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Freezing Fruit

University of Georgia, FDNS-E-43-4

Freezing is one of the easiest, most convenient and least time-consuming ways to prepare foods at home. Freezing does not sterilize food; the extreme cold simply retards growth of microorganisms and slows down changes that affect quality or cause spoilage in food. Properly frozen fruits will retain much of their fresh flavor and nutritive value. Their texture, however, may be somewhat softer than that of fresh fruit.

Selecting Freezer Containers

Before preparing fruit for freezing, assemble the containers you will use. The selection of containers depends on the fruit being frozen, personal preference and the types that are readily available. Containers should be moisture-vapor resistant, durable, easy to seal and should not become brittle at low temperatures.

Containers suitable for freezing fruits include plastic freezer containers, flexible freezer bags or glass canning and freezing jars. If jars are used, be sure to use wide-mouth jars for fruits packed in liquid. Regular (narrow-mouth) jars break too easily at the neck.

Some household containers are not recommended for freezing. The cardboard cartons that milk, ice cream or cottage cheese come in are not moisture-vapor resistant enough. Regular (not canning) jars break too easily at freezer temperatures.

Preparing the Fruit

Sort, wash and drain fruits carefully, discarding parts that are green or of poor quality. Do not allow fruit to soak in wash water or it will lose nutrients and flavor. Prepare fruits as they will be used–stemmed, pitted, peeled or sliced. Prepare enough fruit for only a few containers at a time, especially those fruits that darken rapidly.

Do not use galvanized equipment in direct contact with fruit. The acid in the fruit dissolves zinc, which can be harmful in large amounts. Also, be wary of using iron utensils or chipped enamelware, as metallic off-flavors can result.

Types of Packs

There are several ways to pack fruits for freezing: syrup pack, sugar pack, dry pack or unsweetened pack. Most fruits have a better texture and flavor if packed in sugar or syrup. However, the sugar is not necessary to safely preserve the fruit. For those watching their sugar intake, it can be left out or an artificial sweetener can be substituted.

The type of pack will depend on the intended use. Fruits packed in syrup are generally best for uncooked dessert use; those packed in dry sugar or unsweetened are best for most cooking purposes, because there is less liquid in the product.

- **Syrup Pack –** The proportion of sugar to water depends upon the sweetness of the fruit to be frozen. A 40-percent syrup is recommended for most fruits. Lighter syrups are desirable for mild-flavored fruits to prevent masking of flavors. Heavier syrups may be needed for very sour fruits. A small piece of crumpled, water-resistant paper can be used to hold the fruit down in the syrup, if necessary.
- **Sugar Pack –** Sprinkle sugar over the fruit and mix gently until the juice is drawn out and the sugar dissolved. Soft sliced fruits such as peaches, strawberries, figs, deseeded grapes, plums and cherries will yield sufficient syrup for covering if the fruit is layered with sugar and allowed to stand for 15 minutes. Some small whole fruits may be coated with sugar and frozen.
- **Dry Pack –** The dry pack is good for small whole fruits such as berries that give a good quality product without sugar. Simply pack the fruit into a container, seal and freeze. A tray pack is an alternative that may make the fruit easier to remove from the container. Simply spread a single layer of prepared fruit on shallow trays and freeze. When frozen, promptly package and return to the freezer. The fruit pieces remain loose and can be poured from the container and the package re-closed. Be sure to package the fruit as soon as it is frozen, to prevent freezer burn.
- **Other Unsweetened Packs –** In addition to a dry pack, unsweetened fruit can be packaged in water, un-sweetened juice or pectin syrup. Unsweetened packs generally yield a product that does not have the plump texture and good color of those packed with sugar. The fruits freeze harder and take longer to thaw. However, some fruits such as raspberries, blueberries, steamed apples, gooseberries, currants, cranberries, rhubarb and figs give a good quality product without sugar. The pectin syrup is often used for fruits, such as strawberries or peaches that retain their texture better than if frozen in water or juice.
- **Packs for Purées and Juices –** Purées and juices can be packed as is. Sugar may be added, if desired.

Using Artificial Sweeteners

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.

Artificial sweeteners give a sweet flavor but do not furnish the beneficial effects of sugar, such as color protection and thickness of syrup.

Labels on the products give the equivalents to a standard amount of sugar. Use directions on the container to determine the amount of sweetener needed.

Preventing Discoloration

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=1500mg.

  Follow the directions below for using ascorbic acid in the various types of packs. Use the amount specified in the directions for freezing each specific fruit.

  In syrup or liquid packs – Add powdered or crushed ascorbic acid to cold syrup shortly before using. Stir it in gently so you do not stir in air. Keep syrup refrigerated until use.

  In sugar or dry packs – Dissolve the ascorbic acid in two or three tablespoons of cold water and sprinkle dissolved ascorbic acid over fruit just before adding sugar.

  In crushed fruits, fruit purées and fruit juices – Add ascorbic acid to prepared fruit and stir well.

- **Ascorbic Acid Mixtures –** Ascorbic acid mixtures are special anti-darkening preparations, usually made of ascorbic acid mixed with sugar, or with sugar and citric acid. The important active ingredient in these mixtures is ascorbic acid. Follow the manufacturer's directions for use. Do not confuse this with the ascorbic acid specified in the table, *Directions for Freezing Fruits*.
- **Citric Acid or Lemon Juice –** Citric acid or lemon juice are sometimes used in place of ascorbic acid. Neither, however, is as effective as ascorbic acid. When used in large quantities, they often mask natural fruit flavors.
- **Steaming –** Steaming works best for fruits that will be cooked before use. Steam the fruit just until hot according to the directions for each fruit.

Packaging, Labeling and Storing

Most foods require headspace between the packed food and closure. This allows for expansion of the food as it freezes.

Before closing freezer containers, make sure sealing edges are free of moisture and food particles. Seal the container and label plainly. Include name of food, date and type of pack.

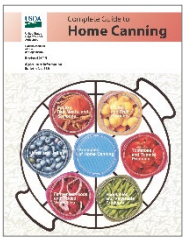
Freeze packaged fruits as quickly as possible at 0°F or below. For quickest freezing, place packages against the refrigerated surfaces of the freezer. Freeze no more food at one time than will freeze within 24 hours–usually two to three pounds of fruit per cubic foot of freezer space. After fruit is frozen, rearrange the packages and store close together.

Most fruits maintain high quality for eight to twelve months at 0°F or below; citrus fruits and citrus juices, for four to six months. Unsweetened fruits lose quality faster than those packed in sugar or syrup. Longer storage will not make the food unfit for use, but may impair its quality. It is a good idea to post a list of the frozen foods with freezing dates near the freezer and check the packages off the list as they are removed.

