

# Freezing, Canning and Drying



*Preserving Your Harvest*

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# Freezing Fruits and Vegetables

Freezing is a quick and convenient way to preserve fruits and vegetables at home. It is the method of food preservation that preserves the greatest quantity of nutrients. To maintain top nutritional quality in frozen fruits and vegetables, it is essential to:

- Select fresh, firm-ripe produce
- Blanch vegetables as directed
- Store the frozen product at 0 °F
- Use within suggested storage times



# Blanching

## ► Boiling Water Blanching:



- Use 1 gallon water for each pound of vegetables except for leafy greens, which need 2 gallons per pound.
- Bring water to rolling boil.
- Immerse wire basket, blanching basket or mesh bag containing vegetables.
- Cover pot and boil at top heat the required length of time. You may use the same blanching water two or three times. Keep it at the required level. Change the water if it becomes cloudy.
- Cool vegetables immediately in pans of ice water for the same time used for blanching. Keep water ice cold for chilling.
- Drain the vegetables thoroughly. Extra water will form too many ice crystals.
- Pack, using dry or tray pack methods. Freeze.

# Frozen Spinach or Veggie Cubes

Chop or pulverize your blanched Veggie in your blender

Add dissolved Ascorbic acid/Vitamin C with a little water (follow instruction on bottle for ratio)

Pour into muffin trays

Remove after frozen- Pop out of muffin forms (may need to set in shallow tray of lukewarm water to loosen)

Put veggie cubes in zip freezer bag to use as a quick addition to a recipe or smoothie



**KD's Recipe for smoothie cubes:**  
Use store bought frozen organic spinach in big bag

**Break into smaller pieces and PRESS into muffin or Ice trays**

**Cover with apple juice  
THEN Freeze (no need to add ascorbic acid it is already in the store bought products, check label)**



## Boiling Water Blanching Times:

- **1½ minutes:** Cabbage (shredded)
- **2 minutes:** Asparagus (small stalks), blackeye peas, carrots (diced or sliced), greens (except collards)
- **3 minutes:** Beans (snap, green or wax), broccoli and cauliflower flowerets (1½ inches across), celery, collards, sweet peppers (halves), rutabagas and turnips (cubed), summer squash (½-inch slices)
- **4 minutes:** Whole kernel or cream corn (blanch on cob, cool and cut off cob), eggplant (1/3-inch slices)
- **5 minutes:** Carrots (whole, small)

The following times depend on size:

- **1½-2½ minutes:** Green peas
- **2-4 minutes:** Asparagus, beans: lima, butter, pinto
- **3-4 minutes:** Okra
- **3-5 minutes:** Brussels sprouts, Irish potatoes (new)
- **3-7 minutes:** Onions (until center is heated)
- **7-11 minutes:** Corn-on-the-cob



# Fruit

## Methods of Packing Fruits

There are three ways to pack fruits for freezing:

- ▶ Sugar pack
- ▶ Syrup pack
- ▶ unsweetened pack



Although some fruits may be packed without sweeteners, the flavor of many fruits is retained better with the use of sugar. Gooseberries, currants, cranberries, blueberries and rhubarb give as good quality packs with or without sugar.

# Steps in Freezing Fruits

1. Select best-quality fruits; wash and sort fruits carefully, discarding parts that are of poor quality. Do not soak.
2. Prepare fruits as you will use them. Do not use iron or copper equipment that can react with the acid in fruit.
3. Use ascorbic acid as an anti-browning treatment.
4. Use dry sugar or sugar syrup as recommended. If you are preparing a sugarless pack of fruits that brown, be sure to treat with ascorbic acid or other anti-browning agents.
5. Pack into good-quality plastic bags, freezer containers or freezer jars. Allow ½-inch headspace for expansion. Keep fruits that tend to darken, such as peaches, under the syrup by placing crumpled wax paper between lid and fruit.





# Types of Fruit Freezing Methods

**Unsweetened Pack:** Simply spread a single layer of prepared fruit on shallow trays and freeze. To prevent freezer burn, package the fruit as soon as it is frozen and return to the freezer. Sugar substitutes may be used in any of the unsweetened packs. Both saccharin and aspartame work well in frozen products, or they can be added to the fruit just before serving.

