



# DISCOVER



## 4-H FOOD PRESERVATION



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## Description

The Discover 4-H Clubs series guides new 4-H volunteer leaders through the process of starting a 4-H club or provides a guideline for seasoned volunteer leaders to try a new project area. Each guide outlines everything needed to organize a club and hold the first six club meetings related to a specific project area.

## Purpose

The purpose is to create an environment for families to come together and participate in learning activities while spending time together as a multi-family club. Members will experiment with new 4-H project areas.

## What is 4-H?

4-H is one of the largest youth development organizations in the United States. 4-H is found in almost every county across the nation and enjoys a partnership between the U. S. Department of Agriculture (USDA), the state land-grant universities (e.g., Utah State University), and local county governments.

4-H is about youth and adults working together as partners in designing and implementing club and individual plans for activities and events. Positive youth development is the primary goal of 4-H. The project area serves as the vehicle for members to learn and master project-specific skills while developing basic life skills. All projects support the ultimate goal for the 4-H member to develop positive personal assets needed to live successfully in a diverse and changing world.

Participation in 4-H has shown many positive outcomes for youth. Specifically, 4-H participants have higher participation in civic contribution, higher grades, increased healthy habits, and higher participation in science than other youth (Lerner et al., 2005).

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## Utah 4-H

4-H is the youth development program of Utah State University Extension and has more than 90,000 youth participants and 8,600 adult volunteers. Each county (Daggett is covered by Uintah County) has a Utah State University Extension office that administers the 4-H program.

## The 4-H Motto

"To Make the Best Better!"

## The 4-H Pledge

I pledge: My HEAD to clearer thinking, my HEART to greater loyalty, my HANDS to larger service and my HEALTH to better living, for my club, my community, my country, and my world.

## 4-H Clubs

What is a 4-H Club? The club is the basic unit and foundation of 4-H. An organized club meets regularly (once a month, twice a month, weekly, etc.) under the guidance of one or more volunteer leaders, elects its own officers, plans its own program, and participates in a variety of activities. Clubs may choose to meet during the school year, only for the summer, or both.

## Club Enrollment

Enroll your club with your local Extension office. Each member will need to complete a Club Member Enrollment form, Medical History form, and a Code of Conduct/Photo Release form (print these from the [www.utah4h.org](http://www.utah4h.org) website or get them from the county Extension office).

## Elect Club Officers

Elect club officers during one of your first club meetings. Depending on how many youth are in your club, you can decide how many officers you would like. This will typically include a president, vice president, pledge leader, and secretary. Other possible officers or committees are: song leader, activity facilitator, clean-up supervisor, recreation chair, scrapbook coordinator, contact committee (email, phone, etc.), field trip committee, club photographer, etc. Pairing older members with younger members as Sr. and Jr. officers may be an effective strategy to involve a greater number of youth in leadership roles and reinforce the leadership experience for both ages. Your club may decide the duration of officers (6 months, 1 year, etc.).



## A Typical Club Meeting

Follow this outline for each club meeting:

- Call to order—president
- Pledge of Allegiance and 4-H Pledge—pledge leader (arranges for club members to give pledges)
- Song—song leader (leads or arranges for club member to lead)
- Roll call—secretary (may use an icebreaker or get acquainted type of roll call to get the meeting started)
- Minutes of the last meeting—secretary
- Business/Announcements—vice president
- Club Activity—arranged by activity facilitator and includes project, lesson, service, etc. These are outlined by project area in the following pages.
- Refreshments—arranged by refreshment coordinator
- Clean Up—led by clean-up supervisor



## Essential Elements of 4-H Youth Development

The essential elements are about healthy environments. Regardless of the project area, youth need to be in environments where the following elements are present in order to foster youth development.

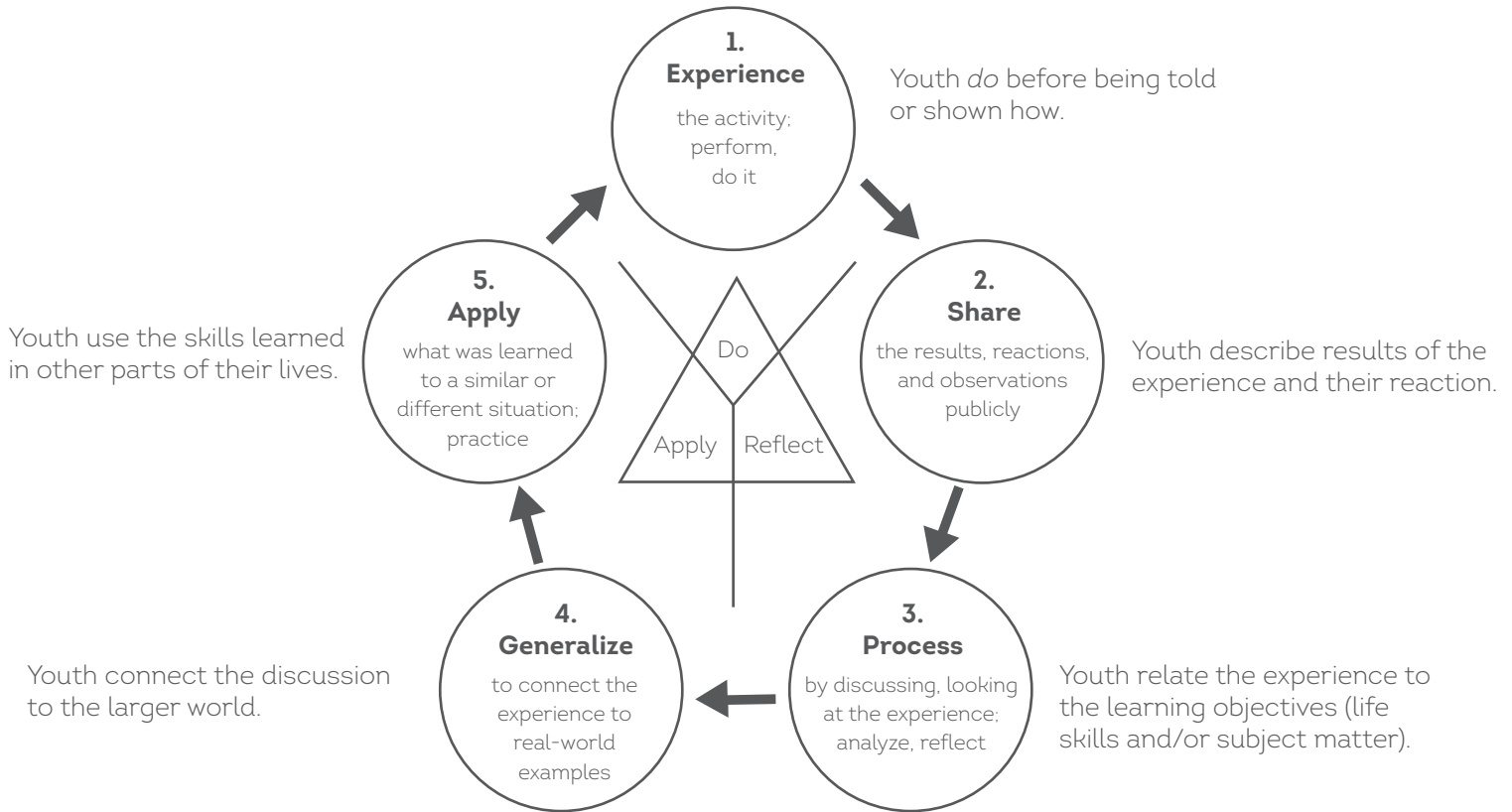
1. **Belonging:** a positive relationship with a caring adult; an inclusive and safe environment.
2. **Mastery:** engagement in learning, opportunity for mastery.
3. **Independence:** opportunity to see oneself as an active participant in the future, opportunity to make choices.
4. **Generosity:** opportunity to value and practice service to others.

(Information retrieved from: <http://www.4-h.org/resource-library/professional-development-learning/4-h-youth-development/youth-development/essential-elements/>)



## 4-H “Learning by Doing” Learning Approach

The Do, Reflect, Apply learning approach allows youth to experience the learning process with minimal guidance from adults. This allows for discovery by youth that may not take place with exact instructions.



