

HOME FOOD PRESERVATION

Lesson Plan: Home Canned Tomatoes

Time Needed: 1 ½ to 2 hours

Supply List:

14 pounds tomatoes
9 pint canning jars, lids & metal rings
Acid - either citric acid or bottled lemon juice
Paper towels
Disposable food grade gloves

Handouts Per Participant:

Crushed Tomato Recipe
Boiling Water Canning

Equipment Needs:

Gas/electric stovetop
Ample counterspace per participant
Boiling water canner with rack
Thermometer
Large stockpot
2nd large or medium stockpot
Several medium to large bowls (min 4)
Large colander
Jar lifter
Jar funnel
Headspace tool/bubble freer or narrow plastic spatula or plastic knife
Ladle
Tongs/large slotted spoon
Measuring spoons
Paring knife/ cutting board (several)
Large wooden spoon or potato masher
Permanent marker or labels
Potholders
Kitchen Towels
Timer

Optional, but can be handy

Extra 2-piece canning lids & metal rings
Extra Kitchen Towels
Small pot, to have extra hot water, in case the water does not cover the jars by 1-2 inches.
Cooling Rack
Laminated recipe to use during class

Recipe: Crushed Tomatoes (with no added liquid)
Source: National Center for Home Food Preservation
https://nchfp.uga.edu/how/can_03/tomato_crushed.html

Learner Objectives:

1. Learn to home preserve high acid foods at home.
2. Understand the importance of canning correctly.
3. Demonstrate the proper steps to successfully home preserve tomatoes at home.
4. Identify problems and solutions for home food preservation.

Canning Method Used: Boiling Water Canning

- High Acid Foods - pH 4.6 or lower
- Used for
 - ◆ most fruits
 - ◆ tomatoes
 - ◆ salsas
 - ◆ acidified foods - like pickles
 - ◆ fermented foods - like sauerkraut
 - ◆ fruit spreads - like jam and jelly
- Prevents growth of *Clostridium Botulinum*; yeasts, molds
- Most bacteria are destroyed at boiling temperatures (212°F at sea level)

Hot Pack Method - Heat fresh produce to a boil; and simmer for 5 minutes. Remove promptly and immediately fill canning jars with hot tomatoes.

- Preferred method for most foods.
- Food is cooked before packing in jars.
- Fewer jars needed.
- Less product floating.
- Better color and flavor retention.



Selecting Tomatoes to Can

Quantity: An average of 14 pounds tomatoes needed per canner of 9 pints.

Quality: Select disease-free, preferably vine-ripened, firm fruit for canning. Do NOT can over ripe tomatoes or tomatoes from dead or frost killed vines.

58 tomato varieties were tested for pH. They ranged from 4.5 to 4.8. All canned tomatoes should be acidified.

Teacher Steps to Boiling Water Canning Crushed Tomatoes with no liquid added

There are many ways to organize work environments for canning. If you are familiar with canning, and organizing differently, feel free to adjust to your class. It is a good idea to have everyone wear gloves to this in a class environment.

Work Stations & Supplies

A. Washing Tomatoes

- Clean Sink
- Colander
- Towels

B. Boiling Water and Ice Water

- Heat source to boil water (if need to use a portable heat source, heat water initially on the stove and transfer to portable heat source just before using)
- Medium to large stockpot
- Tongs
- Containers to hold tomatoes to go into boiling water and ones after they sit in cold water to go to cutting area

C. Cutting Tomatoes

- Cutting boards and knives
- Two containers (one for quartered tomatoes, one for skins & cores)

D. Boiling Tomatoes

- Large stock pot
- Wooden spoon/potato masher

E. Jar Filling Station and Placement into Canner

- Trivet for heavy & hot pot of tomatoes
- Cake pan to catch drips (optional)
- Ladle
- Clean lids, rings, and hot jars
- Jar funnel
- Bubble freer/plastic knife
- Acid and measuring spoon
- Clean damp paper towel
- Jar lifter
- Boiling water canner with water at 180°F
- Thermometer
- Timer

F. Transfer to Cool Location

- Jar lifter
- Clean towel or cake cooling rack

Before Class

1. Wash hands and kitchen counters before starting.
2. Put medium/large kettle of water on to boil. Enough water so a tomato dropped into the water will be covered by water.
3. Prepare supplies for each work station. Set up Washing Tomatoes and Boiling Water & Ice Water stations.
4. Add water to boiling water canner and begin to heat on stove.
 - If using the canner to heat jars, put on stove and set heat to medium to medium high. Add jars making sure each jar is under water. Do not boil, heat to 180°F.
 - If not using the canner to heat jars, fill canner about 1/3 full of water and start
5. water heating. Do not boil, heat to 180°F. Either before class or at the beginning of class wash jars, lids and rings. Rinse tomatoes in cool water.

