

# Making Pickled Products

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Pickling is one of the oldest known methods of food preservation. It remains popular today and pickled foods add a special touch to many snacks and meals.

The many varieties of pickled and fermented foods are classified by ingredients and method of preparation. The four general classes are: brined or fermented, fresh-pack or quick-process, fruit and relishes.

*Based on the "Complete Guide to Home Canning," Agriculture Information Bulletin 539, September 1994 revision.*

**Caution:** The level of acidity in a pickled product is as important to its safety as it is to taste and texture.

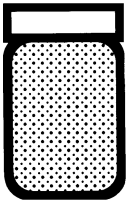
- Do not alter vinegar, food, or water proportions in a recipe or use a vinegar with unknown acidity.
- Use only recipes with tested proportions of ingredients.
- There must be a minimum, uniform level of acid throughout the mixed product to prevent the growth of botulinum bacteria.



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## INGREDIENTS

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**Produce:** Select fresh, firm fruits or vegetables which are free of spoilage. Use a pickling variety of cucumber because the table or slicing varieties may give a poor quality of pickle.

Plan to pickle fruits or vegetables within 24 hours after the harvest for highest quality. If produce cannot be used immediately, refrigerate it and use as soon as possible.

A bushel of cucumbers weighs 48 pounds and yields 16 to 24 quarts — an average of 2 pounds per quart. Choose the appropriate size. Use cucumbers about 1½ inches long for gherkins and 4 inches for dills. Odd shaped and more mature cucumbers can be used for relishes and bread-and-butter style pickles. Measure or weigh produce carefully. Weighing gives the most accurate measures.

**Salt:** Use a canning or pickling salt. Noncaking material added to other salts may make the brine cloudy. Do not reduce salt in fermented pickles, because proper fermentation depends on the correct proportions of salt and other ingredients.

Some fresh-pack pickles can be safely prepared with reduced or no salt. Use only tested recipes formulated to produce the proper acidity. Both the texture and flavor of these pickles may be noticeably different than expected. The quick pickle recipes in this circular may be made with reduced sodium salts, such as light or lite salts. Use of salt substitutes is not recommended.

**Vinegar:** White distilled or cider vinegars of 5 percent acidity (50 grain) are recommended. White vinegar is usually preferred when light color is desirable, as for fruits and cauliflower.

Do not dilute vinegar unless the recipe so specifies. If a less sour pickle is preferred, add sugar rather than decrease vinegar.

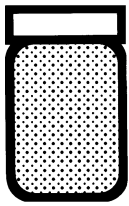
**Sugar:** White granulated and brown sugars are most often used. Brown sugar gives a darker color and distinct flavor. Corn syrup and honey may alter the flavor.

**Water:** A soft water is recommended for pickle making. Very hard water may have an undesirable effect on the color and flavor of pickled products. However, some hard water might produce a firmer pickle.

Hard water may be softened somewhat by the following method. Boil water for five minutes. Skim off the scum and let the water set for 24 hours. Then ladle off the water without disturbing the sediment in the bottom. Another option is to dilute hard water with soft water. To dilute, mix one part hard water with two parts soft water.

**Spices:** Use fresh, whole spices for the best flavor in pickles. Powdered spices may cause the product to darken or become cloudy. It is best to tie whole spices loosely in a cheesecloth bag, put the bag in the pickling liquid, then remove the bag before canning. If desired, add individual spices such as a cinnamon stick from the bag to each jar. Spices deteriorate and quickly lose their pungency in heat and humidity. Store opened spices in an airtight container in a cool dark place.

**Firming Agents:** Alum may be safely used to firm fermented pickles. However, it is unnecessary and is not included in the recipes in this publication. Alum does not improve the firmness of quick-processed pickles. The calcium in lime definitely improves pickle firmness. Food-grade lime may be used as a lime-water solution for soaking fresh cucumbers before pickling them. Excess lime absorbed by the cucumbers must be removed to make safe pickles. To further improve pickle firmness, you may process cucumber pickles for 30 minutes in water at 180 degrees Fahrenheit. This process also prevents spoilage, **but the water temperature should not fall below 180 F**. Use a candy or jelly thermometer to check the water temperature.



## EQUIPMENT \_\_\_\_\_

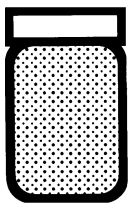
### For Pickling Liquids

For heating pickling liquids use unchipped enamelware, stainless steel, aluminum, or glass pots. DO NOT use copper, brass, iron or galvanized utensils. These metals may react with acids or salts and cause undesirable color and flavors, or even form toxic compounds in the pickle mixture.

