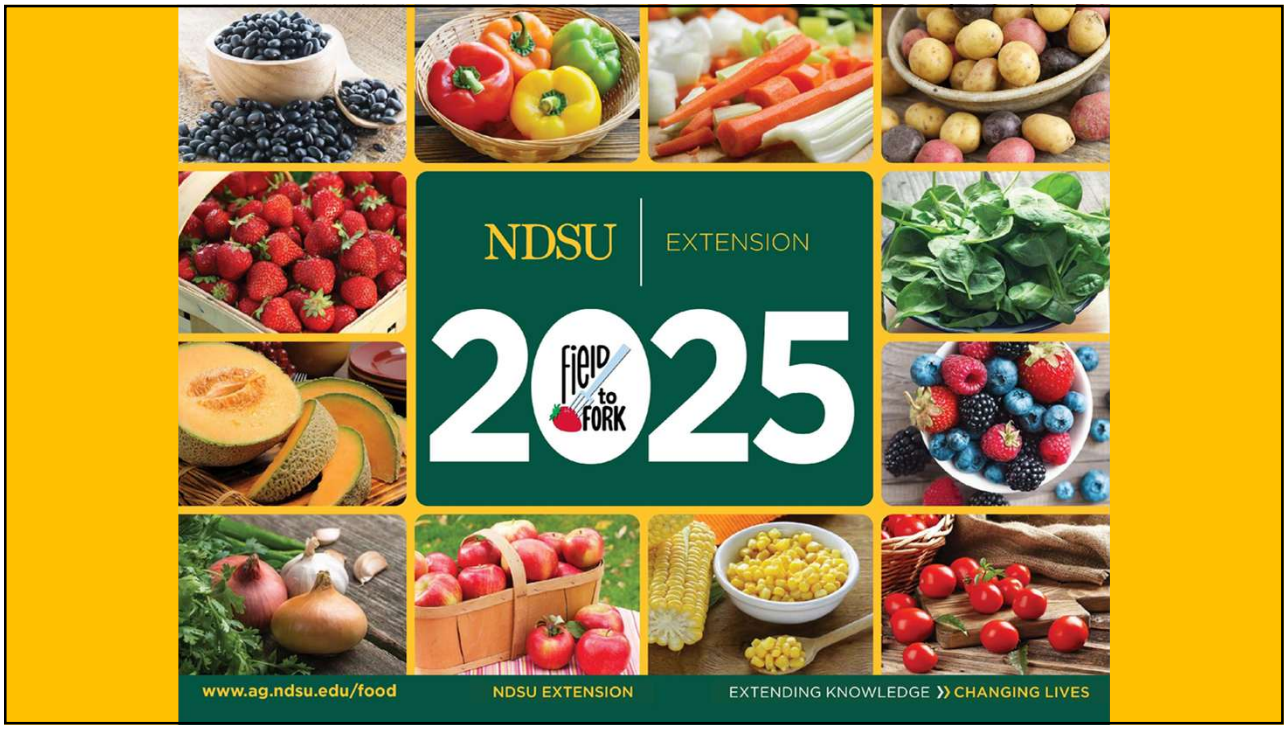

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Upcoming Webinars

- **May 7: Healthy Soil, Healthy Food**
  - Carlos Pires, NDSU Extension soil health specialist and assistant professor

