



Freezing Project Manual

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4-H Home Food Preservation Series

The home food preservation series contains four manuals:

Freezing for ages 8–18

Drying for ages 8–18

Boiling water canning for ages 8–18

Pressure canning for ages 14–18

The manuals may be used by anyone in these age groups regardless of their prior knowledge of home food preservation.

Each manual lists the objectives for the project, and each activity includes a short lesson followed by hands-on activities and questions for further learning. In addition, each manual includes an achievement program to help youth identify their goals and keep track of their accomplishments.

These manuals were written using USDA food preservation guidelines. When preserving food at home, be sure to always follow current USDA canning recipes and guidelines. Contact your local Extension office for a list of these resources.

Acknowledgments

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Washington State University

Meakin, Eunice A. 1983. *Freezing Meat, Fish and Poultry at Home*. Extension Bulletin 1195. Pullman, WA: Washington State University Extension Service.

Oregon State University

Raab, Carolyn A. 2007. *Freezing Fruits and Vegetables*. PNW 214. Corvallis, OR: Oregon State University Extension Service.

Raab, Carolyn, and N. Oehler. 2009. *Freezing Convenience Foods*. PNW 296. Corvallis, OR: Oregon State University Extension Service.

Resources

So Easy to Preserve, University of Georgia

<http://www.soeasytopreserve.com>

Ball Blue Book Guide to Preserving, 2011 or most current edition

Freezing Fruits and Vegetables, PNW 214

<http://extension.oregonstate.edu/catalog/pdf/pnw/pnw214.pdf>

Ball website

<http://www.freshpreserving.com>

National Center for Home Food Preservation website

<http://www.uga.edu/nchfp>

Abbreviations

tsp, TSP = teaspoon

tbsp, TBSP = tablespoon

lb = pound

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Notes to project helper

This manual is for youth who want to learn about home food preservation. They can't do it without your help. You play a key role in helping them learn the basic information, skills, and safety practices behind food preservation. With your help they will set goals, find resources, and evaluate their own progress as they complete this manual.

Your responsibilities

- Become familiar with the material in this book.
- Assist youth in selecting and completing food preservation activities appropriate for their skills.
- Guide youth through thinking about why something happens or why it doesn't.
- Encourage youth to complete difficult tasks to expand their skills.
- Help youth learn about their strengths and weaknesses.
- Help youth evaluate the quality of their completed activities. Questions at the end of each activity will help youth think through the steps in the project and how to apply their new skills in their everyday lives.
- Be an example with kitchen and food safety rules.

Using experiential learning

Experiential learning is the process of "do, reflect, apply." It is an inquiry-based approach to learning. Rather than being provided with information, learners experience, share, process, generalize, and apply what they are learning.

Do. Experience the activity, perform, do it. This could be a group activity or experience. It involves doing, it may be unfamiliar, and it pushes the learner to a new level.

Reflect. Share reactions and observations. Learners talk about their experiences while doing the activity. They share their reactions and observations and freely discuss their feelings.

Apply. Generalize to connect the experience to real-world examples. Learners identify general trends and real-life examples of when they could use what they have learned.

Developing life skills

The Iowa State Life Skills Model helps identify the life skills that youth attain through the experiential learning process. The life skills targeted in this manual include:

Head

- Wise use of resources
- Planning/organizing
- Goal setting
- Critical thinking

Heart

- Communication

Hands

- Marketable skills
- Self-motivation

Health

- Healthy lifestyle choices
- Disease prevention

Freezing foods basics

Project objectives

- Learn how to safely freeze foods and maintain top quality
- Learn how to use the frozen foods you prepared in healthy recipes
- Show others how to preserve foods by freezing

Why freeze foods?

Freezing is one of the easiest, quickest, and most convenient methods of preserving foods for later use. Properly frozen foods maintain more of their original color, flavor, and texture, and generally more of their nutrients, than foods preserved by other methods.

Cold temperatures stop the growth of organisms that can make you sick. Foods that are frozen continue to be safe because of these cold temperatures. Freezing also slows down the chemical reactions that break down food and reduce quality.

Getting ready to freeze

Freezing does not improve food, so start with the best and freshest available; this is a good idea when using any method of food preservation. Different foods have different freezing recommendations. For instance, some foods require a pretreatment called blanching, while others do not. Blanching is the process of immersing food into boiling water for a short period of time, then into cold water. This stops the enzyme process that could cause off colors and flavors in frozen fruits and vegetables. Some foods such as peaches freeze better in a liquid than they do dry. Follow approved recipes and instructions for best results.

