Preserving Food in Wyoming

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Contents

Special Considerations for Canning in Wyoming ................................................................. 1

Jellies, Jams, and Spreads

General Canning Procedures........................................................................................................ 3
After Processing................................................................................................................................... 4
Making Jelly without Added Pectin................................................................................................. 4
Preparing Jams without Added Pectin.......................................................................................... 5
Jellies and Jams with Added Pectin............................................................................................... 6
  Grape-plum Jelly with Pectin .......................................................................................................... 6
  Strawberry-rhubarb Jelly ................................................................................................................ 7
  Blueberry-spice Jam with Pectin.................................................................................................... 7
  Pear-apple Jam with Pectin............................................................................................................. 8
Spread without Added Pectin.......................................................................................................... 8
  Zucchini-pineapple Spread ........................................................................................................... 8
Reduced Sugar Recipes and Ingredients....................................................................................... 8
  Refrigerated Grape Spread with Gelatin........................................................................................ 8
  Refrigerated Apple Spread with Gelatin....................................................................................... 9
  Peach-pineapple Spread.............................................................................................................. 9
Fruit

Apples

Apple Butter

Apple Juice

Applesauce

Apples, Sliced

Spiced Apple Rings

Spiced Crab Apples

Strawberries

Berries (other than strawberries)

Berry Syrup

Cherries

Peaches, Apricots, and Nectarines

Fruit Pie Fillings

Apple Pie Filling

Blueberry Pie Filling

Cherry Pie Filling

Peach Pie Filling

Wild Berries and Other Wild Fruit

Gathering Wild Berries and Other Wild Fruit

General Canning Procedures

Preparing Wild Berry and Other Wild Fruit Juices

Making Jelly

References

Chokecherries

Wild Plum

Serviceberries

Rose Hips

Buffaloberries

Wild Currants

Gooseberries

Wild Grapes

Prickly Pear Cactus
Tomatoes

Chile Salsa and General Procedures for All Salsas ............................................................................. 51
   Tomato Salsa (using slicing tomatoes) .......................................................................................... 53
   Tomato/Green Chile Salsa .......................................................................................................... 53
   Tomatillo Green Salsa .................................................................................................................. 54
   Tomato Salsa (using paste tomatoes) .......................................................................................... 55
   Tomato Taco Sauce ...................................................................................................................... 55
   Tomato/Tomato Paste Salsa ......................................................................................................... 56
   Chile Salsa (Hot tomato-pepper sauce) ....................................................................................... 56

Tomatoes and Other Tomato Products ............................................................................................... 57
   Tomato Juice .................................................................................................................................. 60
   Tomato and Vegetable Juice Blend .............................................................................................. 60
   Whole or Halved Tomatoes Packed in Water ............................................................................... 60
   Crushed Tomatoes ........................................................................................................................ 61
   Tomatoes and Okra or Tomatoes and Zucchini ......................................................................... 61
   Standard Tomato Ketchup ......................................................................................................... 62
   Country Western Ketchup ......................................................................................................... 62
   Blender Ketchup .......................................................................................................................... 63
   Standard Tomato Sauce ............................................................................................................. 63
   Spaghetti Sauce without Meat .................................................................................................... 64
   Spaghetti Sauce with Meat ......................................................................................................... 64
   Mexican Tomato Sauce .............................................................................................................. 65
Pickles and Sauerkraut
Cucumbers .................................................................67
Peppers.........................................................................75
Pickled Vegetables ................................................................80
Sauerkraut ......................................................................86

Vegetables
Snap Beans ....................................................................89
Beets............................................................................91
Carrots.........................................................................92
Sweet Corn ....................................................................94
Peppers.........................................................................96
Pumpkin and Winter Squash ...........................................98
Spinach and Other Leafy Greens ......................................99
Altitude

Canning food in Wyoming differs from canning in many other locations because of the high altitudes found in our state. There is lower atmospheric pressure at high altitudes, which causes water to boil at a lower temperature. Consequently, altitude adjustments must be made when home canning.

The following guidelines have been established by the University of Wyoming Cooperative Extension (UW CES) and are recommended for all home canning in Wyoming.

Adjustments

Canning processes must be adjusted for all locations in Wyoming. For boiling-water canning, the processing times must be increased. For pressure canning, the pressure must be increased. Processing time for many foods were changed in 1988 when the U.S. Department of Agriculture (USDA) published Complete Guide to Home Canning. Additional revisions have since been made in 1994 and 2009 (see www.uga.edu/nchfp/publications/publications_usda.html). To ensure safe home canning, follow recipes with the most current processing times established by the USDA.

Jars

Only standard canning jars made of tempered glass are recommended. Commercial jars such as mayonnaise jars are not recommended for use in home canning. These jars may break more easily, and they have a narrower sealing surface that can prevent a good seal.

Botulism

To prevent the risk of botulism, low-acid home canned foods such as meats and vegetables should be boiled before eating. At altitudes below 1,000 feet, boil foods for 10 minutes. Add an additional minute of boiling time for each additional 1,000 feet.

Ingredients

Do not add or change the ingredients or proportions in home-canning recipes. Doing so could compromise the safety of the product.
JAMS AND JELLIES

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Jellies, Jams, and Spreads

General Canning Procedures

Prepare products as described in the following pages. All products should be filled hot into half-pint or pint canning jars, leaving ¼-inch headspace (½-inch headspace for Zucchini-pineapple Spread).

Wash jars. For products processed only 10 minutes or not processed at all, use sterilized jars. To sterilize empty jars, put them open side up on a rack in a boiling-water canner. Fill the canner and jars with hot (not boiling) water to 1 inch above the top of jars. Boil jars for 15 minutes.

Using a jar lifter or plastic-covered tongs, carefully remove and drain hot, sterilized jars one at a time, and fill immediately with food. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. New two-piece canning lids prepared according to manufacturer’s directions should be used. After screw bands are tightened, jars should be processed in a boiling-water canner. Do not seal jars with paraffin. (Jars sealed with paraffin cannot be processed in a boiling water canner, and processing in a boiling water bath is necessary to destroy molds and yeasts, which can cause spoilage.)

To process in a boiling-water canner, fill canner halfway with water and preheat to 180° Fahrenheit. Load filled jars into canner rack and lower with handles, or load one jar at a time with a jar lifter onto rack in canner. Add boiling water, if needed, to a level of 1 inch above jars. Cover the canner. When water boils vigorously, lower heat to maintain a gentle boil, and process jars for the appropriate time listed in Table 1 (below).

Table 1. Recommended processing times for jellies, jams, and spreads in a boiling-water canner at designated altitudes

<table>
<thead>
<tr>
<th>Product</th>
<th>Style of Pack</th>
<th>Jar Size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>Above 6,000 feet (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All jellies and jams with or without added pectin</td>
<td>Hot</td>
<td>Half pints or pints</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Zucchini-pineapple spread</td>
<td>Hot</td>
<td>Half pints or pints</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Peach-pineapple spread</td>
<td>Hot</td>
<td>Half pints</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pints</td>
<td>30</td>
<td>35</td>
</tr>
</tbody>
</table>
After Processing

After processing is completed, remove jars from canner with a jar lifter, and place on a towel or rack. Do not retighten bands. Air cool jars 12 to 24 hours. Remove screw bands, and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within four weeks. Alternatively, examine and replace jar if defective; use new lid, and reprocess as before. Wash screw bands, and store separately. Jellies, jams, and spreads are best if used within one year.

Making Jelly without Added Pectin

Use only firm fruits, which are naturally high in pectin. Select a mixture of about ¾ ripe and ¼ under-ripe fruit. Over-ripe fruit contains high amounts of mold spores and is not recommended. One pound of fruit should yield at least 1 cup of clear juice. Do not use commercially canned or frozen fruit juices because their pectin content is too low. Use of peels or cores adds pectin to the juice during cooking of the fruit and increases jelly firmness.

Wash all fruits thoroughly before cooking. Cut firm, larger fruits into small pieces. Crush soft fruits and berries. Add water to fruits as listed in Table 2 (page 5). Put fruit and water in a large saucepan, and bring to a boil. Simmer, stirring occasionally, to prevent scorching, for the amount of time listed or until the fruit is soft.

When fruit is tender, press lightly through a colander. Then let juice drip through a double layer of cheesecloth or a jelly bag. Use a stand or colander to hold the bag. Excessive pressing or squeezing of cooked fruit will cause cloudy jelly.

Using no more than 6 to 8 cups of extracted fruit juice at a time, measure and combine the proper quantities of fruit juice, sugar, and lemon juice in Table 2 (page 5) and heat to boiling. Stir until the sugar is dissolved. Boil over high heat, stirring frequently, until the gelling point is reached.

To test jelly doneness, use one of the following methods:

- **Temperature test** – Use a jelly or candy thermometer, and boil until the temperature of the mixture reaches 9°F Fahrenheit above the boiling point of water:

  - 3,000 ft. – approximately 214°F
  - 4,000 ft. – approximately 212°F
  - 5,000 ft. – approximately 211°F
  - 6,000 ft. – approximately 209°F
  - 7,000 ft. – approximately 207°F
  - 8,000 ft. – approximately 205°F

- **Sheet or spoon test** – Dip a cool metal spoon in the boiling jelly mixture. Raise the spoon about 12 inches above the pan (out of steam). Turn the spoon so the liquid runs off the side. The jelly is done when the syrup forms two drops that flow together and sheet or hang off the edge of the spoon.

When the jelly is done, remove from heat and quickly skim off foam. Use a wide-mouth funnel and ladle the jelly into jars, leaving ¼-inch headspace. Adjust the lids, and process the jars as described in Table 1 (page 3).
Table 2. Measures for preparing jellies without pectin

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Cups water added per pound of fruit</th>
<th>Minutes to simmer before extracting juice</th>
<th>Add to each cup of strained juice</th>
<th>Yield from 4 cups of juice (half pints)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apples</td>
<td>1</td>
<td>20 to 25</td>
<td>¾</td>
<td>4 to 5</td>
</tr>
<tr>
<td>Blackberries</td>
<td>0 to ¼</td>
<td>5 to 10</td>
<td>¾ to 1</td>
<td>7 to 8</td>
</tr>
<tr>
<td>Crabapples</td>
<td>1</td>
<td>20 to 25</td>
<td>1</td>
<td>4 to 5</td>
</tr>
<tr>
<td>Grapes</td>
<td>0 to ¼</td>
<td>5 to 10</td>
<td>¾ to 1</td>
<td>8 to 9</td>
</tr>
<tr>
<td>Plums</td>
<td>½</td>
<td>15 to 20</td>
<td>¾</td>
<td>8 to 9</td>
</tr>
</tbody>
</table>

Making Jams without Added Pectin

For best flavor, use fully ripe fruit. Wash and rinse all fruits thoroughly before cooking. Do not soak. Remove stems, skins, and pits from fruit; cut into pieces and crush. For berries, remove stems and blossoms, and crush. Seedy berries may be put through a sieve or food mill.

Using the ingredients in Table 3 (below), measure crushed fruit into a large saucepan. Add sugar, and bring to a boil while stirring rapidly and constantly. Continue to boil until the mixture thickens. As you test for thickness, remember to allow for thickening during cooling.

To test for thickness, use one of the following methods:

- **Temperature test** – Use a jelly or candy thermometer, and boil to the temperature listed under “Making jelly without added pectin.”

- **Refrigerator test** – Jam should be removed from heat for this test. Pour a small amount of boiling jam on a cold plate, and put it in the freezing compartment of a refrigerator for a few minutes. If the mixture gels it is ready to fill the jars.

When jam is done, remove from heat and quickly skim off foam. Use a wide-mouth funnel and ladle the jam into jars, leaving ¼-inch headspace. Adjust the lids, and process the jars as described in Table 1 (page 3).

Table 3. Measures for preparing jam without pectin

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Cups crushed fruit</th>
<th>Cups sugar</th>
<th>Tbsp lemon juice</th>
<th>Jam yield (half pints)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apricots</td>
<td>4 to 4½</td>
<td>4</td>
<td>2</td>
<td>5 to 6</td>
</tr>
<tr>
<td>Berries*</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>3 to 4</td>
</tr>
<tr>
<td>Peaches</td>
<td>5½ to 6</td>
<td>4 to 5</td>
<td>2</td>
<td>6 to 7</td>
</tr>
<tr>
<td>Strawberries</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

*Includes blackberries, boysenberries, dewberries, gooseberries, loganberries, and raspberries
**Jellies and Jams with Added Pectin**

You can use commercially prepared powdered or liquid pectins with fresh fruits and juices as well as commercially canned or frozen fruit juice. The order of combining ingredients depends on the type of pectin. Complete directions for a variety of fruits are provided with packaged pectin. Jelly or jam made with added pectin requires less cooking, generally gives a larger yield, and has more natural fruit flavor. In addition, using added pectin eliminates the need to test for doneness. Note: Although adding ½ teaspoon of butter or margarine with the juice and pectin will reduce foaming, these may cause off-flavor in long-term storage of jellies and jams.

The following recipes are normally available with packaged pectin:

- **Jellies** – Fruits include apple, crabapple, blackberry, boysenberry, dewberry, currant, elderberry, grape, mayhaw, peach, plum, black raspberry, red raspberry, loganberry, rhubarb, and strawberry. Mint, an herb, also makes good jelly.

- **Jams** – Fruits include apricot, blackberry, boysenberry, dewberry, loganberry, red raspberry, youngberry, blueberry, cherry, currant, fig, gooseberry, grape, orange (for orange marmalade), peach, pear, plum, strawberry, and spiced tomato. Rhubarb, technically a vegetable, also makes good jam.

Be sure to use canning jars and self-sealing, two-piece lids, and process the jars in boiling water as described in Table 1 (on page 3). Purchase packaged pectin each year. Old pectin may result in poor gel.

The following special jelly and jam recipes use packaged pectin.

**GRAPE-PLUM JELLY WITH PECTIN**

3½ pounds ripe plums  
3 pounds Concord grapes*  
1 cup water  
½ tsp butter (optional ingredient to reduce foaming)  
8½ cups sugar  
1 box (1¾ oz) powdered pectin  
Yield: about 10 half-pints  
* Concord grapes are recommended; other varieties can be used but the texture of the final product may be less than optimal.

**Procedure:** For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 3.

Wash and pit plums; do not peel. Wash grapes. Thoroughly crush plums and grapes, one layer at a time, in a saucepan. Add water. Bring to a boil, cover, and simmer 10 minutes. Strain juice through a jelly bag or double layer of cheesecloth. Measure sugar and set aside. Combine 6½ cups juice with butter (if desired) and pectin in a large saucepan. Bring to a hard boil over heat, stirring constantly. Add the sugar and return to a full boil. Boil hard for 1 minute, stirring constantly. Remove from heat, quickly skim off foam, and fill hot jars or hot sterilized jars, leaving ¼-inch headspace. Adjust lids, and process the jars as described in Table 1 (page 3).
STRAWBERRY-RHUBARB JELLY WITH PECTIN

1½ lbs red-stalked rhubarb
1½ quarts ripe strawberries
½ tsp butter or margarine (optional to reduce foaming)
6 cups sugar
6 oz liquid pectin
Yield: about 7 half pints

Procedure: For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 3.

Wash and cut rhubarb into 1-inch pieces, and blend or grind. Wash, stem, and crush strawberries, one layer at a time, in a saucepan. Place both fruits in a jelly bag or double layer of cheesecloth and gently squeeze out juice. Put 3½ cups of juice into a large saucepan. Add butter or margarine (if desired) and sugar, thoroughly mixing into juice. Bring to a boil over high heat, stirring constantly. Immediately stir in liquid pectin. Bring to a full rolling boil, and boil hard for 1 minute, stirring constantly. Remove from heat, quickly skim off any foam, and fill hot jars or hot sterilized jars, leaving ¼-inch headspace. Process the jars as described in Table 1 (page 3).

BLUEBERRY-SPICE JAM WITH PECTIN

2½ pints ripe blueberries
1 tbsp lemon juice
½ tsp ground nutmeg or cinnamon
5½ cups sugar
¾ cup water
1 box (1¾ oz) powdered pectin
Yield: about 5 half-pints

Procedure: For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 3.

Wash and thoroughly crush blueberries, one layer at a time, in a large saucepan. Add lemon juice, spice, and water. Stir in pectin and bring to a full rolling boil over high heat, stirring frequently. Add sugar, and return to a full rolling boil. Boil hard for 1 minute, stirring constantly. Remove from heat, quickly skim off foam and fill hot jars or hot sterilized jars, leaving ¼-inch headspace. Adjust the lids, and process the jars as described in Table 1 (page 3).
PEAR-APPLE JAM WITH PECTIN

2 cups peeled, cored, and finely chopped pears (about 2 pounds)
1 cup peeled, cored, and finely chopped apples
6½ cups sugar
¼ tsp ground cinnamon
½ cup bottled lemon juice
6 oz liquid pectin
Yield: about 7 to 8 half-pints

Procedure: For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 3.

Crush apples and pears in a large saucepan, and stir in cinnamon. Thoroughly mix sugar and lemon juice with fruits and bring to a boil over high heat, stirring constantly. Immediately stir in pectin. Bring to a full rolling boil, and boil hard 1 minute, stirring constantly. Remove from heat, quickly skim off foam, and fill hot jars or hot sterilized jars, leaving ¼-inch headspace. Adjust lids, and process the jars as described in Table 1 (page 3).

Spreads without Added Pectin

ZUCCHINI-PINEAPPLE SPREAD

4 quarts cubed or shredded zucchini
46 oz canned unsweetened pineapple juice
1½ cups bottled lemon juice
3 cups sugar
Yield: about 8 to 9 pints

Procedure: Peel zucchini. Cut into ½-inch cubes or shred. Mix zucchini with other ingredients in a large saucepan, and bring to a boil. Simmer 20 minutes. Fill hot jars with hot mixture and cooking liquid, leaving ½-inch headspace. Adjust lids, and process the jars as described in Table 1 (page 3).

Reduced Sugar Recipes and Ingredients

A variety of fruit spreads may be made that are tasty, yet lower in sugars and calories than regular jams and jellies. The following are recipes for reduced-sugar fruit spreads. Gelatin may be used as a thickening agent, as indicated in two of the following recipes. Sweet fruits, apple juice, spices, and/or a liquid, low-calorie sweetener are used to provide the sweet flavor of these fruit spreads. When gelatin is used in the recipe, the jars of spread should not be processed (because heating will cause the loss of the gel). These fruit spreads should be refrigerated and used within four weeks.

REFRIGERATED GRAPE SPREAD WITH GELATIN

2 tbsp unflavored gelatin powder
24 oz bottled unsweetened grape juice
2 tbsp bottled lemon juice
2 tbsp liquid low-calorie sweetener
Yield: 3 half-pints
**Procedure:** In a saucepan, soften the gelatin in the grape and lemon juices. Bring to a full rolling boil to dissolve gelatin. Boil for 1 minute, and remove from heat. Stir in sweetener. Fill quickly into sterile jars, leaving ¼-inch headspace. Adjust lids. **Do not process or freeze. Store in the refrigerator, and use within four weeks.**

**REFRIGERATED APPLE SPREAD WITH GELATIN**

- 2 tbsp unflavored gelatin powder
- 32 oz bottled unsweetened apple juice
- 2 tbsp bottled lemon juice
- 2 tbsp liquid low-calorie sweetener
- Food coloring, if desired

Yield: 4 half-pints

**Procedure:** In a saucepan, soften the gelatin in apple and lemon juices. Bring to a full rolling boil to dissolve gelatin. Boil for 2 minutes, and remove from heat. Stir in sweetener and, if desired, food coloring. Fill quickly into hot sterile jars, leaving ¼-inch headspace. Adjust lids. **Do not process or freeze. Store in the refrigerator, and use within four weeks.**

**Variation:** For spiced apple spread, add two 3-inch sticks of cinnamon and four whole cloves to mixture before boiling. Remove both spices before adding sweetener and food coloring.

**PEACH-PINEAPPLE SPREAD**

- 4 cups drained peach pulp (see procedure below)
- 2 cups drained, unsweetened crushed pineapple
- ¼ cup bottled lemon juice
- 2 cups sugar (optional)

Yield: 5 to 6 half pints

**Procedure:** Thoroughly wash 4 to 6 pounds of firm, ripe peaches. Drain well. Peel and remove pits. Grind fruit flesh with a food processor using a medium or coarse blade; or crush with a fork; or chop coarsely with a knife. Do not use a blender because fruit will be chopped too finely to make a true pulp. Place cooked fruit in a jelly bag or strainer lined with four layers of cheesecloth. Allow juice to drip for about 15 minutes. Save the juice for jelly or other uses. Measure 4 cups of the drained fruit pulp for making spread. Combine the 4 cups of pulp, pineapple, and lemon juice in a 4-quart saucepan. Add up to 2 cups of sugar, if desired, and mix well. Heat and boil gently for 10 to 15 minutes, stirring enough to prevent sticking. Fill quickly into hot jars, leaving ¼-inch headspace. Adjust lids, and process the jars as described in Table 1 (page 3).

**Variations:** The above recipe may also be made with any combination of peaches, nectarines, apricots, and plums. It may also be made without sugar or up to 2 cups sugar. Nonnutritive sweeteners may be added; however, if aspartame (a low-calorie sweetener) is used, the sweetening power may be lost within three to four weeks. Alternatively, nonnutritive sweeteners can be added after processing and just prior to serving.

**Source of Information**


9
FRUIT

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**Preparation**
Prepare apple products as described in the following recipes. Wash jars. *For products processed 10 minutes or less, use sterilized jars.* To sterilize empty jars, put them open side up on a rack in a boiling-water canner. Fill the canner and jars with hot (not boiling) water to 1 inch above tops of jars. Boil jars for 15 minutes.

Using a jar lifter or plastic-covered tongs, carefully remove and drain hot, sterilized jars one at a time, and fill immediately with food. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. New two-piece canning lids prepared according to manufacturer’s directions should be used. After screw bands are tightened, jars should be processed in a boiling-water or pressure canner.