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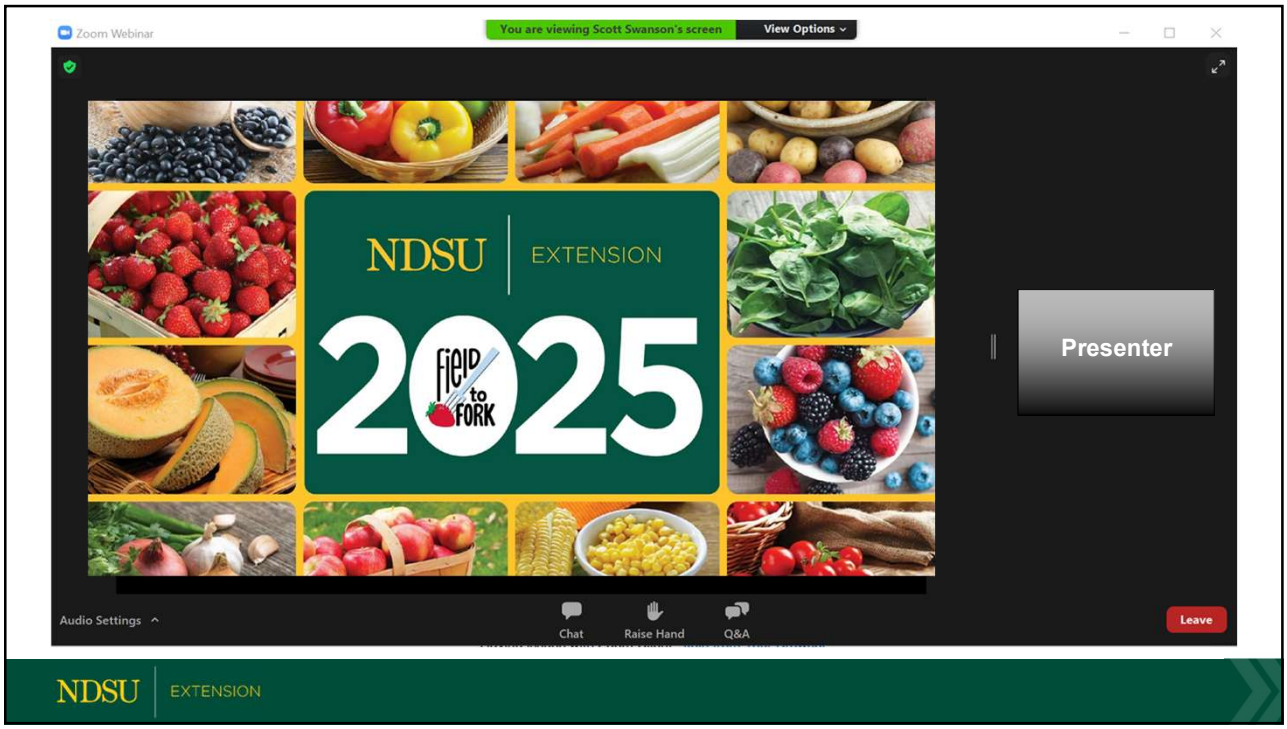

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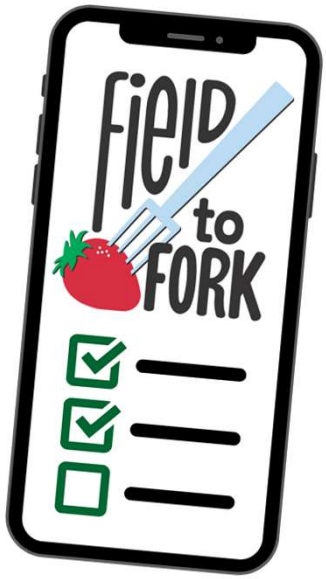
- **Please complete the short online survey** that will be emailed to you after today's webinar. It will take just a couple minutes!
- Be sure to sign up for an opportunity to win a prize in the drawing. After submitting the survey, a form to fill out with your name/address will appear.

Acknowledgement: This project was supported by the U.S. Department of Agriculture's (USDA) Agricultural Marketing Service through SCBG24-246. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the USDA.



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April 30

Food Preservation Toolkit

Karen Blakeslee, Kansas State University, Extension Associate

K-STATE Research and Extension

Brand names appearing in this presentation are for product identification purposes only.
No endorsement is intended, nor is criticism implied of similar products not mentioned.

