



NORTH CAROLINA
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N. C. AGRICULTURAL EXTENSION SERVICE

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RALEIGH

JELLY, PRESERVES, JAM, AND PICKLE

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EQUIPMENT FOR MAKING JELLY, PRESERVES, AND JAM

Only a few utensils are necessary for preserving and jelly-making. Have on hand several sharp fruit knives for paring and cutting; a large kettle for cooking; a colander, cheese cloth and flannel jelly bag for straining and filtering; and a wooden paddle or spoon for stirring. A thermometer is a necessity if perfect products are desired. Other tests are fairly accurate; but they take time, patience, and experience, and even then good materials are often spoiled by over or under-cooking. Accurate scales and measuring cups are also necessary. A wash-boiler with wooden rack in the bottom makes an excellent sterilizer for glasses, bottles and jars, and can also be used for pasteurizing and processing.

JELLY

"Jelly is the juice of fruits boiled with sugar to an elastic consistency." Good jelly should be firm enough to hold its shape, and should be tender, clear and brilliant.

Selecting the Fruit

The fruits best suited for jelly-making are grapes, plums, apples, crab apples, and blackberries, as these fruits contain the necessary properties for making good jelly—that is, pectin with an acid. The fruit should be firm and in good condition. One-half should be ripe to give color and flavor with one-half under-ripe fruit to supply acid. Strawberries, peaches, and cherries are lacking in pectin and will not make jelly unless this property is supplied from some other source.

Pectin

Pectin is a carbohydrate akin to starch, and is usually found just under the skin of fruits. It is necessary to cook the fruit in order to extract the pectin.

Pectin Test

To determine the amount of pectin in fruit juices use one teaspoonful grain alcohol and one teaspoonful cooked fruit juice (cooled to room temperature), mix in a glass, let stand one minute. Pour mixture gently into another glass. If a solid mass has formed, the juice will stand measure for measure of sugar. If the mass is slightly broken it will be safer to use three-fourths as much sugar as juice. If only a small amount of pectin is present, one-half measure of sugar to a measure of juice is advisable. Crab apple usually yields a heavy pectin, and an equal volume of sugar and juice may be used. Apples and blackberries contain a smaller amount of pectin and will usually require three-fourths as much sugar as juice. Grapes require from one-half to three-fourths as much sugar as juice.

Orange Pectin

The following method of extracting pectin from orange peel has been suggested by Dr. M. N. Straughn of the Bureau of Chemistry:

Peel every particle of the outside yellow skin of the orange, cutting it off as thin as possible. Remove all the white peel. Grind this white peel with a meat chopper, and to each cupful pressed down add the juice of one lemon and allow to stand one hour. Add two cups of water. Heat to boiling point and boil five minutes. Set aside until next morning; then add four cups of water, heat to boiling, and boil ten minutes. Allow to cool, drip through cheese cloth, and then through bag. This pectin may be prepared, poured into jars while hot, sealed, sterilized, and kept for later use. The peel which has been allowed to drain may be again treated as described and a quantity of pectin obtained.

Making the Jelly

Cooking the Fruit. The juice of fruit is extracted for jelly-making by cooking fruit with water until it is soft. This usually requires from 25 to 45 minutes. Long cooking destroys the pectin.

Straining. After cooking the fruit, it is placed in a square of cheese cloth and allowed to drain without pressing. The juice is then filtered by pouring through a flannel jelly bag.

The Jelly Bag. A square of white flannel with the two adjacent sides French-seamed makes the best jelly bag. The bag may be hung on nails to drain if loops are placed at the top.

Adding the Sugar. As soon as the juice begins to boil add the sugar and cook rapidly until the jelly stage is reached. By adding the sugar at the beginning there is less danger of crystalization, as the sugar is inverted when cooked with an acid.

Too little sugar makes a tough jelly. Too much sugar causes the jelly to be soft and syrupy. Overcooking and the use of too much sugar cause many failures in jelly-making.

Test juices with alcohol (see Pectin Test) to determine the amount of sugar to use. Either medicated or denatured alcohol can be used.

Testing the Jelly. The skillful use of the thermometer will save many failures in jelly-making. Different juices jell at slightly different temperatures. Grapes usually require a higher temperature than berries and apples.

A good thermometer costs very little money and will soon pay for itself in materials saved. To test the jelly without a thermometer, take a little of the boiling juice in a spoon and cool. When the jelling point is reached, the juice will form a sheet and break from the side of the spoon when poured out. The use of the thermometer, however, will give more accurate results.

The temperatures in this bulletin are for sea level. In the mountain districts 2 degrees F. should be deducted for every thousand feet above sea level. For instance, in the recipe for apple jelly, the temperature of the finished product at sea level is given as 222 degrees F. If this jelly is made at an altitude of 2,000 feet above sea level, the temperature would be 218 degrees F.

Skimming the Jelly. As soon as the jelly stage is reached, skim. There is less waste when the skimming is done at the last.

Pouring Jelly into Glasses. The glasses should be washed and sterilized. Remove them from the water and drain while hot. When the jelly is fin-

ished, pour it immediately into the hot sterilized glasses. Fill the glasses full. When the jelly is firm it will have shrunken, leaving a space for the melted paraffin.

Covering the Jelly. When cold, cover the jelly with a thin layer of melted paraffin to exclude the air. Cover glasses with lacquered tin tops.

Hermetic Caps. If hermetic caps are used, paraffin will be unnecessary as the jelly is sealed and processed while hot.

Jelly Stock (Pectin Extract)

During the summer months when fruit is plentiful, it is advisable to can jelly stock and make it into jelly as it is needed. The jelly stock will keep, while jelly, unless it is hermetically sealed, occasionally will ferment and lose its delicate fruity flavor. The method of preparing the stock is simple. After the fruit is cooked and juice extracted and strained ready for jelly-making, it is poured into jars and processed for 20 minutes. It is then stored. When ready to use, add the required amount of sugar and cook until the jelly stage is reached. If this method is put into practice it will be found that the products from orchard and vineyard can be very rapidly disposed of and the tedious work of jelly- and jam-making postponed until winter. Clearer jelly can be made from jelly stock than from the fresh fruits that have just been cooked, as long standing causes the solids to settle and only the clear juice is used.

Apple Jelly Stock

Wash apples, cut in small pieces, and cover with water. After boiling point is reached, cook from 35 to 45 minutes. Strain and pour juice at once into hot sterilized jars and process 20 minutes. Store in a cool place until ready to make jelly.

Apple Jelly (made from stock)

1 pint apple jelly stock. 1½ cup sugar.

Cook to 222 degrees F., or 105½ degrees C. Skim and pour into sterilized glasses.

Winesap Apple Jelly Stock

4 pounds apples 5 pounds water (to cover).

Wash apples, cut in small pieces, weigh them, and add water to cover. After boiling point is reached, cook for 35 minutes. Proceed as in apple jelly stock.