**Freezing Procedure**
For optimal quality, freeze no more than 2 to 3 pounds of food per cubic foot of freezer capacity per day. (Larger volumes can slow the process of freezing, and slower freezing lowers the quality of the food.) Steam-blanch a single layer of sliced apples 3 minutes, or place 5 cups of apples at a time in 1 gallon of boiling water and blanch 1½ minutes after water returns to a boil. Cool in very cold water and drain. Cover surfaces with ½ cup sugar for every 4 cups of sliced apples. To prepare applesauce, follow procedure in canning section. To package sauce or slices for freezing fill pint- or quart-size freezer bags to a level of 3 to 4 inches from the tops, and squeeze out air. Seal, label, and freeze. Before freezing, bags may be inserted into reusable, rigid plastic freezer containers for added protection against punctures and leakage.

**Process: Boiling Water**
To process in a boiling-water canner, fill canner half way with water, and preheat to 180° Fahrenheit. Load filled jars into canner rack and lower with handles, or load one jar at a time with a jar lifter onto rack in canner. Add boiling water, if needed, to a level of 1 inch above jars. Cover the canner. When water boils vigorously, lower heat to maintain a gentle boil, and process jars for the appropriate time listed in Table 1 (page 4).
Table 1. Recommended processing times for apple products in a boiling-water canner at designated altitudes

<table>
<thead>
<tr>
<th>Product</th>
<th>Style of pack</th>
<th>Jar Size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>6,001-8,000 (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple butter</td>
<td>Hot</td>
<td>Half-pints or pints Quarts</td>
<td>10 15</td>
<td>15 20</td>
</tr>
<tr>
<td>Apple juice</td>
<td>Hot</td>
<td>Pints or quarts Half-gallons</td>
<td>10 15</td>
<td>15 20</td>
</tr>
<tr>
<td>Applesauce</td>
<td>Hot</td>
<td>Pints             Quarts</td>
<td>20 30</td>
<td>25 35</td>
</tr>
<tr>
<td>Apples, sliced</td>
<td>Hot</td>
<td>Pints or quarts</td>
<td>30 35</td>
<td></td>
</tr>
<tr>
<td>Spiced apple rings</td>
<td>Hot</td>
<td>Half-pints or pints</td>
<td>15 20</td>
<td></td>
</tr>
<tr>
<td>Spiced crab apples</td>
<td>Hot</td>
<td>Pints</td>
<td>30 35</td>
<td></td>
</tr>
</tbody>
</table>

Process: Pressure
To process in a pressure canner, place jar rack, 2 inches of water, and filled jars in canner. Fasten lid, and heat canner on high setting. Allow steam to escape in a full, steady stream for 10 minutes. Add weighted gauge or close petcock to pressurize the canner. Start timing the recommended process when the desired pressure is reached. Regulate heat to maintain a uniform pressure, and process jars for the time given in Table 2 (below). Do not allow the pressure to drop below the recommended pressure for your altitude.

When processing is complete, remove canner from heat. Air-cool the canner until it is fully depressurized. Slowly remove weighted gauge or open petcock, wait 2 more minutes, unfasten, and carefully remove canner lid.

Table 2. Recommended processing times and pressures for apples in a pressure canner at designated altitudes

<table>
<thead>
<tr>
<th>Product</th>
<th>Style of pack</th>
<th>Jar Size</th>
<th>Process time (minutes)</th>
<th>Dial Gauge*</th>
<th>Weighted Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,001-4,000 feet (lbs)</td>
<td>4,001-6,000 feet (lbs)</td>
</tr>
<tr>
<td>Apples, sliced</td>
<td>Hot</td>
<td>Pints or quarts</td>
<td>8</td>
<td>7 8</td>
<td>9 10</td>
</tr>
<tr>
<td>Applesauce</td>
<td>Hot</td>
<td>Pints or quarts</td>
<td>8 10</td>
<td>7 8</td>
<td>9 10</td>
</tr>
</tbody>
</table>

*Reminder: check your dial pressure gauge annually. For more information, contact your local UW CES office.
After processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten bands. Air-cool jars for 12 to 24 hours. Remove screw bands, and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within recommended times (applesauce, slices, or juice – within 1 week; spiced rings or crabapples – within 2 months; and apple butter – within 6 months). Alternatively, examine and replace jar if defective; use new lid, and reprocess as before. Wash screw bands, and store separately. Products are best if used within one year.

APPLE BUTTER

Recommended varieties

Jonathan, Winesap, Stayman, Golden Delicious, McIntosh, or similar varieties.

8 pounds apples
2 cups cider
2 cups vinegar (5-percent acid)
2¼ cup white sugar
2¼ cups packed brown sugar
2 tbsp ground cinnamon
1 tbsp ground cloves
yield: about 8 to 9 pints

Preparation

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 3.

Wash, remove stems, quarter, and core apples. Cook slowly in cider and vinegar until soft. Press apples through a colander, food mill, or strainer. Cook fruit pulp with sugar and spices, stirring frequently.

To test for doneness, remove a spoonful and hold it away from steam for 2 minutes. It is done if the apple butter remains mounded on the spoon. Another way to determine when the butter is cooked adequately is to spoon a small quantity onto a plate. When a rim of liquid does not separate around the edge of the butter, it is ready for canning.

Fill hot product into hot or hot sterilized half-pint or pint jars leaving ¼-inch headspace. Remove air bubbles by running a rubber spatula through the filled jars and between the food and side of the jar in several places. Wipe rims of jars with a clean, dampened paper towel. Adjust lids, and process jars as listed in Table 1 (page 4).

APPLE JUICE

Quality

Good quality apple juice is made from a blend of apple varieties. For best results, buy fresh juice from a local cider maker within 24 hours after it has been pressed (or make your own juice if you have a press).

Preparation

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 3.
Refrigerate juice for 24 to 48 hours. Without mixing, carefully pour off clear liquid and discard sediment. If desired, strain clear liquids through a paper coffee filter or double layers of damp cheesecloth. Heat quickly, stirring occasionally, until juice begins to boil. Fill immediately into hot or hot sterilized pint or quart jars, or fill into hot half-gallon jars, leaving 1/4-inch headspace. Wipe rims of jars with a clean, dampened paper towel. Adjust lids, and process jars as listed in Table 1 (page 4).

APPLESAUCE

Quantity
An average of 21 pounds is needed per canning load of 7 quarts; an average of 13½ pounds is needed per canner load of 9 pints. A bushel weighs 48 pounds and yields 14 to 19 quarts of sauce. An average of 3 pounds makes a quart of canned applesauce.

Quality
Select apples that are sweet, juicy, and crisp. For a tart flavor, add 1 to 2 pounds of tart apples to each 3 pounds of sweeter fruit. Apple varieties suitable for making applesauce include combinations of Golden Delicious, McIntosh, Johnathan, Granny Smith, Idared, and York Imperial. Red Delicious apples are best for eating fresh and are not a good choice for canning.

Preparation

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 3.

Wash, peel, core, and slice apples. If desired, slice apples into water containing ascorbic acid to prevent browning, as described for making sliced apples. Place drained slices in an 8- to 10-quart pot. Add 1/2 cup water and heat, stirring occasionally to prevent burning. Heat the apples until tender (5 to 20 minutes, depending on maturity and variety). Press through a sieve or food mill, or skip the pressing step if chunky-style sauce is preferred. If desired, add 1/8 cup sugar per quart of sauce. Taste and add more sugar if desired. Reheat sauce to boiling. Fill hot or hot sterilized jars with hot sauce, leaving 1/2-inch headspace. Remove air bubbles by running a rubber spatula through the filled jars and between the food and side of the jar in several places. Wipe rims of jars with a clean, dampened paper towel. Adjust lids, and process jars as listed in Table 1 (page 4) or Table 2 (page 4).
APPLES, SLICED

Quantity
An average of 19 pounds is needed per canner load of 7 quarts; an average of 12¼ pounds is needed per canner load of 9 pints. A bushel weighs 48 pounds and yields 16 to 19 quarts, which is an average of 2¾ pounds per quart.

Quality
Select apples that are juicy and crisp. If possible, use a combination of sweet (such as Golden Delicious) and tart varieties (such as Rome Beauty, Granny Smith, or Johnathan). Or select varieties that have both a sweet and tart flavor like Empire, McIntosh, or Braeburn. Hot pack method as described below yields higher quality products than raw pack.

Preparation
For products processed for 10 minutes or less, use sterilized jars. To sterilize empty jars, see procedure on page 3.

Wash, peel, core, and slice apples. To prevent discoloration, keep slices in water containing ascorbic acid, made by mixing 1 teaspoon ascorbic acid crystals or crushing and mixing six 500-milligram vitamin C tablets in 1 gallon of water. Place drained slices in a large saucepan, and add 1 pint water or very light or light syrup for each 5 pounds of sliced apples.
- To make very light syrup for a canner load of quarts, mix 1¼ cups sugar in 10½ cups water and heat to dissolve sugar
- To make a light syrup, mix 2¼ cups sugar in 9 cups water and heat to dissolve sugar

Boil 5 minutes, stirring occasionally. Fill hot jars or hot sterilized jars with hot slices and hot syrup or water, leaving ½-inch headspace. Remove air bubbles by running a rubber spatula through the filled jars and between the food and side of the jar in several places. Wipe rims of jars with a clean, dampened paper towel. Adjust lids, and process jars as listed in Table 1 (page 4) or Table 2 (page 4).

SPICED APPLE RINGS

12 pounds firm tart apples (maximum diameter 2½ inches)
12 cups sugar
6 cups water
1¼ cups white vinegar (5-percent acid)
3 tbsp whole cloves
¾ cup red hot cinnamon candies or 8 cinnamon sticks
1 tsp red food coloring (optional, especially if using cinnamon candies)

Preparation
Wash apples. To prevent discoloration, peel, slice, and core one apple at a time. First, peel and core the apple; then immediately cut crosswise into rings ½-inch thick, and immerse rings in an ascorbic acid solution, as described for making sliced apples.

To make flavored syrup, combine sugar, water, vinegar, cloves, cinnamon candies or cinnamon sticks, and, if desired, food coloring in a 6-quart saucepan. Stir, heat to boil, and simmer 3 minutes. Drain apple slices, add to hot syrup, and cook 5 minutes. Fill hot jars (preferably wide-
mouth) with apple rings and hot flavored syrup, leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Wipe rims of jars with a clean, dampened paper towel. Adjust lids, and process jars as listed in Table 1 (page 4).

**SPICED CRAB APPLES**

5 pounds crab apples  
4½ cups apple cider vinegar (5-percent acid)  
3¾ cups water  
7½ cups sugar  
4 tsp whole cloves  
4 sticks cinnamon  
1 to 6 ½-inch cubes of fresh ginger root, depending on taste preference (1 cube for a hint of ginger; up to 6 cubes for a stronger ginger flavor)  
Spice bag or cheesecloth to hold spices  
Yield: about 9 pints

**Preparation**

Remove blossom petals and wash apples, but leave stems attached. Puncture the skin of each apple four times with an ice pick or toothpick. Mix vinegar, water, and sugar, and bring to a boil. Add spices, tied in the spice bag or cheesecloth. Using a blancher basket or sieve, immerse one-third of the apples at a time in the boiling vinegar/sugar solution for 2 minutes. Place cooked apples and spice bag in a clean 1- or 2-gallon crock, and add hot syrup. Cover and let stand overnight. Remove the spice bag, drain the syrup into a large saucepan, and reheat to boiling. Fill hot pint jars with apples and hot syrup, leaving ½-inch headspace. Remove air bubbles by running a rubber spatula through the filled jars and between the food and side of the jar in several places. Adjust lids, and process as listed in Table 1 (page 4).

**Strawberries**

**Quantity**

A 24-quart crate weighs 36 pounds and yields 18 to 24 quarts. An average of 1 pound makes 1 pint of frozen berries.

**Quality**

For best quality, freeze or preserve strawberries on the day they are harvested. They should be picked when they reach an ideal maturity for eating fresh. Select berries with fresh flavor, deep uniform color, and firm texture. Smaller, irregularly shaped and seedy berries make good quality jams.

**Berry Preparation**

Remove blossoms. Prepare 1 to 2 quarts at a time. Wash and drain berries. Do not soak.

**Freezing Procedure**

For optimal quality, freeze no more than 2 to 3 pounds of food per cubic foot of freezer capacity per day. Berries may be frozen in syrup or in a dry sugar pack.

- To make a syrup pack, mix and dissolve 1 cup sugar in 4 cups water. Add 1 cup of this syrup per quart of prepared fruit.
- To make a dry sugar pack, add ⅓-⅔ cup sugar per quart of prepared fruit. Mix carefully to avoid damaging the fruit.
To package, fill pint or quart freezer bags to a level of 3 to 4 inches from the top, and squeeze out air. Seal leaving 1-inch headspace, label, and freeze. Before freezing, bags may be inserted into reusable rigid freezer containers for added protection against punctures and leakage.

**Berries (other than strawberries)**

**Recommended varieties**
Blackberries, blueberries, currants, dewberries, elderberries, gooseberries, huckleberries, loganberries, and raspberries. Canning strawberries does not result in a high-quality product; however, strawberries freeze well (see previous section).

**Quantity**
A 24-quart crate weighs 36 pounds and yields 18 to 24 quarts. An average of 12 pounds is needed per canner load of 7 quarts; an average of 8 pounds is needed per canner load of 9 pints. An average of 1 pound makes 1 pint of frozen berries.

**Quality**
Select fresh berries with a sweet flavor, deep color, and firm texture, and of ideal maturity for eating fresh.

**Preparation**
Prepare 1 or 2 quarts at a time. Wash and drain berries; do not soak. Remove blossoms and stem if appropriate. Snip off gooseberry heads and tails with scissors.

**Freezing Procedure**
For optimal quality, freeze no more that 2 to 3 pounds of food per cubic foot of freezer capacity per day. Berries may be frozen in syrup or in a dry sugar pack.

- To make a syrup pack, mix and dissolve 1 cup sugar in 4 cups of water. Add 1 cup of this syrup per quart of prepared fruit.
- To make a dry sugar pack, add ¼-½ cup sugar per quart of prepared fruit. Mix carefully to
Canning Procedure

Wash jars. Prepare lids according to manufacturer’s instructions. Berries may be packed hot or raw in jars and covered with your choice of water; apple or white grape juice; or very light, light, or medium syrup. To make syrup, mix sugar and water in the desired proportions listed below, and heat to dissolve.

<table>
<thead>
<tr>
<th>Syrup Type</th>
<th>Cups Water</th>
<th>Cups Sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very light</td>
<td>10 ½</td>
<td>1 ¼</td>
</tr>
<tr>
<td>Light</td>
<td>9</td>
<td>2 ¼</td>
</tr>
<tr>
<td>Medium</td>
<td>8 ¾</td>
<td>3 ¾</td>
</tr>
</tbody>
</table>

- To make a hot pack, heat berries in boiling water for 30 seconds and drain. Fill hot jars with hot berries and liquid, leaving ½-inch headspace.
- To make a raw pack, place drained berries in hot jars and cover with your choice of warm liquid, leaving ½-inch headspace.

Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Wipe sealing edge of jars with a clean, damp paper towel. Add lids, tighten screw bands, and process jars.

Process

To process in a boiling-water canner, fill canner halfway with water, and preheat to 180° Fahrenheit for hot packs and 140° Fahrenheit for raw packs. Load filled jars into the canner rack and lower with handles, or load one jar at a time with a jar lifter onto rack in canner. Add boiling water, if needed, to a level of 1 inch above jars. Cover the canner. When the water boils vigorously, lower the heat to maintain a gentle boil, and process for the appropriate time listed in Table 3 (page 11).

BERRY SYRUP

Juices from fresh or frozen blueberries, cherries, grapes, black or red raspberries, and strawberries are easily made into toppings for use on ice cream or pastries.

Yield: about 9 half-pints.

Procedure

Select 6½ cups of fresh or frozen fruit. With fresh fruit, wash, cap, stem, and crush fruit into a saucepan. Heat to boiling, and simmer until soft (5 to 10 minutes). Strain when hot through a colander, and drain until cool enough to handle. Strain the collected juice through a double layer of cheesecloth or jelly bag. Discard the dry pulp. The yield of the pressed juice should be about 4½ to 5 cups. Combine the juice with 6 ¾ cups of sugar in a large saucepan, bring to boil, and simmer 1 minute. To make syrup with whole fruit pieces, save 1 to 2 cups of the fresh or frozen fruit, combine these with the sugar, and simmer as in making regular syrup. Remove from heat, skim off foam, and fill into clean hot half-pint or pint jars, leaving ½-inch headspace. Adjust lids and process as listed in Table 3 (page 11).
Table 3. Recommended processing times for berries in a boiling-water canner at designated altitudes

<table>
<thead>
<tr>
<th>Product</th>
<th>Style of pack</th>
<th>Jar Size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>6,001-8,000 feet (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berries – Whole</td>
<td>Hot</td>
<td>Pints or quarts</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Berries – Whole</td>
<td>Raw</td>
<td>Pints Quarts</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Berries – Syrup</td>
<td>Hot</td>
<td>Half-pints or pints</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

After Processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Air cool jars 12 to 24 hours. Remove screw bands, and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within one week. Alternatively, examine and replace jar if defective; use new lid, and reprocess as before. Wash screw bands, and store separately. Berries are best if used within one year.

Cherries

Quantity

A lug weighs 25 pounds and yields 8 to 12 quarts. An average of 17½ pounds is needed to make a 7-quart canner load; 11 pounds is needed per canner load of 9 pints. An average of 2½ pounds of cherries is needed to make 1 quart of frozen product.

Quality

Select freshly harvested cherries with deep, uniform color and of ideal maturity for eating fresh.

Preparation

Stem and wash. Pit if desired. If pitted, immediately place cherries into cold water containing 1 teaspoon of powdered ascorbic acid or six crushed 500-milligram vitamin C tablets per gallon to prevent stem-end discoloration. If preserved unpitted, prick skins on opposite sides with a clean needle to prevent splitting.

Freezing Procedure

For optimal quality, freeze no more than 2 to 3 pounds of food per cubic foot of freezer capacity per day. Cherries may be frozen in syrup or in a dry sugar pack.

- To make a syrup pack, mix and dissolve 1 cup sugar in 4 cups water. (If cherries are sour, additional sugar may be needed.) Add 1 cup syrup to each quart of prepared cherries.
To make a dry sugar pack, add \(\frac{1}{2}-\frac{2}{3}\) cup sugar per quart of sour cherries or \(\frac{1}{4}-\frac{1}{3}\) cup sugar per quart of sweet cherries. Mix sugar and cherries carefully to avoid damaging the fruit.

To package, fill pint or quart freezer bags to a level 3 or 4 inches from their tops and squeeze out the air. Seal, leaving 1-inch headspace, label, and freeze. Before freezing, bags may be inserted into reusable rigid plastic freezer containers for added protection against punctures and leakage.

**Canning Procedure**

*For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 3.*

Wash jars. Prepare lids according to manufacturer’s instructions. Cherries may be packed hot or raw in jars and covered with your choice of water; apple or white grape juice; or very light, light, or medium syrup. Medium syrup is suggested for sour cherries, and very light syrup for sweet cherries.

To make syrup, mix sugar and water in the desired proportion listed below, and heat to dissolve.

<table>
<thead>
<tr>
<th>Syrup Type</th>
<th>Cups Water</th>
<th>Cups Sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very light</td>
<td>10½</td>
<td>1¼</td>
</tr>
<tr>
<td>Light</td>
<td>9</td>
<td>2¼</td>
</tr>
<tr>
<td>Medium</td>
<td>8¼</td>
<td>3¾</td>
</tr>
</tbody>
</table>

- To make a hot pack, place drained cherries in syrup, juice, or water and bring to a boil. Fill hot jars or hot sterilized jars with hot cherries and cooking liquid, leaving \(\frac{1}{2}\)-inch headspace.
- To make a raw pack, fill hot jars or hot sterilized jars with drained cherries, and cover with your choice of boiling liquid, leaving \(\frac{1}{2}\)-inch headspace. Remove air bubbles by running a rubber spatula through the filled jars and between the food and side of the jar in several places. Wipe the jar sealing edge with a clean, damp paper towel. Add lids, tighten screw bands, and process jars as listed in Table 4 (below) or Table 5 (page 13).

**Process: Boiling Water**

To process in a boiling-water canner, fill canner halfway with water and preheat to 180° Fahrenheit for hot packs and 140° Fahrenheit for raw packs. Load filled jars into the canner rack and lower with handles, or load one jar at a time with a jar lifter onto rack in canner. Add boiling water, if needed, to a level of 1 inch above jars. Cover the canner. When the water boils vigorously, lower the heat to maintain a gentle boil and process for the appropriate time listed in Table 4 (below).

**Table 4. Recommended processing times for cherries in a boiling-water canner at designated altitudes**

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar Size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>6,001-8,000 feet (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>Pints</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Quarts</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>Raw</td>
<td>Pints or Quarts</td>
<td>35</td>
<td>40</td>
</tr>
</tbody>
</table>

**Process: Pressure**

To process in a pressure canner, place the jar rack, 2 inches of water, and filled jars in canner. Fasten lid and heat canner on high setting. Allow steam to escape in a full, steady stream for 10 minutes. Add weighted gauge or close petcock to pressurize the canner. Start timing the recommended process when the desired pressure is reached.
Table 5. Recommended processing times and pressures for cherries in a pressure canner at designated altitudes

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar Size</th>
<th>Process time (minutes)</th>
<th>Dial Gauge*</th>
<th>Weighted Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,001-4,000 feet (lbs)</td>
<td>4,001-6,000 feet (lbs)</td>
</tr>
<tr>
<td>Raw</td>
<td>Pints or Quarts</td>
<td>10</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Hot</td>
<td>Pints or Quarts</td>
<td>8</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>

*Reminder: Check your dial pressure gauge annually. For more information, contact your local UW CES office.

Regulate heat to maintain a uniform pressure, and process the jars for the times listed in Table 5 (above). When processing is complete, remove canner from heat. Air cool canner until it is fully depressurized. Slowly remove weighted gauge or open petcock, wait 2 more minutes, unfasten, and carefully remove canner lid.

**After Processing**

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Air cool jars 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within one week. Alternatively, examine and replace jar if defective; use new lid, and reprocess as before. Wash screw bands, and store separately. Cherries are best if eaten within one year.

