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UNIVERSITY OF KENTUCKY - COLLEGE OF AGRICULTURE

Freezing Fruits & Berries 🛞

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Introduction



Freezing is an easy way to preserve foods. It preserves food by stopping the growth of bacteria, mold, and yeast. Foods correctly frozen maintain excellent color, flavor, texture, and food value. Frozen berries and fruits are delicious as a snack or to use in preparing other dishes.

You will learn to:

- identify the kinds of fruits and berries that can be frozen
- identify equipment needed for freezing and how to use each item
- plan how many packages of fruits and berries to freeze for your family
- freeze different kinds of fruits and berries by the syrup, sugar pack, and dry pack methods
- · label each container with all suggested information
- use the freezer to prepare fun snack foods

Also plan to:

- give a demonstration showing something you have learned in this project
- · keep a complete record of your freezing project

Nutrition Facts

Fruits and berries are an important part of a healthy eating plan. They provide vitamins A and C and are low in fat. By freezing fruits and berries, you add variety and balance to your diet all year long. Answer these questions about the Food Guide Pyramid: A Guide to Daily Food Choices.

Do you eat at least five servings of fruits and vegetables every day?
Do you eat dark-green, leafy, or deep-yellow vegetables several times a week?

3. Do you eat a fruit or vegetable containing vitamin C every day?4. Will preserving fruit and vegetables make it easier for your family to have five servings of fruits and vegetables every day?

Food Guide Pyramid

A Guide to Daily Food Choices

The Food Guide Pyramid is a general guide to help you choose the right amount of healthful foods every day. The Pyramid emphasizes foods from the five foods groups in the three lower sections. Each of these food groups provides some, but not all, the nutrients you need. No one food group is more important than another—for good health you need them all.

Breads, Cereals, Rice and Pasta are important sources of energy, vitamins, minerals and fiber. Aim for six to 11 servings a day. An example of one serving is:



- 1 slice of bread
- 1/2 cup cooked rice
- 1/2 cup cooked cereal
- 1 ounce ready-to-eat cereal

Fruits and vegetables are rich sources of vitamins, minerals and fiber. The goal is five or more servings a day. For those 8 years old and above, one serving equals:

- 1/2 cup raw or cooked vegetables
- 1 cup leafy raw vegetables
- 1 piece of fruit or melon wedge
- 3/4 cup of juice
- 1/2 cup of canned fruit

Milk, Yogurt and Cheese provide protein, vitamins and minerals like calcium. You need two to four servings a day. One serving is:

- 1 cup of milk or yogurt
- 1 1/2 to 2 ounces of cheese

Meat, Poultry, Fish, Dry Beans, Eggs and Nuts supply protein, B vitamins and iron. You need two to three servings. A serving equals:

2 1/2 to 3 ounces of cooked, lean meat, poultry or fish.

One ounce of lean meat or 1/3 serving is equal to:

- 1/2 cup cooked beans
- 1 egg
- 2 tablespoons peanut butter

Fats, Oils and Sweets provide Calories and little else nutritionally. Foods in this group include salad dressings, butter, margarine, sugars, soft drinks, candies and desserts. When choosing foods for a healthy diet, consider the fat and added sugars in your choices from all the food groups, not just fats, oils and sweets from the Pyramid tip.

Words to Know

Moisture-vapor-resistant or **moisture-vapor-proof**—Containers or wrapping materials that keep water and air away from frozen food. These containers prevent the cold, dry air in the freezer from drying out your frozen foods and keep the juices and flavors of the food in the package.

Enzymes—Chemical substances present in all living things. They cause changes in color, flavor, taste, texture, and food value. When food is frozen at a very low temperature, the cold almost stops the activity of enzymes. However, if food is stored too long, there may be a noticeable change in taste and food value. Most fruits and vegetables frozen at 0°F or below keep well in storage for six months to a year.

Blanching—The process of scalding fruits or vegetables by dipping them into boiling water or placing them in steam. Fruits such as peaches may be blanched then cooled in cold water to make their skins loose and easy to slip off.

Headspace—The space left in the top of a container to allow for expansion of food and liquid. Proper headspace of one-half inch for pint containers and one inch for quart containers prevents foods from spilling over when frozen.