Winesap Apple Jelly (made from stock)

2 cups winesap apple jelly stock 1½ cup sugar

Cook to 222 degrees F., and pour into hot sterilized glasses.

Apple Jelly

Wash apples and cut into small pieces; cover with water and boil from 35 to 45 minutes. Strain and measure juice. Test with alcohol to determine amount of sugar to be added. Apples usually require three-fourths as much sugar as juice. Cook to 222 degrees F., or 105½ degrees C. Skim and pour into hot glasses.

Crab Apple Jelly

Cut apples in small pieces, cover with water, and when the boiling point is reached cook for 45 minutes. Strain through cheese cloth. Filter by pouring juice through a heavy flannel bag and for each cup of juice use a cup of sugar. Crab apples contain a large amount of pectin and are also very acid. The jelly stage will be reached at 220 degrees F. This jelly is very firm and is excellent in flavor.

Grape Jelly Stock

8 pounds grapes (one-half under-ripe) 2 pounds water (one quart)

Crush grapes and boil with water 20 minutes; strain through cheese cloth and pour juice through a flannel bag. Pour into sterilized jars and process 20 minutes. Store in a cool place until ready to make jelly.

In grape jelly stock the cream of tartar crystals slowly settle to the bottom and by this method crystallization in the jelly is reduced to a minimum. Orange pectin is frequently used with grape jelly stock to prevent the formation of crystals.

Grape Jelly (made from stock)

Test juice with alcohol and add the required amount of sugar. Grapes usually require from one-half to three-fourths as much sugar as juice. Cook to 223 degrees F., or 106 degrees C. Sometimes a higher temperature than this is required for grape jelly. Pour into hot, sterilized glasses.

Muscadine Jelly Stock

Proceed as in directions for grape jelly stock. Any of the following varieties may be used: Scuppernong, Thomas, Mish, James, Eden, Memory, Smith, Flowers, and Luola.

Muscadine Grape Jelly (made from stock)

4 cups muscadine grape jelly stock 1 cup pectin (orange)
3¾ cups sugar.

As soon as the juice begins to boil, add the sugar gradually and cook to 223 degrees F., or 106 degrees C. Pour immediately into hot sterilized glasses.

Scuppernong Grape Jelly

Wash and crush grapes. Add water in the proportion of 1 quart water to 4 pounds grapes. Cook from 20 to 30 minutes. Strain through cheese cloth and filter through flannel jelly bag.

To 4 cups juice add 2 cups orange pectin (see recipe) and 4½ cups sugar. Cook to 223 degrees F., or 106 degrees C. Pour immediately into hot sterilized glasses.

Paste Stock

Cook grape pulp until seeds separate.

Put through potato ricer or colander.

Process in jars 20 minutes.

Store in a cool dry place and make paste fresh when needed.

The Flowers is the best muscadine variety for paste.

Grape Paste

2 pounds paste stock 1 pound sugar (granulated or pulverized).

Cook carefully, stirring constantly until mass will hold its shape. Use large flat pan and wooden paddle.

When finished, the paste is of the consistency of fudge and should be poured out on oiled platters or on a marble slab to dry. When cold cut in one inch squares, roll in granulated sugar, and pack in airtight boxes. This makes a wholesome confection for children as well as for adults.

Strawberry Jelly

Cap, wash, and crush berries; add only enough water to keep them from burning. Cook until soft and strain juice through flannel jelly bag. To 1 pint strawberry juice add 1 pint orange pectin juice and 1 pound sugar. As soon as juices boil add sugar and cook to 223 degrees F., or 106 degrees C. Skim and pour at once into hot sterilized glasses.

Blackberry Jelly Stock

6 quarts blackberries. 1 pint water.

Wash berries, place over heat and after boiling point is reached cook for 15 minutes. Strain through double cheese cloth and process in pint jars for 20 minutes. This will yield 3 pints of jelly stock. Store in cool place.

Blackberry Jelly (made from stock)

2 pints jelly stock. 1½ pound sugar.

As soon as the boiling point is reached, add sugar gradually and cook to 222 degrees F. Skim and pour immediately into hot sterilized glasses.

Mint Jelly

1 pint orange pectin juice. 2 drops oil of peppermint.
1 pound sugar. Small amount of green coloring paste.

Bring the pectin to boiling point, add sugar, and cook rapidly until jellying point is reached (223 degrees F., or 106 degrees C.) Skim quickly and add peppermint and coloring. Stir thoroughly and pour into glasses.

Quince Jelly Stock

Cut quinces into small pieces, cover with water and cook until tender. Strain through cheese cloth and process in pint jars for 20 minutes.

Quince Jelly

2 cups quince jelly stock. 2 cups sugar.

Strain stock through a flannel jelly bag, place on stove, and add sugar when boiling point is reached. Cook to 220 degrees F. Skim and pour immediately into hot sterilized glasses.

Quince and Crab Apple Jelly

1 cup quince jelly stock. 2 cups sugar.
1 cup crab apple jelly stock.

As soon as boiling point is reached, add sugar and cook to 220 degrees F. This jelly has a very fine flavor.

Orange Marmalade Number 1

6 oranges. 3 lemons.

Remove and discard the thin yellow rind from half of the oranges. Cut oranges and lemons into very thin slices and for every measure of fruit add three measures of water. Let stand over night. Cook until fruit disintegrates. Measure and add an equal volume of sugar. Cook to 220 degrees F. The finished marmalade should have the consistency of jelly. A combination of lemon and orange gives a more delicate flavor than orange alone.

Orange Marmalade No. 2

1 lb. peeled oranges. 14 oz. sugar.
 $\frac{1}{4}$ lb. peel removed from oranges. Juice of 1 lemon.
1 qt. water.

Wash fruit, remove one-fourth of the peel and cut into thin slices. Cover with water and boil ten minutes. Drain. Repeat this process twice, cooking in the last water until tender.

With a sharp knife, remove and discard the yellow part from the skin which remains on the oranges. Leave the white peel for it contains the pectin. Weigh the fruit, cut it into small pieces. For each pound of fruit, use 14 ounces of sugar. Put the fruit into a preserving kettle, add one quart of cold water, and cook until the fruit disintegrates—about 20 minutes. Heat to boiling point. Add the sugar and cooked peel. Cook until it sheets from the side of the spoon.

Marmalade

1 grapefruit. $3\frac{1}{2}$ qts. cold water.
1 orange. 5 lbs. sugar.
1 lemon.

Wash fruit, cut in thin slices and discard seeds. Add water and let stand overnight. Cook until the peel is tender. (It will take 4 or 5 hours simmering on top of the stove.) Again set aside overnight. Add the sugar and cook, stirring occasionally until the syrup thickens on a cold dish or flakes from a spoon—218 degrees F. Cool the mixture a little before putting it into glasses so that the fruit will remain in suspension.