**Peaches, Apricots, and Nectarines**

**Quantity**

A bushel of nectarines or peaches weighs 48 pounds and yields 16 to 24 quarts. An average of 17½ pounds is needed to make a 7-quart canner load; 11 pounds is needed per canner load of 9 pints.

A bushel of apricots weighs 50 pounds and yields 20 to 25 quarts. An average of 16 pounds is needed to make a 7-quart canner load; 10 pounds are needed to make 9 pints.

An average of 2¼ - 2½ pounds of peaches, apricots, or nectarines is needed to make 1 quart of frozen product.

**Quality**

Choose ripe, mature fruit of ideal quality for eating fresh. Canned hot packs are better than raw packs. Nectarines yield a lower quality canned product than peaches or apricots.

**Preparation**

With peaches, wash fruit and dip in boiling water for 30 to 60 seconds or until skins loosen. Nectarines should be washed, but for optimal quality, do not remove skins. Apricots should be washed; removing skins is optional. Dip quickly in cold water and slip off skins. Cut fruit in half,
remove pits, and slice if desired. To prevent darkening, keep cut fruit in water containing ascorbic acid made by mixing 1 teaspoon of ascorbic acid crystals, or crushing and mixing six 500-milligram vitamin C tablets in 1 gallon of water to help prevent discoloration.

**Freezing Procedure**

For optimal quality, freeze no more than 2 to 3 pounds of food per cubic foot of freezer capacity per day. These fruits may be frozen in syrup or in a dry sugar pack.

- To make a syrup pack, mix and dissolve 1 cup sugar in 4 cups water; also add ½ teaspoon of ascorbic acid or three crushed 500-milligram vitamin C tablets. Add 1 cup of this syrup to each quart of prepared fruit.
- To make a dry sugar pack, add ¼-½ cup sugar per quart of prepared fruit. Mix carefully to avoid damaging the fruit.

To package, fill pint- or quart-sized freezer bags to a level of 3 to 4 inches from their tops, and squeeze out air. Seal, label, and freeze. Before freezing, bags may be inserted into reusable rigid plastic freezer containers for added protection against punctures and leakage.

**Canning Procedure**

*For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 3.*

Wash jars. Prepare lids according to the manufacturer’s instructions. Peaches, apricots, and nectarines may be packed hot or raw, although raw packs yield a lower quality product. Cover with your choice of water; apple or white grape juice; or very light, light, or medium syrup. To make syrup, mix sugar and water in the desired proportion listed below, and heat to dissolve.

<table>
<thead>
<tr>
<th>Syrup Type</th>
<th>Cups Water</th>
<th>Cups Sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very light</td>
<td>10½</td>
<td>1¼</td>
</tr>
<tr>
<td>Light</td>
<td>9</td>
<td>2¼</td>
</tr>
<tr>
<td>Medium</td>
<td>8½</td>
<td>3¼</td>
</tr>
</tbody>
</table>
To make a hot pack, place drained fruit in syrup, water, or juice, and bring to boil. Fill hot jars or hot sterilized jars with hot fruit and cooking liquid, leaving ½-inch headspace. If canning halves, place halves in layers, cut side down.

To make a raw pack, fill hot jars or hot sterilized jars with raw fruit, placing cut side down. Add hot water, juice, or syrup, leaving ½-inch headspace.

Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Wipe the jar sealing edge with a clean, damp paper towel. Add lids, tighten screw bands, and process jars as listed in Table 6 (below) or Table 7 (below).

**Processing: Boiling Water**

To process in a boiling-water canner, fill canner half way with water and preheat to 180° Fahrenheit for hot packs and 140° Fahrenheit for raw packs. Load filled jars into a canner rack and lower with handles, or load one jar at a time with a jar lifter onto rack in canner. Add boiling water, if needed, to a level of 1 inch above jars. Cover the canner. When the water boils vigorously, lower the heat to maintain a gentle boil, and process for appropriate time listed in Table 6 (below).

**Table 6. Recommended processing times for peaches, apricots, or nectarines in a boiling water canner at designated altitudes**

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar Size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>6,001-8,000 feet (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>Pints</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Quarts</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td>Raw</td>
<td>Pints</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Quarts</td>
<td>40</td>
<td>45</td>
</tr>
</tbody>
</table>

**Process: Pressure**

To process in a pressure canner, place the jar rack, 2 inches of water, and filled jars in canner. Fasten lid and heat canner on high setting. Allow steam to escape in a full, steady stream for 10 minutes. Add weighted gauge or close petcock to pressurize the canner. Start timing the recommended process time when the desired pressure is reached.

Regulate heat to maintain a uniform pressure, and process the jars for the time listed in Table 7 (below). When processing is complete, remove canner from heat. Air cool canner until it is fully depressurized. Slowly remove weighted gauge or open petcock, wait 2 more minutes, unfasten, and carefully remove canner lid.

**Table 7. Recommended processing times and pressures for peaches, apricots, or nectarines in a pressure canner at designated altitudes**

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar Size</th>
<th>Process time (minutes)</th>
<th>Dial Gauge*</th>
<th>Weighted Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pints or quarts</td>
<td>10</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4,001-6,000</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6,001-8,000</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Above 1,000</td>
<td></td>
</tr>
</tbody>
</table>

*Reminder: Check your dial pressure gauge annually. For more information, contact your local UW CES office.*
After Processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Air cool jars 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within one week. Alternatively, examine and replace jar if defective; use new lid, and reprocess as before. Wash screw bands, and store separately. Products are best if eaten within one year.

Fruit Pie Fillings

General

Each canned quart makes one 8-inch pie. To make safe, high-quality fillings, use a thickener called ClearJel®. ClearJel® is a form of corn starch that has been modified to give it special and unique characteristics when used in food products. It can be used for canned fruit pie fillings because it does not break down in the acid food mixtures and does not thicken enough during heat processing to interfere with the intended effect of the heat on killing bacteria during canning. Foods thickened with ClearJel® may also be frozen.

There is no substitution for ClearJel® that can be made in the recipes in this publication. Do not use other corn starch, flour, tapioca, or other thickener or any other form of ClearJel®, such as Instant ClearJel®. (Note: No discrimination is intended and no endorsement is implied by UW CES specifying ClearJel®. It is listed here because it is the only suitable product available to the general public for the stated purpose in given products.)

ClearJel® is available only through a few supply outlets but generally not in grocery stores. Find out about its availability in your area prior to gathering other ingredients to make these pie fillings. If you cannot find it, contact the University of Wyoming Cooperative Extension Service (UW CES) nutrition and food safety educator who serves your county. Contact information is at http://ces.uwyo.edu/Counties.asp.

Because the variety of fruit may alter the flavor of a fruit pie, first make a single quart, prepare a pie with it, and serve. Then adjust the sugar and spices in the recipe to suit personal preferences. The amount of lemon juice should not be altered because it aids in controlling the safety and storage stability of the fillings.

When using frozen cherries and blueberries, select unsweetened fruit; if sugar has been added, rinse it off while fruit is frozen. Collect, measure, and use juice from thawing fruit to partially replace the water specified in the recipe.

APPLE PIE FILLING

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>1 Quart</th>
<th>7 Quarts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh sliced apples (blanched)</td>
<td>3 1/2</td>
<td>6</td>
</tr>
<tr>
<td>Granulated sugar</td>
<td>1/4</td>
<td>5/8</td>
</tr>
<tr>
<td>ClearJel®</td>
<td>1/2 tsp</td>
<td>1 tsp</td>
</tr>
<tr>
<td>Cinnamon</td>
<td>1/2 cup</td>
<td>2 cups</td>
</tr>
<tr>
<td>Cold water</td>
<td>3/4 cup</td>
<td>5 cups</td>
</tr>
<tr>
<td>Apple juice</td>
<td>2 tbsp</td>
<td>3/4 tsp</td>
</tr>
<tr>
<td>Bottled lemon juice</td>
<td>1/8 tsp</td>
<td>1 tsp</td>
</tr>
<tr>
<td>Nutmeg (optional)</td>
<td>1 drop</td>
<td>7 drops</td>
</tr>
<tr>
<td>Yellow food coloring (optional)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Quality
Use firm, crisp apples. Stayman, Golden Delicious, Rome, or other similar varieties are suitable. If apples lack tartness, use an additional ¼ cup lemon juice for each 6 quarts of slices.

Procedure
Wash, peel, and core apples. Prepare slices ½-inch thick and place in water containing 1 teaspoon ascorbic acid crystals or 6 crushed 500-milligram vitamin C tablets in 1 gallon of water to help prevent discoloration.

Place 6 cups of fruit at a time in 1 gallon of boiling water. Boil each batch for 1 minute after the water returns to a boil. Drain but keep fruit in a covered bowl or pan so it will stay warm while other batches of fruit are being blanched. Combine sugar, ClearJel®, cinnamon, and nutmeg (if desired) in a large saucepan and mix. Add water, apple juice, and, if desired, food coloring. Stir and cook on medium-high heat until mixture thickens and begins to bubble. Add lemon juice to sauce and boil for 1 minute, stirring constantly, and then fold in drained apple slices. Immediately fill hot jars with mixture, leaving 1-inch headspace. Wipe the jar sealing edge with a clean, damp paper towel. Add lids, tighten screw bands, and process jars as listed in Table 8 (page 19).

BLUEBERRY PIE FILLING

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>1 Quart</th>
<th>7 Quarts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh blueberries</td>
<td>3½ cups</td>
<td>6 quarts</td>
</tr>
<tr>
<td>Granulated sugar</td>
<td>¼ cup + 2 tbsp</td>
<td>6 cups</td>
</tr>
<tr>
<td>ClearJel®</td>
<td>¼ cup + 1 tbsp</td>
<td>2¼ cups</td>
</tr>
<tr>
<td>Cold water</td>
<td>1 cup</td>
<td>7 cups</td>
</tr>
<tr>
<td>Bottled lemon juice</td>
<td>3 tbsp.</td>
<td>½ cup</td>
</tr>
<tr>
<td>Blue food coloring (optional)</td>
<td>3 drops</td>
<td>20 drops</td>
</tr>
</tbody>
</table>
Quality
Select sweet, deep-blue fruit that is ripe but firm.

Procedure
Wash and drain blueberries. Combine sugar and ClearJel® in a large saucepan and mix. Add water and food coloring (if desired). Cook on medium-high heat until mixture thickens and begins to bubble. Add lemon juice and boil for 1 minute, stirring constantly. Immediately fold in berries and, without delay, fill hot jars with mixture, leaving 1-inch headspace. Wipe the jar sealing edge with a clean, damp paper towel. Add lids, tighten screw bands, and process jars as listed in Table 8 (page 19).

CHERRY PIE FILLING

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>1 Quart</th>
<th>7 Quarts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh sour cherries</td>
<td>¾ cups</td>
<td>6 quarts</td>
</tr>
<tr>
<td>Granulated sugar</td>
<td>1 cup</td>
<td>7 cups</td>
</tr>
<tr>
<td>ClearJel®</td>
<td>¼ cup + 1 tbsp</td>
<td>1½ cups</td>
</tr>
<tr>
<td>Cold water</td>
<td>¾ cup</td>
<td>9¼ cups</td>
</tr>
<tr>
<td>Bottled lemon juice</td>
<td>1 tsp</td>
<td>½ cup</td>
</tr>
<tr>
<td>Cinnamon (optional)</td>
<td>½ tsp</td>
<td>1 tsp</td>
</tr>
<tr>
<td>Almond extract (optional)</td>
<td>¼ tsp</td>
<td>2 tsp</td>
</tr>
<tr>
<td>Red food coloring (optional)</td>
<td>6 drops</td>
<td>¾ tsp</td>
</tr>
</tbody>
</table>

Quality
Select ripe, firm cherries.

Procedure
Rinse and pit cherries, and hold in cold water containing 1 teaspoon ascorbic acid crystals or 6 crushed 500-milligram vitamin C tablets in 1 gallon of water to help prevent discoloration. Combine sugar and ClearJel® and mix. Add water and, if desired, cinnamon, almond extract, and food coloring. Stir mixture, and cook over medium-high heat until mixture thickens and begins to bubble. Add lemon juice and boil for 1 minute, stirring constantly. Immediately fold in drained cherries, and, without delay, fill hot jars with mixture, leaving 1-inch headspace. Wipe the jar sealing edge with a clean, damp paper towel. Add lids, tighten screw bands, and process jars as listed in Table 8 (page 19).

PEACH PIE FILLING

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>1 Quart</th>
<th>7 Quarts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh sliced peaches</td>
<td>¾ cups</td>
<td>6 quarts</td>
</tr>
<tr>
<td>Granulated sugar</td>
<td>1 cup</td>
<td>7 cups</td>
</tr>
<tr>
<td>ClearJel®</td>
<td>¼ cup + 1 tbsp</td>
<td>¾ cup</td>
</tr>
<tr>
<td>Cold water</td>
<td>¾ cup</td>
<td>5¼ cups</td>
</tr>
<tr>
<td>Bottled lemon juice</td>
<td>½ cup</td>
<td>1¾ cups</td>
</tr>
<tr>
<td>Cinnamon (optional)</td>
<td>½ tsp</td>
<td>1 tsp</td>
</tr>
<tr>
<td>Almond extract (optional)</td>
<td>¼ tsp</td>
<td>1 tsp</td>
</tr>
</tbody>
</table>

Quality
Select ripe, but firm, peaches. Red Haven, Sun High, and similar varieties make excellent pie filling.
Procedure

Peel peaches. To loosen skins, submerge peaches in boiling water for 30-60 seconds, and then place in cold water for 20 seconds. Slip off skins and prepare slices ½-inch thick. Place slices in water containing 1 teaspoon ascorbic acid crystals or 6 crushed 500-milligram vitamin C tablets in 1 gallon of water to help prevent discoloration.

Combine water, sugar, and ClearJel®, if desired, cinnamon and/or almond extract. Stir and cook on medium-high heat until mixture thickens and begins to bubble. Add lemon juice to sauce and boil for 1 minute more, stirring constantly. Fold in drained peach slices, and continue to heat for 3 minutes. Immediately fill hot jars with mixture, leaving 1-inch headspace, and process without delay.

Procedure for Canning All Pie Fillings

Wash jars. Prepare lids according to the manufacturer’s instructions. Fill fruit mixtures quickly into hot jars, leaving 1-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Wipe sealing surface of jars with a clean, damp paper towel. Add lids, tighten screw bands, and process jars as listed in Table 8 (below).

To process in a boiling-water canner, fill canner halfway with water and pre-heat to 180° Fahrenheit. Load filled jars into a canner rack and lower with handles, or load one jar at a time with a jar lifter onto rack in canner. Add boiling water, if needed, to a level of 1 inch above jars. Cover the canner. When the water boils vigorously, lower the heat to maintain a gentle boil, and process for the appropriate time listed in Table 8 (below).

Table 8: Recommended processing times for fruit pie fillings in a boiling-water canner at designated altitudes

<table>
<thead>
<tr>
<th>Fruit Filling</th>
<th>Jar Size</th>
<th>3,001-6,000 Feet (minutes)</th>
<th>6,001-8,000 feet (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>Pints</td>
<td>35</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>or</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Blueberry</td>
<td>Quarts</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Cherry</td>
<td></td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Peach</td>
<td></td>
<td>40</td>
<td>45</td>
</tr>
</tbody>
</table>

After Processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Air cool jars 12 to 24 hours. Remove screw bands, and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within three days. Alternatively, examine and replace jar if defective; use new lid, and reprocess as before. Wash screw bands, and store separately. Pie fillings are best if used within one year.

Sources of Information


WILD BERRIES AND OTHER WILD FRUIT

Betty Holmes
Health Educator
Diabetes Prevention and Control Program, Wyoming Department of Health (retired)

Suzanne Pelican
Food and Nutrition Specialist (retired)
University of Wyoming

David Wayne Wilson
Senior Lecturer of Agroecology and Horticulture (retired)
University of Wyoming

Reviewed by
Karen L. Panter
Horticulture and Specialty Crops Specialist
University of Wyoming Extension
Gathering Wild Berries and Other Wild Fruit

Safety Tips

Wearing proper clothing is important when gathering wild fruit. You may walk through weeds and brush so wear slacks or jeans, a long-sleeved shirt, and sturdy shoes. Wear gloves because berries and other fruit can stain your hands and some bushes have thorns. Wear a wide-brimmed hat to protect your face from the sun and your hair from the bushes. Be careful where you walk, watching out for anthills, sharp sticks, and poison ivy. Refer to the photo below to help you identify poison ivy, which is characterized by its branched three leaves. The oil contained in practically all parts of the plant is poisonous to most people when it comes in contact with their skin.

Equipment Needed

A small pail with a handle is useful when picking berries and other wild fruit. Attach the handle to your belt or tie a string through the handle and then tie the string around your waist. This leaves both hands free for gathering fruit; it also keeps you from needing to bend over as much.

What to Pick

Pick only firm berries and fruit, which are naturally high in pectin. Select a mixture of ¾ ripe and ¼ under-ripe fruits. The under-ripe fruit will increase the pectin content, making for better jelly. Be gentle on the bushes when you pick so there will be fruit to harvest next year. If unable to identify plants, berries, or fruit from the illustrations in this booklet, check with your local University of Wyoming Cooperative Extension Service office or a wild plant expert before using.

When to Harvest

Optimal times for picking berries and fruit vary with several factors, including temperatures during spring and summer months, amount of moisture during the growing season, and location of the bushes. At lower elevations, berries and other fruit may ripen one to two weeks earlier than those growing a few hundred feet higher in elevation. Late summer (from early August until frost) is usually the best time to harvest. One exception, however, is buffaloberries, which are best picked after the majority of berries are ripe and after a frost.

Care of Fruit

To avoid crushing berries and other fruit during transport, put no more than a couple quarts in any single container. Refrigerate berries and other fruit until you preserve them and, for optimal quality, preserve them as soon as possible after harvest.
General Canning Procedures

Prepare products as described in the following pages.

Wash jars. **For products processed only 10 minutes, use sterilized jars. To sterilize empty jars,** put them open side up on a rack in a boiling-water canner. Fill the canner and jars with hot (not boiling) water to 1 inch above the top of jars. Boil jars for 15 minutes.

Using a jar lifter or plastic-covered tongs, carefully remove and drain hot jars or, for products processed only 10 minutes, hot sterilized jars one at a time and fill immediately with food. With canned whole fruit and fruit syrups and butters (but not jellies or jams), remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. New two-piece canning lids prepared according to manufacturer’s directions should be used. After screw bands are tightened, jars should be processed in a boiling-water canner. *Do not seal jars with paraffin.* Jars sealed with paraffin cannot be processed in a boiling water canner and processing in a boiling water bath is necessary to destroy molds and yeasts, which can cause spoilage.

To process in a boiling-water canner, fill canner halfway with water and preheat to 180° Fahrenheit. Load filled jars into canner rack and lower with handles or load one jar at a time with a jar lifter onto rack in canner. Add boiling water, if needed, to a level of 1 inch above jars. Cover the canner. When water boils vigorously, lower heat to maintain a gentle boil and process jars for the appropriate time described in Table 1 (page 5) or Table 2 (page 5).

**After Processing**

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten bands. Air cool jars 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within four weeks. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Jellies, jams, and other wild berry and wild fruit products are best if used within one year.
Preparing Wild Berry and Other Wild Fruit Juices

1. Pick over the fruit and discard any that are overripe, damaged, or spoiled.
2. Wash the fruit quickly but thoroughly and lift out of water. Do not let the fruit soak in water. Because the juice is strained from the pulp, you do not need to remove stems and pits.
3. Place fruit in a large saucepan and barely cover with water. Heat the fruit at a high temperature until it boils and then reduce the heat so the fruit gently boils.
4. Cook for 10 minutes or until a deep-colored liquid forms. The fruit can be crushed as it cooks or the first juice can be drained into another saucepan and the fruit cooked a second time. Then crush the fruit as it cooks the second time to release more juice.
5. Strain all cooked fruit juice through a jelly bag or three layers of cheese cloth. If you do not have a jelly bag, you can make one out of a clean old sheet or pillowcase using two pieces of material, 8 inches by 12 inches sewn together on three sides. Wash sheets or pillowcases before using. Do not use fabric softener. Dampen the jelly bag before adding fruit juice. This encourages the juice to start dripping through the bag. Squeezing the jelly bag forces through bits of pulp that will cloud the jelly. Leftover pulp can be used to make jams and butters along with the cooked fruit still in the saucepan.

Note: If the fruit does not yield enough juice, you can add other fruit juice to the wild fruit juice. If the shortage is ½ cup or less, you can add water.

6. The juice can be used immediately to make jelly or syrup, and the pulp can be used to make jam. Alternatively, the juice can be canned and made into jelly at a later time. To preserve the juice by canning, pour the hot juice into hot pint or quart jars or hot sterilized pint or quart jars leaving ¼-inch headspace. (For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 4.) Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 1 (below).

Table 1. Recommended processing times for wild berry and other wild fruit juices in a boiling-water canner at designated altitudes

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar Size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>6,001-8,000 (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>Pints or quarts</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

Information about Pectin

Proper amounts of fruit, pectin, acid, and sugar are needed to make a jellied fruit product. Some kinds of fruit have enough natural pectin to gel. Others require added pectin particularly when they are used for making jellies because jelly should be firm enough to hold its shape. All fruits have more pectin when they are under-ripe.

Commercial fruit pectin made from apples or citrus fruits are available in either liquid or powdered form. Follow manufacturer’s instructions when using added pectin. Many home canners prefer the added pectin method for making jellied fruit products because fully ripe fruit can be used, cooking time is shorter, there is no need to test for doneness, and the yield from a given amount of fruit is greater. Store commercial fruit pectin in a cool, dry place so it will keep its gel strength and do not hold it from one year to the next. You can use added pectin with any fruit.
Making Jelly

Whether you are a first-time jelly maker or a seasoned expert, be sure to review these steps before starting.

