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Agriculture and Natural Resources

UC Master Food Preserver Program

PRESERVING FALL & WINTER VEGETABLES

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LET'S PRESERVE

Freezing Vegetables

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Introduction

Freezing is a quick, convenient, and easy method of preserving foods in the home. Frozen foods are easy to serve because most of the preparation is done before freezing. Freezing preserves nutritive quality so that frozen foods resemble fresh foods.

Preparation

Start with clean countertops and utensils. Wash hands with soap and warm water. All produce should be properly washed before it is consumed or preserved by rinsing, gently rubbing, or scrubbing with a clean vegetable brush under cold running water. Do not soak produce in water.

Successful Freezing

The five factors that are responsible for most of the quality losses of frozen foods are enzymes, air, microorganisms, large ice crystals, and evaporation of moisture.

Enzymes and Blanching

Enzymes are naturally occurring substances in plants that control the ripening process. Freezing only slows enzyme activity. Most frozen vegetables will lose quality in the freezer unless they have been blanched.

Why Blanch Vegetables?

- To improve flavor, color, texture, and nutrient retention
- To slow or stop the action of enzymes in the ripening process
- To cleanse the surface of dirt and organisms
- To brighten the color of green vegetables
- To wilt or soften vegetables, making it easier to fill containers

Correct blanching time is critical in having a quality product. Refer to the blanching directions in this fact sheet. Most vegetables are blanched in boiling water. Steam blanching normally takes 50 percent more time than water blanching and is ideal for delicate vegetables.

Air

Exclusion of air from the food prevents the enzyme reactions and oxidation that cause surface browning. This problem is more common in fruits, but some vegetables, such as potatoes, are also affected.

Microorganisms

Bacteria, molds, and yeast are present on all fresh foods and multiply rapidly when the temperature is between 40°F and 140°F (4°–82°C). Unlike canning, freezing does not kill most microorganisms in food, but it does prevent their growth if the food is held at 0°F (-17°C) or lower. When thawed, the surviving organisms can grow again. This is why proper handling and preparation techniques are essential.

Ice Crystals—Freeze Quickly

Small ice crystals are desirable in frozen food to preserve its texture. Large ice crystals rupture food cells and cause a soft, mushy texture. Small crystals are formed when food is frozen quickly and kept at a constant storage temperature of 0°F (-17°C) or lower. Avoid adding more than 2 pounds of frozen food per square foot of freezer space because a larger volume of food will slow the freezing process and may raise the temperature of already frozen food.

Evaporation of Moisture—Packaging Materials

Poor packaging that leaves food unprotected in the freezer allows foods to lose moisture, which will cause a loss of color, flavor, and texture. Long-term exposure to air causes drying of plant fibers, known as freezer burn. Use of proper packaging materials helps prevent freezer burn.

Good Packing Materials

- Resistant to moisture and vapor
- Durable and leak proof
- Resistant to cracking and brittleness at low temperatures
- Resistant to oil, grease, and water
- Able to protect foods from absorption of off-flavors and odors
- Easy to seal
- Easy to label

PennState Extension

Select plastic bags labeled specifically for freezing food. Look for plastic containers (boxes, jars, bowls) specifically labeled for freezer storage. Tempered glass jars specifically designed for freezing are suitable. Select jars with tapered sides for easy removal of the food. Storage bags are not as resistant to moisture and vapor. Waxed paper, paper cartons, cottage cheese containers, ice cream and juice cartons, or any rigid carton with cracks or a poorly fitting lid are not suitable for long-term storage. They do not adequately prevent the loss of moisture or the drying out of food from exposure to air.

Tips for Packing Vegetables

- Cool or chill foods before filling them into packages.
- Package foods in quantities that will be used for a single meal-sized serving.
- Allow ½ inch (13 mm) of headspace for all types of containers. Vegetables that pack loosely, such as asparagus and broccoli, require no headspace.
- When vegetables are packaged in bags, press the air from the bag.
- Label packages with the name of product, added ingredients (such as salt), date packaged and date to use by, number of servings or quantity, and type of pack (such as whole, sliced, or diced).
- Freeze foods as soon as they are packaged and sealed.
- Do not overload the freezer with unfrozen food.
- Spread unfrozen foods out in the freezer so that they will freeze more rapidly.

Individually Quick Freezing or Tray Freezing

Foods such as cut green beans, peas, whole-kernel corn, and small mixed vegetables are suitable for freezing quickly before being packaged. This allows a partial amount of the food to be poured from containers without being thawed. After vegetables have been blanched, cooled, and drained, place them one layer deep on cookie sheets or shallow trays and freeze uncovered just until solid (4 to 6 hours), then quickly package and seal.

Blanching Directions

- Bring 1 gallon of water to an active boil. Lower 1 pound of vegetables into the water. Cover. Return to a boil. Start counting the blanching time when the water returns to a boil.
- As soon as blanching is complete, vegetables should be cooled quickly in 3 to 4 gallons of cold water.
- Chill at least as long as vegetables were blanched.
- Drain.
- Package.

For additional information about food preservation, visit the Penn State Extension Home Food Preservation website at **extension.psu.edu/food/preservation** or contact Penn State Extension in your county.

Prepared by Martha Zepp, extension project assistant; Andy Hirneisen, senior food safety educator; and Luke LaBorde, professor of food science.

