UCCE Master Food Preservers of Sacramento County

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*Sacramento County Master Food Preservers*

# *April 17, 2024*
# Waste Not-Want Not

*Resources*:

- Please visit the National Center for Home Food Preservation at http://nchfp.uga.edu for detailed information about research-based methods of home food preservation.
- UC ANR Catalog (http://anrcatalog.ucanr.edu)

Should you need assistance or require special accommodations for any of our educational programs, please contact us at 916-875-6913.

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## Candied Citrus Peel

*Source: "Candied Lemon Peel Using a Dehydrator",* The Dehydrator Bible, 2009, page 28, Sacramento County UCCE Master Food Preservers, Feb 17, 2021

Method: Dehydration

1. Clean lemons to remove dirt.
2. Juice lemon and remove pulp.
3. Cut peel to 1/4" thick slices.
4. Weigh the peel to estimate the amount of sugar is needed. Use 50% of the weight of the peel or adjust to your liking (sugar is used in step 8, but you need to weight the peel before immersing it in water).
5. Soak the peel in cold water for 1-2 hrs to lessen the bitter taste in the peel.
6. Bring water and lemon peel to a boil, drain water.
7. Repeat the boiling process with fresh cold water: a. 2 x for orange b. 3 x for lemon c. 5 x for grapefruit
8. Drain the liquid, add sugar, and simmer the peel for 20 minutes.
9. Turn off the heat, and let the peel soak in syrup for a few hours.
10. Drain the syrup.
11. Dehydrate the peel at 135° for 5 to 6 hours.
12. Peel is done when it is dry, but pliable

## Canned Citrus Sections

*Source:* *https://apps.chhs.colostate.edu/preservesmart/produce/canning/citrus-fruits/*

Method: Raw Pack

Yield:

15 pounds of citrus fruit (makes 7 quarts)
13 pounds of citrus fruit (makes 9 pints)

- An average of about 2 pounds yields 1 quart

Packing liquid, *any of the following*:

- **Citrus juice**
- **Water**
- **Water + sugar (for syrup)**- see table below for ingredients needed for preparing syrup

| Measure of Water and Sugar for Syrup | | | | |
|---|---|---|---|---|
| **Syrup Type** | **For 9 Pints** | **(or 4 Quarts)** | **For 7 Quarts** | |
| | **Cups Water** | **Cups Sugar** | **Cups Water** | **Cups Sugar** |
| **Very Light** | 6-1/2 | 3/4 | 10-1/2 | 1-1/4 |
| **Light** | 5-3/4 | 1-1/2 | 9 | 2-1/4 |
| **Medium** | 5-1/4 | 2-1/4 | 8-1/4 | 3-3/4 |
| **Heavy** | 5 | 3-1/4 | 7-3/4 | 5-1/4 |

*If using syrup for canned citrus fruits, a very light, light or medium syrup is recommended.*

1. Prepare boiling water canner. Heat jars in simmering water until ready for use. Do not boil. Wash lids in warm soapy water and set bands aside.
2. Wash and peel fruit and remove white tissue (pith) to prevent a bitter taste.
3. Break into sections.
4. Bring to a boil water, juice, or syrup. *Refer to table above in Ingredients section.*
5. Fill jars with sections and water, juice or hot syrup, leaving 1/2-inch headspace.
6. Remove air bubbles.
7. Add more liquid, if needed, for ½-inch headspace.
8. Wipe rim with clean, wet paper towel.
9. Place lid on jar and add screw band. Screw the band down fingertip tight- not too loose nor too tight. Follow lid manufacturer's directions for tightening the jar lids properly.
10. Process jars in a boiling water canner for **10 minutes**, adjusting for altitude (at 1,001 to 3,000 feet altitude add 5 minutes; 3,001 to 6,000 feet - add 10 minutes; 6,001 to 8,000 feet - add 15 minutes, 8,001 to 10,000 feet - add 20 minutes).
11. Remove jars and cool. Check lids for seal after 24 hours. Lid should not flex up and down when center is pressed.

**Quick tip: If any jars did not seal, treat as if 'fresh' and do any of the following:**

- Eat the food immediately.
- Refrigerate food and use within a week.
- Freeze.
- Reprocess. If reprocessing, must repeat the *entire* canning process.

