

Home Canning Pickled and Fermented Foods

The home canning of pickles, relishes, and fermented foods allows you to enjoy the bounty of your summer garden or local farmers market year-round. It may also save you money and give you some control over what's in your food. To ensure safe, high quality home-canned products, always follow research-based recommendations when canning.

Pickles are considered a high-acid food. The acid may be added, most often as vinegar, or in the case of fermented products form naturally during the fermentation process. For all pickled and fermented foods, the acidity level is important for safety, as well as for taste and texture. Acid prevents the growth of *Clostridium botulinum* (the bacteria that causes botulism) and allows these products to be safely processed in a boiling water canner.

Types of Pickled and Fermented Foods

Quick-process pickles or pickled vegetables are covered with boiling pickling liquid, usually made up of vinegar, spices, and seasonings. Sometimes

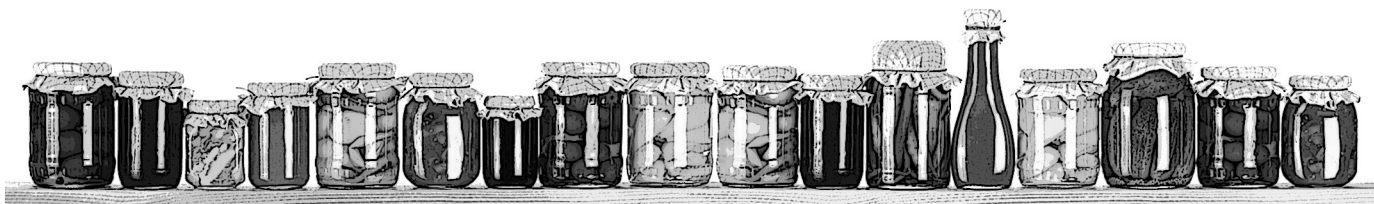
the vegetables are brined (in salt water) for several hours and then drained before being covered by the pickling liquid. Brining removes some of the excess liquid found in vegetables, allowing for easier packing of jars for home canning. Many pickled products have a better flavor if allowed to stand for several weeks after processing to allow the spices and seasonings to fully develop.

Fermented pickles and sauerkraut are cured in a salt and water solution for three to six weeks. During this time, colors, flavors and textures change, and the acidity increases through fermentation. The lactic acid formed in the fermentation process helps to preserve the food.

Relishes are made from chopped vegetables and fruits that are cooked with vinegar and seasonings. They may or may not be sweet.

Fruit pickles are made from whole or sliced fruits that are simmered in a sweet-and-sour syrup made with sugar, seasonings, and vinegar or lemon juice.

Chutneys are relish-type condiments, usually made with fruit, vegetables, sugar, vinegar, and spices and simmered until thick.



Ingredients

Select fresh, firm fruits and vegetables with no signs of spoilage. Wash them well, especially around the stems. A pickling variety of cucumber instead of table or slicing cucumbers will make for better quality pickles. Be sure to remove and discard a $\frac{1}{16}$ -inch slice from the blossom end of vegetables. The blossoms contain enzymes that can cause product softening.

Use only commercial vinegar that is at least 5% acidity in home canning. White distilled vinegar or cider vinegar may be used, depending on the flavor desired. Do not use homemade vinegar, since the acidity level is unknown. Do not dilute the vinegar unless the recipe specifies, because the acidity is needed for a safe product. If a less sour taste is desired, add sugar rather than decrease the vinegar.

Use canning or pickling salt. Table salt contains non-caking agents that may make the brine cloudy. Do not change the salt concentrations in fermented pickles or sauerkraut, because proper fermentation depends on correct proportions of salt and other ingredients. In these products, the salt is necessary for safety. In quick-process pickles made with vinegar, the amount of salt can be safely reduced. However, the quality may be lower, with both flavor and texture different than expected. You may want to make a small quantity first to determine whether you like the result. Salt substitutes contain potassium chloride and may develop a bitter tasting product.