### For Brining or Fermenting

A 1-gallon container holds 5 pounds of fresh cucumbers, and a 5-gallon container holds 25 pounds. Glass and food-grade plastic containers are excellent substitutes for stone crocks. Other 1- to 3-gallon food-grade containers may be used if lined inside with a clean food-grade plastic bag.

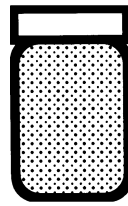
**Do not use garbage bags or trash liners.** A large sealed food-grade plastic bag containing 4½ tablespoons of salt and 3 quarts of water may be used as a weight to hold cucumbers under the surface of brine. A plate and jars of water may also be used. Select a pie or dinner plate just small enough to fit inside the fermentation container. Cover the weight and container top with a heavy clean bath towel to reduce mold growth on the brine surface.



## PREPARATION \_\_\_\_\_

Wash fruits and vegetables and sort according to size when they are used whole. Cut 1/16 inch off the blossom end of cucumbers.

If especially firm pickles are preferred, mix 1 cup pickling lime and ½ cup salt to 1 gallon of water in a 2- to 3-gallon crock or enamelware container. Do not use aluminum. Avoid inhaling lime-water solution while mixing. Soak cucumbers in lime water for 12 to 24 hours. Remove cucumbers from lime solution, rinse, and resoak 1 hour in fresh cold water. Repeat the rinsing and soaking steps in fresh water two more times. Handle carefully, as slices will be brittle. Drain well.



## CANNING PROCEDURE \_\_\_\_\_

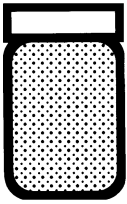
Wash jars. Prepare lids according to manufacturer's instructions. Fill jars uniformly with product. Avoid packing so tight that the brine or syrup cannot surround and cover the food. Remove the air bubbles by running a rubber scraper or nonmetal spatula between the food and the jar. Wipe sealing edge of jars with a clean, damp paper towel. Add lids and tighten screw bands. Process jars in a boiling water canner or use the low temperature pasteurization treatment.

**To process in a boiling water canner,** fill canner halfway with water and preheat to 180 F for hot packs or 140 F for raw packs. Load sealed jars into the canner rack and lower with handles or load one jar at a time with a jar lifter onto rack in canner. Cover canner and turn heat to high. Add water if needed to a level of 1 inch above jars. When water boils vigorously, lower heat to maintain a gentle boil and process jars for the time given in Table 1 on page 12.

**To process using low-temperature pasteurization treatment,** place jars in a canner filled halfway with warm (120 F to 140 F) water. Add hot water to a level 1 inch above jars. Heat the water and maintain 180 F water temperature for 30 minutes. Use a candy or jelly thermometer to be certain that the water temperature is at least 180 F during the entire 30 minutes. Temperatures higher than 185 F may cause unnecessary softening of pickles. This treatment results in a better product texture but must be carefully managed to avoid possible spoilage.

**Caution: Use only when recipe indicates.**

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Cool jars 12 to 24 hours and remove screw bands. Check lid seals. If the center of the lid is indented, the jar is sealed. Wash, dry, label and store sealed jars in a clean, cool, dark place. If the lid is unsealed, examine and replace jar if defective, use new lid, and reprocess as before. Wash screw bands and store separately. Pickles are best if used within a year but are safe as long as lids remain vacuum sealed.