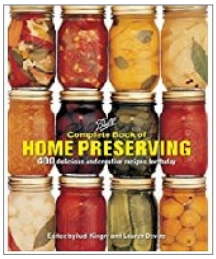
MFP Approved Sources

We use research based recipes in our public classes and outreach events from a limited source list. The general rule of thumb is that if the process has any risk involved (canning, fermentation), we are limited to USDA, University and some Ball recipes. We have the greatest flexibility with freezing and dehydrating because when properly done the temperature and moisture content is insufficient for pathogens to grow.

Canning recipes sources:

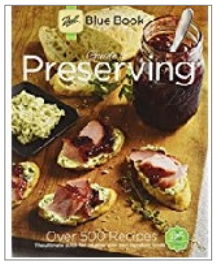


- National Center for Home Food Preservation
- USDA Complete Guide to Home Canning 2015 edition
- So Easy to Preserve, 6th edition (*University of Georgia)*
- Ball Complete Book of Home Preserving 2012, & 2009 editions (*not 2016—multiple recipes conflict with tested results and Ball is not sharing their test results. Until USDA or University researchers validate the safety and change their recommendations, we don't teach from this book. Use your MFP training to choose safe recipes for personal use.)*

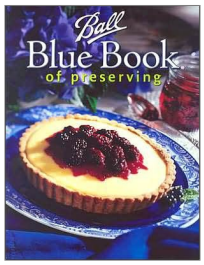


- Freshpreserving.com—(*Ball's website, but no BW recipes with fresh lemon juice for salsa or broth.)*

- Ball Blue Book *(FYI, the latest book (37th edition published in 2014) is not recommended by other Extension Advisors.)*



2014 edition



2004 edition

- USDA & University Extension Programs
- University of Alaska
- University of California
- Clemson University
- Colorado State University
- Cornell University
- University of Georgia
- University of Idaho
- Iowa State University
- Kansas State University
- University of Maryland
- Michigan State University
- University of Minnesota
- University of Missouri
- Montana State University
- North Carolina State University
- North Dakota State University
- Oregon State University
- Penn State
- Purdue University
- Utah State University
- Washington State University
- University of Wyoming
- *you get the picture*

Note: we don't teach tomatoes in oil.

Fermentation Recipe Sources

- Pickles – see canning sites
- Sauerkraut *(without additions of other vegetables)*
- Collard Kraut and Sauerkraut—Clemson recipes
- Kimchee & Kombucha – Colorado State recipes

Fresh Cheese Recipes

- University of Alaska: Fresh Mozzarella
- New Mexico University: Fresh Cheese
- Oregon State University: Queso Fresco

Dehydrating & Freezing Recipe Sources

- Recipes that follow the food safety and preservation processes recommended by our canning sources

Making Homemade Cheese

New Mexico State University, Guide E-216

Introduction

Cheesemaking techniques vary depending upon the intended final use or consumption of the cheese.

Cheese can have widely varying characteristics. Italian mozzarella-type cheese, used in pasta dishes, must have good melting quality and mild flavor. Hard cheese such as Romano and Parmesan must be dry with distinct flavor. Mexican cheese, often used in fried foods, must be stable at high temperatures. The variety among cheeses has arisen from differences in milk quality, diversity among native microflora (microorganisms naturally occurring in

a given region) and differences in handling during processing. In North America cheese is usually made from the milk of cows (Bos taurus) or goats (Capra aegagrus). In India cheese is often made of milk from water buffalo (Bubalus arnee). Yak (Bos grunniens) cheese is made in the interior of Asia.

Cow's milk consists of 88% water with 3.7% fat, 3.4% protein, 4.8% sugar (lactose), and 0.7% minerals and vitamins (USDA, 2005). The process of making cheese involves forming a curd from milk solids such as fats, protein and minerals that are separated and concentrated (Hill, 2006). The discharged liquid, whey, contains most of the lactose, water, simple proteins, minerals and vitamins (Hill, 2006). About 10 pounds (1.25 gallons) of milk are required to make one pound of cheese.

Making cheese is a dynamic process, affected by time, temperature and the bacterial culture (lactic acid bacteria) and coagulating enzyme (rennet) that are used to concentrate and separate thecasein (milk protein) and fat from the whey. Exceptions to this include cheeses such as Queso Fresco or Queso Blanco (traditionally eaten in Latin American countries) and Paneer (traditionally eaten in India), which are made without bacterial cultures or rennet. These cheeses are made by curdling hot milk by adding an acid such as vinegar or fruit juice.

This type of fresh cheese is simple to make and has higher yield because all the whey proteins normally lost are included in the cheese.

The enzyme rennet causes casein to form chains and to develop a mesh-like network or gel, trapping water and fat. This semisolid gel is the curd. When the gel is firm enough, it is cut into small pieces and, after cooking, the whey is removed.The whey may be partially drained from the curd and the curd washed with water to increase its moisture content. The temperature during cooking and handling of the curd affects the texture of the curd and the type of final product. When the curd has reached the desired moisture and acidity, salt can be added. Salting may be achieved through brine, as with Gouda; surface salt, as with Feta; or dry salt, as with Cheddar. After salting, the curd may be partially drained and again washed with water to increase the moisture content. When the curds have reached the desired moisture and acidity (pH), the whey is separated from the curd.

The cheese curd formed is a result of bacterial action on lactose converted to lactic acid. The acid acts as a preservative, removes water from the cheese curd, and develops cheese texture (Hill, 2006). Initially the enzymes from native microflora produce the flavor components, which change during aging.

Commercial cultures have been developed to produce a particular cheese type. Yogurt and buttermilk contain live bacteria that can be used as a culture to make cheese.

Once the whey is removed, the curd is allowed to stick together, forming a mat. The mat is transferred to a hoop or mold lined with cheesecloth, which contributes to the final shape. The mold can be pressed to form a dense cheese (Cheddar) or can be left to settle under its own weight to have an open texture (Feta).

Soft cheese can be made at home without specialized equipment. Because soft cheese contains over 45% water, it is highly perishable and has a refrigerated life of only five to seven days.

Food Safety concerns

There are four major pathogens associated with fresh cheese. These can cause foodborne illness. They are: *Salmonella spp.*, *Escherichia coli*, *Listeria monocytogenes*, and *Staphylococcus aureus*. These pathogenic bacteria are controlled by good sanitation of equipment and food contact surfaces, proper cooking, cooling and handling of cheese curds during processing, and proper hand washing.

