

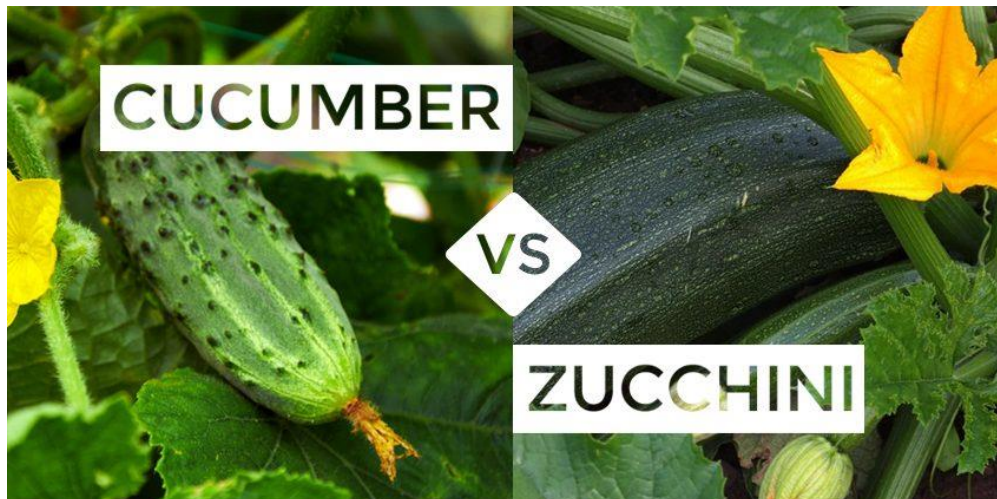
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University of California
Agriculture and Natural Resources

UCCE Master Food Preserver Program
Sacramento County

*Sacramento County Master Food Preservers
Monthly Wednesday Night Demonstration
September 15, 2021
Cucumbers and Zucchini*



Resources:

- Please visit the National Center for Home Food Preservation at <http://nchfp.uga.edu> for detailed information about research-based methods of home food preservation.
- UC ANR Catalog (<http://anrcatalog.ucanr.edu>)

Should you need assistance or require special accommodations for any of our educational programs, please contact us at 916-875-6913.

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BREAD AND BUTTER PICKLES

Source: <https://www.freshpreserving.com/blog?cid=breadandbutterpickles>

Preserving method: Water bath canning

Yield: Makes about 2 (32 oz) quart jars

For every 2 quarts of pickles:

3 1/2 lbs pickling cucumbers (about 14 small to medium)

2 1/2 cups vinegar (5% acidity)

2 1/2 cups sugar

1/4 cup Ball® Bread & Butter Pickle Mix

Directions

1. Slice ends off cucumbers then cut into 1/2-inch slices.
2. Combine vinegar, sugar, and Ball® Bread & Butter Pickle Mix in a medium saucepan and bring to a boil.
3. Pack based on *enjoy now* or *fresh preserve* steps below.
4. *Enjoy now (Refrigerate up to 3 months):*
5. Pour hot pickling liquid over cucumber slices in a large bowl. Cool to room temperature, about 30 minutes.
6. Pack cucumber slices into jars. Ladle pickling liquid over cucumbers. Place lids & bands on jars.
7. Refrigerate pickles. For best flavor, allow pickles to stand in refrigerator for 3 weeks.

-Or-

Fresh preserve (Store up to 1 year):

1. Prepare boiling water canner. Heat jars in simmering water until ready to use, do not boil. Wash lids in warm soapy water and set aside with bands.
2. Pack slices into a hot jar leaving a 1/2 inch headspace. Ladle hot pickling liquid over slices leaving 1/2-inch headspace. Remove air bubbles. Wipe rims. Center lids on jars. Apply bands and adjust to fingertip tight. Place jar in boiling water canner. Repeat until all jars are filled.
3. Process jars 15 minutes, adjusting for altitude. Turn off heat, remove lid, let jars stand 5 minutes. Remove jars and cool 12-24 hours. Check lids for seal, they should not flex when center is pressed. For best flavor, allow pickles to stand for 4-6 weeks.

