Pickled and fermented food products are classified on the basis of ingredients used and the method of preparation. There are four general classifications.

**Fermented pickles**, often called brine pickles, are fermented and cured for about three weeks. Dill pickles and sauerkraut are examples of this group. Changes occur in the flavor and the color of the foods, and the acidity increases as the curing process takes place.

**Fresh pack** or quick process pickles are not brined or brined only for several hours, then drained and combined with vinegar and seasonings. These are quick and easy to prepare.

**Fruit pickles** are fruits heated in a spicy syrup acidified with vinegar or lemon juice.

**Relishes** are chopped fruits and/or vegetables seasoned and cooked with vinegar. Relishes often are hot and spicy since they are used to accent other, sometimes bland, food.

**USE ONLY TESTED RECIPES**

Pickled products can be satisfactory, tasty and safely prepared if top quality ingredients are used, a tested recipe is followed, and the proportions or measurements of the ingredients are strictly followed. The recipes in this booklet are a result of extensive research. They include the exact proportions of ingredients and the latest procedures. Always read through the complete recipe before starting. Then make sure that all necessary equipment and ingredients are on hand.

**INGREDIENTS**

**Fruits and vegetables.** Select only freshly harvested, tender but firm fruit or vegetables, free of any spoilage or bruises. Varieties of pickling cucumbers make better pickles than the slicing or salad kind. Wax-coated cucumbers should not be used in making pickles because the wax is almost impossible to remove and it prevents penetration of the brine.

Keep fruits or vegetables refrigerated or as cool as possible until ready to process to prevent deterioration. For best results, have just enough on hand to make one canner load. Process as soon as possible without interrupting the procedure.

**Salt.** There are various types of salt. Buy pure canning or pickling salt for top pickled products. Table salt and iodized salt contain anti-caking ingredients and may cause cloudiness or discoloration when used in pickling. Never reduce the amount of salt specified in any fermented pickle recipe.

Light salt or reduced-sodium salts should be used only in quick, fresh pack pickle recipes. The flavor and texture of pickles made with these salts is different and may not suit all tastes.

**Vinegar.** Use a high grade cider or white distilled vinegar of 5 percent acidity. As cider vinegar tends to darken light-colored fruits and vegetables, white distilled vinegar is often selected for a clear appearance. Never use homemade vinegar for making pickles because the percent of acidity is unknown, and acidity affects the safety and quality of the pickled product. For the same reason, do not reduce the amount of vinegar called for in a recipe.

**Sugar.** White granulated or brown sugar may be used in sweetening pickles. Brown sugar tends to give a tan color but may be preferred for its flavor. Corn syrup and honey may produce undesirable flavors and are not recommended in pickling.

**Seasonings.** Various herbs and spices often included in pickle and relish recipes give added taste. For superior flavors and aromas, buy fresh spices and herbs in small containers or amounts that will be used within a year. Old spices and herbs tend to become stale and powdery, often causing a cloudy, discolored liquid with poor flavor.

**Water.** Use clear, good-quality drinking water to make the pickling liquid and to wash fruits and vegetables. Very hard water causes pickles to shrivel. If water tends to be hard, distilled water can be used.

**Utensils.** Ingredients used in pickling solutions sometimes react with the metals in utensils and containers. Do not use iron, copper, brass or chipped enamelware utensils. Stainless

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1 This publication is intended for use by individuals who have a basic understanding of canning procedures. For more detailed information, consult the USDA Complete Guide to Home Canning, which is available through your local county Extension office.

To find more resources for your business, home or family, visit the College of Agriculture and Home Economics on the World Wide Web at www.cahe.nmsu.edu
steel, aluminum and Pyrex-type utensils are best for heating pickling liquid. Stone jars, glass jars, crock pots, large casseroles, glass bowls, or food-grade plastic containers may be used for brining. Use a glass or nonmetallic plate to cover and hold vegetables 1 to 2 inches under brine. A food-grade plastic freezer bag or glass jar filled with water placed on the plate make excellent weights to hold food below the surface.