Sanitation

1. Wash hands* and all equipment with soapy detergent before and after use.
2. Rinse all equipment with clean potable water, removing all soapy residue.
3. Boil all cheese-making equipment between uses.
4. Soak all cheese-making equipment in a bleach water solution for 2 minutes, before and after use. Maintain active chlorine in bleach water (see below).
5. For best-quality cheese, use new cheesecloth each time you make cheese. (Sterilize cheesecloth by first washing, then boiling or soaking 2 minutes in bleach-water.)
6. Squeaky clean is clean. If you can feel a residue on the equipment, it is not clean.

*** Wash hands** *whenever hands touch dirty or soiled surfaces, after a sneeze or cough, after bathroom use, after eating, or after handling raw milk. Hands should be dried completely with a clean disposable paper towel.*

Bleach-water

- Add one tablespoon of standard household bleach to one gallon of water.
- Make a new bleach-water solution each time you make cheese.
- Test chlorine activity of bleach-water on a regular basis using litmus test paper (available at hardware stores).
- Remake bleach-water if it becomes cloudy with food particles.
- Bleach-water recipe can be doubled if necessary.

Pasteurization of Raw Milk

The pasteurization of raw milk is a delicate procedure dependent on temperature and time. It is recommended that the raw milk be pasteurized by heating at 60–62.5°C

(140–145°F) for 30 minutes. This heat treatment will destroy pathogenic bacteria that could cause foodborne illness. After pasteurization the milk is cooled to 32–37°C (89.6–98.6°F). Then the cheese making process may begin.

- Use a cooking thermometer in the milk to measure temperature. Temperature control is very important.
- Do not heat milk over 145°F It may change the texture and flavor of the cheese. Temperatures under 140°F will not kill harmful bacteria.

Note: *Pasteurized milk available at the grocery store has been heat processed and homogenized for a ready-to-drink milk product. This affects milk protein and fat texture. Although homogenized milk can be used, resulting cheese will have a different texture than the traditional cheese.*

Table 1. Fat content of common milk products (USDA Nutrient Database, 2005)

Dairy Product	Fat g/cup (g/240 g)
Whole milk	8
2% milk	5
1% milk	2.5
Skim milk	0.5
Condensed milk	27
Buttermilk	2.2
Half 'n' half	28
Heavy cream	88
Light cream	40
Yogurt, plain, nonfat	0.4
Yogurt, plain, lowfat	3.5
Yogurt, plain, whole	7.4

Selecting Milk and Cultured Products

The quality of the cheese depends highly on the quality of the raw milk and cultures used to make the cheese. Quality is affected by freshness, or age and microbial status of the raw milk, and by the health of the dairy cow. Cultures, as already mentioned, can be obtained directly from a supplier or indirectly from yogurt or buttermilk. Regardless of the source of milk and cultures, care must be taken to handle the cultures properly to prevent microbial contamination that may affect the actions of the culturing agent.

The texture and flavor of cheese are determined initially by the culturing agents, by the fat content of the milk product used, and by the amount of moisture left in the product. The milk products used in cheese-making

contribute both fat and moisture. Therefore, when the goal is to make a low-fat cheese, it is important to consider that the flavor, texture and moisture content of a cheese made from low-fat milk will be much different than those of a cheese product with a higher fat content. Table 1 provides information on the fat content of various milk products that may be used in making cheese.

Equipment for Making Soft Cheese

- Thermometer with a temperature range of 40 to 165°F.
- Large double boiler with about a 5-quart capacity for 1 gallon of milk. (Two large cooking pots of different sizes can be substituted for a double boiler.)
- Spatula long enough to reach the bottom of the double boiler.
- Long-handled spoon.
- Long-bladed knife.
- Digital timer or easy-to-read clock.
- Measuring cups, teaspoons.
- Cheesecloth or muslin, tea towel.
- Quart strainer to support draining cloth.
- Forms or molds for shaping the cheese.
- A homemade press can be made from pan-shaped colander and a salad plate or a "follower." (Figure 1) A 1-pound coffee can (smooth sided) can also be used. Punch holes in the bottom of the can from the inside out so a cloth liner will not catch on the metal edges. Make a follower out of the can lid in the same way.
- A press or device to put pressure on the cheese. Cans or glass jars that fit snugly in the coffee can may be used for this purpose.
- Brining container made of glass or heavy plastic.
- Plastic bucket (2-gallon capacity) for whey discharge.

Meat Curing/Fermentation

Message from the Statewide MFP office on July 27, 2018 to MFP Program Coordinators to be shared with all volunteers

Due to safety concerns, we are not teaching meats processes that involve fermenting or curing. All approved resources will include a cooking step (immediately after preparation) and will be stored in a refrigerator or freezer.

Below are a list of examples of resources or processes **excluded** from our approved list:

- Any recipe holding meat in the Danger Zone for fermenting, curing, or storing
- *Virginia Ham* publication from Virginia Tech
- Select recipes from *Basics of Sausage Making: Formulation, Processing & Safety* from the University of Georgia such as:
    - Dry or Fermented Sausages
    - Fermented Sausages, Pepperoni and Dry Beef Salami
        - Note: Summer Sausage can be taught because it is heated and refrigerated
    - Semi-Dry Sausages, unless cooked immediately after preparation
    - Mold-Ripened Sausages

Thankfully, there are still plenty of meat recipes to choose from including the following:

- Making Sausage at Home, University of Alaska Fairbanks FNH-00263
- Smoking Fish at Home – Safely, PNW238
- Most of Basics of Sausage Making: Formulation, Processing & Safety, University of Georgia Extension Bulletin #1437 (see exceptions above)

Pectin

University of Wisconsin, Publication B2909, Making Jams, Jellies & Preserves

Pectin is a carbohydrate that causes fruit to gel. Some fruits such as apples, crabapples, currants, grapes and some plums contain enough pectin to form a gel; others require added pectin.

You can add pectin to any fruit to ensure a good gel. Here are several advantages of doing so:

- You can use fully ripe, flavorful fruit.
- Cooking time is shorter and standardized.
- You will have more jars on the shelf from the same amount of fruit.

A disadvantage may be that large amounts of sugar added with regular pectin may mask the fruit's flavor.

Regular pectins: Regular pectins require at least ½ cup of sugar per cup of fruit to get. Natural fruit pectins made from apples or citrus fruits are marketed in two forms:

- Liquid, such as Certo®, and
- Powdered, such as Sure-Jell®. *

Liquid pectin is added to a hot cooked fruit and sugar mixture, and the mixture is boiled for 1 more minute. Powdered pectin is mixed with unheated fruit or juice, the mixture is brought to a boil, sugar is added, and the mixture is boiled for 1 minute.

Follow the pectin package directions and tested recipes for each form of pectin. Liquid and powdered forms are not interchangeable in recipes. Purchase fresh pectin each year. Old pectin may result in poor gels.