## FRUIT HONEY FROM PEELS AND CORES

*Fruit Honeys are made by cooking fruit juice or pulp with sugar to the consistency of honey. They do not contain any honey. Peels from peaches, pears, apples work well. Use fruit honey on top of waffles, French toast, on a trifle, coffee cake, or any other baked good that is enhanced with a sweet spread*.

*Source: So Easy to Preserve, 2014*

Yield: varies half-pint jars
Method: Boiling Water Canning

1. Prepare boiling water canner. Heat jars in simmering water until ready for use. Do not boil. Wash lids in warm soapy water and set bands aside.
2. Sterilize canning jars by boiling for 10 minutes at altitudes of less than 1,000 At higher elevations, boil jars 1 additional minute for each additional 1,000 feet in elevation.
3. Cover fruit peelings with water and cook slowly in a covered saucepan until soft.
4. Pour mixture through a cheesecloth bag and press to remove all juice. Drip the juice through a jelly bag and measure. **Measure out sugar at the rate of half as much sugar as juice**.
5. Heat juice in saucepan to a vigorous boil. Add sugar. Boil rapidly until the consistency of honey.
6. Ladle syrup in jars. Leave 1/4-inch head space. Wipe rims with a dampened clean paper towel; adjust two-piece metal canning lids.
7. Process 5 minutes in boiling-water or atmospheric steam canner
8. Remove jars from canner. Let cool, undisturbed, 12-24 hours and check for seals. Clean and label jars. Store sealed jars in a cool, dry, dark location.

Note: If unsterile jars are used, the filled jars should be processed 10 minutes.

**Elevation Adjustment**

(at 1,001 to 3,000 feet altitude add 5 minutes; 3,001 to 6,000 feet - add 10 minutes; 6,001 to 8,000feet - add 15 minutes, 8,001 to 10,000 feet- add 20 minutes).

## SCRAP APPLE JELLY

*Source: Adapted from freshpreserving.com and the National Center for Home Food Preservation, 2019*
*http://www.oklahomagardening.okstate.edu/recipes/2019/juice-jelly/*
*Source: OREGON STATE UNIVERSITY Extension Service*
*https://extension.oregonstate.edu/sites/default/files/documents/8836/sp50455preservingfruitjuicesapplecider.pdf*

Yield: about 6 half-pint jars
**Preserving Method:** Boiling Water Bath Canning

### Ingredients

| | |
|---|---|
| 4-1/2 cups apple juice prepared from apple peels and cores<br>5 cups sugar<br>1 box powdered pectin | 5 to 6 (8 oz) 1/2 pint glass preserving jars with lids and bands |

**To make juice:**
Place peels and cores into a pan. Add up to 1 cup of cold water per pound of fruit. Boil on high heat; stir to prevent scorching. Reduce heat, simmer for 15 minutes. Do not overcook excess boiling destroys the pectin, flavor and color. Pour everything into a damp jelly bag and suspend the bag to drain the juice. Clear jelly comes from juice dripped through a jelly bag without pressing or squeezing. If a fruit press is used to extract the juice, restrain the juice through a jelly bag.

Follow one of these methods to extract the juice:

**Drip Method**

Pour hot prepared fruit pulp into a jelly bag or through several layers of cheese cloth. Let drip overnight, if necessary. Do not squeeze the bag.

**Steam Juicing**

One of the easiest ways to extract juice is by using a steam juicer available at many hardware and variety stores. This unique piece of equipment allows you to conveniently extract juice by steaming the fruit which is held in a retaining basket. The juice drops into a reservoir which has a tube outlet for removal. Follow manufacturer's instructions for using steam juicer.

1. Prepare boiling water canner. Heat jars in simmering water until ready for use. Do not boil. Wash lids in warm soapy water and set bands aside.
2. Sterilize canning jars by boiling for 10 minutes at altitudes of less than 1,000 At higher elevations, boil jars 1 additional minute for each additional 1,000 feet in elevation.
3. Pour juice into a large saucepan. Stir in pectin and bring to a full rolling boil

over high heat, stirring constantly.
4. Add sugar, stirring to dissolve. Return to a boil over high heat: boil hard 1 minute, stirring constantly.
5. Remove from heat. Skim foam off.
6. Ladle hot jelly into hot, sterile jars, leaving ¼-inch headspace. Wipe rims with a dampened clean paper towel; adjust two-piece metal canning lids/rings.
7. Process 5 minutes in boiling-water or atmospheric steam canner, adding 1 additional minute per 1,000 feet above sea level.
8. Remove jars and cool. Check lids for seal after 24 hours. Lid should not flex up and down when center is pressed.