Use white sugar unless the recipe calls for brown. Sugar substitutes are not usually recommended for pickling because heat and storage may cause bitterness or loss of flavor. An alternative is to use a pickle recipe that does not call for sugar, and add the sugar substitute before serving. If you plan to use a sugar substitute in pickling, follow recipes that were developed for the specific sugar substitute.

Use fresh whole spices for best quality and flavor. Ground spices may cause the pickles to darken and become cloudy. Pickles will darken less if the whole spices are tied in a spice bag and then removed from the brine before packing the jars.

If good quality ingredients and up-to-date recipes are used, firming agents are not needed for crisp pickles. Soaking cucumbers in ice water for four to five hours before pickling is a safer method. The use of alum is no longer recommended. Food grade pickling lime does improve pickle firmness and can be used to soak cucumbers before pickling. However, the excess lime must be removed by repeated soaking and rinsing with fresh water. Failure to reduce the lime may increase the risk of botulism because of the change in acidity. For quick-process pickles, calcium chloride products such as Pickle Crisp® may be added to the filled jars before applying the lids, following the manufacturer's instructions.

Equipment

A stainless steel saucepan should be used when ingredients such as vinegar, lemon juice, or acid foods are part of the recipe. This prevents leaching of metals into the food and pitting of the pan, which might occur with other metals such as aluminum and cast iron.

When fermenting fresh vegetables, a one-gallon container is needed for each five pounds of vegetables. A five-gallon stone crock is ideal for fermenting 25 pounds of fresh cabbage or cucumbers. A glass or food-grade plastic container can be substituted for a stone crock. Other one- to three-gallon non-food-grade plastic containers may be used, if lined with a clean food-grade plastic bag. **Be sure that foods contact only food-grade plastics. Do not use garbage bags or trash liners.**

Vegetables must be kept one to two inches under the brine when fermenting. To weigh the vegetables down, use a dinner plate or glass pie plate that will just fit inside the container. Weigh the plate down with two or three sealed quart jars filled with water, or a large, sealed plastic bag containing three quarts of water and four and one-half tablespoons of salt. Cover the container with a clean, heavy towel to help prevent contamination from insects and molds while the vegetables are fermenting. All equipment must be washed in hot soapy water and rinsed well with very hot water before use.

Safety

When home canning pickles and fermented foods, use only research-based, tested recipes. Do not change the proportions of vinegar, water, vegetables, or fruit given in a recipe. All pickles and fermented foods must be processed to destroy yeasts, molds, and spoilage bacteria. Processing also inactivates enzymes that could affect the color, flavor, and texture of the final product.

Altitude affects processing times and pressures. The processing times 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, please see *Home Canning Basics* (FCS3-578).

Step-By-Step Canning

1. Assemble all equipment and utensils.
2. Visually examine jars, lids, and bands for defects. Wash jars and two-piece caps in hot, soapy water and rinse well. Place lids, bands, and jars in simmering water. Remove pan from heat and allow the lids and jars to remain in the hot water until needed. Do not boil the lids. Dry the bands and set aside.
3. Fill the boiling water canner half full of clean warm water. Center the canner over the burner and preheat the water to 180°F. Begin preparing the recipe while the water is preheating. It will take about 20 to 30 minutes for the water to begin to boil.
4. Use top-quality ingredients; wash fresh produce well. Prepare the recipe, following the directions given.
5. 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.
6. Load filled jars into the canner, using a jar lifter. Keep jars upright at all times. Add boiling water to cover the jars by 1 to 2 inches. Turn the heat up so the water boils vigorously and place the lid on the canner.
7. Begin timing the process when the water has reached a full boil. Set a timer for the total number of minutes indicated in the recipe. The water must remain at a boil for the whole processing time. Add boiling water, if necessary, to keep the water level at least 1 inch above the jar tops.
8. When the processing time specified in the recipe is complete, turn off the heat and remove the canner lid. Wait 5 minutes before removing jars.
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 pickled products.