Freezing fruits

Select ripe fruit that is not soft or mushy. Fruit ripened on the tree or vine is best. Use only freshly harvested fruit, and prepare it as quickly as possible for the best results. Wash, peel, trim, pit, or slice as directed or needed.

Packing fruit dry or with syrup

There are two types of packs: dry and syrup. Any fruit can be frozen without sugar. However, the texture may be softer.

Dry pack. Fruits that will be used for cooked products are often packed dry in sugar. Follow these guidelines:

- Use 1 cup of sugar for each 2–3 pounds of fruit.
- Mix sugar and fruit gently until the sugar has dissolved in the juice.
- Pack loosely in suitable packaging, leaving $\frac{1}{2}$ inch headspace between the food and the lid. Label and freeze.

Syrup pack. Fruits that will be served uncooked are usually packed in syrup, although fruit may also be packed in water or fruit juices. Follow these guidelines:

- If using syrup, prepare the strength of syrup desired; this will depend on the sweetness of the fruit, intended use of the product, and personal preference. See the syrup strengths chart below.
- Plan for about $\frac{2}{3}$ cup of syrup for each pint of fruit; about $1\frac{1}{3}$ cup for each quart.
- Dissolve sugar in hot water to fully dissolve the sugar. Cool before using.
- Place fruit in the selected container and pour the syrup, water, or juice over the fruit. Allow headspace, label, and freeze.

Syrup strengths

Syrup strength	Water	Sugar	Yield
Light	4 cups	1 cup	4 $\frac{3}{4}$ cups
Medium	4 cups	1 $\frac{3}{4}$ cups	5 cups
Heavy	4 cups	2 $\frac{3}{4}$ cups	5 $\frac{1}{2}$ cups

Equipment for freezing foods

Equipment	Use
Dry measuring cups	Used to measure dry and solid ingredients. They usually come in a nesting set of 1 cup, ½ cup, ⅓ cup, and ¼ cup.
Liquid measuring cups	Measure liquids with clear measuring cups. You can see through the cup to measure, and there is headspace.
Measuring spoons	Used to measure dry and liquid ingredients. They usually come in a nesting set of 1 tbsp, ½ tbsp, 1 tsp, ½ tsp, and ¼ tsp. When you measure liquid ingredients, measure carefully to avoid spills.
Sharp knives and cutting boards	Used to cut food to the desired size. Wash knives and cutting boards after each use in warm, soapy water.
Potholders	Used to protect hands when working with hot pans.
Rubber spatula	Used to scrape the sides of bowls or pans. You can use the flat side to level dry or solid ingredients when measuring.
Large pans	Heavy-duty pans are best for cooking ingredients. Don't use aluminum pans.
Long-handled spoons	Spoons should be tall enough that they will not fall into the ingredients.
Mixing bowls	Made of pottery, glass, metal, or plastic. They come in different sizes.
Funnel	Used to pour liquids into jars.
Colander	Used to drain foods after washing.
Timer	For timing food preparation and processing times.
Airtight storage containers	Used to store food for freezing. Containers that you can eliminate air from are best.
Food chopper, blender, or food processor	Equipment that will chop, blend, and puree items for food preservation. These optional items can cut back on preparation time. Handle them under the supervision of an adult.
Labels, permanent markers	Used to write on containers to identify the type of food, pretreatment step, and date.
Cookie sheet or jelly roll pan	Used for freezing items individually before packaging them.
Blanching basket	Used for blanching vegetables before freezing.
Freezer bags and freezer jars	Used for safely storing frozen or dried foods for an extended period of time.
Jars and lids	Used for safely storing frozen foods for an extended period of time. Mason-type, threaded, home canning jars with 2-part lids. Recommended sizes: ½ pint, 1½ pint, quart, and ½ gallon (only for juice).
Bubble remover & headspace measurer	Has graduations on one end to accurately measure headspace and a tapered tip on the other end to remove bubbles from the jar. Only use plastic versions. Used to measure headspace if using jars for freezer storage.
Peeler	Utensil used to remove the skin from vegetables.
Scale	Used to weigh fruit and vegetables.

Preventing browning. Light-colored fruit may turn brown. To prevent this, ascorbic acid or a commercial anti-darkening agent may be added. Ascorbic acid is available in the canning sections of many stores, or use 500-milligram vitamin C tablets. Three crushed tablets equal ½ teaspoon of ascorbic acid.