Carrot Marmalade

3 c. carrots. 3 lemons.
4 c. sugar. 1 c. water.
2 oranges.

Wash carrots, scrape, and chop in small pieces. Cook until tender. Wash and peel oranges. Cut peeling into fine strips. Boil these until tender in water to cover. Cut the orange pulp in small pieces. Squeeze the juice from the lemons. To the hot carrots add sugar, water, lemon juice, orange pulp and cooked peeling. Cook until syrup is thick and fruit is clear.

PRESERVES

To make preserves, take whole berries, small fruits, or uniform pieces of large fruits, and cook in syrup until they are saturated. The proportions are usually 1 pound of fruit to $\frac{3}{4}$ pound of sugar.

When fruit is cooked in syrup, osmosis or a diffusion between the fruit juices and the syrup takes place. If the syrup is thin when the fruit is put into it, the mixing or diffusion of the fruit juices and the syrup, through the cells of the fruit, takes place evenly and the fruit remains plump; but if the syrup is very heavy, the fruit juices are drawn out rapidly and the syrup cannot enter the fruit rapidly enough to prevent shrinkage or shriveling. It is necessary, therefore, to start preserving in a thin syrup. Boil until the syrup is of the desired density. Remove the fruit and place in a shallow dish, allowing it to stand in some of the syrup while the remainder boils thicker. Pour this syrup over the fruit on the platter and let stand until cold or until the next day, when the whole may be returned to the kettle, allowed to come to a boil, and the fruit removed and set aside in a shallow dish until the syrup is again boiled down.

When thick enough, this syrup is poured over the fruit as at first and the vessel covered and allowed to stand until next morning. The fruit is packed in jars, the syrup poured in little by little as the packing progresses, and until the jar is quite full. The packer must use a reed paddle to remove air bubbles and to push the fruit in place. All jars packed with preserves must be processed after filling to destroy mold spores.

Never use metal kettle for preserves, jams, or jellies. Porcelain-lined or agate kettles are desirable. Cook preserves, jams, and jellies in open vessel that evaporation may take place easily.

Peach Preserves

Peel peaches, cut in halves if small, in quarters if large. Use 1 pound of fruit to $\frac{3}{4}$ pound of sugar. Put enough water with sugar to make a thin syrup, and proceed as in directions for preserving. Cool, pack in jars as symmetrically as possible. Paddle. After packing, process jars 15 minutes.

Pear Preserves

Large pound pears are excellent for preserves. Peel pears and cut into uniform pieces that are not too small. Use 1 pound of fruit to $\frac{3}{4}$ pound of sugar. Put enough water with sugar to make thin syrup. Proceed as in directions for preserving. Let cool, pack in jars, and process for 15 minutes.

Cherry Preserves

Seed and weigh cherries. For each pound of fruit use $\frac{3}{4}$ pound of sugar and $\frac{1}{4}$ cup of cherry juice. Cook sugar and juice together. When cool add cherries and cook rapidly to $106\frac{1}{2}$ degrees C., or 224 degrees F. Pack in jars when cold and process 15 minutes.

Gingered Pears

10 pounds pears, peeled and quartered.

$7\frac{1}{2}$ pounds sugar.

4 ounces ginger root or 2 level tablespoonfuls powdered ginger.

Juice and the grated yellow part of the rind of 3 lemons.

Grind pears through meat chopper. Place all ingredients in enameled kettle. Cook until amber colored and of the consistency of jam. Pack in jars while boiling hot.

Strawberry Preserves

None but freshly-picked berries should be preserved. Practically the same methods are to be followed in the preserving of all berries. Berries should be gathered in shallow trays or baskets, and not in deep vessels which allow them to be bruised and crushed. They should be uniform, ripe, and sound; only large firm berries should be selected for preserving. All berries should be carefully sorted and lightly washed by placing in colander and pouring water over them rather than by putting them into a pan of water.

RECIPE No. 1

(Especially fancy pack but not as economical as recipe No. 2, since a considerable amount of extra syrup is usually left over to be canned separately.)

2 pounds whole berries. 1 pint berry juice.
2½ pounds sugar.

If the best possible color and flavor is to be secured for the finished product, the syrup for preserved berries should be made of berry juice, obtained by crushing, heating and straining the softer, broken berries. Boil together the berry juice and the sugar, and skim and cool the syrup before dropping the berries into it, to prevent shrivelling and toughening the fruit. Return to the fire and bring slowly to a boil in a covered pan. Remove the cover and cook until the fruit looks clear, being very careful not to overcook; the berries should remain whole. If a thermometer is used the cooking may be finished at 222 degrees to 224 degrees F. Skim and cool in a covered pan. If berry preserves are covered for five minutes before removing from the fire and the vessel left covered while cooling, the product will be more plump. The fruit will be better if allowed to cool in shallow trays or pans and stand in the syrup over night; it improves the shape and flavor, as the berries absorb more of the syrup, become heavier, and pack better. Lift the berries out of the syrup carefully and pack cold. Cap; process pint jars for 10 minutes at 180 degrees F.

RECIPE No. 2

2 pounds berries. ½ cup berry juice.
1½ pounds sugar.

Wash, cap, and stem the strawberries. Make a syrup of the sugar and juice and add the berries. Cook to 222 degrees F., or 105½ degrees C., or until the syrup is very thick. Cool quickly, pack into jars previously sterilized for 10 to 15 minutes, and seal as for preserves. More of the natural flavor is retained by using this method, and no syrup will be left over, which means a saving in sugar, but the yield is not so great and the fruit does not remain whole and plump as in the first method given above.

Sun-cooked Preserves

The berries should be washed, capped, stemmed, drained, and measured. Allow an equal weight of sugar for fruit. For every 2 pounds of berries measure one-fourth cupful of berry juice and heat with the sugar. Cook and pour over the whole berries in shallow trays. Stand in the sun for three or four days, bringing indoors each night. Dampness is a great foe to successful sun cookery. Allow the fruit to remain in the sun until it is well plumped and the syrup is thickened almost to a jelly. If the sun

fails to shine, keep the preserves in a cool oven. Pack in sterilized jars and seal. (Recipes for strawberry preserves from leaflet U. S. Department Agriculture.)

Fig Preserves

Gather figs when just ripe (they must not be soft or cracked). Peel carefully, trying not to cut too near the seed. Use 1 pound of sugar and the juice of $\frac{1}{2}$ lemon to each pound of fruit. Place sugar in preserving kettle with enough water to keep it from sticking. Stir occasionally until it begins to boil. Add lemon juice. This will prevent crystals from forming. Add part of the figs, let them boil until clear and transparent. Remove to a platter, which should be placed in the sun if possible. Add more of the figs to the boiling syrup until all are used. When all figs are removed, boil syrup down until as thick as honey. Add the figs which have been sunning or standing; boil 2 minutes. Set aside until next morning, when they may be packed in jars. Process filled jars for 15 minutes.

