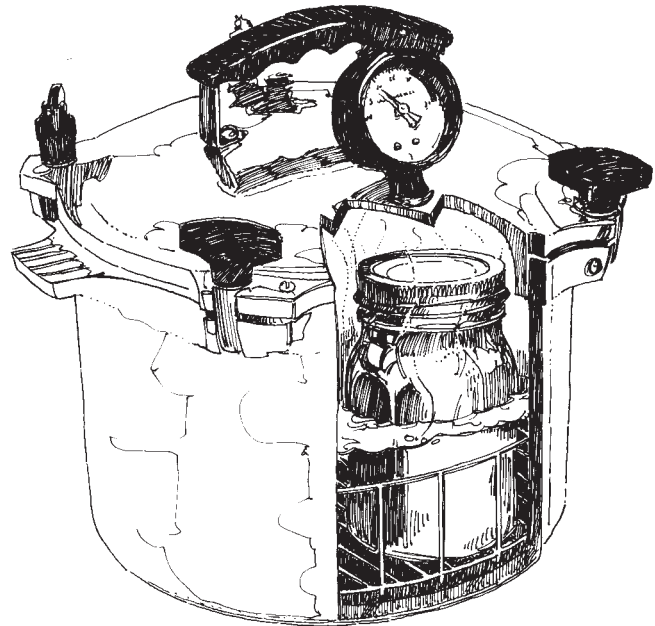


Figure 5. Use a pressure canner for all vegetables except tomatoes.

Oven Canning

Oven canning is dangerous for there is always the possibility of the jars bursting. Also, the temperature in the jar never gets higher than 212 degrees F, even if the oven is turned on “all the way.” *Oven canning is not recommended for any food.*

Causes of Spoilage

1. Food was not processed at a high enough temperature for enough time.
2. Jars did not seal.

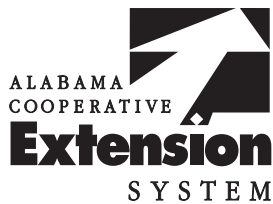
Causes of Discoloration, Floating, Liquid Loss, Unattractiveness

See the latest edition of Extension publication HE-0001, *Home Food Preservation*.

Points to Remember

1. Use the variety your family likes.
2. Select mature, yet tender, vegetables.
3. Remember: “From the garden to the canner in 2 hours.”
4. Wash and prepare the vegetable carefully.
5. Preheat the vegetable if using hot pack method.
6. Pack in standard canning jars; cover with liquid; remove air bubbles.
7. Wipe jar mouth and threads; adjust lid according to manufacturer’s instructions.
8. Place jar on rack in 7-quart pressure canner with 3 inches of hot water.
9. Adjust pressure canner lid.
10. Let steam escape from pet cock for 10 minutes, then close.
11. Start counting time when pressure gauge registers 10 pounds.
12. Use recommended timetable.
13. When time is up, slide canner from range unit; let it cool.
14. About 3 or 4 minutes after gauge has returned to 0, open pet cock slowly.
15. Close doors and windows. Lift side of canner lid away from you.
16. Take out hot jars one at a time.
17. Place jars on a rack to cool—out of a draft.
18. Store canned food the next day in a cool, dark, dry place.

REMEMBER—EACH STEP IN CANNING
DEPENDS ON COMPLETING THE PREVIOUS
STEP CORRECTLY



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Patricia West, *Regional Extension Agent*, and **Evelyn F. Crayton**, *Extension Assistant Director, Family Programs*, and Professor, Nutrition and Food Science, both with Auburn University. This publication is based on recommendations in "Home Canning of Fruits and Vegetables," USDA Home and Garden Bulletin #8.

For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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