Blanching Times

Asparagus, small spears: 2 minutes

Asparagus, large spears: 4 minutes

Green, wax, or Italian beans, small: 2 minutes; large: 3 minutes

Broccoli, 1½-inch (4 cm) pieces: 3 minutes

Brussels sprouts, small heads: 3 minutes; large heads: 5 minutes

Cabbage, quarters: 4 minutes; wedges: 2 minutes; shredded: 1½ minutes

Carrots, sliced or diced: 2 minutes; whole: 5 minutes

Cauliflower, small pieces: 3 minutes; large pieces: 5 minutes

Corn, whole cut kernel or cream style: 4 minutes
Corn on the cob, small ears: 7 minutes; medium ears: 9 minutes; large ears: 11 minutes

Okra, small pods: 3 minutes; large pods: 5 minutes

Peas, black-eyed and green, small: 1½ minutes; large: 2½ minutes

Sugar peas, small: 2 minutes; large: 3 minutes

Zucchini or summer squash, ½-inch (13 mm) slices: 3 minutes

Chopped onions and peppers usually don't need blanching.

Sweet potatoes, pumpkin, spaghetti squash, and tomatoes should be cooked before freezing.

Steam blanching normally requires 50 percent more time than water blanching. Steam blanching is less likely to cause water-soaked vegetables and is ideal for broccoli and other delicate vegetables.

If you don't have a blancher, substitute a colander, sieve, or basket to lift food from the boiling water.

Did You Know?

If you have problems with frozen cauliflower turning dark, try blanching it in boiling water that contains 1 tablespoon lemon juice per quart of water.

Cooked tomatoes may be frozen successfully. Raw, whole tomatoes do not freeze well and may become watery and develop an off-flavor after a month in the freezer.

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Fermentation—Sauerkraut and Pickles

Photo credit: Steve Williams, Penn State

Fermenting is the process in which beneficial bacteria break down food components under controlled, anaerobic conditions to produce acids. This improves the taste, texture, and shelf life of the food. Maintain a high level of cleanliness and follow research-tested procedures to have the greatest success in producing safe, high-quality products. Start with clean countertops and utensils. Wash hands with soap and warm water. All produce should be properly washed before it is consumed or preserved.

Containers for Fermenting

Stone crocks are the traditional fermentation container; however, other containers, such as glass or food-grade plastic containers, may be used. Many restaurants receive foods and ingredients in 5-gallon plastic buckets, which make ideal fermentation containers. Do not use copper, iron, or galvanized metal containers or lead-glazed crocks. If you are unsure about the suitability of a container, you may line it with a food-grade plastic bag, such as one designed for roasting or brining turkeys. Do not use garbage bags or trash liners.

Covering

To avoid surface mold growth, keep the cabbage or pickles submerged at all times. If the juice does not cover the cabbage or pickles, add boiled and cooled brine prepared with 1½ tablespoons of salt in a quart of water. Cover the cabbage or pickles with a plate just small enough to fit inside the fermentation container and weigh it down with two or three clean quart jars filled with water. An acceptable alternative is to fill a large, sealed, food-grade plastic bag containing 4½ tablespoons of salt and 3 quarts of water. The filled bag may be inserted into another bag and sealed for added strength. Plastic bags sold for roasting or brining turkeys are the right size for 5-gallon containers. Cover the top of the container with several layers of clean cheesecloth or a clean kitchen towel to reduce exposure to airborne mold spores.

SAUERKRAUT

Recommended Varieties

Bravo, Danish Ballhead, Excalibur, Murdoc, Premium Late Dutch, Late Flat Head, and Krautman are good varieties for sauerkraut. Late season cabbage is desirable for making sauerkraut.

Quantity

A 50-pound bag of fresh cabbage makes 16 to 20 quarts of sauerkraut. A 1-gallon stone crock holds 5 pounds of shredded cabbage, and a 5-gallon crock holds 25 pounds.

Quality

To make good sauerkraut, use disease-free, firm, sweet, mature heads of cabbage from mid- and late season crops. Prepare and start the fermentation one to two days after harvesting the cabbage.

Preparation

Work with about 5 pounds of fresh cabbage at a time. Discard outer leaves. Rinse heads with cold water and drain. Cut heads in quarters, remove cores, and trim and discard worm- and disease-damaged tissue. Shred or slice cabbage to a thickness of a 25-cent coin, or 1/16 of an inch (1.5 mm).

Filling and Packing the Container

Place 5 pounds of shredded cabbage in the fermentation container and thoroughly mix in 3 tablespoons of canning or pickling salt. Pack, pound, or squeeze the mixture with clean hands until the level of natural juices drawn from the cabbage covers its surface. Continue preparing and packing 5-pound quantities of shredded cabbage and 3 tablespoons of salt at a time until finished, or until the fermentation container is filled within three (7.5 cm) to four inches (10 cm) from its top. Weigh down and cover the cabbage as described in the "Covering" section at the beginning.

The exact ratio of 3 tablespoons of canning or pickling salt to 5 pounds of shredded cabbage controls pathogen growth. Changing the proportions could result in an unsafe product.

Fermentation Temperature, Time, and Management

Store the container at 70°–75°F (21°–23°C) while fermenting. At these temperatures, sauerkraut will be fully fermented in about three to four weeks; at 60°–65°F (15°–18°C), fermentation may take six weeks. Below 60°F (15°C), sauerkraut may not ferment. Above 80°F (26°C), sauerkraut may become soft and spoil.

