JELLIES, JAMS, PRESERVES, AND MARMALADES

Circular 447

UNIVERSITY OF KENTUCKY
College of Agriculture and Home Economics
Agricultural Extension Division
THOMAS P. COOPER, Dean and Director

CONTENTS

Jellies, Jams, Preserves, and Marmalades

By Florence Imlay and Pearl J. Haak

Fruit sweets such as jams, preserves, marmalades, butters, and conserves have a special place on the menu. They can be used to tempt the appetite, add color and zest to a meal, make a new dish of left-over food, or supply the dessert for an emergency meal. As they contain much sugar, they are an excellent source of energy and should be used as a part of the sugar allowance for the day.

You will probably agree that it is better to have a few jars of perfect products than to have a great many jars filled with poor quality products. By following the directions given in this circular you can easily make good jellies and preserves. You may prefer to can unsweetened fruit juice in the summer or early fall, and then make a few glasses at a time, as it is needed, during the winter. Marmalades, jams, conserves, and some preserves, can be made from canned fruits also.

Jelly

Good jelly is clear, sparkling, and transparent. It contains neither sediment nor crystals, and has the natural color and flavor of the fresh fruit. It is firm but tender, holding its shape, and when turned from the glass it will quiver. To make good jelly it is necessary to have pectin, acid, and sugar in the right proportions. Some fruits contain both enough pectin and acid to make the juice jell, while others are low in either pectin or acid, or both. The following fruits contain both enough pectin and acid to make a good jelly.

Tart apples
Crabapples
Currants
Gooseberries
Sour plums
Cranberries
Quince
Citrus fruits
Slightly underripe grapes
Slightly underripe blackberries, loganberries, raspberries, dewberries

The following fruits are rich in acid but low in pectin

Apricots
Cherries
Strawberries
Rhubarb
Pineapple
Peaches

Elderberries, pears, and sweet apples do not have enough acid for jelly making.

Selecting fruit

Fruits for making most jellies should be just at the ripened stage, but for berry or grape jelly it is a good idea to use ¼ to ½ slightly underripe fruit to furnish the pectin, and ½ to ¾ well-ripened fruit to supply the natural flavor and depth of color. See page 6.

Preparing fruit and extracting juice

Wash fruit, and remove stems or blossom ends. Crush soft and juicy fruits in a kettle and add about 1 cup of water to 2 or 3 quarts of fruit. Cut the less juicy fruits in small pieces, using skins, seeds, and cores. Place them in a kettle and add just enough water to cover. Cover the kettle and bring the mixture slowly to boil. Boil soft fruits 5 to 10 minutes, and apples and quinces 20 to 25 minutes.

To obtain a clear, concentrated fruit juice, drain without squeezing through a wet, heavy muslin, or flannel bag, or several layers of cheesecloth.

Pectin test

To determine whether a fruit juice has enough pectin for making a good jelly, pour from 2 to 3 tablespoons of cooked fruit juice into a small container and add an equal amount of ethyl alcohol (denatured). If the fruit juice is rich in pectin, a solid mass of gelatinous material will form (Fig. A). If the juice is only moderately rich, several small particles of gelatinous material will form (Fig. B). If the fruit juice is poor in pectin, many tiny pieces will form (Fig. C). If it is poor in pectin, add a commercial pectin or a fruit juice, such as crabapple, which is rich in pectin.

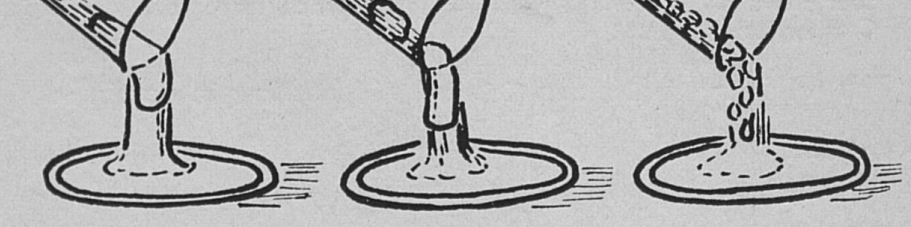


Fig. A. **Excellent Pectin test**

Fig. B. **Moderate Pectin test**

Fig. C. **Poor Pectin test**

Acid test

If a fruit juice has a decided tart or acid taste, it usually has enough acid to make it jell. But if you are quite sure that the juice is tart enough, mix together 1 teaspoon of lemon juice, 3 tablespoons of water, and ½ teaspoon of sugar, and compare with fruit juice for acidity. If the fruit juice is about as sour as the lemon mixture, it contains enough acid to make jelly. If the juice has a subacid taste, add an equal quantity of a tart fruit juice, a few slices of lemon, or a small quantity of lemon juice.