Low- or no-sugar pectin: Low-methoxyl pectin is extracted from the inner rinds of citrus fruits and is chemically different from regular pectin. Low-methooxyl pectin needs little or no sugar to gel, sometimes aided by calcium. Look for packages of pectin labeled "light," "less sugar" or "no sugar needed."

Because let sugar is added, low-methoxyl gels tend to be less firm, less sweet and more fruity. Follow the manufacturer's directions precisely.

Bulk powdered pectin: Bulk powdered pectin can be substituted for individual packets sold in most grocery stores. Both regular and low-sugar bulk pectin is available. Generally, 1/3 cup of bulk pectin mix replaces one standard box. Currently, there are not suppliers of bulk liquid pectin.

All American Canner

All American Canner Manual Excerpts

Metal-To-Metal Seal, Cleaning and Maintenance
The metal-to-metal seal must be lubricated periodically to prevent the cover from sticking to the bottom as a result of dryness. Lubricate the metal-to-metal seal on the bottom with petroleum jelly or Vaseline to prevent scratching and sticking of the seal. It is recommended that a thin film be applied every third or fourth use.The metal-to-metal seal must not be permitted to become dry, as this could result in severe damage to the metal-to-metal seal and make it very difficult to remove the cover. Lack of lubrication also makes it very difficult to maintain a steam-tight seal.

It is also important to periodically wipe off the metal-to-metal seal with a clean towel to remove any build-up of foreign material trapped in the lubricant. You may use 0000 grade steel wool and carefully go around the seal to remove any build-up of hardened lubricant. However, avoid hard scrubbing of the metal-to-metal seal to prevent damage.

Accuracy of Steam Pressure Gauge
ALL-AMERICAN pressure cooker canners are weighted-gauge canners. The pressure gauge is supplied as a

reference only for when the unit is pressurized and timing for canning may roughly begin, or when the pressure has dropped to zero and the lid may be safely removed. The accuracy of your steam pressure gauge is at ± 2 pounds. Please refer to information provided on page 8 under **"Using Cooker"** - Item #2 - the bold print. If you would like to have your gauge tested you may contact your county extension agent. If they are unable to provide this service, you will have to purchase a new gauge.

Discoloration and Pitting

Discoloration of aluminum inside is harmless. It can be removed by boiling a solution of one tablespoonful of vinegar or two level tablespoons cream of tartar in a quart of water, or by scrubbing with an aluminum cleaner or soap impregnated steel wool cleaning pad.

Pitting is caused by the interaction of aluminum with other metals in the presence of moisture. This can be prevented by washing, rinsing and drying the unit thoroughly after every use. Always store the pressure cooker in a dry area when not in use. While pitting is not injurious to health, if pitting becomes present and you detect it in the metal, then we recommend that the unit be returned to the factory for examination. **DO NOT USE THE UNIT IF PITTING IS PRESENT** until it is determined the extent of damage caused by pitting.

Storage

The cover should be storedseparately from the bottom or upside down on the bottom to allow air circulation. Always be sure the cover and bottom are thoroughly dried to protect against pitting and corrosion. Protect the metal-to-metal seal from being struck or dented.

It is also important to periodically wipe off the metal-to-metal seal with a clean towel to remove any build-up of foreign material trapped in the lubricant. You may use 0000 grade steel wool and carefully go around the seal to remove any build-up of hardened lubricant. However, avoid hard scrubbing of the metal-to-metal seal to prevent damage.

Kombucha

Colorado State University Extension, Farm to Table

What is kombucha?
Kombucha is a lightly effervescent, cider-like beverage, made by fermenting sweetened tea. It is produced using a starter culture of bacteria and yeasts called a SCOBY (Symbiotic Colony of Bacteria and Yeast). A mature SCOBY resembles a flat, jelly-like pancake, often referred to as a 'mushroom' or 'tea fungus' due its unique appearance, although it is not a mushroom.

Nutrition and health benefits
Kombucha contains live beneficial bacteria and yeasts, organic acids, B vitamins, antioxidants, and trace minerals. Added juice or flavorings may contribute nutrients as well. With only about 30 calories and 2-3 grams of sugar per 8 ounces of unflavored kombucha, kombucha can be a refreshing, low calorie beverage. Health impacts attributed to kombucha vary widely, from claims of multiple therapeutic effects, such as improved digestion, gut health, and immune function, to adverse reactions if acid levels become unusually high. Only limited scientific research is available to help answer questions about the benefits and safety of kombucha.

How is kombucha made?
Maintain safe and hygienic practices, such as following proper steps and keeping a clean environment, to minimize risk of contaminants such as molds or harmful bacteria which could cause illness. Always wash hands well and rinse with kombucha or vinegar before handling the SCOBY. First, obtain a SCOBY and starter liquid, either from a friend's mature starter or purchased fresh online. The SCOBY and liquid are added to a food-grade vessel of brewed, cooled, sugar sweetened tea, then lightly covered and allowed to ferment at room temperature, typically for 7-10 days but possibly up to one month. The liquid acidifies the tea to assure a safe pH level and minimize contamination, while the sugar feeds the bacteria and yeast, producing an acidic end product which tastes a bit like cider vinegar, typically with slight carbonation and trace amounts of alcohol. Fruit juice or other flavorings may then be added as desired.

Precautions
When consuming any new food or beverage, start small (up to 4 ounces per day with plenty of water) and observe your own body's results. Under some conditions, the alcohol level may exceed 0.5 percent alcohol by volume, which surpasses the limit for non-alcoholic beverages. If any signs of spoilage are noted, such as fuzzy blue, gray, green, brown, or black mold, discard the SCOBY and kombucha, and thoroughly wash vessel.

Making Kombucha

Ingredients for 1 gallon:
¼ cup green and/or black tea (in mesh bag), or 4-8 tea bags
1 gallon of filtered water
1 cup cane sugar
1-2 cups Kombucha Starter Liquid (from a previous batch)
1 SCOBY

Equipment:
- Tea kettle or pot, for heating water
- Brewing vessel, safe for fermenting (i.e. large glass jar, stainless steel, food grade plastic)
- Clean fine weave cloth, towel, or coffee filter (large enough to cover brew vessel)
- Rubber band (wide enough to fit around brew vessel)
- Bottles or jars, for finished kombucha
- Funnel (optional)