Packing. Arrange figs in rows in the jars with stems up, pouring in a little syrup as each row is placed. Use paddle to remove bubbles.

Figs which are peeled by hand should be labeled "Skinless Figs," as they bring a better price in the market than those that have the skins removed by scalding in soda water.

Preserved Watermelon Rind

Make a saturate solution of lime, using $2\frac{1}{2}$ tablespoonfuls ($\frac{1}{2}$ oz.) lime (calcium oxide) to 1 gallon of water. After 4 or 5 hours pour off water, leaving excess lime. Remove peel and pink part from 2 pounds watermelon rind and cut rind in 1-inch squares. Soak over night in lime water. Drain, soak in clear water 2 hours and boil for 10 minutes in ginger water (1 ounce ginger to 4 quarts of water). Make a thin syrup, using 2 pounds of sugar, the juice of 1 lemon, and $2\frac{1}{4}$ quarts water. Add gradually the rind to the syrup and cook until tender and clear. When cold, pack in jars, cover with syrup, and process 15 minutes.

JAM

Jam is more easily made than preserves, and is a marketable product. It differs from preserves in the method of cooking, the object being to cook the fruit into a smooth paste of jelly-like consistency.

Blackberries, strawberries, raspberries, and such soft fruits as clearstone peaches and figs make excellent jam. At least three-fourths of the fruit should be fully ripe to give flavor and color to the finished product; one-fourth slightly under-ripe fruit will improve the consistency of the jam.

As in preserves, 1 pound of fruit to $\frac{3}{4}$ pound of sugar is the proportion used.

Put fruit and sugar into preserving kettle with just enough water to prevent burning. Add sugar and mash fruit with a wooden spoon or bat. Cook slowly until fruit is a smooth thick mass. The temperature of the jam when finished will range from 221 degrees F., or 105 degrees C., to 223 degrees F., or 106 degrees C., depending upon the kind of fruit used.

Packing Jam. After jam is cooked it should be poured immediately into hot sterilized jars. Seal and process 15 minutes.

Strawberry Jam

Three-fourths of the berries should be fully ripe. Wash and cap, and to 1 pound of fruit add $\frac{3}{4}$ pound sugar and proceed as in directions for jam.

Raspberry Jam

Follow directions for strawberry jam.

Blackberry Jam

Select wild berries, if possible; they are well flavored and have small seed. For flavor, be sure three-fourths of the berries are fully ripe. Use 1 pound of fruit to $\frac{3}{4}$ pound of sugar, and proceed as in directions for jam.

Peach Jam

Select soft clear-stone peaches. Cut into small pieces, mash, and add $\frac{3}{4}$ pound sugar to each pound of fruit. Proceed as in directions for jam.

Fig Jam

Select soft, thoroughly ripe figs. Peel and mash. Use 1 pound fruit to $\frac{3}{4}$ pound of sugar with juice of $\frac{1}{2}$ lemon for every pound of fruit. Proceed as in directions for jam.

Damson Jam

Wash fruit and pick off stems. To seed, place a small quantity in a colander and lower in hot water. Allow them to heat slowly. Press out the seed and remove. Keep water over a slow fire until all are seeded. Use 1 pound fruit to $\frac{3}{4}$ pound sugar, and proceed as in directions for jam.

Grape Jam

Have one-fourth of the grapes under-ripe. Wash the fruit and remove stems. Separate the skins from the pulp and cook pulp until seeds can be removed by pressing fruit through a colander. Boil the skins with a little water until they are tender. Add pulp and to 1 pound of fruit use $\frac{1}{2}$ pound sugar. Proceed as in directions for jam. The skins may be left out if desired.

FRUIT JUICES

Fruit juices are easily and quickly made, and require very little equipment. A crusher of some kind is necessary. In making large quantities a cider mill can be used or if one is not available a wooden crusher can be made at home. If only a small quantity of fruit is to be handled a potato-masher will give satisfactory results. Buckets for holding the juice, cheese-cloth and flannel for straining, a large pan for heating the fruit and a wash-boiler for pasteurizing will complete the list of equipment.

The juices of grapes, strawberries, raspberries, blackberries, and cherries make a healthful, delicious drink.

Only sound ripe fruit should be used. The fruit is crushed and heated to simmering point, 180 degrees F. It is then strained through cheese-cloth and allowed to run slowly through a flannel bag. Add 1 cup of sugar

for every gallon of juice. Pour juice into hot sterilized jars or bottles and process at simmering point for 30 minutes. If bottles are used cap before processing. In using jars adjust tops and raise clamps. Seal after processing.

Muscadine Grapes

The muscadine family includes the following well-known varieties: Scuppernong, Thomas, Mish, Eden, James, Memory, Smith, Flowers, and Luola. Most of these grapes make excellent juice of fine flavor. The Thomas is perhaps the best, and does not require the addition of any sugar. The cold pressed juice is very superior in flavor to the hot pressed juice.

Muscadine Grape Juice (cold pressed)

Crush grapes, strain through cheesecloth, let stand 1 hour.

Strain or filter through flannel.

Pasteurize in jars or bottles at 185 degrees F. 1 to 2 minutes.

Let stand for 8 months. Syphon off juice and repasteurize.

In repasteurizing do not use a higher temperature than first pasteurization, as more solids will form.

One bushel of grapes will yield from 3 to 4 gallons of juice.

Hot Pressed Muscadine Grape Juice

Pick, wash, press, and cook grapes until seeds separate.

Strain through cheesecloth, cool, and filter through flannel. Add one cup of sugar for every gallon of juice.

Pour into hot sterilized jars or bottles, cap, and pasteurize at 185 degrees F. 1 to 2 minutes.

Flavoring Syrup (French method)

5 cups juice (see above).

3 pounds sugar.

3 cups water.

Cook sugar and water to 243 degrees F. Add juice immediately. Bring to boiling point, skim, and pour into hot sterilized bottles. Cap immediately.

Process for 5 minutes at 212 degrees F.

Making Jelly from Pomace

After grapes are crushed to obtain cold-pressed grape juice the pomace can be made into an excellent jelly. Four pounds of pomace will yield 2 dozen 4-ounce glasses of jelly. The wet pomace is cooked for 15 minutes with enough water to barely cover. It is then strained and the juice tested for pectin and the required amount of sugar added. Cook to 223 degrees F., or 106 degrees C., and pour immediately into hot sterilized glasses.

Pomace left from cider-making can be made into apple jelly by using the above method. The temperature for the finished product will be 222 degrees F., or 105½ degrees C.

PICKLES

Pickle-making begins with the brine, and to carelessly-made or carelessly-maintained brine is attributed most of the soft and unfit pickles.

Dr. Edwin Le Favre, of the Bureau of Chemistry, U. S. Department of Agriculture, has written an excellent bulletin (Farmers' Bulletin, 1159) on Fermented Pickles. Every pickle maker is advised to read this bulletin in full. Much of the chapter on brines and the recipes for dill pickles and sauerkraut are reprinted here.

