Questions and Answers on Food Preservation
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Consumers frequently have questions regarding home food preservation practices. Below are some questions commonly asked, and the answers. They concern canning fruits, vegetables, pickles, and jellies, and freezing fruits and vegetables.

Why is open-kettle canning not recommended?
In open-kettle canning, food is cooked in an ordinary kettle, then packed into hot jars and sealed. The food is not processed after packing in the jars.

Open-kettle canning is unsafe because temperatures reached are not high enough to destroy all the spoilage organisms that may be in low-acid foods, such as meat and vegetables, other than tomatoes.

Spoilage bacteria may also enter the food when it is transferred from kettle to jar, making it undesirable as well to can other foods such as fruits, pickles, preserves, and jams by this method.

Why is oven canning unsafe?
Jars may explode, causing personal injury or damage to the oven. Also, temperatures obtained in the oven are not high enough to insure adequate destruction of spoilage organisms in low-acid foods.

Times specified for boiling-water-bath processing of foods do not apply to oven processing since the rate of heat penetration would be different in the oven and the products could easily be underprocessed.

Should jars and lids be sterilized before canning?

No, not when the boiling-water-bath or pressure-canner method is used, because the containers and lids are sterilized during processing. But be sure jars and lids are clean.

Why is no liquid added when tomatoes are canned?
Because tomatoes provide their own juice if pressed gently when packed raw, or when heated before packing hot into jars.

Is it safe to add celery, green pepper, and onion to tomatoes when canning them?
No. Adding other vegetables lowers the acidity of tomatoes. Acidity helps protect against the growth of botulinum bacteria, which can produce a fatal toxin in canned foods. Specific recipes, times, and temperatures determined scientifically for vegetable mixtures need to be used for their safe canning.

Why is headspace important in canning?
Headspace—the distance between the surface of food and the underside of the lid—allows for expansion of solids or bubbling up of liquid during processing. If headspace is not adequate, some food in the container will be forced out, leaving food particles or sirup on the sealing surface and preventing a seal.

When too much headspace is allowed, some air may remain in the jar after processing, causing food at the top of the jar to darken.

What causes jars to break in a canner?
Breakage can occur for several reasons: (1) Using commercial food jars rather than jars manufactured for home canning, (2) Using jars that have hairline cracks, (3) Putting jars directly on bottom of canner instead
of on a rack, (4) Putting hot food in cold jars, or (5) Putting jars of raw or unheated food directly into boiling water in the canner, rather than into hot water (sudden change in temperature—too wide a margin between temperature of filled jars and water in canner before processing).

What causes liquid to be lost from jars during processing?

Loss of liquid may be due to packing jars too full. Headspace must be allowed between the top of the food and lid as specified in the instructions for each food. Food expands when processed, so headspace must be adequate or liquid will be forced out of the jar.

Liquid may be lost if the canner's pressure fluctuates during processing. Lowering the pressure too suddenly after processing may also cause liquid to be lost. Pressure canner should be removed from the heat and allowed to cool normally at room temperature.

If liquid is lost from jars during processing, can more be added to fill them again?

No, because if the jar is opened and liquid added, this would allow bacteria to enter the jar and you would need to process again.

Loss of liquid does not cause food to spoil, though food not covered by the liquid may darken.

Why does fruit sometimes float in the jar after canning?

Fruit may float because it is packed too loosely, sirup is too heavy, or because some air remains in tissues of the fruit after heating and processing.

How do you test the seal on home-canned foods?

After jars have cooled, check two-piece lids by pressing the center of the flat metal lid; if lid is down and will not move, jar is sealed.

For porcelain-lined caps, check seal by turning each jar partly over in your hands. If no leakage occurs, the jar is sealed.

What causes lids not to seal?

If food has not been sufficiently heated, a vacuum may not be drawn on the jar of food and the lid will fail to seal. Presence of food particles or sirup on the jar rim could also prevent obtaining an airtight seal. Each jar rim should be wiped clean of all food and sirup before putting the sealing lid in place.

If food has been packed too tightly in the jars or if sufficient headspace has not been allowed, expansion of the food during heating could force sirup or food out of the jar, thus causing poor contact between the lid and jar.

Why should flat metal disks and rubber rings be used only once?

Depressions in the rubber compound made when the lid or ring was first used can prevent obtaining an airtight seal if used a second time.

Why should metal bands be removed after jars have cooled?