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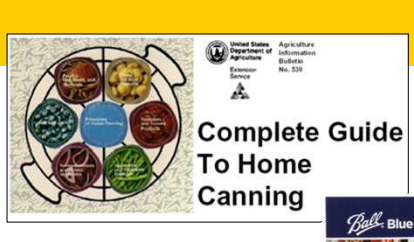
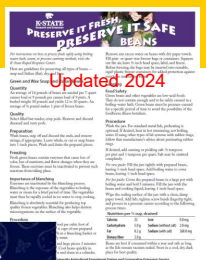
Recipes





- Not recommended to can homemade (your own creation!) recipes
- Freeze homemade recipes for long-term storage

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Food Preservation App

- Oregon State University – iOS only
  - https://extension.oregonstate.edu/catalog/pub/pnw-689-canning-timer-checklist-app

Scan here!

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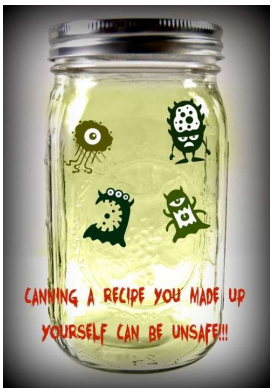
Unsafe Recipes Sources

Just because a food is canned commercially doesn't mean it can be canned safely at home!!

- Blogs
- Pinterest
- Old recipe books
- Recipe magazines, newspapers
  - May not be adequately tested
- Unmanaged social media
- Many others…



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Your Stovetop

Flat Glass Top

Gas

Coil burner

Photos: CSU Extension Flickr

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Portable Burner

Scan here!

- Great for other cooking steps
  - Heating water, skinning tomatoes, cooking jelly mixtures, etc.
- Frees up your stove space
- Not all are appropriate for canners
- Power source
  - Electric - minimum 1500W/120V
  - Outdoor Gas – not recommended for pressure canning
- Must withstand weight, high heat and long heating times
- Read manufacturer's directions for burner and canner!

Photos: CSU Extension Flickr

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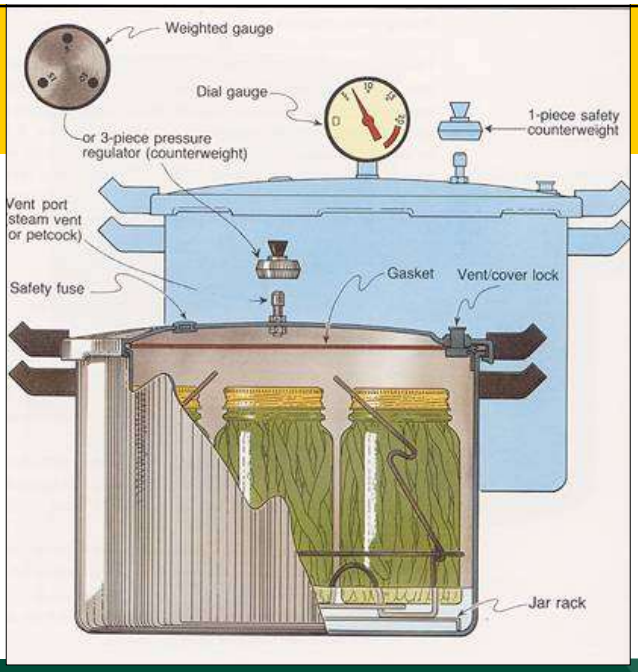
Canning Equipment

Pressure Canner – Dial or Weighted Gauge

A pressure canner can be used as a water bath canner, just do not apply the weight.



USDA Complete Guide To Home Canning

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Presto Induction Stovetop Compatible

- Stock No. 01784
- https://www.gopresto.com/product/23-quart-induction-compatible-pressure-canner-with-stainless-steel-clad-base-01784

Scan here!