**Sugar Pack:** To freeze fruits using a sugar pack, sprinkle the required amount of sugar over the fruit. Gently stir until the pieces are coated with sugar and juice.

**Syrup Pack:** To make sugar syrup, dissolve the needed amount of sugar in water, mixing until the solution is clear. Chill syrup before using. Use just enough cold syrup to cover the fruit.





## Preventing Discoloration in Fruits

Some fruits, such as peaches, apples, pears and apricots, darken quickly when exposed to air and during freezing. They may also lose flavor when thawed. There are several ways to prevent darkening of fruit and flavor loss:

**Ascorbic Acid (Vitamin C):** Ascorbic acid or vitamin C is effective in preventing discoloration in most fruits. Not only does it preserve natural color and flavor of fruits, but it adds nutritive value as well. Ascorbic acid in powdered form is available at some drugstores or where freezing supplies are sold. Ascorbic acid tablets may be more readily available and less expensive, but are more difficult to dissolve. They do need to be finely crushed before use. Fillers in the tablets may make the syrup cloudy, but they are not harmful. One-half teaspoon powdered ascorbic acid equals 1500 mg. Ascorbic acid may be added by the following methods when freezing fruits.

- ***Syrup or Liquid Packs:*** Add powdered or crushed ascorbic acid to cold syrup shortly before using. Stir it gently so you do not stir in air. Keep syrup refrigerated until use.
- ***Sugar or Dry Packs:*** Dissolve the ascorbic acid in two to three tablespoons of cold water and sprinkle dissolved ascorbic acid over fruit just before adding sugar.
- ***Crushed Fruits, Fruit Pulses & Fruit Juices:*** Add ascorbic acid to prepared fruit and stir well. (See ice cube pic - these can be used in juice smoothies or baby food)



# Canning

Canning is an important, safe method of food preservation if practiced properly. The canning process involves placing foods in jars and heating them to a temperature that destroys microorganisms that could be a health hazard or cause the food to spoil. Canning also inactivates enzymes that could cause the food to spoil. Air is driven from the jar during heating, and as it cools, a vacuum seal is formed. The vacuum seal prevents air from getting back into the product bringing with it microorganisms to recontamination of the food.

There are two safe ways of canning, depending on the type of food being canned. These are the boiling water bath method and the pressure canner method.

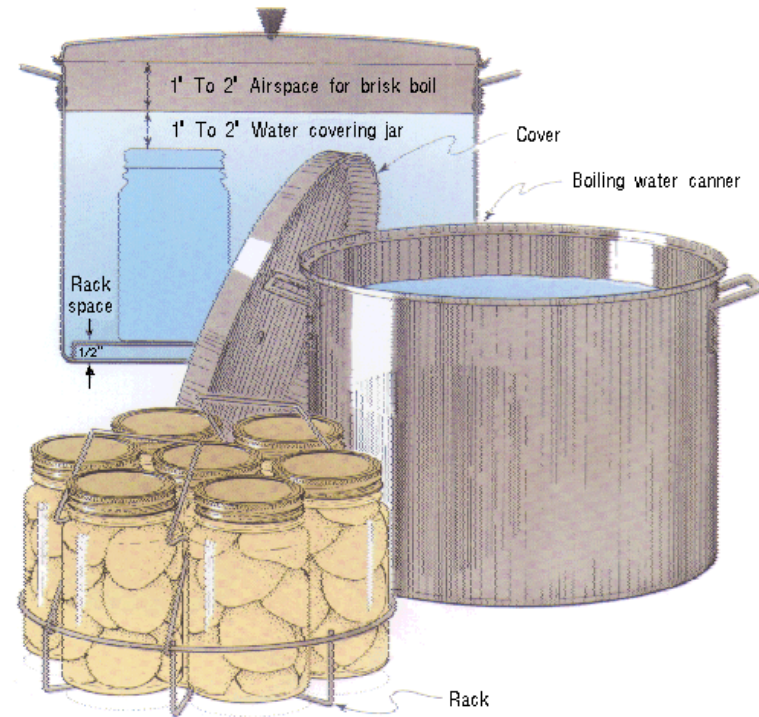
- ▶ **Boiling Water Method**
- ▶ **Pressure Canning**



