

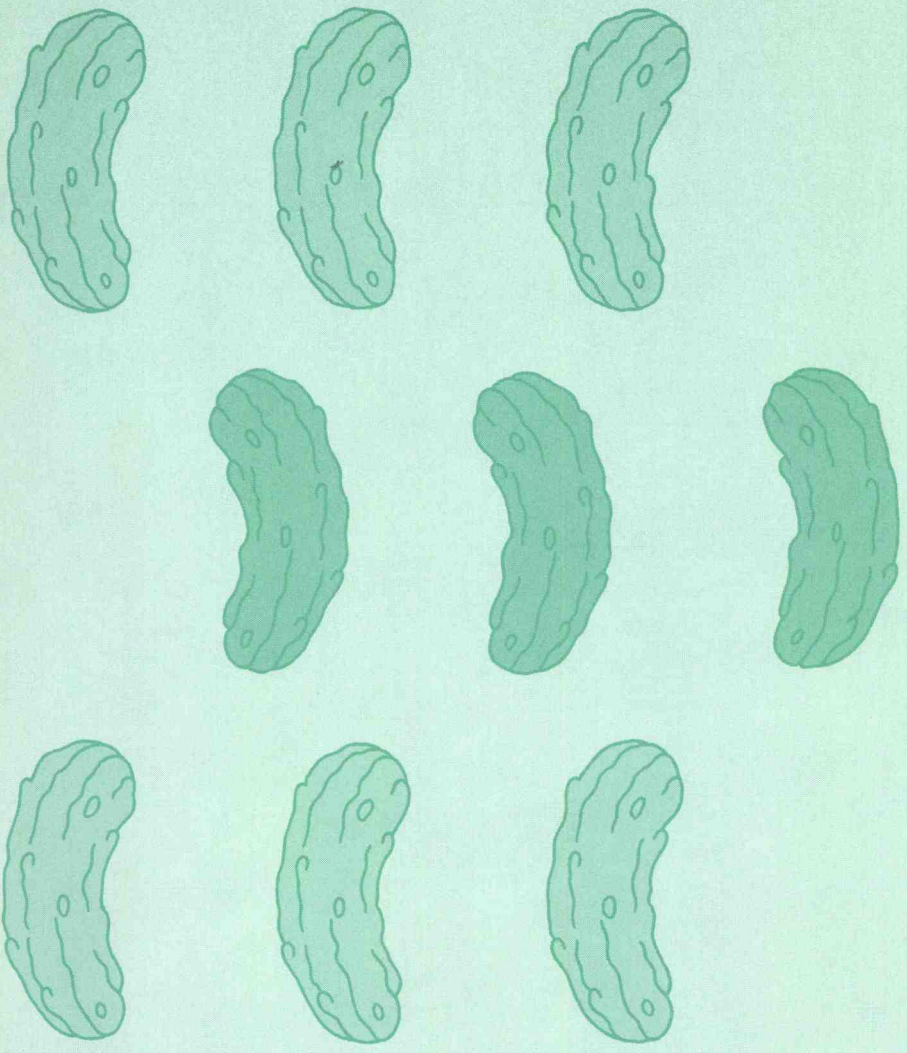
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Pickling Vegetables

PNW 355 • August 1990



What's new?

The information in this publication is based on the new U.S. Department of Agriculture recommendations published in the *Complete Guide to Home Canning* (Agriculture Information Bulletin No. 539). These new instructions may improve the quality of your pickled vegetables.

Here's what's new:

- **New procedures**
For example, a lower-temperature pasteurization process has been added to improve pickle firmness.
- **Changes in ingredients**
Some recipes have different amounts and kinds of ingredients (such as spices); some include food-grade lime for firming pickles.
- **New recipes**
For example, a low-salt recipe is included for the first time as well as a recipe for three-bean salad.

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Pickling Vegetables

C.A. Raab

Pickling is one of the oldest methods of food preservation. The Chinese were fermenting vegetables as early as the third century B.C. By the first century A.D., Romans were pickling.

Pickled products appeared in America, too. The pickle barrel was common during the Colonial days. Pickles even became part of our folklore as children learned to recite the “Peter Piper picked a pack of pickled peppers” tongue-twister.

By the early 1920’s, the U.S. Department of Agriculture had published instructions on making pickles at home. Many of these procedures are still used today.

In 1988, USDA published new home canning recommendations after doing extensive research. The information in this publication is based on USDA’s new *Complete Guide to Home Canning*.