Note: If unsterile jars are used, the filled jars should be processed 10 minutes.

## BROTH FROM FROZEN SCRAPS

*Instead of using beautiful fresh vegetables to make broth, keep adding clean vegetable scraps to a freezer bag. Onion skins will give your broth a beautiful golden color. An onion scape will give it flavor. The base of a (clean) celery stalk is too tough to eat on its own, but is full of flavor. Potato peels? Carrot peels? Cauliflower stems? Save them all. When the bag is full, make broth.*

*For meat broths, freeze the bones from a rotisserie chicken, pheasant, duck, ham, pork chops, steak, lamb, and more.*

*There are multiple ways to make a flavorful broth: stovetop, slow cooker, and pressure cooker. After you've made the broth, preserve it for long term storage in the freezer or by pressure canning.*

For detailed pressure canning instructions, visit the National Center for Home Food Preservation at https://nchfp.uga.edu.

*Source: https://nchfp.uga.edu*
Yield: varies

**Making Vegetable Broth in a Pressure Cooker**

1. Get as much flavor from the vegetables by browning the vegetable scraps in oil, then sautéing some garlic before adding liquid.
2. Cook on high pressure for an hour and quick release the pressure.
3. Strain the broth.
4. Refrigerate for up to two days, freeze for several months, or pressure can it for 30 minutes in pint jars, 35 minutes in quart jars at 10 psi at or below 1000' elevation, 15 psi above 1000'.

## STALE BREAD IDEAS

*Awww, those unloved bread ends! No one wants them, you can't even give them away and 90% of the time we through them out in the bin. Well, today you're in luck because we're going to share some simple stale bread ideas! You will be so amazed you'll never throw out old stale bread again!*

- Feed the birds!
- Compost them
- Croutons for your salad, cube bread, sauté in a buttered pan, salt and pepper, let cool, serve
- Toppings, for your soups, chili, and casseroles
- Breadcrumbs, blend, and cover your favorite fish/meat with it then bake or fry
- Holiday herb stuffing
- Fondue
- Bread pudding, savory or sweet
- Use in your meat loaf
- Keep a bag of stale ends in the freezer until you have enough to make anything
- Overnight French toast casserole or an egg stratta

## BREAD PUDDING

*Source: [https://preppykitchen.com/bread-pudding/](https://preppykitchen.com/bread-pudding/)*

| Ingredients | For the Vanilla Sauce |
|---|---|
| 6 cups of stale bread cut into 2-inch<br>2 cups whole milk<br>½ cup granulated sugar (100g)<br>3 tablespoons unsalted butter<br>1 teaspoon ground cinnamon<br>½ teaspoon salt<br>3 large eggs<br>1 tablespoon vanilla extract | 1 cup whole milk (240ml)<br>1 cup heavy cream (240ml)<br>½ cup packed light brown sugar (110g)<br>2 tablespoons unsalted butter<br>2 tablespoons cornstarch<br>1 tablespoon vanilla extract or paste<br>Salt to taste (optional) |

***For the Bread Pudding:***

a. Preheat oven to 350°F

b. In a medium saucepan, combine the milk, sugar, butter, cinnamon, and salt and place over medium heat. Stir occasionally until the butter is fully melted. Set aside and allow to cool slightly, about 10 minutes.

c. While the milk is cooling, lightly butter an 8-inch square baking dish, and place the bread cubes in the baking dish.

d. Once the milk mixture is just warm to the touch, whisk in the eggs, one at a time, then the vanilla. Pour the custard over the bread, making sure to soak any dry pieces on top that got missed in the pour. (let site for 20 to 30 minutes so the bread can soak up the liquid.

e. Bake for 40 to 45 minutes or until golden brown on top and a knife inserted in the center comes out clean.

***For the Sauce:***

f. While the bread pudding is baking, combine the milk, cream, sugar, and butter in a medium saucepan and place over medium heat. Stir occasionally until the butter and sugar are fully melted and the mixture is steaming.

g. Meanwhile, dissolve the cornstarch is ¼ cup water, or use bourbon or rum for a boozy kick. Once the milk mixture is steaming, stir in the

cornstarch. Stir constantly until the mixture has thicken. Remove from the heat and stir in the vanilla and salt if desired.

h. Pour some of the sauce over the warm bread pudding and serve with extra sauce.

