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# Making Jams and Jellies

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Instructions for making jams and jellies with and without added pectin and for reduced-sugar fruit spreads.

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## Four essential ingredients

### *Fruit*

- Provides unique flavor as well as some pectin and acid.
- Full-flavored, just-ripe fruits are ideal, but if one-fourth of your fruit is underripe, it will provide more natural pectin than fully ripe fruit.
- Never use overripe fruit, as it contains insufficient pectin.

### *Pectin*

- Pectin is found naturally in fruits and is the ingredient, when combined with sugar or other sweeteners (NOT artificial sweeteners), that produces a gel.
- Slightly underripe fruit contains the most pectin.
- Concentrated in the skins and cores of fruits, pectin is the reason why recipes call for using skins and cores for juicing or pulping.
- Most commercial pectin is made from citrus fruits or apples.

### *Acid*

- Fruits will not gel or thicken without acid.
- Fruits naturally contain acid, and the amount of acid is higher in underripe fruit.

### *Sweeteners*

- Sugar is essential to help form the gel and contributes to flavor; reducing the amount of sugar in the recipe contributes to poor or no gelling.
- Sugar called for in recipes is refined white sugar, but other natural and artificial sweeteners can be used following special directions.

## Equipment

**Large saucepan:** An 8- to 10-quart pot with a broad flat bottom works the best. A heavy metal container is best because it allows even heat distribution.

**Jelly bag/cloth:** Needed for extracting juice for jelly.

**Cloth:** Damp unbleached muslin or cotton flannel or four thicknesses of cheesecloth

**Thermometer:** Jelly or candy thermometer is needed for determining doneness.

**Boiling water bath canner:** Necessary for processing jams and jellies.

**Jars:** Recommended jars are Mason-type, threaded, home-canning jars with self-sealing lids. Commercial jelly or mayonnaise-type jars result in more seal failures

and jar breakage. Use only half-pint or one-pint jars. Larger jars will result in a weak gel.

## Jellies and jams: with and without commercial pectin

Jellies and jams without added commercial pectin contain less sugar. However, they are generally more challenging to ensure a quality product. Jellies and jams made with commercial pectin simplifies the process and yields more per amount of juice.

### *Preparing the Fruit for Jellies: With and Without Pectin*

- Unless using added pectin, use 1/4 slightly underripe fruit and 3/4 just ripe fruit. If pectin will be added, ripe fruit can be used.
- Prepare fruit in batches, enough for one recipe only. Do not prepare large batches, as they do not gel properly.
- Wash fruit, discarding all damaged portions and caps and stems, but do not remove the skin or cores, since natural pectin found in fruit is concentrated in these parts.

**Table 1. Extracting juice and making jelly**

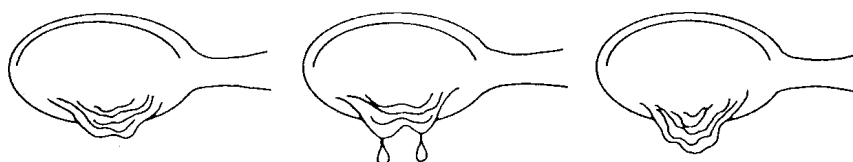
To extract juice					
	Cups of water to add per pound of fruit	Minutes to simmer fruit before extracting juice	Ingredients to add to each cup of strained juice		Yield from 4 cups of juice (half-pints)
			Sugar (Cups)	Lemon juice (Tsp)	
<b>Apples</b>	<b>1</b>	<b>20 to 25</b>	<b>3/4</b>	<b>1-1/2 (opt)</b>	<b>4 to 5</b>
<b>Blackberries</b>	<b>None or 1/4</b>	<b>5 to 10</b>	<b>3/4 to 1</b>	<b>None</b>	<b>7 to 8</b>
<b>Crab apples</b>	<b>1</b>	<b>20 to 25</b>	<b>1</b>	<b>None</b>	<b>4 to 5</b>
<b>Grapes</b>	<b>None or 1/4</b>	<b>5 to 10</b>	<b>3/4 to 1</b>	<b>None</b>	<b>8 to 9</b>
<b>Plums</b>	<b>1/2</b>	<b>15 to 20</b>	<b>3/4</b>	<b>None</b>	<b>8 to 9</b>

