

4-H Food Preservation

Leader's Guide

The 4-H Food Preservation project gives 4-H members the opportunity to express creativity, practice decision making, and learn skills that will be useful throughout their lives. As a 4-H Food Preservation project leader, you set the stage to help members:

- Learn principles of safe food preservation
- Practice food preservation techniques in canning, freezing, and drying
- Use preserved food creatively in meals and snacks
- Share what they learn in meaningful ways

The project has two levels: Junior and Intermediate/Senior. The Junior level is for members from 9 to 11 years old and focuses on beginning food preservation skills. The Intermediate/Senior level is for members 12 to 18 years old and expands on the 4-H member's skills in food preservation. Members are encouraged to repeat techniques until they learn the skills. They may spend several years in each level to fully explore the skills and options before moving on. Members beginning food preservation at the Intermediate or Senior age are encouraged to begin with the Junior-level skills before moving on to the skills introduced at Intermediate/Senior level. Please refer to member publications 4-H Food Preservation: Junior Level (4-H 93310), and 4-H Food Preservation: Intermediate/Senior Level (4-H 93320), for more information.

The role of parents

Members at all levels need to practice techniques at club meetings. Many learning experiences take place at home as well. For some activities, safety is



an important consideration as members are working with heavy jars and canners, hot liquids, and a variety of equipment. Therefore, it is important that parents understand their role as supervisors of food preservation activities. Be sure parents receive the member handouts that discuss expectations of them and goals of the project.

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Invite parents to the first meeting, and talk about the goals of the project; what members will be doing; and the number, length, time, and place of project meetings. Consider asking parents to help with club meeting activities, tours, or field trips.

Put It Up! Food Preservation for Youth Curriculum

The Oregon 4-H program has adopted the *Put it Up! Food Preservation for Youth* curriculum from the National Center for Home Food Preservation. The *Put It Up!* curriculum is a series of lessons that help youth explore and understand the science of safe food preservation. Though the hands-on food preservation activities are designed for middle school ages, they are appropriate for fourth- to 12th-graders. This curriculum is available for Oregon 4-H leaders to use at no charge thanks to funding from the United States Department of Agriculture National Institute of Food and Agriculture.

The series is composed of six different food preservation methods:

- boiling water canning
- making jam
- pickling
- freezing
- drying
- pressure canning

Each method is divided into a beginning hands-on activity and an advanced hands-on activity.

In addition to step-by-step procedures, reflection questions, and ideas for experimentation, each method also includes additional activities: a science-based, fill-in-the-blank challenge, a history-based word search, a glossary, a resource list, a knowledge test, and more. These activities could be used to prepare for hands-on activities while waiting for foods to process or as an alternative to a hands-on activity at some meetings. They will help 4-H'ers understand the science of food preservation.

To access pdf files of the free curriculum, click the link at the bottom of this website: <http://nchfp.uga.edu/putitup.html>. Once you submit the request form, you will receive a username, password, and web page address with the curriculum files. Please do not share the username/password/website with



others. In order to continue to be able to offer the curriculum at no cost, the National Center for Home Food Preservation must gather information about who is using it and how it is being used. Others who wish to use the curriculum should register themselves. There is no limit on the number of people who can access this curriculum.

Recommendations for using Put It Up! Food Preservation for Youth with Oregon 4-H clubs

Additional suggestions to accompany the *Put It Up!* curriculum include:

Method 1: Boiling Water Canning

1. *Beginning Boiling Water Canning Activity: Crushed Tomatoes.* For the first product, instead of crushed tomatoes (steps 15 and 16, page Beg. 6) you may prefer to follow instructions for canning whole or halved tomatoes in *Canning Tomatoes and Tomato Products* (PNW 300) available at <https://catalog.extension.oregonstate.edu/pnw300>
2. *Advanced Boiling Water Canning Activity: Choice Salsa.* Instead of the recipe example in the lesson (step 19, page Adv. 6) you may prefer to use a recipe selected from *Salsa Recipes for Canning* (PNW 395) available at <https://catalog.extension.oregonstate.edu/pnw395>

Method 2: Making Jam

1. We suggest using powdered pectin meant for reduced sugar rather than the recipe provided in the *Advanced Jam Making Activity* in the lesson. There are several brands available on the market. Using the recipe and instructions



on the pectin package is recommended in Oregon 4-H fair entry requirements. There will be instructions for many types of fruit in the recipe pamphlet. This is a good opportunity to use fruit you may have in your freezer.

