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FOOD PRESERVATION III



UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE
AGRICULTURAL EXTENSION SERVICE

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DO'S AND DON'TS FOR CANNING

DO

Do read directions for canning the product and follow them.

Do plan ahead and have cans, lids, and other equipment ready before starting to can.

Do can in small amounts and work quickly to preserve "freshness."

Do select fresh products in tip-top condition, and grade for size and degree of maturity or ripeness.

Do be scrupulously clean and have plenty of boiling water handy.

Do work rapidly and allow no delay in any step of the canning.

Do be accurate—follow up-to-date directions in every detail.

DON'T

Don't use a jar that is nicked, cracked or has a rough top edge or one that is not a standard jar.

Don't try to do all the canning in one day.

Don't try to can vegetables that are past their best eating stage or have wilted or become heated.

Don't use the dish cloth for wiping the top of the jar—use a fresh, clean cloth or paper towel.

Don't let the fruit or vegetable wait.

Don't can by guess or hear-say.

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FOOD PRESERVATION III

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“—I pledge my hands to larger service—.” By enrolling in a food preservation project and working at it you are living up to part of the 4-H pledge which you repeat so often. You will do this by increasing your skill in canning and freezing. You'll enjoy seeing on the cellar shelves some of the colorful jars of food *you* canned and you can point with pride to the packages of frozen food in the freezer that you learned to do in this project. This is going to be an interesting and worthwhile project, and when you have completed it you will know how to can vegetables, freeze party food, chicken and meats, and to make jelly and sauerkraut.

THE PRESSURE CANNER

In Food Preservation II, you learned to use the boiling water bath and the steam canner. In this project you will learn to use the pressure canner.

With a pressure canner you can have a cooking temperature higher than boiling water. You must heat low-acid foods (vegetables, meats, fish) to a higher than boiling temperature for canning in order to kill the spoilage organisms. With ten pounds of pressure the temperature reading is 240°F. A pressure canner takes about one-third of the time and fuel required for a water bath and it is easier, too, since the amount of water used is so little.



The original cost of a pressure canner may seem high but it should last years and, if much canning is done, the cost per jar is small.

Before you start to can, learn how to use a pressure canner. Steam under pressure is not dangerous if handled properly. Always read and follow the instructions that come with the canner. Then, remember there are five important things to do for safety each time you use a pressure canner.

1. Be sure the pop off, petcock, and/or safety valve is clean, free of corrosion, and in good condition.
2. Have enough water in the canner to keep it from boiling dry before the processing time is up.
3. When the canner is being used, never put the lid on without fastening it securely. If no pressure is needed, use some other lid.

*In collaboration with Ruth C. Upchurch and Charline Lindsay, State Club Agents.

- 4. Always make sure the petcock is open when the cover is placed on the canner; and be sure the petcock *is open before you start to unfasten* the cover. *Never* start to unfasten the lid before the pressure is down and most of the steam out.
- 5. When removing the lid, tilt it *away from you* so the steam will not come up in your face.

CANNING VEGETABLES

Cleanliness, accuracy, speed, proper equipment and high quality vegetables are the key words in canning. Before you start to can, look up the directions for canning that particular food and plan so that when you begin, you can go right along with no delay in any step of the process.

1. Assemble and prepare equipment. Select standard jars with no defects. Wash jars in hot soapy water. *For safety always use the two-piece lids* in a pressure canner. You do not need to adjust them after processing and the jars can stand and cool a few minutes in the canner after removing the lid. Too, you lose less juice from the jars with this type of lid than with other types. For information on jar lids and how to use them, see Food Preservation II, 4-H Circular 120.

- 2. Put hot water in the canner.
- 3. Select fresh, young vegetables and sort for uniformity of size and maturity.
- 4. Wash vegetables carefully and thoroughly. Do small lots at a time and do not let them become water soaked or bruised.
- 5. Prepare the vegetable as for cooking, and then heat required time.
- 6. Pack into the jars quickly, having about two-thirds vegetables and one-third liquid. Leave 1/2 to 1 inch head space. For flavor add salt, 1 teaspoon for each quart. Remove air bubbles. Make sure the liquid covers the solid food. Wipe top of jar carefully, adjust lid, and immediately place container in the hot canner.

7. Process as indicated for the particular vegetable. Only count the time the pressure in the canner is of the required amount.

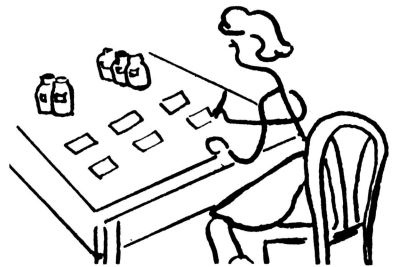
8. When the processing is complete and the pressure down, remove the lid, and after a minute or two, remove the jars from the canner to a *dry*, non-metal surface.

9. Cool jars out of a draft, uncovered and in an upright position.

10. When cool, remove bands. Test seals and observe for leakage. Any jars that are not sealed, use or transfer contents to another jar and reprocess. Clean, shine, label, and store in a cool, dry, frost-proof place.