Set-Up Hints

This recipe works best with 3 large burners on the stove. Look for a site with 2 stoves or bring a stronger portable burner. Use the portable burner to keep water hot for dipping the tomatoes in to skin them. It usually is best to heat the water on the stove and use the portable burner to keep the water warm.

When Class Starts

- Introductions - teachers and students
Have participants tell if they have ever canned and if yes, what products.
- Inform students, this will be a guided, hands-on canning experience, encourage them to ask questions along the way. Let them know when the jars are in the canner, we will be reviewing what we did. If time permits, use the canning activities included with this lesson series.

Tasks to Start Class

Have students wash hands.

Wash jars, lids and rings, if not done ahead of class. Keep jars hot by using one of the following methods:

1. Jars can be immersed into the canner water or pot with hot water.
2. Jars can be held in a clean sink in very hot water.
3. Jars can be run through a dishwasher and kept in the hot dishwasher.



Tomatoes need washed in water and sorted. Select tomatoes that are vine ripened and are firm. They should be free from bruises and the skin should be intact. Do NOT can over ripe tomatoes or tomatoes from dead or frost killed vines.



Preparing Tomatoes

1. After washing tomatoes, dip tomatoes in boiling water for 30-60 seconds or until skins split. *If skins are tough, you may need to cut an X in the skin with a knife before putting in the boiling water.*
2. Remove from boiling water and place in cold water. *The colder the better, add ice or freeze a larger block of ice to use.*
3. Slip skins off and remove core. Cut into quarters.

Heating Tomatoes

Heat a single layer of the quartered tomatoes quickly in a large pot, crushing them with a wooden mallet or spoon. Continue stirring to prevent burning and bring to a boil.

Once boiling, gradually add remaining quartered tomatoes, bringing to a boil with each addition. Stirring constantly. These remaining tomatoes do not need to be crushed. They will soften with heating and stirring.

This process will help keep liquid and tomatoes blended.

Boil gently 5 minutes once all tomatoes have been added.



Getting Ready

Use an assembly line for filling jars. If there is not enough room to do this by the stove, try to do it near the stove.



Jar Fill Station

- A. **Start with** - Cooked tomatoes in pot on trivet or potholder
- B. Cake pan (optional) with jar funnel, ladle, & plastic bubble freer
- C. Acid and measuring device should be very close
- D. Damp paper towel
- E. Washed lids and rings (follow manufactures instructions)
- F. Jar lifter
- G. Boiling water canner on stove with water at 180°F

Adding Acid to Tomatoes

	Pints	Quarts
Bottled Lemon Juice	1 Tablespoon	2 Tbsp
Citric Acid	1/4 teaspoon	1/2 tsp

Tomatoes are usually considered an acid food, although some varieties are known to have pH values slightly above 4.6 (The higher the number the lower the acid).

We can tomatoes as acid foods, so we must add acid to make sure they have a pH of 4.6 or lower. We use bottled lemon juice or citric acid (powder). Vinegar can also be used, but it will change the taste slightly.

How to Fill a Jar

Demonstrate filling a jar. Have all students fill a jar.

1. Get hot jar, measure correct amount of acid and put in jar.
2. Use jar funnel, fill jar with tomatoes using ladle.
3. Run a plastic bubble freer around the inside of the jar to release any air bubbles.
4. Use head space measurer or jar measurements to fill to the correct headspace (1/2 inch for tomatoes).
5. Wipe rim using a clean damp cloth or paper towel.
6. Center lid on jar and adjust screw band finger tight.
7. Using jar lifter, move jar from counter to the rack in the canner, being careful not to tip jar. Repeat until all jars are filled.

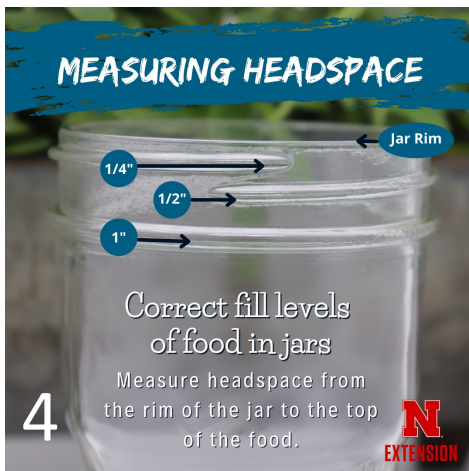
Elevation

Did you know that water boils at a different temperatures?

In Nebraska City water boils at 210°F.
In Kimball water boils at 203°F.

Seven degrees could mean the difference of a safe or unsafe canned product. Additional time must be added when processing in a boiling water canner.

Look online or use a cell phone to find the elevation where you are.



Finger Tight

As the jars are heating in the boiling water canner, air is forced out of the jar, called venting. At the end of the processing time and the jar comes out of the canner, it wants to equalize the pressure and have the air back. The lid pulls tight to the jar and forms a seal, not letting the air back in. That is how the vacuum forms. If a lid is on too tight when you put it in the canner, the lids may buckle or not seal properly. If the lid is too loose, it won't form a tight bond to the jar.