**Notes:**

**Use stale bread.** Dry, stale bread will soak up the custard the best. If you don't have stale bread, let it sit out overnight before making this recipe. Or you can cube fresh bread and bake it on a cookie sheet for 10 minutes at 250°F to dry it out.

**Allow time for the bread to soak in the custard mixture before baking.** The bread pudding will have a better fluffy and creamy texture if you allow the bread to soak in the custard for 20-30 minutes before popping it in the oven to bake.

**Scale the recipe as needed.** This recipe makes one 8×8-inch baking dish, but it's so easy to scale this recipe to feed a larger crowd. Cook a double batch in a 9×13-inch pan and add 5-10 minutes of baking time, or until the pudding is baked through.

## WHEY FACTS

*"Little Miss Muffet sat on a tuffet, eating her curds and whey"*

Whey is the yellowish liquid left over when you make various cultured milk products. Although it still contains lactose, it is full of minerals and whey protein. Whey may be frozen up to 3 months until used.

There are actually two kinds of whey.

1. **Acid Whey**

   Acid (or sour) whey is the liquid produced from making cheese in which an acid (like vinegar or lemon juice has been added for the curdling process (such as for paneer, feta, chevrè, or whole milk ricotta).

**Uses for Acid Whey**

- Soak grain in acid whey for making breads.
- Feed acid whey to animals. They may like sweet whey better than acid whey.
  Whichever kind you feed them, be careful, because it can upset their digestion if they consume too much. **Cats should not be feed whey**.

**Sweet Whey**

Sweet whey is the liquid produced from making cheese in which rennet has been added for the curdling process (such as for cheddar or most soft cheeses).

**Uses for Sweet Whey**

- Add it to smoothies and shakes to provide more vitamins, minerals, and proteins.
- Use as cooking liquid for potatoes, rice, grits, pasta, and grains.
- Use as soaking liquid for beans, grains, and nuts.
- Use as soup broth (especially cream-style soups).
- Drink it straight!
- Use instead of the water or milk in any baking recipe.
- Put it in your compost pile. It adds nutrients and makes thick, black compost.

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## EDIBLE ROOT-VEGGIE TOPS

*In the garden, at farmers markets, and in some grocery stores, root vegetables often are presented the same way they came out of the ground, with the bulbous root and leafy greens. Vegetables can be eaten stem-to-root. Below are just a few recipes; many more are online and in books. Explore! Eat!*

## RADISH TOP SOUP

*Source: food52.com*

**Ingredients**

| | |
|---|---|
| 3 tablespoons extra-virgin olive oil<br>4 shallots, skinned, halved, and finely sliced (1¼ cups)<br>¼ teaspoon red pepper flakes<br>2 garlic cloves, skinned and finely sliced<br>8 ounces Yukon Gold potatoes, peeled and cut in 1/2-inch cubes (1 1/4 cups)<br>3 cups vegetable stock<br>2 ½ cups spring water | 1 teaspoon sea salt, or to taste<br>Freshly ground black pepper, to taste<br>12 ounces radish tops without the tough stems (or 12 ounces mustard greens), leaves and tender stems cut in 1/2-inch strips (14 cups loosely packed)<br>1 tablespoon crème fraîche Lemon-infused oil as garnish |

1. Put a large heavy-bottomed soup pot over medium-high heat.
2. Add the olive oil, shallots, red pepper flakes, and garlic. Stir well and sauté for 2 to 3 minutes until softened, stirring from time to time.
3. Add the potatoes, stock, water, and salt and pepper to taste.
4. Bring to a boil.
5. Add the radish leaves, stir well, and continue to boil until wilted, about 1 to 2 minutes.
6. Reduce heat to medium to medium-low, cover the pot, and simmer for 20 minutes, until the potatoes are tender.
7. Add the crème fraiche and purée the soup with an immersion blender or a food processor until silky smooth.
8. Taste and adjust the seasoning if needed and keep warm.