Fermentation naturally stops because the acids accumulate to such an extent that further growth cannot take place. If you submerge the cabbage with a brine-filled bag, do not disturb the crock until the normal fermentation is complete (when bubbling ceases). If you use jars as weights, you must check the sauerkraut two to three times each week and remove scum if it forms. Sauerkraut should be to desired tartness, with firm texture, have brine that is not cloudy, and be free of any sign of mold or yeast growth. Do not taste if you see mold on the surface, feel a slimy texture, or smell a bad odor. Fully fermented sauerkraut may be kept tightly covered in the refrigerator for several months, or it may be canned and frozen.

Freezing Procedure

Don't freeze more than 2 pounds of food per cubic foot of freezer capacity per day. Fill pint or quart plastic freezer containers or tapered freezer jars. Allow ½ inch (13 mm) of headspace, seal, label, and freeze.

Canning Procedure

Read "Let's Preserve: Basics of Home Food Preservation" before starting. Wash jars. Prepare lids according to manufacturer's instructions. If there is not enough juice to cover the cabbage in each jar, add boiled and cooled brine prepared with 1½ tablespoons of salt in a quart of water.

To Make a Hot Pack

Bring sauerkraut and liquid slowly to a boil in a large kettle, stirring frequently. Remove from heat and fill jars rather firmly with sauerkraut and juices, leaving ½ inch (13 mm) of headspace. Wipe sealing edge of jars with a clean, damp paper towel. Add lids and tighten screw bands. Process for the recommended time according to Table 1.

To Make a Raw Pack

Fill jars firmly with unheated sauerkraut and cover with juices, leaving ½ inch (13 mm) of headspace. Fill and seal as previously described for a hot pack and process for recommended time (see Table 1).

To Process in a Boiling Water Canner

Preheat canner filled halfway with water to 180°F (82°C) for hot packs and 140°F (60°C) for raw packs. Load sealed jars onto the canner rack. Lower with handles in the preheated boiling water canner, or load one jar at a time with a jar lifter. Add water, if needed, to 1 inch (2.5 cm) above jars and cover. Bring water to boil over high heat. When water boils vigorously, lower heat to maintain a gentle boil and process for recommended time (see Table 1).

To Process in an Atmospheric Steam Canner

Read "Let's Preserve: Basics of Home Food Preservation" before starting. Preheat the base of a steam canner that has been filled with the amount of water designated in the instruction manual that comes with the canner (usually about 2 quarts). Set the rack in the base of the canner. Heat water in the base of the canner to 180°F (82°C). As each jar is filled, place it on canner rack, keeping the cover or lid on the atmospheric steam canner as you work. When all jars are in the canner, bring the canner to a boil over medium to medium-high heat until a steady column of steam at least 6 inches (15 cm) long escapes from the vent hole(s). Processing time begins when there is a steady column of steam 6 (15 cm) to 8 inches (20 cm) long. Slowly adjust the heat to maintain a steady column of steam throughout the processing time.

After Processing

When processing is complete, turn off heat. Allow the jars to sit in the covered canner for 5 minutes before removing them from

Caution: The only research-based recipes for fermented vegetables include procedures for sauerkraut and fermented pickles.

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Table 1. Recommended process times for sauerkraut in a boiling water or atmospheric steam canner at designated altitudes.

		Process time (in minutes) at altitudes of			
Style of pack	Jar size	0–1,000 ft.	1,001–3,000 ft.	3,001–6,000 ft.	Above 6,000 ft.
Hot	Pints	10	15	15	20
	Quarts	15	20	20	25
Raw	Pints	20	25	30	35
	Quarts	25	30	35	40

the canner with a jar lifter, being careful not to tilt the jars, to a wooden cutting board or towel-lined surface.

Do not retighten screw bands. Cool jars for 12 to 24 hours and remove screw bands. Check lid seals. If the center of the lid is indented, the jar is sealed. Wash, dry, label, and store sealed jars in a clean, cool, dark place. If lid is unsealed, examine and replace jar if defective, use new lid, and reprocess as before or store in the refrigerator. Wash screw bands and store separately. Canned goods are best if consumed within a year and are safe as long as lids remain vacuum sealed.

Small-Batch Fermentation

Sauerkraut may be fermented in small batches in quart or half-gallon jars. Spoilage is of greater concern when fermenting in jars because it is harder to keep the cabbage submerged below the brine. For the best success, it is important to ensure thorough mixing of cabbage and salt before packing into sterilized jars.

Procedure

Five pounds of cabbage makes about two 1-quart jars or one half-gallon jar. Sterilize the jar(s) by placing a rack in the bottom of a large pot, covering with water, and boiling for 10 minutes. Allow jar(s) to cool before using. Shred the cabbage as directed in the previous section on preparation of sauerkraut. When fermenting in jars, use the ratio of 5 pounds of cabbage to 3½ tablespoons of canning salt. Thoroughly mix the salt into the cabbage in a large bowl and allow the cabbage to wilt for 10 minutes to draw out liquid. Massage, tamp, and squeeze the cabbage until it becomes soft and juices accumulate at the bottom of the bowl.

Pack the cabbage into the cooled jars, making sure to add any remaining juices from the bowl. Use your hand or a wooden spoon to press the cabbage into the jar and release any air pockets, leaving about 2 inches (5 cm) of headspace above the cabbage. If the juice does not cover the cabbage completely, add boiled and cooled brine (1½ tablespoons canning salt per quart of water). Top with a square of cheesecloth, tucking it in around the sides. Use a paper towel to remove any loose cabbage pieces from the inside of the jar that are above the cheesecloth.