Anti-darkening agent—Substance that helps prevent fruit from losing its light, fresh appearance before freezing and during storage in the freezer. Ascorbic acid (vitamin C) is a very effective anti-darkening agent for most fruits. Ascorbic acid crystals can be purchased in drugstores, or a commercial anti-darkening product can be bought in the grocery store. Citric acid (available at drugstores) or lemon juice (which contains both citric acid and ascorbic acid) make suitable antidarkening agents for some fruits.

Quick-freeze—Freezing foods as quickly as possible after packaging. Quick freezing produces very small ice crystals from the moisture in food tissue, while slow freezing tends to result in large ice crystals. Large ice crystals cause an undesirable mushy texture in frozen foods. This is an important reason to freeze food at 0°F (-18°C) or colder. If the power for your freezer goes off, however, all is not lost. Food in an unloaded freezer usually stays frozen for two days, even in the summertime, provided you do not open the freezer door. If power cannot be restored within two days, use dry ice to keep the food frozen.

Freezer burn—The drying out of frozen food that has been improperly packaged. Freezer burn results in loss of flavor, color, and texture.

Equipment



You will need:

- freezer
- pans for washing and holding food
- brush for cleaning fruit
- colander or strainer for draining fruits
- stainless steel paring knife
- measuring cups and spoons
- large spoon or small scoop
- pan for making syrup when fruit is packed in syrup
- clean dishcloth, towels, and potholders
- freezer containers, jars, or packaging materials
- a jar filler with wide neck for filling containers or one for filling jars (these fillers keep the top part of the jar or container clean and free from syrup and sugar)
- freezer tape for sealing rigid plastic containers
- marking pen or crayon for labeling

Packaging for Quality Freezing

For high-quality frozen foods you must use good packaging materials and methods.

Good packaging materials:

- 1. Protect food from drying out.
- 2. Prevent flavors from mixing in the freezer.
- 3. Are easy to stack in freezer and do not waste freezer space.

Use only moisture-vapor-proof containers for packaging. Do not use waxed paper, lightweight aluminum foil, ice cream or milk cartons; they are not moisture-vapor-proof.

Packaging materials are of two general types:

- 1. Rigid containers made of plastic and glass.
- 2. Non-rigid containers such as plastic bags, heavy-duty (not regular) aluminum foil, plastic film, polyethylene, or laminated paper. Plastic bags can be placed inside rigid plastic containers or freezer boxes before freezing. This makes the bags easier to stack and saves freezer space.

Tips for packing food in containers:

- 1. Pack food firmly; then gently press extra air out of non-rigid containers to prevent dehydration (loss of moisture) and freezer burn.
- 2. Leave proper headspace (one-half inch for pint containers, one inch for quart containers) to permit expansion of foods as they freeze.
- 3. Wipe the mouth of rigid containers with a clean, damp cloth before sealing.

Sealing and Labeling

1. Seal properly for the kind of packaging material you use. Use lowtemperature (freezer) tape to tightly seal rigid plastic and aluminum foil containers. Seal plastic freezer bags with paper-covered wire twist ties, or use self-closing freezer bags with zippered seals.

2. Label every container carefully and clearly. Use a waterproof marking pen or wax pencil on the freezer tape or label. State the kind and variety of food, style of pack, and the day, month, and year

packed. When using plastic bags, place the label on the bag before filling.



- 1. Place packages in the freezer immediately after packing and sealing.
- 2. Allow space between the packages when you first put them in the freezer. Containers may be stacked once contents are solidly frozen.
- 3. Arrange food in freezer so you will know where to find it (vegetables in one section and fruit in another).

Records and Storage Time

- 1. Keep a checklist of food you put in and take out of the freezer.
- 2. Most fruits and vegetables stored at 0°F or below keep well in storage for six months to a year. Plan to use all of one year's frozen produce before the next year's crop is ready to freeze.

How Much Fruit to Freeze? An important purpose of this project is to help your family eat more nutritiously. The chart below will guide you with this goal. Since you use fresh foods almost exclusively during the summer months, the plan provides for preserved foods for 36 weeks (the amount of time most families do not have fresh fruit and berries available). You may wish to make changes in the number of weeks preserved foods are needed. The appropriate amount of fruits needed by one person is given. Multiply this amount by the number of persons in your family to get the number of quarts of food your family will need. With the help of your family, decide how much of each food you will freeze, can, or preserve in other ways.

