



NDSU | EXTENSION

2025

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Upcoming Webinars

- **March 26 - Tips and Tricks for Vegetable Production**
 - Susie Thompson, NDSU Department of Plant Sciences associate professor and potato breeder
- **April 2 - Plant Pathology 101: Common Plant Diseases**
 - Sam Markell, NDSU Department of Plant Pathology professor and interim department chair



Presenter

- **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.

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March 19

Pickling Safety

Cindy Brison, University of Nebraska Extension educator



History of Pickling

- Pickling is an ancient food preservation technique that dates back thousands of years
- The practice has evolved over time
- Includes a variety of pickled foods made from produce, fish, meats, and eggs



What Can You Pickle

- Cucumbers—for best results use a pickling cucumber
 - Have thicker skins and smaller seeds and less water
 - Non-pickling varieties: European, English and slicing cucumbers

- Produce
- Relishes
- Pickled eggs
- Chutney--a condiment or spread that's made from fruits, vegetables, vinegar, sugar, and spices. It can be sweet, savory, or spicy, and can vary in texture from smooth to chunky



Pickling Ingredients



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Picture generated from Gemini

Produce

Provides color, texture and flavor to pickles

- Freshly picked, firm produce
- Free from spoilage and nicks/dents
- Pickle within 24 hours of picking
- Wash all produce before using

- Weigh pickles for accuracy
- Size matters



Vinegar

Provides taste and prevents spoilage from most bacteria

- When pickling you **must** use 5% acidic vinegar
- Can use white distilled or cider vinegar
- Never dilute vinegar
- Avoid home-made vinegars—they have lower acidity levels
- Vinegar reduces the pH to a level that prevents the growth of bacteria that causes botulism



Salt



Provides taste and helps prevent spoilage

- Use canning/pickling salt
 - Table salt may make your pickling brine cloudy because it contains iodine
- When fermenting avoid reduced sodium products as they may not allow proper fermentation (not recommended by the USDA)
- Use the correct amounts

Salt

- Do not leave salt out of the recipe--it is critical to deter bacterial growth
- Some fresh pack pickles can be prepared with little or no salt.
 - Use a research-based recipe.



Sugar

Contributes taste and plumps the pickles

- Not used in all recipes
- White or brown sugar
- Brown will produce a darker brine and different flavor



Water



- Covers pickles in brine while diluting the intense flavor of the vinegar
- Affects firmness
- Soft water is recommended
- Very hard water may cause dark or discolored pickles

Spices



Contributes taste and flavors the vinegar

- Fresh, whole spices are the best
- Powdered can cause the brine to darken or get cloudy
- Follow directions for adding spices (in each jar versus in a cheesecloth in brine)
- Do not over add garlic
- Substitute 1 TBSP dill seed for 1 dill head

Commercial Firming Agents



Calcium hydroxide (Pickling lime):

- Use only food grade lime in the initial soak, measure—too much can change the pH and lead to botulism
- Do not soak in aluminum containers
- Rinse and soak three times per the recipe

Calcium Chloride

- Ball and Mrs. Wages
- Follow the directions
- Add a small amount to each jar before sealing



Grape Leaves and Alum



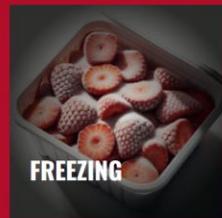
- Contains tannins to inhibit the enzyme that makes pickles soft
- Cutting off 1/16 of the blossom end has the same effect
- **Alum**—no longer recommended—can cause nausea and digestive distress

Other Recommendations

- Remove the blossom end of the cucumber—if you don't it releases an enzyme that softens your pickles
- Using soft water will help with firmness
- Refrigerating your pickles prior to opening can increase crispness
- **Pasteurization**--Process cucumber pickles for 30 minutes in water at 180°F. This process also prevents spoilage, but the water temperature should not fall below 180°F. Use a candy or jelly thermometer to check the water temperature.

Use an Up-to-Date Research-Based Recipe

PRESERVE BY...



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Picture from the National Center for Home Food Preservation

Where to Find Recipes

- National Center for Home Food Preservation
- Ball Canning
- Any Extension Office web page



- Follow the recipe
- The size of the pieces influences the heat penetration and processing times
- Use the correct processing times and adjust for altitude—this is scientifically determined, and as altitude increases, the time must increase

Types of Pickles

Brined (fermented)

- Usually brined 3-4 weeks, use a weight to keep produce under brine
- Can be stored in their original container 4-6 months in the fridge—remove scum and mold regularly
- Can be processed for longer storage.

Quick Pickles (unfermented)

- Pack in jars, add brine and process
- Store 4-5 weeks before consumption



Pickle Problems



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<https://extension.umn.edu/preserving-and-preparing/pickle-problems>



Hollow pickles

- Too much time between harvesting and pickling. Should be done with in 24 hours of picking. If not, refrigerate.
- Poorly developed when growing, and they will float.
- If fermented or crock pickles, it could be improper curing.
- No cucumbers over 2 inches across—pickling solution will not penetrate.

Shriveling Pickles

- Too much salt, sugar or vinegar at the beginning of the pickling process—measure carefully.
- Whole or large pickles are more likely to shrivel.
- Overcooking, over-processing and old cucumbers could cause shriveling.
- Dry weather causes shriveling.