Weigh the cabbage down using a 4-ounce jelly jar filled with brine that fits inside the opening, or use a sealed food-grade plastic bag filled with brine. Cover loosely with a lid or a clean towel so that gases produced during fermentation can escape. Alternately, you may use commercially available weights and one-way valve covers. Place the jar on a tray to catch any juices that might bubble out during the fermentation process. Check the jar two or three times per week and promptly remove any scum or mold. Fermentation at room temperature should take about three weeks.

Photo credit: Bigstock.com

Small-batch-fermented sauerkraut may be stored for several months in the refrigerator, frozen, or water bath canned. If canning, follow the procedure described above using a clean jar.

FERMENTED PICKLES

Recommended Varieties

Use a pickling variety cucumber such as Carolina or Bush Pickle. Pickling cucumbers are short and have thin skins. Slicing or table cucumbers are not suitable for fermenting pickles.

Quantity

An average of 4 pounds of 4-inch (10 cm) pickling cucumbers fills a 1-gallon container.

Quality

Cucumbers should be fresh, firm, and free of rot or disease. Use appropriately sized cucumbers for fermenting. Use large or oddly shaped cucumbers for relish.

Preparation

Select 4-inch (10 cm) cucumbers for fermenting. Use the following quantities for each gallon capacity of your container:

- 4 pounds of 4-inch (10 cm) pickling cucumbers
- 2 tablespoons dill seed or 4 to 5 heads fresh or dry dill weed
- ½ cup canning and pickling salt
- ¼ cup vinegar (5 percent)

Caution: If the pickles become soft, slimy, or develop a disagreeable odor, discard them.

Table 2. Recommended process times for fermented pickles in a boiling water or atmospheric steam canner at designated altitudes.

		Process time (in minutes) at altitudes of		
Style of pack	Jar size	0–1,000 ft.	1,001–6,000 ft.	Above 6,000 ft.
Pack	Pints	10	15	20
Raw	Quarts	15	20	25

- 8 cups water and one or more of the following ingredients:
  - 2 cloves garlic (optional)
  - 2 dried red peppers (optional)
  - 2 teaspoons whole mixed pickling spices (optional)

Procedure

Wash cucumbers. Rub each cucumber under running water to loosen and remove soil. Cut 1/16-inch (1.5 mm) slice off blossom end and discard. The blossom end contains enzymes that can cause the cucumbers to soften during fermentation. Leave ¼ inch (6 mm) of stem attached. Place half of dill and spices on bottom of a clean, suitable container. Add cucumbers, remaining dill, and spices. Dissolve salt in vinegar and water and pour over cucumbers. Add suitable cover and weight. Store where temperature is between 70°–75°F (21°–23°C) for about three to four weeks while fermenting. Temperatures of 55°–65°F (12°–18°C) are acceptable, but fermentation will take five to six weeks. Avoid temperatures above 80°F (26°C), or pickles will become too soft during fermentation. Fermenting pickles cure slowly. Check the container several times a week and promptly remove surface scum or mold.

Storage

Fully fermented pickles may be stored in the original container for about four to six months, provided they are refrigerated and surface scum and molds are removed regularly. Canning fully fermented pickles is a better way to store them.

Canning Procedure

Read "Let's Preserve: Basics of Home Canning" before starting. Wash jars. Prepare lids according to manufacturer's instructions.

Pour the brine into a pan, heat slowly to a boil, and simmer 5 minutes. Filter brine through paper coffee filters to reduce cloudiness, if desired. Fill jar with pickles and hot brine, leaving ½ inch (13 mm) of headspace. Adjust lids and process as described above under "To Process in a Boiling Water Canner" or "To Process in an Atmospheric Steam Canner" for the times listed in Table 2, or use the low-temperature pasteurization treatment described below.

Low-Temperature Pasteurization

The following method may be used to process fermented pickles. Place jars in a canner filled halfway with warm 120°–140°F (48°–60°C) water. Then add hot water to a level 1 inch (2.5 cm) above jars. Heat the water enough to maintain a temperature of 180°–185°F (82°–85°C) for 30 minutes. Check with a candy or jelly thermometer to be certain the water temperature is at least 180°F (82°C) during the entire 30 minutes. Temperatures higher than 185°F (85°C) may cause unnecessary softening of pickles.

For additional information about food preservation, visit the Penn State Extension Home Food Preservation website at **extension.psu.edu/food/preservation** or contact Penn State Extension in your county.

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How To Store Root Vegetables, Without A Root Cellar

Storing your root vegetables using the sand method allows you to put delicious, quality produce on the table until spring—no root cellar needed!

by Deborah Tukua Updated: August 31, 2023
https://www.farmersalmanac.com/root-vegetables-sand-storage-35710

Did you have a successful garden this year? Many of our readers have reported growing plentiful crops of carrots, turnips, potatoes, and other root vegetables. However, using them up can be quite a challenge. So how do you store root vegetables? Some root vegetables like carrots can be stored right in the garden over the winter by simply covering them with a thick layer of mulch. However, this method may not be very convenient. On the other hand, storing root vegetables in sand indoors not only offers an efficient solution to reduce waste, but it also helps in conserving energy, saving money, and providing delicious, high-quality produce for months to come—completely eliminating the need for a root cellar!