Place lids on the mouth of the jar and hold in place with a screw-on metal band tightened securely.

The bands hold the lids in place during the processing and cooling periods. The bands hold the lids in place in the processing and cooling periods.

Use regular and wide-mouth Mason jars with self-sealing lids held in place by screw-on metal bands. The bands hold the lids in place during the processing and cooling periods. The bands hold the lids in place during the processing and cooling periods.

Mason jars are made from tempered glass to resist high temperatures. Jars are available in 1/2 pint, pint, 1-1/2 pint, and quart sizes. Larger jars are not recommended for home canning.

Inspect jars carefully for cracks or chips and discard faulty ones. Wash jars in hot, soapy water and rinse thoroughly or in the dishwasher. Keep jars hot in the dishwasher, a sink of hot water or in a warm oven until they are filled.

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Check metal screw bands for signs of rust or dents. Discard badly corroded or dented bands. Use only new lids and follow manufacturer's directions for preparing lids for canning.

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Fill each jar with pickles and brine according to directions in the recipe. Remove any air bubbles trapped in the jar with a plastic or rubber spatula. Leave the recommended headspace to allow liquid to boil. Wipe jar rim with a clean cloth moistened in hot water. Place a metal lid on the mouth of the jar and hold in place with a screw-on metal band tightened securely.

Do not over tighten. Process in a boiling water canner.

Follow these steps for successful boiling-water canning:

1. Fill the canner halfway with water.
2. Preheat water to 140°F for raw-packed foods and to 180°F for hot-packed foods.
3. Load filled jars, fitted with lids, into the canner rack and use the handles to lower the rack into the water; or fill the canner, one jar at a time, with a jar lifter.
4. If necessary, add more boiling water so the water level is at least 1 inch above jar tops.
5. Turn heat to its highest position until water boils vigorously.
6. Set a timer for the minutes required for processing the food.
7. Cover with the canner lid and lower the heat setting to maintain a gentle boil throughout the process schedule.
8. If necessary, add more boiling water to keep the water level above the jars.
9. When jars have been boiled for the recommended time, turn off the heat and remove the canner lid.
10. Using a jar lifter, remove the jars and place them on a towel, leaving at least 1-inch spaces between the jars during cooling.

Low-temperature pasteurization treatment. The following treatment results in a better product texture but must be carefully managed to avoid possible spoilage. Place jars in a canner half-filled with warm (120° to 140°F) water. Then add hot water to a level 1 inch above jars. Heat the water to maintain 180° to 185°F water temperature for 30 minutes.

Check with a candy or jelly thermometer to assure 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. Caution: Use only when recipe indicates.

Test for jar seals. Remove screw bands when jars have cooled (12 to 24 hours) and test for vacuum seals by:

- Pressing the lid center with finger. If the lid springs up when released, it is not sealed.
- Tapping the lid with a teaspoon. A sealed jar lid will make a ringing sound.
- Holding the jar at eye level and looking across the lid. A sealed jar lid curves down slightly in the center.

Reprocessing unsealed jars. Remove lids from unsealed jars and discard. Check sealing surface of jar for tiny nicks or cracks. If the jar has defects, discard it and replace with another jar. If not, add a new lid and process for the same amount of time within 24 hours. Unsealed jars can be kept in the refrigerator and the food used within 3 to 4 days, or remove about an inch of the contents and freeze.

Storing canned food. Clean the outsides of sealed, cooled jars. Label with date and contents and store in a cool (50–70°F), dark, dry place away from sun, light or dampness. Vegetable products are best if eaten within one year.

Accidental freezing. Freezing may cause food in jars to spoil if jars become unsealed. Freezing and thawing cause food to soften and lose eating quality. Protect jars from freezing by wrapping with layers of newspapers.

If canned food spoils. Examine jars carefully before tasting fruit. Check lids for a vacuum seal. Never taste food from an unsealed jar.

Signs of food spoilage are streaks and dried food at the top of the jar, swollen lids, broken jar seals, rising air bubbles and any unnatural color. Other indicators include bad or unnatural odor; spurting liquid; white, blue, green or black mold; or foaming.