## 4-H Mission Mandates

The mission of 4-H is to provide meaningful opportunities for youth and adults to work together to create sustainable community change. This is accomplished within three primary content areas, or mission mandates - citizenship, healthy living, and science. These mandates reiterate the founding purposes of Extension (e.g., community leadership, quality of life, and technology transfer) in the context of 21st century challenges and opportunities. (Information retrieved from: [http://www.csrees.usda.gov/nea/family/res/pdfs/Mission\\_Mandates.pdf](http://www.csrees.usda.gov/nea/family/res/pdfs/Mission_Mandates.pdf))

1. **Citizenship:** connecting youth to their community, community leaders, and their role in civic affairs. This may include: civic engagement, service, civic education, and leadership.
2. **Healthy Living:** promoting healthy living to youth and their families. This includes: nutrition, fitness, social-emotional health, injury prevention, and prevention of tobacco, alcohol, and other drug use.
3. **Science:** preparing youth for science, engineering, and technology education. The core areas include: animal science and agriculture, applied mathematics, consumer science, engineering, environmental science and natural resources, life science, and technology.

## Getting Started

1. Recruit one to three other families to form a club with you.
  - a. Send 4-H registration form and medical/photo release form to each family (available at [utah4h.org](http://utah4h.org)).
  - b. Distribute the Discover 4-H Clubs curriculum to each family.
  - c. Decide on a club name.
  - d. Choose how often your club will meet (e.g., monthly, bi-monthly, etc.).
2. Enroll as a 4-H volunteer at the local county Extension office (invite other parents to do the same).
3. Enroll your club at the local county Extension office.
  - a. Sign up to receive the county 4-H newsletter from your county Extension office to stay informed about 4-H related opportunities.
4. Identify which family/adult leader will be in charge of the first club meeting.
  - a. Set a date for your first club meeting and invite the other participants.
5. Hold the first club meeting (if this is a newly formed club).
  - a. See *A Typical Club Meeting* section above for a general outline.
    - i. Your activity for this first club meeting will be to elect club officers and to schedule the six project area club meetings outlined in the remainder of this guide. You may also complete a-d under #1 above.
  - b. At the end of the first club meeting, make a calendar outlining the adult leader in charge (in partnership with the club president) of each club meeting along with the dates, locations, and times of the remaining club meetings.
6. Hold the six project-specific club meetings outlined in this guide.
7. Continue with the same project area with the 4-H curriculum of your choice (can be obtained from the county Extension office) OR try another Discover 4-H Club project area.



## Other Resources

Utah 4-H website: [www.Utah4-h.org](http://www.Utah4-h.org)

National 4-H website: [www.4-h.org](http://www.4-h.org)

4-H volunteer training:

To set up login:

<http://utah4h.org/volunteers/training/>

To start modules: (password = volunteer)

## References

Information was taken from the Utah 4-H website ([utah4h.org](http://utah4h.org)), the National 4-H website ([4h.org](http://4h.org)), the Utah Volunteer Handbook, or as otherwise noted.

Lerner, R., M. et al. (2005). Positive youth development, participation in community youth development programs, and community contributions of fifth grade adolescents: Findings from the first wave of the 4-H Study of Positive Youth Development. *Journal of Early Adolescence*, 25(1), 17-71.

**We would love feedback or suggestions on this guide; please go to the following link to take a short survey:**

**Go to <https://goo.gl/iTfiJV> or [Click here to give your feedback](#)**

# 4-H FOOD PRESERVATION CLUB *Meetings*



## Club Meeting 1

Introduction to Food Preservation ..... 2



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# 4-H Club Meeting 1

## Introduction to Food Preservation



### Supplies

- One apple
- Lemon juice
- Knife
- Projector
- Computer with Power-Point
- "The Ant and the Grasshopper" (Aesop's fables)
- ChooseMyPlate table
- Food Safety crossword
- Small bags of trail mix with dried fruit or another preserved treat
- Paper
- Coloring supplies
- Samples of dried, frozen, and canned foods

### INTRODUCTION

In this club meeting, club members will learn about why we preserve foods, what makes them decay, and we will get to explore food safety, preservation history, and different kinds of preserved foods

### PRIOR TO MEETING

- Print "The Ant and the Grasshopper" story and Food Safety crossword puzzle. Set up the projector and search and pull up a ChooseMyPlate table from the pdf. You can also print this table for each club member. Also pull up the Timeline of Food Preservation PowerPoint. Links to these can all be found under "References and Other Resources."

## Activity #1

### Types of Food Preservation



## TYPES OF FOOD PRESERVATION

TIME: 10 MINUTES

1. Cut an apple and dip one slice in the lemon juice.
2. Let it sit while you talk; this will be used later to show what oxidation is.
3. Define food preservation and discuss what it is.
4. Explain that there are five main ways to preserve foods: Freezing, drying (dehydrating), water bath canning, pressure canning, and curing. The main purpose of each of these is to slow or stop microorganisms from causing the food to spoil, and to stop oxidation from happening (you can show the different slices of apples now). Oxidation is when an atom gives up an electron in a reaction. For example, when something burns, it is a rapid oxidation. Another great example is rust. When water gets on iron, the iron will give up an electron to the oxygen in water and will turn a reddish color. This is an example of slow oxidation. When fruit, like apples, turn brown, it is because of oxidation, similar to rust.





5. These microorganisms are generally bacteria that can be very dangerous. Names such as Salmonella, Staph, and Botulism will be familiar to you later. These dangerous bacteria are the reason that we need to be SAFE and CAREFUL while preserving food. Understanding home preservation principles is essential to keeping everyone healthy and happy.
6. You can let club members eat the apples.

## Activity #2

The Ant and the Grasshopper



# THE ANT AND THE GRASSHOPPER

TIME: 15 MINUTES

1. Tell the story of "The Ant and the Grasshopper" (Aesop's fables).
2. Have each member look at the ChooseMyPlate table (either a hard copy or projected) for the amount of each food group everyone should be getting. Ask them if they are fulfilling this.  
Table can be found here: [https://choosemyplate-prod.azureedge.net/sites/default/files/printablematerials/mini\\_poster.pdf](https://choosemyplate-prod.azureedge.net/sites/default/files/printablematerials/mini_poster.pdf)
3. Ask them if it is easier to have a healthy diet in the summer or the winter. Why? All of the plants grow in the warm months, so we need to have some stored up. Having a constant supply ready of each of the food groups is important to be healthy and maintain energy. It is also great to have in case of any emergencies such as natural disasters and job loss.
4. Have club members discuss in what situations they might need to use preserved food.

## Activity #3

Safety



# SAFETY

TIME: 10 MINUTES

1. Discuss what might be dangerous in the kitchen.
2. Have the class come up with rules.
3. Make sure that they include how to handle sharp objects (techniques), how to handle hot objects (techniques), and workplace cleanliness.



# INTRODUCTION TO FOOD PRESERVATION

TIME: 10 MINUTES

Choose 1-3 of the following activities (depending on how long they take) to do with your club:

1. Food Preservation crossword:

a. After teaching about the basics of food safety, have club members work in groups to finish the crossword puzzle. Award the fastest group small trail mix bags with dried fruit in them or another preserved treat (leader may choose to award all participants).

