

Make your own SAUERKRAUT

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To add zip to your menu and perk up your family's taste buds, nothing can match the flavor of homemade sauerkraut. Making your own sauerkraut can also provide a way to save on food costs.

Sauerkraut is a naturally fermented cabbage. Natural fermentation is one of the oldest means of food preservation, and reduces the risk of foodborne illness and food spoilage. The juice extracted from shredded cabbage by adding salt contains fermentable sugars. Cabbage's natural flora cause fermentation to take place. In the absence of air, the microorganisms on cabbage leaves will produce between 1.5 and 2 percent acid (chiefly lactic acid) and thereby preserve the cabbage.

Sauerkraut is a low-calorie food — only 42 calories per cup — and a good source of vitamin C (30 mg. per cup). However, because of the salt necessary to regulate the fermentation, sauerkraut is a high-sodium food, containing about 1.5 grams (1,500 mg.) sodium per cup. For that reason, people trying to moderate sodium intake should take into account the sodium content of sauerkraut before including kraut in their menu.

Note: You can reduce the sodium content — as well as the tartness — by rinsing sauerkraut in cold water before using.



Ingredients

Cabbage. The composition (amount of natural sugars, etc.) of cabbage differs with the variety and conditions of its growth. Fully mature, large-headed types weighing 6 to 15 pounds per head with a solid, white interior are the most desirable for kraut. The larger the head, the sweeter it is. This is particularly true later in the fall after a few light frosts. However, smaller heads can be used.

The following are among the best varieties (cultivars) to grow for sauerkraut in Wisconsin home gardens: Bravo, Krautman, Sanibel and Wisconsin All-Seasons. All of these are yellows-resistant and will grow to a large size. If you do not want a large-headed variety, grow any yellows-resistant late cabbage (80 to 100 days). While it is traditional to use ordinary green cabbage for making sauerkraut, you may also use red cabbage varieties. Ask your county UW-Extension office for *Vegetable Cultivars and Planting Guide for Wisconsin Gardens A1653*, also available from the address on the back of this booklet.

Salt. Use a non-iodized salt, because iodine will prevent the bacterial fermentation necessary to change cabbage into sauerkraut. Use bulk

pickling or canning salt, available at most supermarkets, in making sauerkraut. Add 2.25 to 2.5 percent salt by weight (see *Procedure 3* below for exact recipe).

Salt draws out the cabbage juice so it can be fermented. Salt also helps control the flora of the fermentation by favoring the lactic acid-producing bacteria and inhibiting the undesirable competitors. In this way, salt acts as a preservative.

Using too little salt not only softens the cabbage tissue, but also yields a product lacking in flavor. Too much salt delays the natural fermentation and, depending on the degree of oversalting, may cause an acrid flavor, darken the color or allow pink pigment-producing yeasts to grow.

Equipment

Shredder. Shred cabbage using a large, sharp knife, special kraut cutter or food processor. Kraut cutters may be found at auctions and second-hand stores or may be purchased new from many garden catalogs and magazines.

Container. A 5-gallon container will hold about 25 pounds of prepared cabbage. An old-fashioned earthenware crock ranging in size from 2 to 20 gallons is the traditional container. Crocks can be purchased new at many specialty shops, but are quite expensive. Food-grade plastic pails that are sturdy and rigid make excellent containers. Ingredients used by dairy processing plants, bakeries and restaurants are often packed in 5-gallon plastic pails. Check with one of these businesses in your area to see if they will sell you an empty food-grade container. Glass containers can also be used successfully.

Note: Used crocks bought at auctions or found among family treasures should be carefully checked for cracks or chips. If a crock has a poor glaze or is chipped, don't use it for making sauerkraut. Do not use metal containers of any type. The dyes used in nonfood plastic containers and bags are not intended for food use, and may not be safe when in contact with a food product. If you must use a nonfood-grade plastic container, line it with a clean, heavy food-grade plastic bag.

Procedure

1. Remove defective and coarse outer leaves from the cabbage. This will also get rid of any residual insecticide spray or dust. Cut away any spoiled or damaged spots. Rinse heads lightly in cold water to remove dust or visible dirt particles; drain. The bacteria needed to ferment the cabbage are found on the cabbage leaves.

2. Cut heads into halves or quarters and core. Slice or shred the cabbage so that the shred is as long and thin as possible. If you use a food processor, you may not get this characteristically desirable shred, but it will not affect the fermentation.

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3. Weigh the cabbage. Place the first 5 pounds in a sterilized pan or bowl. For every 5 pounds of cabbage, sprinkle with 3 tablespoons pure canning or pickling salt (not iodized). Mix well to distribute the salt uniformly. Allow the salted cabbage to stand 5 to 10 minutes to wilt slightly and begin to draw out juices.

Then pack the cabbage into a crock or other suitable container. Pound the cabbage firmly with a wooden tamper until enough juices are drawn out to cover the cabbage. Repeat this procedure layer by layer, until the container is filled to the desired depth and the cabbage is completely covered with 1 to 2 inches of juice. Leave at least 4 or 5 inches between the cabbage and the top of the container.



