Canning 101, Inst. Kelle A. Rankin-Sunter ph. 332-7435 or fruit@Blaine-CORE.com

From the USDA Food Guide to Canning http://www.uga.edu/nchfp/publications/publications_usda.html

Why Can Foods?

Canning can be a safe and economical way to preserve quality food at home. Disregarding the value of your labor, canning *homegrown* food may save you money over buying commercially canned food. Canning favorite and special products to be enjoyed by family and friends is a fulfilling experience and a source of pride for many people. Keep in mind when eating that FRESH IS BEST. Many vegetables begin losing some of their vitamins when harvested. Nearly half the vitamins may be lost within a few days unless the fresh produce is cooled or preserved. Within 1 to 2 weeks, even refrigerated produce loses half or more of some of its vitamins. The heating process during canning destroys from one-third to one-half of vitamins A and C, thiamin, and riboflavin. Once canned, additional losses of these sensitive vitamins are from 5 to 20 percent each year. The amounts of other vitamins, however, are only slightly lower in canned compared with fresh food. If vegetables are handled properly and canned promptly after harvest, they can be more nutritious than fresh produce sold in local stores. The advantages of home canning are lost when you start with poor quality fresh foods; when jars fail to seal properly; when food spoils; and when flavors, texture, color, and nutrients deteriorate during prolonged storage.

How Canning Preserves Foods

The high percentage of water in most fresh foods makes them very perishable. They spoil or lose their quality for several reasons:

- growth of undesirable microorganisms-bacteria, molds, and yeasts,
- activity of food enzymes,
- reactions with oxygen,
- moisture loss.

Microorganisms live and multiply quickly on the surfaces of fresh food and on the inside of bruised, insect-damaged, and diseased food. Oxygen and enzymes are present throughout fresh food tissues.

Proper canning practices include:

- carefully selecting and washing fresh food,
- peeling some fresh foods,
- hot packing many foods,
- adding acids (lemon juice or vinegar) to some foods,
- using acceptable jars and self-sealing lids,
- processing jars in a boiling-water or pressure canner for the correct period of time

Collectively, these practices remove oxygen; destroy enzymes; prevent the growth of undesirable bacteria, yeasts, and molds; and help form a high vacuum in jars. Good vacuums form tight seals which keep liquid in and air and microorganisms out.

Ensuring Safe Canned Foods

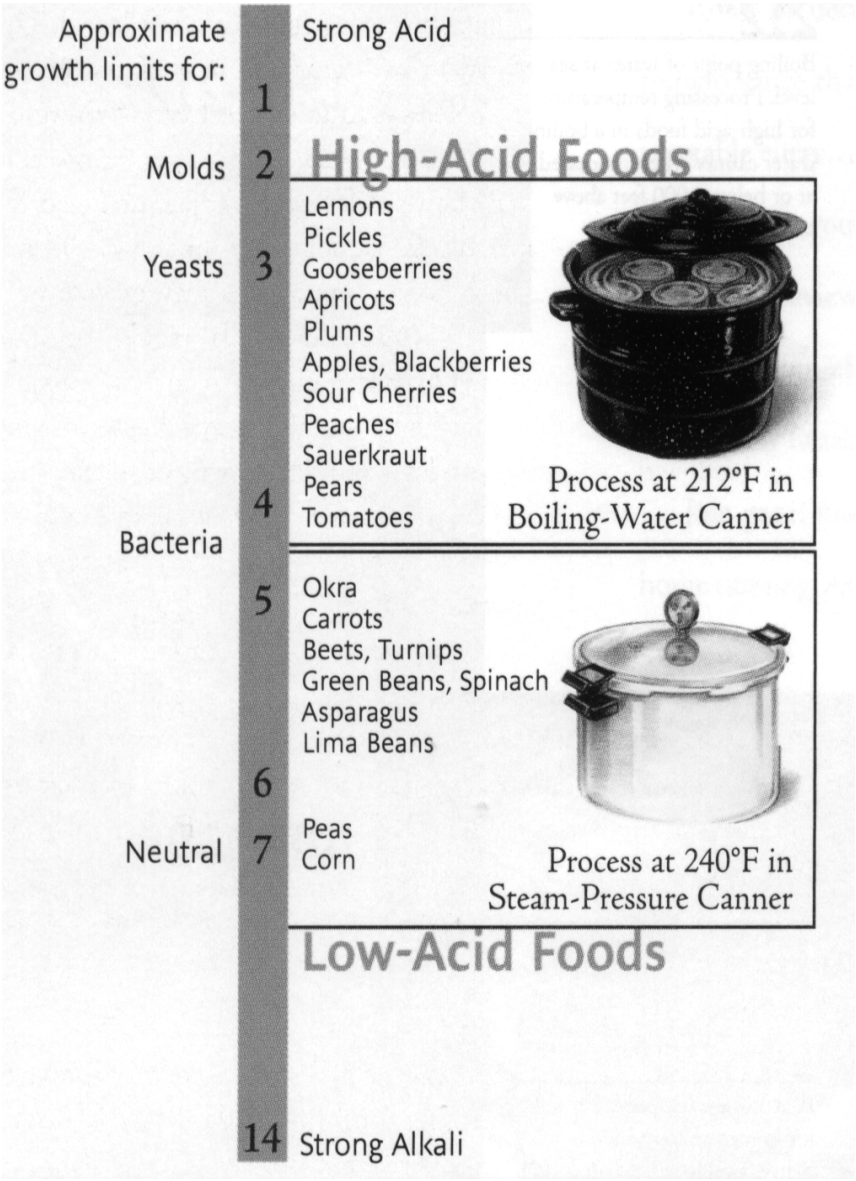
Growth of the bacterium Clostridium botulinum in canned food may cause botulism—a deadly form of food poisoning. These bacteria exist either as spores or as vegetative cells. The spores, which are comparable to plant seeds, can survive harmlessly in soil and water for many years. When ideal conditions exist for growth, the spores produce vegetative cells which multiply rapidly and may produce a deadly toxin within 3 to 4 days of growth in an environment consisting of:

- a moist, low-acid food
- a temperature between 40° and 120° F
- less than 2 percent oxygen

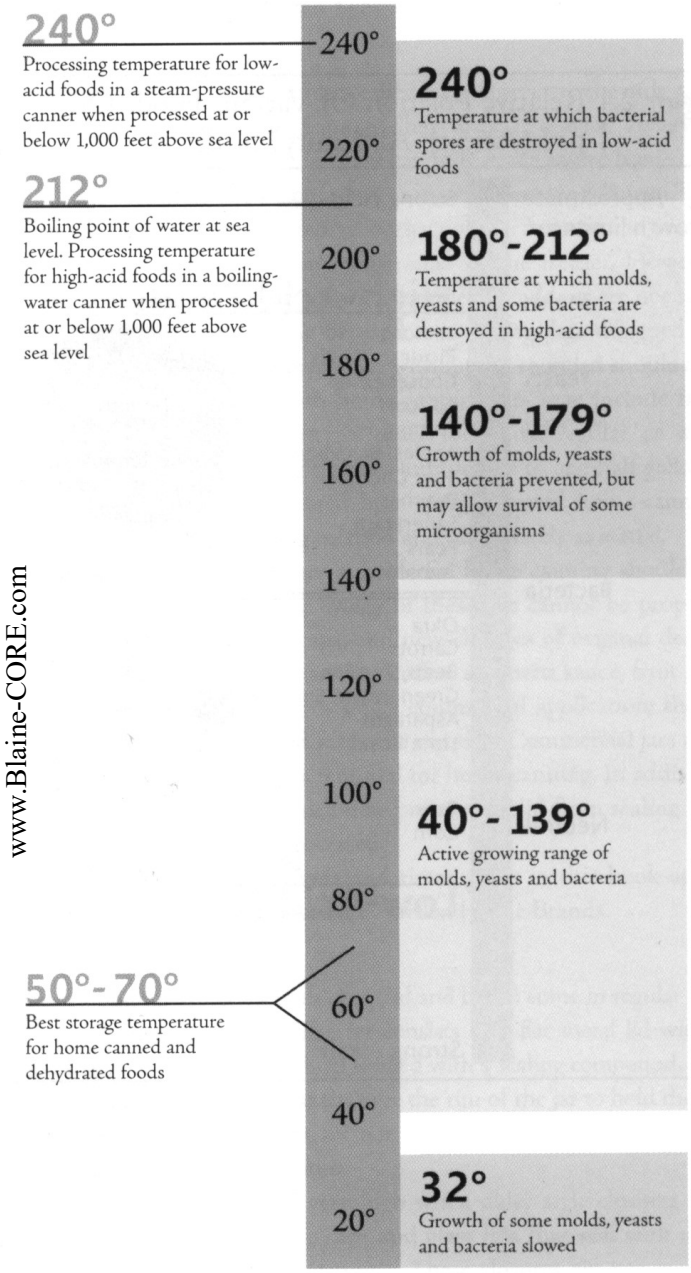
Botulinum spores are on most fresh food surfaces. Because they grow only in the absence of air, they are harmless on fresh foods.
Most bacteria, yeasts, and molds are difficult to remove from food surfaces. Washing fresh food reduces their numbers only slightly. Peeling root crops, underground stem crops, and tomatoes reduces their numbers greatly. Blanching also helps, but the vital controls are the method of canning and making sure the recommended research-based process times, are used.
The processing times ensure destruction of the largest expected number of heat-resistant microorganisms in home-canned foods. Properly sterilized canned food will be free of spoilage if lids seal and jars are stored below 95° F. Storing jars at 40° to 70° F enhances retention of quality.

Food Acidity and Processing Methods

Whether food should be processed in a pressure canner or boiling-water canner to control botulinum bacteria depends on the acidity of the food. Acidity may be natural, as in most fruits, or added, as in pickled food. **Low-acid** canned foods are not acidic enough to prevent the growth of these bacteria. **Acid** foods contain enough acid to block their growth, or destroy them more rapidly when heated. The term "pH" is a measure of acidity; the lower its value, the more acid the food. The acidity level in foods can be increased by adding lemon juice, citric acid, or vinegar.
Low-acid foods have pH values higher than 4.6. They include red meats, seafood, poultry, milk, and all fresh vegetables except for most tomatoes. Most mixtures of low-acid and acid foods also have pH values above 4.6 unless their recipes include enough lemon juice, citric acid, or vinegar to make them acid foods. Acid foods have a pH of 4.6 or lower. They include fruits, pickles, sauerkraut, jams, jellies, marmalades, and fruit butters.
Although tomatoes usually are considered an acid food, some are now known to have pH values slightly above 4.6. Figs also have pH values slightly above 4.6. Therefore, if they are to be canned as acid foods, these products must be acidified to a pH of 4.6 or lower with lemon juice or citric acid. Properly acidified tomatoes and figs are acid foods and can be safely processed in a boiling-water canner.