1. Wash empty jars in hot water with detergent and rinse well by hand or wash in a dishwasher. Keep clean jars in warm water (if washed by hand) or in hot dishwasher until ready to use. **For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 4.**

2. Review process for preparing juice on page 5. For a clear jelly, strain the juice through a jelly bag or several layers of cheese cloth for several minutes. (To make a jelly bag, see directions on page 5.) Do not squeeze the bag because pulp may be forced through, resulting in a cloudy jelly. The juice may be refrigerated overnight. By morning, the sediment will settle to the bottom. Carefully pour off the juice to avoid disturbing the sediment. Measure the juice accurately into a large (4-quart) saucepan. **Caution: Be aware when jelly boils, it increases two or three times in volume.**

   ♦ If commercial pectin is used, the volume will be larger. The order of combining ingredients depends on the type of pectin used. Complete directions for using pectin are included in the packages. Bring strained fruit juice to a quick, hard boil over high heat stirring occasionally. Add pre-measured sugar all at once. Bring to a full rolling boil (a boil that cannot be stirred down). Boil hard for 1 minute stirring constantly.

   ♦ If commercial pectin is not used, you must boil the juice until a natural gel forms. Use one of the following tests to see if the juice has cooked long enough to form a gel:

     - **Temperature test** – Use a jelly or candy thermometer, and boil until mixture reaches the correct temperature for your altitude (9° Fahrenheit above the boiling point of water):
       
       | 3,000 ft. | 4,000 ft. | 5,000 ft. |
       |----------|----------|----------|
       | 214°F    | 212°F    | 211°F    |
       | 6,000 ft. | 7,000 ft. | 8,000 ft. |
       | 209°F    | 207°F    | 205°F    |

     - **Sheet or spoon test** – Dip a cool metal spoon in the boiling jelly mixture. Raise the spoon about 12 inches above the pan (out of steam). Turn the spoon so the liquid runs off the side. The jelly is done when the syrup forms two drops that flow together and sheet or hang off the edge of the spoon.

3. Remove from heat and quickly skim off foam.

4. Pour hot jelly mixture immediately into hot jars or hot sterilized jars leaving ¼-inch head-space. Wipe rim clean with damp cloth or paper towel. Adjust lids and tighten screw bands. Process in a boiling-water canner as described in Table 2.

   **Table 2. Recommended processing times for wild berry and other wild fruit jellies, jams, syrups, and butters in a boiling-water canner at designated altitudes**

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar Size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>6,001-8,000 (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>Half-pints or pints</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>
Soft Jelly: Possible Causes and Tips to Use or Improve

Causes

Because some jellies such as chokecherry do not set up right away, let the jars remain undisturbed for 24 hours before checking for gel.

Soft jellies may be caused by one or more of the following: too much juice in the mixture, too little sugar added, mixture not acidic enough, too much jelly made at one time, not cooking mixture long enough, and/or cooking commercial pectin too long.

Tips to Use or Improve

If the jelly does not gel, use it as syrup for pancakes.

Soft jellies can sometimes be improved by recooking according to the directions given below. It is best to recook only 4 to 6 cups of jelly at one time:

- To remake jelly with powdered pectin, for each quart (4 cups) of jelly, mix ¼ cup sugar, ½ cup water, 2 tablespoons bottled lemon juice, and 4 teaspoons powdered pectin. Bring mixture to a boil stirring constantly. Boil hard for 30 seconds. Remove from heat, quickly skim off foam, and fill hot jars or hot sterilized jars leaving ¼-inch headspace. Adjust new lids and process jars as described in Table 2 (above).

- To remake jelly with liquid pectin, for each quart (4 cups) of jelly, measure ¾ cup sugar, 2 tablespoons bottled lemon juice, and 2 tablespoons liquid pectin. Bring jelly to a boil over high heat, stirring constantly. Remove from heat and quickly add the sugar, lemon juice, and pectin. Bring to a full rolling boil stirring constantly. Boil hard for 1 minute. Remove from heat, quickly skim off foam, and fill hot jars or hot sterilized jars leaving ¼-inch headspace. Adjust new lids and process jars as described in Table 2 (above).

- To remake jelly without added pectin, for each quart (4 cups) of jelly, add 2 tablespoons bottled lemon juice. Heat to boiling and boil for 3 to 4 minutes. Use one of the gel tests described on page 6 to determine doneness. Remove from heat, quickly skim off the foam, and fill hot jars or hot sterilized jars leaving ¼-inch headspace. Adjust new lids and process jars as described in Table 2 (above).

References

References for original publication:

- Florence Anderson, pioneer women from Pocatello, Idaho
- Grace Mills, pioneer women from Tensleep, Wyoming
- Edible Native Plants of the Rocky Mountains by H.C. Harrington. University of New Mexico Press, New Mexico, 1967
- Wild Berry Recipes, Cooperative Extension Service, University of Alaska, Fairbanks, Alaska, 1973

References for 2011 revision:

- David Wayne Wilson (senior lecturer, agroecology and horticulture, University of Wyoming) updated plant descriptions and identified sources for or provided images of plants, berries, and fruit.
Chokecherries

A fruit found coast-to-coast

The main species of chokecherry is *Prunus virginiana*, with three subspecies found in almost every state of the continental U.S. including Alaska. Only one of these subspecies, the black chokecherry (*Prunus virginiana var. melanocarpa*), is found throughout Wyoming. Two other subspecies, common chokecherry (*P. virginiana var. virginiana*) and western chokecherry (*P. virginiana var. demissa*), occur in Nebraska, but they have not yet been reported in either Wyoming or Colorado. Chokecherries are found along stream banks and roadside rights-of-way where extra runoff from paved surfaces increases available moisture.

Young chokecherry leaves look very similar to wild plum leaves, but the older leaves have a distinct oval shape with an abruptly pointed tip. The entire leaf edge has very fine tooth-like indentations, like the blade of a saw, called serrations. The stems are reddish brown and covered with distinct, white, raised bumps. These are lenticels, which function to cool the plant. Older stems are gray but still show the scars of the lenticels. The stems, leaves, and fruit pits of chokecherry are poisonous because they contain hydrocyanic acid (cyanide). Only the soft fruit should be used for human consumption, and the pits should be discarded. Additionally, the recipes provided in this bulletin would also work for the native Wyoming sand cherry (*Prunus pumila*), pincherry (*Prunus pensylvanica*), and the domesticated Nanking cherry (*Prunus tomentosa*).
Chokecherry fruit is popular with wild berry jelly makers. Mixtures of half chokecherry juice and half apple juice make a tasty product. If you prefer a jelly without an apple flavor, add red currant juice with the chokecherry juice to make a jelly with a true wild berry flavor.

**For all chokecherry products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 4.**

**Chokecherry Jelly**

5 cups chokecherry juice  
7 cups sugar  
1 package powdered pectin

Follow steps for preparing juice on page 5. Then follow steps for making jelly on page 6.

**Chokecherry Syrup with Added Pectin**

4 cups chokecherry juice  
4 cups sugar  
1 package powdered pectin

Follow steps for preparing juice on page 5. Combine juice, sugar, and pectin in a large saucepan. Bring to a boil and cook until mixture coats a metal spoon (similar to the way gravy coats a spoon). Pour into hot half-pint or pint jars or hot sterilized half-pint or pint jars leaving ¼-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 2 (page 5).

**Chokecherry Syrup without Added Pectin**

4 cups chokecherry juice  
2 cups sugar  
1 cup light corn syrup

Follow steps for preparing juice on page 5. Combine ingredients in saucepan and boil for 3 minutes. Pour into hot half-pint or pint jars or hot sterilized half-pint or pint jars leaving ¼-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Wipe sealing edge of jars with a clean, damp paper towel. Add lids and process in a boiling-water canner as described in Table 2 (page 5).

**Pioneer Chokecherry Syrup**

4 cups chokecherry juice  
4 cups sugar  
1 tsp cream of tartar

Follow instructions for making juice on page 5. Combine all ingredients and cook in a saucepan over medium heat until mixture coats a metal spoon (similar to the way gravy coats a spoon). Refrigerate small quantity for immediate use. Pour remaining syrup into hot half-pint or pint jars or hot sterilized half-pint or pint jars leaving ¼-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 2 (page 5).
Wild Plums

More American than apple pie!

The American plum (*Prunus americana*) is native to the United States. Although not found in as many states as chokecherry, it is native to Wyoming. In contrast, apples, which are also in the rose family, are not native to the U.S., although there are a few species of native crabapples found in isolated and scattered locations. Plums and chokecherries are in the same genus so they are very similar in appearance. Because plum bushes do not sucker as readily as chokecherry shrubs, plums are more accurately described as a small tree up to 15 feet in height. The serrated leaves are very similar to chokecherry leaves; in fact, the young leaves of chokecherries are almost identical to a plum leaf. Older plum leaves, however, taper more gradually toward the tip than older chokecherry leaves. Luckily, the woody stems of plums are distinctly different from the reddish chokecherry stems. Young plum stems are brown, turning gray as they mature, and the raised white markings (lenticels) are not as distinct as those found on chokecherry. Flowering plum trees have individual flowers, usually white or slightly pinkish, scattered throughout the tree, in contrast to the large flower clusters on chokecherry shrubs. Fruiting plum trees are easy to tell from chokecherry shrubs because plums are larger (up to ¾ inch in diameter) and are individually scattered. The green fruit gets an orange to reddish blush as it ripens, turning dark red at maturity. Plums also are much sweeter than chokecherries.

General Procedures

Wash plums. Boil for 15 to 20 minutes or until the skins are tender. Tart wild plums are high in pectin. The fruit can be boiled a second time for extra juice. To make jam or butter, squeeze out the pits. Some recipes call for whole seeded plums. Other recipes recommend pressing plums through a sieve to remove skins and pits.

For all wild plum products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 4.
Wild Plum Jelly

5½ cups juice
1 box powdered pectin
7½ cups sugar

Follow steps for preparing juice on page 5. Then follow steps for making jelly on page 6.

Pioneer Wild Plum Jam

Wash plums. For every cup of pulp (with skins), add ¾ cup sugar. Cook over low heat until the consistency is desirable for spreading. Stir often to prevent scorching. The mixture will thicken as it cools. Fill hot half-pint or pint jars or hot sterilized half-pint or pint jars leaving ¼-inch headspace. Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 2 (page 5).

Wild Plum Butter

Prepare plums as described above under General Procedures. Pour off juice and use for jelly. Squeeze pits out of the remaining fruit. Press through sieve to remove skins. If you prefer, puree pitted fruit in a blender instead of sieving it. Measure sieved or pureed fruit and add one-half as much sugar, if desired, for each pint of fruit. If you prefer a tart flavor rather than a sweet one, sugar can be decreased or eliminated. For each two cups of fruit, add the following: ¼ teaspoon cinnamon and ⅛ teaspoon cloves. Bring to a boil and simmer uncovered, stirring frequently until desired spreading consistency. Plum butter will thicken as it cools. Spoon mixture into hot half-pint or pint jars or hot sterilized half-pint or pint jars leaving ¼-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 2 (page 5).

Canned Wild Plums

Whole plums can be canned and served as a whole fruit during the winter months. Wash plums and discard any that are damaged or spoiled.

- To can in syrup, heat plums to boiling in syrup made of 2 cups sugar and 4 cups water.
- To can in water, heat plums in water only. Although plums canned in water have fewer calories than those canned in syrup, canning in water results in less firm fruit.

Place hot fruit to ½ inch from top of hot pint or quart jars. Cover with either boiling syrup or boiling water leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 3 (below).

Table 3. Recommended processing times for canned wild plums in a boiling-water canner at designated altitudes

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar Size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>6,001-8,000 (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>Pints</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Quarts</td>
<td>35</td>
<td>40</td>
</tr>
</tbody>
</table>
Serviceberries

“Serviceberries” if you prefer the Bostonian pronunciation

Serviceberries are yet another native species from the rose family. Three species of serviceberry are found in Wyoming: Saskatoon serviceberry (*Amelanchier alnifolia*), Utah serviceberry (*Amelanchier utahensis*), and dwarf serviceberry (*Amelanchier pumila*). Serviceberries produce prolific clusters of attractive white star-shaped blooms. The leaves are oval to nearly round, from ¾ to 2 inches in length and serrated on the upper half toward the leaf tip. Stems are alternately arranged with relatively short internodes. The fruit is a small berry-like pome (or small apple). The immature red fruit turns a dark purple to black when it ripens. Found on open hillsides, serviceberry bushes frequently grow among mountain mahogany shrubs. Serviceberries can grow up to 15 feet tall but seldom attain this height because they are heavily browsed by deer. Four to 5 feet is a more typical height for this shrub.

Serviceberry Jelly

3½ cups juice
1 package powdered pectin
5 cups sugar

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 4. Follow steps for preparing juice on page 5. Then follow steps for making jelly on page 6.

Variation: To add a little tartness to the jelly, add ¼ cup lemon juice to the serviceberry juice before cooking.
Rose Hips

The mountain man’s anti-scurvy medicine

The Woods’ rose (Rosa woodsii) is the most common native rose shrub found in Wyoming. Other species found in Wyoming include the prickly rose (Rosa acicularis), prairie rose (Rosa arkansana), and Nootka rose (Rosa nutkana). The fruits of all these species are edible throughout the year and were an important source of vitamin C for the native people and early explorers of the Rocky Mountains. Dried rose hips persist on plants and remain edible throughout the winter. Rose hips are bright red in color and range in flavor from tasteless to sweet. Although never bitter, they are very seedy. The blooms of wild roses are usually light to dark pink or even red, and they have five petals with five sepals. Each leaf is composed of multiple oppositely arranged leaflets forming a pinnate compound leaf up to 6 inches in length. The leaflets are more deeply serrated at the tip and are from ½ to 1 inch in length, half as wide as they are long. Stems are dark brown and covered with light-colored thorns shaped like a cat’s claw. Shrubs are 3 to 4 feet in height and found in open to wooded habitats.

Dried Rose Hips

Rose hips should be gathered after the first frost. Cut rose hips in half and remove the seeds with the point of a knife. Dry as quickly as possible in a slightly warm oven. Use as potpourri to add a light rose fragrance to a room.
Rose Hip Jelly

4 cups rose hips
2 pounds sugar

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 4. Wash rose hips and remove outside covering. Add just enough water to cover and bring to a boil. Add sugar and simmer until the fruit is soft. Strain and return juice to kettle. Bring juice to boil again and test for gel following the procedure on page 6. Pour into hot half-pint or pint jars or hot sterilized half-pint or pint jars leaving ¼-inch headspace. Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 2 (page 5).

Candied Rose Hips

1½ cups rose hips
½ cup water
¼ cup sugar

Wash rose hips and remove seeds. Combine sugar and water to make a syrup. Add rose hips and boil 10 minutes. Lift rose hips from syrup with a skimmer or slotted spoon and drain on waxed paper. Dust with sugar and dry in a very warm oven (150-175° Fahrenheit). If the rose hips seem sticky, add more sugar. After rose hips have dried, remove from oven and cool. Store rose hips between sheets of waxed paper in a covered metal container. Candied rose hips can be added to your favorite cookie recipes (oatmeal cookies, bar cookies, sugar cookies, etc.). They can also be added to puddings or used in place of nuts or fruits in other baked products; for extra flavor, you can add grated lemon rind.
Buffaloberries

Anything called buffalo is so Wyoming!

Two species of buffaloberry are found in Wyoming: silver buffaloberry (*Shepherdia argentea*) and russet buffaloberry (*Shepherdia canadensis*). A closely related species called silverberry or wolf-willow (*Elaeagnus commutata*) is also found in Wyoming. All three species are in the same plant family of the Russian olive (*Elaeagnus angustifolia*), a common invasive species. Buffaloberry shrubs grow up to 8 feet in height and are similar in appearance to Russian olive, having narrow, blunt-shaped leaves.

- Silver buffaloberry leaves have a distinct sage coloration similar to Russian olive.
- Russet buffaloberry leaves are dark green on the upper surface and fuzzy underneath with star-shaped hairs. Stems are light brown with alternately arranged lateral branches sometimes forming a spine at the tip.

Buffaloberry is a dioecious species, which means plants have either imperfect male or female flowers on separate plants. The imperfect flowers are yellowish to pale green. The fruit, which is found only on plants that bear female flowers, is pale orange to bright red in color. Silver buffaloberries make the best jams and jellies. Although suitable for jams and jellies, raw russet buffaloberries have a soapy taste and can cause diarrhea if consumed in large quantities. When eaten raw, the dry, mealy berries of silverberry or wolfberry shrubs are less palatable than either of the buffaloberries, but they can still be used to make jam.
Buffaloberry Jelly

This jelly is clear with a color of golden honey, and the taste is similar to currant jelly. Follow steps for preparing juice on page 5. Buffaloberry juice will be pale in color (a peachy-pink) and will look soapy. For every cup of buffaloberry juice, use ¾ cup of sugar. Follow steps for making jelly on page 6. If made with pectin, follow proportions given for currant jelly on page 18. Because buffaloberries make a tart jelly, you can add some apple juice if you desire a milder flavor. If so, use one cup of apple juice for every cup of buffaloberry juice.

Dried Buffaloberries

Wash berries and remove stems and leaves. Put berries in a food grinder and grind to a mushy consistency. Form crushed berries into patties. Dry patties in a food dehydrator. When they are brittle and break when bent, they are dry. Store in an airtight jar in a cool dry place.

Dried Buffaloberry Syrup

3 cups dried berries
2 cups water
2 cups sugar

Soak berries in water until tender. Bring berries to a boil and strain to remove seeds. Add sugar and stir until sugar is dissolved. Refrigerate and use within one month.

Berry Gravy

Make buffaloberry syrup using recipe above. In a separate container, use a wire whip to thoroughly mix 5 to 6 tablespoons all-purpose flour with one cup water. If you prefer more translucent gravy, use corn starch instead of flour. Stir until lumps are dissolved. Slowly pour flour (or cornstarch) and water mixture into boiling berry syrup. Boil until thick, stirring constantly. Remove from heat and store in refrigerator in a clean, covered container, and use within one week. Berry gravy can be used like jam on toast or like syrup on pancakes or waffles. Berry gravy can also be used as a glaze for pork loin roast.
Wild Currants

Even in the Equality State, not all currants are created equal

Three main species of wild currants are found in Wyoming. All three are small shrubs growing to a maximum height of 5 feet.

- **Black currant shrubs** (*Ribes hudsonianum*) are found in moist, shady locations in stands of timber or along streams. Their leaves have three to five lobes and look like a small maple leaf. The leaves also have tooth-like indentations (serrations) around the entire edge of the leaf. The white flowers are funnel shaped, and the black berries are very sweet.

- **Golden currant shrubs** (*Ribes aureum*) are found in open, sunny areas. The leaves have three to five blunt or rounded lobes, without serrations around the lower portion of the leaf. The flowers are bright yellow, and the berries can be yellow, orange, red, or purple. Because golden currant berries range in flavor from sweet to bitter, you should sample the berries of each shrub to test the flavor. Darker berries are usually sweeter.

- **The berries from wax current shrubs** (*Ribes cereum*), the third species of wild currants found in Wyoming, are not recommended for making jams and jellies. This species grows in the same location and even frequently alongside golden currant bushes. Leaves are smaller and not as deeply lobed as either of the other two species. The leaves and buds are sticky. Flowers are trumpet shaped and usually pink in color, and the berries are orange to red. Wax currants are usually very bitter.

**Currant Ice Cream Sauce**

1 cup currants, washed and stemmed
½ cup water
½ cup sugar or honey (or use ¼ cup sugar and ¼ cup honey)

Cook currants in water for 10 minutes. Add sugar and/or honey and boil gently 5 more minutes. Serve hot or chilled over vanilla ice cream.
Currant Jelly

6½ cups currant juice
1 package powdered pectin
7 cups sugar

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 4. Wash currants. To prepare the juice, crush the fully ripe fruit before cooking and then follow steps for preparing juice on page 5. Then follow the steps for making jelly on page 6. Variation: Mix currant juice with equal parts of apple juice.

Currant Punch

Follow steps for preparing juice on page 5. Sweeten hot currant juice to taste, stirring to dissolve sugar. Cool. Add club soda or ginger ale at serving time. Other fruit juices may be combined with the currant juice for a flavorful variation. For a special touch, add a small scoop of ice cream at serving time.
Gooseberries

A currant by any other name is a gooseberry

Gooseberries are closely related to currants and differ mainly by the presence of prickles or thorns on the stem of the gooseberry. In contrast, currant shrubs lack thorns. Gooseberry shrubs usually produce a larger fruit than currant shrubs. Gooseberries are sour when green but very flavorful as they ripen to a reddish purple color. Most people prefer gooseberries over currants for making pies and jams. There are two main species of gooseberry in Wyoming; both are small shrubs that generally do not exceed 3 feet in height.

- Canadian gooseberry or redshoot gooseberry (Ribes oxycanthoides, formerly Ribes setosum) has rust-colored younger shoots covered with fine spines while the older grayish stems have one to three large spines at the base of the leaves.

- Whitestem gooseberry (Ribes inerme) has very few thorns at the base of the leaves of the older white stems; however, young shoots are covered with fine spines.

Gooseberry leaves are similar to those of golden currant and are deeply lobed with blunt tips. Whitestem gooseberry tends to produce slightly larger fruit (up to ½ to ¾ inch in diameter) than
that of Canadian gooseberry (an average diameter of ¼ to ⅜ inch). Gooseberry flowers are small and bell shaped, usually white with a pale greenish-yellow tint.

**For all gooseberry products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 4.**

**Gooseberry Jelly**

3½ cups gooseberry juice  
¼ cup lemon juice  
1 package powdered pectin  
5 cups sugar

Prepare the juice by grinding stemmed fruit through a food grinder or follow directions for preparing juice on page 5. It will take between 5 to 6 cups of berries to make 3½ cups of juice. Add ½ cup of water to the ground berries and boil for 5 minutes. Follow steps for making jelly on page 6.

**Gooseberry Jam**

5½ cups ground fruit  
7 cups sugar  
1 package powdered pectin

Add sugar and pectin to fruit and stir well. Then cook jam according to the directions on pectin package. Pour into hot half-pint or pint jars or hot sterilized half-pint or pint jars leaving ¼-inch headspace. Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 2 (page 5).

**Canned Gooseberries**

Canned gooseberries can be eaten as a sauce or used in pies. Wash and stem berries. Put ½ cup water for each quart of fruit in a large saucepan and bring to a boil. Add berries, boil for 30 seconds, and drain. Fill hot pint or quart jars and cover with hot juice leaving ½-inch headspace. Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 4 (below).