*Completely cover the cabbage with a food-grade plastic bag filled 3 or 4 inches with salted water (6 tablespoons of salt per gallon of water). This cover results in the least spoilage. (See **Procedure 4**, next page.)*

Graphic: Complete Guide to Home Canning Guide 6, "Preparing and Canning Fermented Foods and Pickled Vegetables," U.S. Department of Agriculture (Washington, DC: U.S. Government Printing Office), 1989, p. 6.

4. A water-filled plastic bag is one of the easiest and best ways to both cover and weight down the cabbage. Be sure that you use a heavy-duty, watertight plastic bag intended for food use and not colored. Clear freezer bags sold for packaging turkeys are suitable for use on 5-gallon containers. Fill the bag with salted water (6 tablespoons salt in 1 gallon water) to a depth of 3 to 4 inches, allowing the bag to completely cover the cabbage. Tie closed securely.

As an alternative method, cover the cabbage with a clean cloth or clear plastic, fitting the covering snugly against the container sides. Then place a wooden, china or other nonmetal disc and a weight on top.

Note: It is absolutely essential that you cover the cabbage and liquid to exclude air, since the fermentation process requires anaerobic conditions (without oxygen).

5. Place the container of cabbage in a well-ventilated place with a relatively constant temperature. If kept at room temperature (68 to 72 degrees F), the kraut should be ready in 3 to 4 weeks. At higher temperatures, fermentation will proceed more rapidly and the kraut will be ready sooner. Conversely, if kept at temperatures lower than 68 degrees F, fermentation will be slow, but may be incomplete if the temperature drops below 60 degrees F.

It is desirable to provide 68 to 72 degrees F temperatures during the first several days to begin production of the acid that will preserve the cabbage. Then, if you want a slower fermentation, the container could be stored in a cooler area such as a basement or unheated garage. If the temperature drops below freezing, fermentation will stop, but will start again when the temperature rises into a favorable range.

6. Check the container daily. During the fermentation, film yeasts or molds may form on the liquid's surface. If they appear, skim them off. If any discoloration appears within the top inch of kraut, remove it. If you are using a cloth covering, rinse or replace it each time you remove scum or spoiled cabbage.

Note: Scum is less likely to form when you use the water-filled bag as a cover and weight.

Long-Term Storage

While there are four alternatives for storing sauerkraut after fermentation is complete, canning and freezing are preferable for maintaining high quality.

1. Canning

- ◆ Heat well-fermented sauerkraut and liquid to simmering (185 to 200 degrees F). Do not boil.
- ◆ Pack hot kraut into clean, hot canning jars to within $\frac{1}{2}$ -inch of the top of the jar. Cover with hot juice, leaving $\frac{1}{2}$ -inch headspace. If there is not enough sauerkraut juice to cover all the kraut in the jars, use a boiling hot, weak brine — 2 tablespoons salt for each quart of water.

- ◆ Place a properly pretreated lid on each jar. Pretreat according to manufacturer's instructions.
- ◆ **Process in a boiling water canner (212 degrees F) 15 minutes for pints and 20 minutes for quarts.** Start to count processing time as soon as the hot jars are placed in actively boiling water.

2. Freezing

Pack sauerkraut and juice in rigid plastic moisture- or vapor-proof freezer containers, in glass freezer jars (leaving 1-½ inches headspace), or in heavy, tightly sealed plastic freezer bags. Freeze.

3. Refrigerating — for shorter-term storage

The kraut may also be placed in tightly closed jars or sealed freezer bags and stored in the refrigerator for as long as several months.

4. Leaving in the Crock — for shorter-term storage

If you have a cool basement, garage or other storage area, the sauerkraut may be kept in the crock indefinitely as long as the top surface is not exposed to air, which may cause spoilage. No refrigeration is required. But after removing portions, cover and weight down. A small amount of spoilage may appear after each opening, but you can remove it the next time you open the crock.

Making Small Amounts

This method is convenient if you make into sauerkraut only a head or two of cabbage at a time. But making small amounts may result in more spoilage losses. Use any type of 2-quart standard canning jar that is free from nicks, chips or cracks. Sterilize the jar, lid and other utensils to be used in packing the kraut by placing in boiling water for 10 minutes.

Select and prepare cabbage as directed in the instructions for making a larger batch of sauerkraut. Shred the cabbage into a sterilized pan or bowl. A 2-quart jar will hold about 3-½ pounds of shredded cabbage. To this amount, add 2 tablespoons plus 1 teaspoon canning or pickling salt (not iodized). Thoroughly mix salt into the cabbage. Allow the salted cabbage to stand for 5 to 10 minutes to wilt somewhat and begin to draw out juices.

Pack the cabbage firmly into the jar, filling it to the top. Press down firmly until juice runs out of the cabbage and covers it completely. Put the sterilized lid on the jar just tightly enough to keep out air. Set the jar on a tray or in a pan to collect juice that may leak out during active fermentation. Keep the jar at room temperature (68 to 72 degrees F) until the bubbling stops. This will usually take 2 to 3 weeks.

Note: Do not pour the juice that bubbles out back into the jar.