# Boiling Water Method

- ▶ The boiling water bath method is safe for fruits, tomatoes and pickles as well as jams, jellies and other preserves. In this method, jars of food are heated by being completely covered with boiling water (212 °F at sea level).
- ▶ High-acid foods (pH of 4.6 or less) contain enough acid that the *Clostridium botulinum* spores can't grow and produce their deadly toxin. High-acid foods include fruits and properly pickled vegetables. These foods can be safely canned at boiling temperatures in a boiling water bath.
- ▶ \*\*\*Tomatoes and figs have pH values close to 4.6. To can these in a boiling water bath, add acid in the form of lemon juice or citric acid \*\*\*

**\*\* See handout for steps for Boiling water Method\*\***

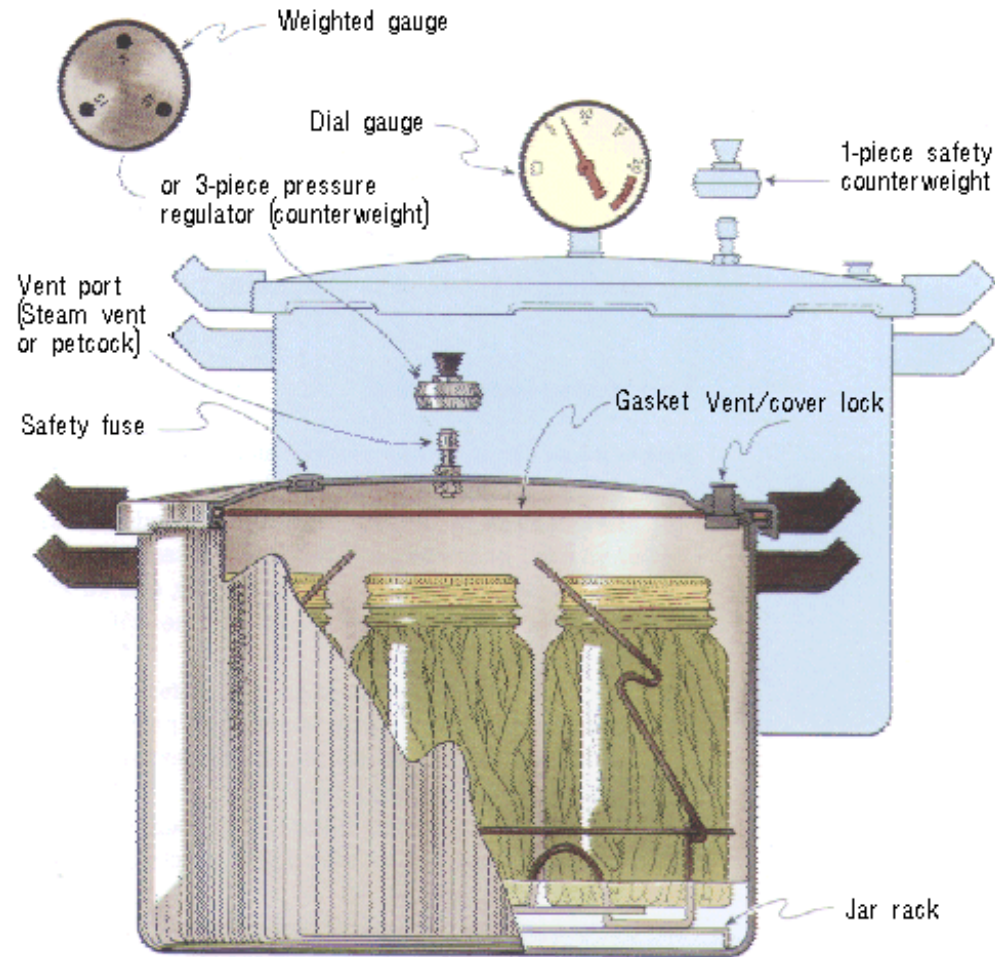




# Pressure Canning Methods

Pressure canning is the only safe method of canning low-acid foods (those with a pH of more than 4.6). These include all vegetables, meats, poultry and seafood. Because of the danger of botulism, these foods must be canned in a pressure canner. Jars of food are placed in 2 to 3 inches of water in a pressure canner and then heated to a temperature of at least 240 °F. This temperature can only be reached in a pressure canner.