Approximate amount needed per person per week	Number of weeks preserved foods needed	Total needed per year for one person	Total needed per year for my family
7 servings per wk; ½ cup per serving:	36	36 x 3½ cups = 126 cups	31½ quarts x no. of people
$7 x \frac{1}{2} = 3\frac{1}{2} cups$		126 ÷ 4 cups/quart = 31½ quarts	in family

Take the total number of quarts of fruits and berries your family will need and decide how many quarts of each your family will use. Consider what your family enjoys eating, as well as the berries and fruits available for freezing.



Fruit or berry	Number of quarts family plans to can	Number of quarts family plans to store, pickle, etc.	Number of quarts family plans to freeze	Number of packages I plan to freeze
Apples				
Blackberrie	S			
Cherries				
Grapes				
Peaches				
Pears				
Plums				
Rhubarb				
Raspberries	3			
Strawberrie	S			

The following chart will help you determine how many quarts of frozen food you get from the indicated amount of fresh fruit.



Table of Fruit

Fruit	Fresh	Frozen
Apples	1 bu. (48 lb.)	16 to 20 qts.
Berries other than strawberries	1 crate (16 qts.)	10 to 12 qts.
Cherries, sweet or sour	1 bu. (56 lb.)	18 to 22 qts.
Peaches	1 bu. (48 lb.)	16 to 24 qts.
Pears	1 bu. (50 lb.)	20 to 25 qts.
Plums	1 bu. (56 lb.)	19 to 28 qts.
Rhubarb	15 lb.	8 to 11 qts.
Strawberries	1 crate (16 qts.)	12 to 14 qts.

bu.= bushel

Selecting Fruits and Berries

Most fruits freeze very well. Pears, however, may become mushy. Freeze only the best firm, well-ripened fruits. Their quality depends on growing conditions, the variety, and maturity, as well as method of freezing.

Certain varieties of some fruits make better frozen foods than others. A few of the better varieties recommended for freezing are listed here. They all grow well in Kentucky.

Fruits	Recommended Varieties
Blackberries	Darrow, Eldorado, Thornfree
Cherries	
Red Tart	Early Richmond, Montmorency
Sweet	Gov. Wood, Napoleon, Windsor
Grapes	Concord, Fredonia, Sheridan
Peaches	Comanche, Glohaven, Golden Jubilee, Redhaven, Sunhaven
Pears	Kieffer, Morgan, Seckle, Tyson
Plums	Bluefre, Fruce, French Damsen, Ozark Premier, Stanley Prune
Raspberries	
Black	Bristol, Cumberland, Logan
Red	Latham
Strawberries	Citation, Pocahontas, Sunrise, Surecrop, Tennessee Beauty

Steps in Freezing Fruits

Get Materials and Equipment

Be sure you have enough containers of the proper size. Check plastic or glass containers for cracks or chips. Be sure containers are clean. Make syrup, if you are using a syrup pack for your fruits. Be sure it is thoroughly cold when you use it.

Select Fruit

The fruit you use should be well-ripened, firm, plump, and tender. Freeze it at the stage it would taste best when eaten fresh. Sort out all fruit that is bruised, decayed, or underripe. Underripe fruit may develop a poor color and a bitter off-flavor during freezing.

Prepare Fruit and Berries

Wash fruit or berries gently and quickly in cold water. Over-soaking makes a poor frozen product. Drain fruit in a colander or sieve. Work with a small amount of fruit at a time to allow for easy handling. Peel or cut.

An anti-darkening agent may be used to control the darkening of fruit. Ascorbic acid, citric acid, or lemon juice may be used to prevent darkening.

Pack Fruit

Fruits may be packed in sugar syrup or dry sugar or dry-packed with no sugar. Follow the directions for the pack you want.