2. Timeline of Food Preservation Powerpoint. Talk about the history of food preservation using this Power-Point:

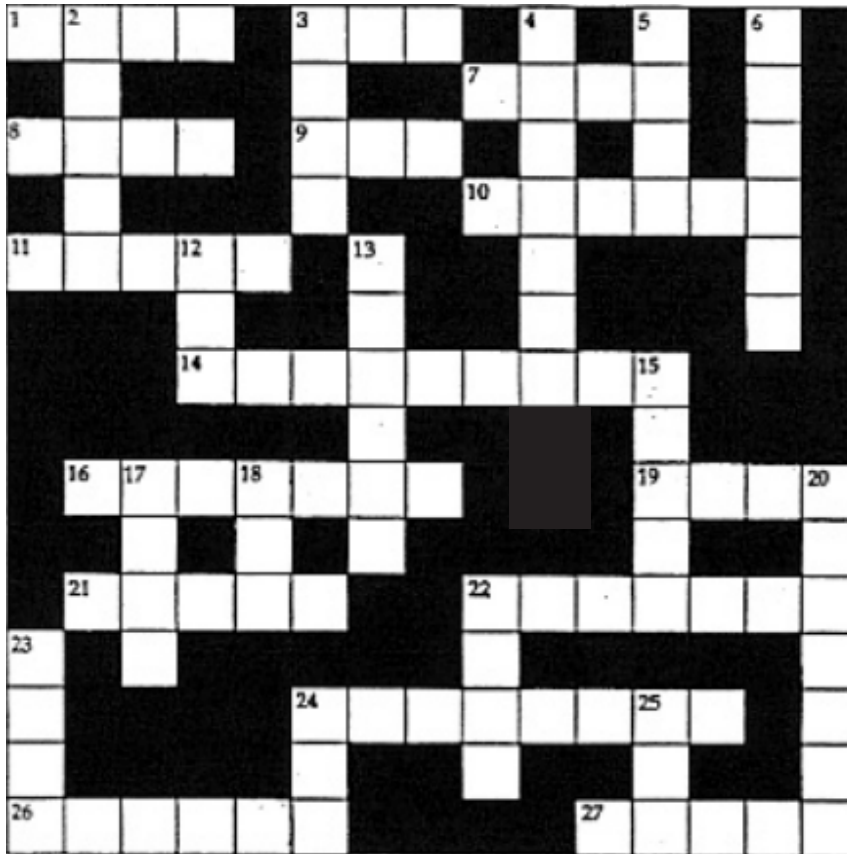
a. <https://prezi.com/vjxnf8e1acja/timeline-of-food-preservation-methods/?webgl=0>. Have club members make teams of 3-4 and come up with a possible new food preservation method and present it to the club.

3. Taste test of preserved foods:

a. Talk about the qualities of preserved foods. Dried foods are light and easy to carry. Frozen foods can last for a long time and still taste fairly fresh. Canned goods last the longest and are tasty.



# FOOD SAFETY CROSSWORD



## Across

- 1) In a hot situation, keep “. . .” (4)
- 3) Keep your “. . .” away from your food (3)
- 7) It's not right hand, it's the “. . .” hand (4)
- 8) Have you a “. . .” of an idea how to keep food safe? (4)
- 9) Raw food should “. . .” be kept above cooked food (3)
- 10) It comes in Fahrenheit or Centigrade - or from a university (6)
- 11) Read this type of date carefully and eat in time (3,2)
- 14) This type of cleaner kills germs (9)
- 16) Clean, cool, and dry - that's how this area should be (7)
- 19) A beverage that comes from cows (4)
- 21) “Now wash your . . .” Mother used to say (5)
- 22) Do this and clean the fridge regularly so it can work efficiently (7)
- 24) Up-market name for germs (8)
- 26) A Scottish way of describing how hot food should be for safe eating (6)
- 27) All cooking utensils should be “. . .” (5)

## Down

- 2) Don't leave your left “. . .” out (5)
- 3) Meat and poultry juices should not blush this color (4)
- 4) Unhand this before handling food (9)
- 5) Sometimes you need to cause a “. . .” part way through microwaves cooking (4)
- 6) In cricket, they come off. In the kitchen, they should go on (6)
- 12) This type of food shouldn't be eaten (3)
- 13) Keep this below 5 C and perishable food will be safe (6)
- 15) Watch this while waiting for the egg to boil (6)
- 17) Frozen meat and poultry need to “. . .” thoroughly before cooking (4)
- 18) Get “. . .” of your garbage regularly (3)
- 20) Everything in this room should be kept clean (7)
- 22) Pay attention to these to not eat spoiled food (5)
- 23) Old fashioned “. . .” and water keep things clean (4)
- 24) It's in the “. . .”
- 25) Cross-contamination may make you “. . .” (3)



# FOOD SAFETY CROSSWORD SOLUTIONS

## Answers Across

1. Cool
3. Pet
7. Left
8. Germ
9. Not
10. Degree
11. Use by
14. Disinfect
16. Storage
19. Milk
21. Hands
22. Defrost
24. Bacteria
26. Piping
27. Clean

## Answers Down

2. Left
3. Pink
4. Jewelry
5. Stir
6. Covers
12. Bad
13. Fridge
15. Timer
17. Thaw
18. Rid
20. Kitchen
22. Dates
23. Soap
24. Cool
25. Ill



## Reflect

- Why/how does food preservation work?
- How can food preservation help me maintain a nutritious diet?
- What are things about nature that I should understand while contemplating food preservation?
- In what situations would storing preserved foods be useful/essential?

## Apply

- Spend some time with your family and see if you have food storage, if so, do an inventory; if not, start a food storage plan!
- Begin to use meal plans during the week to include each of the four groups.
- Discuss how else you can use the things you learned this week at home. Encourage members to share activities with their families.

### 4-H MISSION MANDATES

#### Citizenship

Having students discuss preparedness and encouraging them to share with their families will lead to stronger and disaster-prepared communities.

#### Science

Understanding the basic science of food preservation will help them to know how to be safe while consuming food, and it will give them tools to provide for themselves.

#### Healthy Living

They will learn how important it is to have a balanced and healthy diet. Give them the resources to provide for themselves two of the food groups during the winter.



## ESSENTIAL ELEMENTS

### Belonging

The atmosphere of the room should be inviting. Help the youth to work together and encourage each other's ideas. Working together during the crossword puzzle will also develop a team mentality.

### Independence

Give students a mix of lesson time and self-discovery time to promote curiosity and independence.

### References and Other Resources

Crossword Puzzle pulled from Pinterest - Foodlink, Author: Jan Harper

<http://www.eastoftheweb.com/short-stories/UBooks/AntGra.shtml>

<https://prezi.com/vjxnf8e1acja/timeline-of-food-preservation-methods/?webgl=0>

<https://www.tes.com/teaching-resource/food-safety-puzzles-6168579>

[https://choosemyplate-prod.azureedge.net/sites/default/files/printablematerials/mini\\_poster.pdf](https://choosemyplate-prod.azureedge.net/sites/default/files/printablematerials/mini_poster.pdf)



### Supplies

- An example of good freezer jam and jam frozen too fast
- Other examples of frozen foods: (to taste test)
- Corn, peas, apples, bananas, grapes, etc.
- Ziploc® bags and a permanent marker
- Sugar
- Freezer
- Sink
- Washcloths
- Butter knife
- Bread (optional)

### INTRODUCTION

In this club meeting, club members will become experts in food preservation through freezing by making their own freezer jam and frozen grapes.

### PRIOR TO THE MEETING

- Make a batch of jam at home using the supplies and instructions found in Activity 3, intentionally freezing one container too fast to show kids later. Also research pectin and how it works.

## Activity #1

### Introduction to Freezing



## INTRODUCTION TO FREEZING

TIME: 10 MINUTES

1. Briefly show some examples of frozen foods, and have students taste test them and discuss how they are different from their non-frozen counterparts. Having an example of jam frozen too quickly and some frozen at a nice even pace is a good idea, it will be beneficial as a visual aid for later in this lesson.
2. Why does food decompose and rot? Microbes! They are like little packmen that eat the sugar and protein chains and break them down. Sugar and protein chains give structure to the food, so when they break down, so does the structure. That is why foods get mushy. Freezing slows down or stops microbes so that they don't break down the food.
3. Discuss the history of freezing food. Refrigeration has been happening for a long time using caves and streams. Later ice block refrigerators were invented. Freezers have only been developed within the last 100 years. They are a great way to store food and maintain its freshness for up to a year. It works by freezing the microorganisms that decompose food so that the food stays fresh.
4. Freezing is not for all foods though. Show them an example of a frozen banana. You only use those bananas for things like banana bread. What do you think the texture of the banana will be like when it thaws? Have students write down a hypothesis. (Let the banana thaw throughout the club meeting and test it at the end.)





