4-H Canning: Tomatoes and Fruit

A 4-H Food Preservation Project
Welcome to the home food preservation project for boiling-water canning! You will learn how to process fruit and tomatoes in the boiling-water canner.

Use this project with the USDA’s Complete Guide to Home Canning (Bulletin 539), which includes guides 1–7. Each guide gives detailed information on canning. Page numbers in this project refer to information in the canning bulletin. Be sure you have the most recent edition of the bulletin (at this printing, December 2009). Go to the Penn State Home Food Preservation website at extension.psu.edu/food-safety/food-preservation for a to the bulletin.

Use up-to-date methods and tested recipes for safe, high-quality home-canned foods. Follow the recipe exactly. Do not alter ingredients or change processing times. Old family recipes and cookbooks may not be based on the newest research. Some Internet sources are not based on fact. Contact your local Penn State Extension office for help with finding up-to-date canning resources or visit the Penn State Home Preservation website to find reliable canning information.

Read Guide 1, pages 5–12 of the Complete Guide to Home Canning, which gives background information on the basics of home canning. You can also find and complete a free online course, Preserving Food at Home, on the National Center for Home Food Preservation website, www.uga.edu/nchfp/index.html.

For up-to-date information, visit these websites:

Penn State Home Food Preservation
Safe canning, freezing, and drying recipes, equipment and ingredient sources, and the latest questions and answers on home food preservation
extension.psu.edu/food-safety/food-preservation

National Center for Home Food Preservation
www.uga.edu/nchfp/index.html
How Does Canning Work?

Heating food in a canning jar destroys enzymes, yeasts, mold, and bacteria that could cause food to spoil. It also forces air out of the jar. The heat softens the gasket compound on the underside of the lid, helping to form a seal as the jar cools. The center of the lid is pushed inward as the jar cools, creating a vacuum and making the seal airtight. Because air and microorganisms can’t get back inside the jar, the contents are safely preserved if up-to-date canning methods are used.

Food Acidity and Processing Methods

Foods are grouped as acid or low acid for canning. Use the boiling-water canner to process acid foods. These include fruit, some tomatoes, pickled fruit and vegetables, and sauerkraut. Do not use a boiling-water canner to process meat, poultry, fish, milk, vegetables, or soups. These foods are low in acid and must be processed in a pressure canner (see Guide 1, pages 8–9). Milk products should not be processed using boiling-water or pressure-canner methods. Regular ovens, microwave ovens, and dishwashers are not safe for canning foods.

The practice of putting hot food into jars and then placing a lid on the jar and sealing without processing is called open-kettle canning. This method of canning was used in the past; however, it is no longer considered a safe practice.

Plan to preserve foods your family likes. Decide what quantities of fruit and tomatoes your family will use in a year. If you need help planning, see Guide 1, page 32.

How to Acidify Tomatoes

The acid level of tomatoes is very close to being low acid. For this reason, whole, halved, crushed, or juiced tomatoes need to be acidified to ensure a safe level of acidity. To acidify, use 2 tablespoons of bottled lemon juice or ½ teaspoon citric acid for each quart of product. Add this acid to the empty jar before adding the food. See Guide 3, page 5 for details. Note: Do not use fresh lemon juice. A safe tomato product depends on a standard acid level, which you get with bottled lemon juice or citric acid. The acid level of fresh lemon juice may vary.

Processing for Altitude

At sea level (altitude is 0 feet) water boils at 212°F. As altitude goes up, water boils at a lower temperature. Lower temperatures do not kill bacteria. To make up for the difference, the processing time must be increased. The recipes in the canning bulletin give adjustments for altitude. To learn more, read page iv and in Guide 1, pages 10 and 23–24. Find the altitude where you will be canning at extension.psu.edu/food-safety/food-preservation/tools or contact your local extension or conservation district office.

Bottled lemon juice ensures a standard acid level for acidifying tomatoes. The acid level of fresh juice may vary.
A Few Tips

Prepare fruit and tomatoes to help ensure safe, good-tasting products. Select high-quality, ripe produce. Process it soon after harvest. Most produce is at peak quality 6–12 hours after picking. Fruit such as peaches and pears may need one or more days to ripen between harvest and canning. Keep fresh produce in a shady, cool place until ready to can. Wash carefully and peel them (if needed) before preparing. Peeling helps remove microorganisms that can cause spoilage or poor quality. Keep hands, equipment, and counters clean, too.