Preservation by pickling

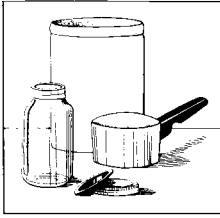
Microorganisms are always present on vegetables. Home canning prevents the growth of those that cause spoilage and illness. When the acidity of a canned food is high, harmful bacteria like *Clostridium botulinum* can’t grow. That’s why pickling (the addition of acid) prevents spoilage.

There are two types of pickles:

- **Brined** (fermented) pickles require several weeks of “curing” at room temperature. During this period, colors and flavors change. Acid is produced as lactic acid bacteria grow.
- **Quick** (unfermented) pickles are made in 1 or 2 days by adding acid in the form of vinegar. It’s critical to add enough vinegar to prevent bacterial growth.

Carolyn A. Raab, Extension foods and nutrition specialist, Oregon State University. The information in this publication is based on U.S. Department of Agriculture recommendations, and it was reviewed by Extension specialists in food and nutrition at Washington State University and the University of Idaho.

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Raab, Carolyn A.
Pickling vegetables



Equipment

Equipment for fermenting

Crock. A 1-gallon container is needed for each 5 pounds of fresh vegetables. Therefore, a 5-gallon stone crock is an ideal size for fermenting about 25 pounds of fresh cabbage or cucumbers. Select a crock that is made for food use. Food-grade plastic and glass containers are excellent substitutes.

Caution: It's not safe to use garbage cans or other containers that are not made to come into contact with food that will be eaten.

Sauerkraut may be fermented in quart or half-gallon jars, but there may be more spoilage in these smaller containers.

Weight. A weight is needed to keep fermenting food under the brine. When using a crock, select a dinner plate or glass pie plate that is slightly smaller than the container opening. Weight it down with 2 or 3 quart jars (with lids) filled with water.

For other containers, fill a large food-grade plastic bag (either heavy weight or double-bagged) with brine (1½ tablespoons salt per 1 quart water). Be sure to close the bag before placing it in the fermentation container. (Using brine prevents dilution in case the bag leaks.)

Other equipment

Utensils. Don't use zinc, copper, brass, galvanized metal, or iron utensils. These metals may react with acid or salt and affect the quality (color changes) and safety of pickles.

Jars designed for home canning are the best choice. However, some commercial jars (such as mayonnaise) may be used in the boiling water canner when new two-piece lids are used.

When you use commercial jars, be sure that dimensions are similar to standard jars and that screw bands fit snugly. Discard screw bands that are dented or rusty.

Lids. Choose the size of lid that fits your jars (wide-mouth or regular). To prevent sealing failures, don't reuse lids. Check manufacturer's directions for heating lids before use.

Boiling water canner. These canners, made of aluminum or porcelain-covered steel, have removable baskets and fitted lids. Any large container may be used if it has room for at least 1 inch of briskly boiling water over the tops of jars during processing. (Place a metal rack in the bottom of the container.)



Ingredients

Vegetables

Select tender vegetables without blemishes or mold. Wash thoroughly in cold water. When you select **cucumbers**, keep the following points in mind:

- Use varieties grown especially for pickling.
- Avoid commercially waxed cucumbers. Pickling liquid cannot penetrate the wax easily.
- Pick cucumbers early in the morning and use within 24 hours for best quality.
- Select cucumbers of similar size: 1½ inches long for gherkins; 4 inches for dills. Use odd-shaped and more mature ones for relishes and bread-and-butter style pickles.
- Remove the blossom ends. They may contain enzymes that cause softening in pickles.

Salt

- **Pickling and canning salts** are the best choices.
- **Table salt** may be used, but the additive that keeps it free-flowing may make the brine cloudy.
- **Reduced-sodium salts** (such as potassium chloride) may be used in quick pickle recipes. However, the pickles may have a slightly different taste. *Don't use reduced-sodium salt in brined pickles or sauerkraut*—these products need a specific amount of sodium to control bacterial growth and to give a firm texture.

Don't use flake salt (it varies in density) or rock salt (it has impurities).

Vinegar

Vinegar is the most important ingredient in quick-pickle recipes. Without an adequate amount, the pickles won't be safe to eat. Use vinegar with 5% acidity.

Caution: Don't reduce the amount of vinegar or increase the amount of water in a recipe (for a less sour taste, add a small amount of sugar).

- **White distilled vinegar** has a pungent taste. Use it when pickling light-colored foods such as cauliflower and onions.
- **Cider vinegar** has a milder flavor.

Don't use homemade vinegar (it varies in acidity).

Flavorings

Spices should be fresh. Whole spices are the best choice. Powdered spices may cause the pickles to darken and become cloudy.

