

HOME FOOD PRESERVATION

Lesson Plan: Home Canned Carrots

Time Needed: 1 ½ to 2 hours

Supply List:

11 lbs small carrots
(1-1 ½ inch in length)
(baby carrots are recommended)
9 pint canning jars, lids & metal rings
Canning Salt
Paper towels
Disposable food grade gloves

Handouts per participant:

Home Canned Carrots
Canning Carrots Recipe
Using a Pressure Canner

Equipment Needs:

Gas/electric stovetop
Ample counterspace per participant
Pressure canner with rack
Thermometer
Large stockpot
Pitcher
Jar lifter
Jar funnel
Headspace tool/bubble freer or narrow
plastic spatula or plastic knife
Ladle
Measuring spoons
Paring knife/ cutting board
Large colander and/or bowl
Large wooden spoon
Permanent marker or labels
Potholders
Timer

Optional, but can be handy:

Extra 2-piece canning lids
Extra Kitchen Towels
Small pot or kettle, for extra hot water
Cooling Rack
Laminate recipe to use during class

Recipe: Carrots (baby, sliced or diced) and canning salt

Source: National Center for Home Food Preservation
https://nchfp.uga.edu/how/can_04/carrots_sliced.html

Learner Objectives:

1. Learn preserve low acid foods at home.
2. Understand the importance of pressure canning.
3. Demonstrate steps to successfully preserve carrots at home.
4. Identify problems and solutions to home preservation.

Canning Method Used: Pressure Canning

- Low Acid Foods, such as carrots – pH greater than 4.6
- Used for:
 - ◆ All vegetables (not pickled)
 - ◆ Meats
 - ◆ Poultry
 - ◆ Seafood
 - ◆ Soups
 - ◆ Mixed canned foods
- Temperatures of 240°F or above are necessary for safe pressure canning to destroy *Clostridium Botulinum*.

Parts of pressure canner - review handout: "Using a Pressure Canner".

Selecting Carrots to Can

Quantity: Average of 11 pounds carrots needed per canner of 9 pints. (34 cups of sliced carrots is equal to approximately 11 pounds)

Quality: Select small carrots, preferably 1 to 1-1/4 inches in diameter.

Things to make pressure canning easier:

- Stove burners - 1 large one for canner and 1 small/medium for hot water to add to carrots when filling jars.



Teacher Steps to Pressure Canning Carrots

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

Work Stations

For this class, select the raw pack method. Review differences in raw pack and hot pack canning methods with all participants. Create three stations away from the stove with the following supplies:

Station 1: (place next to a sink) carrots for washing, small vegetable brush for scrubbing, paper towels, gloves or colander for rinsing. If using baby carrots, intense scrubbing is not necessary.

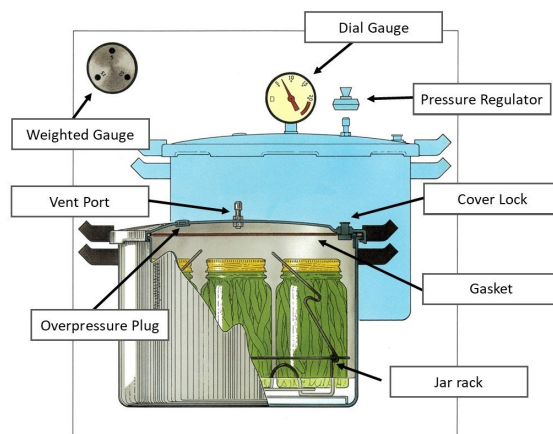
Station 2: (place by the sink) 9 pint canning jars, lids & metal rings, dish soap, dish pan, paper towels or clean kitchen towel for drying (All equipment could be prepared prior to class which would eliminate this station.)

Station 3: paring knives and cutting boards, large bowl for holding cut carrots, gloves. (This station could be eliminated if using baby carrots.)

When Class Starts

(Participants can work in small groups to complete each task. Hands-on workshops can be utilized throughout the class or completed once carrots are in canner to fill processing time.)