Watch the time.



Label jars, then store.

APPROXIMATE YIELD OF CANNED VEGETABLES FROM RAW

Vegetables	For 1 pt.	1 Bu. Fresh	Will can
Asparagus	1-2 lbs.		
Beans, snap	1 lb.	30 lbs.	16-20 qts.
Beets without tops	1-1 ½ lbs.	52 lbs.	16-20 qts.
Carrots without tops	1 bunch	50 lbs.	20-24 qts.
Corn, sweet, in husks	3-5 ears	35 lbs.	15-20 pts.
Greens	1-1 ½ lbs.	12-18 lbs.	6- 9 qts.
Lima beans in pods	2-3 lbs.	32 lbs.	12-16 pts.
Peas in pods	2-2 ½ lbs.	32 lbs.	12-16 pts.
Sweet potatoes fresh	1 ½ lbs.	55 lbs.	18-22 qts.
Tomatoes	1 ½ lbs.	50 lbs.	15-20 qts.

Home canning of these vegetables is not recommended: cabbage, cauliflower, celery, cucumbers, egg plant, lettuce, onions, parsnips and turnips. The flavor and texture of these vegetables when canned, are poor and most of them are good frozen or stored.

Asparagus

1. Wash asparagus thoroughly to remove all soil. Trim off scales and tough ends, and wash again.

2. If asparagus is to be canned whole, tie in uniform bundles and stand it in boiling water for 2 to 3 minutes. If it is to be canned "cut," cut into 1 to 3-inch pieces, cover with boiling water and boil 2 to 3 minutes.

3. Pack hot. Cover with boiling water, leaving ½ inch head space. Add ½ teaspoon of salt to a pint, or 1 teaspoon to a quart. Work out air bubbles. Wipe top of jar. Adjust lid.

4. Process immediately in pressure canner at 10 pounds pressure. Process pint jars 25 minutes; quart jars 40 minutes.

Beans—Green Lima

1. Wash and shell.

2. Cover beans with boiling water and bring to a boil.

3. Pack hot beans to within 1 inch of jar. Add ½ teaspoon salt to each pint jar and 1 teaspoon to each quart. Fill with boiling water to within 1 inch of top of jar. Work out air bubbles. Wipe top of jar. Adjust lid.

4. Process immediately in pressure canner at 10 pounds pressure. Process pint jars 35 minutes; quart jars 60 minutes.

Beans—Snap (HOT PACK)

1. Wash thoroughly.

2. Remove stem end and cut into desired lengths, 1 to 3 inches. Cover with boiling water and boil about 5 minutes.

3. Pack hot beans into jars to ½ inch of top. Add ½ teaspoon salt to each pint; 1 teaspoon to each quart. Fill with boiling liquid to within ½ inch of top of jar. Remove air bubbles. Wipe top of jar. Adjust lids.

4. Process immediately in pressure canner at 10 pounds pressure, pint jars 20 minutes and quarts 25 minutes.

Cold Pack

1. Wash beans. Trim and cut into desirable, uniform pieces.
2. Pack tightly to $\frac{1}{2}$ inch of top. Add $\frac{1}{2}$ teaspoon salt to each pint and 1 teaspoon to each quart. Cover with boiling water.
3. Remove air bubbles. Add more water if needed to cover beans and be $\frac{1}{2}$ inch from top of jar.
4. Wipe top of jar. Adjust lid.
5. Process immediately in pressure canner, pints 20 minutes and quarts 25 minutes.

Beets

1. Select young, tender beets, cut off tops, leaving taproots and one inch of stem. Wash thoroughly, using a brush if necessary to remove all dirt.
2. Cover with boiling water, boil until skins slip easily—15 to 25 minutes according to size. Skin and trim. Leave baby beets whole. Cut medium and large beets into quarters or $\frac{1}{2}$ inch slices; halve or quarter very large slices.
3. Pack beets to $\frac{1}{2}$ inch of top. Add $\frac{1}{2}$ teaspoon salt to each pint and 1 teaspoon to each quart. Fill with boiling water to within $\frac{1}{2}$ inch of top of jar. Adjust lid.
4. Process immediately in pressure canner at 10 pounds pressure. Process pint jars 25 minutes; quarts 45 minutes.

Corn—Whole Kernel

1. Husk and remove silk. Wash and cut out defective parts. Cut kernels from cob at about two-thirds depth of kernel.
2. To each quart of corn add one pint of boiling water and heat to boiling.
3. Pack hot corn to 1 inch of top, dividing hot cooking liquid equally among jars. Add $\frac{1}{2}$ teaspoon salt to each pint, 1 teaspoon to each quart. Remove air bubbles. Wipe tops of jars. Adjust lids.
4. Process pint jars 55 minutes; quarts 85 minutes at 10 pounds pressure.