Instructions:
1. Heat water. In brewing vessel, make tea. Steep tea for 10 minutes.
2. Remove tea leaves or bags. While water is still hot, stir in sugar and completely dissolve.
3. Allow sweetened tea to completely cool to room temperature. **
   ** Alternative method to cool faster: heat only half the water in step #1, to make a strong sweet tea, then add the remaining water as cold water.
4. Once cooled to room temperature, with washed hands, add SCOBY and Kombucha Starter Liquid to sweetened tea.
5. Cover with clean cloth or coffee filter. Secure with a rubber band or bungee cord to keep insects and contaminants out but allow air flow. Record start date.
6. Allow kombucha to ferment at room temperature (ideally 64-79°F/18-26°C) for 7-14 days. A new SCOBY will develop on the surface of the liquid, starting as a light haze that gradually turns whitish, then opaque and thicker as time progresses. Check the kombucha flavor after a week. Stop fermenting when you like the flavor.
7. To "stop" fermenting: pour kombucha into clean jars or bottles sanitized by rinsing with boiling water or vinegar, retaining SCOBY and at least 1-2 cups for your next batch. Save more, at least 20%, if following continuous brew technique (see below).
8. Flavor finished kombucha as desired with 10-20% juice or clean fruit, and experiment with clean herbs and spices based on preference. Cap tightly. Leave at room temperature 1-3 days for potential carbonation or refrigerate immediately. CAUTION: Longer time capped at room temperature could result in carbon dioxide accumulation and even explosion of the contents.

Repeat batches using continuous brew technique:
To minimize handling the SCOBY and reduce introduction of contaminants, it is better to leave the SCOBY and starter liquid in the vessel and not wash the vessel between uses, but only if it becomes built up with yeast. Gently pour in new sweetened, cooled tea along the inside of the jar to limit disturbing the SCOBY. SCOBY growth can be peeled and shared with others or stored for several weeks in a similar cloth covered vessel, covered by kombucha.

Shelf Life

National Center for Home Food Preservation

Properly canned food stored in a cool, dry place will retain optimum eating quality for at least 1 year. Canned food stored in a warm place near hot pipes, a range, a furnace, or in indirect sunlight may lose some of its eating quality in a few weeks or months, depending on the temperature. Dampness may corrode cans or metal lids and cause leakage so the food will spoil.

How long can I keep my homemade jams and jellies once I open them?
https://nchfp.uga.edu/questions/FAQ_jellied.html#8

Opened home-canned jams and jellies should be kept in the refrigerator at 40°F or lower. "Regular" – or pectin-added, full-sugar – cooked jams and jellies are best stored for 1 month in the refrigerator after opening. They may last longer depending on the specific product and how it is used. The expected shelf life will be shortened by keeping the container frequently open and/or out at room temperature for long periods of time during use. At each use, you can spoon out the quantity of jam or jelly that you may require into a bowl, and replace the jar in the refrigerator quickly - this would ensure minimum exposure to sources of microbial contamination during use. Do examine the container regularly during storage for any signs of spoilage like molds, yeasts and off odors (including a fermented, "yeasty'," or "alcohol" odor), once it is opened. Discard the entire contents of the container if these are detected.

Lower-sugar or no-sugar-added spreads may have a shorter refrigerated shelf life than those made with the traditional amounts of sugar. Natural flavor changes in the fruit base are more noticeable without the sugar to mask them; for example, some lower-sugar spreads may taste more tart or acidic over time. Light-colored spreads may also darken more quickly with less added sugar.

Freezer jams also have to be stored in the refrigerator after thawing and will only retain good quality for 3 to 4 weeks after opening. They are subject to more syneresis ("weeping" or separation of liquid from the gel) than cooked jams and jellies.

Note: For safe eating practices, store your opened jar of jam or jelly in the refrigerator until consumed, and examine it frequently for signs of spoilage (like mold or yeast growth, or off-odors, including "fermented," "alcohol" or "yeasty" odors). Discard the product immediately if any signs of spoilage are detected.

Shelf Life of Dehydrated Foods

National Center for Home Food Preservation

Packaging and Storing Dried Foods
Dried foods are susceptible to insect contamination and moisture re-absorption and must be properly packaged and stored immediately.

First, cool completely. Warm food causes sweating which could provide enough moisture for mold to grow. Pack foods into clean, dry insect-proof containers as tightly as possible without crushing.

Store dried foods in clean, dry home canning jars, plastic freezer containers with tight-fitting lids or in plastic freezer bags. Vacuum packaging is also a good option. Pack foods in amounts that can be used all at once. Each time a package is re-opened, the food is exposed to air and moisture that can lower the quality of the food and result in spoilage.

Pack food in amounts that will be used in a recipe. Every time a package is re-opened, the food is exposed to air and moisture that lower the quality of the food.

Fruit that has been sulfured should not touch metal. Place the fruit in a plastic bag before storing it in a metal can. Sulfur fumes will react with the metal and cause color changes in the fruit.

Dried foods should be stored in cool, dry, dark areas. Recommended storage times for dried foods range from 4 months to 1 year. Because food quality is affected by heat, the storage temperature helps determine the length of storage; the higher the temperature, the shorter the storage time. Most dried fruits can be stored for 1 year at 60ºF, 6 months at 80ºF. Vegetables have about half the shelf-life of fruits.

Foods that are packaged seemingly "bone dry" can spoil if moisture is reabsorbed during storage. Check dried foods frequently during storage to see if they are still dry. Glass containers are excellent for storage because any moisture that collects on the inside can be seen easily. Foods affected by moisture, but not spoiled, should be used immediately or redried and repackaged. Moldy foods should be discarded.

Conditioning Fruits
The moisture content of home dried fruit should be about 20 percent. When the fruit is taken from the dehydrator, the remaining moisture may not be distributed equally among the pieces because of their size or their location in the dehydrator. Conditioning is the process used to equalize the moisture. It reduces the risk of mold growth.

To condition the fruit, take the dried fruit that has cooled and pack it loosely in plastic or glass jars. Seal the containers and let them stand for 7 to 10 days. The excess moisture in some pieces will be absorbed by the drier pieces. Shake the jars daily to separate the pieces and check the moisture condensation. If condensation develops in the jar, return the fruit to the dehydrator for more drying. After conditioning, package and store the fruit as described above.

Determining Dryness of Vegetables
Vegetables should be dried until they are brittle or "crisp." Some vegetables actually shatter if hit with a hammer. At this stage, they should contain about 10 percent moisture. Because they are so dry, they do not need conditioning like fruits.

Deciphering Packaged Food Dates

Storing Food for Safety and Quality, University of Idaho, PNW 612

Food most foods, product dating is not required by law. An exception is infant formula and some baby foods for which open dating is required. Open dates are calendar dates that are clearly understood by consumers, as opposed to coded dates that are sometimes used by food manufacturers for their own tracking. Infant and baby foods are dated for nutrient retention as well as quality, since these foods often provide the sole source of nutrition. Do not buy or use infant formula or baby food after its “use by” date.

Many food manufacturers choose to label packaged foods with some type of date. However, there is no universal system for expressing the date. Commonly used fate terminology is explained below. These dates are not related to product safety.