- **Syrup pack**—Select this pack for whole fruits, fruits that tend to darken such as peaches and apples, and fruits intended for desserts. Make the syrup ahead of time and chill before using. Fruits should be well-covered with syrup or juice during freezing and thawing to prevent darkening of the top surface.
- Sugar pack—Choose this pack for juicy fruits and those that do not darken such as cherries and strawberries. Sprinkle sugar (quantity needed is given in directions for each fruit) over the fruit. Mix gently with large wooden or slotted spoon until juice is drawn out of the fruit and sugar is dissolved. Put fruit and juice into containers.
- **Dry pack**—An easy way to freeze fruits and berries, gently pack prepared fruits into containers without added liquid or sweetening. Avoid crushing the fruit.

You can place crumpled freezer paper under the lid of a rigid container to hold fruit under the syrup or juice. When plastic bags are used, press out all possible air. See that you properly seal, label, and freeze your containers.



Sugar Syrup for Freezing Fruits

Percent sugar	Syrup	Amount of water	Amount of sugar	Approximate amount of syrup
30	Light	4 cups	2 cups	5 cups
40	Medium	4 cups	3 cups	5½ cups
50	Heavy	4 cups	4¾ cups	6½ cups

Apples

1. Gather all needed equipment and place on work table.

 Make a medium syrup by combining three cups of sugar and four cups of water in a medium saucepan. Bring the sugar and water to a full rolling boil. Chill syrup in the refrigerator before using. You may add 1/2 teaspoon ascorbic acid to each quart of syrup to further prevent darkening.



- 3. Wash apples.
- 4. Make salt solution by adding 2 tablespoons salt to 1 gallon (4 quarts) of water in a bowl.
- 5. Peel apples. Cut into halves and remove cores. Slice one-half-inchthick slices into the salt solution. Drain well.
- 6. Pack gently into containers leaving one-half inch headspace for pints and one inch for quarts.
- 7. Cover fruit with chilled syrup.
- 8. Put lid on airtight.
- 9. Label and place containers in freezer immediately.

NOTE:

Apples will freeze well using the dry pack method. Simply omit the syrup and pack as suggested above.

Cherries, sour



- 1. Gather all needed equipment and place on work table.
- 2. Remove any overripe or bruised cherries. Wash cherries; remove stems and pits.
- 3. Measure the number of cups of cherries you have; then place cherries in a large bowl.
- 4. Add one cup of sugar for each five cups of cherries and gently mix with a large spoon. Let the mixture set until sugar is dissolved and cherries form their own juice.
- 5. Pack gently into containers leaving one-half inch headspace for pints and one inch for quarts.
- 6. Put lids on airtight.
- 7. Label and place containers in freezer immediately.

NOTE:

Cherries will freeze well using the dry pack method. Simply omit the sugar and pack as suggested above.



packed in syrup



Peaches packed in either syrup or sugar make an excellent frozen product. Sliced peaches are shown being packed in syrup. A pint glass freezer jar is used here, but other sizes and types of containers are also suitable.

Follow these general directions for packing other fruits in syrup. Vary the syrup as called for in the directions for each fruit.

Make syrup ahead of time so it will be ready and cold when you need it. Peaches are best packed in a 40 percent syrup, using 3 cups of sugar to 4 cups of water. This amount makes about 5 1/2 cups of syrup. You need about 2/3 cup of syrup for each pint container of peaches.



For frozen peaches with better color and flavor, add ascorbic acid to the cold syrup as described on pages 10 and 11. For peaches, use 1/2 teaspoon crystalline ascorbic acid to each quart of syrup. 1. Select mature peaches that are firm-ripe, with no green color in the

- skins. Allow 1 to 1 1/2 pounds fresh peaches for each pint to be frozen. Wash carefully and drain.
- 2. Pit peaches and peel them by hand for the best looking product. Peaches peel more quickly if they are dipped first in boiling water for 30 seconds to 1 minute, then in cold water.



- Pour about 1/2 cup of cold syrup into each pint container. Slice peaches directly into container.
 Add syrup to cover peaches. Leave one-half inch head space at top of wide-mouth pint containers to allow for expansion of the fruit during freezing.



5. Put a small piece of crumpled freezer paper on top of fruit to keep peaches down in the syrup. Syrup should always cover fruit to keep top pieces from changing color and flavor.



6. Wipe all sealing edges clean for a good seal. Screw lid on tight. Label with name of fruit and date.



We eat the rhubarb stems. Rhubarb is usually of high quality during May.