- **Dill** may be fresh, seeds, or oil. The flavor of dill seeds may not be as good as the fresh dill (1 teaspoon seeds equals 1 dill head). To use dill oil, substitute 1 to 3 drops for each head of dill.
- **Garlic** should be fresh and at the peak of maturity.
- **Sugar** may be either white or brown. Brown sugar may give a darker color to the brine. Corn syrup and honey may give an undesirable flavor.

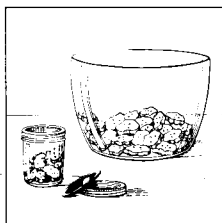
Water

- **Soft water** makes the best brine for pickles.
- **Hard water** may cause cloudiness and off-colors. If only hard water is available, boil and let sit for 24 hours. Skim off scum and use water from the top of the container without disturbing any sediment.

Firming ingredients

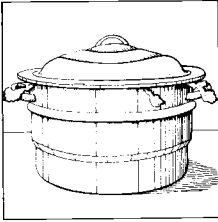
- **Alum** may be used to firm fermented cucumbers. However, it's not necessary and isn't included in this publication. Alum doesn't improve the firmness of quick pickles.
- **Lime** contains calcium, which improves pickle firmness. Cucumber slices are sometimes soaked in a lime-water solution for 12 to 24 hours before pickling them. The lime should be food-grade. *Caution: Don't use lime sold at garden centers or lumberyards.*

For instructions, see "Variation for firmer pickles" in the recipes. Be sure to remove excess lime by rinsing and soaking the cucumbers as instructed.



Packing the jars

1. Follow manufacturer's directions for preheating lids.
2. Prepare ingredients.
3. Pack food and liquid to within $\frac{1}{2}$ inch from the top of the jar unless otherwise specified. If the jars are too full, some of the contents could siphon out during heat processing and prevent sealing by sticking to the rim. All air may not be exhausted during processing if headspace is too large.
4. Run a plastic spatula around the inside of the jar to remove air bubbles.
5. Wipe jar rims and threads with a clean, damp cloth to remove any bits of food that might prevent a seal. Adjust lids.



Processing

Pickles are processed to stop fermentation and growth of bacteria that cause spoilage.

Caution: It's extremely important to wait until fermented pickles taste tart before processing.

Use either conventional boiling-water canner processing or lower-temperature pasteurization.

Conventional boiling-water canner processing

1. Arrange the jars on the rack of a canner half filled with very hot water. Add more very hot water, if needed, to bring the water level up to 1 inch above jar tops. Place a tight-fitting cover on canner.
2. When the water boils, set a timer for the recommended time (see table 1). Increase processing times for higher altitudes as directed to make up for the lower boiling point of water. Keep water boiling gently and steadily. Add boiling water if necessary to keep jars covered.
3. Immediately remove jars from canner at the end of processing. Spoilage could occur if jars are left in hot water.
4. Put jars on a rack or cloth so air can move freely around them. There should not be a cold draft or fan blowing on the jars.

Lower-temperature pasteurization

Processing at temperatures lower than the boiling point of water may result in a better quality product. Directions must be followed carefully to avoid possible spoilage.

1. Place jars in a canner half filled with warm water (120-140°F). Add hot water to a level of 1 inch above jars.
2. Heat the water to 180-185°F and start a timer. Process for 30 minutes, checking with a candy or jelly thermometer to be certain that the water temperature stays at least 180°F (temperatures higher than 185°F may cause softening of pickles).
3. Immediately remove jars from canner at end of processing time.
4. Put jars on a rack or cloth so air can move freely around them.

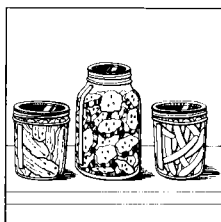
Testing the seals

Test each jar within 12 to 24 hours. Jars with flat, metal lids are sealed if:

- The lid has popped down in the center.
- The lid doesn't move when you press it down.
- The center of the lid gives a clear, ringing sound when you tap it with a spoon. (This isn't as reliable as the other methods.)

If you discover that a jar hasn't sealed within 24 hours of the initial processing, refrigerate the contents or reprocess.

To reprocess, start by removing the lid. Check and clean the sealing surfaces of the jar. Use a new lid and process again for the full time. The quality of the pickled food won't be as good after reprocessing.



Storing

Wipe the jars and label them with the date and contents. Remove screw bands so that the liquid under them won't cause rusting.

Store jars in a cool, dark, dry place.