When the bubbling stops, check to be sure that there is still enough liquid to cover the kraut. If there is not, replace the juice that has bubbled out with a boiling hot, weak brine — 2 tablespoons salt per quart of water. Retighten the cover securely, wipe the outside of the jar and store in the refrigerator or a very cool place until you use it up.

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For longer storage, heat the kraut and liquid, repack into pint or quart jars as in the canning directions on the previous page.

Process in a boiling water canner (212 degrees F) 15 minutes for pints and 20 minutes for quarts.

You can also freeze the kraut.

Spoilage Problems

Spoilage in sauerkraut causes undesirable color, off-odors, soft texture and unpleasant flavor.

Softness may result from insufficient salt, high temperatures during fermentation, uneven salt distribution or air pockets caused by improper packing.

Pink color in kraut is caused by the growth of certain types of yeasts on the kraut surface. These may grow if there is too much salt or unevenly distributed salt, or if the kraut is insufficiently covered during fermentation.

Rotted kraut is usually found at the surface, where the cabbage has not been covered sufficiently to exclude air during fermentation.

Darkness in kraut may be caused by unwashed and improperly trimmed cabbage, insufficient juice to cover the cabbage during fermentation, uneven salt distribution, exposure to air, high temperatures during fermentation, processing or storage, or by a long storage period.



Cooking with Kraut

For full flavor, just heat sauerkraut through. But to make it more interesting and mellow, add a little brown sugar, chopped apple and onion, and simmer slowly. Rinsing kraut with water before using will produce a milder flavor and also remove some of the salt.

Sauerkraut can be used in appetizers, dips, soups, relishes, salads, entrées and even desserts. It is also a good vegetable companion for corned beef, spareribs, frankfurters, sausages, pork hocks, poultry or game.

A newer way to use kraut is as a sauce, dip or potato topping. Puréed sauerkraut, called kolé, is mixed in equal amounts with plain yogurt or with mayonnaise. To make a flavorful topping for baked potatoes or a dip for chips and vegetables, add herbs, chili sauce, hot taco or pepper sauce, chopped meats or seafood such as clams. If the flavor seems too acidic, smooth it out with a pinch of baking soda. Yogurt kolé is a low-calorie taste treat, perfect for people trying to reduce or control their weight.



Sauerkraut salad

- 1 pint sauerkraut (2 cups), undrained
- ½ cup green pepper, chopped (fresh or frozen)
- ¼ cup pimento, chopped (canned) or sweet red pepper (fresh or frozen)
- ¼ cup onion, chopped
- ½ cup granulated sugar

Mix all ingredients together. Refrigerate a few hours before using to allow flavors to blend. Can be stored in the refrigerator 2 to 3 weeks.

Wisconsin bratwurst casserole

- 12 ounces Wisconsin smoked, cooked bratwurst links, cut in thirds
- 2 cups sauerkraut, drained
- 2 medium apples, cored and thinly sliced
- ¼ cup raisins
- ¼ cup onion, finely chopped
- 2 tbsp brown sugar
- 2 tsp caraway seed (optional)
- 1 cup beer or apple juice
- 1 tbsp lemon juice
- 2 tbsp all-purpose flour
- ¼ cup cold water

Oven Instructions. Omit water. Mix all ingredients together. Place in casserole dish and bake at 350 degrees F for 45 to 50 minutes.

Microwave Instructions. Place sausage in a 2-quart casserole dish. Micro-cook, covered, at HIGH for 1-½ minutes, turning once. Meanwhile, stir together sauerkraut, apples, raisins, onion, brown sugar and caraway. Add to sausage. Pour beer or apple juice and lemon juice over all, stirring to combine. Cook, covered, at HIGH for 10 minutes or until apples are tender, stirring once. Combine flour and water, add to sausage mixture. Cook, covered, 2 minutes more or until thickened and bubbly, stirring once or twice.

Yield: 4 servings

Chocolate sauerkraut cake

1-½ cups granulated sugar
⅔ cup butter, margarine or vegetable shortening
3 eggs
1 tsp vanilla
2-¼ cups all-purpose flour
1 tsp baking soda
1 tsp baking powder
½ cup unsweetened cocoa
1 cup cold water
⅔ cup sauerkraut, drained and chopped



- ◆ Cream the sugar and shortening until thoroughly blended and smooth.
- ◆ Add the eggs and vanilla and beat until fluffy.
- ◆ Measure the dry ingredients. Mix them together with a fork. Add to the creamed mixture along with the water, and beat to blend in completely.
- ◆ Stir the chopped sauerkraut into the batter.
- ◆ Pour batter into two greased and floured 9-inch round layer cake pans, or a greased and floured 9x13-inch cake pan. Bake at 350 degrees F for 25 to 30 minutes for layer pans, or for 35 to 40 minutes for a 9x13-inch pan.
- ◆ Cover cooled cake with cream cheese frosting.

Cream cheese frosting

1 3-ounce package cream cheese
6 tbsp butter
1 tsp vanilla
2 cups powdered sugar
1 tbsp milk

Soften cream cheese and butter. Combine all ingredients and beat until smooth. To make frosting spread easily, add more milk if necessary.

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