Corn—Cream Style

1. Prepare corn like whole kernel except cut kernels slightly further from the cob and scrape the cob.
2. To each quart of corn add one pint of boiling water and heat to boiling.
3. Pack hot corn in pint jars to 1 inch of top of jars, dividing the hot cooking liquid among the jars. Add $\frac{1}{2}$ teaspoon salt to each pint. *Do not use quart jars.* Remove air bubbles. Wipe tops of jars. Adjust lids.
4. Process pint jars 85 minutes at 10 pounds pressure.

Greens

1. Can only young tender, freshly cut greens. Pick over. Wash thoroughly lifting the greens out of the water each time. Remove tough stems and midribs.

2. Place about 2 ½ pounds in a cheesecloth bag and steam about 10 minutes, or until wilted. Or heat until wilted in a shallow pan with a well fitted lid.

3. Pack hot and loosely to ½ inch of top of jar. Cover with boiling water leaving ½ inch headspace. Remove air bubbles. Add ¼ teaspoon salt to pints; ½ teaspoon salt to quarts. Wipe top of jars. Adjust lids.

4. Process pint jars 45 minutes, quarts 70 minutes at 10 pounds pressure.

Peas—Green

1. Shell and wash peas.

2. Cover with boiling water and bring to boil.

3. Pack hot and loosely to 1 inch of top of jars. Cover with boiling water with ½ inch space at top of jars. Add ½ teaspoon salt to each pint and 1 teaspoon to each quart. Remove air bubbles. Wipe top of jar. Adjust lid.

4. Process both pint and quart jars 40 minutes at 10 pounds pressure.

CARE AND USE OF CANNED PRODUCTS

After the products are canned, care must be taken in handling the glass jars to avoid breaking the seal. Remove bands from jars with self-sealing lids and with three-piece lids before storing. Intense light, heat or cold will cause a loss of color and a softening of the canned products.

Freezing will not cause canned food to spoil unless it breaks the seal and permits air to enter the jar. Freezing will break the cells which make up the food, however, and the texture and form of the product will be less desirable.

Store canned products on sturdy shelves. For efficient storage have shelves built just wide enough for two or, at most, three rows of cans or jars. A 12-inch board is wide enough for two or three rows. Shelves should be about 10 inches apart for glass jars and a support placed about every 30 inches. Properly canned and stored foods will keep a long time but the quality is better if used within the first 9 months or year after canning.

Inspect Canned Foods Before Opening

Before opening any kind of canned food, examine the cans for signs of spoilage. Corrosion of the lid and any unusual deposit or sign of leakage about the rubber or on the can indicate a poorly canned product. Most spoilage is accompanied by gas formation and most foods are hot when placed in the can and shrink when cooled.

When the jar is opened, if there is an outrush of air or spurting of the liquid, it shows spoilage. If the air rushes inward it shows the seal was per-

fect. As soon as the jar is opened, test to see if the odor is similar to the fresh product, as an "off" odor indicates spoilage. The contents should appear sound, natural in odor and the liquid free from cloudiness. All foods that show any sign of spoilage should be destroyed. Boil all low-acid foods before tasting.

Judging the Canned Vegetable

The check sheet for judging vegetables in glass jars is found in the 4-H Food Preservation II, Circular 120. Four main points are considered when judging canned vegetables.

Liquid—Clear and free from starch and other particles. About the right amount, not more than one-third of total volume of can.

Color—Bright, typical, uniform.

Absence of Defects—No foreign material, skin, core, ends or other trimmings, discoloration or scars from insects or mechanical injury.

Maturity—Tender, best stage for eating; even, fine succulent texture; not coarse, stringy, hard, fibrous, or soft and mushy.

In addition to the points on the score card these special points should be considered in judging the following foods.

Tomatoes—Good red color, typical of variety with little yellow, black or grey, no core, material, skin, blemishes or foreign material. Mostly whole tomatoes with few crushed and split and with not more than one-third juice.

Tomato Juice—Typical red color with little or no tendency to separate and not too thick or too thin. No seeds, specks or tiny pieces of core.

Green beans—Tender, fully fleshed pods with seeds just formed, not fibrous. Uniform typical color with no strings. Small pieces of pod with no blemishes or foreign material. Liquid practically clear, bright with slight tinge of yellow-green. Little if any trace of suspended material or sediment.

Greens—Tender and whole leaves, few if any stems, no grit, few damaged leaves, no grass, weeds or root stubs. Uniform typical color with few if any brown or yellow leaves, not more than one-third liquid.