Hold light-colored fruit in an ascorbic acid (vitamin C) solution while peeling and cutting to prevent darkening. See Guide 1, page 11 for directions.

Fruit and tomatoes may be packed raw or hot into jars. However, hot packing is the preferred pack style for acid foods processed in the boiling-water canner. See Guide 1, page 12 for directions on raw and hot packing.

Salt and sugar are sometimes added to canned foods. Neither is essential to can fruit and tomatoes safely. See Guide 1, page 31 for information on canning without sugar or salt. Do not reduce the amount of salt called for in fermented fruit and vegetables, such as pickles and sauerkraut.

Use equipment designed for home canning. Mason jars are best for home canning. They are made of tempered glass that will withstand high canning temperatures. The jars and their rims must be clean and free of defects. They can be used for many years if they are not scratched, cracked, or chipped. See Guide 1, pages 13–15 to learn how to select, prepare, and use jars.

Use two-piece, self-sealing, flat, metal lids and screw bands for canning. Screw bands that are not bent or rusted may be reused. Use a new lid for every jar of food processed. Buy only the quantity of lids you will use in a year. See Guide 1, pages 15–16 to learn how to select, prepare, and use lids.

The empty space above the food in the jar and below its lid is the headspace. This space lets the food expand during canning and helps form a vacuum as the jar cools. The correct headspace helps make the seal strong.

Headspace

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Too much headspace?
Getting Ready to Can

Gathering what you need is the first step for successful canning. Here is a list of items you will need:

- jars, lids, and screw bands
- canner or large pot with lid and rack
- bowls for holding prepared produce
- timer or clock
- cutting board and sharp knife
- colander or strainer for washing and draining
- wide-mouth funnel and ladle for filling jars
- brush for washing produce
- large pan for cooking produce
- small pan for heating lids
- lid lifter for removing lids from hot water
- tea kettle or pan, if boiling water is needed during processing
- paper towels, clean towels, or newspaper
- jar lifter or tongs for lifting hot jars out of the canner
- potholders (note: wet potholders conduct heat and cause burns)
- cooking racks or layers of towels or newspaper
- flat plastic knife or spatula for removing air bubbles from jars
- labels for identifying jar contents
- ascorbic acid to prevent darkening

Steps for Successful Boiling-water Canning

Read Guide 1, page 18 on using boiling-water canners.

1. Gather, wash, rinse, and dry the equipment you need.
2. Fill the canner at least halfway with clean water.
3. Preheat water to 140°F (hot but not simmering) for raw-packed foods and to 180°F (simmering) for hot-packed foods. Begin preparing food while the water is heating. See Guide 1, page 12 to learn how to pack food into jars.
4. Wash jars in hot, soapy water and rinse well or wash them in the dishwasher. Keep the jars hot until you’re ready to fill them with food. See Guide 1, page 14.
5. Prepare the lids according to the directions on the box. If no directions are available, then heat the lids in a pan of water on the stove to just a simmer. Do not let the water boil.
6. Select enough fresh produce to fill one canner load of pint or quart jars.

7. Prepare food according to recipe directions in Guides 2, 3, 6, or 7.

8. Fill the jars, allowing the recommended head-space. See Guide 1, page 13.

9. Insert a clean, thin, flat plastic or wooden (not metal) utensil into the jar along its sides. This will release air bubbles so they can rise to the top. Note: Using a metal utensil may cause tiny scratches on the jars. This weakens the jars, making them more likely to break during processing.

10. After releasing the air bubbles, you may need to add more food or liquid to correct the headspace.

11. Wipe the rim of the jar carefully with a clean, damp paper towel. Particles of food left on the rim may cause seal failure.

12. Put lids on the tops of the jars. Then put on screw bands and tighten them until you feel resistance; this is often described as "fingertip tight." If the bands are too loose, liquid may escape from the jars during processing and seals may fail. If the jars are too tight, air will not escape during processing. This may cause lids to buckle and the jars to break.

