



FACT SHEET

Family and Consumer Sciences

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Jams, Jellies, and Other Fruit Spreads

Jams, jellies, preserves, conserves, marmalades, and butters are all gelled or thickened fruit products. Most are cooked and preserved with sugar. Their individual characteristics depend on the kind of fruit used and the way it is prepared, the ingredients and their proportions in the mixture, and the method of preparation.

Jams are thick, sweet spreads made by cooking crushed or chopped fruits with sugar. Jams tend to hold their shape but are generally less firm than jelly.

Jellies are usually made by cooking fruit juice with sugar. A good product is clear and firm enough to hold its shape when turned out of the container, yet quivers when moved.

Preserves are spreads containing small, whole fruit or uniform-size pieces in a clear, slightly gelled syrup. The fruit should be tender and plump.

Conserves are jam-like products that may be made from a mixture of fruits. They may also contain nuts, raisins, or coconut.

Marmalades are soft fruit jellies containing small pieces of fruit or peel. They often contain citrus fruit.

Fruit butters are sweet spreads made by cooking fruit pulp with sugar to a thick consistency. Spices are often added. Butters are not gelled.

Essential Ingredients

For successful jams, jellies, and other fruit products, a proper ratio of fruit, pectin, acid, and sugar is needed.

Fruit or Juice

For best color, flavor, and consistency, choose ripe fruit (shape is irrelevant). Unsweetened, canned, or frozen fruit or fruit juice can also be used. If you preserve your own fruit or fruit juice, use slightly underripe fruit (usually 1/4 slightly underripe and 3/4 fully ripe is recommended.) Fruit is best if canned in its own juice. If adding sugar, note on each jar how much sugar it contains. This will be needed to adjust recipes later.

To extract juice for jelly, follow these directions:

- Place fruit into a flat-bottomed saucepan and add cold water. For apples and other hard fruits, add up to 1 cup per pound of fruit. For berries and grapes, use only enough water to prevent scorching. Crush soft fruits to start the flow of juice.
- Bring to a boil on high heat. Stir to prevent scorching.
- Reduce heat.
- Grapes and berries need 10 minutes or less to cook until soft. Apples and other hard fruits may need 20 to 25 minutes, depending on the firmness of the fruit. Do not overcook; excess boiling will destroy the pectin, flavor, and color.
- Pour everything into a damp jelly bag and suspend the bag to drain the juice. The clearest jelly comes from juice that has dripped through a jelly bag without pressing or squeezing.

- If a fruit press is used to extract the juice, the juice should be restrained through a jelly bag.

NOTE: Juicy berries may be crushed and the juice extracted without heating.

Pectin

Pectin is the natural substance found in fruit that causes the fruit juice to gel. Some kinds of fruits have enough natural pectin to gel firmly; others require added pectin. The best type of pectin is found in just-ripe fruit. Pectin from underripe or overripe fruit will not gel.

Refer to the chart below for pectin and acid content of common fruits.

Group I:	If not overripe, has enough natural pectin and acid for gel formation with only added sugar.
Group II:	Low in natural acid or pectin, and may need addition of either acid or pectin.
Group III:	Always needs added acid, pectin, or both.

Group I	Group II	Group III
Apples, sour	Apples, ripe	Apricots
Blackberries, sour	Blackberries, ripe	Blueberries
Crabapples	Cherries, sour	Figs
Cranberries	Chokecherries	Grapes (Western Concord)
Currants	Elderberries	Guavas
Gooseberries	Grapefruit	Peaches
Grapes (Eastern Concord)	Grape Juice, bottled (Eastern Concord)	Pears
Lemons	Grapes (California)	Plums (Italian)
Loganberries	Loquats	Raspberries
Plums (not Italian)	Oranges	Strawberries
Quinces		

Commercial pectins are made from apples or citrus fruit and are available in both powdered and liquid forms. Be sure to follow the manufacturer’s directions when using commercial pectin. *The powdered and liquid forms are not interchangeable in recipes.*

Commercial pectins may be used with any fruit. The additional sugar required when using commercial pectin may mask the natural fruit flavor.

There are special pectins available to make jellied products with no added sugar or with less sugar than regular recipes. Recipes will be found on the package inserts and directions should be followed carefully.

Commercial fruit pectin should be stored in a cool, dry place and used by the date indicated on its package. *Do not hold commercial fruit pectin over from one year to the next.*

Acid

When a recipe calls for added acid (lemon juice or citric acid), it is needed for successful gel formation.