## FREEZING GRAPES

TIME: 15 MINUTES

1. Wash the grapes.
2. Take off their stems.
3. Sort out the good ones and toss out the bad ones.
4. Coat them in sugar if desired.
5. Put them in the freezer in Ziploc bags labeled with club members' names for a snack later or some fruity ice cubes in their drink.



## FREEZER JAM

TIME: 50 MINUTES

Supplies:

- 2 cups crushed strawberries or blackberries (about 1 quart berries)
- 4 cups sugar
- 1 package powdered freezer jam pectin
- 1 cup water
- Freezer containers to hold jam (1 per participant)
- Measuring utensils
- Stirring spoons
- Large bowl
- Cutting boards
- Knives

Instructions:

1. This is a fun activity to introduce the youth to the basics of making jam and using pectin without having to use larger canning equipment. It can also be used to teach reading recipes and measuring dry vs. liquid ingredients.
2. Discuss how you might need to prepare before making something: How much, how to store it, what to store it in, etc. (Think about preparation techniques: cool foods before packing, pack for a single meal, as little air as possible, headspace, properly sealed, label with ingredients/date/servings/form of food).
3. Sort and wash fully ripe berries.
4. Drain the berries and remove all caps and stems.
5. Crush berries with your hands or a utensil.
6. Place prepared berries in a large mixing bowl.





7. Add sugar and mix well.
8. Let stand for 20 minutes, stirring occasionally.
9. Dissolve pectin in water and boil for 1 minute. As it's boiling, discuss what pectin is and how it works.
10. Add pectin solution to berry-and-sugar mixture; stir for 2 minutes.
11. Place jam into freezer containers, leaving  $\frac{1}{2}$  inch head space at the top. Close covers on containers and let stand at room temperature for 24 hours.
12. To store: Store uncooked jams in refrigerator or freezer. Label with ingredients/date/servings/form of food. Discuss freezer pointers: Placement in contact with cold surfaces in coldest part of freezer, leave a little space for air circulation. They can be held up to 3 weeks in the refrigerator or up to a year in a freezer. Once a container is opened, jam should be stored in the refrigerator and used within a few days. If kept at room temperature the jam will mold or ferment in a short time.
13. Yield: About 5 or 6 half-pint jars.
14. Have club members take jam home to finish freezing.
15. Optional: Have club members taste test and compare the normal jam and the jam that was frozen too fast using the bread and discuss the differences.



## Reflect

- What kind of preparation was required for making these frozen treats?
- What other kinds of food would be good/poor for freezing?
- What are the advantages/disadvantages of making freezer jam vs. buying jam at the store?

## Apply

- How can you use what you learned today at home with your families?
- Why is preparation important?
- Where else is practicing safety important?
- Challenge club members to go home and make a smoothie using frozen fruits with their family.

### 4-H MISSION MANDATES

#### Healthy Living

Introducing fruits into club member's diets promotes healthy living.

#### Science

Teaching about pectin and how it works introduces basic biology knowledge.

### ESSENTIAL ELEMENTS

#### Independence

Giving students a mix of lesson time and self-discovery time promotes - curiosity and independence.

#### Mastery

Starting with a simple freezer project and working up to a complex project leads to the mastery of freezer skills.



## Dehydration Part 1



### Supplies

- Popsicle sticks
- Twine or thread
- Paper towels
- Water
- Dehydrator

### INTRODUCTION

Dehydration is an exciting way to preserve food. During this meeting, club members will learn the history of dehydration, create their own dehydrating machine, and learn about dehydrators for next week's meeting

### PRIOR TO CLUB MEETING

- Explore the dehydrator and how it works before teaching club members about it.

## Activity #1

### History of Dehydration



## HISTORY OF DEHYDRATION

Time: 35 MINUTES

1. Explore the following questions with club members:
  - a. What does it mean to dehydrate something? (take the water out of it)
  - b. What are some things we dry today? How do we dry them? (e.g., Ourselves after a shower with a towel, hair with a hair dryer, etc.)
  - c. How about food?
2. Discuss with club members that 2,000 years ago they didn't have this technology to dry food, how might they have done it? Show them some primitive set-ups for drying. Ask why each set-up might have been effective.
  - a. Ancient Middle Easterners and Oriental people sun-dried their food as well as using salting and smoking methods for fish and meat.





- b. Near Easterners sand-dried fruits by wrapping them in dried palm leaves and putting them in the hot sand.
  - c. Peruvian natives air-dried potatoes after freezing them overnight.
  - d. Arctic people preserved walrus meat using a freeze-drying method.
  - e. Native Americans dried their foods using smoke.
3. Split into teams of 3-5. Use popsicle sticks, twine or thread, and a wet paper towel to design a device and method of how to dry a paper towel in the fastest manner.
  4. Challenge club members to go home and try using a larger version of the apparatus you designed to dry something.

## Activity #2

### Dehydrators



## DEHYDRATORS

Time: 30 MINUTES

1. Explore the dehydrator:
  - a. Generally disassemble dehydrator and present each part. Explain how it works. What kind of rules should we make about the dehydrator?
  - b. Have students practice taking it apart and putting it back together.
  - c. What observations can we make, and what things might we consider when preparing to dehydrate food? (Cleanliness, space, amount of food, size of food, storage containers, time frame, etc.) What happens to apples if you leave them out?
2. Discuss the following concepts for proper dehydration:
  - a. Placement-
    - i. To dehydrate some foods you have to peel to let out moisture. What are some foods that might need to be peeled?
    - ii. When dehydrating, it is important to have small, even slices, and space them evenly apart. It is important to be careful not to overfill dehydrators and make sure the dehydrator's vents are not blocked or clogged.
  - b. Conditioning-
    - i. Conditioning means ensuring that everything is evenly dry. If it seems that the pieces may not be dry, store in a glass or plastic container covered by a cloth for about a week. Stir daily. If there is any sign of moisture (like fog on the glass), then place the food back into the dryer.



ii. Why do you think we do it? Conditioning ensures an equalization of moisture and a reduction of the chance of spoiling the food.

c. Storage-

i. Where do you think would be a good place to store dehydrated foods?

ii. What types of containers do you think work best for storing dehydrated foods?



## Reflect

- What techniques worked when drying the paper towel? Which ones didn't? Why?
- What are the parts of a dehydrator and what they do?
- What are some important things to remember when dehydrating?

## Apply

- Why is it important to understand how a dehydrator works before using one?
- In what circumstances would it be important to know how to dry food? (You could use this question to lead a discussion on emergency preparedness.)

### 4-H MISSION MANDATES

#### Citizenship

Use the apply question to lead a discussion on emergency preparedness. Students that are prepared for emergencies can contribute to their communities in a time of a disaster or by sharing their knowledge.

#### Healthy Living

Dehydration skills give club members one more way to include healthy fruits and vegetables in their diets.

#### Science

Exploring how dehydration works through an experiment in the first activity gives a basic understanding of engineering. Students also learn scientific terms (such as conditioning) in the second activity.

### ESSENTIAL ELEMENTS

#### Belonging

Working in teams on the drying projects creates connections between club members, and helps your club to feel more like a team.

#### Independence

Giving students a mix of lesson time and self-discovery time promotes curiosity and independence.

#### Mastery

Providing adequate background knowledge is important to encourage curiosity, growth, and eventually mastery. Dehydration was given 2 weeks of curriculum to fulfill this purpose.

#### Mastery and Other Resources

[http://www.kansas4-h.org/events-activities/fairs/kansas-state-fair/docs/food-preservation/Judging\\_Dried\\_Fruits\\_Leather.pdf](http://www.kansas4-h.org/events-activities/fairs/kansas-state-fair/docs/food-preservation/Judging_Dried_Fruits_Leather.pdf)



### Supplies

- Dried fruit
- Fresh fruit samples
- Apples
- Dehydrator
- Apple slicer
- Peeler
- Aprons
- Knives
- Cutting boards
- Gallon Ziploc bags
- Plastic food wrap
- Rubber spatula
- Twisty ties
- Lemon, pineapple, and orange juice
- Bowls for soaking apples
- Fruit leather ingredients are listed in Activity 3

### INTRODUCTION

In this meeting, teach the youth that dehydration has been around for a long time. For thousands of years people have been using the sun, wind, fire, and smoke to dry their food so that it would last longer. Today we have machines that help with drying called dehydrators. Taking water out of food preserves is a good idea because bacteria and other microbes thrive in warm, moist areas. If there is no water, the microbes don't survive as well. Putting dehydrated food into a cool, dark area helps it to last for many weeks longer than it normally would have lasted. Dried food is useful because it weighs less and is generally easy to pack and store.