## CARROT GREENS CHIMICHURRI

*Source: Adapted from Fernando's Mom's Chimichurri recipe, loveandlemons.com*
Yield: about 1 cup

**Ingredients**

| | |
|---|---|
| 1 cup finely chopped carrot greens<br>2 teaspoons dried<br>oregano 1/4 teaspoon<br>cumin<br>1 teaspoon ground sweet paprika<br>1/2 teaspoon crushed<br>red pepper flakes | 1 garlic clove, minced 1<br>teaspoon salt<br>A few grinds of pepper<br>1/4 cup white wine vinegar<br>1/4 cup olive oil (a good fruity one) |

1. Wash and dry your carrot greens well; cut off of carrots.
2. Finely chop the carrot greens, mix with all of the dried spices and minced garlic.
3. Stir in the vinegar and olive oil. Taste and adjust seasonings. (tip: taste it with a carrot or a piece of bread rather than by the spoonful)
4. Store in an airtight container at room temperature. It'll keep for quite a while, but will not look as vibrant green after a few days.
5. If you find this too oily or vinegary, dilute it with 1/4-1/2 cup of lukewarm water. Mix well and spoon it onto whatever you're serving it with, rather than dipping into it.

## TURNIP GREENS FRITTATA

*Source: food52.com*
Yield: 4 servings

**Ingredients**

| | |
|---|---|
| 2 tablespoons olive oil<br>1 large or 2 small white potatoes, skin on and finely diced (no larger than 1/4-inch; 1 1/2 cups total)<br>1 garlic clove, smashed<br>and chopped<br>Salt | 1 to 2 bunches turnip greens, stems discarded and leaves sliced crosswise into 1/2-inch strips (you should have 4 cups loosely packed sliced greens)<br>8 eggs, lightly beaten Coarsely<br>ground black pepper<br>1/4 cup grated Parmesan cheese |

1. Heat the oven to 375 degrees.
2. Warm the oil in a large skillet.

3. Add the potatoes and cook over medium high heat until browned on the edges and soft in the center. Add the garlic and season with salt after the potatoes have been cooking for 2 minutes.
4. Stir in the turnip greens and cook until wilted and tender, about 3 minutes.
5. Season the eggs with salt and pepper. Pour the eggs into the pan, sprinkle with the cheese and transfer to the oven.
6. Bake until the frittata is just set, about 10 minutes.
7. Let cool for 10 minutes, then slice and serve.

## COMPOSTING

- Zero waste
- Home versus commercial composting

Common things to compost are:

· Eggshells, fruit, veggies, cardboard minus the plastic label etc…….

Items NOT to compost…

· No Meat, Beef, chicken, pork, etc…….

### Tackling Food Waste Beyond Consumption - Resources

1. I Recycle Smart…… https://irecyclesmart.com/
2. Earth 911…….https://earth911.com/

### UCCE Master Gardeners of Sacramento County

1. Composting…….
   https://sacmg.ucanr.edu/Composting/
2. Composting for the Home Gardener (EHN 98)
   https://ucanr.edu/sites/sacmg/files/163139.pdf
3. Worm Composting (GN 144)
   https://ucanr.edu/sites/sacmg/files/153018.pdf
4. Composting Tips and Tricks (GN 142)
   https://sacmg.ucanr.edu/files/163152.pdf

### YouTube Channel

1. https://sacmg.ucanr.edu/Video_Library/#compost

### Live Composting Demonstrations at Fair Oaks Horticulture Center schedule

1. https://sacmg.ucanr.edu/?calendar=yes&g=21788

## USING BOILING WATER CANNERS

https://nchfp.uga.edu/publications/uga/using_bw_canners.html#gsc.tab=0

Most boiling water canners are made of aluminum or porcelain-covered steel; at least one stainless steel model is also available. Boiling water canners have fitted lids and removable racks that are either perforated or shaped wire racks.

The canner must be deep enough so that at least one inch of briskly boiling water will be over the tops of jars during processing.

Some boiling water canners do not have completely flat bottoms; these will not work well on smooth top ranges. The canner bottom should also be fairly flat for use on electric burners. Either a flat or ridged bottom may be used on a gas burner. To ensure uniform processing of all jars with an electric range, the canner should be no more than 4 inches wider in diameter than the element on which it is heated. (When centered on the burner or element, the canner should not extend over the edge of the burner or element by more than 2 inches on any side.) Before canning on a smooth top range, check the range manufacturer's advice on suitability for canning and recommended maximum canner size for specific burners.

## PROCESS ADJUSTMENTS AT HIGH ALTITUDES

https://nchfp.uga.edu/how/general/ensuring_safe_canned_foods.html

Using the process time for canning food at sea level may result in spoilage if you live at altitudes of 1,000 feet or more. Water boils at lower temperatures as altitude increases. Lower boiling temperatures are less effective for killing bacteria. Increasing the process time or canner pressure compensates for lower boiling temperatures. Therefore, select the proper processing time or canner pressure for the altitude where you live.