Botulinum spores are very hard to destroy at boiling-water temperatures; the higher the canner temperature, the more easily they are destroyed. Therefore, all low-acid foods should be sterilized at temperatures of 240° to 250° F, attainable with pressure canners operated at 10 to 15 PSIG. PSIG means pounds per square inch of pressure as measured by gauge.



Equipment and Methods *Not* Recommended

Open-kettle canning and the processing of freshly filled jars in conventional ovens, microwave ovens, and dishwashers are not recommended, because these practices do not prevent all risks of spoilage. Steam canners are not recommended because processing times for use with current models have not been adequately researched. Because steam canners do not heat foods in the same manner as boiling-water canners, their use with boiling-water process times may result in spoilage. So-called canning powders are useless as preservatives and do not replace the need for proper heat processing. Jars with wire bails and glass caps make attractive antiques or storage containers for dry food ingredients but are not recommended for use in canning. One-piece zinc porcelain-lined caps are also no longer recommended. Both glass and zinc caps use flat rubber rings for sealing jars, but too often fail to seal properly.

Ensuring High-quality Canned Foods

Begin with good-quality, fresh foods suitable for canning. Quality varies among varieties of fruits and vegetables. County Extension offices can recommend varieties best suited for canning. Examine food carefully for freshness and wholesomeness. Discard diseased and moldy food. Trim small diseased lesions or spots from food. Can fruits and vegetables picked from your garden or purchased from nearby producers when the products are at their peak and within 6-12 hours after harvest for most vegetables. For best quality, apricots, nectarines, peaches, pears, and plums should be ripened 1 or more days between harvest and canning. If you must delay the canning of other fresh produce, keep it in a shady, cool place.

Maintaining Color and Flavor in Canned Food

To maintain good natural color and flavor in stored canned food, you must:

- Remove oxygen from food and jars,
- Quickly destroy the food enzymes,
- Obtain high jar vacuums and airtight jar seals.

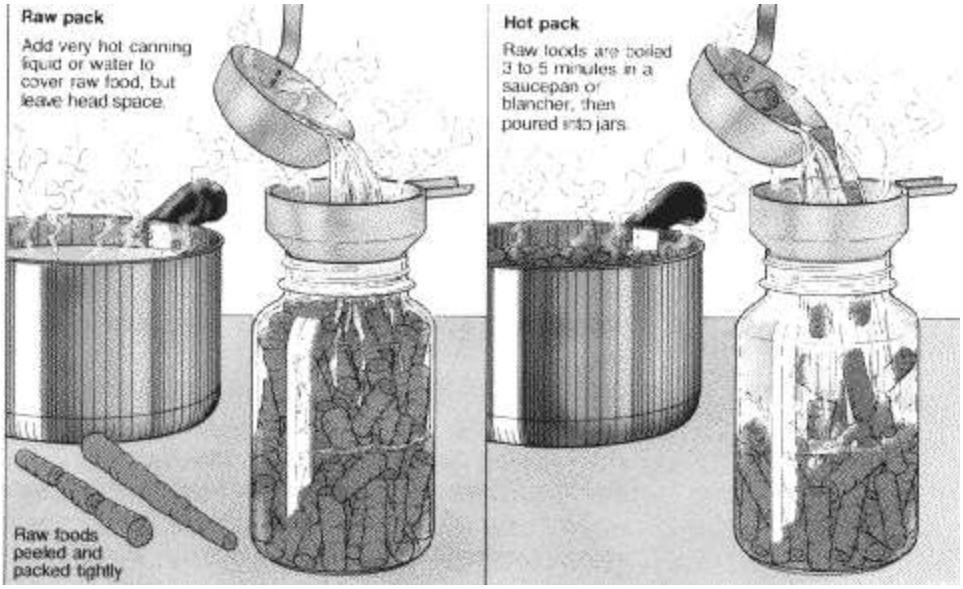
Follow these guidelines to ensure that your canned foods retain optimum colors and flavors during processing and storage:

- Use only high-quality foods which are at the proper maturity and are free of diseases and bruises.
- Use the hot-pack method, especially with acid foods to be processed in boiling water.
- Don't unnecessarily expose prepared foods to air. Can as soon as possible.
- While preparing a canner load of jars, keep peeled, halved, quartered, sliced, or diced apples, apricots, nectarines, peaches and pears in a solution of 3 grams (3,000 milligrams) ascorbic acid to 1 gallon of cold water. You can get ascorbic acid in several forms:

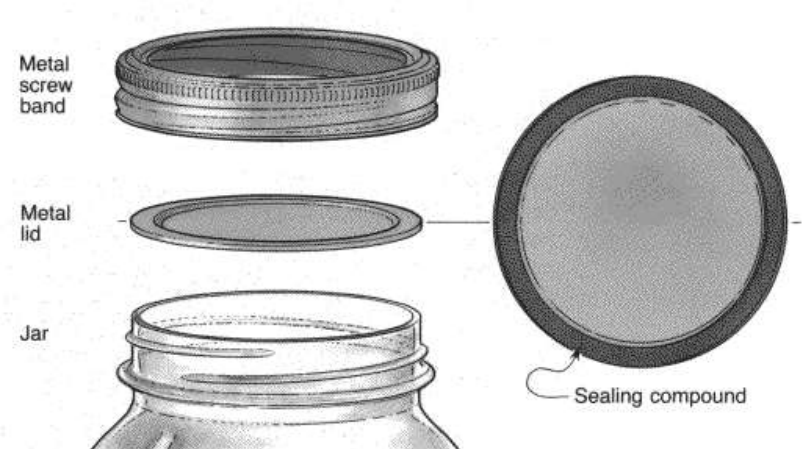
  Pure powdered form—seasonally available among canners' supplies in supermarkets. One level teaspoon of pure powder weighs about 3 grams. Use 1 teaspoon per gallon of water as a treatment solution.