Salt Pickles

In the household, where pickles usually are made in small quantities, stone jars constitute very useful receptacles. A 4-gallon jar, which will hold approximately 12 pounds ($\frac{1}{4}$ bushel) of cucumbers, is a convenient size.

Wash the cucumbers if dirty, pack them in the jar, and cover with 6 quarts of a 10 per cent brine (22½ ounces salt to 6 quarts water, 40 degrees on salinometer scale). At the time of making up the brine, or not later than the following day, add more salt at the rate of 1 pound for every 10 pounds of cucumbers used, in this case 1 pound and 3 ounces. This is necessary in order to maintain the strength of the brine. Cover with a round board or plate and on top of this place a weight heavy enough to keep the cucumbers well below the surface. At the end of one week and of each succeeding week for 5 weeks add (in this case) $\frac{1}{4}$ pound of salt. In adding salt always place it on the cover. If the salt is added directly to the brine it may sink to the bottom, as a result of which the salt solution at the bottom would be very strong, while that near the surface might be so weak that the pickles would spoil. A scum, made up usually of wild yeasts and molds, will form on the surface. As this may prove injurious by destroying the acidity of the brine, it should be removed by skimming.

Clean, water-tight barrels should be used in making larger quantities of pickles. With a barrel holding from 40 to 45 gallons, proceed as follows: Put into the barrel from 5 to 6 inches of a 40 degree brine. To this brine it is well to add 1 quart of good vinegar. In this brine place the cucumbers as they are gathered. To keep the cucumbers below the brine, put a loose wooden cover over them and weight it with a stone heavy enough to bring the brine over the cover. The cucumbers should be weighed each time before they are added. After the cover and stone have been replaced add to the brine over the cover 1 pound of salt for every 10 pounds of cucumbers added.

If the cucumbers are not added too rapidly it will be unnecessary to add more brine, for when a sufficient weight is maintained on the cover the cucumbers make their own brine. If, however, the cucumbers are added rapidly, or if the barrel be filled at once, more brine may be required. In such case add a sufficient amount of the 40-degree brine to cover the cucumbers.

When the barrel is full, add 3 pounds of salt each week for 5 weeks (15 pounds to a 45-gallon barrel). In adding the salt place it on the cover. Added in this way it goes into solution slowly, insuring a brine of uniform strength throughout, and a gradually increasing salt concentration. Thus shriveling of the pickles is prevented to a great extent and the growth and activity of the lactic bacteria are not seriously checked. Stirring or agitation of the brine is not advisable and may be harmful for the reason that the introduction of air bubbles is conducive to the growth of spoilage bac-

teria. The scum which forms from time to time on the surface should be removed.

If the cucumbers are kept well under the brine and salt is added in the proportion indicated, it will not be necessary to exclude the air or seal in any manner.

Pickles prepared in this way are known as salt pickles or salt stock. If they are well covered by the brine and if the surface remains clean they should keep indefinitely. A proper curing requires from 6 weeks to 2 months or possibly longer, according to the temperature at which it is carried out and the size and variety of cucumbers used.

After a partial soaking in water to remove excess of salt, these cucumbers may be eaten as salt pickles. Many prefer them in this form. Most people, however, like them better after they have been given an additional treatment in vinegar alone, or in vinegar combined with sugar and spices. Whatever the final disposition, pickles should first receive this perfect curing in brine. Attempts to use short cuts or to make pickles "over night," as is sometimes advised, are based on an erroneous conception as to what really constitutes a pickle.

Salt percentages, corresponding salinometer readings, and amount of salt required to make 6 quarts of brine

Salt in Solution	Salino- meter Reading	Amount of Salt Present in 6 Quarts of Finished Brine	Salt in Solution	Salino- meter Reading	Amount of Salt Present in 6 Quarts of Finished Brine
Per Cent	Degrees	Ounces	Per Cent	Degrees	Ounces
1.06	4	2	8.48	32	18
2.12	8	4 ¼	9.54	36	20
3.18	12	6 ½	10.6	40	22 ½
4.24	16	8 ½	15.9	60	35
5.3	20	11	21.2	80	48
6.36	24	13	26.5	100	64
7.42	28	14 ½			

The figures given in the first two columns of tables are correctly stated. Those in the last column are correct within the possibilities of ordinary household methods. In making up a brine from this table, first dissolve the required amount of salt in a smaller volume of water, then add water to make up as nearly as possible to the required 6 quarts.

A brine in which a fresh egg just floats is approximately a 10 per cent solution.

Fermentation takes place fairly well in brines of 40 degrees strength, and will, to some extent at least, up to 60 degrees. At 80 degrees all fermentative action ceases.

The amount of brine necessary to cover vegetables is equal to about one-half of the volume of the material to be fermented. For example, if a 5-gallon keg is to be packed, 2 ½ gallons of brine are required.

Causes of Failure and How to Avoid Them

A *soft or slippery condition* is one of the most common forms of spoilage in making pickles. This is the result of bacterial action, and always occurs when pickles are exposed above the brine and very often when the brine

is too weak to prevent the growth of spoilage organisms. Prevention lies in keeping the pickles well below the brine and the brine at the proper strength. Experiments have shown that in order to insure the keeping of pickles for more than a very few weeks a brine should contain 10 per cent of salt. Once pickles have become soft or slippery as a result of bacterial action, no form of treatment will restore them to a normal condition.

Hollow pickles sometimes occur during the process of curing. This is, indeed, one of the most frequent causes of failure in pickle-making. This condition does not, however, mean a total loss, as in the case of softening, for the reason that such pickles may be utilized in the making of mixed pickles or certain forms of relish. Hollow pickles are generally believed to be the result of a faulty development or nutrition of the cucumber. While there are good reasons to believe that this trouble is inherent in the cucumber, there is also a strong probability that faulty methods may contribute to this condition. One of these is allowing too long a time to intervene between gathering and brining. This period should not exceed 6 or 8 hours.

Hollow pickles frequently become *floaters*. This condition is the result of the formation of gas within the pickle. This lowers the relative weight of the pickles and causes them to rise to the surface.

The use of so-called hard waters should be avoided in making up a brine. The presence of large amounts of calcium salts and possibly of other salts found in many natural waters may prevent the proper acid formation and thus interfere with a normal curing of the pickles. The addition of a small amount of vinegar serves to overcome alkalinity and is valuable, especially where hard water must be used in making up brine. Iron, if present in any appreciable amount, is very objectionable. The presence of iron, under certain conditions, may cause a blackening of the pickles.

Shriveling of pickles often occurs when they have been placed at once in very strong salt or sugar solutions or even in very strong vinegars. For this reason such solutions are to be avoided so far as possible. When their use is desirable, the pickles should first be given a preliminary treatment in a weaker solution. This difficulty is most often encountered in the making of sweet pickles. The presence of sugar in high concentrations is certain to cause shriveling unless proper precautions are taken.