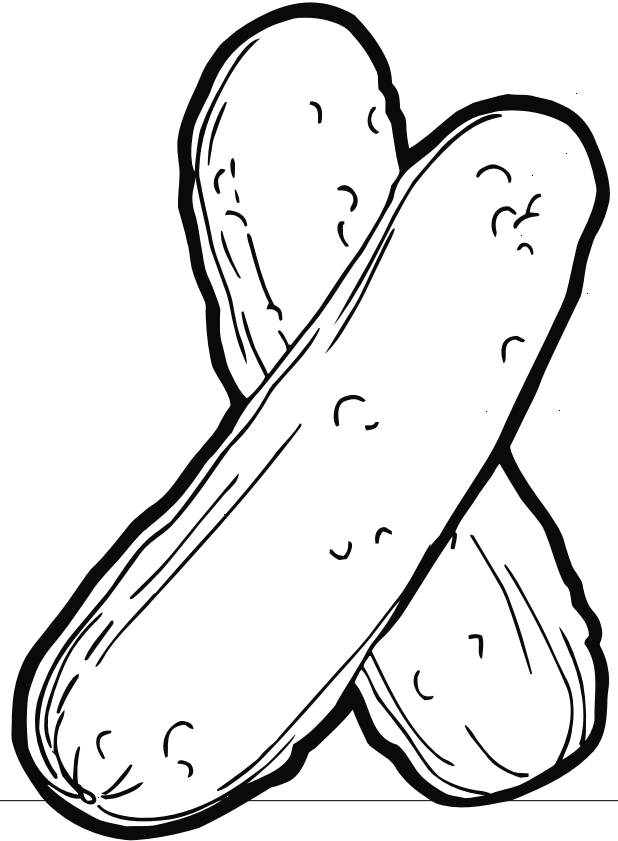
## RECIPES

### Quick Fresh-Pack Dill Pickles

8 pounds of 3- to 5-inch pickling cucumbers  
2 gallons water  
1¼ cups canning or pickling salt  
1½ quarts vinegar (5%)  
¼ cup sugar  
2 quarts water  
2 tablespoons whole mixed pickling spice  
about 3 tablespoons whole mustard seed  
(tsp per pint jar)  
about 14 heads of fresh dill (1½ heads per  
pint jar) or 4½ tablespoons dill seed  
(1½ tsp per pint jar)

**Yield:** 7 to 9 pints

**Procedure:** Wash cucumbers. Leave ¼ inch of cucumber stem ends attached but cut 1/16 inch slice off blossom end. Dissolve ¾ cup salt in 2 gallons of water. Pour brine water over cucumbers and let stand 12 hours. Drain. Combine vinegar, ½ cup salt, sugar and 2 quarts water. Add mixed pickling spices tied in a clean white cloth. Heat to boiling. Fill jars with pickles. Add 2 teaspoons mustard seed and 3 heads fresh dill per quart. Cover with boiling liquid, leaving ½-inch headspace. Adjust lids and process jars as described in Table 1 (page 12) or use the low-temperature pasteurization treatment described on page 3.



### Pickled Horseradish Sauce

2 cups (¾ lb) freshly grated horseradish  
1 cup white vinegar (5%)  
½ tsp canning or pickling salt  
¼ tsp powdered ascorbic acid

**Yield:** About 2 half-pints

**Procedure:** The pungency of fresh horseradish fades within 1 to 2 months, even when refrigerated. Therefore, make only small quantities at a time. Wash horseradish roots thoroughly and peel off brown outer skin. The peeled roots may be grated in a food processor or cut into small cubes and put through a food grinder. Combine ingredients and fill into sterile jars, leaving ¼-inch headspace. Seal jars tightly and store in a refrigerator.

## Fermented Dill Pickles

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

- 4 pounds of 4-inch pickling cucumbers
- 2 tablespoons dill seed or 4 to 5 heads fresh or dry dill
- ½ cup salt
- ¼ cup vinegar (5%)
- 8 cups water and one or more of the following ingredients:
  - 2 cloves garlic (optional)
  - 2 dried red peppers (optional)
  - 2 teaspoons whole mixed pickling spices (optional)

**Procedure:** Wash cucumbers. Cut 1/16 inch slice off blossom end and discard. Leave ¼ inch of stem attached. Place half of dill and spices on bottom of a clean, suitable container (see page 3). 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 F 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.** Fully fermented pickles may be stored in the original container for about 4 to 6 months, provided they are refrigerated and surface scum and molds are removed regularly. Canning fully fermented pickles is a better way to store them. 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 jar with pickles and hot brine, leaving ½-inch headspace. Adjust lids with process as directed in Table 1 (page 12), or use the low-temperature pasteurization treatment described on page 3.



## Reduced Sodium Sliced Dill Pickles

- 4 pounds pickling (3- to 5-inch) cucumbers
- 6 cups vinegar (5%)
- 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

**Yield:** About 8 pints

**Procedure:** Wash cucumbers. Cut 1/16 inch slice off blossom end and discard. Cut cucumbers in ¼ inch slices. Combine vinegar, sugar, salt, celery and mustard seeds in large saucepan. Bring mixture to boiling. Place 2 slices of onion and ½ dill head on bottom of each pint jar. Fill jars with cucumber slices, leaving ½-inch headspace. Add 1 slice of onion and ½ dill head on top. Pour hot pickling solution over cucumbers, leaving ¼-inch headspace. Adjust lids and process according to Table 1 (page 12).

## Quick Sweet Pickles

May be canned as either strips or slices

- 8 pounds of 3- to 4-inch pickling cucumbers
- 1/3 cup canning or pickling salt
- 4½ cups sugar
- 3½ cups vinegar (5%)
- 2 teaspoons celery seed
- 1 tablespoon whole allspice
- 2 tablespoons mustard seed
- 1 cup pickling lime (optional — for use in variation below for making firmer pickles)

**Yield:** About 7 to 9 pints

**Procedure:** Wash cucumbers. Cut 1/16 inch off blossom end and discard, but leave ¼ inch of stem attached. Slice or cut in strips, if desired. 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 sterile jars, leaving ½-inch headspace.