Use within 1 year for best eating quality and nutritive value. Exposure to heat, freezing temperatures, or light decreases the quality and shelf life of canned food.

Before using

Before opening each jar, look for signs of spoilage: bulging lids, leaks, and any unusual appearance of the pickled food. When opening, check for off-odor, mold, slimy or soft texture, foam, or spurting liquid.

Caution: Never taste questionable foods.

If there is any sign of spoilage, destroy the pickled food. To destroy spoiled pickled food, either put it down the garbage disposal or boil for 10 minutes and discard in the garbage.

Recipes

Most of these recipes for brined and quick pickles have been taken from the *USDA Complete Guide to Home Canning*. For additional laboratory-tested recipes, contact your county Extension office. *If you wish to use untested recipes, see the pointers on page 17.*

Write the recommended conventional processing time for your altitude (table 1) in the boxes provided.

Brined (fermented) foods

Cabbage and cucumbers must be kept 1 to 2 inches under the brine while fermenting. (See "Equipment for fermenting," page 2.) After weighting down, cover the container opening with a clean, heavy bath towel to prevent contamination from insects and molds during fermentation.

Dill pickles

Use the following quantities for each gallon capacity of your container.

- 4 lb pickling cucumbers (4-inch)
- 2 Tbsp dill seed or 4 to 5 heads fresh or dry dill weed
- 2 cloves garlic (optional)
- 2 dried red peppers (optional)
- 2 tsp whole mixed pickling spices (optional)
- 1/2 cup salt
- 1/4 cup vinegar (5%)
- 8 cups water

<p>My processing time</p> <p>Pints _____ minutes</p> <p>Quarts _____ minutes</p>

Procedure. Wash cucumbers. Cut 1/16-inch slice off blossom end, but leave 1/4 inch of stem at the other end. Place half of dill and half of other flavorings on bottom of a clean, suitable container (see page 2). Add cucumbers, remaining dill, and flavorings. Dissolve salt in vinegar and water and pour over cucumbers. Add suitable weight and cover.

Store where temperature is 70-75°F for about 3 to 4 weeks. Temperatures of 55-65°F are acceptable, but the fermentation will take 5 to 6 weeks. Pickles will become too soft if temperatures are above 80°F during fermentation.

Check the container several times a week and promptly remove surface scum or mold.

Caution: If the pickles become soft or slimy, or if they develop a disagreeable odor, discard them.

(Recipe continued on page 10)

Table 1.—Recommended conventional processing times in a boiling-water canner

Product	Style of pack	Jar size	Minutes of process time at altitudes of			
			0-1,000 ft	1,001-3,000 ft	3,001-6,000 ft	Above 6,000 ft
Brined (fermented) pickles						
Dill pickles	Raw	Pints	10	15	15	20
		Quarts	15	20	20	25
Sauerkraut	Hot	Pints	10	15	15	20
		Quarts	15	20	20	25
	Raw	Pints	20	25	30	35
		Quarts	25	30	35	40
Quick (unfermented) pickles						
Quick kosher dills	Raw	Pints	10	15	15	20
		Quarts	15	20	20	25
Quick sweet pickles	Hot	Pints or quarts	5	10	10	15
		Raw	Pints	10	15	15
		Quarts	15	20	20	25
Reduced-sodium sweet pickles	Hot	Pints	10	15	15	20
Bread and butter pickles	Hot	Pints or quarts	10	15	15	20
Sweet gherkin pickles	Raw	Pints	5	10	10	15
Pickled asparagus	Raw	Pints or quarts	10	15	15	20
Pickled dilled beans	Raw	Pints	5	10	10	15
Pickled three-bean salad	Hot	Half-pints or pints	15	20	20	25
Pickled beets	Hot	Pints or quarts	30	35	40	45
Pickled hot peppers	Raw	Half-pints or pints	10	15	15	20
Marinated whole mushrooms	Hot	Half-pints	20	25	30	35
Pickle relish	Hot	Half-pints or pints	10	15	15	20

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Fully fermented pickles may be stored in the original container for 4 to 6 months, provided you refrigerate them and remove surface scum and molds regularly.

Canning is a better way to store fully fermented pickles. To can them, pour the brine into a pan, heat slowly to a boil, and simmer 5 minutes. Filter brine through paper coffee filters to reduce cloudiness, if desired. Fill pint or quart jars with pickles and hot brine, leaving 1/2-inch headspace.

Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

Sauerkraut

25 lb cabbage

1 cup canning or pickling salt

Quality. For the best sauerkraut, use firm heads of fresh cabbage. Shred cabbage and start kraut between 24 and 48 hours after harvest.