Amount of juice to cook

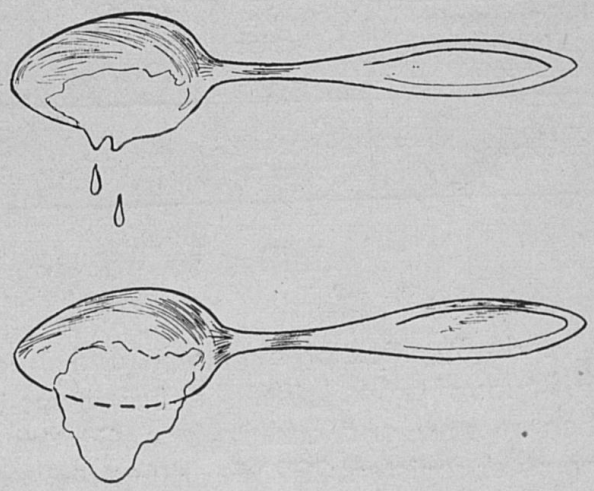
To make good jelly cook only 2 or 3 cups of fruit juice at a time. Cooking a large amount of juice at once makes the jelly strong-flavored, dark-colored, and gummy-textured. Use a broad-bottomed kettle which holds at least 4 times the amount of juice to be used.

Amount of sugar to use

The amount of sugar to use is determined by the amount of pectin in the juice. If a juice is rich in pectin, use 1 cup of sugar to every cup of juice, but if the juice contains only a moderate amount of pectin, use ¾ cup of sugar to every cup of juice. Too much sugar makes a sirupy jelly and too little a tough, gummy jelly.

Testing jelly

It is very important that jelly be removed from the stove at the right moment, because cooking too long makes it tough and leathery. The sheet test is a simple way of determining whether the jelly is done. Take a little juice in a spoon and let it drip off the edge. If it goes off in drops it is not done. When the drops run together and drop off the side in a sheet, the jelly is done. Remove it from the flame immediately. If a thermometer is used the temperature will be from 217° to 222° F or 103° to 106° C.



Filling the glasses

Upon removing the jelly from the fire, strain it and pour it into hot, sterilized glasses, holding the container close to the glass. This prevents air bubbles from forming. When the jelly is cold, pour hot paraffin over the top. Cover the glasses and store in a cool, dry place.

Summary of Steps in Jelly Making

1. Measure from 2 to 3 cups of juice, made according to directions on page 4.
2. Test the juice for pectin.
3. Measure sugar according to pectin test.
4. Boil juice rapidly from 2 to 3 minutes to evaporate some of liquid.
5. Add sugar gradually, boiling rapidly until mixture gives a sheet test, or registers 217° to 222° F by a jelly thermometer.
6. Skim and pour immediately into hot sterilized glasses.
7. Cool and cover with hot paraffin.
8. Label and store in a cool, dry place.

General Directions for Making Jelly

Fruit	Maturity	Amount of Juice	Amount of sugar for good pectin test	Approximate cooking time
Crab or sour apple, currant, plum	Ripe	2-3 c	1 c per cup of juice	6-8 minutes or 217-222° F
Blackberries Raspberries Dewberries Loganberries Gooseberries Elderberry-apple	½ slightly underripe, ½ fully ripe	2-3 c	½ to ⅔ c per cup of juice	8-10 minutes or 217-222° F
Grape	Slightly underripe	2-3 c	¾-1 c per cup of juice	6-8 minutes or 217-222° F

Jellies to go with Meats

Spiced grape jelly

Add ½ stick of cinnamon and 1 to 1½ dozen whole cloves to 4 cups of grape juice. Let boil in the juice for about 10 minutes, then remove and add sugar. Continue cooking until the thermometer registers 222° F, or until the sheet test is obtained. Pour into hot sterilized jars.

Mint jelly

1 c mint leaves (chopped fine and packed lightly)
1 c boiling water
1 c apple juice
¾ c sugar

Pour the boiling water over the mint leaves and let stand for one hour. Press the juice from the leaves and add 2 tablespoons of this extract to the sugar and apple juice. Boil until the jelly test is obtained, or to 222° F. Then add a few drops of green vegetable coloring. If fresh mint is not available add 2 drops of peppermint just before removing the finished jelly from the fire. Pour into hot sterilized jars.

