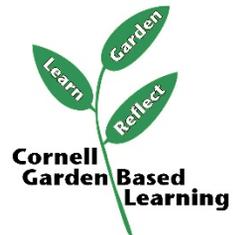


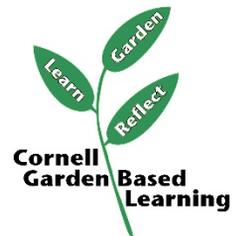
Cornell Cooperative Extension Cornell Garden-Based Learning

Food Preservation and Food Security



Learning Objectives

- We will...
- Understand safe handling, preparation and preservation of food including important practices in preventing foodborne illnesses and avoiding cross contamination.



What is food preservation?

A key set of skills that can help improve food security.



What is food preservation?

- **Canning:** preparing and preserving food at room temperature in airtight containers



What is food preservation?

- **Freezing:** preventing food from spoiling by storing at freezing temperatures



What is food preservation?

- **Dehydration/Drying:** preserving food by extracting moisture and inhibiting the growth of micro-organisms



What is food preservation?

- **Fermentation/Pickling:** converting carbohydrates in food to alcohol or acids by utilizing microorganisms under **anaerobic** (without air) conditions



What is food preservation?

- **Curing and Smoking:** preserving and flavoring food using additives (sugar, salt, nitrates, nitrites) and/or smoke to draw out moisture



Why preserve?

- Great way to save large quantities of produce and local game
- Creates shelf-stable products, good for emergencies
- Increases availability of high-quality produce during winter months
- Nostalgia, tradition, and family history!



Why CCE Educates

- “My power went out and I need to put my jars in the canner – what do I do??”
- “My jar of canned tomatoes has sprouted... Is it still safe to eat?”
- “How do I make syrup for the 30 pounds of pears that I need to can today?”



Why CCE Educates

- **Done wrong, food preservation can pose serious health risks**
- Well-practiced skills + good recipes = lots of possibilities, autonomy and less food waste
- Consumer demand
- Q&A hotlines, troubleshooting



Workshop Examples

- Planning Your Garden for Preserving
- Basics of Dehydration
- Boiling Water Bath Canning
- No-fear Pressure Canning
- Tomatoes and Salsas
- Low-sugar Jams And Jellies
- Recipe-specific Classes (Favorites Like Strawberry Jam, Pickled Green Beans)
- Fermentation: Sauerkraut, Kombucha, Sourdough Bread, etc...

Resources

- **CCE Nutrition, Food Safety and Security, and Obesity Prevention Website**
<http://cce.cornell.edu/program/nutrition>
 - Master Food Preserver Training
 - Find out if there's an educator in your county
- **National Center for Home Food Preservation (HFP)** at University of Georgia <https://nchfp.uga.edu/>

More Resources

- **USDA Complete Guide to Home Canning, 2015**
[https://nchfp.uga.edu/publications/publications_usa.html](https://nchfp.uga.edu/publications/publications_usda.html)
- University of Georgia **So Easy to Preserve**
<https://setp.uga.edu/>
- CCE Wild Harvest Table
<http://www.wildharvesttable.com/>

Food Safety



CCE Priority

Teach safe skills to prevent foodborne illness.



Basics of Food Safety

4 SIMPLE
STEPS
TO FOOD
SAFETY



Clean



Separate



Cook



Chill

Clean



CLEAN: Wash hands and surfaces often.

- Bacteria can be spread throughout the kitchen and get onto hands, cutting boards, utensils, counter tops and food. To prevent foodborne illness, always:
 - Wash your hands with warm water and soap for at least 20 seconds before and after handling food and after using the bathroom, changing diapers and handling pets.
 - Wash your cutting boards, dishes, utensils and counter tops with hot soapy water after preparing each food item and before you go on to the next food.

Clean



- Consider using paper towels to clean up kitchen surfaces. If you use cloth towels wash them often in the hot cycle of your washing machine.
- Rinse fresh fruits and vegetables under running tap water, including those with skins and rinds that are not eaten.
- Rub firm-skin fruits and vegetables under running tap water or scrub with a clean vegetable brush while rinsing with running tap water.

Separate



SEPARATE: Don't cross-contaminate

- **Cross-contamination** is how bacteria can be spread. When handling raw meat, poultry, seafood and eggs, keep these foods and their juices away from ready-to-eat foods. Always start with a clean scene— wash hands work spaces, and utensils with hot water and soap.
- Separate raw meat, poultry, seafood and eggs from other foods in your grocery shopping cart, grocery bags and in your refrigerator.