Which Fresh Root Vegetables And Fruits Store Well In Sand?

Vegetables that store exceptionally well in sand are turnips, beets, rutabaga, carrots, parsnips, salsify, ginger, onions, and winter radishes. Firm fleshed fruits such as apples and pears also keep well in sand.

The Basics Of Storing Root Vegetables In Sand

1. **Temperature**. Root crops require cold and moisture when stored in sand. They are best stored at a temperature of 32 to 40° F. with 90 to 95 percent relative humidity. High humidity helps keep carrots and other vegetables from shriveling. Apples and pears require the same cold temperatures with a relative humidity of 80-90 percent.
2. **Container**. Use cardboard or wood boxes placed off the ground on pallets. The crisper drawer in the refrigerator also easily transforms into a mini root cellar. Plastic storage bins also work.
3. **Location, location**: In the book, *Root Cellaring*, authors Mike and Nancy Bubel advise, “All you need …is a 3.5' x 7' space. It will hold 28 half-bushels of produce.” The room you store your veggies in will need to be unheated, enclosed, and well insulated. If you have a basement, a corner or a closet can easily be converted into a root cellar. If you don’t have a basement, you can use an interior corner of an unheated garage or storage shed during the cooler months, as long as the temperature does not drop below freezing.
4. **Type of sand.**Once you have chosen a suitable location to store your root vegetables, you will need “play” sand to pack the harvested vegetables. Play sand is a fine-grade sand that has been washed, dried, and screened. This type of sand is commonly used in children’s sandboxes and landscaping projects. It is usually available in 50 lbs. bags at local garden and home improvement stores. Play sand is typically slightly damp, but not soggy. If it is not damp enough, you can add some sand to a

bucket, moisten it with a spray bottle of distilled water, and evenly distribute the moisture by tossing the sand with your hands before packing the root vegetables. The sand helps preserve freshness and prevents rot by keeping excess moisture away from the vegetables.

Procedure for Sand Storage

1. Remove the leafy tops of vegetables before storing them, but don't clean or wash the root vegetables prior to storage. Let them sit in the air for a couple of days prior to storage to let the skins "cure."
2. Select the best of the crop—mature, but not overripe, unbruised, and unblemished produce.
3. Pour a layer of sand, several inches deep, into your storage container. Work your fruit or vegetables into the sand, adding more sand and vegetables in layers, making sure the sand covers the vegetables being stored, and allow for space between the vegetables.

Storage Notes

- Store carrots and parsnips vertically in the sand, making sure they do not touch each other.
- Avoid storing apples and root vegetables together. Apples release ethylene gas, which can speed up the ripening process and cause your root vegetables to rot.
- If your storage room is dry, check the sand regularly and add moisture as needed to prevent it from drying out. One way to do this is by spraying the sand with distilled water when necessary.
- Check stored food every week or so, culling those veggies showing signs of deterioration.
- In general, root crops can remain fresh in sand for two to five months.
- Remember, the vegetables are stored to eat through the winter months, So, eat them before signs of spoilage appear.
- When you're ready to eat your vegetables, remove the desired quantity, dust the sand off, and clean thoroughly before preparing.

Storing Pumpkin and Winter Squash at Home

N.S. Mansour

All pumpkins and hard-shelled winter squash may be stored at the end of the growing season for use well into the new year. For best results, store sound, well-cured fruit at 50 to 55°F in a 50 to 70% relative humidity.

Length of storage life varies according to variety and type of squash or pumpkin.

Hard-shelled winter squash	*Storage life*
Table Queen (acorn type)	1 to 2 months
Butternut	2 to 3 months
Hubbard types	3 to 6 months
Banana	3 to 6 months
Buttercup (turban type)	3 to 6 months
Sweet Meat	4 to 6 months
Pumpkin	
Jack O'Lantern	2 to 3 months
Connecticut Field	2 to 3 months

Table Queen and other acorn-type squash can be stored satisfactorily for 1 to 2 months. With longer storage, the skin begins to turn yellow and the squash becomes stringy.

Harvesting

Harvest all types of squash and pumpkin before frost begins. Squash are ready for harvest when the rind is hard enough to resist fingernail scratches. Cut the stem 2 to 4 inches from the fruit. Pumpkins without stems do not store well. Hubbard-type squash stores best with the stems completely removed. Handle fruit carefully to keep them in good condition.

Slightly immature squash and pumpkin can be used if they are cured properly. Curing helps toughen the skins of immature fruit and helps heal cuts and scratches.

Curing

All squash undergo a slow curing process during proper storage. Artificial curing is not necessary for well matured squash under good storage conditions.

Nearly mature squash, except acorn types, may benefit from a short period of curing. Curing is holding squash and pumpkin at a temperature favorable for healing cuts and scratches and for forming a protective corky layer over injuries and cut surfaces of the stem.

Cure squash and pumpkin for 10 days at temperatures of 80 to 85°F and a relative humidity of 80 to 85 degrees. Use a small cabinet heated by a thermostatically controlled electric heater or a corner of the garage partitioned off with plastic for a curing chamber. A small fan will maintain good circulation and uniform distribution of heat.

Storing

Squash and pumpkin deteriorate rapidly if stored at temperatures below 50°F. The best storage temperature is between 50 and 55°F.

Fruit that has been exposed to freezing before harvest also will deteriorate rapidly. A relative humidity of 75%, about normal for garages or other suitable storage areas in western Oregon, is satisfactory. Keep the temperature at 50 to 55°F.