Method 3: Pickling

1. *Beginning Pickle Making Activity: Refrigerator Pickles* is a fresh pickle using a commercial spice mix that is stored in the refrigerator and meant to be consumed within 3 months. This would not be an option for a fair entry.
2. *Advanced Pickle Making Activity: Dill Pickles* is a basic dill pickle recipe. The spices, dill, and garlic are optional and are placed in each jar, making it possible for every jar to be unique. This would allow each 4-H'er to make his or her own jar of pickles from one recipe.
3. Other vegetables can be pickled using the same method as cucumbers. Find additional options for approved recipes in *Pickling Vegetables* (PNW 355) at <https://catalog.extension.oregonstate.edu/pnw355>

Method 4: Freezing

1. *Advanced Freezing Activity: Corn-on-the-cob* suggests that members only freeze corn blanched and frozen on the cob. For an activity that allows a comparison of freezing methods, we suggest members freeze some cobs without blanching and freeze some corn after it has been cut off the cob for a comparison of outcomes and to determine which method is preferred.

Method 5: Drying

1. *Beginning Drying Activity: Fruit* suggests drying grapes and blueberries but many other fruits are available and will dry well. Look for additional suggestions *Drying Fruits and Vegetables* (PNW 397) at <https://catalog.extension.oregonstate.edu/pnw397>.

Method 6: Pressure Canning

1. *Advanced Pressure Canning Activity: Tomato Veggie Soup* gives quantities for suggested vegetables for the soup. Any mixture of the listed vegetables would be safe. Note that the jars are to be filled half full of solids and the rest of the way with the liquid before processing.

The *Put It Up!* curriculum also includes a leader's guide titled *Food Preservation for Youth* that focuses on specific ways to use the youth modules. This leader's guide also incorporates math and science education, which allows you to help your members meet the performance expectations of the Next Generation Science Standards.

Oregon 4-H Fair Guidelines for Food Preservation Exhibits

The Oregon 4-H food preservation exhibit classes for county and state fairs contain preservation techniques not in the *Put it Up!* curriculum. These classes include dried meat and fermentation. For these techniques and additional information, there are several resources available that leaders will find helpful:

- Food Preservation publications from Oregon State University Extension Service <https://catalog.extension.oregonstate.edu/topic/nutrition-and-foods/food-preservation-and-storage>
- *Principles of Home Canning, USDA Complete Guide to Home Canning* http://nchfp.uga.edu/publications/publications_usda.html
- *So Easy to Preserve*, National Center for Home Food Preservation http://nchfp.uga.edu/publications/publications_uga.html

Exhibits for county and state fairs are required to be made from recipes and instructions from these approved sources. The recipes in *Put it Up!* are from

these sources and are acceptable for county fair entries.

Teaching techniques

As a 4-H leader, you are a teacher. If you use a variety of teaching techniques, you can stimulate and maintain interest in the project. Some of these techniques are:

Demonstrations

A demonstration is showing by doing. You and other adults will demonstrate techniques to club members, and members might be expected to share what they have learned by demonstrating techniques to others. Plan to ask every club member to give an informal “mini-demonstration” to the club showing a skill they have learned. Doing this also gives each member an opportunity to practice speaking in front of a group.

Supervised practice sessions

Subject matter can be taught most effectively by having members practice techniques that the leader has demonstrated. To reinforce their learning, it is important for members to see and sample products soon after completing the preservation process. Since the preservation process is often too long to complete during a meeting, you might need to examine and evaluate some products at the next meeting. You might occasionally find it worthwhile to preserve a product ahead of time. That way, a finished product can be seen and sampled by members as they preserve the same product. This immediate feedback helps keep the members’ interest.

Field trips

Field trips can be enjoyable learning experiences. Possibilities include visits to stores or stands that sell fresh produce, stores that sell equipment for preserving food, and facilities that package or process fruits, vegetable, or meats.

Experiments

The *Put It Up!* curriculum includes experiments as a way to help youth understand why specific food preservation techniques are used. Experiments help members explore the whys and hows of food preservation. Additional experiment suggestions are included later in this publication.

Other

There may be other learning opportunities available in your area, such as foods and nutrition participation days, food preservation judging or meal contests, educational displays, OSU Master Food Preserver clinics, or special community activities.

Experiments

Experiments are a great way for youth to understand why specific techniques are used when preserving foods. Experiments also help solidify foundational scientific concepts. Here are some additional experiments that could be incorporated into club meetings.

Packing light-colored fruit for freezing

Purpose: To evaluate the effect of packing method on the color of frozen fruit

Reference: *Freezing Fruits and Vegetables* (PNW 214)

Prepare 2 pounds of a light-colored fruit (apples, peaches, or pears) for freezing. Divide the fruit into three batches and pack each batch a different way, as follows:

1. Syrup pack: Add ascorbic acid or a commercial anti-browning mixture
2. Dry sugar pack: Add ascorbic acid or a commercial anti-browning mixture
3. Dry pack: Do not add sugar and do not add ascorbic acid

Pack into separate freezer containers, seal, label, and freeze.

After 3 to 4 weeks, thaw and compare the color of the batches. Is the color light (like the original color), slightly brown, or very brown? Is there a difference in the sweetness?