1. Introduce teacher and students
2. Explain that this is a guided, hands-on learning experience, encourage them to ask questions. Once we have our jars into the pressure canner, we will be reviewing entire process.
3. Have participants wash hands and kitchen counters before starting.
4. Review the parts of a pressure canner. This activity can be done individually with the worksheet activity or it can demonstrated.



- Place canning rack in bottom of canner and fill with 2 to 3 inches of water. Place canner on burner making sure it is level and centered over burner. (Begin warming water prior to beginning of class to guarantee that you reach acceptable temperatures when needed.)
- Begin heating additional large pot of water to 140°F for raw packed method. This water will be used to fill jars once produce has been added by participants.

Steps for Participants

Station 1 - Have participants wash and peel carrots.
(Peeling may not be necessary.)

Station 2 - Participants should wash at least 9 canning jars, lids and metal rings. Jars should be washed in a clean sink with hot soap and water. Jars should be left in hot rinse water until needed.

Station 3 - Cut carrots into desired size, making sure all pieces are uniform in size. Re-rinse. Discuss the size and shape of the carrots and why the size has been selected. (Small carrots that are 1 to 1 1/4 inch in diameter are best. Larger carrots are often too fibrous. Keeping the size of carrots consistent per jar will produce a more uniform canned product.)

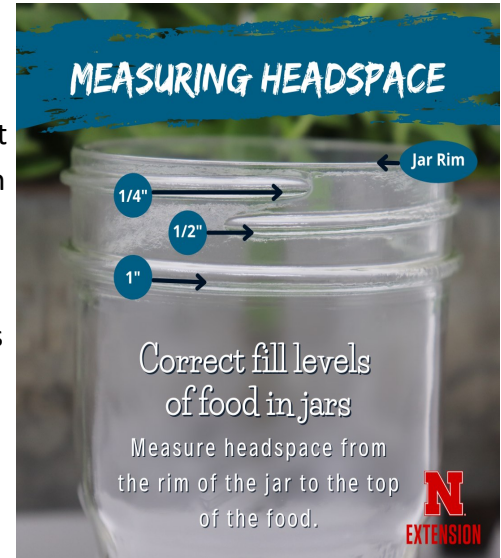
*Explain reason for heating additional water. Talk about what is meant by headspace prior to packing or filling the jars.

HINT

Bring a separate pot of water to 140°F for raw packed canning method. The hot water will be poured over the carrots, once packed into prepared jars. Leaving one inch of headspace.

HINT

With pressure canning, jars do not need to be sterilized as with other methods of preservation. But well cleaned jars are essential.



Ready to Fill Jars with Carrots

Line up an assembly for packing/filling jars.

1. Start with packing clean, cut, raw carrots in 9 pints jars. Choose the raw pack method for foods that DO NOT lose shape when cooked. This method does allow for food (carrots) to float if not packed tightly.
2. Add 1/2 teaspoon canning salt, if desired to each pint jar. Canning salt is added for flavor or can be eliminated all together.



- Once jars are full, a canning funnel can be used with a ladle to fill each jar with additional heated water (140°F). Leave headspace of 1-1 1/2 inches for low acid food.



- Dampen a clean paper towel and wipe the rim of each jar to remove any water or food particles.
- Release air bubbles by inserting a flat plastic spatula or bubble freer between the food and jar. The two-piece canning lid can be placed on



Finger Tight

As the jars are heating in the pressure 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.



- Using a jar lifter, place filled jars into the canner on the metal rack. The water in the canner should be 140°F.



- Securely fasten the canner lid closed. Show participants how the canner lid twists closed.





9. Leave the canner weight off so the pressure regulator vent port can release steam. Heat at the highest setting until steam flows from regulator vent. Refer to picture so participants see the visible steam flowing.
10. Maintain high heat setting, steam should exhaust for 10 minutes.

11. Place weight on vent port or close petcock (on older canner). The canner will pressurize in the next 3 to 5 minutes.
12. Start the timing process when the pressure reading on the dial gauge indicates the recommended weight or when the weighted gauge begins to jiggle or rock.
13. Regulate heat under the canner to maintain a steady pressure slightly above the correct gauge pressure.
14. When the timed process is completed, turn off the heat.