**Raw pack** — Fill jars, leaving ½-inch headspace. Add hot pickling syrup, leaving ½-inch headspace.

Adjust lids and process according to Table 1 (page 12), or use the low-temperature pasteurization treatment described on page 3.

**Variation for firmer pickles:** Wash cucumbers. Cut 1/16 inch off blossom end and discard, but leave ¼ inch of stem attached. Slice or strip cucumbers. Mix 1 cup pickling lime and ½ 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 re-soak 1 hour in fresh cold water. Repeat the rinsing and re-soaking two more times. Handle carefully because slices or strips will be brittle. Drain well.

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

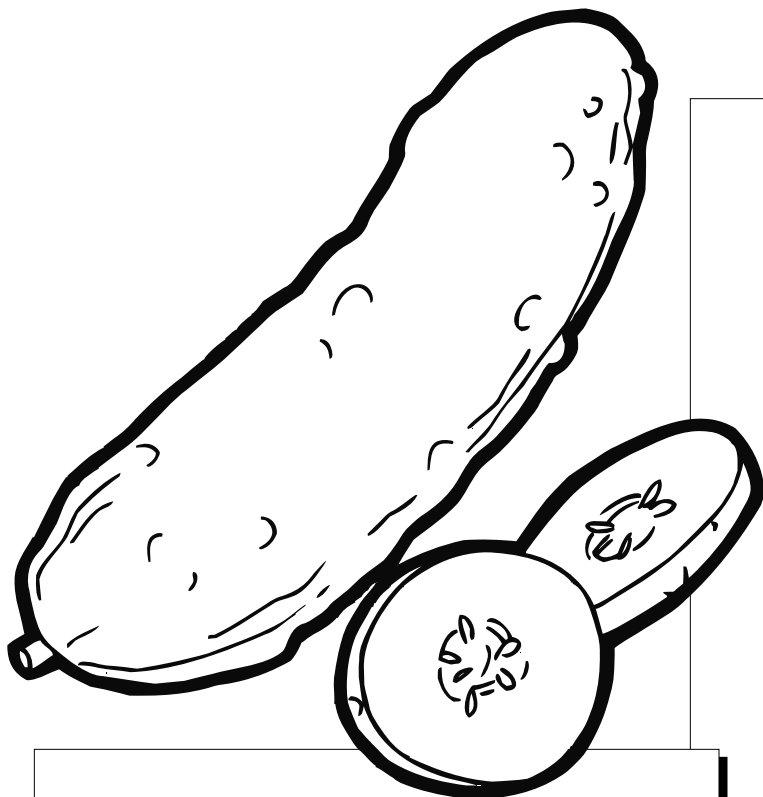
**Variation:** Add 2 slices of raw whole onion to each jar before filling with cucumbers.

## Sweet Gherkin Pickles

- 7 pounds cucumbers (1½ inch or less)
- ½ cup canning or pickling salt
- 8 cups sugar
- 6 cups vinegar (5%)
- ¾ teaspoon turmeric
- 2 teaspoons celery seeds
- 2 teaspoons whole mixed pickling spice
- 2 cinnamon sticks
- ½ teaspoon fennel (optional)
- 2 teaspoons vanilla (optional)

**Yield:** 6 to 7 pints

**Procedure:** Wash cucumbers. Cut 1/16 inch slice off blossom end and discard, but leave ¼ inch of stem attached. Place cucumbers in large container and cover with boiling water. Six to 8 hours later, and on the second day, drain and cover with 6 quarts of fresh boiling water containing ¼ cup salt. On the third day, drain and prick cucumbers with a table fork. Combine and bring to boil 3 cups vinegar, 3 cups sugar, turmeric, 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 and reheat to boil. Pour over pickles. On the fourth day, drain and save syrup. Add another 2 cups sugar and 1 cup vinegar. Heat 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 sterile pint jars with pickles and cover with hot syrup, leaving ½-inch headspace. Adjust lids and process according to Table 1 (page 12), or use the low-temperature pasteurization treatment described on page 3.



### Reduced-Sodium Sliced Sweet Pickles

4 pounds (3- to 4-inch) pickling cucumbers

#### Brining solution:

- 1 quart distilled white vinegar (5%)
- 1 tablespoon canning or pickling salt
- 1 tablespoon mustard seed
- ½ cup sugar

#### Canning syrup:

- 1<sup>2</sup>/<sub>3</sub> cups distilled white vinegar (5%)
- 3 cups sugar
- 1 tablespoon whole allspice
- 2¼ teaspoons celery seed

**Yield:** About 4 to 5 pints

**Procedure:** Wash cucumbers and cut 1/16 inch off blossom end and discard. Cut cucumbers into ¼ 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 (about 5 to 7 minutes). Drain the cucumber slices. Fill jars, and cover with hot canning syrup leaving ½-inch headspace. Adjust lids and process according to Table 1 (page 12).