### PRIOR TO THE MEETING

- Dry apples using the instructions for activity 2-6+ hours in advance so they have samples to try, and make fruit leather samples at least 24 hours in advance using activity 3. Print off dried fruit judging sheets found at [http://www.kansas4-h.org/events-activities/fairs/kansas-state-fair/docs/food-preservation/Judging\\_Dried\\_Fruits\\_Leather.pdf](http://www.kansas4-h.org/events-activities/fairs/kansas-state-fair/docs/food-preservation/Judging_Dried_Fruits_Leather.pdf)

## Activity #1 Sampling



### SAMPLING

Time: 5 MINUTES

1. Give samples of dried fruit and fresh fruit to each student and have them discuss the differences between them.
2. Optional - Use the hand out on the next page as a guide for tasting and judging the quality of the dried fruit and fresh fruit.





# DEHYDRATED FOODS

	Excellent	Very Good	Good	Needs Improvement
<b>Label</b>				
Information Complete				
Processed properly				
<b>Appearance</b>				
Color characteristic of product				
Pieces uniform size				
<b>Texture/Consistency</b>				
Pieces uniformly dry				
<b>Fruits/Tomatoes:</b>				
Leathery & pliable Chewy, not sticky or brittle				
<b>Vegetables:</b>				
Brittle and crisp; tough Dry enough to rattle in jar				
<b>Herbs:</b>				
Pulverize when rubbed				
<b>Leathers:</b>				
Pliable; not sticky Rolls are free of tears				
<b>Jerky:</b>				
Leathery but not brittle Piece cracks but does not break when bent				
<b>Container:</b>				
Clean, clear glass Standard-size canning jar				
New lid/rust-free ring				





3. Talk about color, weight, texture, smell, and taste.
4. Introduce to club members the idea that different levels of crispiness can be achieved if desired. Preserving food is all about gearing it toward your needs.
5. What conclusions can we draw from the observations of our different fruits? What might be useful about this information? (Easier to pack around, microbes can't grow there, etc.)

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## Activity #2

### Drying Fruit



## DRYING FRUIT

Time: 15 MINUTES

1. Briefly review placement, conditioning, and storage from the last club meeting.
2. Practice dehydrating a simple fruit. Apples are a great fruit to start with. Dried apples are an excellent snack to take to school or on trips. They are a great way to get some quick energy while being active as well.
3. Make sure to show members how to pre-treat the apples, and that there is more than one way to pre-treat foods. Remind them that the pre-treatment prevents oxidation (as learned with the apple you cut in the first club meeting). Help them be familiar with either the knives used to peel and evenly cut the apples, or the apple corer/peeler that is being used.
4. Peel and trim. Core and cut into slices or rings 1/4-inch thick. Treat with ascorbic acid solution or fruit juice containing vitamin C to prevent browning.
5. Evenly place each slice so that there is even heating for all areas.
6. Set dehydrator to 140 F. Let dry for 6 to 12 hours.
7. Let them sample your pre-dried apples.
8. Save their dried apples as a snack for the next club meeting.

---

## Activity #3

### Fruit Leather



## FRUIT LEATHER

Time: 50 MINUTES

### Ingredients

- 4 large mangos
- Food mill/sieve
- Blender
- 1 cup honey
- 1/2 tsp ground cinnamon
- 1/4 tsp ground nutmeg
- 1/4 tsp ground cloves
- Vegetable oil or cooking spray



1. Fruit leathers are excellent for lunches and hiking snacks. They are a good source of healthy calories and are easy to pack around if packaged correctly.
2. Teach the youth how to properly use a blender. Make sure there is enough liquid while blending fruit so that it blends well and does not ruin the blender, but does not leave the mixture too runny.
3. Preheat electric dehydrator to 140 degrees.
4. Wash and peel mangoes, chop roughly into chunks. Purée in blender until smooth. Pass purée through a food mill or sieve; discard any coarse fiber extracted by the food mill. Add honey and spices to the purée and mix thoroughly.
5. Lightly spray two fruit roll tray liners from an electric dehydrator with vegetable oil/cooking spray. Spread mango mixture evenly to ¼-inch thickness on the trays.
6. Dry continuously for about 10 hours. Maintain dehydrator air temperature steadily at 140 F. (Monitor the dehydrator air temperature periodically with a thermometer). Remove trays from dehydrator when purée is dry, with no sticky areas (about 10 hours – this will be highly dependent of the relative humidity of the drying room). Test for dryness by touching gently in several places near the center of the leather; no indentation should be evident.
7. Peel leather from trays while still warm. Leave the second tray on the dehydrator while you peel the first leather, or re-warm leathers slightly in the dehydrator if they cool too much prior to peeling. Cut into quarters, lay on a piece of clean plastic food storage wrap about 1 to 2 inches longer at each end of the leather and roll together into fruit leather rolls. When cool, twist the ends of the plastic wrap tightly to close.
8. Store fruit rolls in freezer-quality zippered plastic bags or airtight plastic container for short-term storage, up to about 1 month. Leathers should be stored in a cool, dark, dry place. For longer storage up to 1 year, place tightly wrapped rolls in the freezer.
9. Hand out fruit leather samples.
10. Save their fruit leather as a snack for the beginning of the next club meeting (makes 8 rolls).



## Reflect

- Are there foods that may not turn out as an acceptable product if dehydrated?
- Would there be a benefit to drying food and then freezing it? What might that be?
- Much like freezing, dehydrating is not for all kinds of foods. Knowing what we do, what kinds of foods might not be great for dehydrating? (Lettuce, melons, and cucumbers because they have such a high water content).

## Apply

- What can you use dried foods for?
- Why is it important to know how to dehydrate foods?

### 4-H MISSION MANDATES

#### Healthy Living

Encourage the youth to be active and to always choose healthy snacks and sides to their meals. Dehydration skills give club members one more way to include healthy fruits and vegetables in their diets.

#### Science

Youth will understand what kinds of climates bacteria generally like.

### ESSENTIAL ELEMENTS

#### Belonging

The room should be relaxed and welcoming. The environment should encourage discussion and learning. Give youth positive feedback to encourage discussion and group work.

#### Independence

Give students a mix of lesson time and self-discovery time to promote curiosity and independence.

#### Mastery

Starting with a simple dehydration project and working up to a complex one leads to the mastery of dehydration skills.

#### Mastery and Other Resources

[http://www.kansas4-h.org/events-activities/fairs/kansas-state-fair/docs/food-preservation/Judging\\_Dried\\_Fruits\\_Leather.pdf](http://www.kansas4-h.org/events-activities/fairs/kansas-state-fair/docs/food-preservation/Judging_Dried_Fruits_Leather.pdf)



## Water Bath Canning



### Supplies

- Aprons
- Knives
- Cutting boards
- Jars
- Lids
- Pots
- Rubber spatula
- Boiling-water canner jars
- Ingredients for cherries found in Activity 3
- Ingredients for chili salsa found in Activity 4

### INTRODUCTION

This week club members will get to try canning for the first time! Water bath canning is a simple way to start canning that has been happening for a long time. Club members will learn about canning history, and then try their hand at canning cherries and chili salsa.