**Table 2. Recommended process time for jelly and jams without added pectin in a boiling-water canner**

Style of pack	Jar size	Process Time at Altitudes of		
		0-1000 feet	1,001-6,000 ft	Above 6,000 ft
Hot	Half-pints or pints	5 min	10	15

**Table 3. Temperature test altitudes**

Sea Level	1,000 feet	2,000 feet	3,000 feet	4,000 feet	5,000 feet	6,000 feet	7,000 feet	8,000 feet
220°F	218°F	216°F	214°F	212°F	211°F	209°F	207°F	205°F



*If jelly mixture on a spoon forms drops that flow together and sheet or hang off the edge of the spoon, the jelly is done.*

**Extracting the juice**

- Add water to fruits that require it, as listed in the Table 1.
- Put fruit and water in large saucepan and bring to a boil.
- Simmer according to the times listed in the table until fruit is soft. Stir to prevent scorching.
- One pound of fruit should yield at least one cup of clear juice.
- When fruit is tender, strain through a colander, then strain through a jelly bag or two layers of cheesecloth, allowing the juice to drip. **Pressing or squeezing the bag may cause cloudy jelly.**
- To make without commercial pectin, use no more than six to eight cups of extracted fruit juice at a time, measure fruit juice, sugar, and lemon juice according to Table 1 and heat to boil.
- Stir until the sugar dissolves and boil over high heat to the jelling point.
- Test jelly for doneness using one of the following methods:
  - 1) Temperature test: use a jelly thermometer and boil until mixture reaches the temperatures at the altitudes in Table 3.
  - 2) Sheet or spoon test: dip a cool metal spoon into jelly mixture and raise the spoon about 12 inches above the pan. Turn the spoon so the liquid runs off the side. The jelly is done when the syrup form two drops that flow together and sheet or hangs off the edge of the spoon (see diagram).
- Remove from heat and quickly skim off foam.
- Fill sterile jars with jelly. See types of recommended jars on page 1.
- Use a measuring cup to ladle jelly through wide-mouth funnel, leaving 1/4 inch headspace.
- Using self-sealing two-piece lids, adjust lids and process according to Table 2.

**Table 4. Ingredient quantities**

	Cups crushed fruit	Cups sugar	Tbsp lemon juice	Yield (Half-pints)
<b>Apricots</b>	<b>4 to 4-1/2</b>	<b>4</b>	<b>2</b>	<b>5 to 6</b>
<b>Berries*</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>3 to 4</b>
<b>Peaches</b>	<b>5-1/2 to 6</b>	<b>4 to 5</b>	<b>2</b>	<b>6 to 7</b>

\*Includes blackberries, boysenberries, dewberries, gooseberries, loganberries, raspberries and strawberries.

**Making jam without added pectin**

- Wash, rinse, remove stems, skin, bruises, pits from fruit and cut into pieces and crush.
- Use fully ripe fruits for best flavor.
- Seedy berries may be put through a sieve or food mill.
- Measure crushed fruit into a large saucepan using the ingredients and quantities specified in Table 4.
- Add sugar and boil rapidly while stirring rapidly and constantly until mixture thickens.
- Use one of the following tests to determine doneness:
  - 1) Temperature test (as described previously).
  - 2) Refrigerator test: Remove jam mixture from heat and pour a small amount of boiling jam on a cold plate and place it in the freezer for a few minutes. If the jam gels, it is done.
- Remove jam from heat and skim off foam quickly.
- Fill sterile jars with jelly. See types of recommended jars on page 1.
- Use a measuring cup to ladle jelly through wide-mouth funnel, leaving 1/4 inch headspace.
- Using self-sealing, two-piece lids, adjust lids and process according to Table 2.

**Making jams and jellies with added commercial pectin**

By using added commercial pectin, you can use fresh fruits and juices as well as commercially canned or frozen fruit juices. Follow directions for each fruit as found on the package of commercial pectin. Using commercial pectin eliminates the need to test for doneness and proper gelling.