### Bread and Butter Pickles

- 6 pounds of 4- to 5-inch pickling cucumbers
- 8 cups thinly sliced onions (about 3 pounds)
- ½ cup canning or pickling salt
- 4 cups vinegar (5%)
- 4½ cups sugar
- 2 tablespoons mustard seed
- 1½ tablespoons celery seed
- 1 tablespoon ground turmeric
- 1 cup pickling lime (optional — for use in variation below for making firmer pickles)

**Yield:** About 8 pints

**Procedure:** Wash cucumbers. Cut 1/16 inch off blossom end and discard. Cut into 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. Drain and add cucumbers and onions and slowly reheat to boiling. Fill pint jars with slices and cooking syrup, leaving ½-inch headspace. Adjust lids and process according to Table 1 (page 12) or use low-temperature pasteurization treatment described on page 3.

**Variation for firmer pickles:** Wash cucumbers. Cut 1/16 inch off blossom end and discard. Cut into 3/16 inch slices. Mix 1 cup pickling lime and ½ cup salt to 1 gallon water in a 2- to 3-gallon crock or enamelware container. 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, as slices will be brittle. Drain well. Continue as above.

**Storage:** After processing and cooling, jars should be stored four to five weeks to develop ideal flavor.

## 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 teaspoons each of mustard seed, turmeric, whose allspice and whole cloves
- 6 cups white vinegar (5%)

**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 into clean jars, leaving  $\frac{1}{2}$ -inch headspace. Adjust lids and process according to Table 1 (page 12).

## Pickled Pepper-Onion Relish

- 6 cups finely chopped onions
- 3 cups finely chopped sweet red peppers
- 3 cups finely chopped green peppers
- $1\frac{1}{2}$  cups sugar
- 6 cups vinegar (5%), preferably white distilled
- 2 tablespoons canning or pickling salt

**Yield:** 9 half-pints

**Procedure:** Wash and chop vegetables. Combine all ingredients and boil gently until mixture thickens and volume is reduced by one-half (about 30 minutes). Fill sterile jars with hot relish, leaving  $\frac{1}{2}$ -inch headspace, and seal tightly. Store in refrigerator and use within one month.

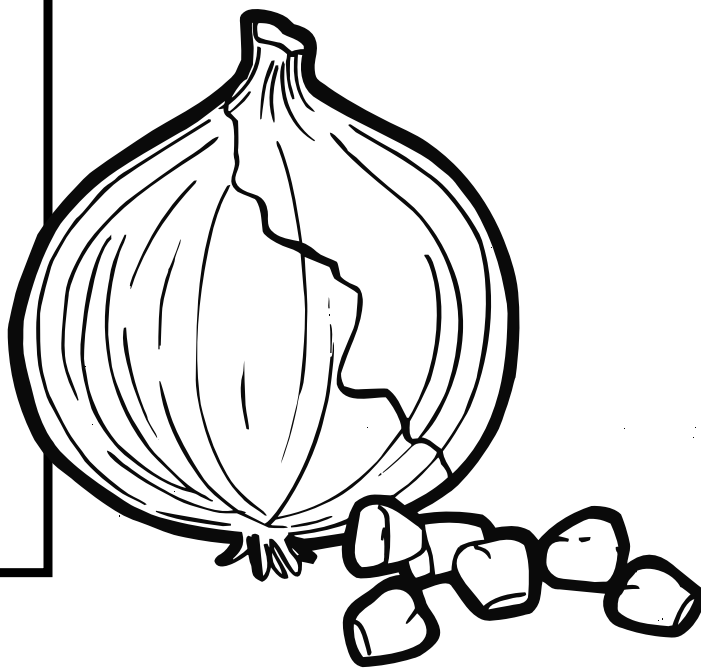
**Caution:** If extended storage is desired, this product must be processed according to Table 1 (page 12).

## Pickled Corn Relish

- 10 cups fresh whole kernel corn (16 to 20 medium size ears), or six 10-ounce packages of frozen corn
- $2\frac{1}{2}$  cups diced sweet red peppers
- $2\frac{1}{2}$  cups diced sweet green peppers
- $2\frac{1}{2}$  cups chopped celery
- $1\frac{1}{4}$  cups diced onions
- $1\frac{3}{4}$  cups sugar
- 5 cups vinegar (5%)
- $2\frac{1}{2}$  tablespoons canning or pickling salt
- $2\frac{1}{2}$  teaspoons celery seed
- $2\frac{1}{2}$  tablespoons dry mustard
- $1\frac{1}{4}$  teaspoons turmeric

**Yield:** About 9 pints

**Procedure:** Boil ears of corn 5 minutes. Dip in cold water. Cut whole kernels from cob or use six 10-ounce frozen packages of corn. Combine peppers, celery, onions, sugar, vinegar, salt and celery seed in a saucepan. Bring to boil and simmer 5 minutes, stirring occasionally. Mix mustard and turmeric in  $\frac{1}{2}$  cup of the simmered mixture. Add this mixture and corn to the hot mixture. Simmer another 5 minutes. If desired, thicken mixture with flour paste ( $\frac{1}{4}$  cup flour blended in  $\frac{1}{4}$  cup water) and stir frequently. Fill jars with hot mixture, leaving  $\frac{1}{2}$ -inch headspace. Adjust lids and process according to Table 1 (page 12).





