Food Preservation
Pressure Canning

Facilitation Script

Session: 2 of 4 Sessions
Length of Session: 2½ hours or more
Audience: Teens and adults
Size: Based on number of available range tops, canning supplies and equipment

NOTE: As participants arrive give them an apron to put on, remind them to pull back long hair and wash hands in preparation for the training session.

Slide 1: Welcome. I am________________________, the Family and Consumer Sciences Extension Agent for__________County. I am so glad to have each of you join us for our pressure canning program. This program will give you an overview and practical experience in using the pressure canning method of food preservation.

Slide 2: Please share your name, a personal family experience with canning and your reasons for wanting to learn how to preserve food through home canning.

Note to Facilitator: It is a good idea to share your own personal experiences with home canning. Remember to introduce your assistants and any volunteers who may be assisting you during the program.

Slide 3: Our purpose for presenting this program is to teach research-based methods to teens and adults for preserving harvest from personal gardens or local farmers markets so you can enjoy safe food year round; to demonstrate how you can gain more control over what is in your food by limiting or avoiding salt, sugar or preservatives; to help you save money; to teach you how to prepare your own better tasting canned foods using the most current research-based methods for home food preservation; to teach families how to continue family traditions of home food preservation; and to help you gain a sense of personal satisfaction from home canning.

Slide 4: Objectives for this session are for each of you to:
1. Identify research-based methods of home food preservation.
2. Differentiate between high acid and low acid foods and the correct method of canning for each level of acidity.
3. Examine and use proper jars, tools and equipment during the pressure canning session.
4. Accurately prepare food product and jars for pressure canning.
5. Correctly process the products in the pressure canner following research-based methods.
6. Identify signs of unsealed jars and signs of spoilage in home canned goods.
Slide 5: Please answer the pretest. We will check your answers, and then check your knowledge again at the end of the session.

Note: By reviewing the correct answers now and discussing the correct answers throughout the program, this enables participants to internalize the content through repetition.

Slide 6: Microorganisms live and multiply quickly on the surfaces of fresh foods. Therefore, we should always use research-based recommendations when using either method of home canning. By following the correct procedures we can ensure safely canned foods that are of top quality and may be stored for up to two years.

Based on cases reported to the Centers for Disease Control between 1996 and 2008, home canned foods, specifically canned vegetables, were the most common cause of foodborne botulism outbreaks in the United States. Follow up by the CDC indicated most illnesses resulted from improper home canning methods and lack of understanding of correct procedures. Education plays a key role in creating positive behavior and ensuring a safe food supply through home canned foods. The CDC and other agencies refer consumers to the Cooperative Extension Service for information on home processing foods.

Slide 7: We lose the advantages of home canning when we start with poor quality fresh foods; when jars fail to seal properly; when food spoils; or when color, texture, flavors and nutrients deteriorate during prolonged storage.

Slide 8: Currently there are only two research-based methods acceptable for home canning of safe and quality products: the boiling water canning method and the pressure canning method. The method used to process home canned products depends on the type of raw product and whether or not the recipe has the addition of an acid.

Slide 9: To ensure that the finished product is safe, it is crucial not to change or modify the recipe, processing method or processing time. There are no USDA approved conversions between boiling water canning and pressure canning processing times, available to home canners. Note: Open kettle canning, oven canning and the use of steam canners or small pressure cookers are not recommended for home canning. “Small” pressure canners refer to the pressure cookers that sometimes bill themselves as canners. In order for any pressure cooker to be safely used for canning, it must meet 3 criteria:

1. Hold at least 4 quart jars standing upright on the rack
2. Be able to measure and regulate pressure (at 5, 10 and/or 15 psi (pounds per square inch)
3. Have a port for venting excess air from the canner before bringing up to pressure

Small pressure cookers don’t meet these requirements and should not be used for canning. The National Center for Home Food Preservation has a factsheet on the topic at http://nchfp.uga.edu/publications/nchfp/factsheets/pressurecookers.html.

Steam canners, on the other hand, have recently been approved by USDA for home canning high acid foods (in place of a boiling water bath), providing certain criteria are met. These are outlined in another NCHFP factsheet at http://nchfp.uga.edu/publications/nchfp/factsheets/steam_canners.html

Slide 10: Low acid foods, such as meats, seafood, poultry, dairy and most vegetables must be processed in a pressure canner, where temperatures of 240 to 250 degrees F can be attained
at 10 to 15 pounds of pressure. Maintaining this high temperature for the amount of time specified in the recipe at the correct pressure destroys the bacterial spores that cause botulism. The specified time depends on the kind of food being canned, the way it is packed into the jar and the size of the jar. All low acid foods should be processed in a pressure canner following research recommended instructions.