Quick and large pressure variations during processing may cause unnecessary liquid losses from jars. Weighted gauges on Mirro® canners should jiggle about 2 to 3 times per minute. On Presto canners, they should rock slowly throughout the process.

Steps to Follow When Processing Time is Complete

1. Allow the canner to cool naturally, do not force the canner to cool.
2. After the canner is depressurized and returned to zero pressure, remove weight from the vent or open the port.
3. Wait 10 minutes, unfasten the lid, and remove it carefully. Lift the lid away from you so that the steam does not burn your face.

Depressurizing Your Canner

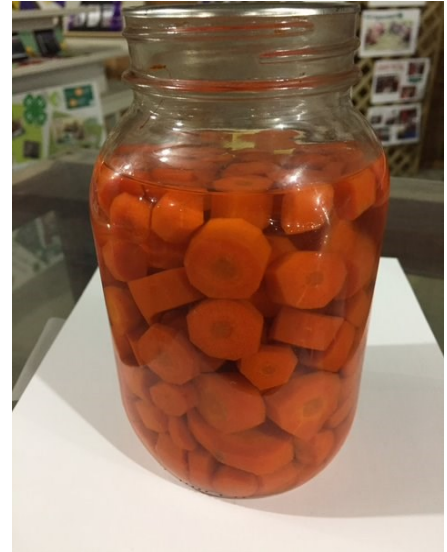
- Forced cooling may result in food spoilage. Cooling the canner with cold running water or opening the vent port before the canner is fully depressurized will cause loss of liquid from jars and seal failures. Force cooling also may warp the canner lid of older model canners, causing steam leaks.
- Depressurization of older models should be timed. Standard size, heavy walled canners require about 30 minutes when loaded with pints and 45 minutes when loaded with quarts. Newer thin-walled canners cool more rapidly and are equipped with vent locks. These canners are depressurized when their vent lock piston drops to a normal position.



- Using a jar lifter, remove jars one at a time, begin careful not to tilt the jars.
- Jars should be lifted straight up and out of canner onto a towel or rack, leaving at least 1-inch space between each jar for cooling.

Avoid placing the jars on a cold surface or in a cold draft until they have cooled completely. Movement or temperature swings of warm jars may cause seal failure and loss of food.

- Allow jars to sit undisturbed while they cool for 12 to 24 hours. DO NOT tighten lid ring bands or push down on the center of the flat metal lid.
- Remove ring bands from sealed jars. Ring bands can be washed, dried and put away for use another time.
- Place unsealed jars in the refrigerator and use first. These are jars are not shelf-stable unless the entire canning process to completed again.
- Wipe down sealed jars with sudsy water to remove any residue.
- Label jars and store in a cool, dry place out of direct light.
- Best if used within 1 year.



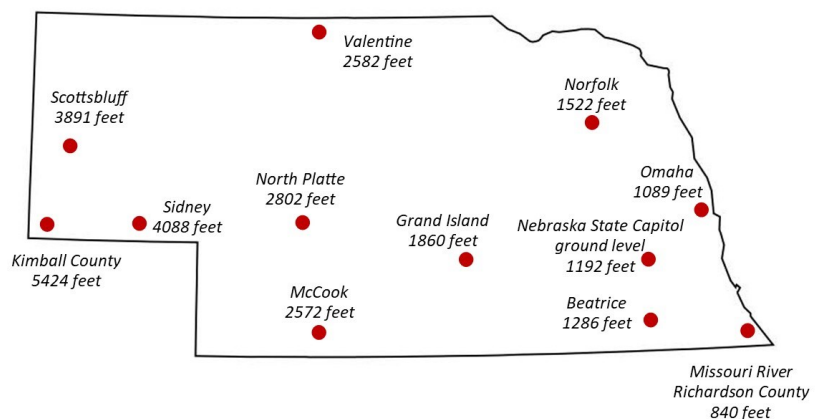
If students do not want to return to pick up a jar, you can let them take them home hot. These hot jars should be placed in the refrigerator and used as the seal will not have set and cooled to be shelf-stable.