Dill Pickles

The method for making dill pickles differs from that for making salt pickles in two important particulars: (1) A much weaker brine is used, and (2) spices are added, chief of which is dill. Dill herb, the entire stalk of which is used, gives a distinctive flavor to pickles.

By reason of the weaker salt concentration, a much more rapid curing of the pickles takes place. As a result they can be made ready for use in about half the time required for ordinary brined pickles. This shortening of the period of preparation, however, is gained at the expense of the keeping quality of the product. For this reason it is necessary to resort to measures which will prevent spoilage.

For making dill pickles in the home, use stone jars, or clean, water-tight kegs or barrels. If a 4-gallon jar is used, proceed as follows: Place in the bottom a layer of dill and $\frac{1}{2}$ ounce of mixed spice. Then fill the jar to within two or three inches of the top with washed cucumbers which are as uniform in size as possible. Add another $\frac{1}{2}$ ounce of spice and a layer of dill. If they can be obtained, it is a good plan to place over the top a layer of grape leaves. In fact, it would be well to place these at both the bottom and top. They make a very suitable covering and have been found

to have a greening effect on the pickles. Pour over the pickles a brine made up as follows: Salt, 1 pound; vinegar, $\frac{3}{4}$ quart; and water, 10 quarts. Cover with a board cover or plate with sufficient weight on top to hold the cucumbers well below the brine. If the cucumbers are packed at a suitable temperature (about 86 degrees F.), an active fermentation will at once set in. This should be completed in from 10 days to 2 weeks, if a temperature of about 86 degrees F. is maintained. A scum soon forms on the surface. This consists usually of wild yeasts, but often contains molds and bacteria, and should be skimmed off.

After active fermentation has ceased, it is necessary to protect the pickles in some way against spoilage. This may be done in one of two ways: (1) Cover with a layer of paraffin. This should be poured while hot over the surface or as much of it as is exposed around the edges of the board cover. When cooled this forms a solid coating which effectually seals the pickles. (2) Seal the pickles in glass jars or cans. As soon as it is found that they are sufficiently cured, which may be determined by their agreeable flavor and dark-green color, transfer them to glass jars (2-quart size), and fill with a fresh brine made as directed. Add a small amount of dill and spice. In this case it is well to bring the brine to a boil, and, after cooling slightly, pour it over the pickles. Seal the jars tight.

In this connection it may be well to call attention to the fact that in no case should a hot brine be used at the start of a fermentation. In all probability the hot brine would kill the organisms present, thus preventing any fermentation.

The plan of preserving dill pickles by sealing in jars has the merit of permitting the use of a small quantity without the necessity of opening up and again resealing a large bulk, as is the case when pickles are packed in large containers and sealed with paraffin.

If it is desired to put up dill pickles in barrel lots, select none but clean, tight barrels. Anything in the barrels which would give the pickles an "off" flavor must be removed. A careful observance of this precaution may save much trouble and disappointment.

Fill the barrel with washed cucumbers, adding from 6 to 8 pounds of green or brined dill, or half that amount of dry dill, and 1 quart of mixed spices. If brined dill is used, it is well to add about 2 quarts of the dill brine. The dill and spices should be evenly distributed at the bottom, middle, and top of the barrel. Also add 1 gallon of good vinegar.* Head up tight and through a hole bored in the head fill the barrel with a brine made by adding salt in the proportion of $\frac{1}{2}$ pound to the gallon of water. Add brine until it overflows the head and level with top of the rim. This level should be maintained by adding brine from time to time as required. Remove the scum which soon forms on the surface. During the period of active fermentation the barrel should be kept in a warm place, and the hole in the head should remain open to allow gas to escape. When active fermentation is over, as indicated by the cessation of bubbling and frothing on the surface, the barrel may be plugged up tight and placed in storage, preferably in a cool place. It is well to bear in mind, however, that, on account of leakage and other causes, the brine in a barrel of pickles may recede at any time. Occasional inspection, therefore, should be made to determine this

*The addition of vinegar is not essential in the making of dill pickles, and many prefer not to use it. Its use, however, in the proportion indicated would be favorable to the growth of the lactic bacteria and at the same time would be inhibitive, to some extent at least, to the growth of spoilage organisms. Its use, therefore, is to be regarded with favor. Some prefer also to omit the use of mixed spices for the reason that they interfere with the distinctive flavor of the dill herb which by many is considered most desirable.

matter, and, if necessary, more brine added. Pickles put up in this way should be ready for use within about 6 weeks.

In case it is desired to hold the pickles in storage for a long time, it would be advisable to use a brine somewhat stronger than that indicated. A 30-degree brine, made by adding 10 ounces of salt to a gallon of water, is used for this purpose. Pickles packed in a brine of this strength will keep a year if the barrels are kept filled and in a cool place. The important factor in preserving pickles put up in a weak brine such as is ordinarily used for dill pickles, is the exclusion of air. When put up in tight barrels this is accomplished by keeping the barrels entirely filled with brine.

Sauerkraut

Fermented salt cabbage, commonly called sauerkraut, is a form of food which has much to commend it to popular favor. The making of sauerkraut offers a good means of utilizing surplus stock of cabbage and at the same time affords a food which to most people is both palatable and wholesome. It also enables the housewife to carry over into the winter months a form of vegetable food which helps to vary the diet at a time when this often consists too largely of meat.

For making sauerkraut in the home 4- or 6-gallon stone jars constitute the best containers, unless very large quantities are desired, in which case kegs or barrels may be used.

Select only mature, sound heads of cabbage. Quarter them and slice off the core portion. For shredding, one of the hand shredding machines which can be obtained on the market is much the best, although an ordinary slaw cutter or a large knife will do.

In making sauerkraut the fermentation is carried out in a brine made from the juice of the cabbage which is extracted by the action of salt. One pound of salt for every 40 pounds of cabbage makes the proper strength of brine to produce the best results. This may be distributed as the cabbage is packed in the jar or it may be mixed with the shredded cabbage before being packed. Thus, the distribution of 2 ounces of salt with every 5 pounds of cabbage probably is the best way to secure an even distribution. The cabbage should be packed firmly but not too tightly in the jar or keg. When full, cover with a clean cloth and a board cover or plate. On the cover place a weight heavy enough to cause the brine to come up to the cover. If the jar is kept at a temperature of about 86 degrees F., fermentation will start promptly. A scum soon forms on the surface. As it tends to destroy acidity and may injure the cabbage beneath, it should be skimmed off from time to time. If kept at the temperature indicated the fermentation should be completed in from 6 to 8 days.

A well-fermented sauerkraut should show a normal acidity of approximately +20 or a lactic acid percentage of 1.8.