### PRIOR TO THE MEETING

- Read [http://nchfp.uga.edu/publications/uga/using\\_bw\\_canners.html](http://nchfp.uga.edu/publications/uga/using_bw_canners.html) and [http://nchfp.uga.edu/publications/usda/GUIDE01\\_HomeCan\\_rev0715.pdf](http://nchfp.uga.edu/publications/usda/GUIDE01_HomeCan_rev0715.pdf) to become familiar with water bath canning. Read through activity 2 and choose which you want to do

## CANNING HISTORY

**Time: 5 MINUTES**

Briefly go over the following information with your club:

1. Canning started out as a very basic source of preservation. People used to use salt, vinegar, sugar, and other spices to preserve foods. The use of salt, vinegar, and other spices is known as pickling. This will stop the food from decomposing and will generally stop bad bacteria from growing.
2. In the 19th century, in France, Napoleon understood that an army marches on its stomach, so he offered a large sum of money to whoever could find a way to make food last longer. Nicholas Appert won the contest by using pre-cooked, hot foods placed in a blown glass bottle and sealed air-tight with a hand cut cork and a compound of lime and skim-milk.
3. This system was later experimented with and people tried using containers such as tin cans as well as glass bottles. Because of the discoveries of Louis Pasteur, the reason that Appert's system worked was understood. Industry grew and the glass bottles and tin cans started to come in uniform sizes with different sealing mechanisms.
4. Eventually in the late 1800s, because of the low cost of sugar, women used a method to heat the bottles, then add a hot sugary solution to their fruits and quickly seal. This is now known as open kettle canning.

## Activity #1

### Canning History



# SAFETY

Time: 5 MINUTES

This activity is optional. Read through the information below and choose the activities/discussions that best suit your club based on time, skill level, and if your club is having problems in a particular area.

1. When you are at a higher altitude, water will boil at a lower temperature.
  - a. Why could that be? There are several things that affect a change in state such as temperature, and pressure. If you are in a pool what happens when you go deeper? A change in pressure. This is the same with air. The lower you are, the more air is pushing on you. Because there is less air pressure at higher altitudes water will boil at lower temperatures. The bacteria will be killed at a certain temperature, so depending on altitude you may have to boil water longer.
2. Mold and Salmonella.
  - a. Watch out for mold! It can make you sick. Mold is a fungus that functions kind of like a fly. It breaks down food and starts to help it rot. If you see mold on food, simply cutting off the moldy part may not be enough. You can't see the roots of the mold and they may go pretty deep.
  - b. Salmonellosis is a type of food poisoning caused by a bacteria called salmonella enterica. It will make you very sick and especially young children and older adults. There are several ways to get salmonellosis, such as handling certain animals like baby chicks, reptiles, ducklings, and small rodents. Another way is if a food handler does not wash their hands, or if you handle animal feces. You can also get it from improperly handled food. Symptoms are diarrhea, abdominal cramping, and fever. You will feel these symptoms between 12 and 72 hours of contact with the bacterium. Watch out for dehydration. Most people can recover between 4-7 days without treatment.
3. Benefits of a clean and organized workstation.
  - a. How do you feel when your room is messy? Messy areas are not only stressful, but they can be dangerous. How could an area where you prepare food be dangerous if it is dirty?
  - b. Why might it be important to keep your area organized? What benefits come from it?
  - c. As an activity, do a race between an organized station and an unorganized station to make a peanut butter and jelly sandwich (or another simple recipe). Have one table covered in props, the knife hidden in a backpack, the jelly under the desk, etc., and the other table clean and organized.
4. Proper preparation.
  - a. Proper preparation is so important! Today, if we had not been prepared, what might have gone differently?
  - b. Think about something you have to do tomorrow. What things are you going to need to have prepared before you start? Make a list, a chronological order of each thing.
  - c. When using a recipe, make sure to research before you start. Read the whole recipe and then cook. Understand the dangers and the effort it takes to do each task.

# CHERRIES

Time: 20 MINUTES

## Ingredients

For more information, visit: [http://nchfp.uga.edu/how/can\\_02/cherry\\_whole.html](http://nchfp.uga.edu/how/can_02/cherry_whole.html)

- Cherries (enough for your group and enough for at least 5 pints)
  - Fruit juice
  - Water
  - Gloves
  - Sterile needle or ascorbic acid
1. Safety: Read safety tips at <http://nchfp.uga.edu/how/general.html>. Wash hands and review rules on how to handle hot objects. What might we need to be aware of so that no one is in danger? Boiling water, make sure water level is always full enough, don't touch the steam, knives, etc.
  2. Quantity: An average of 17 ½ pounds is needed per canner load of 7 quarts; an average of 11 pounds is needed per canner load of 9 pints. A lug weighs 25 pounds and yields 8 to 12 quarts – an average of 2 ½ pounds per quart.
  3. Quality: Select bright, uniformly colored cherries that are mature (of ideal quality for eating fresh or cooking).
  4. Procedure: Stem and wash cherries. Remove pits if desired. If pitted, place cherries in water containing ascorbic acid to prevent stem-end discoloration. If canned un-pitted, prick skins on opposite sides with a clean needle to prevent splitting. Cherries may be canned in water, apple juice, white grape juice, or syrup. If syrup is desired, select and prepare preferred type as directed.
  5. Hot pack – In large saucepan add ½ cup water, juice, or syrup for each quart of drained fruit and bring to boil. Fill jars with cherries and cooking liquid, leaving ½-inch headspace.
  6. Raw pack – Add ½ cup hot water, juice, or syrup to each jar. Fill jars with drained cherries, shaking down gently as you fill. Add more hot liquid, leaving ½-inch headspace. Adjust lids and process.

**Table 1. Recommended Process Time for Sweet or Sour Cherries, Whole in boiling water canner.**

Process Time at Altitudes of					
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 3,000 ft	3,001 - 6,000 ft	Above 6,000 ft
Hot	Pints	15 min	20	20	25
	Quarts	20	25	30	35
Raw	Pints or Quarts	25	30	35	40

# CHILI SALSA

Time: 40 MINUTES

## Ingredients

Recipe can also be found at: [http://nchfp.uga.edu/how/can\\_salsa/chile\\_salsa.html#tbl1](http://nchfp.uga.edu/how/can_salsa/chile_salsa.html#tbl1)

- 5 lbs tomatoes (as purchased)
- 2 lbs chile peppers (as purchased)
- 1 lb onions (as purchased)
- 1 cup vinegar (5 percent)
- 3 tsp salt
- 1/2 tsp pepper

1. Sterilize jars (recipe yields 6-8 pints).
2. Wear plastic or rubber gloves and do not touch your face while handling or cutting hot peppers. If you do not wear gloves, wash hands thoroughly with soap and water before touching your face or eyes.
3. Optional: Wash and dry chilies. Slit each pepper on its side to allow steam to escape. Peel peppers using one of the following methods:
  - a. Oven or broiler method: Place chilies in oven (400°F) or broiler for 6-8 minutes until skins blister.
  - b. Range-top method: Cover hot burner, either gas or electric, with heavy wire mesh. Place chilies on burner for several minutes until skins blister. Allow peppers to cool. Place in a pan and cover with a damp cloth. This will make peeling the peppers easier. After several minutes, peel each pepper. Cool and slip off skins. Discard seeds and chop peppers.
4. Wash tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Dip in cold water, slip off skins, and remove cores. Coarsely chop tomatoes and combine chopped peppers, onions, and remaining ingredients in a large saucepan. Heat to boil, and simmer 10 minutes. Fill jars, leaving 1/2-inch headspace. Adjust lids and process according to the recommendations below in Table 1.
5. Hot Pack - Combine all ingredients in a large saucepan and heat, stirring frequently until mixture boils. Reduce heat and simmer for 10 minutes, stirring occasionally. Ladle mixture into clean, hot pint jars, leaving 1/2-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe rims of jars with a dampened, clean paper towel; apply two-piece metal canning lids. Process in a boiling water canner according to the recommendations in Table 1.

<b>Table 2. Recommended process time for Chili Salsa II in a boiling-water canner.</b>				
<b>Process Time at Altitudes of</b>				
<b>Style of Pack</b>	<b>Jar Size</b>	<b>0 - 1,000 ft</b>	<b>1,0001 - 6,000 ft</b>	<b>Above 6,000 ft</b>
Hot	Pints	15 min	20	25



## Reflect

- What are some important steps in water bath canning?
- What safety precautions did we take when canning?
- Were there any questions that you had during these activities? (Encourage them to research and share with the class next time.)