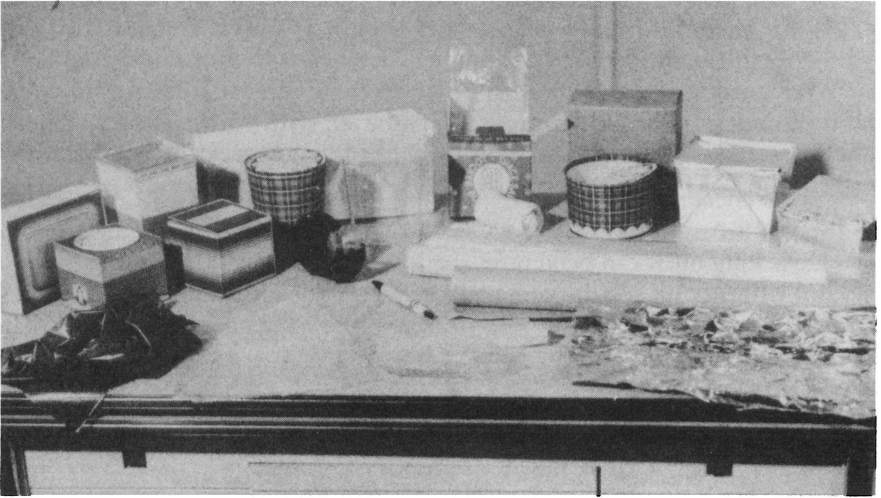
FREEZING MEAT

Freezing is the easiest known method of preserving meat. Meat preserved by freezing looks, tastes and is more like fresh meat than meat preserved by any other method. For high quality frozen meat, select healthy, sound, well-finished animals. After slaughter, chill meat promptly and thoroughly to 40° F. or below. Pork should be frozen as soon as it is thoroughly chilled (24 hours at 34°F.) but beef and lamb should be allowed from three to seven days to age or "ripen" at a temperature around 37°F.

Packaging Materials

A number of good materials are available for packaging meats. Among these are films, foils, and laminates. An ideal packaging material for frozen meat should be:

1. Moisture - vapor resistant to prevent evaporation.



The best packaging material is air and vapor tight.

2. Flexible—to make a snug wrap.
3. Flavorless and water proof.
4. Relatively tough—does not tear or scuff easily.
5. Inexpensive.
6. Easy to seal and label.
7. Easy to handle without damage when frozen.

Good packaging can greatly extend the “fresh life” of frozen meats. It prevents drying, “freezer burn,” which causes loss of color and may make the meat dry, tough and rather tasteless; and there will be less rancidity and off flavors. Meat in prime condition when frozen must have a good wrap to come out with full flavor and freshness. It is unwise use of money to buy poor packaging material for frozen foods.

Preparing and Packaging

For freezing, cut the meat according to the way it is to be cooked and in pieces suited to the size of the family, just as if it were to be used fresh. Cut the thick meat from the thin meat and the fat from the lean.

Separate steaks from roasts, pot roasts from stew meat and from meat to be ground. Cut tender steaks, chops and other meat for broiling, *at least one-half inch thick* and put cellophane, or other material that will not stick, between the pieces.

To save storage space, bone and trim the cuts into smooth compact pieces. Each package should contain the quantity the family would probably cook at one time. Carefully label the package stating kind of meat, the cut, number of pounds or pieces and date of freezing.

It pays to have an experienced person cut and package the meat. Tight packaging is necessary. Pad sharp ends of bones with packaging material to

prevent punctures and tears. Mold ground meat in a firm roll. Mold the packaging material to the meat to exclude air, or pull the material tight against the meat and wrap as a sandwich. That is, fold long edges together and over until tight, and smooth down to force out air. Then fold ends and turn under, pulling them tight. Then fasten with string, freezer tape or other material. This makes a smooth package with practically all the air pushed out.

Length of Storage

How long meat can be kept in the locker varies with the kind and quality, and whether or not the temperature of the locker is kept steady. If the temperature is kept steadily at zero or below, pieces of pork and chicken will keep well at least 4 to 6 months; beef, 8 to 12 months. The less the meat is cut the longer it will keep.

Liver and other glandular meats freeze well, but their storage time is short, 2 to 3 months.

The fat of chicken and pork develops a poor flavor more rapidly than does a harder fat as that of beef. Long storage increases the cost and decreases the quality of frozen foods.

Chicken, Turkey and Other Poultry

In dressing poultry for freezing, take care to avoid overscalding and breaking the skin. Plunge the fowl up and down in water near 140°F. (low simmer) until the feathers let loose.

Singe, wash thoroughly, remove entrails, kidneys, lungs and any excess fat as it may become rancid with storage. Chill immediately in finely chipped ice in a small amount of water or, 4 or 5 birds (4 to 5 lb. size) may be chilled in refrigerator. Livers need to be chilled and packaged separately as they may flavor other meat.

Chicken and turkey may be cut into the conventional pieces, in quarters, or in halves, or left whole for freezing. Just enough pieces of chicken or turkey to suit the family needs may well be packaged for freezing. Sometimes dark and light meat are packaged separately. Usually the pieces are divided in three groups to package: (1) the livers (2) the meaty pieces and (3) the boney pieces, hearts and gizzards.

If bird is left whole, tie compactly and package tightly. If cut in half, dip halves in water and put one half, skin side down, on packaging material; cover with cellophane and place the other half skin side up and package tightly.

Often pieces of chicken or turkey are packed in quart size rectangular cartons which open on the large side. They are lined with freezer cellophane and will hold an average fryer (3 pounds). About one-half cup of water is added just before sealing. This water forces out the air and wraps the pieces in ice.