**Slide 11:** Current USDA recommended pressure canning processing times for tomatoes also require the addition of an acid. The recommended pressure canning processing times are equivalent only to the heat treatment that is obtained in a boiling water canner. According to the National Center for Home Food Preservation, “Those pressure processes are not the amount of heat and time that would be required for canning a low acid food to control for botulism. There has not been a properly researched process for pressure canning of low acid tomatoes without added acid. The available processing times still require the addition of acid as if they are being processed in boiling water. (see [http://nchfp.uga.edu/publications/nchfp/factsheets/acidifying.html](http://nchfp.uga.edu/publications/nchfp/factsheets/acidifying.html))

**Facilitator Note:** Some USDA recommended recipes for tomatoes combined with other vegetables are pressure canned without acidifying. However, the recommended processing times are generally much longer and have been determined through lab testing and temperature measurements.

**Slide 12: Facilitator Note:** Review the names and purpose for each tool, utensil and piece of equipment to be used for pressure canning: pressure canner, jar lifter, funnel, canning rack, plastic jar bubble remover, ladles, timer, dishcloths, dish towels, paper towels.

**Slide 13:** Pressure canners made after 1997 have been redesigned with more safety features, and they are lighter in weight. Choose a pressure canner that has been approved by Underwriter’s Laboratory (UL) to ensure it meets current safety guidelines. Follow the manufacturer’s instructions regarding care and maintenance of the canner.

**Slide 14:** When you purchase a new pressure canner, keep all your documentation. You will need to follow the manufacturer’s instructions for your particular type of pressure canner. Some pressure canners only need one to two inches of water in the bottom of the canner. Others require much more water, based on manufacturer’s instructions. Read the manufacturer’s instructions to find this information.

**Slide 15:** Two types of gauges are available to regulate pressure: the dial gauge and the weighted gauge. The dial gauge is easy to read because it indicates the pounds of pressure on the dial. A counterweight or pressure regulator will cover the vent to allow pressure to build up within the pressure canner. A dial gauge should be checked for accuracy annually. Our Extension office has equipment to test the dial gauge for accuracy. If the gauge reads high or low by more than two pounds at 10 pounds of pressure, replace it.

**Slide 16:** A weighted gauge is round with different-sized holes around the edge. Each hole indicates the amount of pressure that will build up inside the pressure canner. A weighted gauge will usually jiggle several times a minute or rock gently when the correct pressure is being maintained. Always read the manufacturer’s directions to know how a particular weighted gauge should rock or jiggle. A weighted gauge should maintain its accuracy as long as you don’t drop it or plug the vent. Always check the vent to ensure that it is clear. Hold the lid up to a light to ensure the vent is clear prior to use. If the vent is not clear, it must be
cleaned prior to use. Vents should be checked for both dial and weighted gauge canners.

**Slide 17:** When you have placed your correctly packed jars into the pressure canner, pressure will have to build in order to complete the processing time in the pressure canner. The next step is to vent the canner prior to processing. Once the lid is firmly in place on the canner, usually secured with a twist, the air trapped inside the canner must be removed. This process is known as venting or exhausting the canner and is necessary to ensure that the temperature inside the canner during processing corresponds to the pressure indicated on the gauge. Any air left inside the canner during processing will reduce the temperature inside the canner and lead to under processing. To vent a canner, leave the vent port uncovered or manually open the petcock on some older models.

**Slide 18:** Heat the canner on high until the one to two inches of water boils and generates steam that can be seen escaping through the open vent port or petcock.

When a funnel shape of steam begins to continuously escape the canner, set a timer for 10 minutes. After 10 minutes of continuous steam, the canner is vented. You can close the petcock or place the counterweight or weighted gauge over the vent port to begin building pressure in the canner. Once the recommended pressure is reached, set a timer for the processing time specified in the recipe.

**Slide 19:** Once processing is completed, older canner models may take up to one hour to cool when fully loaded with quart jars. Newer canner models cool more rapidly and are usually fitted with vent locks that open when the pressure is at zero. These canners are depressurized when the piston in the vent lock drops to a normal position. If the lid will not open, there may be a hidden lock in the canner handles.

A loaded canner is heavy. If you have a flat-top electric range, you will need to lift the canner straight up, without sliding it, to prevent scratching the top of the range.

**Slide 20:** Your first step for successful pressure canning, is to assemble all equipment and utensils. The equipment used for pressure canning includes a pressure canner, canning rack, proper canning jars, canning funnel, flexible spatula, jar lifter, measuring spoons, ladle, timer, damp paper towels, dishcloths and kitchen towels. These items are usually available from any local grocery store that carries home canning supplies.

**Facilitator Note:** Share examples of local businesses in your area where participants can purchase equipment and supplies.

**Facilitator Note:** Demonstrate inspection of the jars for nicks, cracks and defects and other equipment to ensure good working order.