## Apply

- Was there a time you worked with someone else to solve a problem?
- Why are preparation and safety important?
- What other foods could you use water bath canning to preserve?
- What is your favorite meal? What parts of the meal could you preserve before so that you could have your favorite meal in a disaster? (Encourage club members to preserve these foods at home.)

### 4-H MISSION MANDATES

#### Citizenship

Food preservation can be useful in disaster preparedness. Encourage club members to share what they learn with their families, friends, and neighbors.

#### Healthy Living

Water bath canning skills give club members one more way to include healthy fruits and vegetables in their diets, and leads them to explore a wider variety of foods.

#### Science

Students learn the science behind food borne illnesses, salmonella, and mold as well as learn about the relationship between pressure and altitude.

### ESSENTIAL ELEMENTS

#### Belonging

Working on recipes together brings club members closer together.

#### Independence

Give students a mix of lesson time and self-discovery time to promote curiosity and independence.

#### Generosity

Encourage club members to share some of their canned goods with a friend, family member, or neighbor.





## Mastery

A simpler version of canning (water bath canning) is used as a background for the harder version of canning (pressure canning) so students have time to learn and progress.

## References and Other Resources

[http://nchfp.uga.edu/publications/uga/using\\_bw\\_canners.html](http://nchfp.uga.edu/publications/uga/using_bw_canners.html)

[http://nchfp.uga.edu/publications/usda/GUIDE01\\_HomeCan\\_rev0715.pdf](http://nchfp.uga.edu/publications/usda/GUIDE01_HomeCan_rev0715.pdf)

<http://www.brooklyn.cuny.edu/bc/ahp/MBG/MBG4/Appert.html>

[http://nchfp.uga.edu/how/can\\_02/cherry\\_whole.html](http://nchfp.uga.edu/how/can_02/cherry_whole.html)

[http://nchfp.uga.edu/how/can\\_salsa/chile\\_salsa.html#tble1](http://nchfp.uga.edu/how/can_salsa/chile_salsa.html#tble1)

<http://www.webmd.com/food-recipes/food-poisoning/ss/slideshow-salmonella>



## Pressure Canning



### Supplies

- Large chickens, preferably fresh
- Beans, Snap and Italian-Pieces (Green and Wax)
- Sink
- Boiling water
- Canning salt
- Aprons
- Knives
- Cutting boards
- Pressure canner
- Pots
- Jars
- Lids (both pieces)

### INTRODUCTION

Help the youth understand about the dangers of salmonella, botulism, and other dangerous molds and bacteria. Teach them about the specific dangers of each and how to avoid them. Help them understand that the shelf life of anything canned is 1 year. Pressure canning was developed after water bath canning, and is not the same as pressure cooking. It can be very dangerous, so make sure that the pressure canner is set up and taken down correctly. Safety is the key here, safety for the food and safety for the people.

### PRIOR TO MEETING

- Read [http://nchfp.uga.edu/publications/uga/using\\_press\\_canners.html](http://nchfp.uga.edu/publications/uga/using_press_canners.html) to familiarize yourself with pressure canning. You also might want to try either activity beforehand. Invite family members to participate in this club meeting so that club members can show off their skills (optional).

## Activity #1 Canning History



### CANNING HISTORY

TIME: 5 MINUTES

1. Explain that canning was a French military secret, but the news spread and in England they began to use tin instead of glass. From there, canning factories spread out and eventually reached the United States in 1812 where Thomas Kensett founded the first oyster/meat/fruit/vegetable canning factory.
2. In 1902 commercial pressure cookers were available for purchase. The only downside was that they were 50 gallon pots. These were primarily used in factories and hotels. Later they dropped to 30 gallons, and later 10 gallon vessels were made available for use in the home.
3. Since then, technology has been developing and pressure canners are now what they are today.



## SAFETY

TIME: 15 MINUTES

1. What do you think might happen if we use a pressure canner improperly? The same that happens to an over full tire, it pops. This is so very important to understand. This section can be dangerous if done improperly.
  - a. What kinds of things might we need to be aware of today? Hot stuff. Exploding stuff. Sharp stuff. Dirty stuff.
  - b. Show them the parts of the pressure cooker!
  
2. Bacteria, Good and Bad.
  - a. What is the first thing that comes to mind when you hear bacteria?
  - b. What is the first thing that comes to mind when you hear the word, "bacteria?" Very small single cell organisms. They are so small that if one million of them were laid end to end they would be about 5 centimeters--that is less than 2 inches!
  - c. Bacteria can be harmful and helpful. Does anyone know about any bacteria that can be helpful? Digestion, food making (cottage cheese), and decomposers.
  - d. Harmful bacteria breaks down food and discolors it. There are many kinds that also release deadly toxins. Has anyone heard of Tetanus? That is caused by a bacteria that releases toxins.
  - e. There are also bacteria that are useful to us such as E. coli, which is in our stomach. However, if that bacteria enters the bloodstream it causes lots of damage and gives severe stomach cramps, diarrhea, and can possibly cause death.
  - f. Pressure canning and most other forms of food preservation is designed to kill all harmful bacteria so that the food lasts longer and won't make you sick.
  
3. Botulism.
  - a. Has anyone heard of Botulism before? It is an illness cause by a bacterium called Clostridium botulinum. This bacteria is fairly common and exists in soil and non-treated water. It can also be found on fruits, vegetables, and any other food that has been in contact with it.
  - b. The disease symptoms start with feeling tired, weakness, trouble seeing and speaking. However, it can develop later into weakness in arms, legs, and chest muscles. Usually it does not affect consciousness or give fever.
  - c. The proper way to prevent it is to properly prepare food! You need to heat your food above 185 degrees.



# CANNING CHICKEN

TIME: 25 MINUTES

1. Canning chicken has some very simple preparation, especially if it is dry packed. It does not look as pretty or as delicious as many other bottled items, but it is a very useful thing to have in storage. This is a great opportunity to help the youth understand safe meat handling. Ensure that everyone is using protective gloves while handling the meat. Teach them about the importance of sanitizing their work station and how to stop the spread of bacteria like salmonella.
2. Procedure:
  - a. Choose freshly killed and dressed, healthy animals. Large chickens are more flavorful than fryers. Dressed chicken should be chilled for 6 to 12 hours before canning.
  - b. Remove excess fat. Cut the chicken into suitable sizes for canning. Can with or without bones. The hot pack is preferred for best liquid cover and quality during storage. Natural poultry fat and juices are usually not enough to cover the meat in raw packs.
  - c. Hot pack – Boil, steam or bake meat until about two-thirds done. Add 1 teaspoon salt per quart to the jar, if desired. Fill jars with pieces and hot broth, leaving 1-1/4 inch headspace.
  - d. Raw pack – Add 1 teaspoon salt per quart, if desired. Fill jars loosely with raw meat pieces, leaving 1-1/4 inch headspace. Do not add liquid.
  - e. Adjust lids and process following the recommendations in Table 1 or Table 2 according to the canning method used.