Recipes for Beginners

Kosher-Style Dills

Ingredients

- 30 to 36 pickling cucumbers, 3 to 4 inches long, blossom ends removed, ¼ inch of stem left attached
- 3 cups vinegar
- 3 cups water
- 6 tablespoons canning or pickling salt
- 7 heads fresh or dried dill
- 4 to 7 garlic cloves, sliced
- 3½ teaspoons mustard seed

Directions

- Combine vinegar, water, and salt in a large saucepan. Bring to a boil.
- Place ½ head of dill, ½ to 1 clove sliced garlic, and ½ teaspoon mustard seed in the bottom of each hot pint jar.
- Pack cucumbers into hot jars. When the jars are half-filled with cucumbers, add remaining ½ head dill to each jar. Finish packing cucumbers into the jars, leaving ½-inch headspace.
- Ladle boiling brine over cucumbers, leaving ½-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 10 minutes in a boiling water canner.
- Pickles will shrivel after processing. They will later plump in sealed jar.

Yield: about 6 to 7 pint jars

Nutritional Analysis (½ cup): 35 Calories, 0 g fat, 6 g carbohydrate, 2 g protein

Recipe adapted from So Easy to Preserve. Used with permission for educational purposes only.

Recipes for Beginners

Bread and Butter Pickles

Ingredients

- 6 pounds 4- to 5-inch pickling cucumbers, blossom ends removed, cut into 3/16-inch slices
- 8 cups thinly sliced onions (about 3 pounds)
- ½ cup canning or pickling salt
- 4 cups vinegar
- 4½ cups sugar
- 2 tablespoons mustard seed
- 1½ tablespoons celery seed
- 1 tablespoon ground turmeric

Directions

- Combine cucumber and onion slices in a large bowl. Add salt. Cover with 2 inches crushed or cubed ice Refrigerate 3 to 4 hours, adding more ice as needed. Drain.
- Combine remaining ingredients in a large saucepan. Boil 10 minutes.
- Add drained cucumbers and onions and slowly reheat to boiling.
- Pack hot pickles and liquid into hot pint or quart jars, leaving ½-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 10 minutes in a boiling water canner.
- After processing and cooling, jars should be stored 4 to 5 weeks to develop ideal flavor.

Yield: about 8 pint jars or 4 quart jars

Nutritional Analysis (½ cup): 130 Calories, 0 g fat, 33 g carbohydrate, 1 g protein

Recipe adapted from USDA Complete Guide to Home Canning. Used with permission for educational purposes only.

Recipes for Beginners

Okra Dill Pickles

Ingredients

7 pounds small okra pods, trimmed
8 or 9 garlic cloves
2/3 cup canning or pickling salt
4 teaspoons dill seed
6 small hot peppers, whole
6 cups water
6 cups vinegar

Directions

- Fill hot pint jars firmly with whole okra, leaving ½-inch headspace. Place 1 garlic clove in each jar.
- Combine salt, dill seed, hot peppers, water, and vinegar in a large saucepan and bring to a boil.
- Pour hot liquid over okra, leaving ½-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 10 minutes in a boiling water canner.

Yield: about 8 or 9 pint jars

Nutritional Analysis (½ cup): 40 Calories, 0 g fat, 8 g carbohydrate, 2 g protein

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Recipes for Beginners

Spicy Pickles

Ingredients

- 9-11 pounds pickling cucumbers (about 50 3 to 4-inches), blossom ends removed, whole, spears, or sliced
- 3 ½ cups vinegar
- 7 ½ cups water
- 1 pouch Spicy Pickles Mix Packet

Directions

- Combine vinegar, water and Mrs. Wages mix in a large saucepan. Bring to a boil over medium heat stirring constantly until mixture dissolves. Remove from heat.
- Pack cucumbers into hot jars, leaving ½-inch headspace.
- Ladle hot liquid over cucumbers, leaving ½-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal lids.
- Process pint jars 10 minutes, quart jars 15 minutes in a boiling water bath canner.