Yield. About 9 quarts

Procedure. Work with about 5 pounds of cabbage at a time. Discard outer leaves.

Rinse heads under cold running water and drain. Cut heads in quarters and remove cores. Shred or slice to the thickness of a quarter. Put cabbage in a suitable fermentation container (see page 2), and add 3 tablespoons of salt.

Mix thoroughly, using clean hands. Pack firmly until salt draws juices from cabbage. Repeat shredding, salting, and packing until all cabbage is in the container. Be sure it's deep enough so that its rim is at least 4 or 5 inches about the cabbage.

If juice doesn't cover cabbage, add boiled and cooled brine (1 1/2 tablespoons of salt per quart of water). Add plate and weights; cover container with a clean bath towel. Store at 70-75°F while fermenting. At temperatures between 70 and 75°F, kraut will be fully fermented in 3 to 4 weeks; at 60°F, fermentation may take 5 to 6 weeks.

At temperatures lower than 60°, kraut may not ferment. Above 75°, kraut may become soft. If you weigh the cabbage down with a brine-filled bag, do not disturb the crock until normal fermentation is completed (when bubbling ceases).

If you use a plate and jars as weight, you'll have to check the kraut 2 to 3 times each week and remove scum if it forms. Fully fermented kraut may be kept tightly covered in the refrigerator for several months, or it may be canned as follows:

- **Hot pack.** Bring kraut and liquid slowly to a boil in a large kettle, stirring frequently. Remove from heat and fill pint or quart jars rather firmly with kraut and juices, leaving 1/2-inch headspace.
- **Raw pack.** Fill pint or quart jars firmly with kraut and cover with juices, leaving 1/2-inch headspace.

Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

My processing time			
	Hot pack	Raw pack	
Pt	_____ min	_____ min	
Qt	_____ min	_____ min	

Quick (unfermented) foods

Caution: It's not safe to reduce the amount of vinegar in recipes. If the flavor is too tart, add a little sugar.

Quick kosher dills

4 lb pickling cucumbers (4-inch)
14 garlic cloves, split
1/4 cup pickling salt
2 3/4 cups vinegar (5%)
3 cups water
14 heads fresh dill
28 peppercorns

Yield. 6 to 7 pints

Procedure. Wash cucumbers and cut in half lengthwise. Heat garlic, salt, vinegar and water to boiling. Remove garlic and place 4 halves into each pint or quart jar. Pack cucumbers into jars, adding 2 heads dill and 4 peppercorns.

Pour hot vinegar solution over cucumbers to within 1/2 inch of top. Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

My processing time

Pints _____ minutes

Quarts _____ minutes

Quick sweet pickles

8 lb pickling cucumbers (3- to 4-inch)
1/3 cup canning or pickling salt
4 1/2 cups sugar
3 1/2 cups vinegar (5%)
2 tsp celery seed
1 Tbsp whole allspice
2 Tbsp mustard seed
1 cup pickling lime (optional)

Yield. 7 to 9 pints

Procedure. Wash cucumbers. Cut 1/16 inch off blossom end, but leave

1/4 inch of stem at other end. Slice or cut in strips. Place in bowl and sprinkle with 1/3 cup salt. Cover with 2 inches of crushed or cubed ice. Refrigerate 3 to 4 hours.

Add more ice as needed. Drain well. Combine sugar, vinegar, celery seed, allspice, and mustard seed in 6-quart kettle. Heat to boiling.

Hot pack. Add cucumbers and heat slowly until vinegar solution returns to boil. Stir occasionally to make sure mixture heats evenly. Fill pint or quart jars, leaving 1/2-inch headspace.

Raw pack. Fill pint or quart jars, leaving 1/2-inch headspace.

Add hot pickling syrup, leaving 1/2-inch headspace. Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

My processing time

Hot pack Raw pack

Pt _____ min _____ min

Qt _____ min _____ min

Variation for firmer pickles. Wash cucumbers. Cut $\frac{1}{16}$ inch off blossom end, leaving $\frac{1}{4}$ inch of stem attached. Slice or cut in strips. Mix 1 cup pickling lime and $\frac{1}{3}$ cup salt to 1 gallon water in a 2- to 3-gallon crock or enamelware container.

Caution: Avoid inhaling lime dust while mixing the lime-water solution.

Soak cucumber slices or strips in lime water solution for 12 to 24 hours, stirring occasionally. Remove from lime solution and rinse and resoak 1 hour in fresh cold water. Repeat the rinsing and resoaking two more times. Handle carefully—slices or strips will be brittle. Drain well.