Keep the surface of the fruit dry to prevent or retard growth of decay fungi and bacteria. Air circulation helps to prevent moisture from forming on the surfaces of the fruit.

Provide shelves for storage of pumpkin and squash. Do not store fruit on cold concrete floors. Promptly discard any fruit that shows signs of decay. Some of the more durable squash may be stacked on top of each other if adequate room is provided for air circulation.

Do not store pumpkin or squash near apples, pears, or other ripening fruit. Ripening fruit releases ethylene gas, which causes yellowing of the squash and shortens storage life.

Research (with muskmelons) suggests that pumpkins and winter squash may benefit from being dipped in 135 to 140°F water for 3 minutes, and dried quickly before storage. Warm, wet fruit are subject to invasion by microorganisms, therefore drying and cooling to the storage temperature should be done immediately following this treatment. This hot water treatment surface sterilizes the fruit. No benefit has been found from chlorination of the hot water, but gently wiping the surface clean with 1 part household bleach in 10 parts of water may be helpful.

N.S. Mansour, Extension vegetable crops specialist, Oregon State University.

EC 1632
Revised September 2009

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Asparagus: Preserve It

University of California Cooperative Extension Master Food Preserver

Pickled Asparagus

Yield: three wide-mouth pint jars
5 pounds asparagus
3 large garlic cloves
2-1/4 cups water
2-1/4 cups white vinegar (5%)
3 small hot peppers (optional)
1/4 cup canning salt
1-1/2 teaspoons dill seed

Yield: three 12-ounce jars
3-1/2 pounds asparagus
3 large garlic cloves
1-1/2 cups water
1-1/2 cups white vinegar (5%)
3 small hot peppers (optional)
1/6 cup canning salt
1 teaspoons dill seed

1. Wash asparagus gently under running water. Cut stems from the bottom to leave spears with tips that fit into the canning jar with a little less than 1/2-inch headspace.
2. Peel and wash garlic cloves. Place a garlic clove at the bottom of each jar, and tightly pack asparagus into jars with the blunt ends down.
3. In a 6-8 quart pot, combine water, vinegar, hot peppers (optional), salt and dill seed. Bring to a boil. If using, place one hot pepper in each jar over asparagus spears.
4. Pour boiling hot pickling brine over spears, leaving 1/2-inch head- space. Remove air bubbles and adjust headspace if necessary by adding hot liquid. Wipe rims with a dampened clean paper towel; adjust two-piece metal canning lids.
5. Process jars in a boiling water or atmospheric steam canner for 10 minutes at 0-1,000 feet elevation, 15 minutes at 1,001-6,000 feet, and 20 minutes above 6,000 feet.
6. Allow pickled asparagus to sit in processed jars for 3 to 5 days before consumption for best flavor development.

Source: So Easy to Preserve, 2014

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Pickled Beets

Yield: about 4 pints

3-1/2 pounds of 2- to 2-1/2-inch diameter beets
1 cup sugar
2 cups vinegar (5%)
6 whole cloves
2 to 3 onions (2- to 2-1/2-inch diameter) if desired
1 cup water
1 cinnamon stick
3/4 teaspoons canning salt

1. Trim off beet tops, leaving 1 inch of stem and roots to prevent bleeding of color. Wash thoroughly. Sort for size. Cover similar sizes together with boiling water and cook until tender (about 25 to 30 minutes).
2. **Caution: Drain and discard liquid.** Cool beets.
3. Trim off roots and stems and slip off skins. Slice into 1/4-inch slices.
4. Peel and thinly slice onions.
5. Combine vinegar, salt, sugar, and fresh water. Put spices in cheesecloth bag and add to vinegar mixture.
6. Bring to a boil. Add beets and onions. Simmer 5 minutes.
7. Remove spice bag.
8. Fill jars with beets and onions, leaving 1/2-inch headspace. Add hot vinegar solution, allowing 1/2-inch headspace. Remove air bubbles adjusting headspace if necessary by adding hot liquid. Wipe rims with a dampened clean paper towel; adjust two-piece metal canning lids.
9. Process jars in a boiling water or atmospheric steam canner for 30 minutes at 0-1,000 feet elevation, 35 minutes at 1,001-3,000 feet, 40 minutes at 3,001-6,000 feet, and 45 minutes above 6,000 feet.

Source: "Complete Guide to Home Canning," Agriculture Information Bulletin No. 539, USDA, 2015

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Pickled Baby Carrots

Yield: about 4 pints

8-1/2 cups peeled baby carrots
5-1/2 cups white vinegar (5%)
1 cup water
2 cups sugar
2 teaspoons canning salt
8 teaspoons mustard seed
4 teaspoons celery seed

1. Wash and rinse canning jars; keep hot until ready to use. Prepare lids and bands according to manufacturer's directions.
2. Wash carrots well.
3. Combine vinegar, water, sugar and canning salt in an 8-quart Dutch oven or stockpot. Bring to a boil and boil gently 3 minutes. Add carrots and bring back to a boil. Then reduce heat to a simmer and heat until the carrots are half-cooked (about 10 minutes).
4. Meanwhile, place 2 teaspoons mustard seed and 1 teaspoon celery seed in the bottom of each clean, hot pint jar.
5. Fill hot jars with the hot carrots, leaving 1 inch headspace. Cover with hot pickling liquid, leaving 1/2 inch headspace. Remove air bubbles and adjust headspace, if necessary, by adding hot liquid. Wipe rims with a dampened clean paper towel; adjust two-piece metal canning lids.
6. Process in a boiling water or steam canner for 15 minutes at 0-1,000 feet elevation, 20 minutes at 1,001-6,000 feet, 25 above 6,000 feet.