If bands are not removed soon after cooling, moisture between the ring and jar may cause the ring to rust, thus making later removal of the bands difficult. The band is no longer necessary after the jar has cooled because the seal has been provided by the flat metal lid with sealing compound and the vacuum created during cooling.

What causes canned foods to change color?

Darkening of food at the top of the jar may be caused by oxidation due to air in the jar, or by too little heating or processing so that enzymes are not destroyed. Overprocessing may cause discoloration of foods throughout the jar.

Pink and blue colors sometimes seen in canned pears, apples, and peaches are caused by chemical changes in the fruit coloring matter.
Iron and copper from cooking utensils or from water in some areas may cause brown, black, and gray colors in some foods.

Why do undersides of metal lids sometimes discolor?

Natural compounds in some foods, particularly acids, corrode metal and make a dark deposit on the underside of jar lids. This deposit on lids of sealed, properly processed canned foods is harmless.

Is it safe to use canned foods which have been frozen as the result of storing them in an unheated storage area?

Freezing does not cause the food to spoil unless the seal is damaged or the jar broken. If the jar is no longer sealed, the food may still be safe to eat if the jar is not broken and the food is still frozen and has not been subjected to thawing and refreezing.

Examine jars for breaks and hairline cracks. If any are found, discard food from those jars. If no cracks are found, food may be transferred from jars into freezer bags or containers and stored in the freezer, or it may be kept in the refrigerator for use within a day or two.

Home-canned foods which have been frozen may be less palatable due to texture changes than properly stored canned foods. Do not recan home-canned foods which have been frozen.

How do you protect canned foods against freezing?

Wrap the jars in paper or cover them with blankets. However, if the storage area temperature is expected to be below freezing (32° F) for more than a day or two, move the food to a warmer storage area.

What does mold on canned food indicate?

It means the jar has not sealed and the food is spoiled. Even if mold appears to be only on the surface, discard all food in the container because parts of the mold may not be visible in the food.

Is it safe to can foods without salt?

Yes. Salt is used for flavor only in canned vegetables and is not necessary for safe processing. Since the characteristic flavor and texture of pickled vegetables depend on salt, do not omit this ingredient from recipes for pickles and relishes.

What kind of salt should be used in pickling? Why?

Use pure granulated salt. Uniodized table salt can be used, but materials added to the salt to prevent caking may make the brine cloudy. Do not use iodized table salt because it may darken pickles.

What type of vinegar should be used for making pickles? Can it be diluted?

Use cider or white distilled vinegar of 4% to 6% acidity (40 to 60 grain). Do not use vinegar of unknown acidity. Do not dilute vinegar unless the recipe so specifies. If a less sour product is preferred, add sugar rather than decrease vinegar.

Why should pickles be processed in a boiling-water bath?

Pickles require heat treatment to destroy organisms that cause spoilage, and to inactivate enzymes that may affect flavor, color, and texture.

Heat processing in a boiling-water bath is recommended for all pickle products. There is always danger of spoilage organisms entering the food when it is transferred from kettle to jar. This is true even when the utmost caution is observed and is the reason
open-kettle canning is not recommended.

Why should plastic containers not be used when brining pickles?
Vegetables being pickled undergo physical as well as chemical changes during brining or fermentation. As a result of these changes, the plastic may be affected, causing undesirable compounds to be formed or leached from the plastic.

For fermenting or brining pickles, use a crock or stone jar, unchipped enamel-lined pan, or large glass jar, bowl, or casserole.

What causes pickles to be hollow?
Hollowness in pickles generally results from poorly developed cucumbers, holding cucumbers too long before pickling, too rapid fermentation, too strong or too weak a brine during fermentation.

What causes jelly to be too soft?
Too much juice in the mixture, too little sugar, mixture not acid enough (overripe fruit), or making too big a batch at one time.

What makes jelly tough?
Mixture was cooked too long to reach jellying stage because too little sugar was used in proportion to the pectin and acid in the juice.

What makes crystals form in jelly?
Crystals throughout the jelly may be caused by too much sugar in the jelly mixture, or cooking the mixture too little, too slowly, or too long. Crystals on top of jelly that has been opened and allowed to stand are due to evaporation of liquid.

Tartrate crystals in grape jelly may occur if juice has not been allowed to stand overnight and then strained through a double thickness of cheesecloth before preparing jelly.