Sugar

Sugar must be present in the proper proportions with pectin and acid to make a good gel. Sugar also prevents the growth of microorganisms in the product and contributes to the taste. *Never change the amount of sugar in a recipe.*

Granulated white sugar is usually used in home-made fruit products. Sweeteners such as brown sugar, sorghum, and molasses are not recommended because their flavors overpower the fruit and sweetness may vary. Extra fine sugar or sugar blends with dextrose, fructose, or other sweetener added should not be used. You can replace part but not all of the sugar with light corn syrup or light, mild honey. For best results, use tested recipes that specify honey or corn syrup.

Artificial sweeteners cannot be substituted for sugar in regular recipes because sugar is needed for gel formation. Jellied fruit products without added sugar must be made using special recipes or special jelling products.

Equipment and Containers

An 8- or 10-quart saucepan is best for jelly making because it allows even heat distribution and volume control.

A jelly bag or suitable cloth is needed when extracting juice for jelly. Firm unbleached muslin or cotton flannel with the napped side turned in or four thicknesses of closely woven cheesecloth may be used. Jelly bags or cloths should be damp when extracting juice.

A jelly, candy, or deep-fat thermometer should be used to determine doneness in jellied fruit products without added pectin.

A boiling water bath canner is necessary for processing all unrefrigerated or unfrozen fruit spreads.

General Directions

Amount to Prepare

To enjoy jams, jellies, and other fruit products at their best, make only a quantity that you can use within a year. Jellies lose flavor and color during storage. For best results, make only one recipe at a time, using no more than 6 to 8 cups juice. Double batches do not always gel properly.

Preparing the Containers

Prepare the canning jars before you start to make the fruit product. Half-pint jars work best, unless a recipe specifies another size. Using larger jars can result in a weak gel. *Pint jars should be the largest used.*

Wash the containers in hot, soapy water and rinse, or wash in dishwasher. Sterilize the jars by boiling them for 10 minutes. Keep the jars in the hot water until they are used to prevent the jars from breaking when filled with the hot product. *If you are at an altitude of 1,000 feet or more, add one minute to the sterilizing time.*

Wash and rinse all canning lids and bands. Prepare the lids as directed by the manufacturer.

Sealing the Containers and Processing

All jams, jellies, and other fruit spreads must be processed in a boiling water bath to prevent mold growth. *Paraffin is no longer recommended as a method for sealing jams and jellies. Air can seep in around the edges and cause spoilage and mold.* To process jams and jellies in a boiling water bath, pour the boiling product into a hot, sterilized canning jar, leaving 1/4-inch headspace. Wipe the jar rim thoroughly with a wet paper towel or cloth and close with a prepared

canning lid and screw band. Place on a rack in a canner filled with boiling water. The water should cover the jars by at least 1 inch. Cover the canner. Bring the water back to a boil and boil gently for 5 minutes. Remove the jars to a protected surface and cool upright away from drafts.

Altitude adjustment—The processing times given for most fruit products are for processing at altitudes of 0–1,000 feet. Add 1 minute to the processing time for each additional 1,000 feet of altitude.

Storage

Do not move products, especially jellies, for at least 12 hours. Moving them could break the gel. After the products have cooled for 12 hours, check the seal, remove the screw band, wash the outsides of jars, label, and store in a cool, dry, dark place. Place any unsealed jars in the refrigerator. Uncooked jams must be stored in the refrigerator (up to 4 weeks) or freezer (up to 1 year).

Making Jams and Jellies

There are basically two types of jams and jellies: those made with added pectin and those without. The use of commercial pectin simplifies the procedure and yields more jelly per volume of juice or fruit. Jams and jellies can be made more quickly using added pectin, and their doneness is easier to determine. Follow the directions included with the commercial pectin.

If making jam or jelly without added pectin, use the following steps. Measure juice or fruit and sugar. If not following a recipe, allow 3/4 cup sugar for each cup of juice or fruit. If unsure of the pectin or acid content, test before beginning.

To test for pectin, measure 1/3 cup fruit or juice and 1/4 cup sugar into a small saucepan. Heat slowly, stirring constantly until all the sugar is dissolved. Bring to a boil rapidly until mixture sheets from a spoon. Pour into a clean, hot glass or bowl and cool. If cooled mixture is jelly-like, your product will gel. If mixture is not jelly-like your fruit juice does not have enough natural pectin to make a good product. Follow directions for jams or jellies using commercial pectin. To test for acidity, combine 1 teaspoon lemon juice, 3 Tablespoons water, and 1/2 teaspoon sugar. Compare the flavor by tasting this mixture and a taste

of your fruit. If fruit isn't as tart, add 1 Tablespoon lemon juice to each cup of fruit (juice).