Dispose of any food you suspect of being spoiled. For safety, spoiled canned food and containers may need to be detoxified before disposal. Contact your county Extension office for detoxification instructions.

Altitude adjustments. All communities in New Mexico are above sea level, varying from 3,000 to 10,000 feet with differences even within a county.
Use Table 1 to determine the elevation of your community and then select safe processing times for canning your pickles. The boiling temperature of liquids is lower at higher elevations, therefore food must be processed longer at high altitudes.

### Table 1. Elevation of towns in New Mexico.

<table>
<thead>
<tr>
<th>City/Town</th>
<th>Elevation (ft)</th>
<th>City/Town</th>
<th>Elevation (ft)</th>
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<tr>
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<td>Bernalillo</td>
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<td>Bosque Farms</td>
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<td>Carlsbad</td>
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<td>Las Cruces</td>
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<td>Las Vegas</td>
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<td>Logan</td>
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<td>Lordsburg</td>
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### Fermented Recipes

#### Fermented Dill Pickles

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

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

Wash cucumbers. Remove and discard 1/16-inch slice off blossom end but do not remove stem end. Place half of dill and spices at bottom of clean container. Add cucumbers and remaining dill seed and spices. Dissolve salt in vinegar and water in another container and pour over cucumbers. Add cover and weight.

Store 3 to 4 weeks at 70°–75°F. Temperatures of 55°–65°F will take longer to develop full flavor. Higher temperatures (80°F or over) may cause softening of pickles. Check container often and remove any surface scum or mold. **Caution:** Discard pickles if they become soft, slimy or develop a disagreeable odor.

**To can:** Pour brine into a pan and slowly heat to the boiling point. Simmer 5 minutes. Filter through coffee filters to reduce cloudiness. Fill jars with pickles and hot brine. Leave 1/2-inch headspace. Adjust lids and process (Table 2) in boiling-water canner or use low temperature pasteurization treatment.

**Note:** Fully fermented pickles may be stored in original fermenting container up to 4 to 6 months, but container must be refrigerated. Remove surface scum and molds regularly.

### Table 2. Processing times for fermented dill pickles.

<table>
<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>1,000–6,000 ft</th>
<th>Above 6,000 ft</th>
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<tbody>
<tr>
<td>Raw</td>
<td>pints</td>
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<tr>
<td>Raw</td>
<td>quarts</td>
<td>20</td>
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#### Sauerkraut

**Yield:** about 9 quarts

25 lb cabbage, finely shredded

3/4 cup canning or pickling salt

Prepare a 5-gallon fermentation container, plate and weight. Select firm cabbage heads, harvested within 24 to 48 hours. Work with about 5 pounds of cabbage at a time. Discard outer leaves and rinse under cold running water. Drain. Cut into quarters and remove cores. Shred cabbage very fine, about 1/8 to 1/16 inch. Mix 3 tablespoons of salt with every 5 pounds of shredded cabbage and pack firmly. Continue shredding, salting and packing until all cabbage is in container. The salt draws out the cabbage's juices to form enough brine to cover the cabbage. If enough juice is not produced, add brine made by boiling 1-1/2 tablespoons of salt to 1 quart of water. Cool and add to shredded cabbage.

Add plate and weights. Cover container with clean towel. Store at 70°–75°F while fermenting for 3 to 4 weeks. Maintain this temperature for best results.

If using a brine-filled bag to weigh cabbage down, allow fermentation to complete (bubbles cease) before disturbing the sauerkraut. If using water-filled jars as weights, check the kraut two or three times each week. Remove scum as it forms.

Store sauerkraut in the refrigerator in tightly covered jars for several months. Sauerkraut also can be canned.

**Hot pack:** Slowly bring kraut and liquid to a boil in a pot. Stir frequently. Remove from heat and fill jars tightly with kraut and juices. Leave 1/2-inch headspace.

**Raw pack:** Fill jars tightly with kraut and cover with juices, leaving 1/2-inch headspace.
Adjust lids and process in a boiling-water canner (Table 3).

