Home Food Preservation 101
August 4, 2020

Methods of Food Preservation

- Freezing
- Canning
- Sweetening/acidifying
- Drying
- Pickling and Fermenting
- Salting

Fresh Produce

End product only as good as what you start with

- High quality, unblemished produce
- Harvest in the morning or the evening
- Prepare quickly to avoid loss of quality, or store in cool temperatures

Fresh Produce

End product only as good as what you start with

Wash produce under cool running water, scrub with a clean, sanitized vegetable brush or your hands to dislodge dirt and bacteria.
UP-TO-DATE, RESEARCH-TESTED RECIPE

National Center for Home Food Preservation
https://nchfp.uga.edu/

University Extension websites, including
University of Nebraska-Lincoln (food.unl.edu)
University of Wisconsin
Washington State University
Penn State University

UP-TO-DATE, RESEARCH-TESTED RECIPE

University Extension using current technology
Canning timer and checklist APP
Oregon State University
Preserve Smart APP
Colorado State University

KITCHEN ITEMS
large pots and pans
knives and cutting boards
measuring cups and spoons
mixing bowls and spoons
colander
peeler
hot pads

CONTAINERS
freezer containers/bags
mason jars with two-piece lids
CANNING

Destroys microorganisms that may be present in the food by heating them to a high enough temperature.

Destroys yeasts and molds when food reaches 190°F.

Removes air from jars, leaving a vacuum seal.

Molds and some yeasts are unable to grow in a vacuum.

CANNING METHODS

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

Foods are divided into two main categories:

High Acid Foods
- Those that contain acid: pH less than 4.6
- Fruits, Pickles, Sauerkraut, Jams, Jellies, Marmalades, Fruit Butters, Salsas, Tomatoes (after acid is added)

212°F at sea level

Low Acid Foods
- Those that have very little acid: pH higher than 4.6
- Meats (beef, lamb, pork, veal & venison), Seafood, Poultry
- All Fresh Vegetables
- Mixtures of acid and low acid foods

240°F at sea level
CANNING METHODS
The canning method that is approved for a food depends on the type of food.

Foods are divided into two main categories:

- High Acid Foods
  - Boiling Water Canner
  - Steam Canner
  - 212°F at sea level

- Low Acid Foods
  - Pressure Canner
  - 240°F at sea level

LOW ACID FOODS
Low acid foods must be pressure canned because of Clostridium botulinum.

C. botulinum forms protective, heat resistant spores, like a hard seed.

Spores require higher temperatures for destruction in a reasonable period of time (240°F or above at sea level)

FAVORABLE CONDITIONS
for Clostridium botulinum

- 40-140 degrees
- High Moisture
- No Oxygen

Spores germinate and form toxin-producing cells

SIGNS AND SYMPTOMS
for Clostridium botulinum

Food can contain toxins without showing signs of spoilage. It may take between 12-72 hours for symptoms to appear.

- Digestive upset (in some cases)
- Blurred, double vision
- Difficulty swallowing, speaking and breathing
- Death
PREVENTING BOTULISM IN HOME CANNED FOODS

- Spores won’t germinate in acid environments
- Spores are destroyed when a high enough temperature is reached for a specific length of time
- 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

Boiling Water Canner
Naturally high acid foods (fruits, jams, jellies and pickles) may be processed in a boiling water canner.

Steam Canner
For years steam canners were not recommended but recent research has provided directions for their safe use. It can be used for high acid foods.

Pressure Canner
Low acid food (vegetables, meats, poultry and fish) must be processed in a pressure canner to kill the bacteria which causes botulism.

CANNING 101

- Food must be properly prepared and processed the correct time
- Canner must be accurate and operated correctly
- Altitude adjustments must be made
- Directions from a reputable source must be followed
- Up-to-date, research based recipes
- Beware of ‘granny’s method’

ALTITUDE

Altitude changes the temperature of boiling water
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

Follow directions exactly.