Rose geranium jelly

When jelly is about at the two-drop stage shown in Fig. D, add about 1 rose geranium leaf for every cup of sugar used with apple juice. Remove the geranium leaves when the jelly is done.

Lemon verbena leaves may be used instead of rose geranium leaves.

Common Difficulties in Making Jelly and Their Causes

1. **Soft jelly**
   Not enough pectin or acid, because the wrong kind of fruit or over-ripened fruit was used.
   Too much sugar to the amount of juice.
   Too little cooking of juice.
   Long, slow cooking of juice.

2. **Tough, gummy jelly**
   Too little sugar to the amount of juice.
   Cooking jelly too long.
   Cooking too much juice at a time.

3. **Cloudy jelly**
   Poor method of extracting juice.
   Use of green fruit, such as apples, which contain starch.
   Pouring jelly into glasses from too great a distance above the glass.
   Too much pectin in the juice.
   Allowing jelly to cool before filling glasses.

4. **Dark, strong-flavored jelly.**
   Cooking juice too long.
   Cooking too much juice at a time.

5. Crystals in jelly

Too much sugar to the amount of juice.
Too little cooking after sugar was added. (Juice should cook at least 5 minutes after sugar is added.)
Using fruit from fully ripened grapes.

6. Fermented jelly

Improper sterilization of glasses.
Too little cooking of jelly.
Improper sealing of glasses.
Storing in a warm place.

7. Moldy jelly

Improper sterilization of glasses.
Paraffin not hot enough to sterilize top of jelly.

Preserves

Preserves are made by cooking whole, sliced, or quartered fruits in a sirup until the fruit is clear and semitransparent. Preserves should be plump and tender, and have the natural color and flavor of the fresh fruit. The sirup should be thick and clear, and should permeate the fruit without shrinking or shriveling and making the product tough.

Cook firm fruits such as peaches, pears, and watermelon rind, in a thin sirup made by using 1 cup of water to 1½ cups sugar. Cook berries in a heavy sirup made by using ½ cup fruit juice or water to 2 cups of sugar. Boil the fruit rapidly until it is tender and semitransparent. Pour while hot into a shallow pan. Cover and let stand for several hours before packing. If the sirup is too thin upon removing the fruit, boil rapidly to the desired consistency, before pouring over the fruit. To help give the finished product a better color and flavor, cool cooked preserves quickly. Pour sirup over the fruit, and seal at once with melted paraffin. If the preserves are packed without reheating the sirup, process them from 15 to 20 minutes in a water bath.

Cherry preserves[1]

Wash cherries, remove stems and pits. Save the juice and use to make sirup. Place cherries in a shallow pan and cover with a sirup made by using 1 part sugar to 1 part cherry juice or water. Boil rapidly for 15-20 minutes. Remove from the heat, cover, and

[1] A few cloves and part of a stick of cinnamon may be added to cherry, peach, or pear preserves.

let stand in a shallow pan 7 to 12 hours.[1] Drain the juice from the fruit and pack the cherries into clean, hot, sterilized jars. Boil sirup till thick and pour over cherries. Partially seal and process in a water bath (212° F) 15 to 20 minutes. Seal and store in a cool, dry place.

Peach preserves[2]

2 qt sliced peaches
4 c sugar
4 c hot water

Blanch peaches, remove the skins, and slice or cut in quarters. Make a sirup, using an equal amount of sugar and water. Cook peaches in the sirup until they are clear. Remove them from the sirup and boil sirup 5 to 10 minutes longer. Place peaches in a shallow pan, pour the sirup over them and allow to stand over night or for several hours. Remove peaches from sirup, boil the sirup until thick and pour over the peaches. Fill hot sterilized jars, partially seal, and process in a water bath (212°F) 15 to 20 minutes. Completely seal, and store in a cool, dry place.

Pear preserves[2]

2 qt sliced pears
1 lemon
1 T salt
3 c sugar
6 c water

Wash and peel pears, removing stems and blossom ends. Quarter and drop into 4 cups of water to which salt has been added. Make a sirup by boiling sugar and the two remaining cups of water together for 3 to 5 minutes. Add pears and sliced lemon to the sirup and cook until the pears are clear and transparent. Remove the pears and place in a shallow pan. Cook the sirup until it is thick, then pour over the fruit and let stand for several hours. Remove fruit and boil the sirup until thick, then pour over the fruit. Fill hot, sterilized jars, partially seal, and process in a water bath (212°F) 15 to 20 minutes. Completely seal, and store in a cool, dry place.