*Increase processing time: 5 minutes for 1,001 to 3,000 ft; 10 minutes for 3,001 to 6,000 ft; 15 minutes for 6,001 to 8,000 ft; 20 minutes for 8,001 to 10,000 ft.

SWEET GHERKIN PICKLES

Source: https://nchfp.uga.edu/how/can_06/sweet_gherkin_pickles.html

- 7 lbs cucumbers (1-1/2 inch or less)
- 1/2 cup canning or pickling salt
- 8 cups sugar
- 6 cups vinegar (5 percent)
- 3/4 tsp turmeric
- 2 tsp celery seeds
- 2 tsp whole mixed pickling spice
- 2 cinnamon sticks
- 1/2 tsp fennel (optional)
- 2 tsp vanilla (optional)

Yield: 6 to 7 pints

Please read [Using Boiling Water Canners](#) before beginning. If this is your first time canning, it is recommended that you read [Principles of Home Canning](#).

Procedure: Wash cucumbers. Cut 1/16-inch slice off blossom end and discard, but leave 1/4-inch of stem attached. Place cucumbers in large container and cover with boiling water. Six to 8 hours later, and again on the second day, drain and cover with 6 quarts of fresh boiling water containing 1/4-cup salt. On the third day, drain and prick cucumbers with a table fork. Combine and bring to boil 3 cups vinegar, 3 cups sugar, turmeric, and spices. Pour over cucumbers. Six to 8 hours later, drain and save the pickling syrup. Add another 2 cups each of sugar and vinegar and reheat to boil. Pour over pickles. On the fourth day, drain and save syrup. Add another 2 cups sugar and 1 cup vinegar. Heat to boiling and pour over pickles. Drain and save pickling syrup 6 to 8 hours later. Add 1 cup sugar and 2 tsp vanilla and heat to boiling. Fill sterile pint jars, with pickles and cover with hot syrup, leaving 1/2-inch headspace. For more information on sterilizing jars see "[Sterilization of Empty Jars](#)". Adjust lids and process according to the recommendations in [Table 1](#), or use the low-temperature pasteurization treatment. For more information see "[Low- Temperature Pasteurization Treatment](#)".

Table 1. Recommended process time for **Sweet Gherkin Pickles** in a boiling-water canner.

		Process Time at Altitudes of		
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 6,000 ft	Above 6,000 ft
Raw	Pints	5 min	10	15

QUICK FRESH-PACK DILL PICKLES

Source: https://nchfp.uga.edu/how/can_06/quick_dill_pickles.html

8 lbs of 3- to 5-inch pickling cucumbers
2 gals water
1¼ cups canning or pickling salt
1½ qts vinegar (5 percent)
¼ cup sugar
2 quarts water
2 tbsp whole mixed pickling spice
about 3 tbsp whole mustard seed (2 tsp to 1 tsp per pint jar)
about 14 heads of fresh dill (1½ heads per pint jar)
or
4½ tbsp dill seed (1½ tsp per pint jar)

Yield: 7 to 9 pints

Please read [Using Boiling Water Canners](#) before beginning. If this is your first time canning, it is recommended that you read [Principles of Home Canning](#).

Procedure: Wash cucumbers. Cut 1/16-inch slice off blossom end and discard, but leave ¼-inch of stem attached. Dissolve ¾ cup salt in 2 gals water. Pour over cucumbers and let stand 12 hours. Drain. Combine vinegar, ½ cup salt, sugar and 2 quarts water. Add mixed pickling spices tied in a clean white cloth. Heat to boiling. Fill jars with cucumbers. Add 1 tsp mustard seed and 1½ heads fresh dill per pint. Cover with boiling pickling solution, leaving ½-inch headspace. Adjust lids and process according to the recommendations in [Table 1](#) or use the low- temperature pasteurization treatment. For more information see "[Low-Temperature Pasteurization Treatment](#)".