**Table 3. Processing time for sauerkraut.**

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<tr>
<th>Pack</th>
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<th>1,000–3,000 ft</th>
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<td>Raw</td>
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<tr>
<td>Raw</td>
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**FRESH-PACK RECIPES**

**Quick Fresh-Pack Dill Pickles**  (Yield: 7 to 9 pints)
8 lb of 3- to 5-inch pickling cucumbers
2 gal water
1-1/4 cup canning or pickling salt (divided)
1-1/2 qt vinegar (5%)
1/4 cups sugar
2 qt water
2 Tbsp whole mixed pickling spice
about 3 Tbsp whole mustard seed (1 tsp per pint jar)
about 14 heads of fresh dill (1-1/2 heads per pint jar),
or 4-1/2 Tbsp dill seed (1-1/2 tsp per pint jar)

Wash cucumbers. Cut 1/16-inch off blossom end and discard, but leave 1/4-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 jars, leaving 1/2-inch headspace.

Raw pack: Fill jars, leaving 1/2-inch headspace. Add hot pickling syrup, leaving 1/2-inch headspace. Adjust lids and process as below or use the low-temperature pasteurization treatment.

**Variation for firmer pickles:** Wash cucumbers. Cut 1/16-inch off blossom end and discard, but leave 1/4-inch of stem attached. Slice or cut in strips. Mix 1 cup pickling lime and 1/2 cup salt to 1 gallon water in a 2- to 3-gallon crock or enameware 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.

**Table 4. Processing time for quick fresh-pack dill pickles.**

<table>
<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>1,000–6,000 ft</th>
<th>Above 6,000 ft</th>
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<tbody>
<tr>
<td>Raw</td>
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<tr>
<td>Raw</td>
<td>quarts</td>
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<td>25</td>
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**Quick Sweet Pickles**  (Yield: about 7 to 9 pints)
8 lb of 3- to 4-inch pickling cucumbers
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—for use in variation below to make firmer pickles)

Wash cucumbers. Cut 1/16-inch off blossom end and discard, but leave 1/4-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 jars, leaving 1/2-inch headspace.

Raw pack: Fill jars, leaving 1/2-inch headspace. Add hot pickling syrup, leaving 1/2-inch headspace. Adjust lids and process as below or use the low-temperature pasteurization treatment.

**Table 5. Processing time for quick sweet pickles.**

<table>
<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>1,000–6,000 ft</th>
<th>Above 6,000 ft</th>
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<tbody>
<tr>
<td>Hot</td>
<td>pints</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Hot</td>
<td>quarts</td>
<td>10</td>
<td>15</td>
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<tr>
<td>Raw</td>
<td>pints</td>
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</tr>
<tr>
<td>Raw</td>
<td>quarts</td>
<td>20</td>
<td>25</td>
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</tbody>
</table>

**Storage:** After processing (Table 5) 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.

**Pickled Dill Beans**  (Yield: about 8 pints)
4 lb fresh, tender green or yellow beans (5–6 inches long)
8–16 heads of fresh dill
8 cloves garlic (optional)
1/2 cup canning or pickling salt
4 cups white vinegar (5%)
4 cups water
1 tsp hot red pepper flakes (optional)

Wash and trim ends from beans and cut to 4-inch length. Place 1 or 2 heads of dill and 1 clove of garlic in each pint jar. Place beans upright in jars, leaving 1/2-inch headspace. Trim beans to ensure proper fit. Combine salt, vinegar, water, and pepper flakes in a pan and heat to boiling. Add vinegar solution to beans. Leave 1/2-inch headspace. Adjust lids on jars and process (Table 6) in a boiling-water canner.
Table 6. Processing time for pickled dill beans.