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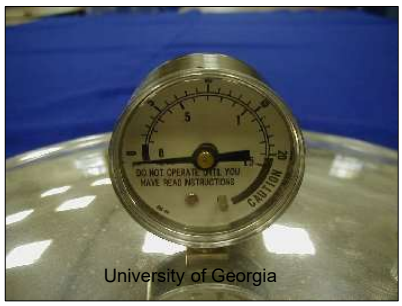
Pressure Gauge Testing



University of Georgia

- Dial pressure gauges need yearly testing
- If more than 2 pounds off, replace
- Weighted gauge canners do not need testing
- 1 pound error in a 20-minute process causes over 10% decrease in sterilizing value
  - 2 pound error a 30% decrease
- We can only test these brands
  - National
  - Presto
  - Magic Seal
  - Maid of Honor

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All American Canners

ALL AMERICAN pressure canners are weighted-gauge canners. The pressure dial gauge is supplied as a reference only for when the unit is pressurized and timing for canning may roughly begin, or when the pressure has dropped to zero and the lid may be safely removed.

Replace older gauges

Older styles – get petcock replaced with weighted gauge

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Old pressure canners

- Check condition
- Is it warped?
- Can you get replacement parts?
- Is there an instruction manual?
- May not be safe!
- May not be a garage sale bargain!
- For replacement parts, see
  - http://www.rrc.k-state.edu/preservation/index.html
  - Right column, bottom

Photo: KSRE

Scan here!

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Presto Digital Pressure Canner

- Not tested by USDA
  - Only meets USDA guidelines for processing
- Great customer support!
- 12-quart size cannot water bath quarts
  - Stock No. 02144
- NOT FOR COOKING!!

https://www.gopresto.com/downloads/canning/DigitalCannerFactsandFAQs.pdf

**The USDA and the National Center for Home Preservation provide guidelines for home canning. Neither agency certifies or approves home canning equipment.*
Source: National Center for Home Food Preservation

Scan here!

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HOT OFF THE PRESS!!

- Presto Precise® 17-quart Digital Pressure Canner
- **Extra tall** – holds quart jars for both pressure and water bath canning
- Stock No. 02152
- Retails for $349.99
- New in May 2024
- NOT FOR COOKING!!

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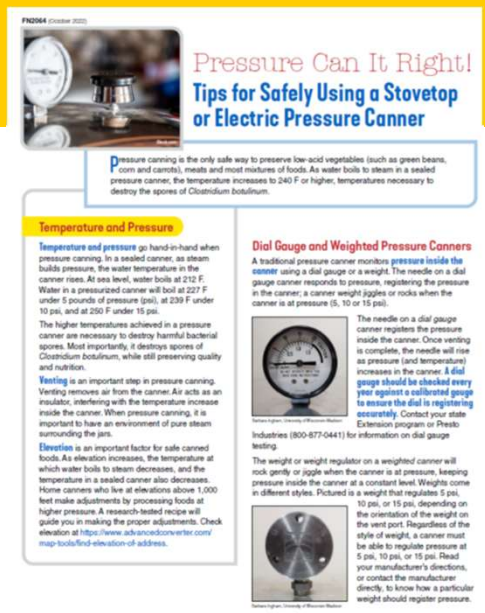
Pressure Can It Right!

- Tips for stovetop or electric pressure canners
- From NCFSEN

Scan here!



Pressure Can It Right!

Tips for Safely Using a Stovetop or Electric Pressure Canner

Pressure canning is the only safe way to preserve low-acid vegetables (such as green beans, corn and carrots), meats and most mixtures of foods. As water boils to steam in a sealed pressure canner, the temperature increases to 240 F or higher, temperatures necessary to destroy the spores of *Clostridium botulinum*.

Temperature and Pressure

Dial Gauge and Weighted Pressure Canners

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Canning in "Smart Cookers"

Preliminary research from Utah State University on Electric Programmable Pressure Cookers (EPPCs)

- Advertise safe low acid pressure canning capabilities
- Do they reach Bot kill – 250°F for 2.5 minutes in the cold spot?
- How does altitude affect EPPCs?
- Used 3 USDA recipes, 3 brands of EPPCs, 3 altitudes, data loggers inside jars, tests done in triplicate

Findings:

- **NOT FOR CANNING!!**
- No brand of EPPC sustained proper temperatures
  - **TEMPERATURE MATTERS!**
- All EPPCs affected by altitude – too low of temperature reached
- Size of EPPC impacts time determination
- GREAT FOR COOKING A HEALTHY MEAL!