**Table 4. Recommended processing times for canned gooseberries in a boiling-water canner at designated altitudes**

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar Size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>6,001-8,000 (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>Pints or quarts</td>
<td>20</td>
<td>25</td>
</tr>
</tbody>
</table>

**Gooseberry Pie**

2 cups fresh or canned gooseberries  
¾ to 1 cup sugar  
2 tablespoons quick-cooking tapioca  
1 tbsp butter  
Grated rind of 1 lemon  
1 unbaked pie shell and top

If using fresh gooseberries, first wash and stem the fruit. Add sugar and tapioca to gooseberries and let stand while preparing the pastry shell and top. Pour gooseberry mixture into pastry-lined pie pan. Dot mixture with butter and add the top of the pastry to form a two-crust pie. Bake at 450° Fahrenheit for 10 minutes. Reduce temperature to 350° Fahrenheit and continue baking 30 minutes longer.
Wild Grapes

Not a grape of wrath but a native grape of Wyoming

Only one species of wild grape, riverside grape (Vitis riparia), is found throughout Wyoming. Six other species, however, occur along the southern and eastern borders of the state. These six species are mapleleaf grape (Vitis acerifolia), summer grape (Vitis aestivalis), canyon grape (Vitis arizonica), graybark grape (Vitis cinerea), fox grape (Vitis labrusca), and frost grape (Vitis vulpina). The domesticated vineyard or wine grape (Vitis vinifera) is cultured in Wyoming.

Riverside grape is a vining plant with opposite leaf arrangement and a unique leaf shape. The leaf lacks the typical deep-lobed characteristic common to most grapes, but it still has three distinct and prominent leaf tips. The base of the leaf is concave, with large rounded ears to each side of the petiole. The leaves are deeply serrated. The white flowers occur in clusters forming into a dark blue fruit.

For all wild grape products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 4.

Wild Grape Jelly

To make wild grape jelly, follow the directions for making cultivated grape jelly as provided with commercial pectin packages.
**Wild Grape Butter**

- 6 quarts grapes, washed and stemmed
- Water to cover
- 4 quarts apples, washed and quartered but not peeled
- 4 cups sugar

Jelly bag or three layers of cheesecloth (to make a jelly bag, see directions on page 5)

Cover the grapes with water and simmer for 20 minutes. Strain off juice and make into jelly as described on page 6. Put the grape pulp into the jelly bag or cheesecloth layers. Return to the kettle, keeping the pulp in the bag. Add apples. The bag keeps grape seeds out of the apples but allows the seeds to impart a richer grape flavor to the butter. Cover apples and bag of grapes with water. Bring to a boil and simmer 20 minutes. Drain. Juice can be used for Grape-apple Jelly (see next recipe). Put apples through a sieve and measure out 5 cups. Place in kettle, add sugar, and heat to boiling, stirring constantly. Cook to desired consistency. Spoon butter into hot half-pint or pint jars or hot sterilized half-pint or pint jars leaving ¼-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 2 (page 5).

**Grape-apple Jelly**

- 5 cups of grape/apple juice (from previous recipe)
- 7 cups sugar
- 1 package powdered pectin

Follow steps for making jelly on page 6.

**Grape Juice**

Wash and stem fresh, firm, ripe grapes. Put 1 cup grapes in a hot quart jar or hot sterilized quart jar. Add ½ to 1 cup sugar depending on sweetness desired. Fill hot pint or quart jars or hot sterilized pint or quart jars leaving ¼-inch headspace. Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 1 (page 5).
Prickly Pear Cactus

Nasty to look at but tasty to eat!

This is one of the easiest plants to identify because almost everyone knows what these cactuses look like. The most common species found in Wyoming is the plains prickly pear (*Opuntia polycanthus*). Cactuses are desert-dwelling succulents found in the drier sections of every state and province of North America. The leaves of plains prickly pear are large fleshy lobes covered with two types of spines. The large woody spines are intimidating, but it is the smaller hair-like spines, which are barbed, that can be far more problematic. They are difficult to see and remove after they become imbedded in the skin. The large yellow cactus flower occurs at the top of a fleshy leaf. The fruit is a reddish purple and covered with fine spines. Because of the spines on the leaves and fruit, use tongs and gloves to gather and handle the fruit.

Prickly Pear Jelly

3 cups of cactus juice (made from approximately 12 cups ripe cactus fruit)

½ cup lemon juice

1 package of powdered pectin

4½ cups of sugar

Jelly bag or three layers of cheesecloth (to make a jelly bag, see directions on page 5)

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 4. Caution: Use tongs and gloves to gather and handle cactus fruit. To prepare cactus juice, rinse and scald the fleshy fruits. If possible, remove any damaged spots but you do not need to remove the small spines or prickles. Cut into halves, barely cover with water, and simmer 15 minutes. Pour into jelly bag or cheesecloth layers and squeeze out cactus juice. Discard pulp. Mix cactus juice and lemon juice with powdered pectin. Place over high heat and stir until the mixture comes to a rolling boil. Add sugar, bring to a vigorous boil again, and boil for 1½ minutes stirring constantly. Remove from heat, skim off any foam, and pour quickly into hot half-pint or pint jars or hot sterilized half-pint or pint jars leaving ¼-inch headspace. Wipe sealing edge of jars with a clean, damp paper towel. Adjust lids and process in a boiling-water canner as described in Table 2 (page 5).
Betty Holmes
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Chile Salsa and General Procedures for All Salsas

Chile Salsa

Quantity
5 pounds tomatoes
2 pounds chile peppers
1 pound onions
1 cup vinegar (5-percent acid)
3 tsp salt
½ tsp pepper
Yield: 6 to 8 pints

Preparation

Caution: Wear rubber gloves while handling peppers or wash hands thoroughly with soap and water before touching your face. Wash and dry peppers. (Note: Jalapeños do not need to be peeled). Slit each pepper along its side to allow steam to escape. Prepare peppers for peeling by placing them either in an oven at 400° Fahrenheit or a broiler for 6 to 8 minutes until skins blister. Allow peppers to cool. Peel each pepper. Some skins may slip off. Discard seeds and chop peppers.

Wash tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Dip in cold water, slip off skins, and remove cores. Coarsely chop tomatoes and combine chopped onions, pepper, and remaining ingredients in a large saucepan. Heat to boiling and simmer 12 to 15 minutes.

Canning procedure

Wash pint jars. (Do not pack into quart jars.) Prepare lids according to the manufacturer’s instructions. Fill hot jars with hot salsa leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Wipe sealing edge of jars with a clean, damp paper towel. Add lids and tighten screw bands.

Process

Process in a boiling-water canner. Fill canner halfway with water and preheat to 180° Fahrenheit. Load filled jars into the canner rack and lower with handles or load one jar at a time with a jar lifter onto rack in canner. Add boiling water, if needed, to a level of 1 inch above jars and cover. When water boils vigorously, lower heat to maintain a gentle boil and process for time given in Table 1 (page 4).
Table 1. Recommended process times for all salsa recipes in a boiling water canner at designated altitudes

<table>
<thead>
<tr>
<th>Jar size</th>
<th>Pack style</th>
<th>3,001-6,000 feet (minutes)</th>
<th>Above 6,000 feet (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pints</td>
<td>Hot</td>
<td>20</td>
<td>25</td>
</tr>
</tbody>
</table>

**After processing**

After processing is complete, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Cool jars for 12 to 24 hours and remove screw bands. Check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within four weeks. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Chile salsa is best if used within one year.

**Spices**

Spices add flavoring to salsas. The amount of spices and herbs may be altered in these recipes. Cilantro and cumin are often used in spicy salsas. You may leave them out if you prefer salsa with a milder taste. For a stronger cilantro flavor, add fresh cilantro just before serving the salsa.

**IMPORTANT REMINDERS FOR HOME-CANNING SALSAS**

Follow the directions carefully for each recipe. Use the amounts of each vegetable listed in recipe. Add the amount of vinegar or lemon juice listed. You may change the amount of spices if desired.

Do not can salsas that do not follow these or other research tested recipes. (They may be frozen or stored in the refrigerator.)

Do not thicken salsas with flour or cornstarch before canning. Thickening salsa prior to canning would result in underprocessing because heat penetration takes longer through a thick food product, and the salsa could spoil during storage. After you open a jar to use, you may pour off some of the liquid or thicken with cornstarch.

For all salsa recipes, follow the cautions under Chile Salsa for handling chiles and for removing the chile skins, and follow the canning, processing, and after-processing steps under Chile Salsa.
For all salsa recipes, follow the cautions under Chile Salsa for handling chiles and for removing the chile skins, and follow the canning, processing, and after-processing steps on pages 3 and 4.

**Tomato Salsa (using slicing tomatoes)**

4 cups peeled, cored, chopped tomatoes  
2 cups seeded, chopped long green chiles  
½ cup seeded, chopped jalapeño peppers  
¾ cup chopped onions  
4 cloves garlic, finely chopped  
2 cups vinegar (5-percent acid)  
1 tsp ground cumin (optional)  
1 tbsp oregano leaves (optional)  
1 tbsp fresh cilantro (optional)  
1½ tsp salt  
Yield: 4 pints

Follow the cautions for handling chiles and for removing the chile skins, and follow the canning, processing, and after-processing steps on page 3. Combine all ingredients in a large saucepan and bring the mixture to a boil stirring frequently. Reduce heat and simmer 20 minutes stirring occasionally. Ladle hot mixture into hot pint jars leaving ½-inch headspace. Adjust lids and process in a boiling-water canner as described in Table 1 (page 4).

**Tomato/Green Chile Salsa**

3 cups peeled, cored, chopped tomatoes  
3 cups seeded, chopped long green chiles  
¾ cup chopped onions  
1 jalapeño pepper, seeded, finely chopped  
6 cloves garlic, finely chopped  
1½ cups vinegar (5-percent acid)  
½ tsp ground cumin (optional)  
2 tsp oregano leaves (optional)  
1½ tsp salt  
Yield: 3 pints

Follow the cautions for handling chiles and for removing the chile skins, and follow the canning, processing, and after-processing steps on page 3. Combine all ingredients in a large saucepan and heat stirring frequently until mixture boils. Reduce heat and simmer 20 minutes stirring occasionally. Ladle mixture into hot pint jars leaving ½-inch headspace. Adjust lids and process in a boiling-water canner as described in Table 1 (page 4).
Tomatillo Green Salsa

5 cups chopped tomatillos (remove dry outer husks before chopping)
1½ cups seeded, chopped long green chiles
½ cup seeded, finely chopped jalapeño peppers
4 cups chopped onions
1 cup bottled lemon or lime juice
6 cloves garlic, finely chopped
1 tbsp ground cumin (optional)
3 tbsp oregano leaves (optional)
1 tbsp salt
1 tsp black pepper

Yield: 5 pints

Follow the cautions for handling chiles and for removing the chile skins, and follow the canning, processing, and after-processing steps on page 3. Combine all ingredients in a large saucepan and stir frequently over high heat until mixture begins to boil; then reduce heat and simmer 20 minutes stirring occasionally. Ladle hot mixture into hot pint jars leaving ½-inch headspace. Adjust lids and process in a boiling water canner as directed in Table 1 (page 4).
**Tomato Salsa (using paste tomatoes)**

- 7 quarts peeled, cored, and chopped paste tomatoes (i.e., Roma tomatoes)
- 4 cups seeded, chopped long green chiles
- 5 cups chopped onion
- ½ cup seeded, finely chopped jalapeño peppers
- 6 cloves garlic, finely chopped
- 2 cups bottled lemon or lime juice
- 2 tbsp salt
- 1 tbsp black pepper
- 2 tbsp ground cumin (optional)
- 3 tbsp oregano leaves (optional)
- 2 tbsp fresh cilantro (optional)

Yield: 16 to 18 pints

Follow the cautions for handling chiles and for removing the chile skins, and follow the canning, processing, and after-processing steps on page 3. Combine all ingredients except cumin, oregano, and cilantro in a large pot and bring to a boil stirring frequently. Reduce heat and simmer 10 minutes. Add spices and simmer for another 20 minutes stirring occasionally. Ladle hot mixture into hot pint jars leaving ½-inch headspace. Adjust lids and process in a boiling water canner as described in Table 1 (page 4).

**Tomato Taco Sauce**

- 8 quarts peeled, cored, finely chopped paste (i.e., Roma tomatoes)
- 2 cloves garlic, crushed
- 5 cups chopped onions
- 4 jalapeño peppers, seeded, chopped
- 4 long green chiles, seeded, chopped
- 2½ cups vinegar (5-percent acid)
- 2 tbsp salt
- 1½ tbsp black pepper
- 1 tbsp sugar
- 2 tbsp oregano leaves (optional)
- 1 tsp ground cumin (optional)

Yield: 16 to 18 pints

Follow the cautions for handling chiles and for removing the chile skins, and follow the canning, processing, and after-processing steps on page 3. Combine ingredients in a large saucepan. Bring to a boil, then reduce heat and simmer stirring frequently until thick (about 1 hour). Ladle hot mixture into hot pint jars leaving ½-inch headspace. Adjust lids and process in boiling water canner as described in Table 1 (page 4).
Tomato/Tomato Paste Salsa

- 3 quarts peeled, cored, chopped slicing tomatoes
- 3 cups chopped onions
- 6 jalapeño peppers, seeded, finely chopped
- 4 long green chiles, seeded, chopped
- 4 cloves garlic, finely chopped
- 2 twelve-oz cans tomato paste
- 2 cups bottled lemon or lime juice
- 1 tbsp salt
- 1 tbsp sugar
- 1 tbsp cumin (optional)
- 2 tbsp oregano leaves (optional)
- 1 tsp black pepper

Yield: 7 to 9 pints

Follow the cautions for handling chiles and for removing the chile skins, and follow the canning, processing, and after-processing steps on page 3. Combine all ingredients in a large saucepan. Bring to a boil. Reduce heat and simmer 30 minutes stirring occasionally. Ladle hot mixture into hot pint jars leaving ½-inch headspace. Adjust lids and process in a boiling water canner as described in Table 1 (page 4).

Chile Salsa (Hot tomato-Pepper Sauce)

- 10 cups peeled, cored, chopped tomatoes
- 6 cups seeded, chopped chile peppers (use mixture of mild and hot peppers)
- 4 cups chopped onions
- 1 cup vinegar (5-percent acid)
- 3 tsp salt
- ½ tsp pepper

Yield: 6 to 8 pints

Follow the cautions for handling chiles and for removing the chile skins, and follow the canning, processing, and after-processing steps on page 3. Combine ingredients in a large saucepan. Heat to a boil and simmer 10 minutes. Ladle hot mixture into hot pint jars leaving ½-inch headspace. Adjust lids and process in a boiling water canner as described in Table 1 (page 4).

Important Reminder

The only changes you can safely make in these salsa recipes are to substitute bottled lemon juice for vinegar and to change the amount of spices and herbs. Do not alter the proportions of vegetables to acid and tomatoes because doing so may make the salsa unsafe.
Tomatoes and Other Tomato Products

Quantity
A bushel of tomatoes weighs approximately 53 pounds.

Table 2. Quantities of fresh tomatoes needed for tomato products

<table>
<thead>
<tr>
<th>Product</th>
<th>Average number of pounds of fresh tomatoes needed for:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Quart</td>
</tr>
<tr>
<td>Juice</td>
<td>3¼</td>
</tr>
<tr>
<td>Juice blend; crushed</td>
<td>3</td>
</tr>
<tr>
<td>Whole or halved</td>
<td>3</td>
</tr>
<tr>
<td>Thin sauce</td>
<td>5</td>
</tr>
<tr>
<td>Thick sauce</td>
<td>6½</td>
</tr>
</tbody>
</table>

Quality
Select only disease-free, firm fruit for canning. Vine-ripened tomatoes are preferred. Do not can tomatoes from dead or frost-killed vines. Green tomatoes are more acidic than ripened fruit and can be canned safely with any of the following recommendations.

Acidification and Sterilizing Jars
To ensure safe acidity in whole, crushed, or juiced tomatoes, add 2 tablespoons bottled lemon juice or ½-teaspoon citric acid per quart of tomatoes. For pints, use 1 tablespoon bottled lemon juice or ¼ teaspoon citric acid. Sugar can be added to offset acid taste.

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, put them open side up on a rack in a boiling water canner. Fill the jars with hot (not boiling) water to 1 inch above tops of jars. Boil jars for 15 minutes. Using a jar lifter or tongs, carefully remove and drain hot, sterilized jars one at a time and fill immediately with food.

Freezing
For optimal quality, freeze no more than 2 to 3 pounds of food per cubic foot of freezer per day. To freeze tomatoes, wash, scald for 30 to 60 seconds to loosen skins, peel, and core. Cut into pieces and freeze, or for stewed tomatoes, simmer tomato pieces for 10 to 20 minutes until tender. To package, fill pint or quart freezer bags to a level 1 to 2 inches from top and squeeze out air. Seal leaving room at the top of the bag for expansion of the food during freezing. Label and freeze. Before freezing, bags may be inserted into reusable rigid freezer containers for added protection against punctures and leakage.

Process: Boiling Water
To process in a boiling-water canner, preheat canner filled halfway with water to 180° Fahrenheit for hot packs and 140° Fahrenheit for raw packs. Load filled jars onto the canner.
rack and lower rack with handles; or load one jar at a time with a jar lifter onto rack in the canner. Add water (boiling water for hot packs and hot water for raw packs), if needed, to a level of 1 inch above jars and add canner cover. When water boils vigorously, lower heat to maintain a gentle boil and process jars as described in Table 3 (below).

**Table 3. Recommended processing times for tomato products in a boiling-water canner at designated altitudes**

<table>
<thead>
<tr>
<th>Product</th>
<th>Style of pack</th>
<th>Jar size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>Above 6,000 feet (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomato juice; tomato vegetable juice blend</td>
<td>Hot</td>
<td>Pints</td>
<td>45</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Hot</td>
<td>Quarts</td>
<td>50</td>
<td>55</td>
</tr>
<tr>
<td>Whole or halved tomatoes packed in water</td>
<td>Hot or raw</td>
<td>Pints</td>
<td>50</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarts</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>Crushed tomatoes</td>
<td>Hot</td>
<td>Pints</td>
<td>45</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Hot</td>
<td>Quarts</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>All tomato ketchups</td>
<td>Hot</td>
<td>Pints</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Standard tomato sauce</td>
<td>Hot</td>
<td>Pints</td>
<td>45</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarts</td>
<td>50</td>
<td>55</td>
</tr>
</tbody>
</table>

**Process: Pressure**

To process in a pressure canner, place jar rack, 2 inches of water, and filled jars in canner. Fasten lid and heat canner on high setting. Allow steam to escape in a fully steady stream for 10 minutes. Add weighted gauge or close petcock to pressurize the canner. Start timing the process when the desired pressure is reached. Regulate heat to maintain a uniform pressure and process jars for the time given in Table 4 (page 11). Do not allow the pressure to drop below the recommended pressure for your altitude.

When processing is complete, remove the canner from heat. Air-cool the canner until it is fully depressurized. Slowly remove weighted gauge or open petcock, wait 2 more minutes, and then carefully remove canner lid.
Table 4. Recommended processing times and pressures for tomato products in a pressure canner at designated altitudes

<table>
<thead>
<tr>
<th>Product</th>
<th>Style of pack</th>
<th>Jar size</th>
<th>Process time (minutes)</th>
<th>Dial Gauge*</th>
<th>Weighted Gauge</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,001-4,000 feet (lbs)</td>
<td>4,001-6,000 feet (lbs)</td>
<td>6,001-8,000 feet (lbs)</td>
</tr>
<tr>
<td>Tomato juice; tomato vegetable juice blend; or crushed tomatoes</td>
<td>Hot</td>
<td>Pints</td>
<td>20</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarts</td>
<td>15</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Whole or halved tomatoes packed in water</td>
<td>Hot</td>
<td>Pints</td>
<td>15</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Raw</td>
<td>Quarts</td>
<td>10</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Tomatoes with okra or zucchini**</td>
<td>Hot</td>
<td>Pints</td>
<td>30</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarts</td>
<td>35</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>All tomato ketchups</td>
<td>Hot</td>
<td>Pints</td>
<td>10</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Standard tomato sauce</td>
<td>Hot</td>
<td>Pints</td>
<td>20</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarts</td>
<td>15</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Spaghetti sauce without meat**</td>
<td>Hot</td>
<td>Pints</td>
<td>20</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarts</td>
<td>25</td>
<td>12</td>
<td>13</td>
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<tr>
<td>Spaghetti sauce with meat**</td>
<td>Hot</td>
<td>Pints</td>
<td>60</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarts</td>
<td>70</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Mexican tomato sauce**</td>
<td>Hot</td>
<td>Pints</td>
<td>20</td>
<td>12</td>
<td>13</td>
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<tr>
<td></td>
<td></td>
<td>Quarts</td>
<td>25</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

* Reminder: check your dial pressure gauge annually. For more information, contact your local UW CES office.

** Products are considered low acid. The UW CES recommends all low-acid home canned foods be boiled for 15 to 20 minutes before eating.

After processing
Remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Air cool jars for 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store in a clean, cool dark place without ring. If the lid is unsealed, refrigerate and use within one week. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Canned tomato products are best if eaten within a year.
Tomato Juice

**Quantity**
See Table 2 (page 9) for guidelines.

**Procedure**
Wash, remove stems, and trim off bruised or discolored portions. To prevent juice from separating, quickly cut about 1 pound of fruit into quarters and put directly into saucepan. Heat immediately to boiling while crushing. Continue to slowly add and crush freshly cut tomato quarters to the boiling mixture. Make sure the mixture boils constantly and vigorously while adding the remaining tomatoes. Simmer 6 to 8 minutes after adding all pieces.

If you are not concerned about juice separation, simply slice or quarter tomatoes into a large saucepan. Crush, heat, and simmer 5 minutes before juicing. Press both types of heated juice through a sieve or food mill to remove skins and seeds. Add bottled lemon juice or citric acid to jars. See acidification instructions on page 9. Reheat juice to boiling. Add up to 1 teaspoon salt per quart, if desired. Fill hot jars with hot tomato juice leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Adjust lids and process jars as described in Table 3 (page 10) or Table 4 (page 11).