WATER BOILS AT LOWER TEMPERATURES AS ALTITUTE INCREASES

https://nchfp.uga.edu/how/general/boil_water_chart.html

| Altitude (in feet) | Temperature at which Water Boils |
|---|---|
| 10,000 | 194°F |
| 8,000 | 197°F |
| 6,000 | 201°F |
| 4,000 | 204°F |
| 2,000 | 208°F |
| 0 (Sea Level) | 212°F |

FIND YOUR ALTITUDE
https://nchfp.uga.edu/how/general/find_altitude.html

Usually, you can find your altitude at your local planning commission or zoning office, on a webpage about your town or city, or contact your local Cooperative Extension Office. There are many online tools, and if you search you may want to use the term 'elevation' instead of altitude. Here are two suggestions:

1. The National Map from USGS: https://viewer.nationalmap.gov/theme/elevation
    - A service of the U.S. Geological Survey, U.S. Dept. of the Interior.
    - Click on the "search" icon at the upper left; this is the Spot Elevation Tool, words that appear when you hover over the icon
    - In the "By Location" box, type your address and hit return
    - Your elevation shows up at the bottom of this box
2. https://whatismyelevation.com/
    - Type in your street address, city and state in the '**Enter Your Location**' box.
    - Select feet (ft) as the unit of measure to use our processing tables.

https://nchfp.uga.edu/how/general/ensuring_HQ_canned_foods.htm

## MAINTAINING COLOR AND FLAVOR IN CANNED FOOD

To maintain good natural color and flavor in stored canned food, you must:

- Remove oxygen from food tissues and jars,
- Quickly destroy the food enzymes,
- Obtain high jar vacuums and airtight jar seals.

Follow these guidelines to ensure that your canned foods retain optimum colors and flavors during processing and storage:

- Use only high-quality foods which are at the proper maturity and are free of diseases and bruises.
- Use the hot-pack method, especially with acid foods to be processed in boiling water.
- Don't unnecessarily expose prepared foods to air. Can them as soon as possible.
- While preparing a canner load of jars, keep peeled, halved, quartered, sliced, or diced apples, apricots, nectarines, peaches, and pears in a solution of 3 grams (3,000 milligrams) ascorbic acid to 1 gallon of cold water. This procedure is also useful in maintaining the natural color of mushrooms and potatoes, and for preventing stem-end discoloration in cherries and grapes. You can get ascorbic acid in several forms:

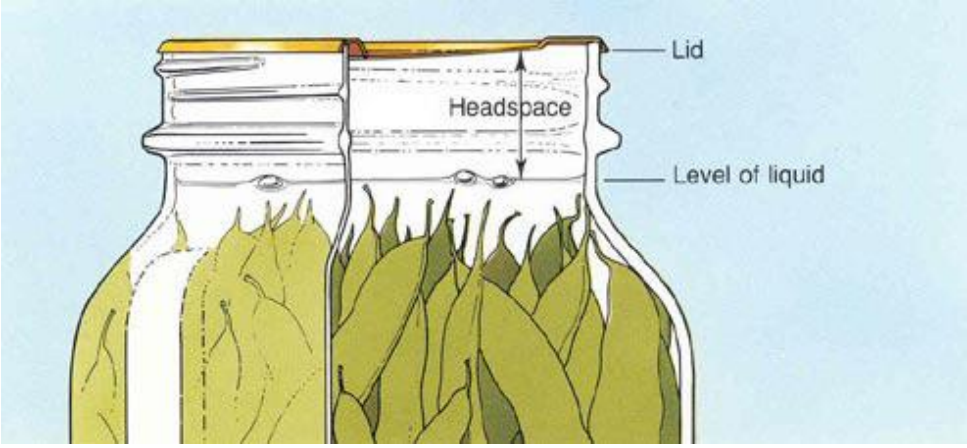
    - *Pure powdered form* —seasonally available among canners' supplies in supermarkets. One level teaspoon of pure powder weighs about 3 grams. Use 1 teaspoon per gallon of water as a treatment solution.
    - *Vitamin C tablets* —economical and available year-round in many stores. Buy 500-milligram tablets; crush and dissolve six tablets per gallon of water as a treatment solution.