Yield: about 14 pint jars or 7 quart jars

Nutritional Analysis (1/2 cup): 15 calories, 0 g fat, 3 g carbohydrate, 2 g protein

Recipe from Mrs. Wages Spicy Pickles

Intermediate Recipes

Pickle Relish

Ingredients

- 3 quarts chopped cucumbers
- 3 cups chopped sweet green peppers
- 3 cups chopped sweet red peppers
- 1 cup chopped onions
- $\frac{3}{4}$ cup canning or pickling salt
- 4 cups ice
- 8 cups water
- 2 cups sugar
- 4 teaspoons mustard seed
- 4 teaspoons ground turmeric
- 4 teaspoons whole allspice
- 4 teaspoons whole cloves
- 6 cups vinegar

Directions

- Combine ice and water in a large bowl. Add cucumbers, peppers, onions, and salt. Let stand 4 hours. Drain. Cover vegetables with fresh ice water and let stand for another hour. Drain again.
- Combine sugar and vinegar in a large saucepan. Tie spices in a spice bag and add to saucepan. Heat to boiling and pour mixture over vegetables. Cover and refrigerate mixture 24 hours.
- Heat relish mixture to boiling.
- Pack hot relish into hot pint or half-pint jars, leaving $\frac{1}{2}$ -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 half-pint jars 10 minutes in a boiling water canner.

Yield: about 9 pint jars or 18 half-pint jars

Nutritional Analysis (1 tablespoon): 10 Calories, 0 g fat, 2 g carbohydrate, 0 g protein

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Intermediate Recipes

Sweet Pickle Rings

Ingredients

4 pounds 3- to 4-inch cucumbers (almost 3 quarts), 1/8-inch slice removed from each end, cut into 1/4-inch slices

Canning syrup:

3 cups vinegar

4 cups sugar

1 tablespoon whole allspice

1 tablespoon celery seed

Brining solution:

1 quart vinegar

1/2 cup sugar

3 tablespoons canning or pickling salt

1 tablespoon mustard seed

3 cinnamon sticks

Directions

- Combine all ingredients for canning syrup in a large saucepan and heat just to boiling. Keep syrup hot until used.
- In another large saucepan, mix the ingredients for the brining solution. Add the sliced cucumbers, cover, and simmer until the cucumbers change color from bright to dull green (about 5 to 7 minutes). Cucumbers should not get soft. Drain the cucumber slices and discard the brining solution.
- Pack hot cucumber slices into hot pint jars, leaving 1/2-inch headspace. Cover with hot canning syrup, leaving 1/2-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 10 minutes in a boiling water canner.

Yield: about 5 to 6 pint jars

Nutritional Analysis (1/2 cup): 100 Calories, 0 g fat, 28 g carbohydrate, 1 g protein

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Intermediate Recipes

Pickled Beets

Ingredients

- 7 pounds 2- to 2½-inch diameter beets
- 4 cups vinegar
- 1½ teaspoons canning or pickling salt
- 2 cups sugar
- 2 cups water
- 2 cinnamon sticks
- 12 whole cloves
- 4 to 6 onions (2- to 2½-inch diameter), thinly sliced (optional)

Variation: For pickled whole baby beets, follow above directions but use beets that are no more than 1 to 1½ inches in diameter. Pack whole after cooking, trimming, and peeling; do not slice. Onions may be omitted.

Directions

- Trim off beet tops, leaving 1 inch of stem and roots to prevent bleeding of color. Sort for size. Cover similar sizes together with boiling water and cook until tender (about 25 to 30 minutes). Caution: Drain and discard cooking liquid. Cool beets. Trim off roots and stems and slip off skins. Slice into ¼-inch slices.
- Combine vinegar, salt, sugar, and fresh water in a large saucepan. Tie cinnamon sticks and cloves in spice bag and add to vinegar mixture. Bring to a boil. Add beets and onions. Simmer 5 minutes. Remove spice bag.
- Fill hot pint or quart jars with hot beets and onions, leaving ½-inch headspace. Ladle hot vinegar solution over beets and onions, leaving ½-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 30 minutes in a boiling water canner.