**Slide 21:** It is very important to wash all empty jars in hot, soapy water and rinse jars before use. Jars can be washed in a dishwasher, if desired. You should always start with clean jars and equipment before each canning session.

All jars to be processed less than 10 minutes should be sterilized for 10 minutes. They can be boiled in a large pot. Jars processed 10 minutes or longer, should be washed and rinsed but do not need to be boiled. Keep jars in a pot of simmering water until ready to fill with your product.
Slide 22: Fresh produce should be inspected for deterioration, rinsed and dried prior to pressure canning.

Slide 23: *Step two*, prepare the recipe, fill the jars to the appropriate headspace, remove air bubbles, clean rim with a damp paper towel and adjust the two-piece caps. Wait until you are ready to process before bringing the water in the canner to a boil.

Facilitator Note: The time estimate for this activity will depend upon the length of preparation time for the food item you will be processing. Demonstrate how to prepare the food item for canning — raw pack or hot pack.

USDA notes that the hot pack method helps maintain color and flavor in canned food, especially for acid foods processed in a boiling water bath. USDA also notes that the raw pack method is more suitable for vegetables processed in a pressure canner.

Slide 24: When filling the jars with product, place the canning funnel in a clean jar. Use a ladle to fill the jar with prepared food product. Clean the rim of the jar with a damp paper towel.

Slide 25: There are two methods of packing food into the jars: raw pack and hot pack. The raw pack method is used for delicate foods that are usually easier to handle raw. In this method, raw produce is packed into the jars and covered with boiling liquid before the lids are applied. There may be shrinkage during processing, which can cause some foods to float to the top of the jar or expand into the headspace.

Slide 26: The hot pack method involves preheating the food for a specified length of time before placing it in the hot jars. Heating the food first, allows for a tighter pack that requires fewer jars and removes more air from the food. In the pressure canner, hot packed food requires less time for the canner to reach boiling because the food and jars are already hot. Hot packed home canned foods maintain color and flavor better than raw packed foods.

Slide 27: Headspace is the space between the top of the jar and the top of the food. The less air there is in this space, the higher the quality of the canned product. As a general rule, juices, jams and jellies require a ¼-inch of headspace; high acid foods, fruits, tomatoes, cucumbers and peppers require ½-inch of headspace; and low acid foods, vegetables and meats require a headspace of 1-inch or more. A USDA recommended recipe will specify the correct headspace to use.

Slide 28: Once the jars are packed with food, any air bubbles should be removed. A plastic jar bubble remover, knife or spatula can be pressed from the side of the jar into the food to release trapped air. Do not use metal utensils as this may result in glass chipping or breakage. After removing air bubbles, you may need to adjust the headspace by adding more product or liquid.

Slide 29: The research recommended two piece cap consists of a screw ring and a flat lid. The lid has a sealing compound inside the edge, designed to allow air to escape as the food in the jar is heated and then to adhere to the glass rim as the jar cools and a vacuum is formed. Lids are designed to be used only once and should be purchased annually, but rings may be reused if they are without rust or nicks. For Ball and Kerr brand lids, it is no longer necessary to soften the sealing compound by heating the lids. Follow the manufacturer’s directions for preparing other brands of lids.
Slide 30: The jar rim should always be wiped clean before adding the lid. Place the lid on the jar rim. Next, place the ring on the jar. Tighten just until hand tight to prevent disturbing the tight seal when you remove the ring for storage. Overtightening may also cause the metal lid to buckle during processing.

Slide 31: Step three, depending on your manufacturer’s instructions, is to place one to two inches of clean hot water in the canner. Center the canner over the burner. Load the jars into the canner one at a time. A jar lifter will make this activity safer and more efficient. Keep the jars upright at all times to prevent food from spilling into the sealing area and interfering with the final seal. Jars should not touch, to avoid breakage during processing.

Slide 32: Fasten the canner lid securely. Leave the weight off the vent port or open the petcock.

Slide 33: Step four, to vent excess air from the canner, heat the canner on high until the water boils and generates steam that can be seen escaping through the open vent port or petcock. When a funnel shape of steam begins to continuously escape the canner, set a timer for 10 minutes.

Slide 34: Step five, after 10 minutes of continuous steam, the canner is vented and you can close the petcock or place the counterweight or weighted gauge over the vent port to begin building pressure in the canner. The canner should pressurize within three to ten minutes.

Slide 35: Step six, start timing the process when the pressure reading on the dial gauge indicates that the recommended pressure has been reached or for canners without dial gauges, when the weighted gauge begins to jiggle or rock as the manufacturer describes.

Slide 36: Step seven, regulate the heat under the canner to maintain a steady pressure at, or slightly above, the correct gauge pressure. Loss of pressure at any time can result in under processing or unsafe food. Quick and large pressure variations during processing may cause unnecessary liquid losses from jars.

Slide 37: Note: If the pressure drops below the recommended pounds, increase the heat to bring the canner back up to pressure and start the timing process over again.