Date of pack or manufacture. Refers to when the food was packed or processed for sale. These are not “use by” dates. Instead, they are printed on canned or boxed goods that are shelf-stable items to identify and locate products if there is a recall.

Freshness, pull, or “sell by” date. Tells the store how long to display the product for sale. The date allows for home storage and use within a reasonable period of time, as predicted by the manufacturer. The product maybe safely consumed after the sell-by date. Often used on breads, baked goods, and dairy products.

“Use before” or “Best if used by” date. Gives the recommended shelf life for best flavor or quality. The food can be safely used past this date. Often used with frozen foods, fried snack foods such as chips and crackers, cereals, canned foods, pasta and rice.

“Freeze by” date. Similar to a “use before” date. Indicates the product should be used or frozen for longer-term storage by the date shown. Seen on some meat products.

Expiration date. The last day the product should be used for best quality. Yeast and baking powder have expiration dates.

Home dating. It is a good practice to mark the date on purchased foods that do not have open dates and that you plan to store for an extended time. Likewise, marking the date on stored home-prepared foods or leftovers is the best way to keep track of stored food. Keep a marker or pen and small self-stick labels handy, and date these foods when you put them into storage.

Food Samples at Public Events

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When conducting an educational display, food demonstration, public presentation or information booth, you may wish to allow members of the public to taste the product you are teaching. However, every county has its own rules and regulations regarding providing food to the public, even if it is just a small free sample or taste test. Contact your local county Environmental Health Department to determine whether you will need a permit to allow the public to taste test your product. Failure to do so could result in fines and citations.

If you will be cooking/preparing and sampling food at an event, many counties will require you to apply for a permit that will designate your table or booth a "temporary food facility" meaning that your booth is now a permitted food preparation area. This may include requirements such as a handwashing station, three-compartment sink, and mesh walls or overhead covering – depending on the policies in your county. If you are sampling food made elsewhere, you may have to show proof that the food was prepared in a permitted "food facility," like a commercial kitchen. This means you cannot bring food you made at home for public sampling, unless your home has been permitted as a "food facility" or "cottage food operation." (See https://www.cdph.ca.gov/Programs/CEH/DFDCS/Pages/FDBPrograms/FoodSafetyProgram/CottageFoodOperations.aspx for more information on cottage food operation permits.)

It is also typically required that all food being prepared for public sampling be purchased from an authorized food vendor (such as a grocery store). This means you cannot use food from your own personal or community garden when offering taste tests to the public. This policy may also vary by county.

Always check with your local Environmental Health Department or UC Cooperative Extension staff before allowing public food sampling. Remember that you can demonstrate a recipe or a technique without allowing the public to sample the finished product. If no food sampling will occur, you do not need a health permit. You can simply provide the recipe or recipe source and explain that due to public health regulations, you are not allowed to provide a taste test.

As a volunteer, you have an opportunity to provide outreach education about food safety and preservation on behalf of Extension and the University. This is a very important role for volunteers. You are providing a great service to the residents in your area, as well as to Extension.

White Peaches

National Center for Home Food Preservation

There is evidence that some varieties of white-flesh peaches are higher in pH (i.e., lower in acid) than traditional yellow varieties. The natural pH of some white peaches can exceed 4.6, making them a low-acid food for canning purposes. At this time there is no low-acid pressure process available for white-flesh peaches nor a researched acidification procedure for safe boiling water canning. Freezing is the recommended method of preserving white-flesh peaches.

Post Processing

Criteria for Safe Use of a Steam Canner

ANR Publication 8573, Guidelines for Safe Canning of Acid Foods in a Steam Canner

Most foods that are high in acid can be safely canned in a steam canner, including naturally acidic foods (such as apples, cherries and peaches) and foods that have been acidified (such as pickles and salsas made from research-tested recipes.) However, there are some instances when a steam canner should not be used. See table 1 for a list of foods that can and cannot be safely processed in a steam canner.

Follow these guidelines for home use of steam canners:

1. Always **follow a research-tested recipe**. Specifically, use research-tested recipes developed for boiling water canners. Recipes must include the quantity of ingredients, the preparation instructions, and processing times for half-pint, pint, or quart jars. For research-tested recipes, visit the National Center of Home Food Preservation website or use the USDA Complete Guide to Home Canning. At this time, recipes in the product manual from the manufacturer of the steam canner are not considered research-tested.
2. Be sure that recipes you use are for foods that are **high in acid**, with a pH of 4.6 or below. If you are following a research-tested recipe for a boiling water canner, then the recipe will be for a high-acid product.
3. Modify processing times for elevations, or altitude, above 1,000 feet, as instructed in research-tested recipes. Elevation for any address can be determined with Google Maps at the DaftLogic website, http://www.draftlogic.com/sandbox-google-maps-find-altitude.htm.
4. Use only recipes that require **45 minutes or less of processing time**, including any additional time for altitude adjustments. Steam canners can run dry if food products ae processed longer than 45 minutes, which can damage the canner, food product, and range surface. For recipes that call for processing times greater than 45 minutes, (e.g., raw-packed tomatoes), use a boiling water canner. If your steam canner runs dry, your food products must be processed again for the full time indicated in the recipe.
5. **Heat jars before filling** prior to filling with food product. Keep the food product as hot as possible by minimizing the time between heating jars and placing them in to the steam canner. Also, you can reduce the potential for product cooling by ensuring that water in the canner has reached a boil before preheating and filling jars.
6. **Add water to the steam canner** as indicated by the manufacturer. The amount of water to add will vary with the manufacturer. Approximately 2 to 3 quarts (approximately 2 to 3 L) of water is typically added to ensure that the water does not run out during the process. The racks allow the jars to sit at or just above the water level and about 1¼ to 1¾ inches (3 to 4.5 cm) above the base of the pan.
7. **Process jars in pure steam (212°F (100°C) at sea level).** The processing time should begin only after a full column of steam (approximately 6 to 8 inches, or 15 to 20 cm) appears through the canner vent holes at the bottom of the cover. Some canners come with built-in temperature sensors, which can be used to monitor the temperature. A full column of steam should be present throughout the process time. If there is an interruption in the steam, the product should be reprocessed for the full process time.
8. After processing is finished, turn off the heat source and wait 2-3 minutes. Cautiously open the lid away from you and remove the jars.
9. Proper cooling is important for food safety. The research-tested processes include important killing of microorganisms that occurs as the product in the jar cools down. Jars MUST be cooled in still air at room temperature. Jars should be cooled on a rack or towel away from drafts. Do not rush cooling by placing jars in the refrigerator. Do not use fan or place jars in a drafty area.