Yield: about 8 pint jars or 4 quart jars

Nutritional Analysis (½ cup): 70 Calories, 0 g fat, 17 g carbohydrate, 1 g protein

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Intermediate Recipes

Spiced Apple Rings

Ingredients

- 12 pounds firm tart apples (maximum diameter, 2½ inches)
- 12 cups sugar
- 6 cups water
- 1¼ cups vinegar
- 3 tablespoons whole cloves
- ¾ cup red hot cinnamon candies, or 8 cinnamon sticks plus 1 teaspoon red food coloring (optional)
- ascorbic acid for anti-darkening solution (1 teaspoon or 3000 mg per gallon of water; or as directed on package for commercial mixture)

Directions

- Prepare apples: To prevent discoloration, peel and core one apple at a time. Immediately cut crosswise into ½-inch rings and immerse in anti-darkening solution.
- Combine sugar, water, vinegar, cloves, and cinnamon candies (or cinnamon sticks and food coloring) in a large saucepan. Heat to boiling, stirring constantly. Simmer 3 minutes.
- Remove apples from anti-darkening solution and drain well. Add to hot syrup and cook 5 minutes.
- Fill hot pint or half-pint jars (preferably wide-mouth) with hot apple rings, leaving ½-inch headspace. Ladle hot syrup over apples, leaving ½-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 half-pint jars 10 minutes in a boiling water canner.

Yield: about 8 or 9 pint jars or 16 to 18 half-pint jars

Nutritional Analysis (½ cup): 250 Calories, 0 g fat, 71 g carbohydrate, 0 g protein

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Intermediate Recipes

Tomato-Apple Chutney

Ingredients

- 3 quarts peeled, chopped tomatoes (about 6 pounds)
- 3 quarts peeled, cored, chopped apples (about 5 pounds)
- 2 cups seedless white raisins
- 2 cups chopped onion
- 1 cup chopped green bell pepper
- 2 pounds brown sugar
- 1 quart vinegar
- 4 teaspoons canning or pickling salt
- 1 teaspoon ground ginger
- ¼ cup whole mixed pickling spice, tied in spice bag

Directions

- Combine all ingredients in a large saucepan. Bring to a boil. Boil gently, stirring frequently, until mixture is thickened and reduced about one half in volume (about 1 hour). Remove spice bag.
- Ladle boiling hot chutney into hot pint jars, leaving ½-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 10 minutes in a boiling water canner.

Yield: about 7 or 8 pint jars

Nutritional Analysis (1 tablespoon): 25 Calories, 0 g fat, 6 g carbohydrate, 0 g protein

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Intermediate Recipes

Dilly Beans

Ingredients

- 2 pounds green beans, washed, ends trimmed
- ¼ cup canning or pickling salt
- 2 ½ cups vinegar
- 2 ½ cups water
- 1 teaspoon cayenne pepper, divided
- 4 cloves garlic
- 4 heads fresh dill or ¼ cup dill seed
- Ball Pickle Crisp (optional)

Directions

- Combine vinegar, water and salt in a large saucepan and bring to a boil. Reduce heat; simmer 10 minutes.
- Pack green beans lengthwise into hot jars, leaving ½-inch headspace. Add ¼ teaspoon cayenne pepper, 1 clove garlic, and 1 head dill or 2 teaspoons dill seed to each pint jar. Add ⅛ teaspoon Pickle Crisp to each pint jar if desired.
- Ladle hot liquid over green beans, leaving ½-inch headspace.
- Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel; apply two-piece metal lids.
- Process pint or quart jars 10 minutes in a boiling water bath canner.