After fermentation is complete, the kraut should be set in a cool place. If the cabbage is fermented late in the fall or if it can be stored in a very cool place, it may not be necessary to do more than keep the surface skimmed and protected from insects, etc. Otherwise, it will be necessary to resort to measures to prevent spoilage. This may be done, as suggested in the case of dill pickles, by one or two methods: (1) A layer of hot paraffin may be poured over the surface, or as much of it as is exposed around the cover. Properly applied to a clean surface, this effectually seals the jar and protects the contents from contamination. (2) After the fermentation is complete, pack the kraut in glass jars or cans, adding enough of the kraut brine, or, in lieu of this, a weak brine made by adding 1 ounce of

salt to a quart of water, to completely fill the jars. Seal the jars tight, and set them away in a cool place. If it has reached the proper degree of acidity, sauerkraut preserved in this way should keep as long as desired.—*Farmers Bulletin, 1159.*

Soaking Brined Pickles

Before making brined cucumbers into sweet or sour pickles the salt should be partially but not entirely removed by soaking the cucumbers in cold water.

Where small amounts (1 or more pecks) are made, place pickles in two or more large porcelain dishpans, cover with cold water, and let stand overnight.

Change water twice in the morning and let stand for at least an hour before pickling.

Good Vinegar

Frequently pickles are spoiled by the use of inferior vinegar. Select a good, clear vinegar of 40 to 60 grain strength (4 to 6 per cent of acetic acid).

If fruit vinegar is used, it should be filtered to remove sediment. (If filter paper is not available, fairly satisfactory results may be had by filtering through doubled flannel.)

Spiced Vinegar

To 1 gallon vinegar add	1 piece mace.
½ ounce allspice.	1 pound sugar for sour pickle.
½ ounce cloves.	2 pounds sugar for less acid pickle.
1 stick cinnamon.	

For sweet pickle use from 4 to 6 pounds of sugar to the gallon of vinegar. Granulated sugar is always best.

Tie spices in muslin bag, drop in vinegar, add sugar, and boil for fifteen minutes. Set spiced vinegar aside for three weeks before removing spice bag.

Cooking Pickles

Place the spiced vinegar in porcelain or agate vessel, bring to a boil, add pickle, a few at a time; let boil again; remove pickles and pack in stone or large glass jars. Continue until all cucumbers have been cooked. One gallon of vinegar will pickle three-fourths of a peck of cucumbers.

It is advisable to pack pickles in large jars first, that enough vinegar may be added to cover well.

Osmosis takes place and a weakened liquor results. It is necessary, therefore, to keep pickles at least six weeks in plenty of spiced vinegar before packing closely in commercial jars where there is room for only a small amount of vinegar.

Commercial Packing

Always add fresh spiced vinegar when packing in commercial jars. Pack cucumbers of one size only in a jar and arrange symmetrically. Use as a model a well packed jar of pickles, which can be found in any good grocery store.

Jars after being packed with pickles, should be put into the canner and processed 15 minutes to prevent mold.

Cucumber Pickle

Select small cucumbers from 1½ to 2½ inches long. Brine and soak as directed.

To ¾ peck of cucumbers use 1 gallon spiced vinegar. If sweeter pickle is desired add 2 pounds of sugar.

Bring vinegar to a boil, add cucumbers ¼ of quantity at a time, and let them boil for 2 minutes but not until soft. Place in large stone or glass jars as they are taken from the kettle. When all have been packed, cover pickle with the boiling vinegar.

Seal jar, or cover top of crock with layers of thick paper tied tightly to exclude the air. Let pickle remain in vinegar 6 weeks before packing in commercial jars. Remove spice bag after 3 weeks.

Never leave loose spice in jars as it will darken the pickle and in time produce a bitter taste.

Garnish by placing on each side of the jar 1 pod of red pepper from which the seed have been removed.

Process packed jar 15 minutes to prevent mold.

Sliced Cucumber Pickle

36 large cucumbers.

1 quart sliced onions.

To 1 gallon spiced vinegar add

2 tablespoonfuls tumeric.

1 tablespoonful black pepper, ground.

2 tablespoonfuls celery seed.

3 tablespoonfuls white mustard seed.

2 tablespoonfuls ground mustard.

2 pounds granulated sugar.

All measures level.

Let mixture boil and add pickles which have been previously prepared.

To prepare pickles, remove cucumbers from brine, soak over night in an abundance of cold water, drain, and cut in cross slices or rings ¾ inch thick.

Slice onions, scald with boiling brine, drop in cold water for a minute. Mix cucumbers and onions and boil for 15 minutes.

Do not boil until the cucumbers soften.

Leave pickles loosely packed in large jar and well covered with vinegar for at least six weeks before packing closely in small jars.

All pickles should be processed for 15 minutes after packing to prevent mold. Garnish with red pepper.

Onion Pickle

Select small silver-skin onions, sort in sizes ½ inch in diameter. Remove skins until the smooth surface is reached.

Place in a large jar or crock and pour over them a strong brine. Let stand for 24 hours.

The following day make a strong brine, bring to a boil, drop in the onions, and boil for 5 minutes. Remove, drop onions in cold water for 1 hour. Drain, place in large jars, and pour over them boiling spiced vinegar. (See recipe spiced vinegar.)

Let these stand for at least six weeks before packing in commercial jars.

Process packed jars for 15 minutes as in cucumber pickles.

Garnish with a sprig of mace on each side of jar. Add, also, small rings of hot red pepper.

Fresh spiced vinegar should be added when onions are packed in jars.

Stuffed Bell Pepper Pickle

- 4½ pints of chopped white cabbage (1 medium size head).
 2 dozen bell peppers, green. 2 tablespoonfuls celery seed.
 1 gallon spiced vinegar. ¼ cup salt.
 3 tablespoonfuls white mustard seed.

All measures level.

Sprinkle cabbage with ¼ cup salt and allow to stand for 4 hours. Squeeze dry by placing in muslin bag and twisting tightly.

Thoroughly mix with the cabbage the mustard and celery seed.

Peppers. Select sweet bell peppers of uniform size, cut off the top with the stem, remove every seed, stuff peppers with the cabbage, replace top and stitch firmly with needle and coarse thread.

Place stuffed peppers in stone jars, pouring over them enough boiling spiced vinegar to cover thoroughly. (Remove spice bag from vinegar after 3 weeks.) Allow peppers to remain in vinegar 6 weeks before packing in commercial jars. Use fresh spiced vinegar for packing.

Process packed jar 15 minutes.

Pickles Which Do Not Require Long Brining

Sliced green tomato pickles, chow chow, and Dixie Relish do not require long or careful brining as do cucumbers, and for that reason are more easily made.

The person inexperienced in pickle making is advised to begin with this type of pickle.