The following slow heat penetration:
- Adding extra sugar or fat
- Having food pieces larger than called for in directions
- Adding thickeners

Heat up and cool-down in pressure canners is counted toward heat penetration so don’t quick cool the canner!

RAW PACK

For foods that lose shape when heated

Place raw food directly in jar

Boiling hot liquid poured over the food

Pack firmly, don’t crush

HOT PACK

Preferred method for most foods

Food is cooked in liquid before packing

Cooked liquid poured over food in the jar

Fewer jars needed

Better color and flavor

Easier to pack, foods pliable
**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.

- 1/4 inch jelled fruit products
- 1/2 inch fruits, tomatoes and pickles
- 1 inch to 1-1/4 inch low acid foods

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**SEALS/STORAGE**

Wait at least 12 hours
- Listen for pop
- Lids should be curved inward and won’t move when pressed
- Clear ringing sound when tapped

Remove screw band
Wash the lid and jar, to remove residue
Label and date
Store in clean, cool, dry, dark location
Use within one year of processing

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**FREEZING**

Easy, quick, convenient
Maintains color, flavor, texture and nutrients
Prevents the growth of microorganisms
Slows, but does not stop, enzyme action

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**FREEZING VEGETABLES**
**BLANCHING**

**Process of immersing food in boiling water for a short period of time, then cooling it quickly to stop cooking.**

Stops the enzymes that can cause undesirable changes in the food after it is frozen.

**If not done properly:**
produce will lose nutritive value and undergo changes in color, flavor, and texture.

**BLANCHING STEPS**

- Put water in saucepan with tight lid
- Bring to a boil
- 1 gallon of water for each pound of vegetables/2 gallons of water for each pound of greens
- Place small amount in strainer and immerse in boiling water
- Cover
- Let boil for required time, begin timing when placed in water
- Lift out of water and cool immediately
- Cool same amount of time as blanching
- Drain, pack into containers and freeze

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**SPECIALTY INSTRUCTIONS**

**Mushrooms**
Treat to prevent darkening:
- Steam, Cool, Drain, Pack
- Pan Fry Method

**Tomatoes**
Does not need to be peeled
- Needs to be cored

**Summer Squash**
Wash and grate
- Pack into containers

**Onions and Peppers**
No blanching required

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**FREEZING FRUITS**
PREVENT FRUIT FROM DARKENING

Ascorbic Acid (Vitamin C)
Citric Acid
Use according to package directions

Lemon Juice
3 Tablespoons per quart of water

Steam Blanch
Fill pot with 1 inch of water and bring to a boil
Place fruit on steam rack in single layer
Cover pot with lid and start blanch time

Acceptable packs for fruit

DRY/TRAY
Place fruit, single layer, on a jelly roll pan and freeze until solid
Transfer to container
Label and freeze

SUGAR
Average 1 cup sugar for 2-3 lbs of fruit
Mix gently until dissolved
Pack loosely, leaving 1/2 inch headspace
Label and freeze

SYRUP
Average 2/3 cup syrup for each pint; 1-1/2 cups per quart
Prepare strength of syrup desired
Dissolve sugar in warm water to fully dissolve
Cool before using
Place fruit in container, pour syrup over fruit, leaving 1/2 inch headspace

UNSWEETENED JUICE/WATER
Place fruit in container, pour over fruit, leaving 1/2 inch headspace

DEHYDRATING

8-12 MONTHS
date mark packages

Removes moisture that bacteria, molds, and enzymes need to survive.
Make those items shelf-stable.

Works on three principles:
Heat - Dry Air - Air Circulation

STORING FROZEN FRUITS AND VEGETABLES
Stored at 0°F
Do you know?

Home
Food Preservation Virtual Learning Series
Wednesdays @ 6:30p.m. CST
FREE/ VIA ZOOM

Join Nebraska Extension
Learn & Ask Questions:
August 3 - Food Preservation 101 - Overview
August 10 - Boiling Water Canning/ Steam Canning/Pressure Canning
September 7 - Freezing/Delhydrating

Register At:
https://go.unl.edu/homefoodpreservation

Questions / Comments?

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