Presentation given at 2021 Partnership for Food Safety Education conference
J. of NEAFCS, Vol. 15, 2020. pp. 27-31
https://extension.usu.edu/preserve-the-harvest/research/why-electric-pressure-cookers-are-not-pressure-canners

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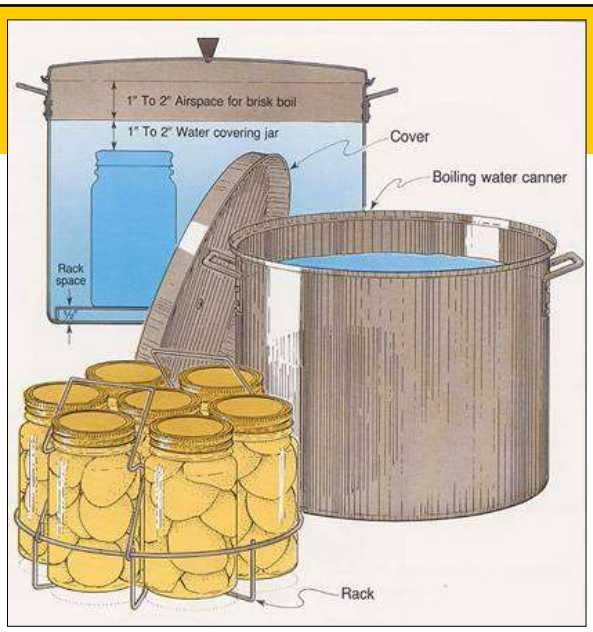
Water Bath Canning

- Bottom must be completely flat for glass stovetop
  - Use biggest burner
- Stock pot must be tall enough so water covers tops of jars at least 1-2" and have airspace above the water



USDA Complete Guide To Home Canning

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Photos: CSU Extension Flickr

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Steam Canners

Scan here!

- Use water bath canning time recommendations
- Uses about 2 quarts water
- Limited to **45 total minutes** of processing
- Vent steam for 1 minute once temperature is reached
- Regulate boiling, does not need to be vigorous
- Publication from NCFSEN

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Ball® EasyCanner Electric Water Bath Canner

- New in 2023
- Holds 8 pints, 7 quarts
- Multicooker and steamer
- ~ $250

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Unsafe Processing Methods

Pressure Cooker

Slow Cooker

Electric Pressure Cooker

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Unsafe Canning Equipment

- Jars with wire bails and glass caps
- Old antique jars
- One-piece zinc porcelain-lined caps
- Glass and zinc caps with flat rubber rings

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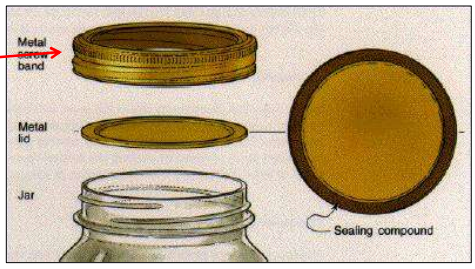
Types of Lids

Buckled lid – ring screwed on too tight

- Use two-pieced metal lid/ring
- Always use new lids – wash them!
- **Current Ball/Kerr lids don't need preheating**

Do NOT BAKE food in the lids/rings!!