Vitamin C tablets—economical and available year-round in many stores. Buy 500-milligram tablets; crush and dissolve six tablets per gallon of water as a treatment solution.
Commercially prepared mixes of ascorbic and citric acid—seasonally available, canners' supplies of supermarkets.
Sometimes citric acid powder is sold in supermarkets, but it is less effective in controlling discoloration. If you choose to use these products, follow the manufacturer's directions.

- Fill hot foods into jars and adjust headspace as specified in recipes.
- Tighten screw bands securely, but if you are especially strong, not as tightly as possible.
- Process and cool jars.
- Store the jars in a relatively cool, dark place, preferably between 50° and 70° F.
- Can no more food than you will use within a year.



Hot-packing is the practice of heating freshly prepared food to boiling, simmering it 2 to 5 minutes, and promptly filling jars loosely with the boiled food. Whether food has been hot-packed or raw-packed, the juice, syrup, or water to be added to the foods should also be heated to boiling before adding it to the jars. This practice helps to remove air from food tissues, shrinks food, helps keep the food from floating in the jars, increases vacuum in sealed jars, and improves shelf life. Preshrinking food permits filling more food into each jar.
Hot-packing is the best way to remove air and is the preferred pack style for foods processed in a boiling-water canner. At first, the color of hot-packed foods may appear no better than that of raw-packed foods, but within a short storage period, both color and flavor of hot-packed foods will be superior.



Jars and Lids

Food may be canned in glass jars or metal containers. Metal containers can be used only once. They require special sealing equipment and are much more costly than jars.
Regular and wide-mouth Mason-type, threaded, home-canning jars with self-sealing lids are the best choice. They are available in 1/2 pint, pint, 1-1/2 pint, quart, and 1/2 gallon sizes. The standard jar mouth opening is about 2-3/8 inches. Wide-mouth jars have openings of about 3 inches, making them more easily filled and emptied. Half-gallon jars may be used for canning very acid juices. Regular-mouth decorator jelly jars are available in 8 and 12 ounce sizes. With careful use and handling, Mason jars may be reused many times, requiring only new lids each time. When jars and lids are used properly, jar seals and vacuums are excellent and jar breakage is rare.
Most commercial pint- and quart-size mayonnaise or salad dressing jars may be used with new two-piece lids for canning acid foods. *However*, you should expect more seal failures and jar breakage. These jars have a narrower sealing surface and are tempered less than Mason jars. Seemingly insignificant scratches in glass may cause cracking and breakage while processing jars in a canner. Mayon-

naise-type jars are not recommended for use with foods to be processed in a pressure canner because of excessive jar breakage. Other commercial jars with mouths that cannot be sealed with two-piece canning lids are not recommended for use in canning any food at home.

Jar Cleaning

Before every use, wash empty jars in hot water with detergent and rinse well by hand, or wash in a dishwasher. Un-rinsed detergents may cause unnatural flavors and colors. These washing methods do not sterilize jars. Scale or hard-water films on jars are easily removed by soaking jars several hours in a solution containing 1 cup of vinegar (5 percent acidity) per gallon of water.

Sterilization of Empty Jars

It is unnecessary to pre-sterilize jars for fruits, tomatoes, and pickled or fermented foods that will be processed 10 minutes or longer in a boiling-water canner. All jams, jellies, and pickled products processed *less than 10 minutes* should be filled into sterile empty jars. To sterilize empty jars, put them right side up on the rack in a boiling-water canner. Fill the canner and jars with hot (not boiling) water to 1 inch above the tops of the jars. Boil 10 minutes at altitudes of less than 1,000 ft. Remove and drain hot sterilized jars one at a time. Save the hot water for processing filled jars. Fill jars with food, add lids, and tighten screw bands. Empty jars used for vegetables, meats, and fruits to be processed in a pressure canner need not be pre-sterilized.

Lid Selection, Preparation, and Use

The common self-sealing lid consists of a flat metal lid held in place by a metal screw band during processing. The flat lid is crimped around its bottom edge to form a trough, which is filled with a colored gasket compound. When jars are processed, the lid gasket softens and flows slightly to cover the jar-sealing surface, yet allows air to escape from the jar. The gasket then forms an airtight seal as the jar cools. Gaskets in unused lids work well for at least 5 years from date of manufacture. The gasket compound in older unused lids may fail to seal on jars.

Buy only the quantity of lids you will use in a year. To ensure a good seal, carefully follow the manufacturer's directions in preparing lids for use. Examine all metal lids carefully. Do not use old, dented, or deformed lids, or lids with gaps or other defects in the sealing gasket. After filling jars with food, release air bubbles by inserting a flat plastic (not metal) spatula between the food and the jar. Slowly turn the jar and move the spatula up and down to allow air bubbles to escape. Adjust the headspace and then clean the jar rim (sealing surface) with a dampened paper towel. Place the lid, gasket down, onto the cleaned jar-sealing surface. Un-cleaned jar-sealing surfaces may cause seal failures.

Then fit the metal screw band over the flat lid. Follow the manufacturer's guidelines enclosed with or on the box for tightening the jar lids properly.

Do not retighten lids after processing jars. As jars cool, the contents in the jar contract, pulling the self-sealing lid firmly against the jar to form a high vacuum.