Table 1. Recommended process time for **Quick Fresh-Pack Dill Pickles** in a boiling-water canner.

		Process Time at Altitudes of		
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 6,000 ft	Above 6,000 ft
Raw	Pints	10 min	15	20
	Quarts	15	20	25

SUMMER SQUASH RELISH

Source: https://nchfp.uga.edu/how/can_06/summer_squash_relish.html

- 4 pounds fresh, firm yellow and/or zucchini summer squash (as purchased)
- ½ cup diced sweet onion (about 2.4 ounces prepared)
- 2 cups cider vinegar (5%)
- 2¼ cups white sugar
- 2 teaspoons celery seed
- 2 teaspoons turmeric
- 4 teaspoons mustard seed

Yield: About 5 pint jars

Please read [Using Boiling Water Canners](#) before beginning. If this is your first time canning, it is recommended that you read [Principles of Home Canning](#).

Procedure:

Wash and rinse pint or half-pint canning jars; keep hot until ready to fill. Prepare lids and ring bands according to manufacturer's directions.

Rinse squash well, remove blossom and stem ends and shred in a food processor. Peel onions and remove root and stem ends. Rinse well and dice, or shred in a food processor.

Combine remaining ingredients and bring to a boil. Carefully add squash and onions. Return combined ingredients to a boil; boil gently for 5 minutes, stirring often.

Pack hot vegetables with liquid into hot jars, leaving ½-inch headspace. Remove air bubbles and adjust headspace if needed. Make sure liquid covers the top of the food pieces. Wipe rims of jars with a dampened, clean paper towel. Apply and adjust prepared canning lids.

Process in a boiling water canner according to the recommendations in [Table 1](#). Let cool, undisturbed, 12 to 24 hours and check for seals.

Table 1. Recommended process time for **Summer Squash Relish** in a boiling-water canner.

		Process Time at Altitudes of		
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 6,000 ft	Above 6,000 ft
Hot	Pints or Half-pints	15 min	20	25

Notes: Recipe may use all yellow squash, all zucchini squash or a combination of both. (One choice we liked is ¾ yellow and ¼ zucchini squash; another was half and half.) Squash may be diced or shredded by hand instead of being shredded in food processor. For recipe development, Vidalia onions were used. Any variety of onion is acceptable. Celery salt may be used in place of celery seed as taste preference.

Additional Note: *Refrigerate any leftover relish from filling jars, if any, and enjoy freshly made!* Refrigerate the canned relish once jars are opened for use.

ZUCCHINI-PINEAPPLE

Source: https://nchfp.uga.edu/how/can_02/zucchini_pineapple.html

- 4 qts cubed or shredded zucchini
- 46 oz canned unsweetened pineapple juice
- 1½ cups bottled lemon juice
- 3 cups sugar

Yield: About 8 to 9 pints

Please read [Using Boiling Water Canners](#) before beginning. If this is your first time canning, it is recommended that you read [Principles of Home Canning](#).

Procedure: Peel zucchini and either cut into ½-inch cubes or shred. Mix zucchini with other ingredients in a large saucepan and bring to a boil. Simmer 20 minutes. Fill jars with hot mixture and cooking liquid, leaving ½-inch headspace. Adjust lids and process. See [Table 1](#) for recommended process time for using a boiling-water canner.

		Process Time at Altitudes of		
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 6,000 ft	Above 6,000 ft
Hot	Half-pints or Pints	15 min	20	25

DEHYDRATING

Source: Excalibur, The Complete Guide to Food Dehydration

Zucchini

(Fair for Dehydrating)

Select slender immature vegetables that have not yet begun to form seeds. If you have older zucchini on hand, the seeds should be removed prior to drying. Older zucchini does not have a fresh taste but may be used for recipes requiring finely chopped or grated zucchini, such as breads and soups.

Step-by-Step

Wash, remove seeds (if necessary), can cut zucchini in 1/4" slices or into 1/8" slices for chips.