Source: National Center for Home Food Preservation, 2015

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Carrot Pineapple Orange Marmalade

Yield: about 4 half-pints

2 medium lemons
3 medium oranges
1 cup finely chopped fresh pineapple
1 cup shredded carrots
3 cups sugar
1/2 teaspoon allspice
1/4 teaspoon nutmeg
1 3-ounce pouch liquid pectin

1. Wash lemons and oranges under cool running water; drain. Peel lemons. Cut off white pith from peel. Slice yellow peel into thin strips. Cut lemons in half crosswise and remove seeds. Extract juice from lemons; measure 1/3 cup of lemon juice. Cut oranges in half crosswise and remove seeds. Remove orange pulp from each half; measure 2 cups orange pulp.
2. Combine lemon peel, lemon juice, orange pulp, pineapple and car- rots into a large saucepan. Add sugar, allspice, and nutmeg, stirring until sugar dissolves. Bring mixture to a boil over high heat, stirring constantly. Add pectin. Return mixture to a rolling boil that cannot be stirred down. Boil hard 1 minute, stirring constantly. Remove from heat. Skim off foam if necessary.
3. Ladle hot conserve into hot jars, leaving 1/4-inch headspace. Re- move air bubbles and adjust headspace, if necessary, by adding hot conserve. Wipe rims of jars with a dampened clean paper towel; adjust two-piece metal canning lids.
4. Process in a boiling water or atmospheric steam canner for 10 minutes at 0-1,000 feet elevation, 15 minutes at 1,001-3,000 feet, 20 minutes at 3,001-6,000 feet, 25 minutes at 6,001-8,000 feet, and 30 minutes at 8,001-10,000 feet.

Source: Ball Blue Book, 2014

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Pickled Cauliflower

Full recipe *(Yield: 9 half-pints)*
12 cups 1-2" cauliflower flowerets
4 cups white vinegar (5%)
2 cups sugar
2 cups thinly sliced onions
1 cup diced sweet red peppers
2 tablespoons mustard seed
1 tablespoon celery seed
1 teaspoon turmeric
1 teaspoon hot red pepper flakes

Half Recipe *(Yield: 5 half-pints)*
6 cups 1-2" cauliflower flowerets
2 cups white vinegar (5%)
1 cup sugar
1 cup thinly sliced onions
1/2 cup diced sweet red peppers
1 tablespoon mustard seed
1/2 tablespoon celery seed
1/2 teaspoon turmeric
1/2 teaspoon hot red pepper flakes

1. Wash cauliflower flowerets and boil in salt water (4 tsp canning salt per gallon of water) for 3 minutes.
2. Drain and cool.
3. Combine vinegar, sugar, onion, diced red pepper, and spices in large saucepan. Bring to a boil and simmer 5 minutes.
4. Distribute onion and diced pepper among jars.
5. Fill hot jars with cauliflower pieces and pickling solution, leaving 1/2-inch headspace. Wipe rims with a dampened clean paper towel; adjust two-piece metal canning lids.
6. Process jars in a boiling water or atmospheric steam canner for 10 minutes at 0-1,000 feet elevation, 15 minutes at 1,001-6,000 feet, and 20 minutes above 6,000 feet.

Source: adapted from the "Complete Guide to Home Canning," Agriculture Information Bulletin No. 539, USDA, revised 2015.

Creamy Cauliflower Soup

YIELD 4 to 6 servings ❄ PREP TIME 5 minutes ❄ COOK TIME 50 minutes

Cauliflower produces a beautiful ivory-colored soup with a subtle Brassica *flavor. It's delicious with garlic, thyme, and Parmesan cheese. You could also use Romanesco sauce in this recipe for a beautiful lime-colored soup. Either soup is lovely garnished with a handful of oven-roasted vegetables and a drizzle of olive oil.*

2 cups dried diced Cauliflower (page 77)
¼ cup dried diced Celery (page 78)
¼ cup dried diced Onions (page 92)
2 dried cloves of Garlic (page 82)
1 sprig fresh thyme
2 quarts low-sodium chicken broth or vegetable broth
1 teaspoon white wine vinegar
¼ cup heavy (whipping) cream
Sea salt
¼ teaspoon freshly ground white pepper
¼ cup shredded Parmesan cheese

1. In a large pot over medium-low heat, stir together the cauliflower, celery, onions, garlic, thyme, and chicken broth. Bring to a simmer. Cover and cook for 45 minutes, until the vegetables are softened.
2. Remove the thyme sprig and stir in the white wine vinegar.
3. With an immersion blender, purée the soup in the pot until smooth.
4. Stir in the cream, season with sea salt, and stir in the white pepper. Cook for 5 minutes.
5. Remove the soup from the heat and cool briefly before adding the Parmesan cheese. Stir until melted.

***SUBSTITUTION TIP**: You can also use 1 teaspoon of dried thyme instead of the fresh thyme, but it will produce flecks in the creamy white soup.*

PER SERVING CALORIES: 98; FAT: 4G; CARBS: 7G; SUGAR: 2G; FIBER: 2G; PROTEIN: 8G; SODIUM: 288MG

Dehydrator Cookbook- Pamela Ellgen

Leek and Wild Rice Soup with Herbs

The sherry adds a touch of class to this soup, perfect for serving to company.