If several chickens are prepared at one time, it might be desirable to cook the boney pieces (backs, necks, wing tips) and the hearts and gizzards. After removing the bone, freeze or can the meat and the stock for a variety

of quick dishes. Left over cooked chicken or turkey may be frozen alone but it is better with the gravy or broth for fricassee, pies and stews. Cooked meat has a short storage life.

Fish

Chill fish soon after they are caught for they lose their fish flavor within a short time at room temperature. Scale, dress, wash and cut fish as for cooking. Small fish are usually frozen whole while large fish are cut into steaks or fillets (boneless strips).

Dip the fish or pieces in cold water and package, placing pieces of packaging material between the fish to keep them from freezing together. Freeze them promptly since stale odors and flavors develop rapidly even at refrigerator temperature (35-45°F.)

Cooking Frozen Meat

Frozen meat may be cooked while frozen or after thawing. Usually it is preferable to start cooking thin pieces of meat while still frozen but to thaw thick pieces. There seems to be less loss of juice if the meat is thawed slowly, as in a refrigerator, than at room temperature. Do not remove the packaging material until the meat is near refrigerator temperature (35-45°F.). Ground meat, liver and other variety meats are very perishable and should be used shortly after thawing. Large pieces of meat should be loosely wrapped and placed in the coldest part of the refrigerator if not used as soon as thawed.

Cook frozen meat as you would a similar piece of fresh meat. If the meat is still frozen when the cooking begins, increase the time of cooking according to the thickness of the piece of meat.

GENERAL DIRECTIONS FOR FREEZING PREPARED FOODS

1. Use only ingredients of the best quality.
2. Shorten the cooking time for most prepared foods or they will be over soft when reheated to serve.
3. Cool cooked foods quickly. Then package and freeze immediately after cooling.
4. Package carefully being sure to leave head space for foods with liquid.
5. Do not store too long, a few weeks and not longer than six months. Date all packages so you will know.
6. Reheat carefully. Use the method that will do least damage to its appearance and texture. Do not stir more than necessary. The top of a double boiler is good for reheating combination dishes.
7. Use all thawed and preheated food for that meal. Further holding and reheating is not recommended.

Frozen Party Sandwiches

Sometimes all the fun of being a hostess is gone by the time the party hours arrives, because you are so tired making all those good things to eat.

If you have a food freezer, make the refreshments ahead of time and be fresh and pretty to greet your guests.

For instance, sandwiches and canapes take time to prepare. By making and freezing them before they are needed, you not only have time but you can use a greater variety of breads, fillings and toppings.

Use tasty, close-grained breads that cut well. Make a variety of shapes and yet have each one look like a dainty choice morsel of food. Pack the sandwiches to be used for one tea, buffet meal or other social function in rectangular boxes with pieces of cellophane or wax paper between the layers. Do not make too many layers as the weight of the upper one may crush the lower ones. Package them in moisture-vapor resistant material excluding as much air as possible and sealing tightly. Freeze at once.

Frozen Salads

The most satisfactory frozen salad is the type that is usually frozen in ice trays in the refrigerator. These usually have as a base, combinations of cream cheese or cottage cheese, whipped cream and gelatin. They may be frozen in paper cups, in cubes or in sheets and cut for individual servings. Combinations of fresh fruits frozen and then mixed with salad dressing at serving time are satisfactory.



Don't use mayonnaise and salad dressing as they tend to separate during freezing and thawing; and apples become pithy, grapes become flabby and nuts discolor. Since freezing destroys the crispness and often the flavor and color of raw vegetables, few vegetable salads are suitable for freezing.

It is better to let your frozen fruit salads thaw only slightly in the refrigerator and then serve them. Use any good frozen salad recipe, keeping the above points in mind.

Ice Cream

Freeze only ice cream that is very smooth and creamy, as any ice crystals present before storage usually increase in size during storage. Freeze ice cream made from your favorite recipe in an ice cream crank freezer. You may like to use some of your frozen fruit purees, chocolate chips or butter-scotch sirup to make ribbon or revel ice cream.

When the ice cream is frozen, transfer it quickly to suitable freezer locker containers. A layer of pliofilm or cellophane cut to fit and placed snugly on top of the ice cream helps to prevent evaporation, crystal formation and off flavors.

For special occasions, pack your ice cream in individual or in special shaped or large molds. Before you serve home freezer ice cream, let it stand for a while ($\frac{1}{2}$ to 1 hours) in the storage or freezing compartment of your refrigerator to soften. Commercial and home made ice creams do not, as a

rule, keep their initial high quality in a home freezer for longer than three weeks or a month.

CREAMY FRUIT ICE (1 quart)

1 tablespoon gelatin

1 cup water

2 cups strawberry, peach or other fruit puree

1 cup sugar (Reduce if puree has more than $\frac{1}{4}$ cup sugar)

Add gelatin to water and let stand about five minutes. Then heat over hot water until the gelatin is dissolved (liquid is clear). Mix the fruit puree and the sugar, and add the gelatin solution. Pour into ice cream crank freezer and freeze. Transfer quickly to suitable container and place in freezer.