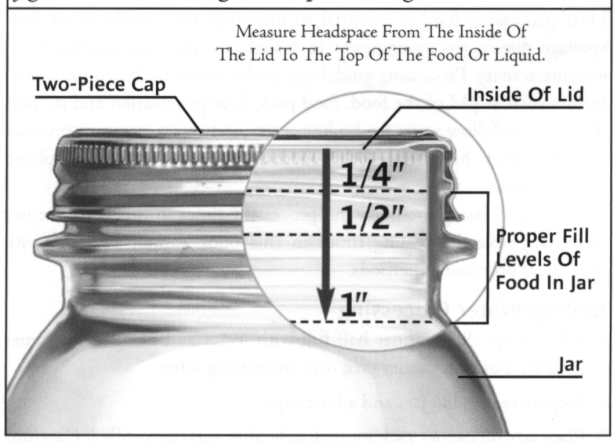
- If rings are too loose, liquid may escape from jars during processing, and seals may fail.
- If rings are too tight, air cannot vent during processing, and food will discolor during storage. Over tightening also may cause lids to buckle and jars to break, especially with raw-packed, pressure-processed food.

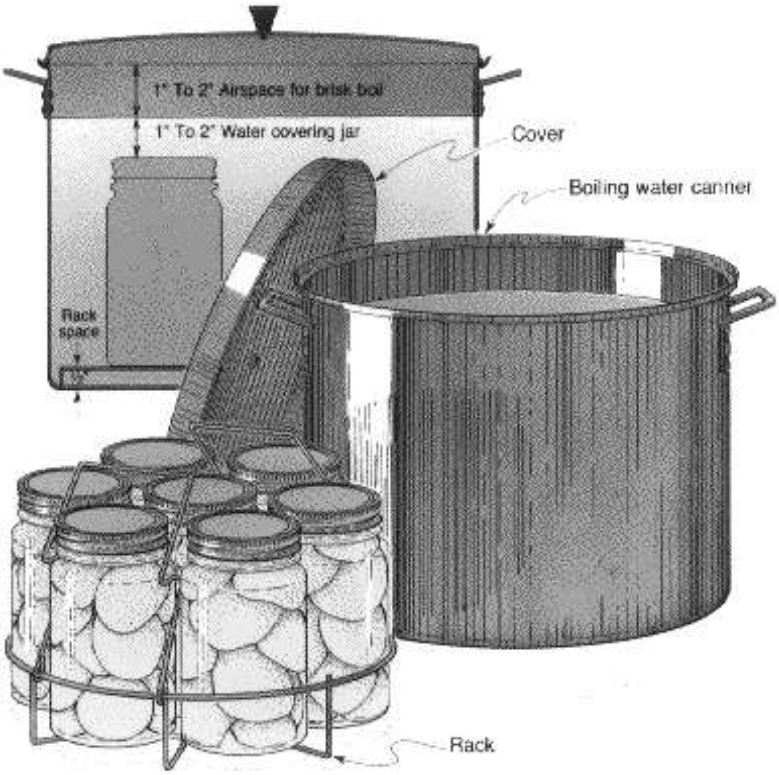
Screw bands are not needed on stored jars. They can be removed easily after jars are cooled. When removed, washed, dried, and stored in a dry area, screw bands may be used many times. If left on stored jars, they become difficult to remove, often rust, and may not work properly again.

Controlling Headspace

The unfilled space above the food in a jar and below its lid is termed headspace. Directions for canning specify leaving 1/4-inch for jams and jellies, 1/2-inch for fruits and tomatoes to be processed in boiling water, and from 1- to 1-1/4-inches in low acid foods to be processed in a pressure canner. This space is needed for expansion of food as jars are processed, and for forming vacuums in cooled jars. The extent of expansion is determined by the air content in the food and by the processing temperature. Air expands greatly when heated to high temperatures; the higher the temperature, the greater the expansion. Foods expand less than air when heated.

figure 6 | Measuring Headspace *(Diagram is not to scale)*





Recommended Canners

Equipment for heat-processing home-canned food is of two main types—boiling water canners and pressure canners. Most are designed to hold seven quart jars or eight to nine pints.

Low-acid foods must be processed in a pressure canner to be free of botulism risks. Although pressure canners may also be used for processing acid foods, boiling water canners are recommended for this purpose because they are faster. A pressure canner would require from 55 to 100 minutes to process a load of jars; while the total time for processing most acid foods in boiling water varies from 25 to 60 minutes. A boiling-water canner loaded with filled jars requires about 20 to 30 minutes of heating before its water begins to boil.

Boiling-water Canners

These canners are made of aluminum or porcelain-covered steel. They have removable perforated racks and fitted lids. The canner must be deep enough so that at least 1 inch of briskly boiling water will be over the tops of jars during processing. Some boiling-water canners do not have flat bottoms. A flat bottom must be used on an electric range. Either a flat or ridged bottom can be used on a gas burner. To ensure uniform processing of all jars with an electric range, the canner should be no more than 4 inches wider in diameter than the element on which it is heated.

Using Boiling-water Canners Follow these steps for successful boiling-water canning:

1. Fill the canner halfway with water.
2. Preheat water to 140° F for raw-packed foods and to 180° F for hot-packed foods.
3. Load filled jars, fitted with lids, into the canner rack and use the handles to lower the

rack into the water; or fill the canner, one jar at a time, with a jar lifter.
4. Add more boiling water, if needed, so the water level is at least 1 inch above jar tops. Cover with lid.
5. Turn heat to its highest position until water boils vigorously.
6. Set a timer for the minutes required for processing the food.
7. Lower the heat setting to maintain a gentle boil throughout the process schedule.
8. Add more boiling water, if needed, to keep the water level 1" above the jars.
9. When jars have been boiled for the recommended time, turn off the heat and remove the canner lid.
10. Using a jar lifter, remove the jars and place them on a towel (several layers works best), leaving at least 1-inch space between the jars while cooling.