Hand Wash Rings



USDA Complete Guide To Home Canning

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Ball/Kerr Preheated Lids Evaluation - 2023

- Newell Brands tested regular and wide mouth lids in water bath and pressure canning
- After canning and cooling overnight, internal vacuum pressure was measured
- 30% of pressure canned regular mouth preheated lids buckled
- 17% of pressure canned wide mouth preheated lids buckled
- DO NOT PREHEAT LIDS!
  - No definitive advantage compared to just hand-washing in warm water
  - Can result in less vacuum pressure with preheated lids which can lead to seal failure and buckling

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Reusable Lids

- Wide and Regular mouth size
- Plastic lid and separate gasket
- Still use metal rings
- Water bath or pressure can
- FOLLOW THE DIRECTIONS FOR BEST RESULTS!!
- Limited use, about 10 times

https://reusablecanninglids.com/

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Put a Lid On It!

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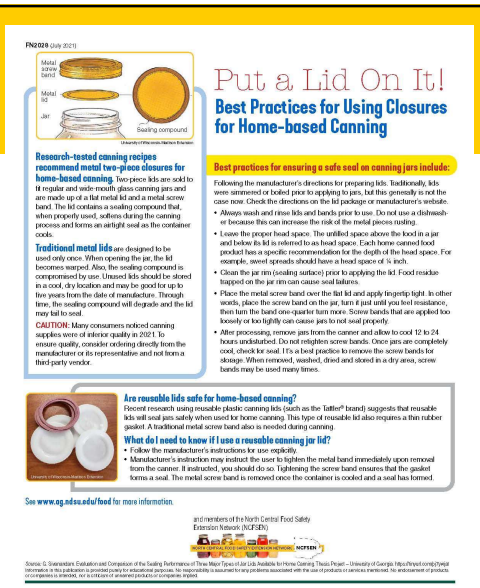

Put a Lid On It!

Best Practices for Using Closures for Home-based Canning

Research-tested canning recipes recommend metal two-piece closures for home-based canning. Two-piece lids are sold to fit regular and wide-mouth glass canning jars and are made up of a flat metal lid and a metal screw band. The lid contains a sealing compound that, when properly used, softens during the canning process and forms an airtight seal as the container cools.

Traditional metal lids are designed to be used only once. When opening the jar, the lid becomes warped. Also, the sealing compound is compromised by use. Unused lids should be stored in a cool, dry location and may be good for up to five years from the date of manufacture. Through time, the sealing compound will degrade and the lid may fail to seal.

CAUTION: Many consumers noticed canning supplies were of inferior quality in 2021. To ensure quality, consider ordering directly from the manufacturer or its representative and not from a third-party vendor.

Best practices for ensuring a safe seal on canning jars include:

Following the manufacturer's directions for preparing lids. Traditionally, lids were simmered or boiled prior to applying to jars, but this generally is not the case now. Check the directions on the lid package or manufacturer's website.

- Always wash and rinse lids and bands prior to use. Do not use a dishwasher because this can increase the risk of the metal pieces rusting.
- Leave the proper head space. The unfilled space above the food in a jar and below its lid is referred to as head space. Each home-canned food product has a specific recommendation for the depth of the head space. For example, sweet spreads should have a head space of ¼ inch.
- Clean the jar rim (sealing surface) prior to applying the lid. Food residue trapped on the jar rim can cause seal failures.
- Place the metal screw band over the flat lid and apply fingertip tight. In other words, place the screw band on the jar, turn it just until you feel resistance, then turn the band one-quarter turn more. Screw bands that are applied too loosely or too tightly can cause jars to not seal properly.
- After processing, remove jars from the canner and allow to cool 12 to 24 hours undisturbed. Do not retighten screw bands. Once jars are completely cool, check for seal. It's a best practice to remove the screw bands for storage. When removed, washed, dried and stored in a dry area, screw bands may be used many times.

Are reusable lids safe for home-based canning?

Recent research using reusable plastic canning lids (such as the Tattler® brand) suggests that reusable lids will seal jars safely when used for home canning. This type of reusable lid also requires a thin rubber gasket. A traditional metal screw band also is needed during canning.

What do I need to know if I use a reusable canning jar lid?