## Pickled Hot Peppers

### Hungarian, banana, chile, jalapeno

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

**Yield:** About 9 pints

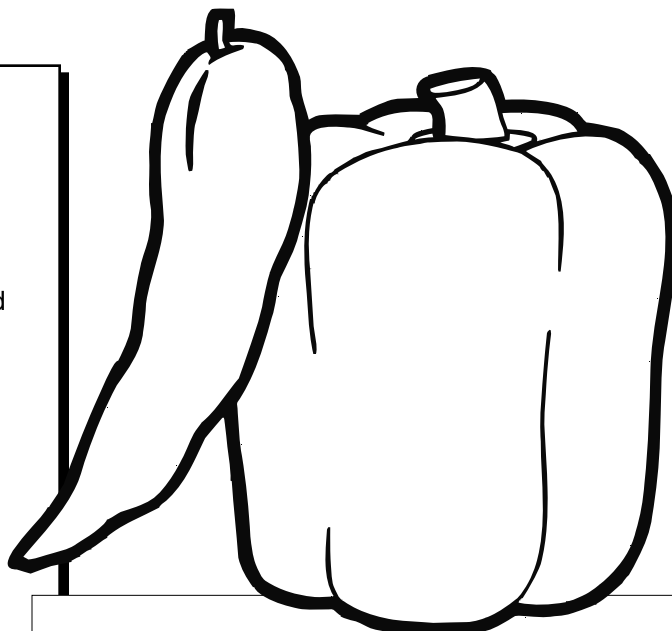
**Caution:** Wear rubber gloves when handling hot peppers or wash hands thoroughly with soap and water before touching your face.

**Procedure:** Small peppers may be left whole. Large peppers may be quartered. Wash, slash two to four slits in each pepper, and blanch in boiling water or blister in order to peel tough-skinned hot peppers.

Peppers may be blistered using one of the following methods: **Oven or broiler method:** Place peppers in a hot oven (400 F) or broiler for 6 to 8 minutes or until skins blister. **Range-top method:** Cover hot burner, either gas or electric, with heavy wire mesh. Place peppers on burner for several minutes until skins blister.

Place peppers in pan and cover with a damp cloth. This will make peeling the peppers easier. After several minutes of cooling, peel each pepper.

Flatten small peppers. Fill 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 process according to Table 1 (page 12).



## Pickled Mixed Vegetables

- 4 pounds of 4- to 5-inch pickling cucumbers, washed, and cut into 1 inch slices (cut off 1/16 inch from blossom end and discard)
- 2 pounds peeled and quartered small onions
- 4 cups cut celery (1 inch pieces)
- 2 cups peeled and cut carrots (½ inch pieces)
- 2 cups cut sweet red peppers (½ inch pieces)
- 2 cups cauliflower flowerets
- 5 cups white vinegar (5%)
- ¼ cup prepared mustard
- ½ cup canning or pickling salt
- 3½ cups sugar
- 3 tablespoons celery seed
- 2 tablespoons mustard seed
- ½ teaspoon whole cloves
- ½ teaspoon ground turmeric

**Yield:** About 10 pints

**Procedure:** Combine vegetables, cover with 2 inches of cubed or crushed ice, and refrigerate 3 to 4 hours. In 8-quart kettle, combine vinegar and mustard and mix well. Add salt, sugar, celery seed, mustard seed, cloves, turmeric. Bring to a boil. Drain vegetables and add to hot pickling solution. Cover and slowly bring to boil. Drain vegetables but save pickling solution. Fill vegetables in sterile pint jars, or clean quarts, leaving ½-inch headspace. Add pickling solution, leaving ½-inch headspace. Adjust lids and process according to Table 1 (page 12).

## Pickled Dilled Beans

- 4 pounds fresh tender green or yellow beans (5 to 6 inches long)
- 8 to 16 heads fresh dill
- 8 cloves garlic (optional)
- ½ cup canning or pickling salt
- 4 cups white vinegar (5%)
- 4 cups water
- 1 teaspoon hot red pepper flakes (optional)

**Yield:** About 8 pints

**Procedure:** Wash and trim ends from beans and cut to 4-inch lengths. In each sterile pint jar, place 1 to 2 dill heads and, if desired, 1 clove of garlic. Place whole beans upright in jars, leaving ½-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 ½-inch headspace. Adjust lids and process according to Table 1 (page 12).