Serves 4

Tip

Using dried cooked wild rice decreases the cooking time for this soup considerably. If you don't have it, boil 2 tbsp (30 mL) wild rice in a saucepan of water for 15 minutes, drain and then add with the vegetables in step 1 and simmer for a total of 40 minutes.

Variations

When in season, add 1 cup (250 mL) blanched chopped asparagus or fiddleheads with the cream.

Add ¼ cup (60 mL) coarsely crumbled dried kale with the vegetables in step 1.

¼ cup	dried leek slices	60 mL
¼ cup	dried onion pieces	60 mL
¼ cup	dried celery slices	60 mL
1 tsp	minced dried garlic	5 mL
1 tsp	crumbled dried parsley	5 mL
½ tsp	crumbled dried thyme	2 mL
½ tsp	crumbled dried basil	2 mL
6 cups	water or vegetable stock	1.5 L
¼ cup	dry sherry or white wine	60 mL
¼ cup	dried cooked wild rice	60 mL
1 cup	whipping (35%) cream	250 mL
1 tsp	salt (or to taste)	5 mL
¼ tsp	freshly ground black pepper	1 mL

1. In a large pot, combine leeks, onions, celery, garlic, parsley, thyme, basil, water and sherry; bring to a boil over high heat. Reduce heat and simmer, stirring occasionally, for 20 minutes.
2. Stir in rice and simmer for about 20 minutes or until vegetables and rice are tender and flavor is well blended. Stir in cream, salt and pepper. Reheat until steaming, stirring often.

Quinoa with Peas & Lemon

Green peas add a pop of color to this bright whole-grain side dish. Plus, choosing frozen saves you time—no shelling required! Want to save even more time? Use a pouch of precooked quinoa.

By **Karen Ansel, M.S., RDN** | Published on March 5, 2021

Active Time: 10 mins
Total Time: 10 mins

Nutrition Profile:
Egg Free Gluten-Free High Fiber Low-Calorie Nut-Free Soy-Free Vegetarian

Ingredients

- 1 tablespoon extra-virgin olive oil
- 1 shallot, chopped
- 1 (10 ounce) package frozen peas
- 2 cups cooked quinoa
- Zest of 1 lemon
- ¼ cup crumbled goat cheese
- ¾ teaspoon salt
- ½ teaspoon ground pepper

Directions

Step 1
Heat oil in a large skillet over medium-high heat. Add shallot and cook, stirring, until softened, about 2 minutes. Stir in peas and quinoa; cook, stirring often, until heated through, about 5 minutes. Stir in lemon zest, goat cheese, salt and pepper.

Nutrition Facts

Per serving: **Serving Size 1/2 cup** 148 calories; total carbohydrate 21g; dietary fiber 4g; total sugars 3g; protein 6g; total fat 5g; saturated fat 1g; cholesterol 6mg; vitamin a 1018iu; sodium 369mg

Pesto Recipe - Pesto of Possibilities

https://therapeutic-hort.ces.ncsu.edu/pesto-possibilities/

4 cups fresh basil leaves (from about 3 large bunches), depending on season basil can be substituted with arugula, cilantro, mustards, parsley, kale, chard
1/2 cup olive oil
1/3 cup nuts or seeds (any kind!)
2 garlic cloves
1/4 cup freshly grated hard cheese such as Parmesan, Pecorino, Sardo (any cheese will do, even cheddar)
1 teaspoon of lemon juice
1 teaspoon coarse kosher salt
Directions
Combine first 4 ingredients in blender. Blend until paste forms, stopping often to push down basil.
Add both cheeses and salt, blend until smooth.
Transfer to small bowl. (Can be made 1 day ahead. Top with 1/2-inch olive oil and chill.) Pos sible additions: chives, chilies, parsley

Potatoes "Anna" and Onion Gratin

The traditional dish Pommes Anna was named for a French courtesan. We're not sure Anna did much camping, but if she did, she surely would have been very impressed with this just-add-water version.

Serves 1

Tip

We generally try to avoid using stock or bouillon powder because of the high salt content and added fillers, but this dish really does benefit from the extra flavor stock powder provides. Look for one that is lower in sodium and has the most natural ingredients possible.

Prep at Home

1/2 cup	dried potato slices	125 mL
2 tbsp	dried onion slices	30 mL
1/2 tsp	vegetable or chicken stock powder (see tip, at left)	2 mL
1/4 tsp	salt	1 mL
Pinch	freshly ground black pepper	Pinch
2 tbsp	coarse dried bread crumbs	30 mL
1 tbsp	grated Parmesan cheese	15 mL

To Serve

1/2 cup	water	125 mL

Prep at Home

1. In a sealable plastic bag, combine potatoes, onions, stock powder, salt and pepper. In another bag, combine bread crumbs and Parmesan. Seal both bags and store at room temperature for up to 2 weeks.

To Serve

1. In a saucepan, combine potato mixture and water. Cover and let stand for 30 minutes.
2. Uncover and bring to a boil over medium heat, stirring often. Reduce heat and simmer, gently stirring occasionally, for about 10 minutes or until potatoes are tender and liquid is almost absorbed. Remove from heat, sprinkle with bread crumb mixture and let stand for 5 minutes.