Dry at 125⁰ F until brittle.

Note: Eat dehydrated zucchini slices as chips with cheese dip or chop and sprinkle on soups and casseroles.

Cucumber

(Poor for Dehydrating)

Wash the cucumber and slice into 1/8" pieces. (Peeling is optional.) Dry at 125⁰ F until leathery. Keep in mind that dried and powder cucumber is excellent as a seasoning.

ZUCCHINI FRITTATA

Ingredients:

- 3 large eggs
- 1/4 teaspoon salt
- 1/8 teaspoon ground black pepper (optional)
- 1 teaspoon canola oil
- 1/2 cup chopped onion
- 1 cup coarsely shredded zucchini
- 1/2 cup shredded Swiss cheese (gruyere or cheddar work as well)

Directions:

1. Preheat oven to 350°.
2. Whisk together eggs and salt.
3. Coat an 8-in. ovenproof skillet (cast iron is a good choice) with cooking spray,.
4. Heat the oil over medium heat, saute onion and zucchini until onion is crisp-tender.
5. Pour in egg mixture; cook until almost set, 5-6 minutes.
6. Sprinkle with cheese.
7. Bake, uncovered, until cheese is melted, 4-5 minutes. If desired, sprinkle with pepper.

Feel free to play around with ingredients. Cheddar cheese with a ½ cup or so of chopped peppers is a good combination – add a little cumin if you like it. Jack cheese makes a runnier final product that slices up like cheesy pizza. Frozen corn (1/2 cup) makes a nice addition as well.

PICKLES and RELISHES PROBLEMS and SOLUTIONS		
Problem	Cause	Prevention
Pickles not crisp enough. Once a pickle becomes soft, it cannot be made firm again.	1. Over-heating	1. Use low-temperature pasteurization to process pickles if permitted for the recipe used.
	2. Blossom ends not removed from cucumber before fermentation. Blossoms may contain fungi or yeasts responsible for enzymatic softening.	2. Slice at least 1/16 th inch off blossom end of cucumber and discard.
	3. "Crisping" procedures not followed.	3. Soak vegetable in saltwater, hydrate with ice, use lime water or calcium chloride as directed in recipe.
Soft and slippery pickles. Most likely due to enzyme activity from yeasts, molds, or remnants of cucumber blossom. If due to microbial spoilage, destroy the food. If softening not caused by microorganisms, pickles are safe to eat.	1. Too little salt in fermentation brine.	1. Maintain salt concentration specified in recipe.
	2. Vinegar too weak.	2. Use vinegar of at least 5% acidity.
	3. Cucumbers stored too high a temperature during fermentation.	3. Conduct fermentation at 70°F to 75°F to facilitate growth of desired lactic acid bacteria.
	4. Cucumbers not covered with brine during fermentation.	4. Keep cucumbers covered.
	5. Scum not removed from brin during fermentation.	5. Remove scum to prevent undesirable yeasts and mold from dominating the fermentation. Use an airlock system for fermentation.
	6. Insufficient heat treatment during processing to destroy microorganisms.	6. Process pickles after filling jars.
	7. Moldy garlic or spices.	7. Use fresh, high-quality spices and garlic.
Hollow pickles. Pickles are safe to eat.	1. Cucumber developed air pockets during growth or are over-ripe.	1. Since hollow cucumbers usually float, remove them when washing before use. Use floating cucumbers for relishes or chunk pickles.
	2. Holding cucumbers too long before brining.	2. Use cucumbers within 24 hours of harvesting.
	3. Fermentation too rapid.	3. Too high temperature during fermentation.