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<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>1,000-6,000 ft</th>
<th>Above 6,000 ft</th>
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<tbody>
<tr>
<td>Raw</td>
<td>pints</td>
<td>10</td>
<td>15</td>
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</table>

Bread and Butter Pickles  
(Yield: 8 pints or 4 quarts)
6 lb 4- to 5-inch pickling cucumbers
8 cups thinly sliced onions (about 3 lb)
1/2 cup canning or pickling salt
2 trays or 2 qt of crushed ice or ice cubes
4 cups vinegar (5%)
4-1/2 cups sugar
1 Tbsp tumeric
1-1/2 Tbsp celery seed
2 Tbsp mustard seed


Combine vinegar, sugar, and spices in a large pot. Boil 10 minutes. Add cucumbers and onions and slowly reheat to boiling. Fill jars with cucumbers, onions and syrup. Leave 1/2-inch headspace. Adjust lids and process (Table 7) in a boiling-water canner or use low-temperature pasteurization treatment.

Table 7. Processing time for bread and butter pickles.

<table>
<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>1,000-6,000 ft</th>
<th>Above 6,000 ft</th>
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<tr>
<td>Hot</td>
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<td>20</td>
</tr>
</tbody>
</table>

Pickled Beets  
(Yield: about 8 pints)
7 lb 2- to 2-1/2-inch diameter beets
4 cup vinegar (5%)
1-1/2 tsp canning or pickling salt
2 cups sugar
2 cups water
2 cinnamon sticks (in cheesecloth bag)
12 whole cloves (in cheesecloth bag)
4-6 onions 2- to 2-1/2 inch diameter (optional)

Trim beet tops, but leave 1-inch stems and roots to prevent color bleeding. Wash thoroughly. Sort by similar size. Place in a pan, cover with boiling water and cook until tender, about 25 to 30 minutes. Drain and cool. Trim roots, stem and remove skins. Slice into 1/4-inch thick slices. Peel and thinly slice onions. Combine vinegar, salt, sugar and fresh water in a pan. Add cheesecloth bag with spices to vinegar mixture and heat to boiling. Add beets and onions. Simmer 5 minutes. Remove spice bag and discard. Fill jars with beets and onions leaving 1/2-inch headspace. Add hot vinegar solution to cover beets, allowing 1/2-inch headspace. Adjust lids and process (Table 8) in a boiling-water canner.

Table 8. Processing time for pickled beets.

<table>
<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>1,000-3,000 ft</th>
<th>3,001-6,000 ft</th>
<th>Above 6,000 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>pints or quarts</td>
<td>35</td>
<td>40</td>
<td>45</td>
</tr>
</tbody>
</table>

Pickled Cauliflower or Brussel Sprouts  
(Yield: 9 half-pints)
12 cups 1- to 2-inch cauliflower florets or small brussel sprouts
4 cups white vinegar (5%)
2 cups sugar
2 cups thinly sliced onion
1 cup diced red bell pepper
2 Tbsp mustard seed
1 Tbsp celery seed
1 tsp tumeric
1 tsp hot red pepper flakes

Wash cauliflower florets or brussel sprouts. Remove stems and blemished outer leaves. Combine 4 teaspoons of pickling salt to 1 gallon of water in large pot and heat to boiling. Add cauliflower florets and boil 3 minutes (4 minutes for brussels sprouts). Drain and cool. Combine vinegar, sugar, onion, red pepper and spices in a large saucepan. Heat to boiling and simmer 5 minutes. Fill jars with cauliflower or brussels sprouts. Leave 1/2-inch headspace. Adjust lids and process (Table 9) in boiling-water canner.

Table 9. Processing time for pickled cauliflower or brussel sprouts.

<table>
<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>1,000-6,000 ft</th>
<th>Above 6,000 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>half-pints or pints</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

Marinated Whole Mushrooms  
(Yield: 9 half-pints)
7 lb small whole mushrooms
1/2 cup bottled lemon juice
2 cups olive or salad oil
2-1/2 cups white vinegar (5%)
1 Tbsp oregano leaves
1 Tbsp dried basil leaves
1 Tbsp canning or pickling salt
1/2 cup finely chopped onion
1/4 cup diced pimento
2 cloves of garlic, cut in quarters
25 black pepper corns

Select fresh, small, unopened mushrooms with caps less than 1-1/4-inch in diameter. Wash. Cut stems, leaving about 1/4-inch attached to cap. Add lemon juice and water to cover.
Heat to boiling and simmer 5 minutes. Drain. Mix olive oil, vinegar, oregano, basil and salt in a saucepan. Stir in onions and pimento. Heat to boiling. Place 1/4 garlic clove and 2–3 peppercorns in each half-pint jar. Fill jars with mushrooms and hot, well-mixed vinegar and oil solution. Leave 1/2-inch headspace. Adjust lids and process (Table 10) in boiling-water canner.