Pressure Canning: After Processing

CA Fundamentals of Consumer Food Safety & Preservation: Master Handbook Chapter 3, Basic Principles of Home Canning

At the completion of the recommended processing time, jars need to be left in the canner to allow time for the contents to cool slightly. For the boiling water canner, turn off the heat, remove the canner lid and wait 5 minutes. In the pressure canner, the wait time is 10 minutes after the pressure has dropped to zero and the petcock has been opened. The wait time is suggested by lid manufacturers to improve the sealing rate of lids.

This wait time also reduces liquid loss (**siphoning**) from jars. The wait time in the canner is not critical for the safety of the product.

When removing hot jars from the canner using a jar lifter, be careful not to tilt the jars. Carefully place jars onto a dry towel or cake cooling rack, leaving at least one inch of space between the jars during cooling. Avoid placing the jars on a cold surface or in a cold draft. When you are using flat metal lids with a gasket compound, do not retighten the rings if they are loose. Retightening hot lids may cut through the gasket and cause seal failures. If using reusable canning lids, follow manufacturer's directions for tightening after processing.

Cooling

Cool the jars at room temperature for 12 to 24 hours. The liquid levels in raw-packed jars may be noticeably lower after cooling. Air is exhausted during processing, and food shrinks. If a jar loses excessive liquid during processing, it is still safe as long as it is processed properly. Do not re-contaminate by opening it to add more liquid. Screw bands are not needed on jars for storage, and should be removed after the jars are cooled. If bands are left on stored jars, they become difficult to remove, often rust, and may not work properly again. The bands may also conceal the loss of the seal in the jar. When removed, washed, dried, and stored in a dry area, screw bands may be used many times.

The home canning process does not destroy all of the organisms in a canning jar. The process targets pathogenic organisms, and those that would cause problems at normal storage temperatures. Some thermophilic (heat-loving) spoilage organisms survive the canning process. While not harmful, these bacteria cause off-odors and flavors in foods. High household temperatures during the cooling phase of home canning increases the chance of spoilage by these bacteria. Problems have also occurred when canning was done during hot weather with no air conditioning in the home and with storage temperatures over 100˚F.

Salsa Recipes for Canning

Washington State University, PNW 395

Ingredients

Salsa is one of the most popular condiments in homes today. Because of its popularity, consumers want to prepare and can salsas at home. Home canning of salsa is possible as long as it is prepared and processed according to a recipe tested for safety.

Caution about using original salsa recipes: Because salsas are a mixture of acid and low-acid ingredients, they are an example of an acidified food appropriate for boiling water canning if—and only if—the level of acidity is adequate to prevent production of the botulism toxin. If the mixture has less acidity, it needs to be treated as a low-acid food, which requires additional laboratory testing to develop the processing recommendations for the elimination of botulism risk. To avoid this serious form of foodborne illness, follow the directions carefully for each recipe in this publication. Never can salsas that do not follow these or other research-tested recipes. Freezing is the only safe option for preserving untested or original salsa recipes.

Most salsa recipes are a mixture of low-acid foods, such as onions and peppers, with acid foods, such as tomatoes or fruit. Salsa recipes for canning with a boiling water canner must meet acidity-level requirements to prevent the growth of botulism bacteria. The salsa recipes in this publication have been tested under laboratory conditions to ensure that they contain enough acid to be processed safely in a boiling water canner.

Tomatoes

Use only high-quality tomatoes for canning salsa or any other tomato product. Avoid tomatoes that are overripe or from dead or frost-killed vines. These will result in a poor-quality and potentially unsafe product. Canning is never a good way to use overripe or spoiling tomatoes.

The type of tomato you use affects the quality of your salsa. For example, paste tomatoes, such as Roma, have firmer flesh and produce thicker salsas than large slicing tomatoes. Although both types make good-tasting salsas, slicing tomatoes usually yield a thinner, more watery salsa than paste tomatoes.

Where recipes call for peeled or skinned tomatoes, remove the skin by dipping tomatoes into boiling water for 30–60 seconds or until skins split. Immerse in cold water until cool enough to handle. Slip off skins and remove cores. Remove seeds if desired.

Tomatillos

Slicing tomatoes

Tomatillos are also known as Mexican husk tomatoes. They do not need to be peeled or seeded, but the dry outer husk must be removed.

Fruits

Some salsa recipes in this publication contain fruit. Fruits add another dimension of flavor to traditional salsas. When canning fruit salsas you must follow the same safety rules as tomato-based salsas. This includes using a research-tested recipe, selecting fruits in the quantity and condition described, and preparing fruits according to the directions

Peppers

Choose high-quality peppers. Peppers range from mild to fiery in taste. Very hot peppers are usually small (1–3 inches long); mild peppers are usually bigger (4–10 inches long). Anaheim, ancho, college, Colorado, and Hungarian yellow wax are mild varieties. Choose a mild pepper when the recipe calls for long green chiles.

Small, very hot peppers provide a distinct taste to salsas. Jalapeño is the most popular hot pepper. Other common hot varieties include serrano, cayenne, habañero, and tabasco.

The terms *chiles*, *peppers*, and *chile peppers* are used interchangeably in this publication. Although there is no clear standard for naming peppers, in many instances, *chile* is used for a hot pepper, or a pepper containing capsaicin, the compound that gives the heat or burning sensation in the mouth. Chile peppers are generally classified as mild, medium, or hot. Sweet peppers, such as bell peppers, do not contain any capsaicin, or heat compounds.

Acids

Small, very hot peppers provide a distinct taste to salsas. Jalapeño is the most popular hot pepper. Other common hot varieties include serrano, cayenne, habañero, and tabasco.

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The acid ingredients used in salsa help preserve it. The addition of acid to salsa recipes for canning is necessary because the natural level of acidity may not be adequate for safety. Commonly used acids in home canning are vinegar, lemon, and lime juices. Lemon and lime juices are more acidic than vinegar, but have less effect on flavor. Use only vinegar that is at least 5% acid and only bottled lemon and lime juices. Never use homemade vinegar or freshly squeezed lemon or lime juice because the level of acidity is variable and could result in an unsafe canned product.

Salt

Pickling or canning salt is recommended when preparing salsa recipes. It contains no anti-caking agents or iodine. Non-iodized table salt can also be used in salsa recipes.

Spices

Spices add flavoring to salsas. Cilantro and cumin are often used in spicy salsas. You may leave them out or reduce the amount if you prefer a salsa with a milder taste. For a stronger cilantro flavor, add fresh cilantro after opening the jar, just before serving.