- Follow the manufacturer's instructions for use explicitly.
- Manufacturer's instruction may instruct the user to tighten the metal band immediately upon removal from the canner. If instructed, you should do so. Tightening the screw band ensures that the gasket forms a seal. The metal screw band is removed once the container is cooled and a seal has formed.

See www.ag.ndsu.edu/food for more information.

and members of the North Central Food Safety Extension Network (NCFSEN)

https://www.ncrfsma.org/north-central-food-safety-extension-network-ncfsen

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Types of Jars

- Use regular or wide-mouth canning jars
  - 4 oz – ½ gallon sizes
  - ½ gallons for apple and grape juice **ONLY**
- Clean, not damaged
- **Use the size specified in the recipe, or smaller, not any larger!**

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Newell Brands

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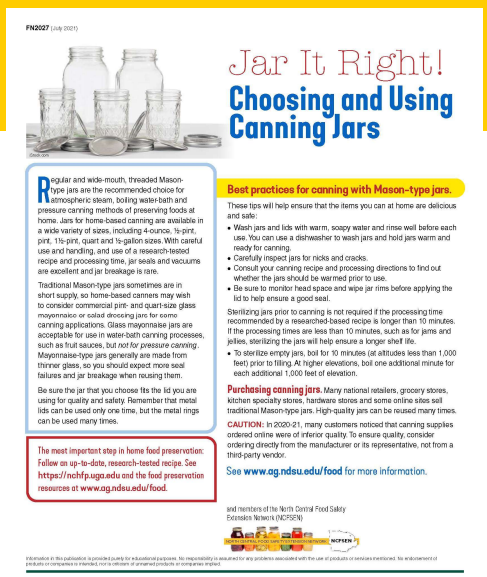
Jar It Right!



FN2027 (July 2021)

Jar It Right!

Choosing and Using Canning Jars

Regular and wide-mouth, threaded Mason-type jars are the recommended choice for atmospheric steam, boiling water-bath and pressure canning methods of preserving foods at home. Jars for home-based canning are available in a wide variety of sizes, including 4-ounce, ½-pint, pint, 1½-pint, quart and ½-gallon sizes. With careful use and handling, and use of a research-tested recipe and processing time, jar seals and vacuums are excellent and jar breakage is rare.

Traditional Mason-type jars sometimes are in short supply, so home-based canners may wish to consider commercial pint- and quart-size glass mayonnaise or salad dressing jars for some canning applications. Glass mayonnaise jars are acceptable for use in water-bath canning processes, such as fruit sauces, but not for pressure canning. Mayonnaise-type jars generally are made from thinner glass, so you should expect more seal failures and jar breakage when reusing them.

Be sure the jar that you choose fits the lid you are using for quality and safety. Remember that metal lids can be used only one time, but the metal rings can be used many times.

The most important step in home food preservation: Follow an up-to-date, research-tested recipe. See https://nchfp.uga.edu and the food preservation resources at www.ag.ndsu.edu/food.

Best practices for canning with Mason-type jars.

These tips will help ensure that the items you can at home are delicious and safe:

- Wash jars and lids with warm, soapy water and rinse well before each use. You can use a dishwasher to wash jars and hold jars warm and ready for canning.
- Carefully inspect jars for nicks and cracks.
- Consult your canning recipe and processing directions to find out whether the jars should be warmed prior to use.
- Be sure to monitor head space and wipe jar rims before applying the lid to help ensure a good seal.

Sterilizing jars prior to canning is not required if the processing time recommended by a researched-based recipe is longer than 10 minutes. If the processing times are less than 10 minutes, such as for jams and jellies, sterilizing the jars will help ensure a longer shelf life.

- To sterilize empty jars, boil for 10 minutes (at altitudes less than 1,000 feet) prior to filling. At higher elevations, boil one additional minute for each additional 1,000 feet of elevation.

Purchasing canning jars. Many national retailers, grocery stores, kitchen specialty stores, hardware stores and some online sites sell traditional Mason-type jars. High-quality jars can be reused many times.