Tomato and Vegetable Juice Blend

**Quantity**
See Table 2 (page 9) for guidelines.

**Procedure**
Crush and simmer tomatoes as described for tomato juice. Add no more than 3 cups of any combination of finely chopped celery, onions, carrots, and peppers for each 22 pounds of tomatoes. Simmer mixture for 25 minutes. Press hot, cooked tomatoes and vegetables through sieve or food mill to remove skins and seeds. Add bottled lemon juice or citric acid to jars. See acidification instructions on page 9. Add up to 1 teaspoon salt per quart if desired. Reheat tomato-vegetable juice blend to boiling and fill immediately into hot jars leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Adjust lids and process jars as described in Table 3 (page 10) or Table 4 (page 11).

Whole or Halved Tomatoes Packed in Water

**Quantity**
See Table 2 (page 9) for guidelines.

*For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 9.*

**Procedure for whole or halved tomatoes packed in water**
Wash tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Then dip in cold water, slip off skins, and remove cores. Leave whole or halved. Add bottled lemon juice or citric acid to jars. See acidification instructions on page 9.

- **Hot pack** – Bring tomatoes to a boil in water and boil 5 minutes. Fill hot jars or hot sterilized jars with hot tomatoes. Add up to 1 teaspoon salt per quart if desired and add enough hot cooking water to cover tomatoes leaving ½-inch headspace.
• **Raw pack** – Fill hot jars or hot sterilized jars with raw peeled tomatoes. Add up to 1 teaspoon salt per quart if desired. Add hot water to cover tomatoes leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Adjust lids and process jars as described in Table 3 (page 10) or Table 4 (page 11).

**Crushed Tomatoes**

**Quantity**
See Table 2 (page 9) for guidelines.

**Procedure for crushed tomatoes**
Wash tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Then dip in cold water, slip off skins, and remove cores. Trim off any bruised or discolored portions and quarter. Heat one-sixth of the quarters quickly in large pan crushing with wooden spoon as they are added to extract the juice. Continue to heat to boiling stirring to prevent burning. Gradually add remaining tomatoes (without crushing). Boil gently for 5 minutes. Add bottled lemon juice or citric acid to jars; see acidification instructions on page 9. Add up to 1 teaspoon salt per quart if desired. Fill hot jars immediately with hot tomatoes leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Adjust lids and process jars as described in Table 3 (page 10) or Table 4 (page 11).

**Tomatoes and Okra or Tomatoes and Zucchini**

**Quantity**
An average of 12 pounds of tomatoes and 4 pounds of okra or zucchini are needed for 7 quarts. For 9 pints, an average of 7 pounds of tomatoes and 2½ pounds of okra or zucchini are needed.

**Procedure**
Wash tomatoes and okra or zucchini. Dip tomatoes in boiling water for 30 to 60 seconds or until skins split. Then dip in cold water, slip off skins, remove cores, and quarter. Trim stems from okra and slice into 1-inch pieces or leave whole. Slice or cube zucchini if used. Bring tomatoes to a boil and simmer 10 minutes. Add okra or zucchini and boil gently for 5 minutes. Add up to 1 teaspoon salt to each quart if desired. Fill hot jars with mixture leaving 1-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Adjust lids and process jars as described in Table 3 (page 10) or Table 4 (page 11).
Standard Tomato Ketchup

24 pounds ripe tomatoes
3 cups onions, chopped
¼ tsp ground red pepper (cayenne)
3 cups cider vinegar (5-percent acid)
4 tsp whole cloves
3 sticks cinnamon
1½ tsp whole allspice
3 tbsp celery seeds
1½ cups sugar
¼ cup salt
Spice bag or cheesecloth to hold spices
Yield: 6 to 7 pints

Procedure

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 9.

Wash tomatoes. Dip in boiling water for 30 to 60 seconds or until skins are split. Dip in cold water. Slip off skins and remove cores; quarter tomatoes and place in a large saucepan. Add onions and red pepper; bring to a boil and simmer uncovered for 25 minutes. Combine spices, tie them in the spice bag or cheesecloth, and add to vinegar in a separate 2-quart saucepan. Bring to a boil. Cover, turn off heat, and let stand 20 minutes. Then, remove spice bag and combine vinegar and tomato mixture. Boil for 30 minutes. Put boiled mixture through a food mill or sieve. Return to heat, add sugar and salt, boil gently, and stir frequently until volume is reduced by one-half or until mixture rounds up on spoon without separation. Fill hot pint jars or hot sterilized pint jars leaving ⅛-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Adjust lids and process jars as described in Table 3 (page 10) or Table 4 (page 11).

Country Western Ketchup

24 pounds ripe tomatoes
5 chile peppers, sliced and seeded
¼ cup salt
2 ⅔ cups vinegar (5-percent acid)
1¼ cups sugar
½ tsp ground red pepper (cayenne)
4 tsp paprika
4 tsp whole allspice
4 tsp dry mustard
1 tbsp whole peppercorns
1 tsp mustard seeds
1 tbsp bay leaves
Yield: 6 to 7 pints

Procedure

Follow directions for standard tomato ketchup.
Blender Ketchup

Use electric blender (eliminates need for pressing or sieving)
24 pounds ripe tomatoes
2 pounds onions
1 pound sweet red peppers
1 pound sweet green peppers
9 cups vinegar (5-percent acid)
9 cups sugar
¼ cup canning or pickling salt
3 tbsp dry mustard
1½ tbsp ground red pepper
1½ tsp whole allspice
1½ tbsp whole cloves
Yield: about 9 pints

Procedure

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, see procedure on page 9.

Wash tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Then dip in cold water, slip off skins, core and quarter. Remove seeds from peppers and slice in strips. Peel and quarter onions. Blend tomatoes, peppers, and onions at high speed for 5 seconds in electric blender. Pour into large kettle and heat. Boil gently for 60 minutes stirring frequently. Add vinegar, sugar, salt, and spice bag containing dry mustard, red pepper, and other spices. Continue boiling and stirring until volume is reduced by one-half and ketchup rounds up on a spoon with no separation of liquid and solids. Remove spice bag and fill hot pint jars or hot sterilized pint jars leaving ⅛-inch headspace. Remove air bubbles pressing a rubber spatula between food and side of jar at several locations. Adjust lids and process jars as described in Table 3 (page 10) or Table 4 (page 11).

Standard Tomato Sauce

Quantity

See Table 2 (page 9) for guidelines.

Procedure

Wash, remove stems, and trim off bruised or discolored portions. To prevent sauce from separating, quickly cut about 1 pound of tomatoes into quarters and put directly into saucepan; heat immediately to boiling while crushing. Continue to slowly add and crush freshly cut tomato quarters to the boiling mixture. Make sure the mixture boils constantly and vigorously while adding remaining tomatoes. Simmer 5 minutes after all tomatoes are added. If you are not concerned about sauce separating, simply slice or quarter tomatoes in a large saucepan. Crush, heat, and simmer 5 minutes before pressing. Press either type of heated juice through a sieve or food mill to remove skins and seeds. Heat juice again until boiling; simmer in a large-diameter saucepan until sauce reaches desired consistency. Boil until volume is reduced by about one-third for thin sauce or by one-half for thick sauce. Fill hot jars leaving ¼-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Adjust lids and process as described in Table 3 (page 10) or Table 4 (page 11).
**Spaghetti Sauce without Meat**

30 pounds tomatoes  
1 cup onions, chopped  
5 cloves garlic, minced  
1 cup celery or green peppers, chopped  
1 pound fresh mushrooms, sliced (optional)  
4 1/2 tsp salt  
2 tbsp oregano  
4 tbsp parsley, minced  
2 tsp black pepper  
1/4 cup brown sugar  
1/4 cup vegetable oil  
Yield: about 9 pints

**Procedure**

Do not increase the portion of onions, peppers, or mushrooms. Wash tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Dip in cold water and slip off skins. Remove cores and quarter tomatoes; boil 20 minutes uncovered in large saucepan.

Put through a food mill or sieve. Sauté onions, garlic, celery or peppers, and mushrooms (if desired) in vegetable oil until tender. Combine sautéed vegetables and tomatoes and add remainder of spices, salt, and sugar. Bring to a boil. Simmer, uncovered, until thick enough for serving. At this time, the initial volume will have been reduced by nearly one-half. Stir frequently to avoid burning. Fill hot jars leaving 1-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Adjust lids and process jars as described in Table 4 (page 11).

**Spaghetti Sauce with Meat**

30 pounds tomatoes  
2 1/2 pounds lean ground beef or sausage (any type – pork, beef, or venison)  
5 cloves garlic, minced  
1 cup chopped onions  
1 cup chopped celery or green peppers  
1 pound fresh mushrooms, sliced (optional)  
4 1/2 tbsp salt  
2 tbsp oregano  
4 tbsp minced parsley  
2 tsp black pepper  
1/4 cup brown sugar  
Yield: about 9 pints

**Procedure**

To prepare tomatoes, follow directions for spaghetti sauce without meat. Sauté beef or sausage until brown; drain off fat; add garlic, onion, celery or green pepper, and mushrooms (if desired). Cook until vegetables are tender. Combine with tomato pulp in large saucepan. Add spices, salt, and sugar; bring to boil. Simmer, uncovered, until thick enough for serving. At this time, initial volume will have been reduced by nearly one-half. Stir frequently to avoid burning. Fill hot jars leaving 1-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Adjust lids and process as described in Table 4 (page 11).
**Mexican Tomato Sauce**

2½ to 3 pounds chiles  
18 pounds tomatoes  
3 cups onions, chopped  
1 tbsp salt  
1 tbsp oregano  
½ cup vinegar (5-percent acid)  

Yield: about 7 quarts

**Procedure**

Follow the cautions under Chile Salsa for handling chiles and for removing the chile skins, and follow the canning, processing, and after-processing steps under Chile Salsa (page 3).

Wash tomatoes, dip in boiling water for 30 to 60 seconds or until skins split, dip in cold water, slip off skins, and remove cores. Coarsely chop tomatoes and combine chopped peppers and remaining ingredients in large saucepan. Bring to a boil. Cover. Simmer for 10 minutes. Fill hot jars leaving 1-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Adjust lids and process as described in Table 4 (page 11).

**Sources of Information**


Cucumbers

Quantity
A bushel of cucumbers weighs 48 pounds and yields 16 to 24 quarts. An average of 14 pounds is needed per canner load of 7 quarts; an average of 9 pounds is needed per canner load of 9 pints. This is an average of 2 pounds per quart.

Quality
Select firm cucumbers of the appropriate size, about 2 inches long for gherkins and 5 inches for dills. Use odd-shaped and more mature cucumbers for relishes and bread-and-butter pickles.

Containers, Weights, and Covers for Fermenting Food
Follow the fermentation procedures below to make Fermented Dill Pickles (recipe on page 6). Other cucumber pickle recipes do not involve fermentation.

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. Many restaurants receive foods and ingredients in 5-gallon plastic pails, which make ideal fermentation containers. Other 1- to 3-gallon non-food-grade containers may be used if lined inside with a clean, food-grade plastic bag. Caution: Do not use garbage bags or trash liners.

Cucumbers must be kept 1 to 2 inches under the brine while fermenting. To do so, after adding prepared cucumbers and brine, insert a dinner plate or glass pie plate just small enough to fit inside the fermentation container. The plate must be slightly smaller than the container opening yet large enough to cover most of the cucumbers.

• To keep the plate under the brine, weigh it down with 2 to 3 sealed quart jars filled with water.
• Alternatively, weigh down the plate using a large, clean, sealed food-grade plastic bag containing 3 quarts clean water and 4½ tablespoons canning or pickling salt.

Cover the container opening above the jars or plastic bag serving as the weight with a heavy, clean bath towel to prevent contamination from molds and insects during fermentation. Caution: The fermentation container, plate, and jars should be washed in hot, soapy water and rinsed well with very hot water before use.

Preparation
Wash cucumbers. Cut ¼ inch off blossom end and discard.

Variation using pickling lime for firmer pickles with some recipes as indicated: If you prefer especially firm pickles, mix 1 cup pickling lime and ½ cup non-iodized salt to 1 gallon of water in a 2- to 3-gallon crock container. Caution: Avoid inhaling the lime dust while mixing
the lime-water solution. Cut cucumbers in slices or strips and soak in lime water for 12 to 24 hours. Remove from lime solution, rinse, and re-soak for 1 hour in fresh cold water. Repeat rinsing and soaking steps in fresh water two more times. Handle carefully as slices or strips will be brittle. Drain well. Caution: To ensure they are safe to eat, cucumber slices or strips must be soaked and rinsed thoroughly three times.

Canning Procedure

Wash jars. For products processed only 10 minutes, use sterilized jars. To sterilize empty jars, put them open side up on a rack in a boiling-water canner. Fill the canner and jars with hot (not boiling) water to 1 inch above tops of jars. Boil jars for 15 minutes. Using a jar lifter or plastic-covered tongs, carefully remove and drain hot, sterilized jars one at a time and fill immediately with food.

Prepare lids according to manufacturer’s instructions. Fill hot jars or hot sterilized jars with product. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge 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 method when indicated as an option).

- To process in a boiling-water canner, fill canner half way with water and preheat to 180°F Fahrenheit. Load filled jars into canner rack and lower with handles or load one jar at a time with a jar lifter onto rack in canner. Add boiling water, if needed, to a level of 1 inch above jars. Cover the canner. When water boils vigorously, lower heat to maintain a gentle boil, and process jars for the appropriate time listed in Table 1 (page 5).
To process using low-temperature pasteurization treatment, place jars in a canner filled halfway with warm (120°F to 140°F Fahrenheit) water. Add hot water to a level 1 inch above jars. Heat the water enough to maintain 180°F to 185°F Fahrenheit water temperature for 30 minutes. Use a candy or jelly thermometer to be certain the water temperature is at least 180°F Fahrenheit during the entire 30 minutes. Temperatures higher than 185°F Fahrenheit may cause unnecessary softening of pickles. This treatment results in better product texture but must be carefully managed to avoid possible spoilage. Caution: Use this method only when the recipe indicates this option.

Table 1. Recommended processing times for pickles in a boiling-water canner at designated altitudes

<table>
<thead>
<tr>
<th>Product</th>
<th>Style of pack</th>
<th>Jar size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>6,001-8,000 feet (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fermented dill pickles</td>
<td>Raw</td>
<td>Pints</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarts</td>
<td>20</td>
<td>25</td>
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<tr>
<td>Quick fresh-pack dills</td>
<td>Raw</td>
<td>Pints</td>
<td>15</td>
<td>20</td>
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<td></td>
<td></td>
<td>Quarts</td>
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<td>25</td>
</tr>
<tr>
<td>Quick sweet</td>
<td>Raw</td>
<td>Pints</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarts</td>
<td>20</td>
<td>25</td>
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<td></td>
<td>Hot</td>
<td>Pints or quarts</td>
<td>10</td>
<td>15</td>
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<tr>
<td>Sweet gherkin</td>
<td>Raw</td>
<td>Pints</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Bread and butter</td>
<td>Hot</td>
<td>Pints or quarts</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Pickle relish</td>
<td>Hot</td>
<td>Half-pints or pints</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Reduced-sodium sweet pickles</td>
<td>Hot</td>
<td>Pints</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

After Processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Air cool jars 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within two to three months. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Pickles are best if eaten within one year.
**Fermented Dill Pickles**

*Use the following quantities for each gallon capacity of your container:*

- 4 pounds 4-inch pickling cucumbers
- 2 tbsp dill seed or 4 to 5 heads fresh or dry dill weed
- ½ cup salt
- ¼ cup vinegar (5-percent acid)
- 8 cups water

One or more of the following ingredients, if desired:

- 2 cloves garlic (optional)
- 2 dried red peppers (optional)
- 2 tsp whole mixed pickling spices (optional)

**Procedure**

Wash cucumbers. Cut ½ inch off blossom end and discard but leave ¼ inch of cucumber stem attached. Place half of dill and spices on bottom of a clean, suitable container as described on page 3. Add cucumbers, remaining dill, and spices. In a separate large bowl or pan, dissolve salt in vinegar and water and pour over cucumbers. Add suitable cover and weight as described on page 3. Store where temperature is between 70° and 75° Fahrenheit for about 3 to 4 weeks while fermenting. Temperatures between 55° and 65° Fahrenheit are acceptable, but fermentation will take 5 to 6 weeks. Avoid temperatures above 80° Fahrenheit 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 or slimy or if they 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 coffee filters to reduce cloudiness, if desired. Fill hot jars with pickles and hot brine leaving ½-inch headspace. Remove air bubbles by running a rubber spatula through the filled jars and between the food and side of the jar in several places. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars in a boiling-water canner. Process jars as listed in Table 1 (page 5) or use the low-temperature pasteurization treatment as described on page 5.
Quick Fresh-Pack Dill Pickles

8 pounds 3- to 5-inch pickling cucumbers
2 gallons water
1¼ cups canning or pickling salt
6 cups vinegar (5-percent acid)
¼ cup sugar
2 quarts water
2 tbsp whole mixed pickling spice
5 tbsp whole mustard seed (2 tsp per pint jar)
21 heads fresh dill (3 heads per pint jar) or 7 tbsp dill seed (1 tbsp per pint)
Spice bag or cheesecloth
Yield: about 7 to 9 pints

Procedure

Wash cucumbers. Cut ¼ inch off blossom end but leave ¼ inch of cucumber stem attached. Dissolve ¾ cup salt in 2 gallons water. Pour brine water over cucumbers and let stand 12 hours. Drain. Combine vinegar, ½ cup salt, sugar, and 2 quarts water. Tie spices in a spice bag or cheesecloth and add to vinegar mixture. Heat to boiling. Fill hot jars with pickles. Add 2 teaspoons mustard seed and 3 heads fresh dill per quart. Cover with boiling liquid leaving ½-inch head space. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 1 (page 5) or use the low-temperature pasteurization treatment as described on page 5.

Quick Sweet Pickles

8 pounds 3- to 4-inch pickling cucumbers
⅓ cup canning or pickling salt
4½ cups sugar
3½ cups vinegar (5-percent acid)
2 tsp celery seed
1 tbsp whole allspice
2 tbsp mustard seed
1 cup pickling lime (optional)
Yield: about 7 pints

Procedure

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars see procedure on page 4.

Wash cucumbers. Cut ¼ inch off blossom end and discard but leave ¼ inch of cucumber stem attached. Cut into strips or slices. Place in bowl and sprinkle with ½ cup salt. Cover with 2 inches
crushed or cubed ice. Refrigerate 3 to 4 hours. Add more ice as needed. Drain well. For firmer pickles, use the pickling lime treatment described on page 3.

Combine sugar, vinegar, celery seed, allspice, and mustard seed in a 6-quart pot. Heat to boiling.

- To make a hot pack, add cucumbers and heat slowly until vinegar mixture returns to boil. Stir occasionally to make sure vinegar mixture heats evenly. Fill hot jars or hot sterilized jars with cucumbers and add hot pickling syrup leaving ½-inch headspace.
- To make a raw pack, fill hot jars with cucumbers and add hot pickling syrup leaving ½-inch headspace.

Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 1 (page 5) or use the low-temperature pasteurization treatment as described on page 5.

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

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**Sweet Gherkins**

7 pounds cucumbers (2 inches or shorter in length)

½ cup canning or pickling salt

8 cups sugar

6 cups vinegar (5-percent acid)

¾ tsp turmeric

2 tsp celery seed

2 tsp whole mixed pickling spice

2 cinnamon sticks

½ tsp fennel (optional)

2 tsp vanilla (optional)

Yield: about 6 to 7 pints

**Procedure**

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars see procedure on page 4.

Wash cucumbers. Cut ⅛ inch off blossom end and discard but leave ¼ inch of cucumber stem attached. Place cucumbers in large container and cover with boiling water. Six to 8 hours later and again 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 other spices. Pour over cucumbers. Six to 8 hours later, drain and save the pickling syrup. Add another 2 cups each sugar and vinegar and reheat syrup 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. Six to 8 hours later, drain and save pickling syrup. Add 1 cup sugar and 2 tsp vanilla to syrup and heat to boiling. Fill hot pint jars or hot sterilized pint jars with pickles and cover with hot syrup leaving ½-inch headspace.

Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 1 (page 5) or use the low-temperature pasteurization treatment as described on page 5.
Bread-and-Butter Pickles

6 pounds 4- to 5-inch pickling cucumbers
8 cups onion, thinly sliced (about 3 pounds)
½ cup canning or pickling salt
4 cups vinegar (5-percent acid)
4½ cups sugar
2 tbsp mustard seed
1½ tbsp celery seed
1 tbsp ground turmeric
1 cup pickling lime (optional)
Yield: about 8 pints

Procedure

Wash cucumbers. Cut ¼ inch off blossom end and cut into slices approximately ¼-inch thick. Combine cucumber and onion slices in a large bowl. Add salt. Cover with 2 inches crushed or cubed ice. Refrigerate for 3 to 4 hours, adding more ice as needed. For firmer pickles, use the pickling lime treatment described on page 3.

Mix sugar, vinegar, and remaining ingredients in a large pot and heat to boiling. Boil 10 minutes. Fill hot pint jars with slices and cooking syrup leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 1 (page 5) or use the low-temperature pasteurization treatment as described on page 5.

Variation using squash: Substitute slender zucchini or yellow squash (1½ to 2 inches in diameter) for cucumbers.
Pickle Relish
3 quarts fresh chopped cucumbers
3 cups chopped sweet green peppers
3 cups chopped sweet red peppers
1 cup chopped onion
¾ cup canning or pickling salt
8 cups water
4 cups ice
2 cups sugar
4 tsp each of mustard seed, turmeric, whole allspice, and whole cloves
6 cups white vinegar (5-percent acid)
Spice bag or cheesecloth
Yield: 8 to 9 pints

Procedure
Combine water, salt, ice, cucumbers, peppers, and onions and let stand 4 hours. Drain and cover vegetables with fresh ice water for another hour. Drain again. Mix sugar and vinegar in a saucepan. Tie spices in a spice bag or cheesecloth and add to vinegar and sugar mixture. Heat to boiling and pour mixture over vegetables. Cover and refrigerate 24 hours. Heat mixture to boiling and fill hot jars with hot mixture leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 1 (page 5).