Cooling Jars

When you remove hot jars from a canner, do not retighten their jar lids. Retightening of hot lids may cut through the gasket and cause seal failures. Cool the jars at room temperature for 12 to 24 hours. Jars may be cooled on racks or towels to minimize heat damage to counters. The food level and liquid volume of raw-packed jars will be noticeably lower after cooling. Air is exhausted during processing and food shrinks. If a jar loses excessive liquid during processing, do not open it to add more liquid. Check for sealed lids as described below.

Testing Jar Seals

After cooling jars for 12 -24 hours, remove the screw bands and test seals using one of these options:
Option 1. Press gently the middle of the lid with a finger or thumb. If the lid springs up when you release your finger, the lid is unsealed.
Option 2. Tap the lid with the bottom of a teaspoon. If it makes a dull sound, the lid is not sealed. If food is in contact with the underside of the lid, it will also cause a dull sound. If the jar is sealed correctly, it will make a ringing, high-pitched sound.
Option 3. Hold the jar at eye level and look across the lid. The lid should be concave (curved down slightly in the center). If center of the lid is either flat or bulging, it may not be sealed.

Reprocessing Unsealed Jars

If a lid fails to seal on a jar, remove the lid and check the jar-sealing surface for tiny nicks. If necessary, change the jar, add a new, properly prepared lid, and reprocess within 24 hours using the same processing time. Headspace in unsealed jars may be adjusted to 1-1/2 inches and jars could be frozen instead of reprocessed. Foods in single unsealed jars could be stored in the refrigerator and consumed within several days.

Storing Canned Foods

If lids are tightly vacuum sealed on cooled jars, remove screw bands, wash the lid and jar to remove food residue; then rinse and dry jars. Label and date the jars and store them in a clean, cool, dark, dry place. Do not store jars above 95° F or near hot pipes, a range, a furnace, in an un-insulated attic, or in direct sunlight. Under these conditions, food will lose quality in a few weeks or months and may spoil. Dampness may corrode metal lids, break seals, and allow recontamination and spoilage. Accidental freezing of canned foods will not cause spoilage unless jars become unsealed and re-contaminated. However, freezing and thawing may soften food. If jars must be stored where they may freeze, wrap them in newspapers, place them in heavy cartons, and cover with more newspapers and blankets.

Canning without Sugar

In canning regular fruits without sugar, it is very important to select fully ripe but firm fruits of the best quality. Prepare these as described for hot-packs in Guide 2, but use water or regular unsweetened fruit juices instead of sugar syrup. Juice made from the fruit being canned is best. Blends of unsweetened apple, pineapple, and white grape juice are also good for filling over solid fruit pieces. Adjust headspaces and lids and use the processing recommendations given for regular fruits. Add sugar substitutes, if desired, when serving.

Additional Links for more information

http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_1OB?navtype=SU&navid=FOOD_NUTRITION
http://foodsafety.cas.psu.edu/cannningguide.html
http://en.wikipedia.org/wiki/Canning
So Easy to Preserve (cookbook) http://www.uga.edu/setp/ - $18, includes shipping, USDA

Primary Items Required for Home Water Bath Canning

Water Bath Canner—you may use a large soup pot or a pressure canner (leave stop-cock open and do not “lock down” the lid). You should place “rack” in the bottom of the pan so that the canning jars will not be sitting directly on the bottom. Pan should be large enough so that water will cover your jars at least one inch and will not be larger than 4” overhang on the burner element.

Canning Jars—these do not have to be new, you can find used jars at thrift stores, garage sales and in Aunt Grace’s attic ! Make sure that you clean them well and check for chips and nicks in the top edge of the glass. DO NOT use jars that show any cracking or damage. You can buy jars news at most grocery stores during summer/early fall months. Buying new jars, you will get lids and rings included.

Lids and Rings—You will need enough “new” lids for your jars each time you fill them with new product. Rings can be re-used. Buy only enough lids to get you through a canning season or two as the rubber in the gasket could degrade. It is always better to use a new lid, if you are unsure as to the age or prior use of a lid. Rings can be used over and over. Do NOT leave the rings on your jars of product. They should be removed and stored clean and dry. Rings that show wear or nominal rust as still safe to use, as long as they have structural integrity.

Additional Equipment List

The following items are helpful for home canning:

- A jar lifter essential for easy removal of hot jars from canner.
- A jar filler or funnel--helps in packing of small food items into canning jars and large ladle.
- A bubble freer--for removing air bubbles from the jars. A plastic knife or spatula works well. Metal objects should not be used as they can scratch the glass, making it more susceptible to breakage.
- A lid wand--the magnet on the end helps remove treated lids from hot water.
- Paper Towels for wiping jar edges before securing lids and rings.
- Sharp Knives & Cutting Board/mats--for product preparation, peeler, corer, grater, etc. may also be helpful. If you are preparing a large quantity of product, consider using a food processor, hand-crank type or electrical. Apple peeler/corer/slicers can be used for “other” fruits and vegetables!
- Timer or clock--to determine processing time.
- Hot pads and Clean heavy-weight cloth towels

Specialty Items for Pickling

Utensils, bowls or pots should not be made of zinc, iron, brass, copper, galvanized metal or enamelware with chips or cracks. The metals in these utensils tend to react with acids and salts, causing undesirable color and taste changes, making pickles inedible.
Un-chipped enamelware, stainless steel, glassware, ceramic or food-grade plastic is acceptable.