- Purchase fresh pectin each year. Old pectin results in poor gels.
- Follow all directions carefully or a poor quality product may result. For example, reducing ingredients or doubling a recipe may prevent gelling.
- Use recommended canning jars as designated on page 1, self-sealing two-piece lids, and process according to Table 5.

**Table 5. Recommended process time for jelly and jams with added pectin in a boiling-water canner**

Style of pack	Jar size	Process Time at Altitudes of		
		0-1000 feet	1,001- 6,000 ft	Above 6,000 ft
<b>Hot</b>	<b>Half-pints or pints</b>	<b>5 min</b>	<b>10</b>	<b>15</b>

**Reduced-sugar fruit spreads**

Reduced-sugar fruit spreads are tasty, yet lower in calories and sugars than regular jams.

Sweetness can be provided by sweet fruits, juices, spices, or a liquid low-calorie sweetener.

If making a reduced-sugar fruit spread, follow the directions available with the product developed for that purpose, such as reduced-sugar commercial pectin product. Make only small batches at a time because they are perishable products and must be stored in the refrigerator. Unopened, they will keep three to four weeks in the refrigerator.

**Remaking soft jellies**

General: Work with no more than four to six cups at a time.

**To remake with powered pectin:**

For each quart of jelly, mix 1/4 cup sugar, 1/2 cup water, two tablespoons bottled lemon juice, and four teaspoons powdered pectin. Bring to a boil while stirring. Add jelly and bring to a rolling boil over high heat, stirring constantly. Boil hard 1/2 minute. Remove from heat, quickly skim foam off jelly, and fill sterile jars, leaving 1/4-inch headspace. Adjust new lids and process.

**To remake with liquid pectin:**

For each quart of jelly, measure 3/4 cup sugar, two tablespoons bottled lemon juice, and two tablespoons liquid pectin. Bring jelly only to boil over high heat, while stirring. Remove from heat and quickly add the sugar,

lemon juice and pectin. Bring to a full rolling boil, stirring constantly. Boil hard for one minute. Quickly skim off foam and fill sterile jars, leaving 1/4-inch headspace. Adjust new lids and process.

#### ***To remake without added pectin:***

For each quart of jelly, add two tablespoons bottled lemon juice. Heat to boiling and boil for three to four minutes. Use one of the tests described on page 2 to determine jelly doneness. Remove from heat, quickly skim off foam, and fill sterile jars, leaving 1/4 inch headspace. Adjust new lids and process.

### **Solutions to common problems**

#### ***What makes jelly cloudy?***

One or more of the following may cause cloudy jelly: Pouring jelly mixture into glasses too slowly. Allowing jelly mixture to stand before it is poured. Juice was not properly strained and so contained pulp. Jelly set too fast--usually the result of using too-green fruit.

#### ***Why do crystals form in jelly?***

Crystals throughout the jelly may be caused by too much sugar in the jelly mixture, or cooking the mixture too little, too slowly, or too long. Crystals that form at the top of jelly that has been opened and allowed to stand are caused by evaporation of liquid. Crystals in grape jelly may be tartrate crystals.

#### ***What causes jelly to be too soft?***

One or more of the following may be the cause: Too much juice in the mixture, too little sugar, mixture not acid enough, making too big a batch at one time.

#### ***What makes the jelly too stiff?***

Too much pectin (fruit was not ripe enough or too much added pectin was used). Overcooking.

#### ***Why does mold form on jelly or jam?***

Because an imperfect seal has made it possible for mold and air to get into the container. Discard the entire jar of jelly. Use recommended canning jars and lids, and process in boiling water bath canner. Paraffin seal is *not* recommended.

### **Other resources**

This guide provides information on processing times and temperatures with additional tips on key safety points for home canning. It is not meant to provide all the safety information and directions needed for canning. The following resource is available for more safety information and instructions for home canning:

*Ball Blue Book*, 2003. Home Canners Catalog, Alltrista Corp., P.O. Box 2005, Muncie, IN 47307. \$4.95 + \$1 S&H.



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