## Pickled Three-Bean Salad

- 1½ cups cut and blanched green or yellow beans (prepared as below)
- 1½ cups canned, drained, red kidney beans
- 1 cup canned, drained garbanzo beans
- ½ cup peeled and thinly sliced onion (about 1 medium onion)
- ½ cup trimmed and thinly sliced celery (1½ medium stalks)
- ½ cup sliced green peppers (½ medium pepper)
- ½ cup white vinegar (5%)
- ¼ cup bottled lemon juice
- ¾ cup sugar
- ¼ cup oil
- ½ teaspoon canning or pickling salt
- 1¼ cups water

**Yield:** About 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 to solution and bring to a simmer. Marinate 12 to 14 hours in refrigerator, then heat entire mixture to a boil. Fill clean jars with solids. Add hot liquid, leaving ½-inch headspace. Adjust lids and process according to Table 1 (page 12).

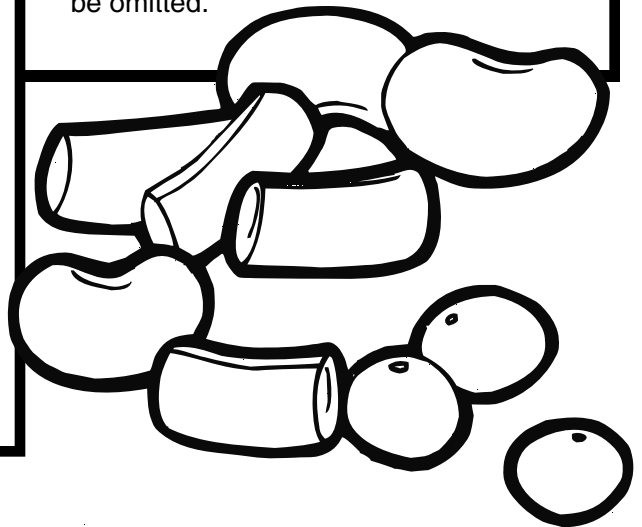
## Pickled Beets

- 7 pounds of 2- to 2½-inch diameter beets
- 4 cups vinegar (5%)
- 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), if desired

**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 (about 25 to 30 minutes). **Caution: Drain and discard liquid.** Cool beets. Trim off roots and stems and slip off skins. Slice into ¼ 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 jars with beets and onions, leaving ½-inch headspace. Add hot vinegar solution, allowing ½-inch headspace. Adjust lids and process according to Table 1 (page 12).

**Variation:** Pickled whole baby beets. Follow above directions but use beets that are 1- to 1½-inches in diameter. Pack whole; do not slice. Onions may be omitted.



## Marinated Peppers

### Bell, Hungarian, banana, or jalapeno

- 4 lbs firm peppers\*
- 1 cup bottled lemon juice
- 2 cups white vinegar (5%)
- 1 tbsp oregano leaves
- 1 cup olive or salad oil
- ½ cup chopped onions
- 2 cloves garlic, quartered (optional)
- 2 tbsp prepared horseradish (optional)

**\*Note:** It is possible to adjust the intensity of pickled jalapeno peppers by using all hot jalapeno peppers (hot style), or blending with sweet and mild peppers (medium or mild style).

**For hot style:** Use 4 lbs jalapeno peppers.

**For medium style:** Use 2 lbs jalapeno peppers and 2 lb sweet and mild peppers.

**For mild style:** Use 1 lb jalapeno peppers and 3 lbs sweet and mild peppers.

**Yield:** About 9 half-pints

**Procedure:** Select your favorite pepper.

**Caution: If you select hot peppers, wear rubber or plastic gloves while handling them or wash hands thoroughly with soap and water before touching your face.** Peppers may be left whole. Large peppers may be quartered. Wash, slash two to four slits in each pepper, and blanch in boiling water or blister in order to peel tough-skinned hot peppers.

Peppers may be blistered using one of the following methods: **Oven or broiler method:** Place peppers in a hot oven (400 F) or broiler for 6-8 minutes or until skins blister. **Range-top method:** Cover hot burner, either gas or electric, with heavy wire mesh. Place peppers on burner for several minutes until skins blister.

Allow peppers to cool. Place in pan and cover with a damp cloth. This will make peeling the peppers easier. After several minutes of cooling, peel each pepper. Flatten whole peppers. Mix all remaining ingredients in a saucepan and heat to boiling. Place ¼ garlic clove (optional) and ¼ teaspoon salt in each half pint or ½ teaspoon per pint. Fill jars with peppers, add hot, well-mixed oil/pickling solution over peppers, leaving ½-inch headspace. Adjust lids and process according to Table 1 (page 12).