Adjusting for Elevation

(The activity sheet can be used with participants to explain importance of elevation.)

When canning foods, it is important to know your local elevation. Your altitude determines the amount of pressure or time for processing your home preserved foods. In Nebraska, the elevation ranges in elevation from about 1,000 feet to 5,000 feet above sea level.

Nebraska Elevations



Filling Canning Jar Methods

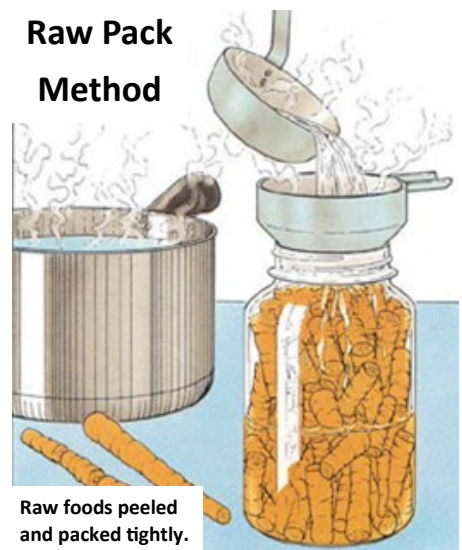
Hot Pack

- Fresh produce is heated to a boil and simmered for 5 minutes.
- Produce is promptly removed and immediately put into clean jars loosely.
- Additional hot liquid (180°F) is poured over packed food in jars. Choice of water or broth can be used.
- This is the preferred method for most foods.
 - Fewer jars are needed.
 - Less floating of food.
 - Better color and flavor retention.
 - Easier to pack, food is pliable.



Raw Pack

- Raw unheated fresh produce is tightly packed into jars.
- Best method for foods that lose shape when cooked.
- Liquid should be heated to 140°F prior to filling jars.
- Raw food is packed directly into jars without crushing.
- Allows food to float as air is entrapped.
- Can result in more discoloration of produce.



Pressure Canner Gauge Testing

It is important that dial gauge pressure canners be checked for accuracy each year before use. Weighted gauges do not require testing. To find a Nebraska Extension gauge testing location near you go to: <https://food.unl.edu/food-preservation-contacts>.

Cleaning and Storing Pressure Canner Between Uses

1. Wash canner with detergent and hot water.
2. Clean vent pipe with a small brush or chenille stem.
3. Rinse and dry thoroughly.
4. Place lid upside down on canner to protect the valves and gauge.
5. Store in a clean, dry place.

This document was adapted from the National Center for Home Food Preservation website resources.

RECIPE: Carrots - Sliced or Diced

Quantity: An average of 17-1/2 pounds (without tops) is needed per canner load of 7 quarts; an average of 11 pounds is needed per canner load of 9 pints. A bushel (without tops) weighs 50 pounds and yields 17 to 25 quarts – an average of 2-1/2 pounds per quart.

Quality: Select small carrots, preferably 1 to 1-1/4 inches in diameter. Larger carrots are often too fibrous.

Procedure: Wash, peel, and rewash carrots. Slice or dice.

Hot pack – Cover with boiling water; bring to boil and simmer for 5 minutes. Fill jars, leaving 1-inch of headspace.

Raw pack – Fill jars tightly with raw carrots, leaving 1-inch headspace.

Add 1 teaspoon of salt per quart to the jar, if desired. Add hot cooking liquid or water, leaving 1-inch headspace.

Adjust lids and process following the recommendations in Table 1 or Table 2 according to the method of canning used.

Table 1. Recommended process time for Carrots 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 and Raw	Pints	25 min	11 lb	12 lb	13 lb	14 lb
	Quarts	30 min	11 lb	12 lb	13 lb	14 lb

Table 2. Recommended process time for Carrots 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 and Raw	Pints	25 min	10 lb	15 lb
	Quarts	30 min	10 lb	15 lb

This document was adapted from the "Complete Guide to Home Canning," Agriculture Information Bulletin No. 539, USDA, revised 2015. Reviewed February 2018.