FROZEN APRICOT BARS

$\frac{1}{4}$ cup butter

$\frac{1}{2}$ cup sugar

$\frac{1}{2}$ cup light corn syrup

1 egg

$\frac{1}{2}$ cup milk

2 cups sifted flour

2 teaspoons baking powder

$\frac{1}{2}$ teaspoon salt

2 cups coarsely ground, dried apricots

1 cup chopped nuts

1. Blend butter, sugar, corn syrup and egg and beat in milk.
2. Sift together flour, baking powder and salt.
3. Stir into first mixture.
4. Mix in apricots and nuts.
5. Spread in greased 13"x9"x2 $\frac{1}{2}$ " baking pan and bake in moderate oven, 350° F., 30 to 40 minutes.
6. Cool, package and freeze.
7. Take from freezer $\frac{1}{2}$ hour before serving and place in 300° F., oven.
8. Cut into bars, roll in powdered sugar and serve or freeze.

FROZEN COCOANUT SQUARES

1. Blend together: $\frac{1}{2}$ cup brown sugar, 1 cup flour and $\frac{1}{2}$ cup butter.
2. Pat into a 9"x12" baking pan and bake 10 minutes at 375° F.
3. Mix together: 1 cup brown sugar, 2 eggs and 1 teaspoon vanilla.
4. Blend: 3 tablespoons flour, $\frac{1}{2}$ teaspoon baking powder, 1 $\frac{1}{2}$ cups coconut and $\frac{1}{2}$ cup nuts, and add to brown sugar and egg mixture.
5. Pour over first mixture after it has baked the ten minutes and replace in oven and bake 20 minutes longer.
6. Mix together: $\frac{2}{3}$ cup powdered sugar, 1 $\frac{1}{2}$ tablespoons lemon juice and 1 teaspoon grated lemon rind.
7. Spread this over cookies while hot.
8. Cool, package and freeze.
9. When ready to use, place in 300° F. oven until hot through.
10. Cut into squares and serve.

JELLY MAKING

WILD GRAPE JELLY

Made of summer's
Indian wine,
Timber spice
With a jug of shine, . . .

Looks like amethyst,
Smells like spring,
Tastes like heaven
With purple wing.

-----*Gladys Martin*

Jelly is a form of preserves in which only the juice of the fruit is used. The large amount of sugar keeps down spoilage. A good jelly is clear, sparkling, glowing with color, tender, quivering, yet retains its shape when cut. It has the rich, fresh flavor of the fruit from which it is made, and is neither sirupy, gummy, sticky, tough, nor cloudy.

A fruit juice that is good for jelly is one which contains acid and pectin in the right proportion. Pectin is a substance found in varying amounts in different fruits. When heated and combined with fruit acid and sugar, it causes the liquid to congeal or jell. It is necessary to heat the fruit to bring out the pectin.

Tender, ripe fruits such as tart apples, crab apples, currants, blackberries, raspberries, and grapes usually will make jelly without any difficulty because they contain pectin and acid in right proportion.

Sweet apples, ripe blackberries and the sweeter plums have a medium amount of pectin and acid and will make jelly if combined with juices from fruits which contain more acid and more pectin. For example, good jelly can be made of the following combinations: currants and ripe blackberries or raspberries; quince and green sour apples; raspberries and gooseberries; or grapes and crab apples. Quinces, pears, ripe grapes, and raspberries have some pectin, but not enough acid. One tablespoon of lemon juice added to 1 cup of these juices will help make a jelly.



Seal and label jelly. Store in a cool, dry, frost-proof place.

It is a good plan to add lemon juice to all very ripe fruit. Cherries and

strawberries contain acid, but not enough pectin. They are readily jellied by adding pectin.

Fruits vary in their pectin content from year to year and in different varieties of one fruit. For example, ripe blackberries may contain enough pectin one season to make perfect jelly, yet the next season's blackberries, used alone, may be a complete failure. Furthermore, as fruits ripen, they lose their jelling power, due to changes in the pectin itself. So if the grapes are overripe, the jelly may be sirupy rather than tender and firm.

By the addition of prepared pectin and lemon juice, good jelly can be made from many fruits ordinarily not used for jelly making. Special directions accompany the commercial pectins on the market and when these products are used their directions should be followed.

A good grade of white granulated sugar is needed. Tests show that it makes no difference whether you use beet or cane sugar.

General Directions for Making Jelly

Two pounds of prepared fruit yield approximately 1 pint of juice, and this will yield about 1 ½ pints of jelly. Select a mixture of underripe and of ripe fruit—the ripe fruit for flavor and color, the underripe for pectin and acid. Wash all fruit thoroughly and discard any damaged parts.