8. If rack is resting on the rim, lower into canner. Water must cover the jars by 1 to 2 inches. Adjust heat to medium-high, place lid on canner, and bring water to a rolling boil.
9. Process jars for the amount of time indicated in the recipe when water is at full boil.
10. Once at a rolling boil, set timer for correct time based on elevation and size of jar. Turn heat down, so water continues to boil evenly, but not a hard boil. *WATCH closely the entire processing time, as every stove is different.*

During the Processing Time

Continue watching the canner. Review procedures and answer questions. Explain adjusting for elevation. Discuss how elevation and size of jar make a difference in processing time.

If you have brought snacks, this is the time to share them. Hand out appropriate take home handouts. Engage participants in the food preservation games, if interested. This can also be the time the participants help clean up kitchen and wash dishes.

11. Once the timer goes off, if the water has remained at a steady boil the entire time:
 - turn off the burner
 - remove lid
 - leave jars in the canner undisturbed for **5 minutes**
12. Lift jars straight out of the canner without tilting. Place on a towel or a rack, leaving at least a 1-inch space between jars during cooling. Avoid placing the jars on a cold surface or in a cold draft. Do NOT tighten bands if loose. Do NOT push down on or wipe off excess water on the center of the flat lid.
13. Make sure you have a place where the jars can be set undisturbed for at least 12 hours. Let the students know that jars will need to sit for 12-24 hours before moving.

If the students do not want to return to pick up a jar, you can let them take them home hot. These hot jars should be put in the fridge and used as the seal will not have set and cooled to be shelf-stable.

Keeping the Canned Tomatoes



In a home environment, follow these final steps to produce a shelf-stable product.

After jars have set 12-24 hours.

- Remove screw bands from sealed jars. Screw bands can be washed and dried and put away for use another time. Put any unsealed jars in the refrigerator and use them first.
- Wipe down sealed jars with sudsy water to remove any residue.
- Label jars, with product name and date.
- Store in a cool, dry place out of direct light.
- Best if used within 1 year.

Crushed Tomatoes (with no added liquid)

Acidification

To ensure safe acidity in whole, crushed, or juiced tomatoes, add two tablespoons of bottled lemon juice or 1/2 teaspoon of citric acid per quart of tomatoes. For pints, use one tablespoon bottled lemon juice or 1/4 teaspoon citric acid. Acid can be added directly to the jars before filling with product. Add sugar to offset acid taste, if desired. Four tablespoons of a 5 percent acidity vinegar per quart may be used instead of lemon juice or citric acid. However, vinegar may cause undesirable flavor changes.

Source: National Center for Home Food Preservation
https://nchfp.uga.edu/how/can_03/tomato_crushed.html

Wash tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Then dip in cold water slip off skins, and remove cores. Trim off any bruised or discolored portions and quarter.

Heat a single layer of the quartered tomatoes quickly in a large pot, crushing them with a wooden mallet or spoon. Continue stirring to prevent burning and bring to a boil. Once boiling, gradually add remaining quartered tomatoes, bringing to a boil with each addition. Stirring constantly.

These remaining tomatoes do not need to be crushed. They will soften with heating and stirring. This process will help keep liquid and tomatoes blended. Boil gently 5 minutes once all tomatoes have been added.

Add bottled lemon juice or citric acid to jars (see acidification box.) Add salt if desired (1 teaspoon per quart or 1/2 teaspoon per pint). Fill jars immediately with hot tomatoes, leaving 1/2 inch headspace. Center lid on jar and adjust screw band finger tight. Process adjusting for elevation.

Table 1. Recommended process time for **Crushed Tomatoes** in a **Boiling Water Canner**. (Can be processed in a Steam Canner - see note*)

		Process Time at Elevation			
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 3,000 ft	3,001 - 6,000 ft	Above 6,000 ft
Hot	Pints	35 min	40 min	45 min	50 min
	Quarts	45 min	50 min	55 min	60 min

Table 2. Recommended process time for **Crushed Tomatoes** in a **Weighted Gauge Pressure Canner**.

			Canner Gauge Pressure (PSI) at Elevation	
Style of Pack	Jar Size	Process Time	0 - 1,000 ft	Above 1,000 ft
Hot	Pints or Quarts	20 min	5 lb	10 lb
		15 min	10 lb	15 lb
		10 min	15 lb	Not Recommended

Table 3. Recommended process time for **Crushed Tomatoes** in a **Dial Gauge Pressure Canner**.

			Canner Gauge Pressure (PSI) at Elevation			
Style of Pack	Jar Size	Process Time	0 - 2,000 ft	2,001 - 4,000 ft	4,001 - 6,000 ft	6,001 - 8,000 ft
Hot	Pints or Quarts	20 min	6 lb	7 lb	8 lb	9 lb
		15 min	11 lb	12 lb	13 lb	14 lb

*Steam Canners have a maximum processing time of 45 minutes. Read and follow steam canner instructions.