Slide 38: Step eight, when the timed process is finished, it is best to remove the canner from the stove and allow it to cool naturally to return to zero pressure. The filled canner will be very hot and may be very heavy. If it is not possible to safely remove it from the stove, it’s OK to just turn off the heat to allow the canner to cool naturally. Forced cooling before the canner is fully depressurized will cause a loss of liquid from jars and failed seals. Forced cooling may also warp the canner lid.

Slide 39: Step nine, after the canner is completely depressurized and the lid lock drops remove the weight from the vent port or open the petcock. At this point, the canner and contents will still be hot. Wait 10 minutes, then unfasten the lid and remove it carefully. Lift the lid with the underside away from you so that the steam coming out of the canner does not burn your face.

Slide 40: Step ten, using a jar lifter remove the jars one at a time, keeping them upright. Carefully place them on a towel, leaving a 1-inch space between the jars for proper cooling.
Slide 41: *Step eleven*, leave the jars undisturbed for at least 12 hours. As the jars cool, the vacuum seal forms.

Slide 42: *Step twelve*, after 12 to 24 hours, test seals and remove bands. Wash outside of jars and lid surfaces. Date and label jars and store in a cool, dry place for up to two years.

Slide 43: After cooling, the metal lids on properly sealed jars will be concave or curved down slightly in the center. If any jars fail to seal, remove the lids and check the jar edge for nicks. If necessary, change the jars. If the jars are sound, wipe the rims, add new properly prepared lids and reprocess within 24 hours. Use the processing time specified in the recipe.

As an alternative to reprocessing, the jar contents may be frozen for storage. Adjust the headspace to 1½-inches and apply a clean lid before freezing. The food in single unsealed jars may be refrigerated and eaten within several days.

Slide 44: Before using stored canned foods, check each jar for signs of spoilage. Do not use any that have come unsealed or have dried food on the outside of the jar, indicating seepage; have rising air bubbles; cloudiness; an unnatural color; spurting liquid when opened; disagreeable odor; or mold growth on the food surface or underside of the lid. Spoiled food should be disposed of safely. **Note:** Sometimes cloudiness results from using table salt instead of canning salt. Cloudiness can also appear in canned lima beans or corn.

Slide 45: **Note:** There are areas in Kentucky where altitudes are greater than 1,000 feet. Please share this with participants.

Altitude affects processing times and pressures: If you live at an altitude greater than 1,000 feet, please consult the University of Kentucky Cooperative Extension Service publication number FCS3-591, *Safe Home Canning: Altitude Adjustments*, or the website for the National Center for Home Food Preservation located at [http://nchfp.uga.edu/](http://nchfp.uga.edu/). For additional information, please consult the website for the National Center for Home Food Preservation located at: [http://nchfp.uga.edu/how/store/store_home_canned.html](http://nchfp.uga.edu/how/store/store_home_canned.html)

Slide 46: **Facilitator Note:** Direct participants to divide into small groups. Explain the sequencing activity. Provide a short amount of time to complete the activity. Review correct order with participants.

**Facilitator Note:** Direct participants to choose a recipe, produce and work station. Guide them as they prepare a recipe and can the product.

Please let us know if you have any questions. We will come around to assist you as you are preparing your food product and filling the jars.

**Facilitator Note:** Regularly check on each group to ensure they are following correct canning methods as they prepare food product, jars and process their filled jars.

Slide 47: To review our session, our original objectives were to:

1. Identify research based methods of home food preservation.
2. Differentiate between high acid and low acid foods, and the correct method of canning for each level of acidity.
3. Examine and use proper jars, tools and equipment during the pressure canning session.
4. Accurately prepare food product and jars for pressure canning.
5. Correctly process the products in the pressure canner following research based methods.
6. Identify signs of unsealed jars and signs of spoilage in home canned goods.

**Slide 48:** Please complete the post-test and the end of session evaluation before leaving today.

**Post-test and Evaluation:** Distribute post-test and evaluations and ask participants to complete and return prior to leaving the program. Obtain email or mailing addresses for follow up evaluations.

Please explain to participants the importance of completing program evaluations. The following items outline the importance of evaluation for this particular program:
- If program objectives were met
- If information presented in the program was easily understood
- If the method of presentation helped you easily understand and learn what was presented
- If the information presented was what you really needed to make a difference in your life
- If the knowledge you’ve acquired has positively impacted your life
- If we are using the best methods and strategies to evaluate our programs
- If we are using the best methods and strategies to communicate program offerings to community members
- If participation in programming has an impact on long term behavioral changes
- To help us improve future programs and revise current programming

**Slide 49:** Invite participants to sign-up for other UK CES programming. Distribute newsletters, program invites, informational materials, etc. promoting UK CES programming.

**Slide 50:** References

**Slide 51:** Credits