

# Canning Foods At Home – The Basics

This slide show is a description of basic principles and typical steps in home canning.

It is not intended to be the only canning instruction and reading you need to do in order to can food safely at home.

These guidelines are not intended to be used with canning recipes and procedures that have not been tested and determined to be safe for home canning.

More information about canning and specific recommended procedures for canning food at home can be found at: <https://nchfp.uga.edu>

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# Canning Foods At Home – The Basics

Cooperative Extension Service  
The University of Georgia  
College of Family and Consumer Sciences

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# Basics of Safe Home Canning



- High quality food is selected and prepared according to specific directions following a science-based, and usually research-tested recommendation.
- Food is placed in a canning or Mason-type jar and is heated to a temperature that destroys microorganisms.
- Heat also inactivates enzymes that can cause changes in color, flavor and texture.
- Air is driven from the jar during heating. As the jar cools, a vacuum seal is formed.



# Vacuum Seal

- Holds the lid on the jar.
- Prevents recontamination of the food.
- Prevents air from drying out the food.



# Canning Method

**The canning method that is approved for a food depends on the type of food.**

**Foods are divided into two main categories:**

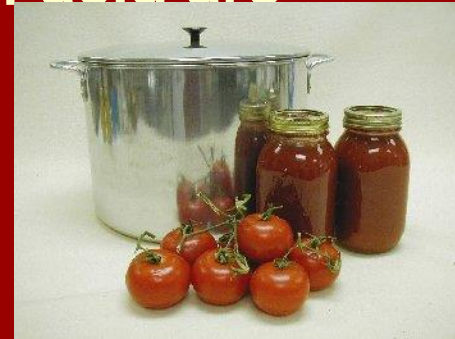
- \* those that contain acid (called “acid foods”)**
- \* those that have very little or no acid (called “low acid” foods)**



# Acid Foods

**pH  $\leq$  4.6 (measure of acidity)**

- Generally all fruits
- Tomatoes, figs and some other fruits are borderline or low-acid.
  - For some, like tomatoes, figs and Asian pears, we know specific amounts of citric acid or lemon juice that must be added before canning to acidify. For others, there are no canning options.
- Sauerkraut
- Foods to which large amounts of acid are added (pickles)



# Low Acid Foods

**pH > 4.6**

- **Generally all vegetables**
- **Meats**
- **Poultry**
- **Seafood**
- **Soups**
- **Mixtures of acid and low acid foods  
(spaghetti sauce – meat, vegetables and  
tomatoes)**



# Two Approved Methods of Canning Foods At Home

- 1) **Boiling Water Canning (212°F at sea level)**
  - Used for acid foods
- 2) **Pressure Canning (at least 240°F)**
  - Used for low acid foods (and mixtures of acid and low acid foods)





# Why Do Low Acid Foods Have to be Pressure Canned to be Safe?

## *Clostridium botulinum!*

- C. botulinum forms protective, heat-resistant spores
- Spores require higher temperatures for destruction in a reasonable period of time (usually 240°F or above at sea level for home canning)



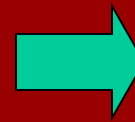
# What Can Happen If Low Acid Foods Are Not Pressure Canned?

When conditions become favorable:

40 – 140 degrees F

High moisture

No air in jar



Spores germinate  
and form toxin-  
producing cells



# Botulism





- \* Food can contain toxin without showing signs.**
- \* Symptoms usually appear within 12 to 72 hours:**
  - Digestive upset (in some cases)**
  - Blurred, double vision**
  - Difficulty swallowing, speaking and breathing**
  - Death**

# Preventing Botulism

## Home Canned Foods

- Spores won't germinate in acid environments
- Spores are destroyed when heated long enough at a specific temperature
- USDA recommends a canner temperature of at least 240°F at sea level for canning low acid foods
- Pressure canner must be used for all low acid foods



# Important “Musts” for Canning

- Food must be properly prepared and processed the correct amount of time.
- Canner must be accurate and operated correctly.
- You may need to make altitude adjustments, depending on your altitude.
- Directions from a reputable source must be followed (USDA, Cooperative Extension, National Center for Home Food Preservation ([www.homefoodpreservation.net](http://www.homefoodpreservation.net)), *So Easy To Preserve*).
- Up-to-date methods and information should be used; many older methods are now known to be unsafe.