Yield: about 4 pint or 2 quart jars

Nutritional Analysis (1/2 cup): 40 calories, 0.5 g fat, 9g carbohydrate, 2g protein

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Advanced Recipes

Pickled Peppers

Ingredients

- 4 pounds hot long red, green, or yellow peppers (Hungarian, banana, chili, or jalapeño)
- 3 pounds sweet red and green peppers, mixed
- 5 cups vinegar
- 1 cup water
- 4 teaspoons canning or pickling salt
- 2 tablespoons sugar
- 2 cloves garlic

Directions

- Prepare hot and sweet peppers: If small peppers are left whole, slash 2 to 4 slits in each. To remove the skins of tough-skinned peppers, blanch in boiling water or blister in order to peel. To blister, place peppers in a hot oven (400°F) or broiler for 6 to 8 minutes or until skins blister. Allow to cool. Place in a pan and cover with a damp cloth. After several minutes, peel peppers. Quarter large peppers. Flatten small peppers if left whole.
- Combine remaining ingredients in a large saucepan. Bring to a boil. Reduce heat and simmer 10 minutes. Remove garlic cloves.
- Pack peppers into hot pint or half-pint jars, leaving ½-inch headspace.
- Ladle hot liquid over peppers, leaving ½-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 half-pint jars 10 minutes in a boiling water canner.

Yield: about 9 pint jars or 18 half-pint jars

Nutritional Analysis (½ cup): 35 Calories, 0 g fat, 6 g carbohydrate, 1 g protein

Caution: When cutting or seeding hot peppers, wear plastic or rubber gloves to prevent hands from being burned. Do not touch your face or eyes.

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Advanced Recipes

Chow-Chow

Ingredients

- 2 cups sliced cucumbers
- 2 cups chopped sweet peppers
- 2 cups chopped cabbage
- 2 cups sliced onions
- 2 cups chopped green tomatoes
- 2 cups fresh lima beans
- 2 cups cut green beans
- 2 cups sliced carrots
- 1½ cups salt
- 2½ quarts water, divided
- 1 quart vinegar
- 4 cups sugar
- 2 tablespoons celery seed
- 4 tablespoons mustard seed
- 4 teaspoons turmeric

Directions

- Soak cucumbers, peppers, cabbage, onions, and tomatoes in salt water (1½ cups salt to 2 quarts water) overnight in refrigerator. Drain well.
- Cook lima beans, green beans, and carrots until tender. Drain well.
- Combine drained vegetables with 2 cups water and remaining ingredients in a large saucepan. Boil 10 minutes.
- Pack hot mixture into hot pint jars, leaving ½-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 10 minutes in a boiling water canner.

Yield: about 4 pint jars

Nutritional Analysis (1 tablespoon): 25 Calories, 0 g fat, 6 g carbohydrate, 0 g protein

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Advanced Recipes

Fermented Dill Pickles

Ingredients

Use the following for each gallon capacity of your fermentation container:

- 4 pounds 4-inch pickling cucumbers
- 2 tablespoons dill seed or 4 to 5 heads fresh or dry dill weed
- 2 cloves garlic (optional)
- 2 dried red peppers (optional)
- 2 teaspoons whole mixed pickling spices (optional)
- ½ cup canning or pickling salt
- ¼ cup vinegar
- 8 cups water

Directions

- Cut 1/16-inch slice off blossom ends of cucumbers and discard. Leave ¼ inch of stems attached.
- Place half of dill and spices on bottom of a clean, suitable container. Add cucumbers, remaining dill, and spices.
- Dissolve salt in vinegar and water and pour over cucumbers. Add suitable cover and weight.
- Store where temperature is between 70° and 75°F for about 3 to 4 weeks while fermenting. Temperatures of 55° to 65°F are acceptable, but the fermentation will take 5 to 6 weeks. Avoid temperatures above 80°F, or pickles will become too soft during fermentation.
- Fermenting pickles cure slowly. Check the container several times a week and promptly remove surface scum or mold. **Caution: If the pickles become soft, slimy, or develop a disagreeable odor, discard them. Fermentation is complete when bubbling ceases.**
- Fully fermented pickles may be stored in the original container for about 4 to 6 months, provided they are refrigerated and surface scum and mold are removed regularly.
- Canning fully fermented pickles is a better way to store them. To can them, pour the brine into a saucepan, heat slowly to a boil, and simmer 5 minutes. Filter brine through paper coffee filters to reduce cloudiness, if desired. Fill hot pint or quart jars with pickles and hot brine, leaving ½-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 for 10 minutes or quart jars for 15 minutes in a boiling water canner.