Ingredient	Recipe Adjustments
Tomatoes	As long as tomatoes are in good condition, any variety can be used. Paste tomatoes, such as Romas, have more solid tissue and will produce a salsa with a thicker texture. Slicing tomatoes will produce a runny, more watery salsa. Underripe green tomatoes or tomatillos can be substituted for ripe tomatoes. Although salsas are traditionally made with red tomatoes, any color of tomato can be used.
Peppers	One type of pepper can be substituted for another. Select any combination of hot and mild pepper to create a flavor you like, as long as you do not exceed the total amount specified. (For example, if the recipe allows for 2 cups of peppers, any mixture of hot and mild peppers can be used.) Bell peppers are an acceptable substitution for some or all of the long green chiles. Do not substitute the same number of whole peppers of a large size for the same number of peppers of a smaller size (For example, do not use 6 bell peppers or long chiles in place of 6 jalapeños or serranos). Canned chiles may be used in place of fresh.
Onions	Red, yellow, or white onions can be substituted for each other. Do not increase the total amount of onions. Green onions cannot be used in place of bulb onions. Do not use green onions in a canned salsa recipe unless they are specified as an ingredient.
Fruits	Use fruits in the condition described in the recipe. When a recipe calls for green or unripe fruits, do not use ripe fruits. This will change the final acidity of the mixture, resulting in an unsafe product. It is not safe to substitute one type of fruit for another.
Acids	Any type of vinegar can be used as long as it is 5% acidity. White vinegar has a tart flavor but will not discolor the salsa. Cider vinegar has a milder flavor but may affect the color of the final product. Flavored or other specialty vinegars can be used as long as they meet acidity guidelines. Never reduce the amount of vinegar, lemon juice, or lime juice in a recipe. An equal amount of bottled lemon or lime juice can be substituted for vinegar when the recipe calls for vinegar. The reverse is not true: When lemon or lime juice is the acid called for in the recipe, vinegar cannot be substituted. This is because vinegar is a less acidic than lemon or lime juice, and the substitution would result in an unsafe salsa. Key lime juice should not be used as lime juice. If prepared salsa is too tart, a small amount of sugar can be added after opening to offset the acidic taste.
Spices and Herbs	The amounts of dried herbs or spices can be altered. It is not safe to add or increase the amounts of fresh herbs or garlic before canning because they affect the acidity level.

Adjustments to Salsa Recipes

Some ingredients in salsa recipes can be adjusted to suit personal tastes. The changes are primarily limited to ingredient *type*. It is important not to change the *amount* of any ingredient, with the exception of dry spices. The table below summarizes the adjustments that can be made to the recipes in this publication without affecting the safety of your canned salsa.

Caution about additional ingredients

Adding ingredients not listed in a salsa recipe will result in an unsafe product if done before canning. This includes thickeners as well as ingredients not listed in the recipe.

Do not thicken salsas before canning. Salsa can be thickened *after* you open the jar by pouring off some of the liquid or adding cornstarch, tomato paste, or other thickening agent.

The flavor can be enhanced with additional ingredients such as corn, black beans, or other additions just before serving.

Addition before canning will result in an unsafe product.

2019 Reappointment Quiz

1. Which of the following statements regarding freezing of fruit is TRUE?
   a. Enhances the fruit's color
   b. Retards the enzyme activity that takes place in fruit
   c. Sterilizes the fruit
   d. Destroys the microorganisms that cause spoilage

2. The best way to prevent discoloration in fruits to be frozen is:
   a. Soak in cold water before freezing
   b. Freeze whole fruits
   c. Treat with ascorbic acid
   d. Add artificial sweetener

3. Which of the following is NOT an approved source of recipes to be taught by MFPs?
   a. *Ball Complete Book of Home Preserving*, 2016 edition
   b. National Center for Home Food Preservation
   c. *Complete Guide to Home Canning*, United States Department of Agriculture
   d. *So Easy to Preserve*, University of Georgia

4. An approved recipe for fresh cheese can be found in which of the following sources:
   a. So Easy to Preserve
   b. University of Minnesota
   c. Ball Blue Book
   d. New Mexico University

5. How many gallons of milk are required to make one pound of cheese?
   a. 1.25
   b. 1.75
   c. 2.25
   d. 2.75

6. Cheese making can be affected by all of the following EXCEPT:
   a. Temperature
   b. Bacterial culture
   c. Coagulating enzyme
   d. Source of the milk

7. All approved resources for meat processes must include which of the following?
   a. Vacuum packaging
   b. Preparation in an environment less than 75 degrees Fahrenheit
   c. Fermenting or curing
   d. A cooking step immediately after preparation

8. In order to gel, low methoxyl pectin requires a source of:
   a. Calcium
   b. Citric acid
   c. Low calorie sweetener
   d. Vinegar

9. Regular commercial pectin gels as a result of:
   a. Artificial sweetener
   b. Heat
   c. Acid and Sugar
   d. None of the above

10. What is the purpose of the pressure gauge on the All American Canner?
    a. Reference for when the unit is pressurized and timing may begin
    b. To note when the pressure has dropped to zero and the lid may be safely removed
    c. Both a and b
    d. Neither a or b

11. After initial fermentation of kombucha, which of the following flavors CANNOT be added before fermenting for an additional 1-3 days?
    a. Pieces of fruit
    b. Herbs and spices
    c. 10%-20% juice
    d. Essential Oils

12. Once opened, full sugar jams and jellies are best stored in the refrigerator for how long?
    a. One day
    b. One week
    c. One month
    d. One year

13. How long can home dried fruits be safely stored at 80 degrees F?
    a. 3 months
    b. 6 months
    c. 9 months
    d. 12 months

14. What food product label gives the recommended shelf life for best flavor or quality?
    a. Sell by date
    b. Date of pack
    c. Use before
    d. Expiration date

15. The County agency that regulates permitting to allow the public to taste a food product at a demonstration is:
    a. Environmental Health
    b. Human Services
    c. Assessor
    d. Public Works

16. Food samples prepared for a public demonstration must originate in which of the following sources?
    a. Commercial kitchen
    b. Permitted cottage food operation
    c. Permitted temporary food facility
    d. All of the above

17. Cooperative Extension does not currently recommend canning white peaches for which of the following reasons?
    a. The acid level is often above a pH value of 4.6
    b. There is no approved pressure canning recipe
    c. Boiling water canning is not appropriate
    d. All of the above

18. When using a steam canner, after processing time and heat is turned off, the canner lid should remain on for how many minutes?
    a. 1
    b. 2-3
    c. 4-5
    d. 7

19. The purpose of leaving the jars in the pressure canner after processing is to:
    a. Improve the seal
    b. Reduce liquid loss
    c. Allows time for contents to cool
    d. All of the above

20. In salsa recipes, it is permissible to change or add which of the following:
    a. Fresh garlic
    b. Dried cilantro
    c. Fresh basil
    d. Dried tomatoes