Follow these guidelines:

- For syrup packs, add ½ teaspoon ascorbic acid to each quart.
- For dry packs, dissolve ½ teaspoon ascorbic acid in 3 tablespoons of cold water and sprinkle over 4 cups of fruit before adding sugar.
- Follow manufacturer's directions for commercial anti-darkening agents.

See the guidelines for freezing fruit chart below for more information.

Individual quick freeze (IQF)

To freeze individual pieces of fruit or vegetables, prepare them by washing, draining, hulling, pitting, or peeling if necessary. Place them in a single layer on a cookie sheet. Freeze immediately. Once frozen, package in an airtight container for convenient use in smoothies or other recipes that call for a specific amount of fruit or vegetable.

Freezing juices

Many kinds of fruit juices can be prepared and frozen for later use. These include cherry, grape, plum, raspberry, and strawberry. The procedure is similar for each:

- Use only fully ripe and high-quality fruit.
- Prepare fruit by washing, draining, hulling, pitting, or peeling if necessary.
- Extract juice by heating the fruit slightly and straining through a jelly bag. Alternatively, place the fruit in a steam juicer.
- Sweeten as desired.
- Pour into containers, allowing 1 inch headspace. Seal and freeze.

Note: Grape juice must be allowed to sit overnight in the refrigerator to allow sediment to sink to the bottom. Pour off the clear juice or strain the juice before freezing.

Tomato juice can be extracted by simmering quarters or eighths of tomatoes for 5 to 10 minutes. Then press through a sieve or food mill, salt if desired, and freeze. Omitting the heating phase will cause the juice to separate.

Guidelines for freezing fruit

Fruit	Preparation	Freezing method
Apples	Wash, peel, core, and slice; use anti-darkening agent to prevent browning.	Syrup pack, dry pack, or pack without any sugar and freeze.
Bananas	Peel and freeze whole for snacks or mash with an anti-darkening agent.	Wrap whole bananas tightly, pack mashed bananas into container and freeze.
Cherries, sweet	Stem, wash, and pit if desired.	Syrup pack, dry pack, or pack without any sugar and freeze.
Pears	Wash, peel, cut in halves or quarters, core, and heat in syrup for 1–2 minutes; drain and cool.	Syrup pack and freeze.
Peaches	Wash, peel, remove pit, cut into halves or slices, use anti-darkening agent to prevent browning.	Syrup pack, dry pack, or pack without any sugar and freeze.
Raspberries	Wash and drain.	Syrup pack, dry pack, or pack without any sugar and freeze.
Strawberries	Wash, drain, and remove hulls; slice if desired.	Syrup pack, dry pack, or pack without any sugar and freeze.
Cantaloupe, melons	Cut in half, remove seeds, peel; cut into slices, cubes, or balls.	Syrup pack and freeze.

Source: Raab, Carolyn A. 2007. *Freezing Fruits and Vegetables*. PNW 214. Corvallis, OR: Oregon State University Extension Service.

Activities

1. Let's Freeze Fruit: Individual Quick Freeze (IQF)

Prepare fruit by washing, draining, hulling, pitting, or peeling if necessary. Place fruit in a single layer on a cookie sheet. Freeze immediately. Once frozen, package in an airtight container for convenient use in smoothies or other recipes that call for a specific amount of fruit. Label and freeze.



Journaling

What fruit did you choose to IQF?

What challenges did you have with this activity?

What will you do differently next time? Why?

2. Let's Make a Fruit Smoothie

RECIPE: FRUIT SMOOTHIE

INGREDIENTS:

2 MEDIUM BANANAS

10-12 IQF STRAWBERRIES

1 CUP APPLE JUICE

SERVES 4

Procedure: Place all the ingredients in a blender and mix until smooth. Pour into glasses and enjoy.

Create your own smoothie

List one fruit you used _____

List the second fruit you used _____

List the liquid you used _____

Explain how you created "Your Own Smoothie."



Journaling

What smoothie recipe did you try?

What challenges did you have with this activity?

What will you do differently next time? Why?

3. Let's Freeze Fruit in a Syrup Pack

Choose a fruit to freeze using the syrup pack method. Following the instructions in this manual, prepare the syrup strength you prefer and pack fruit into a container. Pour syrup over the fruit, leaving headspace. Label and freeze.



Journaling

What fruit did you freeze?

What challenges did you have with this activity?

What will you do differently next time? Why?