**\*\* See handout for steps for Boiling water Method\*\***





# Drying

Food drying is one of the oldest methods of preserving food for later use. It can either be an alternative to canning and freezing or compliment these methods. Drying food is simple, safe and easy to learn. With modern food dehydrators fruit leathers, banana chips, pumpkin seeds and beef jerky can all be dried year-round at home. Dried foods are ideal for backpacking and camping. They are lightweight, take up little space and do not require refrigeration.

Drying removes the moisture from the food so that bacteria, yeasts and molds cannot grow and spoil the food. It also slows down the action of enzymes but does not inactivate them. When the food is ready for use, the water is added back and the food returns to its original shape. Foods can be dried in the sun, in an oven or in a food dehydrator by using the right combination of warm temperatures, low humidity and air current.

**\*\*\* The optimum temperature for drying food is 140 °F. If higher temperatures are used, the food will cook instead of drying. When the food cooks on the outside and the moisture cannot escape, “case hardening” can occur and the food will eventually mold. Thus, the drying process should never be hurried by raising the drying temperature\*\*\***

*Most foods can be dried indoors using modern food dehydrators, counter-top convection ovens or conventional ovens. Microwave ovens are recommended only for drying herbs, because there is no way to create enough air flow to dry denser foods.*



# Food Dehydrators

A food dehydrator is a small electrical appliance for drying foods indoors. A food dehydrator has an electric element for heat and a fan and vents for air circulation. Dehydrators are efficiently designed to dry foods quickly at 140 °F. Food dehydrators are available from department stores, mail-order catalogs, natural food stores, and seed or garden supply catalogs. Costs vary from \$50 to \$350 or above depending on features. Some models are expandable and additional trays can be purchased later. Twelve square feet of drying space dries about a half-bushel of produce. The major disadvantage of a dehydrator is its limited capacity.

## Dehydrator Features to Look For:

- ▶ Double wall construction of metal or high-grade plastic. Wood is not recommended, because it is a fire hazard and is difficult to clean.
- ▶ Enclosed heating elements.
- ▶ Counter-top design.
- ▶ An enclosed thermostat from 85 to 160 °F and a dial for regulating temperature.
- ▶ A fan or blower.
- ▶ Four to 10 open mesh trays made of sturdy lightweight plastic for easy washing.
- ▶ A timer to turn the dehydrator off and prevent scorching if the drying time is completed during the night.
- ▶ UL seal of approval, a one-year guarantee and convenient service.





# Oven Drying

Everyone who has an oven has a food dehydrator. By combining the factors of heat, low humidity and air current, an oven can be used as a dehydrator. An oven is ideal for occasional drying of meat jerkies, fruit leathers, banana chips or for preserving excess produce like celery or mushrooms. Because the oven may also be needed for everyday cooking, it may not be satisfactory for preserving abundant garden produce. Oven drying is slower than dehydrators because it does not have a built-in fan for the air movement. (However, some convection ovens do have a fan.) It takes twice as long to dry food in an oven than in a dehydrator, and it uses more energy.

- ▶ To Use Your Oven: First, check your dial and see if it has a reading as low as 140 °F. If your oven does not go this low, then your food will cook instead of dry. For air circulation, leave the oven door propped open 2 to 6 inches. Circulation can be improved by placing a fan outside the oven near the door. (or use your convection feature on your oven) CAUTION: This is not a safe practice for a home with small children. Because the door is left open, the temperature will vary. An oven thermometer placed near the food gives an accurate reading. Adjust the temperature dial to achieve the needed 140 °F.
- ▶ Trays should be narrow enough to clear the sides of the oven and should be 3 to 4 inches shorter than the oven from front to back. Cake cooling racks placed on top of cookie sheets work well for some foods. The oven racks, holding the trays, should be 2 to 3 inches apart for air circulation.

\*\*\*See Remedies For Drying Problems Hand Out \*\*\*



# Resources

- ▶ <https://hgic.clemson.edu/factsheet/freezing-fruits-vegetables/>
- ▶ <https://hgic.clemson.edu/factsheet/canning-foods-at-home/>
- ▶ <https://hgic.clemson.edu/factsheet/drying-foods/>



## Dried Onion Rings

Peel the onion and cut it into rings.  
Scald it in warm water for 30 seconds.  
Drain and place in the hot oven to dry, for 3-4 hours.

[www.survivopedia.com](http://www.survivopedia.com)