Reduced-Sodium Sliced Sweet Pickles
4 pounds 3- to 4-inch pickling cucumbers
Brining solution:
- 4 cups distilled white vinegar (5-percent acid)
- 1 tbsp canning or pickling salt
- 1 tbsp mustard seed
- ½ cup sugar

Canning syrup:
- 1⅔ cups white vinegar (5-percent acid)
- 3 cups sugar
- 1 tbsp whole allspice
- 2¼ tsp celery seed

Yield: about 4 to 5 pints

Procedure
Wash cucumbers. Cut ¼ inch off blossom end and discard but leave ¼ inch of cucumber stem attached. Cut cucumbers into ¼-inch slices. In a large kettle, mix ingredients for brining solution. Add the cucumber slices, cover, and simmer until the cucumbers change color from bright to dull green (about 6 to 8 minutes). In a separate pan, mix ingredients for canning syrup and heat to boiling. Drain cucumber slices. Fill hot jars with slices and cover with hot canning syrup leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 1 (page 5).
Peppers

Types of Peppers and Pickled Products
- Sweet pickled – made with banana, bell, Hungarian, or pimiento peppers
- Hot pickled – made with chile or jalapeño peppers
- Pickled pepper relish – generally made with sweet red, yellow, or green peppers

Quantity
An average of 9 pounds is needed per canner load of 9 pints. A bushel weighs 25 pounds and yields 20 to 30 pints, an average of 1 pound per pint.

Quality
Select firm yellow, green, or red peppers free of disease and insect damage.

Handling and Preparation
Select your favorite pepper(s). Caution: If you choose hot peppers, wear rubber gloves while handling them or wash hands thoroughly with soap and water before touching your face. Small peppers may be left whole, and jalapeños do not have to be peeled. Wash and quarter large peppers and remove cores and seeds. Slit each pepper along its side to allow steam to escape. Prepare peppers for peeling by placing them either in an oven at 400° Fahrenheit or under a broiler for 6 to 8 minutes until skins blister. Cool peppers in water and peel or slip skins off. Flatten small whole peppers.
Canning Procedure

Wash jars. **For products processed only 10 minutes, use sterilized jars. To sterilize empty jars** see procedure on page 4. Prepare lids according to manufacturer’s instructions. Fill hot jars or hot sterilized jars with product. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars in a boiling-water canner.

Process

To process in a boiling-water canner, preheat canner filled halfway with water to 180° Fahrenheit for hot packs and 140° Fahrenheit for raw packs. Load filled jars onto the canner rack and lower rack with handles or load one jar at a time with a jar lifter onto rack in the canner. Add water (boiling water for hot packs and hot water for raw packs), if needed, to a level of 1 inch above jars and add canner cover. When water boils vigorously, lower heat to maintain a gentle boil and process jars as listed in Table 2 (below).

**Table 2. Recommended processing times for pickled peppers in a boiling-water canner at designated altitudes**

<table>
<thead>
<tr>
<th>Product</th>
<th>Style of pack</th>
<th>Jar size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>Above 6,000 feet (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickled bell peppers</td>
<td>Hot</td>
<td>Half-pints or pints</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Pickled hot peppers</td>
<td>Raw</td>
<td>Half-pints or pints</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Marinated peppers</td>
<td>Raw</td>
<td>Half-pints or pints</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Pickled pepper-onion relish</td>
<td>Hot</td>
<td>Half-pints or pints</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Pickled corn-pepper relish</td>
<td>Hot</td>
<td>Half-pints or pints</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Piccalilli</td>
<td>Hot</td>
<td>Half-pints or pints</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

After Processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten bands. Air-cool jars for 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within two to three months. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Pickled pepper products are best if eaten within one year.
Pickled Bell Peppers

7 pounds firm bell peppers  
3½ cups sugar  
3 cups vinegar (5-percent acid)  
3 cups water  
9 cloves garlic  
4½ tsp canning or pickling salt  
Yield: about 9 pints

Procedure

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars see procedure on page 4.

Select and wash your favorite sweet peppers, cut into quarters, remove cores and seeds, and cut away any blemishes. Slice peppers in strips. Combine vinegar, water, and sugar and boil for 1 minute. Add peppers and bring to a boil. Place ½ clove garlic and ¼ tsp salt in each hot half-pint jar or hot sterilized half-pint jar or double the amounts for pint jars. Add pepper strips and cover with hot vinegar mixture leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 2 (page 12).

Pickled Hot Peppers

4 pounds hot, long red, green, or yellow peppers – use Hungarian, banana, chile, or jalapeño peppers  
3 pounds sweet red and green peppers, mixed  
5 cups vinegar (5-percent acid)  
1 cup water  
4 tsp canning or pickling salt  
2 tbsp sugar  
2 cloves garlic  
Yield: about 9 pints

Procedure

Wash peppers. Peel as described in Handling and Preparation on page 10. If small peppers are left whole, cut 2 to 4 slits in each. Flatten small peppers and quarter large peppers. Fill hot jars leaving ½-inch headspace. Combine and heat other ingredients to boiling and simmer 10 minutes. Remove garlic. Pour pickling solution over peppers leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 2 (page 12).
Marinated Peppers

- 4 pounds firm peppers
- 1 cup bottled lemon juice
- 2 cups white vinegar (5-percent acid)
- 1 tbsp oregano leaves
- 1 cup olive or other vegetable oil
- ½ cup onions, chopped
- 2 cloves garlic, quartered (optional)
- 2 tbsp prepared horseradish (optional)

Yield: about 9 half-pints

Procedure

Select and wash your favorite sweet or hot peppers. Peel as described in Handling and Preparation on page 10. Mix all remaining ingredients in a saucepan and heat to boiling. Place ¼ garlic clove, if desired, and ¼ tsp salt in each half-pint or ½ tsp salt in each pint. Fill hot jars with peppers and pour hot, well-mixed oil/pickling solution over peppers leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 2 (page 12).

Pickled Pepper-Onion Relish

- 6 cups onion, finely chopped
- 3 cups sweet red peppers, finely chopped
- 3 cups green peppers, finely chopped
- 1½ cups sugar
- 6 cups vinegar (5-percent), preferably white distilled
- 2 tbsp canning or pickling salt

Yield: about 9 half-pints

Procedure

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars see procedure on page 4.

Wash and chop vegetables. Combine all ingredients in a large kettle and heat to boiling. Boil gently until mixture thickens and volume is reduced by one-half (about 30 to 35 minutes). Fill
**Pickled Corn-Pepper Relish**

10 cups fresh whole-kernel corn (16 to 20 medium-sized ears) or six 10-ounce packages of frozen corn
2 ½ cups sweet red peppers, diced
2 ½ cups sweet green peppers, diced
2 ½ cups celery, chopped
1 ¼ cups small onions, diced
1 ¾ cups sugar
5 cups vinegar (5-percent acid)
2 ½ tbsp canning or pickling salt
2 ½ tsp celery seed
2 ½ tbsp dry mustard
1 ¼ tsp turmeric
Yield: about 9 pints

**Procedure**

If starting with corn on the cob, boil ears for 6 to 7 minutes, dip in cold water, and cut kernels from cob. Or use six 10-ounce packages of frozen corn. Combine peppers, celery, onions, sugar, vinegar, salt, and celery seed in a saucepan. Bring to a boil and simmer 6 to 7 minutes stirring occasionally. Mix mustard and turmeric in ½ cup of simmered mixture. Add this mixture and corn to the hot mixture. Simmer another 6 to 7 minutes. Fill hot jars with hot mixture leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 2 (page 12).

**Piccalilli**

6 cups green tomatoes, chopped
1 ½ cups sweet red peppers, chopped
1 ½ cups sweet green peppers, chopped
2 ¼ cups onions, chopped
7 ½ cups cabbage, chopped
½ cup canning or pickling salt
4 ½ cups vinegar (5-percent acid)
3 cups brown sugar
3 tbsp whole mixed pickling spice
Clean white cloth to drain vegetables
Spice bag or cheesecloth to hold spices
Yield: about 9 half-pints

**Procedure**

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars see procedure on page 4.

Wash, chop, and combine vegetables with ½ cup salt. Cover with hot water and let stand for 12 hours. Drain and press in a clean white cloth to remove all possible liquid. Tie spices loosely in spice bag or cheesecloth and add to combined vinegar and brown sugar. Add vegetables, bring to a boil, and boil gently for 30 minutes or until the volume of the mixture is reduced by one-half. Remove spice bag. Fill hot jars or hot sterilized jars with hot mixture leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 2 (page 12).
Pickled Vegetables

Canning Procedure

Wash jars. **For products processed only 10 minutes, use sterilized jars. To sterilize empty jars** see procedure on page 4. Prepare lids according to manufacturer’s instructions. Fill hot jars or hot sterilized jars with product. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars in a boiling-water canner.

**Process**

To process in a boiling-water canner, fill canner half way with water, and preheat to 180° Fahrenheit for hot packs or 140° Fahrenheit for raw packs. Load filled jars into canner rack and lower with handles or load one jar at a time with a jar lifter onto rack in canner. Add boiling water, if needed, to a level of 1 inch above jars. Cover the canner. When water boils vigorously, lower heat to maintain a gentle boil, and process jars for the appropriate time listed in Table 3 (page 17).
Table 3. Recommended processing times for pickled vegetables in a boiling-water canner at designated altitudes

<table>
<thead>
<tr>
<th>Pickled product</th>
<th>Style of pack</th>
<th>Jar size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>Above 6,000 feet (minutes)</th>
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</thead>
<tbody>
<tr>
<td>Dilled beans</td>
<td>Raw</td>
<td>Pints</td>
<td>10</td>
<td>15</td>
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<tr>
<td>Three-bean salad</td>
<td>Hot</td>
<td>Half-pints or pints</td>
<td>20</td>
<td>25</td>
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<tr>
<td>Beets</td>
<td>Hot</td>
<td>Pints or quarts</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Cauliflower or Brussels sprouts</td>
<td>Hot</td>
<td>Half-pints or pints</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Sweet green tomatoes</td>
<td>Hot</td>
<td>Pints Quarts</td>
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<td>20</td>
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<td>Green tomato relish</td>
<td>Hot</td>
<td>Pints</td>
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<td>Mixed vegetables</td>
<td>Hot</td>
<td>Pints Quarts</td>
<td>10</td>
<td>15</td>
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<tr>
<td>Bread-and-butter zucchini</td>
<td>Hot</td>
<td>Pints or quarts</td>
<td>15</td>
<td>20</td>
</tr>
</tbody>
</table>

After Processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Air cool jars 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within two to three months. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Pickled vegetables are best if eaten within one year.

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-percent acid)
4 cups water
1 tsp hot red pepper flakes (optional)
Yield: about 8 pints

Procedure

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars see procedure on page 4.

Wash and trim ends from beans and cut to 4-inch lengths. In each hot pint or hot sterilized pint jar, place 1 to 2 dill heads and, if desired, 1 clove of garlic. Place whole beans upright in hot jars or hot sterilized jars leaving ½-inch headspace. Trim beans to ensure proper fit if necessary. Combine salt, vinegar, water, and, if desired, pepper flakes. Bring to a boil. Pour hot solution over beans leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 3 (above).
Pickled Three-Bean Salad

1½ cups cut and blanched green or yellow beans (prepared as below)
1½ cups canned, drained 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 (about 1½ medium stalks)
½ cup sliced green pepper (about ½ medium pepper)
½ cup white vinegar (5-percent acid)
¼ cup bottled lemon juice
¾ cup sugar
¼ cup oil
½ tsp 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 pieces 1 to 2 inches long. Blanch for 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. Refrigerate and marinate for 12 to 14 hours. Then heat entire mixture to a boil. Fill hot jars with solids. Add hot liquid leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 3 (page 17).

Pickled Beets

7 pounds beets, 2 to 2½ inches in diameter
4 cups vinegar (5-percent acid)
1½ tsp salt canning or pickling salt
2 cups sugar
2 cups water
2 cinnamon sticks
12 whole cloves
4 to 6 onions, 2 to 2½ inches in diameter (optional)
Spice bag or cheesecloth to hold spices

Yield: about 8 pints

Procedure

Trim 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 30 to 35 minutes). Caution: Drain and discard liquid. Cool beets. Trim off roots and stems and slip off skins. Cut into ¼-inch slices. Peel and thinly slice onions, if desired. Combine vinegar, salt, sugar, and fresh water. Tie spices in spice bag or cheesecloth and add to vinegar mixture. Bring to a boil. Add beets and onions and simmer 5 minutes. Remove spice bag. Fill hot jars with beets and onions leaving ½-inch headspace. Add hot vinegar solution leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 3 (page 17).

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.
**Pickled Cauliflower or Brussels Sprouts**

12 cups of 1- to 2-inch cauliflower flowerets or small Brussels sprouts  
4 cups white vinegar (5-percent acid)  
2 cups sugar  
2 cups onions, thinly sliced  
1 cup sweet red peppers, diced  
2 tbsp mustard seed  
1 tbsp celery seed  
1 tsp turmeric  
1 tsp hot red pepper flakes  
Yield: about 9 half-pints

**Procedure**

Wash cauliflower flowerets or Brussels sprouts (remove stems and blemished outer leaves) and boil in salt water (4 tsp canning salt per gallon of water) for 3 minutes for cauliflower and 4 minutes for Brussels sprouts. Drain and cool. Combine vinegar, sugar, onion, diced red pepper, and spices in large saucepan. Bring to a boil and simmer for 5 minutes. Distribute onion slices and diced pepper among hot jars. Fill with cauliflower or Brussels sprouts and pickling solution leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 3 (page 17).

**Pickled Sweet Green Tomatoes**

10 to 11 pounds green tomatoes (16 cups sliced)  
2 cups onions, sliced  
¼ cup canning or pickling salt  
4 cups vinegar (5-percent acid)  
3 cups brown sugar  
1 tbsp mustard seed  
1 tbsp allspice  
1 tbsp celery seed  
1 tbsp whole cloves  
Spice bag or cheesecloth to hold spices  
Yield: about 9 pints

**Procedure**

Wash and slice tomatoes and onions. Place in bowl sprinkle with ¼ cup salt and let stand 4 to 6 hours. Drain. Heat vinegar, add sugar, and stir until dissolved. Tie mustard seed, allspice, celery seed, and cloves in the spice bag or cheesecloth. Add to vinegar mixture along with tomatoes and onions. Bring to a boil and simmer 30 minutes stirring as needed to prevent burning. Tomatoes should be tender and transparent when properly cooked.
Remove spice bag. Fill hot jars and cover with hot pickling solution leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 3 (page 17).

**Pickled Green Tomato Relish**

- 10 pounds small, hard green tomatoes
- 1½ pounds red bell peppers
- 1½ pounds green bell peppers
- 2 pounds onions
- ½ cup pickling or canning salt
- 1 quart water
- 4 cups sugar
- 1 quart vinegar (5-percent acid)
- ½ cup prepared yellow mustard
- 2 tbsp cornstarch

Yield: about 7 to 9 pints

**Procedure**

*For products processed only 10 minutes, use sterilized jars. To sterilize empty jars* see procedure on page 4.

Wash and coarsely grate or finely chop tomatoes, peppers, and onions. Dissolve salt in water and pour over vegetables in a large kettle. Heat to boiling and simmer 5 minutes. Drain in colander. Return vegetables to kettle. Add sugar, vinegar, mustard, and cornstarch and mix. Heat to boiling and simmer 5 minutes. Fill hot pint jars or hot sterilized pint jars with hot relish leaving ½-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at
Pickled Mixed Vegetables

4 pounds pickling cucumbers, 4 to 5 inches long, cut into 1-inch slices (with $\frac{1}{16}$ inch cut off and discarded from the blossom ends)
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-percent acid)
¼ cup prepared mustard
½ cup canning or pickling salt
3½ cups sugar
3 tbsp celery seed
2 tbsp mustard seed
½ tsp whole cloves
½ tsp ground turmeric

Yield: about 10 pints

Procedure

For products processed only 10 minutes, use sterilized jars. To sterilize empty jars see procedure on page 4.

Wash and prepare vegetables. Combine vegetables, cover with 2 inches of cubed or crushed ice, and refrigerate 3 to 4 hours. In an 8-quart kettle, combine vinegar and mustard and mix well. Add salt, sugar, celery seed, mustard seed, cloves, and turmeric. Bring to a boil. Drain vegetables and add them to hot pickling solution. Cover and slowly bring to a boil. Drain vegetables but save pickling solution. Fill vegetables in hot pint jars or hot sterilized pint jars or hot quart jars leaving $\frac{1}{2}$-inch headspace. Add pickling solution leaving $\frac{1}{2}$-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 3 (page 17).

Pickled Bread-and-Butter Zucchini

16 cups fresh zucchini, sliced
4 cups onions, thinly sliced
$\frac{1}{2}$ cup canning or pickling salt
4 cups white vinegar (5-percent acid)
2 cups sugar
4 tbsp mustard seed
2 tbsp celery seed
2 tsp ground turmeric

Yield: about 8-9 pints

Procedure

Cover zucchini and onion slices with 1 inch of cool water and salt. Let stand 2 hours and drain thoroughly. Combine vinegar, sugar, and spices. Bring to a boil and add zucchini and onions. Simmer 5 minutes and fill hot jars with mixture and pickling solution leaving $\frac{1}{2}$-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. Add lids and tighten screw bands. Process jars as listed in Table 3 (page 17).
Sauerkraut

Quantity

A 50-pound bag of fresh cabbage makes 16 to 20 quarts of kraut.

Quality

To make good kraut, use disease-free, firm, sweet, mature heads of cabbage from mid- and late- season crops. Prepare and start the fermentation one to two days after harvesting the cabbage.

Containers, Weights, and Covers for Fermenting Food

A 1-gallon container holds 5 pounds of fresh cabbage, and a 5-gallon container holds 25 pounds. Glass and food-grade plastic containers are excellent substitutes for stone crocks. Many restaurants receive foods and ingredients in 5-gallon plastic pails, which make ideal fermentation containers. Other 1- to 3-gallon non-food-grade containers may be used if lined inside with a clean, food-grade plastic bag. Caution: Do not use garbage bags or trash liners.

Cabbage must be kept 1 to 2 inches under the brine while fermenting. To do so, after adding cabbage and brine, insert a dinner plate or glass pie plate just small enough to fit inside the fermentation container. The plate must be slightly smaller than the container opening yet large enough to cover most of the shredded cabbage.

- To keep the plate under the brine, weigh it down with 2 to 3 sealed quart jars filled with water.
- Alternatively, weigh down the plate using a large, clean, sealed food-grade plastic bag containing 3 quarts clean water and 4½ tablespoons canning or pickling salt.

Cover the container opening above the jars or plastic bag serving as the weight with a heavy, clean bath towel to prevent contamination from molds and insects during fermentation. Caution: The fermentation container, plate, and jars should be washed in hot, soapy water and rinsed well with very hot water before use.

Preparation

Work with about 5 pounds of fresh cabbage at a time. Discard outer leaves. Rinse heads with cold water and drain. Cut heads in quarters and remove cores, trim, and discard damaged tissue. Shred or slice cabbage to a thickness of 1/16 to 1/8 inch.

Filling and Packing Containers

Place 5 pounds shredded cabbage in the fermentation container. Add 3 tablespoons of canning or pickling salt and mix thoroughly. Using clean hands, mix until the level of natural juices drawn from the cabbage covers the surface. Continue preparing and packing 5-pound quantities of shredded cabbage and 3 tablespoons of salt at a time until finished or until the fermentation container is filled within 3 to 4 inches from its top. Add the plate and weight (described on page 22) to keep the cabbage under the brine solution. Cover the cabbage-filled container with a heavy, clean bath towel.

Fermentation Temperature, Time, and Management

Store the container at 70° to 75° Fahrenheit while fermenting. At these temperatures, kraut will be fully fermented in about 3 to 4 weeks; at 60° to 65° Fahrenheit fermentation may take 6 weeks. Below 60° Fahrenheit kraut may not ferment. Above 75° Fahrenheit kraut may become soft and spoil.

If you weigh down the cabbage with a brine-filled bag, do not disturb the crock until the normal fermentation is completed (when bubbling ceases). If you use jars as weight, you must check the kraut two to three times each week and remove scum if it forms. Fully fermented kraut may be kept tightly covered in the refrigerator for several months or it may be canned or frozen.
Freezing Procedure

For optimal quality, freeze no more than 2 to 3 pounds of food per cubic foot of freezer capacity per day. Larger volumes can slow the process of freezing, and slower freezing lowers the quality of the food. Bring kraut and liquid slowly to a boil in a large kettle stirring frequently. Remove from heat. Cool. Fill pint- or quart-size freezer bags to a level of 3 to 4 inches from the top and squeeze out air. Seal, label, and freeze. Before freezing, bags may be inserted into reusable, rigid plastic freezer containers for added protection against punctures and leakage.

Canning Procedure

Wash jars. Prepare lids according to manufacturer’s instructions.

- To make a hot pack, bring kraut and liquid slowly to a boil in a large kettle stirring frequently. Remove from heat and fill hot jars rather firmly with kraut and juices leaving ½-inch headspace.
- To make a raw pack, fill hot jars firmly with unheated kraut and cover with juices leaving ½-inch headspace.

Remove air bubbles by running a rubber spatula through the filled jars and between the food and side of the jar in several places. Wipe rims of jars with a clean, dampened paper towel. Adjust lids and process jars in a boiling-water canner.

To process in a boiling-water canner, fill canner halfway with water and preheat to 180° Fahrenheit for hot packs and 140° Fahrenheit for raw packs. Load filled jars into the canner rack and lower with handles or load one jar at a time with a jar lifter onto rack in canner. Add boiling water, if needed, to a level of 1 inch above jars. Cover the canner. When the water boils vigorously, lower the heat to maintain a gentle boil and process for the appropriate time listed in Table 4 (page 24).