Damson plum preserves

3 qt plums
3 c water
4 c sugar

Select plums which are just ripe, or slightly underripe. Wash, remove stems and pierce. Make a sirup of sugar and water, add plums and cook until the fruit is tender and clear. Pour into

[1] Covering preserves until they are cool helps to plump the fruit.

[2] A few cloves and part of a stick of cinnamon may be added to cherry, peach, or pear preserves.

shallow pans and let stand for several hours. Remove plums and boil the sirup until thick, then pour over the fruit. Fill hot, sterilized jars, partially seal, and process in a water bath (212°F) 15 to 20 minutes. Completely seal, and store in a dry, cool place.

Strawberry preserves (1)

1½ qt prepared berries
3 c sugar

Cover the bottom of a pan with half the sugar. Pour in the berries, and cover with the remaining sugar. Let stand all night. Place pan over a slow fire and heat until all the sugar is dissolved, stirring carefully to prevent scorching. Bring to boil and boil rapidly for 2 minutes, stirring carefully to avoid crushing the berries. Remove from the fire, and pour into a shallow pan. Cover with a clean piece of glass, and set in a sunny place for 2 or 3 days, or until the berries are plump and the sirup thick. Stir the preserves frequently. Pack into hot, sterilized jars, partially seal, and process 20 to 30 minutes in a water bath (212°F). Completely seal and store in a cool dry place.

Strawberry preserves (2)

1½ qt prepared berries
3 c sugar

Mix sugar and berries in a saucepan without crushing. Place saucepan on the stove and heat slowly until the sugar is dissolved and the juice is extracted from the berries. Cook rapidly 8 to 10 minutes. Remove from stove and cover until preserves are cool, then pour into shallow pans and let stand overnight. Boil the sirup until thick, pour over berries, and pack preserves in hot, sterilized jars. Partially seal and process in a water bath (212°F) for 15 to 20 minutes. Completely seal, and store in a cool, dry place.

Strawberry preserves (3)

5 c prepared berries
4 c sugar
½ c water

Make a sirup by boiling 2 cups of sugar and the water. Add 3 cups of strawberries to the sirup and bring to boil. Add the remaining sugar to the mixture, and again bring to boil. Then add the remaining strawberries, and let preserves boil 8 to 10 minutes. Remove kettle from stove and cover. When the preserves are cool, spread them in a shallow pan and let stand overnight. Place berries carefully in sterilized jars, boil the sirup until thick and pour over the preserves. Partially seal and process 15 to 20 minutes. Seal, and store in a cool place.

Watermelon rind preserves

Using only the white part of the rind, cut into 1-inch pieces. Soak for 3½ hours in lime water made by adding 1/5 ounce lime to 1 quart of water. Drain and place the rind in clear water for one hour. Drain and boil in fresh water for 1½ hours. Drain. Make a sirup using 2 quarts water, 2 cups of sugar, and ½ lemon thinly sliced to each quart of rind measured before the lime-water treatment. Drop the watermelon rind into the boiling sirup and boil for about 1 hour. As sirup thickens add lemon and spices, if desired. When somewhat thick or at a temperature of 220° F, remove from stove, cover and let stand overnight. Pack preserves in sterilized jars, boil the sirup until thick, pour over preserves, partially seal and process 15 to 20 minutes. Completely seal and store in a cool place.

Jams and Fruit Butters

Jams are made by cooking small whole fruits such as berries, with sugar until the mixture has a soft, smooth, jelly-like consistency.

Butters are made from larger fruits, such as apples, pears, peaches, plums, and grapes, which are cooked and put through a colander or sieve before the sugar is added.

Apple butter

7 lb good cooking apples (20 to 21 medium sized apples)
3 c sugar
4 qt cider
1 t ground allspice
1½ T ground cinnamon
1 t ground cloves

Wash and slice the apples. Add the cider, and cook until the apples are very tender. Press the fruit through a sieve to remove the skins and seeds. Add the sugar and spices to the pulp and cook until thick and clear, stirring frequently to prevent burning. Pour into sterilized jars, cool, cover with paraffin, and store in a cool place.

Plum butter

Wash the plums and put them into a kettle, and cover with water. Cook slowly until plums are soft. Remove them from the stove, rub them through a sieve, and measure the pulp. Add ½ to ⅔ cup of sugar per cup of pulp. Cook mixture slowly until thick and clear. Pour into hot, sterilized jars, and seal.

Grape butter

Wash grapes, remove stems, separate pulp from skins and heat to boiling, adding as little water as possible. Cook until grapes are soft. Then rub them through a sieve. Add ½ cup of sugar per cup of pulp. Cook slowly for about 20 minutes. Pour into hot, sterilized jars and seal.