Shriveled pickles. Pickles are safe to eat.	1. Too strong a salt, sugar or vinegar solution at the beginning of the pickling process.	1. Use a weak solution at the beginning of the pickling process in preparing very sweet or sour pickles, then gradually increase the concentration.
	2. Long time between harvest and brining.	2. Use cucumbers within 24 hours of harvest.
	3. Overcooking or over-processing.	3. Carefully time processes.
	4. Dry weather around harvest.	4. None.
Dark pickles. Pickles are safe to eat, unless brass, copper or zinc utensils and brining equipment were used, in which case, do not use pickles.	1. Use of ground spices, too much spice, or leaving whole spices in jars.	1. Use whole spices and use them only to flavor the covering liquid, do not pack spices in the jar.
	2. Minerals from hard water.	2. Use softened water.
	3. Utensils leached metals, such as iron, copper, or zinc.	3. Use food-grade unchipped enamelware, glass, stainless steel or stoneware utensils.
	4. Iodized salt used.	4. Use canning or pickling salt..
	5. Overcooking or over-processing.	5. Carefully time processes.
Light and blotchy pickles. Pickles are safe to eat.	1. Sun-scaled, poorly colored cucumbers, or over-ripe cucumbers.	1. Select high-quality cucumbers.
Small brown spots on pickles. Pickles are safe to eat.	1. Holding cucumbers too long before brining.	1. Use cucumbers with 24 hours of harvest.
Abnormally bright green pickles. Pickles may not be safe, depending on the cause of color.	1. Prepared in copper utensil.	1. Consumption of excess copper is toxic. If abnormal green color is caused by copper, the pickles should be discarded.
	2. Green food coloring added.	2. Green food coloring is not recommended.

Strong, bitter taste.	1. Spices cooked too long in vinegar, or too many spices used.	1. Follow instructions for amount of spices to use and the boiling time.
	2. Dry weather may induce bitter flavor in cucumbers.	2. Taste cucumbers before processing to ensure bitterness is not present.
	3. Use of salt substitute.	3. Potassium chloride, present in most salt substitutes, cause bitterness.
Off-Flavor in fermented pickles. If no mold is present, and pickles have fermented to proper acidity, they are probably safe to eat.	1. “Wrong” microorganisms growing in brine.	1. Follow direction carefully, especially regarding fermentation temperature and salt levels.
White sediment. Generally, not harmful, but if accompanied by soft and slippery texture and spoiled appearance or odor, discard pickles.	1. Sediment is normal product of bacterial fermentation. Also due to yeast growth on surface of pickles brine, and settling to bottom of jar.	1. To reduce yeast growth, use an airtight cover on fermentation container. Strain brine before using as covering liquid. Heat-process pickles to prevent yeast growth in jar.
	2. Salt that contains an anti-caking agent.	2. Use canning or pickling salt.
Blue or purple garlic. Use the pickles, discard the garlic.	1. Immature garlic.	1. Garlic contains anthocyanins, water-soluble pigments. With acid conditions they may turn blue or purple.
	2. Copper in the water.	2. Garlic contains sulfur compounds, which may react with copper to form copper sulfate, a blue compound.
Yellow crystals on pickled asparagus. Safe to eat.	1. The yellow crystals are rutin, a compound naturally present in asparagus that is insoluble in vinegar. During the pickling it is drawn out and crystalizes on the stem.	1. None.

BOILING WATER CANNING PROCESS

1. Before you start preparing your food, fill the canner halfway with clean water. This is approximately the level needed for a canner load of pint jars. For other sizes and numbers of jars, adjust the amount of water in the canner so it will be 1 to 2 inches over the top of the filled jars.
2. Preheat water to 140°F for raw-packed foods and to 180°F for hot-packed foods. Food preparation can begin while this water is preheating. Do not have the water boiling when you add the jars.
3. Fill, fit with lids, load onto the canner rack and use the handles to lower the rack into the water; or fill the canner with the rack in the bottom, one jar at a time, using a jar lifter. When using a jar lifter, make sure it is securely positioned below the neck of the jar (below the screw band of the lid). Keep the jar upright at all times. Tilting the jar could cause food to spill into the sealing area of the lid.
4. Add boiling water, if needed, so the water level is at least 1 inch above jar tops. Pour the water around the jars, not on them. For process times over 30 minutes, the water level should be at least 2 inches above the tops of the jars.
5. Turn heat to its highest position, cover the canner with its lid, and heat until the water in the canner boils vigorously.
6. Set the timer for the total minutes required for processing the food, adjusting for altitude.
7. Keep the canner covered and maintain a boil throughout the process schedule. The heat setting may be lowered a little as long as a complete boil is maintained for the entire process time. If the water stops boiling at any time during the process, bring the water back to a vigorous boil and begin the timing of the process over, from the beginning.
8. Add more boiling water, if needed, to keep the water level above the jars.
9. When the jars have boiled for the recommended time, turn off the heat and remove the canner lid. Wait no more than 5 minutes before removing jars.
10. Using a jar lifter, remove the jars without tipping and place them on a towel, leaving at least 1-inch spaces between the jars during cooling. Let jars sit undisturbed to cool at room temperature for 12 to 24 hours.