- *Commercially prepared mixes of ascorbic and citric acid* —seasonally available among canners' supplies in supermarkets. Sometimes citric acid powder is sold in supermarkets, but it is less effective in controlling discoloration. If you choose to use these products, follow the manufacturer's directions.

- Fill hot foods into jars and adjust headspace as specified in recipes.
- Tighten screw bands securely, but if you are especially strong, not as tightly as possible.
- Process and cool jars.
- Store the jars in a relatively cool, dark place, preferably between 50° and 70°F.
- Can no more food than you will use within a year.

## CONTROLLING HEADSPACE

The unfilled space above the food in a jar and below its lid is termed headspace. Directions for canning specify leaving 1/4-inch for jams and jellies, ½-inch for fruits and tomatoes to be processed in boiling water, and from 1- to 1¼-inches in low acid foods to be processed in a pressure canner. This space is needed for expansion of food as jars are processed, and for forming vacuums in cooled jars. The extent of expansion is determined by the air content in the food and by the processing temperature. Air expands greatly when heated to high temperatures; the higher the temperature, the greater the expansion. Foods expand less than air when heated.

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**OTHER INFORMATION**

**Recommended Jars and Lids:**
https://nchfp.uga.edu/how/general/recomm_jars_lids.html

**Cooling Jars and Testing Jar Seals:**
https://nchfp.uga.edu/how/general/cooling_jars_test_seals.html

**Causes and Possible Solutions for Problems with Canned Foods:**
https://nchfp.uga.edu/how/general/cannedfoodproblems.html

## FOLLOW THESE STEPS FOR SUCCESSFUL BOILING WATER CANNING

https://nchfp.uga.edu/publications/uga/using_bw_canners.html#gsc.tab=0

*(Read through all the instructions before beginning.)*

1. Before you start preparing your food, place canner rack in the bottom of water canner. Fill the canner half full with clean warm water for a canner load of pint jars. For other sizes and numbers of jars, you will need to adjust the amount of water so it will be 1 to 2 inches over the top of the filled jars.
2. Center the canner over the burner and preheat the water to 140 degrees F. for raw-packed foods and to 180 degrees F. for hot-packed foods. You can begin preparing food for your jars while this water is preheating.
3. Load filled jars, fitted with lids and ring bands, into the canner one at a time, using a jar lifter. When moving jars with a jar lifter, make sure the jar lifter is securely positioned below the neck of the jar (below the ring band of the lid). Keep the jar upright at all times. Tilting the jar could cause food to spill into the sealing area of the lid.

   If you have a shaped wire rack that has handles to hold it on the canner sides, above the water in the canner, you can load jars onto the rack in the raised position and then use the handles to lower the rack with jars into the water.
4. Add more boiling water, if needed, so the water level is at least one inch above the jar tops. Pour the water around the jars and not directly onto them. For process times over 30 minutes, the water level should be 2 inches above the jars.
5. Turn the heat setting to its highest position, cover the canner with its lid and heat until the water boils vigorously.
6. Set a timer (after the water is boiling) for the total minutes required for processing the food.
7. Keep the canner covered for the process time. The heat setting may be lowered as long as a gentle but complete boil is maintained for the entire process time.
8. Add more *boiling* water during the process, if needed, to keep the water level above the jar tops. Pour the water around the jars and not directly onto them.
9. If the water stops boiling at any time during the process, turn the heat on its highest setting, bring the water back to a vigorous boil, and begin the timing of the process over, from the beginning (using the total original process time).

10. When the jars have been processed in boiling water for the recommended time, turn off the heat and remove the canner lid. Wait 5 minutes before removing jars to allow the canner contents to settle. This waiting period is not required for safety of the food when using USDA or University of Georgia processing times, however.
11. Using a jar lifter, remove the jars one at a time, being careful not to tilt the jars. Carefully place them directly onto a towel or cake cooling rack, leaving at least one inch of space between the jars during cooling. Avoid placing the jars on a cold surface or in a cold draft.
12. Let the jars sit undisturbed while they cool, from 12 to 24 hours. Do *not* tighten ring bands on the lids or push down on the center of the flat metal lid until the jar is completely cooled.
13. Remove ring bands from sealed jars. Put any unsealed jars in the refrigerator and use first.
14. Wash jars and lids to remove all residues.
15. Label jars and store in a cool, dry place out of direct light.