- Fresh whole spices.
- Pure granulated, pickling, canning or sea salt (not iodized or table salt).
- 5% White distilled vinegar
- White or beet Sugar (unless recipe calls for brown or other sweetener)

Recipes in this handout are for fresh-pack pickles, not brined product. Additional precautions for brined product should be taken regarding ingredients, brining containers and processing. See canning book.

Nothing beats the crisp, fresh taste of pickles. With year-round access to cucumbers, you can make your pickles fresh all year round, or can up your summer harvest to enjoy in the short days of winter.

NO COOK - Dill Pickles

You can make these with just 10 minutes of prep and 6 hours to brine. You don't even need to turn on the stove!

- 2 cups thinly sliced Kirby cucumber
- 1 tablespoon kosher salt
- 2 tablespoons chopped fresh dill
- 1/2 cup white vinegar

Add cucumber slices to a clean 1-pint jar. Add salt, dill and vinegar. Close the lid and shake to distribute ingredients. (Liquid will not cover cucumber slices. Don't worry. The salt will draw liquid from the cucumbers in a couple of hours.)
Place the jar in the refrigerator and remember to shake it once or twice in the next few hours. In about 6 hours, you'll have delicious, crispy pickles. Will keep for 2 weeks or more.

REFRIGERATOR PICKLES, Sweet

Yield: 28 servings

- 6 c thin sliced cucumbers or zucchini
- 2 c thin sliced onions
- 1 1/2 c vinegar (5%)
- 1 c sugar
- 1/2 tsp salt
- 1/2 tsp mustard seed (optional)
- 1/2 tsp celery seed
- 1/2 tsp ground turmeric (optional)

Place half of the cucumber in a large glass bowl. Top with half the onion. Repeat this process, layering cucumbers and onion. Combine vinegar and remaining ingredients in a sauce pan, stir well. Bring to a boil and cook for one more minute. Pour the mixture over the cucumber and onion; let cool. Cover and marinate in the refrigerator for four days. Will keep for several weeks.

ZUCCHINI RELISH

Yield: about 4 Pints or 8 half-pints

- 4 cups chopped zucchini (about 6 medium)
- 2 cups chopped onion (about 2 medium)
- 1 cup chopped sweet green pepper (about 2 small)
- 1 cup chopped red bell pepper (about 2 small)
- 2-3 tbsp salt
- 3 1/2 cups sugar
- 4 tsp celery seed
- 2 tsp mustard seed
- 2 cups cider vinegar (5%)

Combine zucchini, onion, green and red peppers; sprinkle with salt; cover with cold water. Let stand 2 hours. Drain; rinse and drain thoroughly. Combine remaining ingredients in a large saucepot. Bring to a boil. Add vegetables; simmer 10 minutes. Pack hot relish into hot jars, leaving ¼-inch headspace. Remove air bubbles. Adjust two-piece caps. Process 10 minutes in a boiling-water canner.

Squash (Zucchini) Dill Pickles About 5 pint jars

- 4 pound summer squash
- Dill seed (1 teaspoon per pint)
- Garlic (if desired), 1 lrg clove per jar
- ¼ cup salt
- 1 cup water
- 1 quart vinegar (5%)

Wash and slice squash. Pack garlic, dill seed, and squash into jars, leaving 1/2-inch headspace. Bring vinegar, water, and salt to a boil; simmer 5 minutes. Fill jars to ½ inch from top with boiling hot liquid. Remove air bubbles. Wipe jar rims. Adjust lids. Process 15 minutes in a boiling water bath.

From USDA—**Guide 2, Selecting, Preparing, and Canning Fruit and Fruit Products** http://www.uga.edu/nchfp/publications/usda/utah_can_guide_02.pdf

APPLESAUCE

Quantity: An average of 21 pounds is needed per canner load of 7 quarts; an average of 13-1/2 pounds is needed per canner load of 9 pints. A bushel weighs 48 pounds and yields 14 to 19 quarts of sauce—an average of 3 pounds per quart.
Quality: Select apples that are sweet, juicy, and crisp. For a tart flavor, add 1 to 2 pounds of tart apples to each 3 pounds of sweeter fruit.
Procedure: Wash, peel, and core apples. If desired, slice apples into water containing ascorbic acid (see page 1-3) to prevent browning. Placed drained slices in an 8 to 10-quart pot. Add 1/2 cup water. Stirring occasionally to prevent burning, heat quickly until tender (5 to 20 minutes, depending on maturity and variety). Press through a sieve or food mill, or skip the pressing step if you prefer chunk-style sauce. Sauce may be packed without sugar. If desired, add 1/8 cup sugar per quart of sauce. Taste and add more, if preferred. Reheat sauce to a rolling boil. Fill jars with hot sauce, leaving 1/2-inch headspace. Adjust lids and process.
Recommended process time for Applesauce in a BOILING-WATER canner
Process Time: Pints—15 min Quarts—20 min