13. Use a jar lifter or tongs to place filled jars on the rack inside the canner. Keep jars upright when putting them into the canner. Do not tilt the jars, as food particles may get on the lid and cause the seal to fail.

14. Adjust the water level to at least one inch above the jar tops. Put the lid on the canner. Turn the heat on high until the water begins to boil rapidly.

15. Begin to count processing time when the water starts to boil rapidly. Reduce heat to maintain gentle boiling throughout the processing time. If water stops boiling at any time, bring it back to boiling and begin counting the processing time over from the beginning.

16. Add more boiling water, if needed, to keep the water level above the jars. Add water around the jars, not directly on top of them.

17. When processing time is done, turn off the heat. Lift the lid away from you so that the steam does not burn your face. Wait five minutes before removing jars.

18. Using a jar lifter or tongs, take the jars out of the canner without tilting them. Place them on a cooling rack or on folded towels. Leave at least one inch of space between the jars during cooling. Do not remove or tighten the screw bands. Do not remove excess water from the tops of jars. See Guide 1, page 16.

19. Allow the jars to cool for 12–24 hours. Remove the screw bands and prepare the jars for storage as described in Guide 1, pages 25–26. Jars that do not seal may be reprocessed within 24 hours. See Guide 1, page 26 for directions.
1. Prepare an exhibit about some of the things you have learned in this project. Using your exhibit as a visual aid, give a demonstration to your club or family. Topics might include:
   • Selecting quality produce for canning
   • Showing and describing equipment used for boiling-water canning
   • Explaining how acid/low-acid foods should be processed
   • Demonstrating the boiling-water canning process
   • Testing a seal and preparing a home-canned product for storage
   • Making a food preservation plan
2. Process at least 18 pint or quart jars in the boiling-water canner, including:
   • Six or more jars of fruit in sugar syrup (see Guide 2, page 5)
   • Six or more jars of fruit in fruit juice or water (see Guide 1, page 31)
   • Six or more jars of tomatoes, tomato juice, non-meat tomato sauce and/or salsa (see Guide 3, pages 5–12, 19–26)
3. Label the containers completely and accurately. This will help you evaluate the product when you use it and plan what to can next year. If the information is too detailed to fit on the container, include it on an inventory record.
4. Look at your finished products and evaluate them using the test on page iii. The lids should be sealed and free of rust, leaks, and off-odors.

**Roundup and Fair Exhibits**

Check your county fair and Farm Show premium listings every year for exhibit categories.

**Questions?**

Contact your local Penn State Extension office (visit extension.psu.edu/counties).
4-H PLEDGE
I pledge
My head to clearer thinking,
My heart to greater loyalty,
My hands to larger service, and
My health to better living,
For my club, my community,
my country, and my world.

4-H CREED
I believe in 4-H Club work for the opportunity
it will give me to become a useful citizen.

I believe in the training of my HEAD for the power
it will give me to think, to plan, and to reason.

I believe in the training of my HEART for
the nobleness it will give me to become
kind, sympathetic and true.

I believe in the training of my HANDS for the ability
it will give me to be helpful, skillful and useful.

I believe in the training of my HEALTH for the
strength it will give me to enjoy life,
to resist disease and to work efficiently.

I believe in my country, my state, and my community,
and in my responsibilities for their development.

In these things I believe, and I am willing to
dedicate my efforts to their fulfillment.

4-H MOTTO
“To make the best better”

4-H CANNING: Tomatoes and Fruit was prepared
by Cathy Guffey, senior extension educator,
and Jan Scholl, associate professor of agricultural
and extension education, in collaboration with
Luke Laborde, associate professor of food
science, and the Food Preservation and 4-H
Healthy Living work teams.
Canning Tomatoes and Fruit Project Record

Name ____________________________
Address ____________________________
Project year ________ County ____________ Club name ____________________________
Member’s signature ____________________________
Leader’s signature ____________________________

Your goals for the project year

1. Learn how to ____________________________
2. Be able to can ____________________________
3. Give a demonstration or talk on ____________________________

Tomatoes and fruit canned during the project year

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How you used your canned products during the year (put your menu below)

Sample Menu...
Cheese Plate
Meatloaf (used canned tomatoes)
Peach Melba (used canned peaches)
Milk Iced Tea

My Menu...

What you learned this year

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________