Sliced Green Tomato Pickle

- ½ gallon sliced green tomatoes. 2 tablespoonfuls celery seed.
 1 pint onions, sliced. 1 pound brown sugar.
 ½ teaspoonful ground black pepper. ½ tablespoonful allspice.
 1 small red pepper. ½ tablespoonful cloves.
 3 tablespoonfuls white mustard seed. ½ cup salt.

All measures level.

Sprinkle sliced tomatoes and sliced onion with salt. Let stand 4 hours in separate bowls. Place each in a thin muslin bag and squeeze gently until juice is removed.

When ingredients are prepared, place in porcelain kettle, mixing with them the mustard and celery seed, sugar, and pepper. Cover with good vinegar (1½ pints), to which the spices tied in a bag have been added.

Boil slowly until quite soft and tender. This pickle is not good if removed from the fire before the tomatoes are tender.

After cooking pour into jars and seal while hot. Be careful to use a liberal amount of the vinegar in which pickle was cooked when packing.

Chow Chow

- 1 gallon chopped cabbage.
 ½ gallon chopped green tomatoes.
 1 dozen large onions (chopped).
 1 dozen sweet bell peppers, green (chopped).
 ½ dozen sweet bell peppers, red (chopped).
 2 pounds sugar.
 ½ cup ground mustard.
 6 tablespoonfuls white mustard seed.
 3 tablespoonfuls celery seed.

- 1 tablespoonful ground ginger.
- 1 ounce cloves mashed and tied in bag.
- Vinegar to cover mixture (about one gallon).

Sprinkle lightly with salt the chopped ingredients, putting each in separate bowl. Let stand for 4 hours. Press the juice from the tomatoes. Place the chopped peppers and cabbage in separate muslin bags and squeeze the juice from them.

Mix all ingredients, being careful to rub mustard and ginger to a smooth paste with a little vinegar before adding.

Pour over these the vinegar and boil the mixture slowly for one-half hour.

Pour into large jar. Cover tightly. Remove spice bag after 3 weeks. After 6 weeks chow chow may be packed in commercial jars. Use the same vinegar in which pickles were cooked when packing chow chow.

Process packed jars 15 minutes.

Mustard Pickle

- $\frac{1}{2}$ pound ground mustard.
- $\frac{1}{2}$ ounce tumeric.
- $\frac{1}{2}$ cup flour.
- $1\frac{1}{2}$ pound brown sugar.

Rub these to a smooth paste with one cup of vinegar. Add $\frac{1}{2}$ ounce of celery seed. Add gradually 1 gallon of vinegar. Place on stove until mixture thickens, stir constantly.

This dressing may be poured over:

1 pint very small whole cucumbers which have been taken from brine and soaked over night according to directions for brining and soaking.

- 1 pint sliced brined cucumbers.
- 1 pint small onions (treated first as in onion pickle).
- 3 sweet bell peppers, green (chopped, leaving out seed).
- 3 sweet bell peppers, red (chopped, leaving out seed).
- 1 pint tiny green tomatoes (cut in half).
- All measures level.

Keep in large jar for six weeks. Pack in small jars, using same dressing in which it has stood. Process packed jars 15 minutes.

Dixie Relish

- 1 quart chopped or ground cabbage.
- 1 pint chopped or ground white onions.
- 1 pint chopped or ground sweet green pepper.
- 1 pint chopped or ground sweet red pepper.

Distribute $\frac{1}{2}$ cup salt over these chopped ingredients and let each stand in separate bowl for 4 hours. Squeeze in muslin bag until they are free from juice. Place all ingredients in porcelain-lined kettle with

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|--|-------------------------------------|
| 4 tablespoonfuls mustard seed. | 1 tablespoonful salt. |
| 2 tablespoonfuls celery seed. | 1 tablespoonful allspice, unground. |
| 1 quart vinegar. | 1 tablespoonful cloves, unground. |
| $1\frac{1}{2}$ pound granulated sugar. | 1 stick cinnamon. |

Spices should be tied in bag. Boil mixture for 10 minutes. Pour into jars, seal while hot.

Sweet Pickled Peaches

$\frac{1}{2}$ bushel firm clingstone peaches. 1 ounce cloves.
 1 gallon vinegar. 3 sticks cinnamon.
 10 pounds granulated sugar. Tie spices in bag.

Select ripe, firm peaches, absolutely sound. Peel by hand, endeavoring to do it as smoothly as possible.

Boil vinegar, sugar and spices for 5 minutes. To boiling vinegar add $\frac{1}{4}$ quantity of peaches at a time, allow these to remain for 1 minute but not until soft, remove from fire, place in large jar, and when all have been scalded, pour over them sufficient boiling vinegar to cover well. Seal the jar. Let pickle stand for 6 weeks before packing in commercial jars. Remove the spice bag after 3 weeks.

Process packed jars for 15 minutes.

Watermelon Rind Sweet Pickle

7 pounds prepared watermelon rind. $\frac{3}{4}$ ounce cloves (whole).
 3 pints vinegar. 2 sticks cinnamon.
 4 pounds sugar. $1\frac{1}{2}$ ounce ginger root.

Prepare 7 pounds of rind. Remove the green part and cut off the pink melon until the rind is firm. Cut these pieces into uniform strips $1\frac{1}{4}$ inches wide and $2\frac{1}{2}$ inches long.

Let stand over night in weak brine. Rinse and scald until tender in alum water. (2 level teaspoonfuls powdered alum to 1 quart water.) Rinse again in cold water.

Place in porcelain-lined kettle, add vinegar, sugar, cinnamon, slightly pounded ginger-root, and spice in bag. Cook until rind is tender. Place in jars, seal, and allow pickle to stand 6 weeks before packing in commercial jars. Remove spice bag after 3 weeks. Process packed jars 15 minutes.

Yellow Cucumber Sweet Pickle

Thoroughly ripe cucumbers that have turned yellow can be treated in the same manner as the watermelon rind and made into excellent sweet pickle.

TOMATO CATSUP

Select red-ripe tomatoes. Small and broken fruit, which will not do for canning, may be used, if it is sound and red. Any green or yellowish parts of fruit will make a catsup inferior in flavor and color and not good for market. Use whole spices tied loosely in a bag while cooking, and remove before bottling to prevent darkening the product.

Cook the tomatoes thoroughly, put through a colander or sieve, saving all pulp, and measure. For every $2\frac{1}{2}$ gallons of pulp use the following:

2 cups finely chopped onion.	1 tablespoonful ground black pepper.
3 teaspoonfuls cloves.	$1\frac{1}{2}$ cup sugar.
3 teaspoonfuls cinnamon.	1 cup salt.
3 teaspoonfuls red pepper.	1 quart vinegar.
3 tablespoonfuls allspice.	

Boil all ingredients in a porcelain kettle until the mixture thickens. Add hot vinegar and boil for thirty minutes more. Pour boiling catsup into sterilized bottles and cork immediately. Use new corks.

This recipe will make twenty-two twelve-ounce bottles of catsup.