Yield: about 4 pint jars or 2 quart jars

Nutritional Analysis (½ cup): 15 Calories, 0 g fat, 3 g carbohydrate, 1 g protein

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Advanced Recipes

Sauerkraut

Ingredients

- 25 pounds cabbage
- $\frac{3}{4}$ cup canning or pickling salt

Directions

- 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 a thickness of a quarter. Put cabbage in a suitable fermentation container 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 the container is deep enough so that its rim is at least 4 or 5 inches above the cabbage.
- If juice does not cover cabbage, add boiled and cooled brine (1½ tablespoons of salt per quart of water).
- Add plate and weights; cover container with a clean bath towel. Store at 70° to 75°F while fermenting. At temperatures between 70° and 75°F, sauerkraut will be fully fermented in about 3 to 4 weeks. At 60° to 65°F, fermentation may take 5 to 6 weeks. At temperatures lower than 60°F, sauerkraut may not ferment. Above 75°F, sauerkraut 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 jars as weight, you will have to check the kraut two to three times each week and remove scum if it forms.
- Fully fermented sauerkraut may be kept tightly covered in the refrigerator for several months, or it may be canned as follows.
- To can using a hot pack: Bring sauerkraut and liquid slowly to a boil in a large kettle, stirring frequently. Remove from heat and fill hot pint or quart jars firmly with sauerkraut and juices, leaving ½-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 for 10 minutes or quart jars for 15 minutes in a boiling water canner.
- To can using a raw pack: Fill hot pint or quart jars firmly with sauerkraut and cover with juices, leaving ½-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 for 20 minutes or quart jars for 25 minutes in a boiling water canner.

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

Yield: about 18 pint jars or 9 quart jars

Nutritional Analysis ($\frac{1}{2}$ cup): 40 Calories, 0 g fat, 9 g carbohydrate, 2 g protein

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Recipes for Special Diets

No Sugar Added Pickled Beets

Ingredients

- 7 pounds 2- to 2½-inch diameter beets
- 6 cups vinegar
- 1½ teaspoons canning or pickling salt
- 2 cups Splenda®
- 3 cups water
- 2 cinnamon sticks
- 12 whole cloves
- 4 to 6 onions (2- to 2½-inch diameter), thinly sliced (optional)

Variation: For pickled whole baby beets, follow above directions but use beets that are no more than 1 to 1½ inches in diameter. Pack whole after cooking, trimming, and peeling; do not slice. Onions may be omitted.

Directions

- Trim off beet tops, leaving 1 inch of stem and roots to prevent bleeding of color. Cover similar sizes together with boiling water and cook until tender (about 25 to 30 minutes). Caution: Drain and discard cooking liquid. Cool beets. Trim off roots and stems and slip off skins. Slice into ¼-inch slices.
- Combine vinegar, salt, Splenda®, and fresh water in a large saucepan. Tie cinnamon sticks and cloves in spice bag and add to vinegar mixture. Bring to a boil. Add beets and onions. Simmer 5 minutes. Remove spice bag.
- Fill hot pint jars with beets and onions, leaving ½-inch headspace. Ladle boiling vinegar solution over beets and onions, leaving ½-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 30 minutes in a boiling water canner.

Yield: about 8 pint jars

Nutritional Analysis (½ cup): 60 Calories, 0 g fat, 13 g carbohydrate, 2 g protein

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Recipes for Special Diets

No Sugar Added Sweet Pickle Cucumber Slices

Ingredients

- 3½ pounds pickling cucumbers, blossom ends removed, cut into ¼-inch slices
- boiling water to cover sliced cucumbers
- 4 cups cider vinegar
- 1 cup water
- 3 cups Splenda®
- 1 tablespoon canning or pickling salt
- 1 tablespoon mustard seed
- 1 tablespoon whole allspice
- 1 tablespoon celery seed
- 4 1-inch cinnamon sticks (optional)

Directions

- Pour boiling water over cucumber slices and let stand 5 to 10 minutes. Drain off hot water and pour cold water over cucumbers. Let cold water run continuously over cucumber slices, or change water frequently until cucumbers are cooled. Drain slices well.
- Combine vinegar, 1 cup water, Splenda®, salt, and spices in a large saucepan. Bring to a boil. Add drained cucumber slices carefully to the boiling liquid and return to a boil.
- Place one cinnamon stick in each hot pint jar, if desired. Pack hot pickle slices into hot jars, leaving ½-inch headspace. Cover with boiling liquid, leaving ½-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 10 minutes in a boiling water canner.