Table 10. Processing time for marinated whole mushrooms.

<table>
<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>Process Time (in minutes) at</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1,000–3,000 ft</td>
</tr>
<tr>
<td>Hot</td>
<td>half-pints</td>
<td>25</td>
</tr>
</tbody>
</table>

Pickled Dill Okra (Yield: 8-9 pints)

7 lb small okra
6 small hot peppers
4 tsp dill seed
8-9 garlic cloves
2/3 cup canning or pickling salt
6 cups water
6 cups vinegar (5%)

Wash and trim okra. Place 1 garlic clove in each jar. Pack jars firmly with okra leaving 1/2-inch headspace. Combine salt, peppers, dill seed, water and vinegar in a saucepan and boil. Pour the hot pickling solution over the okra, leaving 1/2-inch headspace. Adjust lids and process (Table 11) in boiling-water canner.

Table 11. Processing time for pickled dill okra.

<table>
<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>Process Time (in minutes) at</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1,000–6,000 ft</td>
</tr>
<tr>
<td>Hot</td>
<td>pints</td>
<td>15</td>
</tr>
</tbody>
</table>

Fruit pickle recipes

Spiced Crab Apples (Yield: 9 pints)

5 lb crab apples
4-1/2 cups cider vinegar (5%)
3-3/4 cups water
7-1/2 cups sugar
4 tsp whole cloves
4 sticks of cinnamon
6 (six) 1/2-inch cubes of fresh ginger root

Remove leaves or blossom petals carefully, but do not remove stems. Wash apples. Puncture skin of apples four or five times with a toothpick. Tie spices in a sturdy, porous cloth. Mix vinegar, water, sugar and spice bag in a large pot and bring to a boil. Place 1/3 of the apples at a time in a wire basket or sieve and dip for 2 minutes in the boiling solution. Place cooked apples and spice bag in 2-gallon crock. Pour hot syrup over apples. Cover and let stand overnight. Remove spice bag and discard; drain syrup into saucepan and heat to boiling. Fill jars with apples, leaving 1/2-inch headspace. Pour hot syrup over apples, leaving 1/2-inch headspace. Adjust lids and process (Table 12) in boiling-water canner.

Table 12. Processing time for spiced crab apples.

<table>
<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>Process Time (in minutes) at</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1,000–6,000 ft</td>
</tr>
<tr>
<td>Hot</td>
<td>pints</td>
<td>30</td>
</tr>
</tbody>
</table>

Spiced Apple Rings (Yield: 8 to 9 pints)

12 lb firm, tart apples (maximum diameter, 2-1/2 inches)
12 cups sugar
6 cups water
1-1/4 cup white vinegar (5%)
3 Tbsp whole cloves
3/4 cup red cinnamon candies, or
8 cinnamon sticks and 1 tsp of red food coloring

Wash, peel and slice one apple at a time to prevent discoloration. Cut crosswise into 1/2-inch slices. Remove core and immerse slices in ascorbic acid solution (1 teaspoon ascorbic acid per 1 gallon of cold water).

Combine sugar, water, vinegar, cloves, cinnamon sticks and food coloring or candy in 6-quart saucepan to make syrup and stir. Heat to boil and simmer 3 minutes. Drain apple rings from ascorbic acid and add to hot syrup. Cook 5 minutes. Fill jars with the apple rings and flavored syrup, leaving 1/2-inch headspace. Adjust lids and process (Table 13) in boiling-water canner.

Table 13. Processing time for spiced apple rings.