CAUTION: In 2020-21, many customers noticed that canning supplies ordered online were of inferior quality. To ensure quality, consider ordering directly from the manufacturer or its representative, not from a third-party vendor.

See **www.ag.ndsu.edu/food** for more information.

and members of the North Central Food Safety Extension Network (NCFSEN)

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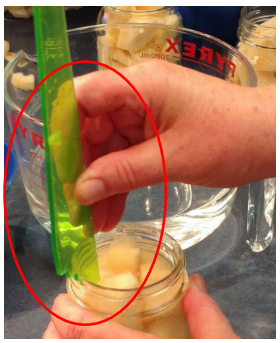
Other Equipment



Your kitchen gadgets!

Photos: CSU Extension Flickr

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Fermentation Equipment

- Stainless steel
- Crock or stone jar
- Unchipped enamel-lined pan
- Large food-grade plastic jars
- Large glass jars
- Weight to hold vegetables in brine (heavy plate or plastic bag filled with brine)

Ball® Fermentation Kit

Newell Brands, 2020

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Types of Freezer Packaging

- Rigid – glass or plastic
  - Safe for freezer
  - Wide mouth
  - Tight fitting lid
- Flexible bags or wrapping
  - Aluminum foil
  - Plastic bags
  - Freezer paper
  - Vacuum seal
- Remove from store wrappings!

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Photo: KSRE and NCHFP

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Freezing Containers - Meat

- Moisture-vapor resistant
- Leak proof
- Withstand freezing temperatures
- Resist grease, oil, water
- Prevents off-flavors or off-odors
- Easy to seal and label
- Won't crack or become brittle

Photo: Mississippi State University Extension

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Drying Equipment

- Dry in dehydrator, oven, sun
  - Sun drying difficult in Kansas, too humid
- Optimum drying temperature is 140°F
- Need air circulation
- Vertical or horizontal style
- Air dry herbs

University of Georgia

Photo: CSU Extension Flickr

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What Makes a Good Dehydrator?

- Double wall construction
  - Metal or plastic
- Enclosed heating elements
- Enclosed thermostat from 85 to 160°F
- Fan or blower
- Four to ten open mesh, sturdy, plastic trays for easy washing
- UL seal of approval

University of Georgia

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Air Fryer as a Dehydrator?

- No research on this method
- Follow the appliance directions
- Would not recommend making jerky
- Best used for cooking healthy meals!

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Freeze Drying

- Does not kill bacteria!
- Requires freeze drying machine
- Food freezes at -30°F to -50°F under vacuum
- Sublimation converts ice from solid to water vapor
- Removes up to 98% water
- https://extension.psu.edu/lets-preserve-freeze-drying
- https://extension.usu.edu/preserve-the-harvest/freeze-drying
- https://www.foodsafetynews.com/2025/02/at-home-freeze-drying-a-growing-trend-with-food-safety-concerns/

$$$$

Photo: Canva

Watch this!

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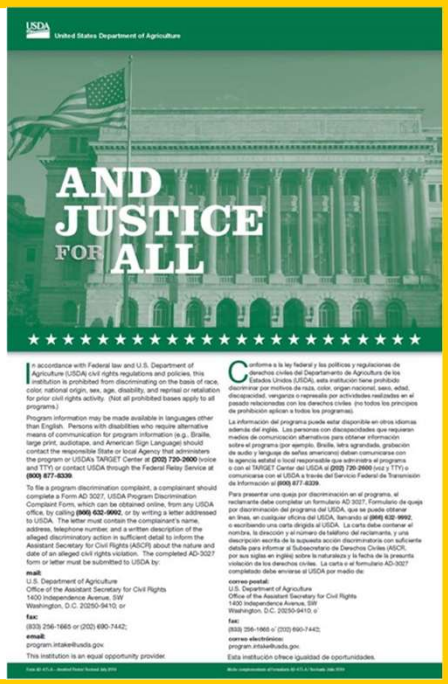

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