Yield: about 4 or 5 pint jars

Nutritional Analysis (½ cup): 40 Calories, 0 g fat, 8 g carbohydrate, 1 g protein

Recipe adapted from USDA Complete Guide to Home Canning. Used with permission for educational purposes only.

Recipes for Special Diets

Reduced-Sodium Sliced Dill Pickles

Ingredients

- 4 pounds 3- to 5-inch pickling cucumbers, blossom ends removed, cut into ¼-inch slices
- 6 cups vinegar
- 6 cups sugar
- 2 tablespoons canning or pickling salt
- 1½ teaspoons celery seed
- 1½ teaspoons mustard seed
- 2 large onions, thinly sliced
- 8 heads fresh dill

Directions

- Combine vinegar, sugar, salt, celery seed, and mustard seed in a large saucepan. Bring to a boil.
- Place 2 slices of onion and ½ dill head on bottom of each hot pint jar. Pack cucumber slices into hot pint jars, leaving ½-inch headspace. Add 1 slice of onion and ½ dill head on top. Ladle hot liquid over cucumbers, leaving ¼-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 15 minutes in a boiling water canner.

Yield: about 8 pint jars

Nutritional Analysis (½ cup): 110 Calories, 0 g fat, 30 g carbohydrate, 0 g protein

Recipe adapted from USDA Complete Guide to Home Canning. Used with permission for educational purposes only.

Recipes for Special Diets

Reduced-Sodium Sliced Sweet Pickles

Ingredients

4 pounds 3- to 4-inch pickling cucumbers, blossom ends removed, cut into ¼-inch slices

Canning syrup:

12/3 cups vinegar

3 cups sugar

1 tablespoon whole allspice

2¼ teaspoons celery seed

Brining solution:

1 quart vinegar

1 tablespoon canning or pickling salt

1 tablespoon mustard seed

½ cup sugar

Directions

- Combine all ingredients for canning syrup in a large saucepan and bring to a boil. Keep syrup hot until used.
- In another large saucepan, mix the ingredients for the brining solution. Add the sliced cucumbers, cover, and simmer until the cucumbers change color from bright to dull green (about 5 to 7 minutes). Drain the cucumber slices and discard the brining solution.
- Pack hot cucumber slices into hot pint jars, leaving ½-inch headspace. Cover with hot canning syrup, leaving ½-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 10 minutes in a boiling water canner.

Yield: about 4 to 5 pint jars

Nutritional Analysis (½ cup): 90 Calories, 0 g fat, 26 g carbohydrate, 1 g protein

Recipe adapted from USDA Complete Guide to Home Canning. Used with permission for educational purposes only.

References

- Address, E.L., and J.A. Harrison (2011). So Easy to Preserve (5th ed.). Athens, GA: Cooperative Extension, University of Georgia.
- 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?...Ferment. Retrieved October 4, 2013 from http://nchfp.uga.edu/how/can6a_ferment.html.
- National Center for Home Food Preservation, University of Georgia (n.d.). How Do I?...Pickle. Retrieved October 4, 2013 from http://nchfp.uga.edu/how/can6b_pickle.html.
- United States Department of Agriculture (2009). USDA Complete Guide to Home Canning (Agriculture Information Bulletin No. 539). Retrieved October 4, 2013 from http://nchfp.uga.edu/publications/publications_usda.html.

Authors

Sandra Bastin, PhD, RD, LD, CCE, Extension Food and Nutrition Specialist

Annhall Norris, Extension Associate

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