SPICED APPLE RINGS

12 lbs firm tart apples
(maximum diameter, 2-1/2 inches)
12 cups sugar
6 cups water
1-1/4 cups white vinegar (5%)
3 tbsp whole cloves
3/4 cup red hot cinnamon candies or 8 cinnamon sticks and 1 tsp red food coloring
Yield: About 8 to 9 pints
Procedure: Wash apples. To prevent discoloration, peel and slice one apple at a time. Immediately cut crosswise into 1/2-inch slices, remove core area with a melon baller, and immerse in ascorbic acid solution (see page 1-3). To make syrup, combine sugar, water, vinegar, cloves, cinnamon candies, or cinnamon sticks and food coloring in a 6-qt saucepan. While stirring, heat to boil, and simmer 3 minutes. Drain apples, add to hot syrup, and cook 5 minutes. Fill jars (preferably wide-mouth) with apple rings and hot flavored syrup, leaving 1/2-inch headspace. Adjust lids and process.— pints or 1/2 pints 10 minutes

APPLE BUTTER

Use 4-5 tasty apple varieties for best results, be sure and use a few Granny Smith for full flavor.
8 lbs apples
2 cups cider
2 cups vinegar
2-1/4 cups white sugar
2-1/4 cups packed brown sugar
2 tbsp ground cinnamon
1 tbsp ground cloves
Yield: About 8 to 9 pints
Procedure: Wash, remove stems, quarter, and core fruit. Cook slowly in cider and vinegar until soft. Press fruit through a colander, food mill, or strainer. Cook fruit pulp with sugar and spices, stirring frequently. To test for doneness, remove a spoonful and hold it away from steam for 2 minutes. It is done if the butter remains mounded on the spoon. Another way to determine when the butter is cooked adequately is to spoon a small quantity onto a plate. When a rim of liquid does not separate around the edge of the butter, it is ready for canning. Fill hot into sterile half pint or pint jars, leaving 1/4-inch headspace. Quart jars need not be presterilized. Adjust lids and process.
Recommended process time for Apple Butter in a BOILING-WATER canner
Process Time: Half-pints—5 minutes Quarts— 10 min.

Spicy Peach Chutney

Serve this flavorful, fresh chutney recipe over dal and rice or your favorite curry recipe. If you would like a milder chutney, simply omit the habanero peppers. If you don't have coconut sugar (a low-glycemic granulated sugar) on hand, feel free to use another granulated sugar such as raw cane sugar.

8 medium-sized ripe peaches, peeled and diced
the juice of 2 limes
3 habanero peppers, seeded and finely diced
2 to 3 jalapeno peppers, seeded and finely diced
1 1/2 tablespoons grated fresh ginger
4 to 6 cloves garlic, crushed
1/2 cup coconut sugar
few dashes sea salt or Herbamare

Place all of the ingredients into a medium-sized saucepan and set heat to medium. Simmer covered for about 20 minutes over medium to medium-low heat then remove the cover and simmer for about 10 minutes more to let some of the liquid evaporate. Serve warm or chill and serve the next day. The flavors definitely improve with age

Dill Pickles

25 lbs of pickling cucumbers
100(ish) cloves of garlic
A big bunch of dill plants

Brine:
1 gallons Cider Vinegar
2 gallons water
1 & 1/2 cups canning salt
6 teaspoons Alum

Thoroughly clean cucumbers and remove any stems or blossoms.
Into clean and hot jars place following ingredients
1 dill head and a couple garlic cloves
Pack well with cucumbers
Add, another dill head
And another couple cloves of garlic
Fill jar with boiling brine mixture leaving 1/2 inch of head space. Make sure you remove any air bubbles.
Wipe rims clean, top with warmed lids and rings. Screw on until hand tight.
If desired, you can water bath can. Process for 15-30 minutes.

Pickled Beets

Makes 4 Pints

3 pounds beets
3 cups cider vinegar
2 cups water
1 cup sugar
3 star anise pods
3 cinnamon sticks
1 teaspoon allspice
1 teaspoon canning salt

Place beets in cold water and bring to a boil.
Remove from pot and cool with running water.
Remove skins from beets.
Quarter, then slice 1/4 inch thick.
Bring remaining ingredients to a boil.
Add sliced beats and simmer five minutes.
Using a slotted spoon, pack beets into jars.
Top with brine making sure to remove all air bubbles.
Wipe rims clean, add warmed lids and rings and screw on until finger tight.
Process jars in water bath for 30 minutes.

Spaghetti Sauce

Ingredients

25 pounds tomatoes
4 large green peppers, seeded
4 large onions, cut into wedges
2 cans (12 ounces each) tomato paste
1 cup canola oil
2/3 cup sugar
1/4 cup salt
8 garlic cloves, minced
4 teaspoons dried oregano
2 teaspoons dried parsley flakes
2 teaspoons dried basil
2 teaspoons crushed red pepper flakes
2 teaspoons Worcestershire sauce
2 bay leaves
1 cup plus 2 tablespoons bottled lemon juice

Directions

In a Dutch oven, bring 2 quarts water to a boil. Using a slotted spoon, place tomatoes, one at a time, in boiling water for 30-60 seconds. Remove each tomato and immediately plunge into ice water. Peel and quarter tomatoes; place in a stockpot.
Pulse green peppers and onions in batches in a food processor until finely chopped; transfer to stockpot. Stir in next 11 ingredients. Add water to cover; bring to a boil. Reduce heat; simmer, uncovered, 4-5 hours, stirring occasionally.
Discard bay leaves. Add 2 tablespoons lemon juice to each of nine hot 1-qt. jars. Ladle hot mixture into jars, leaving 1/2-in. headspace. Remove air bubbles and adjust headspace, if necessary, by adding hot mixture. Wipe rims. Center lids on jars; screw on bands until fingertip tight.
Place jars into canner with simmering water, ensuring that they are completely covered with water. Bring to a boil; process for 40 minutes. Remove jars and cool. Yield: 9 quarts.
Originally published as Homemade Canned Spaghetti Sauce in Taste of Home