Table 4. Recommended processing times for sauerkraut in a boiling-water canner at designated altitudes

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar size</th>
<th>3,001-6,000 feet (minutes)</th>
<th>Above 6,000 feet (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot</td>
<td>Pints</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Quarts</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Raw</td>
<td>Pints</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Quarts</td>
<td>35</td>
<td>40</td>
</tr>
</tbody>
</table>

After Processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Air cool jars 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within two to three months. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Kraut is best if eaten within one year.

Sources of Information


Vegetables

Snap Beans

Quantity
An average of 14 pounds is needed per canner load of 7 quarts; an average of 9 pounds is needed per canner load of 9 pints. A bushel weighs 30 pounds and yields 12 to 20 quarts. An average of ¾ pound makes 1 pint of frozen beans.

Quality
Select filled but tender, crisp pods. Remove and discard diseased and discolored pods.

Preparation
Wash beans, snip off and discard ends, and remove strings, if appropriate. Leave beans whole or cut or snap them into 1-inch pieces. Wash and drain prepared pieces.

Freezing Procedure
For optimal quality, freeze no more than 2 to 3 pounds of food per cubic foot of freezer capacity per day. Larger volumes can slow the process of freezing, and slower freezing lowers the quality of the food. Blanch 6 cups raw, prepared beans at one time. Place each batch in 1 gallon boiling water. Blanch small pieces for three minutes and large pieces for four minutes after the water returns to a boil. Cool beans quickly in several changes of cold water and drain in a colander. Fill pint- or quart-size freezer bags to a level of 3 to 4 inches from the top and squeeze out air. Seal, label, and freeze. Before freezing, bags may be inserted into reusable, rigid plastic freezer containers for added protection against punctures and freezer burn.

Canning Procedure
Wash jars. If desired, add 1 teaspoon canning or pickling salt per quart.

- For hot packs, cover prepared beans in a large pot with boiling water and boil for five minutes. Fill hot jars with beans and cooking liquid leaving 1-inch headspace.
- For raw packs, fill hot jars tightly with prepared beans leaving 1-inch headspace. Add boiling water over beans leaving 1-inch headspace.

Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. New two-piece canning lids prepared according to manufacturer’s directions should be used. Add lids, tighten screw bands, and process in a pressure canner.
Process

To process in a pressure canner, place jar rack, 2 inches of water, and filled jars in canner. Fasten lid and heat canner on high setting. Allow steam to escape in a fully steady stream for 10 minutes. Add weighted gauge or close petcock to pressurize the canner. Start timing the process when the desired pressure is reached. Regulate heat to maintain a uniform pressure and process jars for the time given in Table 1 (below). Do not allow the pressure to drop below the recommended pressure for your altitude.

When processing is complete, remove the canner from heat. Air-cool the canner until fully depressurized. Slowly remove weighted gauge or open petcock, wait two more minutes, and then carefully remove canner lid.

Table 1. Recommended processing times and pressures for snap beans in a pressure canner at designated altitudes

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar size</th>
<th>Process time (minutes)</th>
<th>2,001-4,000 feet (lbs)</th>
<th>4,001-6,000 feet (lbs)</th>
<th>6,001-8,000 feet (lbs)</th>
<th>Above 1,000 feet (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot or raw</td>
<td>Pints</td>
<td>20</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Quarts</td>
<td>25</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
</tbody>
</table>

* Reminder: check your dial pressure gauge annually. For more information, contact your local UW CES office.

After Processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten bands. Air-cool jars for 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within five days. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately.
Beets

Quantity
An average of 21 pounds (without tops) is needed per canner load of 7 quarts; an average of 13½ pounds is needed per canner load of 9 pints. A bushel (without tops) weighs 52 pounds and yields 15 to 20 quarts, an average of 3 pounds per quart.

Quality
Beets with a diameter of 1 to 2 inches are preferred for whole packs. Beets larger than 3 inches in diameter are often fibrous.

Preparation
Trim off beet tops leaving an inch of stem and roots to reduce bleeding of color. Scrub well. Cover with boiling water. Boil until skins slip off easily, about 15-25 minutes depending on size. Cool, remove skins, and trim off stems and roots. Leave baby beets whole. Cut medium or large beets into ½-inch cubes or slices. Halve or quarter very large slices.

Freezing Procedure
For optimal quality, freeze no more than 2 to 3 pounds of food per cubic foot of freezer capacity per day. Larger volumes can slow the process of freezing, and slower freezing lowers the quality of the food. Fill pint- or quart-size freezer bags to a level of 3 to 4 inches from the top and squeeze out air. Seal, label, and freeze. Before freezing, bags may be inserted into reusable, rigid plastic freezer containers for added protection against punctures and freezer burn.

Canning Procedures
Wash jars. If desired, add 1 teaspoon canning or pickling salt per quart. Fill hot jars with hot beets and fresh hot water leaving 1-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. New two-piece canning lids prepared according to manufacturer’s directions should be used. Add lids, tighten screw bands, and process in a pressure canner.

Process
To process in a pressure canner, place jar rack, 2 inches of water, and filled jars in canner. Fasten lid and heat canner on high setting. Allow steam to escape in a fully steady stream for 10 minutes. Add weighted gauge or close petcock to pressurize the canner. Start timing the process when the desired pressure is reached. Regulate heat to maintain a uniform pressure and process jars for the time given in Table 2 (page 6). Do not allow the pressure to drop below the recommended pressure for your altitude.

When processing is complete, remove the canner from heat. Air-cool the canner until fully depressurized. Slowly remove weighted gauge or open petcock, wait two more minutes, and then carefully remove canner lid.
Table 2. Recommended processing times and pressures for beets in a pressure canner at designated altitudes

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar size</th>
<th>Process time (minutes)</th>
<th>Dial Gauge*</th>
<th>Weighted Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2,001-4,000 feet (lbs)</td>
<td>4,001-6,000 feet (lbs)</td>
<td>6,001-8,000 feet (lbs)</td>
</tr>
<tr>
<td>Hot</td>
<td>Pints</td>
<td>30</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Quarts</td>
<td>35</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

* Reminder: check your dial pressure gauge annually. For more information, contact your local UW CES office.

After Processing
After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten bands. Air-cool jars for 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within five days. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Beets are best if eaten within one year. The UW CES recommends all low-acid home canned foods be boiled for 15 to 20 minutes before eating.

Carrots

Quantity
An average of 17½ pounds (without tops) is needed per canner load of 7 quarts; an average of 11 pounds is needed per canner load of 9 pints. A bushel (without tops) weighs 50 pounds and yields 17-25 quarts, an average of 2½ pounds per quart.

Quality
Select small carrots, preferably 1 to 1¼ inches in diameter. Larger carrots are often too fibrous.

Preparation
Wash, peel, and rewash carrots. To freeze, slice or dice or leave whole. To can, slice or dice; do not can whole carrots.

Freezing Procedure
For optimal quality, freeze no more than 2 to 3 pounds of food per cubic foot of freezer capacity per day. Larger volumes can slow the process of freezing, and slower freezing lowers the quality of the food. Blanch 1 pound of carrots in 1 gallon boiling water. Blanch whole carrots for five minutes and diced or sliced carrots three minutes. Cool carrots quickly in several changes of cold water and drain in colander. Fill pint- or quart-size freezer bags to a level of 3 to 4 inches from the top and squeeze out air. Seal, label, and freeze. Before freezing, bags may be inserted into reusable, rigid plastic freezer containers for added protection against punctures and freezer burn.
Canning Procedure
Wash jars. If desired, add 1 teaspoon canning or pickling salt per quart.

- For hot packs, cover carrots with boiling water, bring to a boil, and simmer for five minutes. Fill hot jars with carrots and the cooking liquid leaving 1-inch headspace.
- For raw packs, fill hot jars tightly with raw carrots leaving 1-inch headspace. Add boiling water leaving 1-inch headspace.

Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. New two-piece canning lids prepared according to manufacturer’s directions should be used. Add lids, tighten screw bands, and process in a pressure canner.

Process
To process in a pressure canner, place jar rack, 2 inches of water, and filled jars in canner. Fasten lid and heat canner on high setting. Allow steam to escape in a fully steady stream for 10 minutes. Add weighted gauge or close petcock to pressurize the canner. Start timing the process when the desired pressure is reached. Regulate heat to maintain a uniform pressure and process jars for the time given in Table 3 (below). Do not allow the pressure to drop below the recommended pressure for your altitude.

When processing is complete, remove the canner from heat. Air-cool the canner until fully depressurized. Slowly remove weighted gauge or open petcock, wait two more minutes, and then carefully remove canner lid.

Table 3. Recommended processing times and pressures for carrots in a pressure canner at designated altitudes

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar size</th>
<th>Process time (minutes)</th>
<th>Dial Gauge*</th>
<th>Weighted Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pints</td>
<td></td>
<td>2,001-4,000 ft (lbs)</td>
<td>4,001-6,000 ft (lbs)</td>
</tr>
<tr>
<td>Hot or raw</td>
<td>Pints</td>
<td>25-30</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Quarts</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Reminder: check your dial pressure gauge annually. For more information, contact your local UW CES office.

After Processing
After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten bands. Air-cool jars for 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within five days. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Carrots are best if eaten within one year. The UW CES recommends all low-acid home canned foods be boiled for 15 to 20 minutes before eating.
Sweet Corn

Quantity
A bushel of ears weighs 35 pounds and yields 6 to 11 quarts of whole kernel style corn or 12 to 20 pints of cream-style corn. An average of 31 pounds (in husks) is needed for a 7-quart canner load of whole kernel corn. An average of 20 pounds is needed for a 9-pint canner load of cream-style corn. An average of 2½ pounds makes 1 pint of frozen whole kernel corn.

Quality
Preserve corn within two to six hours after harvest for best quality. Select ears containing slightly immature kernels or those of ideal quality for eating fresh. Sweeter varieties may turn brown when canned especially if processed at 15 pounds of pressure. Can a small amount to check color and flavor before canning large amounts.

Preparation
Husk ears, remove silk, trim out insect-damaged kernels if needed, trim off ends of ears to remove small, fibrous kernels, and wash ears.

- To prepare whole kernel corn for freezing or canning, place ears in 1 gallon of boiling water and blanch for three minutes after the water returns to a boil. Cool ears and cut kernels from cob at about three-fourths of their depth. Do not scrape the cob.
- To prepare cream-style corn for freezing and canning, blanch ears for four minutes in boiling water. Cool ears and cut kernels from cob at about one-half their depth. Scrape the cob with a knife to remove the remainder of the kernels and combine with half-kernels.
• To prepare corn-on-the-cob for freezing, blanch medium-sized ears for 10 minutes and large ears for 12 minutes. Cool in several changes of cold water and drain. If desired, cut ears into uniform 4-, 6-, or 8-inch pieces.

**Freezing Procedure**

For optimal quality, freeze no more than 2 to 3 pounds of food per cubic foot of freezer capacity per day. Larger volumes can slow the process of freezing, and slower freezing lowers the quality of the food.

• To package whole kernels or cream-style corn, fill pint- or quart-size freezer bags to a level of 3 to 4 inches from the top and squeeze out air. Seal, label, and freeze. Before freezing, bags may be inserted into reusable, rigid plastic freezer containers for added protection against punctures and freezer burn.

• To package corn-on-the-cob, fill quart or half-gallon freezer bags. Squeeze out air, seal, label, and freeze.

**Canning Procedure**

Wash jars. Whole kernel corn may be canned in pints or quarts. Cream-style corn must be packed in half-pint or pint jars only. If desired, add 1 teaspoon salt per quart, ½ teaspoon per pint, or ¼ teaspoon per half-pint.

• For hot packs, in a large pan add 1 cup hot water to each quart of whole kernel corn or 2 cups hot water to each quart of cream-style corn. Heat to boiling. Fill hot jars with hot corn and cooking liquid leaving 1-inch headspace.

• For raw packs, fill hot jars with whole kernels leaving 1-inch headspace. Add boiling water leaving 1-inch headspace. Do not raw pack cream-style corn.

Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. New two-piece canning lids prepared according to manufacturer’s directions should be used. Add lids, tighten screw bands, and process in a pressure canner.

**Process**

To process in a pressure canner, place jar rack, 2 inches of water, and filled jars in canner. Fasten lid and heat canner on high setting. Allow steam to escape in a fully steady stream for 10 minutes. Add weighted gauge or close petcock to pressurize the canner. Start timing the process when the desired pressure is reached. Regulate heat to maintain a uniform pressure and process jars for the time given in Table 4 (page 10). Do not allow the pressure to drop below the recommended pressure for your altitude.

When processing is complete, remove the canner from heat. Air-cool the canner until fully depressurized. Slowly remove weighted gauge or open petcock, wait two more minutes, and then carefully remove canner lid.
Table 4. Recommended processing times and pressures for corn in a pressure canner at designated altitudes

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar size</th>
<th>Process time (minutes)</th>
<th>Dial Gauge*</th>
<th>Weighted Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2,001-4,000 feet (lbs)</td>
<td>4,001-6,000 feet (lbs)</td>
<td>6,001-8,000 feet (lbs)</td>
</tr>
<tr>
<td>Cream-style</td>
<td>Hot</td>
<td>85</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Whole kernel</td>
<td>Raw or hot</td>
<td>Pints</td>
<td>55</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quarts</td>
<td>85</td>
<td>12</td>
</tr>
</tbody>
</table>

* Reminder: check your dial pressure gauge annually. For more information, contact your local UW CES office.

After Processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten bands. Air-cool jars for 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within five days. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Corn products are best if eaten within one year. The UW CES recommends all low-acid home canned foods be boiled for 15 to 20 minutes before eating.

Peppers

Recommended varieties

Hot or sweet, including bell, chile, jalapeño, and pimiento peppers.

Quantity

An average of 9 pounds is needed per canner load of 9 pints. A bushel weighs 25 pounds and yields 20 to 30 pints, an average of 1 pound per pint.

Quality

Select firm yellow, green, or red peppers free of disease and insect damage.

Handling and Preparation

Select your favorite pepper(s). Caution: If you choose hot peppers, wear rubber gloves while handling them or wash hands thoroughly with soap and water before touching your face. Small peppers may be left whole, and jalapeños do not have to be peeled. Wash and quarter large peppers and remove cores and seeds. Slit each pepper along its side to allow steam to escape. Prepare peppers for peeling by placing them either in an oven at 400° Fahrenheit or under a broiler for 6 to 8 minutes until skins blister. Cool peppers in water and peel or slip skins off. Flatten small whole peppers.

Canning Procedure

Wash jars. Fill hot jars loosely with peeled, cored, or flattened sweet or hot peppers. Add ½ teaspoon salt to each pint if desired. Add hot water leaving 1-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. New two-piece canning lids prepared according to manufacturer’s directions should be used. Add lids, tighten screw bands, and process in a pressure canner.
Process

To process in a pressure canner, place jar rack, 2 inches of water, and filled jars in canner. Fasten lid and heat canner on high setting. Allow steam to escape in a fully steady stream for 10 minutes. Add weighted gauge or close petcock to pressurize the canner. Start timing the process when the desired pressure is reached. Regulate heat to maintain a uniform pressure and process jars for the time given in Table 5 (below). Do not allow the pressure to drop below the recommended pressure for your altitude.

When processing is complete, remove the canner from heat. Air-cool the canner until fully depressurized. Slowly remove weighted gauge or open petcock, wait two more minutes, and then carefully remove canner lid.

Table 5. Recommended processing times and pressures for peppers in a pressure canner at designated altitudes

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar size</th>
<th>Process time (minutes)</th>
<th>Dial Gauge*</th>
<th>Weighted Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,001-4,000 feet (lbs)</td>
<td>4,001-6,000 feet (lbs)</td>
</tr>
<tr>
<td>Hot</td>
<td>Half-pints or pints</td>
<td>35</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

* Reminder: check your dial pressure gauge annually. For more information, contact your local UW CES office.

After Processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten bands. Air-cool jars for 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within five days. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Peppers are best if eaten within one year. UW CES recommends all low-acid home-canned foods be boiled for 15-20 minutes before eating.
Pumpkin and Winter Squash

Quantity
An average of 16 pounds is needed per canner load of 7 quarts; an average of 10 pounds is needed per canner load of 9 pints, an average of 2¼ pounds per quart.

Quality
Pumpkins and squash should have a hard rind and be stringless, with mature pulp of ideal quality for cooking fresh. Small-size pumpkins (sugar or pie varieties) make better products than larger pumpkins. Winter squash varieties include acorn, banana, buttercup, butternut, golden delicious, and hubbard. Spaghetti squash is considered a winter squash, but because its flesh does not stay cubed upon heating, it should be frozen instead of canned.

Preparation
Wash pumpkins or squash, cut into pieces, and remove seeds.

Freezing Procedure
For optimal quality, freeze no more than 2 to 3 pounds of food per cubic foot of freezer capacity per day. Larger volumes can slow the process of freezing, and slower freezing lowers the quality of the food. Cut into cooking size pieces and bake at 350° Fahrenheit until tender or steam until tender. Cool, scoop from rind, and mash. Fill pint- or quart-size freezer bags to a level of 3 to 4 inches from the top and squeeze out air. Seal, label, and freeze. Before freezing, bags may be inserted into reusable, rigid plastic freezer containers for added protection against punctures and freezer burn.

Canning Procedure
Cut into 1-inch slices and peel. Cut flesh into 1-inch cubes. Boil for two minutes in water. Caution: Do not mash or puree. Wash jars. If desired, add 1 teaspoon canning or pickling salt per quart. Fill hot jars with cubes and cooking liquid leaving 1-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. New two-piece canning lids prepared according to manufacturer’s directions should be used. Add lids, tighten screw bands, and process in a pressure canner.

Process
To process in a pressure canner, place jar rack, 2 inches of water, and filled jars in canner. Fasten lid and heat canner on high setting. Allow steam to escape in a fully steady stream for 10 minutes. Add weighted gauge or close petcock to pressurize the canner. Start timing the process when the desired pressure is reached. Regulate heat to maintain a uniform pressure and process jars for the time given in Table 6 (page 13). Do not allow the pressure to drop below the recommended pressure for your altitude.

When processing is complete, remove the canner from heat. Air-cool the canner until fully depressurized. Slowly remove weighted gauge or open petcock, wait two more minutes, and then carefully remove canner lid.
Table 6. Recommended processing times and pressures for pumpkin and winter squash in a pressure canner at designated altitudes

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar size</th>
<th>Process time (minutes)</th>
<th>Dial Gauge(^*)</th>
<th>Weighted Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2,001-4,000 feet (lbs)</td>
<td>4,001-6,000 feet (lbs)</td>
<td>6,001-8,000 feet (lbs)</td>
</tr>
<tr>
<td>Hot Pints</td>
<td>55</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Quarts</td>
<td>90</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
</tbody>
</table>

\(^*\) Reminder: check your dial pressure gauge annually. For more information, contact your local UW CES office.

**After Processing**

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten bands. Air-cool jars for 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within five days. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Pumpkin and squash are best if eaten within one year. The UW CES recommends all low-acid home canned foods be boiled for 15 to 20 minutes before eating.

**Spinach and Other Leafy Greens**

**Quantity**

A bushel weighs 18 pounds. An average of 28 pounds makes a 7-quart canner load; an average of 18 pounds makes 9 pints. An average of 1¼ pounds makes 1 pint of frozen greens.

**Quality**

Preserve only freshly harvested greens. Leaves should be mature, attractive in color, and tender. Discard wilted, discolored, diseased, or insect-damaged leaves.

**Preparation**

Wash only small amounts of greens at one time. Drain and continue rinsing until water is clear and free of grit. Do not soak greens. Cut out tough stems and midribs. Place 1 pound of greens at a time in a cheesecloth bag or blancher basket and steam three to five minutes or until well wilted, or place 6 cups of raw greens at a time in 1 gallon boiling water and blanch for three to a boil. Cool greens in cold water and drain.

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... than 2 to 3 pounds of food per cubic foot of freezer capacity; slow freezing, and slower freezing lowers the ... air. Seal, label, and freeze. Before freezing, bags may be stored rigid plastic freezer containers for added protection...
Canning Procedure

Wash jars. If desired, add 1 teaspoon canning or pickling salt per quart. Fill hot jars loosely with blanched, drained greens leaving 1-inch headspace. Add fresh boiling water leaving 1-inch headspace. Remove air bubbles by pressing a rubber spatula between food and side of jar at several locations. Food residue should be removed from the jar sealing edge with a clean, damp paper towel. New two-piece canning lids prepared according to manufacturer’s directions should be used. Add lids, tighten screw bands, and process in a pressure canner.

Process

To process in a pressure canner, place jar rack, 2 inches of water, and filled jars in canner. Fasten lid and heat canner on high setting. Allow steam to escape in a fully steady stream for 10 minutes. Add weighted gauge or close petcock to pressurize the canner. Start timing the process when the desired pressure is reached. Regulate heat to maintain a uniform pressure and process jars for the time given in Table 7 (below). Do not allow the pressure to drop below the recommended pressure for your altitude.

When processing is complete, remove the canner from heat. Air-cool the canner until fully depressurized. Slowly remove weighted gauge or open petcock, wait two more minutes, and then carefully remove canner lid.
Table 7. Recommended processing times and pressures for spinach and other greens in a pressure canner at designated altitudes

<table>
<thead>
<tr>
<th>Style of pack</th>
<th>Jar size</th>
<th>Process time (minutes)</th>
<th>Dial Gauge*</th>
<th>Weighted Gauge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,001-4,000 feet (lbs)</td>
<td>4,001-6,000 feet (lbs)</td>
</tr>
<tr>
<td>Hot</td>
<td>Pints</td>
<td>70</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Quarts</td>
<td>90</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

* Reminder: check your dial pressure gauge annually. For more information, contact your local UW CES office.

After Processing

After processing is completed, remove jars from canner with a jar lifter and place on a towel or rack. Do not retighten bands. Air-cool jars for 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jar in a clean, cool, dark place without ring. If the lid is unsealed, refrigerate and use within five days. Alternatively, examine and replace jar if defective; use new lid and reprocess as before. Wash screw bands and store separately. Spinach and other greens are best if eaten within one year. The UW CES recommends all low-acid home canned foods be boiled for 15 to 20 minutes before eating.

Sources of Information