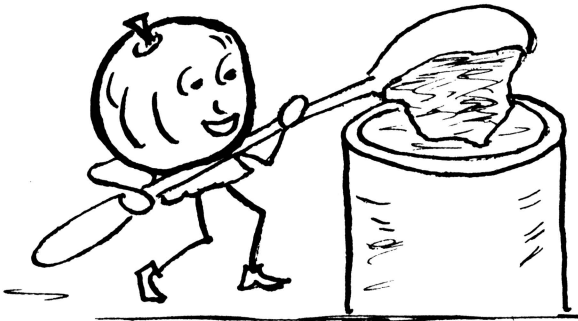
Cut hard fruit in pieces, but do not remove cores or skins, as a large portion of pectin is found near the core and the skin.

Add one pint of water for each pound of fruit. Simmer to make juice. Strain.

The fruit juice or the soft fresh fruit may be frozen and made into jelly months later.

Wash the jelly glasses. Place them in a pan of water, and boil.

A shallow, flat-bottomed kettle, or sauce pan of medium size, and high heat is best for cooking jelly as the substance that gives fruit its flavor and color is broken down or driven off by long or slow cooking. Red and blue colors in fruit are changed to dull brown when overcooked. All fruits will be dull and darken when overcooked.



Jelly is done when it "sheets" from spoon.

Use a small amount of juice at a time, not more than 4 to 6 cups. This quantity of juice with the sugar boils down quickly to the jelly stage and short cooking retains the fresh flavor and color and makes jelly of a better texture. Heat the sugar and fruit juices quickly and stir only until sugar is dissolved.

To test whether or not the jelly is done, dip a large spoon into the boiling sirup, lift and allow sirup

to run off the side. When the sirup runs off in two distinct lines or drops, which sheet together, the jelly is done. This is called the "jelly stage" or "sheeting" test.

Remove any scum from the hot jelly. Pour it into the hot glasses being careful that it does not splash or drip on the rim. Fill to within $\frac{1}{4}$ inch of the top. Uniform glasses from which the jelly can easily be removed are preferable. Let jelly stand for 12 hours or longer to set.

Sealing and Storing

When the jelly is firm and well set, pour melted paraffin over the top. Rotate each glass in the hand so that the hot paraffin runs up to the rim to form a good seal. Cover and label with name of fruit and date of making. Store in a cool, dry, frost-proof place.

Jelly loses much of its delicate flavor, texture, and color in storage. If you have a place for frozen foods, it is well to freeze most of the fruit juice and make up the jellies and jams as you need them.

Apple Jelly

1. Select tart, firm, not fully ripe apples.
2. Wash; remove blemishes and blossom end. Do not peel or core. Cut in thin slices.
3. Place in flat-bottomed pan with straight sides and a well fitted lid.
4. Cover with hot water, 1 pint water to each pound fruit.
5. Heat just long enough to soften apples, about 15 minutes.
6. Strain juice through a cloth bag.
7. Return pulp to pan, cover with water and simmer about 30 minutes. Strain. Keep this juice separate from the first batch as the first one makes better jelly.
8. Measure the juice, heat to boiling and add $\frac{2}{3}$ cup sugar for each cup juice. Stir slowly but constantly until sugar is dissolved.
9. Boil rapidly until a small amount of juice, when dropped from the spoon, forms a "sheet." Remove from heat.
10. Skim the jelly; pour into clean hot glasses filling to $\frac{1}{4}$ inch of the top.
11. Let jelly get cold; cover with a thin layer of hot paraffin. Place cover.
12. Label and store.

Fancy Apple Jellies

Apple jelly has a mild flavor and can be used as a "base" for many interesting and delicious variations. Here are some suggestions:

1. Add strawberry juice and a little lemon juice to apple juice. Result: A lovely rose-pink jelly.
2. Pineapple juice added to apple juice will make a crimson jelly.
3. Orange juice with the juice of apples will give a clear bright red.
4. Thin slices of maraschino cherries dropped into a glass of apple jelly when it begins to stiffen gives a pretty product and delightful in taste.

5. For green mint jelly, cook mint leaves when cooking the apples. Add green vegetable coloring to the juice.

Blackberry Jelly

1. Choose berries with $\frac{3}{4}$ of them being ripe and $\frac{1}{4}$ in the red stage.
 2. Pick over, wash and crush.
 3. Add little water, about $\frac{1}{4}$ cup to 1 quart berries.
 4. Heat until soft, about 5-10 minutes.
 5. Pour into bag and let drip.
 6. For one cup juice, measure $\frac{3}{4}$ cup to 1 cup sugar and place in pan.
- Cook only a small amount at a time, about 6 cups.
7. Heat quickly, stirring till sugar is dissolved.
 8. Boil rapidly until jelly stage is reached.
 9. Let stand a moment, remove any scum, pour into jars. Cool.
 10. Pour paraffin over top, place cover, label and store.