# How Canning Process Times Are Determined

- Foods are prepared by a specific procedure
- The length of time it takes to adequately heat the coldest spot in the jar is determined
- Size of the jar, size of the food, consistency of the canning liquid, etc. all have an effect on how heat penetrates through the product



# What Does This Mean???

- \* **Follow directions exactly. The following can slow heat penetration:**
  - Adding extra sugar or fat.
  - Having food pieces larger than called for in directions.
  - Adding thickeners.
- \* **Note: Heat-up and cool-down in pressure canners is counted toward heat penetration for USDA methods, so don't quick-cool the canner!**



# Methods of Pack

## Raw Pack

- For foods that lose shape when cooked
- Place raw food directly in jars. Boiling hot liquid is then poured over the food
- Pack firmly, don't crush
- Add jars carefully to canner



# Hot Pack

- Preferred method for most foods
- Food is cooked in liquid before packing. Cooking liquid poured over food in jar
- Fewer jars needed
- Less floating
- Better color and flavor
- Easier to pack, foods pliable

**If directions only list hot pack instructions, then hot pack!**

# Headspace

- \* Space in the jar between the inside of the lid and the top of the food or its liquid. Check directions for the correct headspace.
- \* Usually:
  - 1/4" jellied fruit products
  - 1/2" fruits, tomatoes and pickles
  - 1" to 1-1/4" low acid foods





# Headspace

## \* Too little

- Food may bubble out during processing
- Deposit on rim may prevent proper sealing

## \* Too much

- Food at the top is likely to discolor
- Jar may not seal properly, because not all air may be forced from jar during process



# Jars and Lids

- \* Wash canning jars; don't use if nicked or scratched – keep hot until used
- \* Prepare canning lids and ring bands by package instructions
- \* Remove air bubbles (plastic knife)
- \* Wipe jar rims with wet, clean cloth
- \* Adjust lids according to manufacturer's directions.



# Processing Time

» Each food has its own processing time.

• Follow directions carefully!

» Time differs with size of jar.

» Too Little

• Spoilage



# Boiling Water Canning Procedures



- » Have about 6" of water simmering or warm in canner.
  - Hot packed jars - simmering (180 °F) water
  - Raw packed jars – 140 °F water
- » Place jars on rack in canner.
- » Water must be over the tops of the jars by at least one to two inches.

# **Boiling Water Canning Procedures, Continued...**

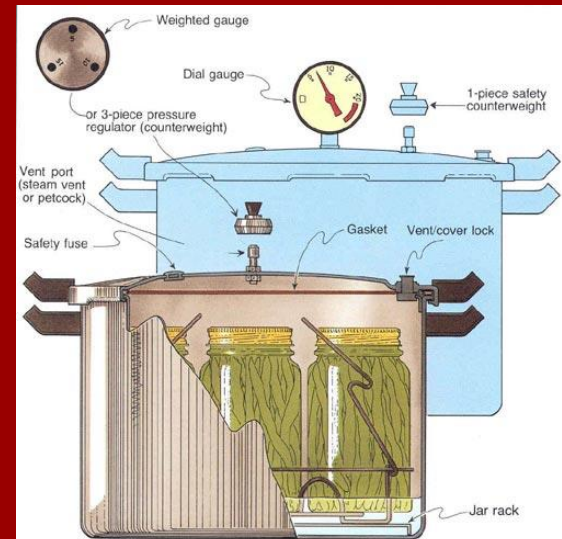
- \* Add more hot or boiling water if necessary.**
- \* Begin timing the process when a full boil is reached.**
- \* Adjust for altitude if over 1000 ft.**
- \* After processing time is complete, turn off canner, remove lid and wait 5 minutes before removing jars.**
- \* Remove jars straight up out of canner and place on padded surface away from drafts.**
- \* Cool 12 to 24 hours, undisturbed.**
- \* Check seals.**
- \* Remove ring bands if used with your lids.**
- \* Wipe off jars before storing in a cool, dry, dark place.**





# Pressure Canning Procedures

- » Have 2" to 3" of water simmering or warm in canner.
  - Hot packed jars - simmering (180 °F) water
  - Raw packed jars – 140 °F water
- » Place jars on rack in canner.
- » Put lid on canner with weight off or petcock open.



## Pressure Canning Procedures — continued...

- » Exhaust air out of canner for 10 minutes — steady stream of steam escaping.
- » Close vent or petcock.
- » Count time when correct pressure is reached.
- » Adjust for altitude, if needed.
- » Turn off heat at end of processing.
- » Let pressure drop to 0 pounds naturally.





## **Pressure Canning Procedures – continued...**

- » **Wait about 2 minutes after pressure drops to 0 psig to make sure no pressure remains.**
  - » **(For some canners, check that locks in handles are released.)**
- » **Remove weight or open petcock. Wait 10 min.**
- » **Open canner. (Be careful of steam!)**
- » **Remove jars to padded surface or rack.**
- » **Cool jars 12 to 24 hours, undisturbed.**
- » **Check that jars have sealed.**

# Testing for Seals

- Follow the directions from your lid manufacturer.
- For two-piece metal lids as an example:
  - Listen for “pop”.
  - Lid curved inward, won’t move when pressed.
  - Clear ringing sound when tapped.



# Storing Home Canned Food

- Wash jars and lid area off, rinse and dry.
  - If using two-piece metal lids, take the ring band off before washing and leave off for storage.
  - Residues left around the sealing area can lead to mold growth.
- Store in a cool, dry, dark place
- Avoid temperature extremes
  - 50 - 70 °F best; definitely below 95 °F.
- Use within 1 year for best quality







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