Variation. Add 2 slices of raw whole onion to each jar before filling with cucumbers.

Storage. After processing and cooling, jars should be stored 4 to 5 weeks to develop ideal flavor.

Reduced-sodium sliced sweet pickles

4 lb pickling cucumbers (3 to 4 inch)

Canning syrup

$1\frac{2}{3}$ cups distilled white vinegar (5%)

3 cups sugar

1 Tbsp whole allspice

$2\frac{1}{4}$ teaspoon celery seed

Brining solution

1 quart distilled white vinegar (5%)

1 Tbsp canning or pickling salt

1 Tbsp mustard seed

$\frac{1}{2}$ cup sugar

Yield. 4 to 5 pints

Procedure. Wash cucumbers and cut $\frac{1}{16}$ inch off blossom end and discard. Cut cucumbers into $\frac{1}{4}$ -inch slices. Combine all ingredients for canning syrup in a saucepan and bring to boiling. Keep syrup hot until used.

In a large kettle, mix the ingredients for the brining solution. Add the cut cucumbers, cover, and simmer until the cucumbers change color from bright to dull green (5 to 7 minutes). Drain the cucumber slices. Fill pint jars, and cover with hot canning syrup, leaving $\frac{1}{2}$ -inch headspace.

Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower- temperature pasteurization (page 5).

<p>My processing time</p> <p>Pints _____ minutes</p>

Bread and butter pickles

6 lb pickling cucumbers (4- to 5-inch)

8 cups thinly sliced onions (about 3 lb)

$\frac{1}{2}$ cup canning or pickling salt

4 cups vinegar (5%)

$4\frac{1}{2}$ cups sugar

2 Tbsp mustard seed

$1\frac{1}{2}$ Tbsp celery seed

<p>My processing time</p> <p>Pints or quarts _____ minutes</p>

1 Tbsp ground turmeric
1 cup pickling lime (optional)

Yield. About 8 pints

Procedure. Wash cucumbers. Cut $\frac{1}{16}$ inch off blossom end and discard. Cut into $\frac{3}{16}$ -inch slices. Combine cucumbers and onions in a large bowl. Add salt. Cover with 2 inches crushed or cubed ice. Refrigerate 3 to 4 hours, adding more ice as needed. Combine remaining ingredients in a large pot. Boil 10 minutes. Add cucumbers and onions and slowly reheat to boiling.

Fill pint or quart jars with slices and cooking syrup, leaving $\frac{1}{2}$ -inch headspace. Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

Variation for firmer pickles. Wash cucumbers. Cut $\frac{1}{16}$ inch off blossom end and discard. Cut into $\frac{3}{16}$ -inch slices. Mix 1 cup pickling lime and $\frac{1}{2}$ cup salt to 1 gallon water in a 2- to 3-gallon crock or enamelware container.

Caution: Avoid inhaling lime dust while mixing the lime-water solution.

Soak cucumber slices in lime water for 12 to 24 hours, stirring occasionally. Remove from lime solution, rinse, and resoak 1 hour in fresh cold water. Repeat the rinsing and soaking steps two more times. Handle carefully—slices will be brittle. Drain well.

Variation, squash bread-and-butter pickles. Substitute slender (1 to $1\frac{1}{2}$ inches in diameter) zucchini or yellow summer squash for cucumbers.

Storage. After processing and cooling, store your jars 4 to 5 weeks to develop ideal flavor.

Sweet gherkin pickles

7 lb cucumbers ($1\frac{1}{2}$ inch or less)
 $\frac{1}{2}$ cup canning or pickling salt
6 cups vinegar (5%)
8 cups sugar
 $\frac{3}{4}$ tsp turmeric
2 tsp celery seeds
2 tsp whole mixed pickling spice (optional)
2 cinnamon sticks
 $\frac{1}{2}$ tsp fennel (optional)
2 tsp vanilla (optional)

Yield. 6 to 7 pints

Procedure. Wash cucumbers. Cut $\frac{1}{16}$ inch slice off blossom end and discard, leaving $\frac{1}{4}$ inch of stem attached. Place cucumbers in large container and cover with boiling water. Six to 8 hours later, drain and cover with 6 quarts of fresh boiling water containing $\frac{1}{4}$ cup salt. Repeat on the second day.

On the third day, drain and prick cucumbers with a table fork. Combine and bring to boil 3 cups vinegar, 3 cups sugar and spices. Pour over cucumbers. Six to 8 hours later, drain and save the pickling syrup. Add another 2 cups each of sugar and vinegar to the syrup and reheat to boiling. Pour over pickles.