Color of product	
Syrup pack	
Dry sugar pack	
Dry pack	

Discussion questions:

- Are there differences in the color? Why?
- Are any of the batches too brown to serve?

- How could you use fruits packed in syrup?
Fruits packed in sugar?

Science “Why”

Enzymes cause light-colored fruits to turn brown when they are exposed to the air. Fruits that have been treated with an anti-browning compound (such as ascorbic acid) hold their color better.

Personal preference will determine whether untreated fruit (i.e., no anti-browning compound) is too brown to serve.

Fruits packed in syrup could be served as a dessert. Fruits packed in sugar might be used for a pie.

Blanching vegetables for freezing

Purpose: To evaluate the effect of blanching on the color, texture, and flavor of frozen vegetables

Reference: *Freezing Fruits and Vegetables* (PNW 214)

Prepare 1 pound of Chinese or other edible pod peas for freezing. (The experimental results are more clear-cut when this vegetable is used.) Wash the peas, then remove stems, blossom ends, and strings. Leave whole.

Divide the peas into two batches. Blanch one batch 2½ to 3 minutes; cool immediately. Do not blanch the second batch.

Pack into separate freezer containers; seal, label, and freeze.

After 1 to 2 weeks, thaw, cook, and compare the color, texture, and flavor.

Is the color natural or off-color? Is the flavor typical or “hay-like?” Are the peas tough or tender?

	Color	Flavor	Texture
Blanched			
Unblanched			

Discussion question

Were there differences in the color, flavor, and texture? Why?

Science “Why”

Vegetables are blanched before freezing to stop the action of enzymes that cause changes in the color, texture, and flavor. Vegetables that are not blanched before freezing often turn off-color, become tough, and develop a “hay-like” flavor.

Pretreating light-colored fruit for drying

Purpose: To evaluate the effects of pretreating on the color of dried fruit

Reference: *Drying Fruits and Vegetables* (PNW 397)

Prepare 2 to 3 pounds of a light-colored fruit (apples, peaches, pears) for drying.

Divide the fruit into several batches. Leave one batch untreated. Pretreat each of the other batches a different way. Choose among:

- Ascorbic acid dip
- Citric acid dip
- Salt dip
- Syrup blanching

Label each batch and dry as directed.

After drying, compare the results. Is the color light (like the original color), slightly brown, or very brown? (Members might also reconstitute the fruit and compare the flavor and texture.)

	Type of pretreatment	Color of product
Example		

Discussion questions

Which method was the most effective way to prevent browning? The least effective?

Is it always necessary to pretreat light-colored fruit before drying?

Science “Why”

Enzymes cause light-colored fruits to turn brown when exposed to air. Pretreating by dipping or blanching before drying helps prevent browning. The method that you choose to prevent browning will depend on the fruit you are drying, the ingredients you have available, and your own personal preferences. If you don’t mind brown dried fruit, you may decide not to pretreat your light-colored fruit at all.

Ways to Share

Encourage club members to share their skills with others and show what they have learned. Member materials include suggestions for each of the project levels. They may include:

- Giving presentations at project meetings, shopping areas, service clubs, farmer’s markets,

and outdoor cookery or backpacking group meetings

- Making displays for store windows, libraries, and schools
- Preparing meals or snacks for families and friends, using preserved foods
- Making a preserved foods gift package for someone
- Becoming a junior or teen leader or otherwise helping younger members learn food preservation techniques
- Participating in fairs or contests such as an individual educational display, a club educational exhibit, a presentation, a foods contest, or an individual exhibit

Help members check exhibit requirements in the fair exhibitor handbook as they plan their exhibits or other participation. You'll find more information on preparing presentations and displays on the OSU Extension 4-H website.

Topics to share through presentations and displays can be based on any of the skills or information a club member is learning. Topic examples include:

- Choosing containers for freezing
- Using canned or frozen fruits in recipes
- Selecting fruit to preserve
- Selecting and using a boiling water canner
- Selecting pectin for jam or jelly
- Making quick pickles or relish
- Important information on a label
- Making fruit leather
- Pretreating fruit for drying
- Reconstituting and using dried fruit
- Pretreating vegetables for freezing
- Pickling methods
- Steps in making juice
- Selecting and using a pressure canner



- Choosing a food preservation method for meat, poultry, or fish
- Preparing a meal for one or two using preserved foods
- Planning a backpacking meal of dried foods
- Preparing and freezing a convenience food
- Preparing a quick meal using preserved foods
- Storage and shelf life of preserved foods
- Comparing the costs, quality, and flavor of home-canned foods with store-bought foods

Reflection

Self-evaluation is perhaps the most effective because it measures self-development. You can help members informally evaluate their own accomplishments by having them ask themselves the following: What did they learn, how did they share what they learned with others, and what do they plan to learn or do next? The *Put It Up!* curriculum includes a Time to Reflect worksheet in each module. Feeling good about their accomplishments can often be a better indicator of success than blue ribbons.

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