- 1. Choose firm, tender stalks with few fibers. Stalks with more red look more appetizing than green stalks.
- 2. Wash carefully with your hands. A soft brush may be used if you do not break the skin.
- 3. Trim ends and cut out any damaged sections of the stem.
- 4. Lay several stems on a cutting board, and cut several pieces all at one time. You may choose how long you would like to make them: one inch, two inches, or just the right length to fit the package.
- 5. Pack tightly. Leave one-half inch headspace for wide-mouth pint boxes.



packed in sugar



Strawberries, sliced and sweetened with dry sugar, are the pride of the freezer. Follow the general steps shown here for other fruits packed in sugar. The container illustrated is a pint plastic box, but other types of containers may also be used. Freezing jars are excellent containers.

1. Select firm, ripe strawberries. About 2/3 quart fresh berries are needed for each pint frozen.



- 2. Wash berries a few at a time in cold water. Lift berries gently out of water and drain.
- 3. Remove caps; then slice berries into a bowl or shallow pan.



4. Using 3/4 cup of sugar per quart of strawberries, combine it with 1/2 teaspoon crystalline ascorbic acid (or follow directions on package of commercial ascorbic acid mixture). Sprinkle sugar mixture over the sliced berries. Turn berries over and over until sugar is dissolved and juice is formed.



5. Pack berries in container, leaving one-half inch head space in the wide-mouth pint box. Place a small piece of crumpled freezer paper on top of berries. Press berries down into juice.



6. Press lid on firmly to seal. Be sure the seal is watertight. Use freezer tape to assure a tight seal. Label with name of fruit and date of freezing. Place in freezer immediately.

NOTE:

Other berries except blueberries can be frozen using the above recipe.

Using Frozen Fruits and Berries

Now that you have frozen berries and fruits in your freezer, you can serve fruit for dessert or tempting snacks. To thaw, leave berries in their sealed containers. You can thaw berries in three ways:

- in the refrigerator—six to eight hours for a one-pound package
- at room temperature—two to four hours for a one-pound package
- in a pan of cool water (turned several times)—one-half hour to one hour for a one-pound package

Times given here are for berries in syrup-pack. Fruit packed with dry sugar thaws slightly faster.

The type of pack you froze the berries in helps you decide how to use them. Fruit packed in syrup is usually best for eating as fresh frozen. Berries packed in sugar or unsweetened are good for using in recipes because there is less liquid in the pack. You can use unsweetened packs for jams and jellies or in baking where you need to know how much sugar the ingredients contain. Use the unsweetened pack for a diabetic diet.

If you want to serve your berries uncooked, thaw them before serving. To cook your berries, thaw them until the pieces can be loosened; then cook them like fresh berries. You may need to add water if there isn't enough juice to prevent scorching.

Other uses for your berries are as a crushed fruit topping for ice cream or cake, a filling for sweet rolls, or jam. They may also be used for fruit cups, fruit salad, fruit-flavored yogurt, cobblers, or pies.



Fruit Pops

Mix

2 Tbsp. lemon juice or pineapple juice

- 1/2 cup water
- 2 Tbsp. sugar

4 cups chopped fresh fruit: bananas, peaches, pears, and melon (if fresh fruits are not available, use canned fruit cocktail)

Fill eight 5-oz. paper cups. Put a wooden spoon in the center and freeze.

Look for other ideas for quick snacks you can freeze. What about frozen fruit juice cubes? Ask your mother or another adult if you may use the trays in the refrigerator.

Cookies

Everybody likes cookies. Big cookies. Little cookies. Crisp ones. Chewy ones. Spicy and sweet ones. You may want to freeze some cookies to eat with your frozen fruit. Many kinds of cookies freeze well. You can freeze both unbaked dough and baked cookies. Special recipes are not necessary. Choose your favorites from any cookbook of tested recipes. The manual that came with your freezer may help, too.

The next time you or someone else in your family bakes cookies, check the ingredients in the recipe. If all the ingredients freeze well, you can expect the finished cookies to freeze well. Why not make a double recipe so you can freeze some?