1. Heat fruit or juice to boiling. Add sugar and stir until sugar dissolves. Boil rapidly until temperature is 220 degrees F (or 8 degrees F above the boiling point of water). Mixture should sheet from a metal spoon or a spoonful placed on a plate in the freezer of the refrigerator should gel in a few minutes.
2. Remove jam or jelly from heat. Skim off foam.
3. Pour into hot, sterilized jars, leaving 1/4-inch headspace.
4. Wipe rims, add lids and rings, and process in a boiling water bath for 5 minutes.

Jellied Products without Added Sugar

Jellied products without sugar or with reduced sugar cannot be made by omitting the sugar in regular jelly recipes. However, they can be made by the following methods:

1. **Special modified pectins**—These pectins are not the same as regular pectin. They will say “light,” “less sugar,” or “no sugar” on the label. Follow the directions on the package. Some products are made with less sugar and some with artificial sweeteners.
2. **Regular pectin with special recipes**—These special recipes have been formulated so that no added sugar is needed. However, each package of regular pectin does contain some sugar. Artificial sweetener is often added.
3. **Recipes using gelatin**—Some recipes use unflavored gelatin as the thickener for the jam or jelly. Artificial sweetener is often added.
4. **Long-boil methods**—Boiling fruit pulp for extended periods of time will cause a product to thicken and resemble a jam, preserve, or fruit butter. Artificial sweetener may be added.

Follow the directions on the modified pectin package or in a no-sugar recipe exactly. Alterations in the recipe could result in product failures. Because these products do not use sugar as a preservative, be sure to process or store them as directed. Some require longer processing in a boiling water bath and some require refrigeration.

Remaking Cooked Jam or Jelly

Measure jam or jelly to be recooked. Work with no more than 4 to 6 cups at a time.

With Powdered Pectin

For each quart of jelly, combine 1/4 cup sugar, 1/2 cup water, 2 Tablespoons bottled lemon juice, and 4 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.

With Liquid Pectin

For each quart of jelly, measure 3/4 cup sugar, 2 Tablespoons bottled lemon juice, and 2 Tablespoons liquid pectin. Bring jelly 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 1 minute. Quickly skim foam off jelly and fill sterile jars, leaving 1/4-inch headspace. Adjust new lids and process.

Without Added Pectin

For each quart of jelly, add 2 Tablespoons bottled lemon juice. Heat to boiling and boil for 3 to 4 minutes. (Refer back to making jam or jelly without added pectin.) Remove from heat, quickly skim foam off jelly and fill sterile jars, leaving 1/4-inch headspace. Adjust new lids and process.

Recipes

Pepper Jelly

Hot peppers have become a popular garden item. This jelly is a safe and delicious way to preserve them—it's excellent with cream cheese and crackers. *However, take caution and wear rubber gloves when handling hot peppers.* Sweet peppers may be substituted for hot peppers, if desired.

Yields 5 half-pint jars

- 4 or 5 hot peppers, cored and cut in pieces
- 4 sweet green peppers, cored and cut in pieces
- 1 cup white vinegar
- 5 cups sugar
- 1 pouch (1/2 bottle) liquid pectin
- Green food coloring

Sterilize canning jars. Put half the peppers and half the vinegar into blender container; cover and process at liquify until pepper is liquified. Repeat with remaining peppers and vinegar. Combine liquified peppers, sugar, and vinegar in a large saucepot and boil slowly for 10 minutes. Remove from heat. Add liquid pectin and boil hard 1 minute. Skim and add a few drops of green food coloring. Pour jelly immediately into hot canning jars, leaving 1/4-inch headspace. Wipe jar rims and adjust lids. Process 5 minutes in a boiling water bath.

Pear-Apple Jam

Yields 7 or 8 half-pint jars

2 cups peeled, cored and finely chopped pears
(about 2 pounds)
1 cup peeled, cored, and finely chopped apples
1/4 teaspoon ground cinnamon
6½ cups sugar
1/3 cup bottled lemon juice
1 pouch liquid pectin

Sterilize canning jars. Crush apples and pears in a large saucepan. 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. Pour jam immediately into hot jars, leaving 1/4-inch headspace. Wipe jar rims and adjust lids. Process 5 minutes in a boiling water bath.

References

National Center for Home Food Preservation. (2006). University of Georgia. Retrieved August 11, 2008, from http://www.uga.edu/nchfp/how/can7_jam_jelly.html

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