**Table 1.** Recommended process time for **Chicken or Rabbit** in a **dial-gauge** pressure canner.

<b>Canner Pressure (PSI) at Altitudes of</b>						
<b>Style of Pack</b>	<b>Jar size</b>	<b>Process Time</b>	<b>0 - 2,000 ft</b>	<b>2,001 - 4,000 ft</b>	<b>4,001 ft - 6,000 ft</b>	<b>6,001 - 8,000 ft</b>
<b>Without Bones:</b>						
Hot and Raw	Pints	75 min	<b>11 lb</b>	12 lb	13 lb	14 lb
	Quarts	90	<b>11</b>	12	13	14
<b>With Bones:</b>						
Hot and Raw	Pints	65 min	<b>11 lb</b>	12 lb	13 lb	14 lb
	Quarts	75	<b>11</b>	12	13	14

**Table 2.** Recommended process time for **Chicken or Rabbit** in a **weighted-gauge** pressure canner.

<b>Canner Pressure (PSI) at Altitudes of</b>				
<b>Style of Pack</b>	<b>Jar Size</b>	<b>Process Time</b>	<b>0 - 1,000 ft</b>	<b>Above 1,000 ft</b>
<b>Without Bones:</b>				
Hot and Raw	Pints	75 min	<b>10 lb</b>	15 lb
	Quarts	90	<b>10</b>	15
<b>With Bones:</b>				
Hot and Raw	Pints	65 min	<b>10 lb</b>	15 lb
	Quarts	75	<b>10</b>	15



# CANNING BEANS, SNAP AND ITALIAN-PIECES (GREEN AND WAX)

**TIME: 35 MINUTES**

1. Preparing beans for canning is a simple activity that is great for bringing the family together. Have everyone sit around a single table, if possible, and put some music on in the background. This will be a great time for people to talk because snipping the beans takes some time and it is not a complex job.
2. Quantity: An average of 14 pounds is needed per canner load of 7 quarts; an average of 9 pounds is needed per canner load of 9 pints. A bushel weighs 30 pounds and yields 12 to 20 quarts – an average of 2 pounds per quart.
3. Quality: Select filled but tender, crisp pods. Remove and discard diseased and rusty pods.
4. Procedure: Wash beans and trim ends. Leave whole or cut or snap into 1-inch pieces.
5. Hot pack –Cover with boiling water; boil 5 minutes. Fill jars loosely with beans, leaving 1-inch headspace. Add 1 teaspoon of canning salt per quart to the jar, if desired. Cover beans with hot cooking liquid, leaving 1-inch headspace.
6. Raw pack – Fill jars tightly with raw beans, leaving 1-inch headspace. Add 1 teaspoon of canning salt per quart to the jar, if desired. Add boiling water, leaving 1-inch headspace.
7. Adjust lids and process in a pressure canner following the recommendations in Table 1 or Table 2 according to the type of canner being used. (There is no safe option for processing green beans in a boiling water canner.)

**Table 3. Recommended process time for Snap and Italian Beans in a dial-gauge pressure canner.**

			Canner Pressure (PSI) at Altitudes of			
Style of Pack	Jar Size	Process Time	0 - 2,000 ft	2,001 - 4,000 ft	4,001 - 6,000 ft`	6,001 - 8,000 ft
Hot and Raw	Pints	20 min	11 lb	12 lb	13 lb	14 lb
	Quarts	25	11	12	13	14

**Table 4. Recommended process time for Snap and Italian Beans in a weighted-gauge pressure canner.**

			Canner Pressure (PSI) at Altitudes of	
Style of Pack	Jar Size	Process Time	0 - 1,000 ft	Above 1,000 ft
Hot and Raw	Pints	20 min	10 lb	15 lb
	Quarts	25	10	15



## Reflect

- What is the difference between raw and hot packing?
- What are some important steps in pressure canning?

## Apply

- Encourage club members to enter something that they made during the club in their local fair.
- Now that they understand more about how bacteria can be spread, why is it important to wash our hands before handling or eating food? Where are places that we should be careful about what we touch? Public areas like school, work, bathrooms, and religious institutions
- Who could you help get involved in food preservation planning and preparation? Families that preserve food together have one more excellent reason to get together and enjoy time together.

## 4-H MISSION MANDATES

### Citizenship

Inviting family members to this activity creates closer communities. Food preservation can be useful in disaster preparedness. Encourage club members to share what they learn with their families, friends, and neighbors.

### Science

The youth should understand how bacteria are transferred and what kinds of dangerous bacteria can develop while handling food.

### Healthy Living

The youth will have one more tool to provide variety to their meals. Adding lots of colors can be difficult, but when it is something that they created, they can feel proud of what they did and be more willing to eat the food that they made themselves.

## ESSENTIAL ELEMENTS

### Belonging

The time snipping beans is an excellent opportunity for people to open up and talk about themselves. Having some questions to prompt conversation can be a great tactic to help each youth feel involved and accepted. Working on recipes together brings club members closer together.

### Independence

Give students a mix of lesson time and self-discovery time to promote curiosity and independence.



## Generosity

Encourage club members to share some of their canned goods with a friend, family member, or neighbor.

## Mastery

A simpler version of canning (water bath canning) is used as a background for the harder version of canning (pressure canning) so students have time to learn and progress.

## Mastery and Other Resources

[http://nchfp.uga.edu/how/can\\_05/chicken\\_rabbit.html](http://nchfp.uga.edu/how/can_05/chicken_rabbit.html)

[http://nchfp.uga.edu/how/can\\_04/beans\\_snap\\_italian.html](http://nchfp.uga.edu/how/can_04/beans_snap_italian.html)

[http://nchfp.uga.edu/publications/uga/using\\_press\\_canners.html](http://nchfp.uga.edu/publications/uga/using_press_canners.html)





## More to *Discover*

Congratulations on completing your Discover 4-H club meetings! Continue with additional curriculum in your current project area, or discover other 4-H project areas. Check out the following links for additional 4-H curriculum.

1. [www.discover4h.org](http://www.discover4h.org)
2. <http://www.4-h.org/resource-library/curriculum/>
3. <http://utah4h.org/curriculum/>

## Become a 4-H Member or Volunteer

To **register** your Utah club or individuals in your club, visit and contact your county Extension office.

<http://utah4h.org/about/>

<http://utah4h.org/join/index>

For help registering in 4-H online visit:

<http://utah4h.org/staffresources/4honlinehelp>

Non-Utah residents, please contact your local 4-H office:

<http://www.4-h.org/get-involved/find-4-h-clubs-camps-programs/>



## Stay *Connected*

### Visit Your County Extension Office

Stay connected with 4-H activities and news through your county Extension office. Ask about volunteer opportunities, and don't forget to register for your county newsletter. Find contact information for counties in Utah here:

<https://extension.usu.edu/locations>

## Enjoy the Fair!

Enter your project or create a new project for the county fair. Learn about your county fair and fair judging here:

<http://utah4h.org/events/index>



## Participate in Local or State 4-H Activities, Programs, Contests, or Camps

For Utah state events and programs visit:

<http://utah4h.org/events/index>

<http://utah4h.org/projects/>

For local Utah 4-H events and programs, visit your county Extension office.

<https://extension.usu.edu/locations>

Non-Utah residents, please contact your local 4-H office.

<http://www.4-h.org/get-involved/find-4-h-clubs-camps-programs/>



## Discover *Service*

### Become a 4-H Volunteer!

 <http://www.youtube.com/watch?v=UBemO5VSyK0>

 <http://www.youtube.com/watch?v=U8n4o9gHvAA>

To become a 4-H volunteer in Utah, visit us at:

<http://utah4h.org/join/becomevolunteer>

### Serve Together as a 4-H Club or as an Individual 4-H Member

Use your skills, passions, and 4-H to better your community and world. You are needed! Look for opportunities to help in your area or participate in service programs that reach places throughout the world (religious groups, Red Cross, etc.).

### Hold a Club Service Project

USU Collegiate 4-H Club hosted "The Gift of Giving" as a club activity. Club members assembled Christmas stockings filled with needed items for CAPSA (Community Abuse Prevention Services Agency).

<http://tinyurl.com/lu5n2nc>



## Donate 4-H Projects

Look for hospitals, nursing homes, or other nonprofit organizations that will benefit from 4-H projects. Such projects include making quilts for CAPSA or Primary Children's Hospital, or making beanies for newborns. During Utah 4-H State Contests, 40 "smile bags" were sewn and donated to Operation Smile.

## Partner with Local Businesses

92,000 pounds of processed lamb, beef, and pork were donated to the Utah Food Bank in 2013 by multiple companies.

<http://tinyurl.com/pu7lxyw>

## Donate Money

Clubs or individuals can donate money gained from a 4-H project to a worthy cause. A nine-year-old 4-H member from Davis County donated her project money to help a three-year-old battle cancer.

<http://tinyurl.com/mqtfwxo>



## Give Us Your *Feedback*

Help us improve Discover 4-H curriculum. We would love feedback or suggestions on this guide.

Please go to the following link to take a short survey: [Click here to give your feedback](#)

Or go to: <https://goo.gl/iTfiJV>