Is a one-door refrigerator-freezer combination suitable for freezing and storage of frozen fruits and vegetables?

It may be difficult to obtain the recommended temperature of 0° F or below for freezing and storing foods in this style freezer without freezing food in the refrigerator part as well. Recommended storage times are severely reduced if a freezer does not maintain 0° F or below. If freezer temperatures are above 10°, do not store frozen food for more than several weeks.

Can containers for commercial foods, such as cottage cheese, margarine, milk, yogurt, ice cream, or sour cream, be used for freezing fruits and vegetables?
Waxed cardboard cartons which previously contained dairy products are not sufficiently moisture-vapor-resistant to use for packaging foods to be frozen.

Plastic commercial-food containers are suitable if they can be tightly sealed and do not become brittle and crack at low temperatures, thus exposing the food to the air.

Can citric acid or lemon juice be used to help prevent fruit from turning dark during freezer storage?
Although these products can be used as anti-darkening agents, neither is as effective as ascorbic acid. Often the quantity of citric acid or lemon juice needed to prevent darkening is so large that natural flavors are masked or the fruit becomes too sour.

Why is it necessary to wash and blanch vegetables before they are frozen?
Washing removes dirt and some of the bacteria from vegetables. Freezing inhibits the growth of bacteria, but does not kill them. Thus it’s important that the food, as well as all surfaces it touches, be kept clean so that the number of bacteria on the food is held to a minimum. Bacteria can grow on food if the temperature rises during freezer storage, and when food is thawed.
Except for green peppers and mature onions, vegetables must be blanched to destroy enzymes which could cause undesirable changes in flavor, texture, and color during freezer storage.

Why can green peppers and mature onions be frozen without blanching?

Unlike other vegetables, green peppers and onions do not lose quality during freezer storage if their enzymes are not destroyed by blanching before freezing.

Green peppers frozen without heating are better suited for use in uncooked foods than are blanched peppers. Some of the characteristic flavor of onions is lost if this vegetable is blanched before freezing.

Why is corn which is frozen on-the-cob blanched for longer times than cut corn?

Longer blanching of corn frozen on-the-cob is necessary so that enzymes present in the cob will be destroyed. Otherwise, enzymes in the unheated cob can cause undesirable flavor changes in the corn kernels.

Corn frozen off-the-cob needs only to be blanched just enough to destroy enzymes in the kernels.

Can vegetables be blanched by steaming instead of by heating in boiling water?

The following vegetables may be heated in steam: broccoli, mushrooms, pumpkin, winter squash, and sweetpotatoes.

To steam these vegetables, put 1 to 2 inches of water in a large kettle; bring water to a boil. Add a basket containing a single layer of prepared vegetable; keep the basket at least 1 inch above the water. Cover kettle and start timing.

Steam broccoli 3 minutes; sliced mushrooms, 3 minutes; whole mushrooms (less than 1-inch diameter), 5 minutes. Steam pumpkin, winter squash, or sweetpotatoes until tender.

Is it necessary to make an adjustment in blanching times for vegetables at altitudes above sea level?

At altitudes 5,000 feet or more above sea level, heat vegetables 1 minute longer than the time given in directions for the vegetable being blanched.

What can be done to prevent food from thawing if the freezer should stop running?

Never open the freezer unnecessarily. A fully-loaded freezer will usually remain cold enough to keep food frozen for 2 days if the door is not opened; a half-loaded freezer may not stay cold enough more than a day.

If power cannot be restored or the freezer cannot be fixed before the food would start to thaw, use dry ice. If dry ice is obtained shortly after the failure has occurred and the freezer is fully loaded, 25 pounds of dry ice should keep a 10-cubic-foot freezer at temperatures below freezing for 3 to 4 days; if freezer is less than half-full, for 2 to 3 days.

Place dry ice on boards or heavy cardboard on top of the packages of food. Handle dry ice carefully—never with your bare hands. Wear gloves to prevent burns.

Another alternative is to move food to a neighbor's freezer or to a freezer locker plant where space can be rented.

Can vegetables and fruits which have thawed be refrozen?

Frozen foods that have thawed may be safely refrozen if they still contain ice crystals or if they are still cold—about 40° F—and have been held no longer than 1 or 2 days at refrigerator temperatures (32° to 40°) after thawing.

Since thawing and refreezing reduces the quality of fruits and vegetables, use refrozen foods as soon as possible to save as much of their eating quality as you can.