To Freeze Unbaked Cookies:

Shape refrigerator-type dough in a roll with a diameter of the desired size. Wrap in plastic freezer wrap or heavy duty foil, seal, label, date,



and freeze. To use, thaw just enough to slice with a sharp knife. Place slices on a lightly greased baking street; bake.

If you wrap in freezer paper or in foil, place roll of cookie dough in center of paper, bring two edges together over dough, and fold down in series of locked folds. Press paper against dough to remove air from package. Well-wrapped dough keeps six to 12 months.

To Freeze Baked Cookies:

Cool the cookies quickly on a cake rack when you take them from the oven. Arrange baked cookies in a sturdy box lined with plastic freezer wrap or heavy-duty aluminum foil. Separate cookie layers with more plastic wrap or foil. Fold over plastic wrap to cover top of cookies and seal with freezer tape, or press foil over cookies to seal. Close box, label, date, and freeze.

To use, let cookies thaw at room temperature in their wrapping. This takes about 10 minutes. May be stored six to 12 months.

Seventeen fruits and berries are spelled out in the following puzzle. Find the Find each one listed at the side of the puzzle and circle the letters. To add to the challenge some are spelled backwards and up-side-down.

Frui	ts and	Т	D	А	В	L	А	С	K	В	Е	R	R	Ι	Е	S
F	· ·	Х	L	М	S	Е	I	R	R	Е	В	W	Е	D	Q	A
Ŀ	Serries	Y	W	R	Q	G	R	А	Ρ	Е	F	R	U	Ι	Т	K
		S	Т	R	А	W	В	Е	R	R	I	Е	S	Ρ	I	J
		0	S	S	U	S	Е	G	Ν	А	R	0	Н	Е	W	R
Y N		т	Т	F	G	U	А	F	Х	S	G	Q	S	А	Т	Н
		W	0	0	Н	В	Т	А	Ρ	Ρ	L	Е	S	С	U	U
		В	С	R	D	Е	В	Ν	Ι	В	0	L	т	Н	Т	В
Apples Apricots	Oranges Peaches Pears Pineapple Plums Raspberries Rhubarb Strawberries	А	I	Ι	Ρ	Y	S	0	Ν	Е	Q	М	Ρ	Е	0	A
Bananas Blackberries Blueberries Cherries Dewberries Grapefruit Grapes		I	R	В	L	U	Е	В	Е	R	R	I	Е	S	С	R
		Z	Ρ	0	U	С	Ι	А	А	R	В	V	А	S	Ζ	В
		В	А	т	М	Ρ	R	Ν	Ρ	I	Е	S	R	Е	А	U
		J	W	Е	S	G	R	А	Ρ	Е	S	V	S	W	Y	R
		V	R	А	W	Т	Е	Ν	L	S	Н	L	Ν	G	S	Т
		Е	С	Ζ	U	S	Н	А	Е	Т	В	Е	С	М	V	В
		П	S	V	в	Δ	С	S	0	R	Т	Δ	W	T	0	х

4-H Project Record for Freezing Fruits and Berries



Name _			_ Date_		
Name o	f 4-H club or project group	o			
Age	Grade in sch	ool			
What ar	e the most important thing	gs you learned in this project?			
How ma	any food preservation proj	ect group meetings did you at	tend?		
Fruits an	d Berries Frozen				
Date	Name of fruit or berry	Number of pints or quarts	Indicate Dry pack	e method of p Sugar pack	oreparation Syrup pack
Total					
List othe	er foods you and your fam	ily froze or canned this year.			
Date	Name of food	Number and size of jars or packages	Indicate n such as fr hot water	nethod of pro reezing, pres bath	eparation sure canner,

List any assistance you have given others (4-H'ers, family, friends) with their food preservation projects.

Number helped	Kind of assistance given	

List talks and demonstrations given which relate to this project. (Include radio and TV appearances.)

Торіс	Number in audience	Number of times given on each level*	
*Levels: Local (L), County (C), Area (A), State (S)			
List awards and recognition received.			
Type of award		Level*	
*Levels: Local (L), County (C), Area (A), State (S)			
On a separate sheet of paper write a story about w preservation project.	hat you did and lea	rned in your food	

Leader's Signature _____

Extension Agent's Signature _____

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