Soft Pickles

- Old cucumbers--pick in the cooler part of the day—hot cucumbers are limp
- Wash cucumber well, especially around the stem-can grow bacteria and cause a soft pickle
- Remove 1/16th of the blossom end to eliminate enzymes
- Soak in ice water 4-5 hours before pickling



Pickling Safety Tips



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- No canning in the oven or multicooker or bathtub
- No open kettle preparation
- Use good sanitation practices
- Don't overcook the brine—can change the acid level and lose its ability to store pickles safely.
- Home canned foods can last 1- 1½ years
- Store jars with the rings off



- Sterilize equipment and make sure your preparation area is clean and sanitary
- Use the appropriate head space in your jars, too much or too little make them unsafe
- **Never** alter the vinegar, food or water proportions
- Safe Changes and Substitutions to Tested Canning Recipes:

<https://www.ndsu.edu/agriculture/sites/default/files/2024-03/fn2102.pdf>

- Make sure your canning jars are in good shape—nothing with chips on the top or scrape marks inside the jar, as they may crack
- Canning jars only—no mayo jars
- Wash and sterilized if necessary
- Remove the air bubbles



Fermentation

- Transformation of raw ingredients into flavorful, preserved, and often nutritionally enhanced products
- Items: bread, cheese, kombucha, sauerkraut, beer and kimchi

<https://nchfp.uga.edu/how/ferment>



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<https://extension.missouri.edu/programs/food-preservation>



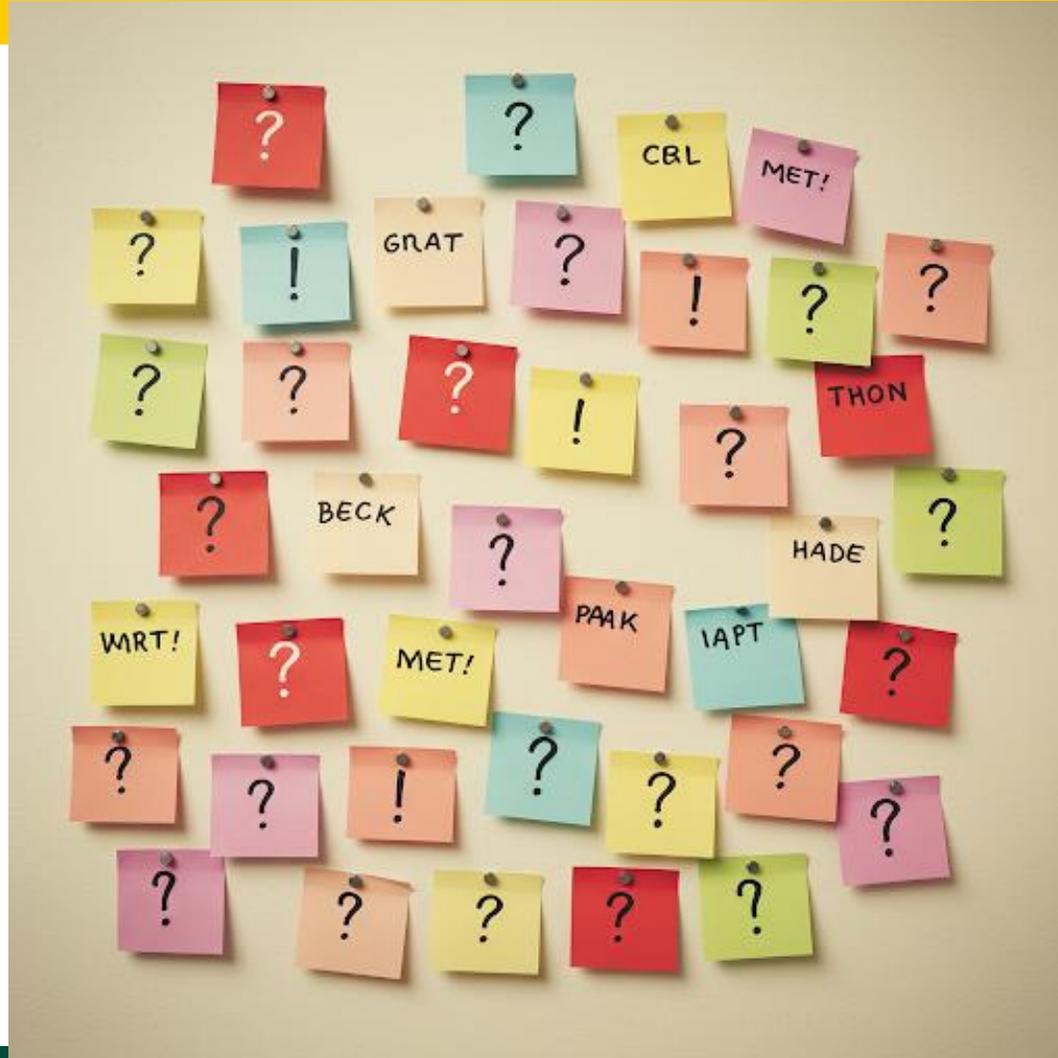
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Questions?????



References:

<https://nchfp.uga.edu/how/pickle/general-information-pickling/general-information-on-pickling/>

<https://www.ndsu.edu/agriculture/sites/default/files/2024-08/fn189.pdf>

<https://extension.umn.edu/preserving-and-preparing/pickling-basics>

<https://extension.psu.edu/prepare-for-pickling>

<https://www.rrc.k-state.edu/preservation/pickling.html>

https://mfp.ucanr.edu/Resources/_Extension_Document_Library/Publications_Pickle_-_Ferment/

<https://extension.umn.edu/cottage-food-safety-news/vacuum-sealing-mason-jars-are-they-safe-my-cottage-foods>

<https://extension.umn.edu/preserving-and-preparing/pickle-problems>



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