APPROXIMATE QUANTITY OF SUGAR TO ONE CUP FRUIT JUICE FOR JELLY

$\frac{3}{4}$ cup 1 cup apple juice	1 cup 1 cup gooseberry juice
1 cup 1 cup crab apple juice	$\frac{3}{4}$ cup 1 cup grape juice (Concord)
$\frac{3}{4}$ cup 1 cup raspberry juice	1 cup 1 cup wild grape juice
$\frac{3}{4}$ cup 1 cup blackberry juice	$\frac{3}{4}$ cup 1 cup wild plum juice
$\frac{3}{4}$ cup 1 cup cranberry juice	$\frac{3}{4}$ cup 1 cup quince juice
1 cup 1 cup currant juice	

Jelly Troubles

Some people have trouble making good jelly. Probably most of the causes could be traced to not following directions. If you have a poor product, check these reasons:

Soft or sirupy jelly can be caused by long, slow cooking, or by using fruit with too little pectin, adding too much sugar or cooking too little.

Crystals may be formed if too much sugar is used, when the juice hasn't been cooked long enough or when there is a lack of acid.

Grape jelly often has crystals. Straining the juice and letting it set a couple of days before making the jelly keeps down crystals. Pour off juice carefully.

Weeping Jelly (jelly with a sirup between jelly and paraffin) can be caused by a break in the seal or too much acid.

Moldy Jelly may be due to lack of protection when jelly is cooling, pouring on paraffin that is not hot, undercooking, or not making a seal with the paraffin.

Cloudiness can be caused by using too thin a cloth to strain juice, by squeezing the jelly bag too much, by not skimming thoroughly or by letting juice cool some before pouring into jars.



Weeping jelly.

MAKING SAUERKRAUT

Sauerkraut of "top quality" can pep up meals. Its tart, crisp flavor is good with many foods such as pork or goose, sausage or ham. And, of course, we cannot forget the traditional dishes of sauerkraut and weiners or spareribs.

It's good for us, too. Sauerkraut is a fairly good source of minerals and is quite good in vitamin C. Just a note of warning—don't overcook when using it. Five to ten minutes usually is long enough.

"Grade A" sauerkraut is a light cream or straw color—not white, yellowish, pink or brown. The shreds are uniform and thin as a dime. It is firm and crisp not soft, mushy or tough. The flavor is highly acid.

It's easy to make good sauerkraut if you follow these directions:

1. Select mature, firm sound heads of cabbage. Remove dirty leaves, wash and quarter heads slicing off the core portion.
2. Weigh, then shred cabbage fine.
3. Weigh out 1 pound pure salt to 40 pounds cabbage (Table salt should not be used). Mix the cabbage and the salt.
4. Pack cabbage firmly, but not too tightly, in stone or other suitable jars. Fill within two inches of top.
5. Cover with a clean cloth and a flat plate or board (don't use a pine board—it may flavor the kraut). Place a weight on the cover heavy enough to cause the brine to keep the cloth wet. Weight should not be iron or limestone.
6. Keep in a cool place until kraut is made. This is called "curing."
7. After kraut is made, seal by one of two methods:
 - (a) Pour a layer of hot paraffin over the surface of the kraut right in the jar in which it was cured.
 - (b) Take the kraut from the jar, heat to a simmer, pack in clean, hot jars adding kraut juice or a weak brine (1½ tbsp. of salt to 1 quart water) to cover the kraut. Fill jars to 1½ inches of the top.
8. Process 5 minutes in a water bath. Seal and store.

UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE AND THE UNITED STATES
DEPARTMENT OF AGRICULTURE COOPERATING

J. W. BURCH, Director, Agricultural Extension Service
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4-H RECORD

Food Preservation III

(To be used with 4-H Circular 121)

Name _____ Age _____

Address _____ County _____

Name of 4-H Club _____

Name of Club Leader _____

Project Leader _____

Jr. Project Chairman _____

Club meetings attended during year _____ Project meetings held _____

Numbered attended _____ Number of jars canned or frozen in completed project _____

Number of Food Preservation demonstrations given at:

Club meetings _____, Project meetings _____, County meetings _____

District meetings _____, State meeting _____

Number of times participated in Judging work in:

Project meeting _____, County _____, District _____, State _____

Interstate _____.

Number of exhibits made in:

Community _____, County _____, District _____, State _____

Interstate _____.

Participated in:

County Achievement _____, District Round-up _____, State Contest

Program _____, National Contests _____, County Fair or Show _____,

District Fair _____, State Fair _____, Interstate Show _____, Marketing

Days _____, County Camp _____, District Camp _____, State Camp _____,

National Camp _____, National Club Congress _____, News stories

published _____, Radio programs participated in _____.

Served on _____ Standing Committee.

4-H Activity selected by club for this year _____

Brief statement of club achievements in club activity, health and recreation

Year

Complete at least 3 out of these 5 requirements:

1. Can at least 5 jars of 3 different vegetables.
2. Freeze at least 5 packages of chicken or meat.
3. Freeze 3 foods that may be used for refreshments.
4. Make 2 kinds of jelly.
5. Make at least 5 jars of sauerkraut.

Check When Completed	Total Amount Done

Record of Any Other Work Done This Year in Food Preservation Project

1. _____
2. _____
-
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Check When Completed	Amount Done

STORY