For a delightful flavor add 1 cup wild grape juice and pulp to 1 or 1½ quarts of cultivated grape juice and pulp.

Blackberry jam

Wash berries, heat slowly until some juice is extracted, and cook until berries are thoroughly heated. Measure the pulp and liquid, and for every pint of pulp add 1 cup of sugar. Cook rapidly until thick, stirring to prevent burning. Pour into hot, sterilized jars, cover with paraffin and store.

Marmalades and Conserves

Marmalades are made from a combination of fruits, or fruits and vegetables cut in small pieces and cooked to a jelly-like consistency. Citrus fruits are usualiy used in the mixture.

Conserves are a combination of several fruits with nuts or raisins, or both, added and cooked with sugar until the mixture has a jelly-like consistency.

Orange-lemon marmalade

6 oranges
2 lemons
Sugar
1 to 1½ qt water

Wash and cut the oranges and lemons in thin slices. Cover with water and let stand overnight. Cook slowly until the fruit is tender, then measure, and add an equal measure of sugar. Cook until the sirup gives the jelly sheet test and pour into hot sterilized jars. Seal and store.

Orange-carrot marmalade

3 carrots, medium
2 oranges
Juice from 3 lemons
4 c sugar
1 c water
½ t salt

Wash and scrape the carrots, and put through a food chopper, using a medium blade. Steam until tender. Wash and peel the oranges. Cut the peeling into small pieces and boil in water until tender. Add the steamed carrots, sugar, lemon juice, and salt to the orange mixture, and cook until the fruit is clear and the sirup gives a jelly sheet test. Pour into hot, sterilized jars, seal, and store in a cool, dry place.

Grape conserve

2 lb grapes
1 orange
6 c sugar
¼ c raisins
¼ c nuts
1 c water

Wash the grapes, remove the stems, and separate the pulp from the skins. Cook the pulp slowly until the seeds are moderately broken up. Remove from stove and rub through a colander. Add 1 cup of water to the skins and cook until tender. Squeeze the orange and put the rind through a food chopper. Mix all ingredients together except the sugar and nuts, and boil until quite thick. Add the sugar, and cook until mixture nearly gives the sheet test. Add nuts, remove from the stove, and pour into hot, sterilized jars. Seal and store in a cool, dry place.

Rhubarb conserve

3 qt rhubarb
6 c sugar
1 c seedless raisins
1 orange
1 lemon (small)
½ c nuts

Wash the rhubarb and cut into 1½-inch pieces. Squeeze the orange and lemon and put the rind through a food chopper. Mix rhubarb, orange, lemon rind, fruit juice, raisins, and sugar and let stand ½ hour. Place on the stove and bring to boil. Let simmer for about 45 minutes, or until it has a thick consistency. Pour into hot, sterilized jars and seal.

Orange-apricot conserve

½ lb dried apricots
1 orange
1 small can crushed pineapple
1 c nuts
3¾ c sugar

Soak the apricots overnight and cook. Squeeze the orange and put the rind through food chopper. Add orange juice and rind to the apricots and cook, stirring constantly, until orange rind is tender (usually 15 to 20 minutes). Cut nuts into medium-sized pieces. Add nuts, pineapple, and sugar to apricot-orange mixture and cook until it gives a sheet test. Pour into sterilized jars. Seal, and store in a cool place.

Score Card for Judging Jelly

General appearance	20
Natural color of fruit Clear and sparkling—free from pulp, bubbles, or mold.	
Texture and consistency	40
Tender and firm enough to retain its angles when cut or broken. Should be neither sirupy, gummy, sticky, nor tough. Holds its shape when removed from the glass.	
Flavor	30
Natural flavor of the fruit	
Container	10
Clear glass, straight sides, clean, attractive and neatly labeled.	
Total score	100

Score Card for Judging Preserves

General appearance	20
Clear and translucent, the fruit retaining its shape and color.	
Texture	30
Tender, firm and plump	
Sirup	10
Bright colored, clear, heavy, containing no crystals, covering fruit well.	
Flavor	30
Natural flavor of fruit	
Container	10
Neat and uniform, of clear glass. Label clean, plain, and neat.	
Total score	100

Score Card for Judging Jams and Butters

General appearance	10
Natural color of fruit containing no foreign substance or mold.	
Texture	40
Smooth, thick, and tender—neither sirupy, gummy nor tough	
Flavor	40
Natural flavor of the fruit	
Container	10
Of clear glass, label clean, plain, and neat.	
Total score	100

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