My processing time

Pints _____ minutes

On the fourth day, drain and save syrup. Add another 2 cups sugar and 1 cup vinegar. Heat syrup to boiling and pour over pickles. Drain and save pickling syrup 6 to 8 hours later. Add 1 cup sugar and 2 teaspoons vanilla and heat to boiling. Fill pint jars with pickles and cover with hot syrup, leaving $\frac{1}{2}$ -inch headspace. Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

Pickled asparagus

8 pints asparagus spears
6 cups water
6 cups white vinegar (5%)
6 Tbsp salt
2 tsp pickling spice (remove cloves)
garlic, 1 clove per jar

Yield. 8 pints

Procedure. Wash asparagus well in cool water. Cut into jar-length spears.

Combine water, vinegar, salt, and mixed pickling spices (tied into a clean, thin white cloth). Heat to boiling. Remove bag containing spices.

Pack asparagus into pint or quart jars (with tip ends down for easier removal). Put 1 clove garlic in each jar. Cover with boiling brine, leaving $\frac{1}{2}$ -inch headspace. Adjust jar lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

<p style="text-align: center;">My processing time</p> <p>Pints or quarts _____ minutes</p>

Pickled dilled beans

4 lb fresh tender green or yellow beans (5 to 6 inches long)
8 to 16 heads fresh dill
8 cloves garlic (optional)
 $\frac{1}{2}$ cup canning or pickling salt
4 cups white vinegar (5%)
4 cups water
1 tsp hot red pepper flakes (optional)

Yield. About 8 pints

Procedure. Wash and trim ends from the beans and cut to 4-inch lengths. In each pint jar, place 1 to 2 dill heads and, if desired, 1 clove of garlic. Place whole beans upright in pint jars, leaving $\frac{1}{2}$ -inch headspace. Trim beans to ensure proper fit, if necessary. Combine salt, vinegar, water, and pepper flakes (if desired).

Bring to a boil. Add hot solution to beans, leaving $\frac{1}{2}$ -inch headspace. Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

<p style="text-align: center;">My processing time</p> <p>Pints _____ minutes</p>

Pickled three-bean salad

$1\frac{1}{2}$ cups cut and blanched green or yellow beans (prepared as below)
 $1\frac{1}{2}$ cups canned, drained, red kidney beans

1 cup canned, drained garbanzo beans
 1/2 cup peeled and thinly sliced onion
 (about 1 medium onion)
 1/2 cup trimmed and thinly sliced
 celery (1 1/2 medium stalks)
 1/2 cup sliced green peppers
 (1/2 medium pepper)
 1/2 cup white vinegar (5%)
 1/4 cup bottled lemon juice
 3/4 cup sugar
 1 1/4 cups water
 1/4 cup oil
 1/2 teaspoon canning or pickling salt

<p>My processing time</p> <p>1/2 Pints or pints _____ minutes</p>
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Yield. 5 to 6 half-pints

Procedure. Wash and snap off ends of fresh beans. Cut or snap into 1- to 2-inch pieces. Blanch 3 minutes and cool immediately. Rinse kidney beans with tap water and drain again. Prepare and measure all other vegetables. Combine vinegar, lemon juice, sugar, and water and bring to a boil. Remove from heat.

Add oil and salt and mix well. Add beans, onions, celery, and green pepper and bring to a simmer. Marinate 12 to 14 hours in refrigerator, then heat entire mixture to a boil. Fill half-pint or pint jars with the vegetables. Add hot liquid, leaving 1/2-inch headspace. Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

Pickled beets

7 lb beets (2 to 2 1/2 inches in diameter)
 4 cups vinegar (5%)
 1/4 cup canning or pickling salt
 2 cups sugar
 2 cups water
 2 cinnamon sticks
 12 whole cloves
 4 to 6 onions (2 to 2 1/2 inch diameter),
 if desired

<p>My processing time</p> <p>Pints or quarts _____ minutes</p>

Yield. About 8 pints

Procedure. Trim off beet tops, leaving 1 inch of stem and roots to prevent bleeding of color. Wash thoroughly. Sort for size. Cover similar sizes together with boiling water and cook until tender (25 to 30 minutes). Drain and discard the liquid.

Cool beets. Trim off roots and stems and slip off skins. Slice into 1/4-inch slices. Peel and thinly slice onions. Combine vinegar, salt, sugar, and fresh water. Put spices in cheesecloth bag and add to vinegar mixture. Bring to a boil.