<table>
<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>Process Time (in minutes) at</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1,000–6,000 ft</td>
</tr>
<tr>
<td>Hot</td>
<td>pints</td>
<td>15</td>
</tr>
</tbody>
</table>

Relish recipes

Pickled Corn Relish (Yield: about 9 pints)

10 cups fresh, whole kernel corn (16 to 20 medium size ears or 6 10-ounce packages frozen corn)
2-1/2 cups diced, sweet red pepper
2-1/2 cups diced, sweet green pepper
2-1/2 cups chopped celery
1-1/4 cups diced onion
1-3/4 cups sugar
5 cups vinegar (5%)
2-1/2 tsp canning or pickling salt
2-1/2 tsp celery seed
2-1/2 tsp dry mustard
1-1/4 tsp tumeric
Wash peppers. If peppers are small, leave whole. Cut two slits in each. Blanch in boiling water or blister in order to peel. Cool and peel off skin. Flatten small peppers, quarter larger peppers. Fill jars, leaving 1/2-inch headspace. Simmer 10 minutes more. Fill jars with hot mixture, leaving 1/2-inch headspace. Adjust lids and process (Table 16) in boiling-water canner.

Table 16. Processing time for pickled hot peppers.

<table>
<thead>
<tr>
<th>Pack</th>
<th>Jar size</th>
<th>1,000–6,000 ft</th>
<th>Above 6,000 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw</td>
<td>half-pints or pints</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

Pickled Hot Peppers  
(Yield: about 9 pints)

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

Caution: Wear rubber gloves when handling hot peppers or wash hands thoroughly with soap and water before touching your face.
egar, sugar and spices. Bring to boil and add zucchini and onions. Simmer 5 minutes and fill jar with mixture and pickling solution. Leave 1/2-inch headspace. Adjust lids and process (Table 18) in boiling-water canner or use low-temperature pasteurization treatment.

**Table 18. Processing time for pickled bread and butter zucchini.**

<table>
<thead>
<tr>
<th>Medium</th>
<th>1,000–6,000 ft</th>
<th>Above 6,000 ft</th>
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</thead>
<tbody>
<tr>
<td>Hot pints or quarts</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

**CAUSES OF POOR-QUALITY PICKLES**

Shriveled pickles can be the result of using too strong a vinegar, sugar or salt solution at the start of the pickling process and/or overcooking or over-processing.

Hollow pickles are usually caused by:
- Poorly developed cucumbers.
- Holding cucumbers too long before pickling.
- Too rapid fermentation.
- Too strong or too weak a brine during fermentation.

Soft or slippery pickles result from microbial activity caused by:
- Too little salt or acid.
- Cucumbers not covered with brine during fermentation.
- Scum not removed from brine during fermentation.
- Insufficient heat treatment.
- A seal that is not airtight.
- Moldy garlic or spices.
- Blossom ends not entirely removed from the cucumbers.

Dark pickles may be caused by:
- Use of ground spices.
- Too much spice.
- Old spices.
- Iodized salt.
- Overcooking.
- Iron or other minerals in water.
- Use of iron utensils.

**CAUSES OF SPOILAGE IN SAUERKRAUT**

Spoilage of sauerkraut is indicated by undesirable color, off-flavor, off-odor and soft texture.

Soft kraut may be the result of:
- Insufficient salt.
- High temperatures during fermentation.
- Uneven distribution of salt.
- Air pockets caused by improper packing.

Pink kraut is caused by the growth of certain types of yeast on kraut. These grow if there is:
- Too much salt.
- Uneven distribution of salt.
- Improper covering or weighting during fermentation.

Dark kraut may be caused by:
- Unwashed and improperly trimmed cabbage.
- Insufficient juice to cover fermenting cabbage.
- Uneven distribution of salt.
- Exposure to air.
- High temperatures during fermentation, processing and storage.
- Long storage period.

Rotten kraut is usually found on the surface where the cabbage has not been sufficiently covered to exclude air during fermentation.

This publication was originally written by Priscilla Grijalva, Food & Nutrition Specialist. It was later revised by Alice Jane Hendley, Food & Nutrition Specialist.