## Piccalilli

- 6 cups chopped green tomatoes
- 1½ cups chopped sweet red peppers
- 1½ cups chopped green peppers
- 2¼ cups chopped onions
- 7½ cups chopped cabbage
- ½ cup canning or pickling salt
- 3 tbsp whole mixed pickling spice
- 4½ cups vinegar (5%)
- 3 cups brown sugar

**Yield:** 9 half-pints

**Procedure:** Wash, chop, and combine vegetables with ½ cup salt. Cover with hot water and let stand 12 hours. Drain and press in a clean white cloth to remove all possible liquid. Tie spices loosely in a spice bag and add to combined vinegar and brown sugar, and heat to a boil in a saucepan. Add vegetables and boil gently 30 minutes or until the volume of the mixture is reduced by one-half. Remove spice bag. Fill hot sterile jars with hot mixture, leaving ½-inch headspace. Adjust lids and process according to Table 1 (page 12).

## Marinated Whole Mushrooms

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

**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 ¼ garlic clove and 2-3 peppercorns in a half-pint jar. Fill jars with mushrooms and hot, well-mixed oil/vinegar solution, leaving ½-inch headspace. Adjust lids and process according to Table 1 (page 12).

**Table 1. Recommended Processing Times in a Boiling Water Canner.**

Pickles	Style of Pack	Jar Size	Process Time at Altitudes of		
			0-1000 ft.	1001-6000 ft.	
----- minutes -----					
1. Quick fresh pack dills	Raw	Pints	10	15	
		Quarts	15	20	
2. Fermented dills	Raw	Pints	10	15	
		Quarts	15	20	
3. Reduced sodium dills	Raw	Pints	15	20	
4. Quick sweet	Hot	Pints or Quarts	5	10	
		Raw	Pints	10	15
			Quarts	15	20
5. Sweet gherkin	Raw	Pints	5	10	
6. Reduced sodium sliced sweet	Hot	Pints	10	15	
7. Bread-and-butter	Hot	Pints or Quarts	10	15	
8. Pickle relish	Hot	Half-pints or Pints	10	15	
9. Pepper-onion relish	Hot	Half-pints or Pints	5	10	
10. Corn relish	Hot	Half-pints or Pints	15	20	
11. Hot peppers	Raw	Half-pints or Pints	10	15	
12. Mixed vegetables	Hot	Pints	5	10	
		Quarts	10	15	
13. Dilled beans	Raw	Pints	5	10	
14. Three-bean salad	Hot	Half-pints or Pints	15	20	
15. Pickled beets	Hot	Pints or Quarts	30	*	
16. Marinated peppers	Raw	Half-pints	15	20	
		Pints	15	**	
17. Marinated mushrooms	Hot	Half-pints	20	**	
18. Piccalilli	Hot	Half-pints or Pints	5	10	

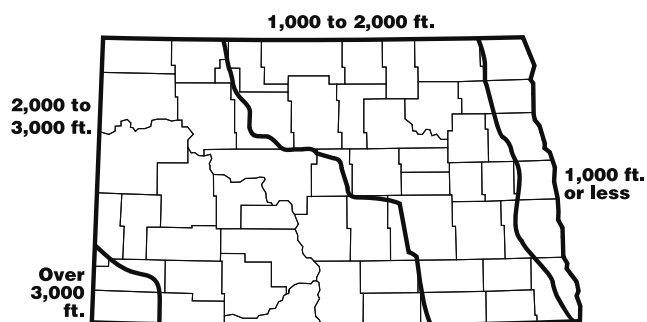
\* 1001-3000 ft. – 35 minutes  
3001-6000 ft. – 40 minutes

\*\* 1001-3000 ft. – 25 minutes  
3001-6000 ft. – 30 minutes

**Adjust for altitude**

As altitudes increase air becomes thinner, and this affects both pressures and boiling points in home canning. Using the water bath process times for canning food at sea level may result in spoilage if you live at altitudes of 1,000 feet or more. Water boils at lower temperatures as altitude increases. Lower boiling temperatures are less effective for killing bacteria. Increasing the processing time or canner pressure compensates for lower boiling temperatures. Select the proper processing time and canner pressure for the altitude where you live.

The altitude in North Dakota varies from 800 feet above sea level in the east to 3,000 feet in the west. The map below shows the approximate altitude of areas of North Dakota.



For more specific information regarding altitude in your county, contact your county extension office.

**For more information on this and other topics, see: [www.ag.ndsu.edu](http://www.ag.ndsu.edu)**