Add beets and onions. Simmer 5 minutes. Remove spice bag. Fill pint or quart jars with beets and onions, leaving 1/2-inch headspace. Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

Variation, pickled whole baby beets. Follow above directions but use beets that are 1 to 1½ inches in diameter. Pack whole; don't slice. Onions may be omitted.

Pickled hot peppers

4 lb hot long red, green, or yellow peppers (Hungarian, banana, chile, jalapeno)
3 lb sweet red and green peppers,
 mixed
5 cups vinegar (5%)
1 cup water
4 tsp canning or pickling salt
2 Tbsp sugar
2 cloves garlic

<p style="text-align: center;">My processing time</p> <p style="text-align: center;">½ Pints or pints _____ minutes</p>

Yield. About 9 pints

Caution: To prevent burns, wear rubber gloves when you handle hot peppers or wash your hands thoroughly with soap and water before touching your face.

Procedure. Wash peppers. If small peppers are left whole, slash 2 to 4 slits in each. Quarter large peppers. Blanch in boiling water or blister skin to peel. (To blister, place peppers in a hot oven (400°F) or broiler for 6-8 minutes or until skins blister.)

Allow peppers to cool by placing in a pan and covering with a damp cloth. After several minutes, peel. Flatten small peppers. Fill half-pint or pint jars, leaving ½-inch headspace. Combine and heat other ingredients to boiling and simmer 10 minutes.

Remove garlic. Add hot pickling solution over peppers, leaving ½-inch headspace. Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

Marinated whole mushrooms

7 lb small whole mushrooms
½ cup bottled lemon juice
2 cups olive or salad oil
2½ cups white vinegar (5%)
1 Tbsp oregano leaves
1 Tbsp dried basil leaves
1 Tbsp canning or pickling salt
½ cup finely chopped onion
¼ cup diced pimento
2 cloves garlic, cut in quarters
25 black peppercorns

<p style="text-align: center;">My processing time</p> <p style="text-align: center;">½ Pints _____ minutes</p>
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Yield. About 9 half-pints

Procedure. Select very fresh unopened mushrooms with caps less than 1¼ inch in diameter. Wash. Cut stems, leaving ¼ inch attached to cap. Add lemon juice and water to cover. Bring to boil. Simmer 5 minutes. Drain mushrooms.

Mix olive oil, vinegar, oregano, basil, and salt in a saucepan. Stir in onions and pimento and heat to boiling. Place $\frac{1}{4}$ garlic clove and 2-3 peppercorns in each half-pint jar. Fill half-pint jars with mushrooms and hot, well-mixed oil-vinegar solution, leaving $\frac{1}{2}$ -inch headspace. Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

Pickle relish

- 3 quarts chopped cucumbers
- 3 cups each of chopped sweet green and red peppers
- 1 cup chopped onions
- $\frac{3}{4}$ cup canning or pickling salt
- 4 cups ice
- 8 cups water
- 2 cups sugar
- 4 tsp each of mustard seed, turmeric, whole allspice, and whole cloves
- 6 cups white vinegar (5%)

My processing time

$\frac{1}{2}$ Pints or pints _____ minutes

Yield. About 9 pints

Procedure. Add cucumbers, peppers, onions, salt, and ice to water and let stand 4 hours. Drain and re-cover vegetables with fresh ice water for another hour. Drain again.

Combine spices in a spice or cheesecloth bag. Add spices to sugar and vinegar. Heat to boiling and pour mixture over vegetables. Cover and refrigerate 24 hours.

Heat mixture to boiling and fill hot half-pint or pint jars, leaving $\frac{1}{2}$ -inch headspace. Adjust lids and use conventional boiling-water canner processing (pages 5 and 8) or lower-temperature pasteurization (page 5).

Untested recipes

If you wish to use a recipe that hasn't been tested in a laboratory, keep these pointers in mind:

- Make sure that the recipe calls for vinegar that is 5% acidity.
- Quick pickle recipes must have at least as much vinegar as water to be safe.
- If lime is included, the recipes must have a rinsing step.
- Brined pickles or sauerkraut recipes must include salt.
- Processing instructions must be correct. Quick pickles can be processed as soon as they are made. Fermented pickles must not be processed until they have a sour taste.

Safety checklist

- Select tender vegetables without blemishes or mold.
- Use the amounts and types of ingredients specified in laboratory-tested recipes.
- Do **not** reduce the amount of vinegar or increase the amount of water in recipes.
- Follow instructions for conventional processing or use lower-temperature pasteurization.
- Do **not** process brined pickles until they taste tart.
- Look for signs of spoilage before using pickled products.



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