ATMOSPHERIC STEAM CANNING PROCESS

1. Use a research tested recipe and processing time developed for a boiling water canner when using an atmospheric steam canner. An atmospheric steam canner may be used with recipes approved for half-pint, pint, or quart jars.
2. Add enough water to the base of the canner to cover the rack. (Follow manufacturer recommendations.)
3. Preheat water to 140°F for raw-packed foods and to 180°F for hot-packed foods. Food preparation can begin while this water is preheating. Do not have the water boiling when you add the jars.
4. . Heat jars prior to filling with hot liquid (raw or hot pack). Do not allow the jars to cool before filling.
5. Load filled jars, fitted with lids, onto the canner rack and place the lid on the canner base.
6. Turn heat to its highest position to boil the water until a steady column of steam (6-8 inches) appears from the vent hole(s) in the canner lid. Jars must be processed in pure steam environment.
7. If using a canner with a temperature sensor, begin processing time when the temperature marker is in the green zone for your altitude. If using a canner without a temperature sensor, begin processing time when a steady stream of steam is visible from the vent hole(s).
8. Set the timer for the total minutes required for processing the food, adjusting for altitude. Processing time must be limited to 45 minutes or less, including any modification for elevation. The processing time is limited by the amount of water in the canner base. When processing food, do not open the canner to add water.
9. Monitor the temperature sensor and/or steady stream of steam throughout the entire timed process. Regulate heat so that the canner maintains a temperature of 212°F. A canner that is boiling too vigorously can boil dry within 20 minutes. If a canner boils dry, the food is considered under-processed and therefore potentially unsafe.
10. At the end of the processing time, turn off the heat and wait 2 to 3 minutes. Carefully remove the lid, lifting the lid away from you.
11. Using a jar lifter, remove the jars without tipping and place them on a towel, leaving at least 1-inch spaces between the jars during cooling. Let jars sit undisturbed to cool at room temperature for 12 to 24 hours.



PRESSURE CANNING PROCESS – QUICK STEPS

1. Use reputable, research-based recipe.
2. Prep work area, food and jars.
3. Heat 2-3” canner water (not boiling).
Hot Pack: 180⁰F, Raw Pack: 140⁰F
4. Jars in canner; lid on; weight off; high heat.
5. Vent 10 minutes.
6. Weight on.
7. Pressurize; lower heat to maintain pressure.
8. Start time; process, adjust heat as needed.
9. Ding! Timer off; heat off.
10. Wait until pressure drops to 0.
11. Weight off.
12. Cool 10 minutes more.
13. Lid off; jars out.
14. Cool jars, undisturbed 12-24 hours.
Check seals; remove rings, clean jars.
15. Label and store sealed jars.
Cool, dry, dark location.
Use within 1 year for best quality.

ADDITIONAL RECIPES (Low Sodium and Low Sugar)

Reduced Sodium Pickles

- [Reduced Sodium Sliced Dill Pickles](#)
- [Reduced Sodium Sliced Sweet Pickles](#)

Sugarless Recipes

- [No Sugar Added Sweet Cucumber Slices](#)