Separate



- Use separate cutting boards for fresh produce and for raw meat, poultry and seafood.
- Never place cooked food on a plate that previously held raw meat, poultry, seafood or eggs.



Cook



COOK: Cook to proper temperatures

- Food is safely cooked when it reaches a high enough internal temperature to kill the harmful bacteria that cause illness. Refer to the chart for the proper internal temperatures:
<https://www.foodsafety.gov/keep/charts/mintemp.html>.
- Use a food thermometer to measure the internal temperature of cooked foods. Make sure that meat, poultry, egg dishes, casseroles and other foods are cooked to the right internal temperature. Color is not a reliable indicator of doneness.

Cook



- Cook eggs until the yolk and white are firm. Only use recipes in which eggs are cooked or heated thoroughly.
- When cooking in a microwave oven, cover food, stir and rotate for even cooking. Food is done when it reaches the correct internal temperature.
- Bring sauces, soups and gravy to a boil when reheating.



Cook



USDA Food Safety and Inspection Service	
Product	Minimum Internal Temperature & Rest Time
Beef, Pork, Veal & Lamb Steaks, chops, roasts	145° F (62.8° C) and allow to rest for at least 3 minutes
Ground Meats	160° F (71.1° C)
Ham , fresh or smoked (uncooked)	145° F (62.8° C) and allow to rest for at least 3 minutes
Fully Cooked Ham (to reheat)	Reheat cooked hams packaged in USDA-inspected plants to 140° F (60° C) and all others to 165° F (73.9° C)
Product	Minimum Internal Temperature
All Poultry (breasts, whole bird, legs, thighs and wings, ground poultry and stuffing)	165° F (73.9° C)
Eggs	160° F (71.1° C)
Fish & Shellfish	145° F (62.8° C)
Leftovers	165° F (73.9° C)
Casseroles	165° F (73.9° C)

Chill



CHILL: Refrigerate promptly

- Refrigerate foods quickly because cold temperatures slow the growth of harmful bacteria. Keeping a constant refrigerator temperature of 40°F or below is one of the most effective ways to reduce the risk of foodborne illness. Use an appliance thermometer to be sure the temperature is consistently 40°F or below. The freezer temperature should be 0°F or below.
- Refrigerate or freeze meat, poultry, eggs and other perishables as soon as you get them home from the store.

Chill



- Never let perishables sit at room temperature more than two hours before putting them in the refrigerator or freezer (one hour when the temperature is above 90°F).
- Never defrost food at room temperature. Food must be kept at a safe temperature during thawing. There are three safe ways to defrost food: in the refrigerator, in cold water, and in the microwave. Food thawed in cold water or in the microwave should be cooked immediately.

Chill



- Always marinate food in the refrigerator.
- Divide large amounts of leftovers into shallow containers for quicker cooling in the refrigerator.
- Use or discard refrigerated food on a regular basis. Check [USDA cold storage information](#) for optimum storage times.



MGV and Nutrition Education

- You can easily incorporate some of these concepts into your work with community gardens and when working with home vegetable gardeners. Some ideas:
 - Share “10 Tips on Food Safety” Fact Sheet and/or “Let’s Preserve” Fact Sheet from Penn State
 - Encourage home gardeners to plant varieties well-suited to preservation
 - Share research-based recipes with information about new vegetable varieties, where appropriate

Let's Preserve



FLOATING FRUIT

To avoid floating fruit, start with firm, ripe fruit. Heat fruit before packing and use a light to medium syrup. Pack fruit as closely as possible without crushing. Follow directions for processing times.

Peaches, Apricots, Nectarines

Recommended Varieties

Glenglo, Ernie's Choice, Cresthaven, John Boy, Loring, Rothaven, and Sunhigh. Elberta is less acceptable. All are yellow-fleshed peaches. Most apricot and nectarine varieties are suitable for canned and frozen products.

Quantity

A bushel of nectarines or peaches weighs 48 pounds and yields 16 to 24 quarts. An average of 17½ pounds makes a 7-quart canner load; 11 pounds makes 9 pints. A bushel of apricots weighs 50 pounds and yields 20 to 25 quarts. An average of 16 pounds makes a 7-quart canner load; 10 pounds makes 9 pints. An average of 1½ pounds makes 1 pint of frozen product.

Quality

Choose ripe, mature fruit of a quality suitable for eating fresh. Canned hot packs are better than raw packs. Nectarines make poor-quality preserved products.

Preparation

Dip peaches (optional for apricots) in boiling water for 30 to 60 seconds or until skins loosen. Wash nectarines; do not dip in hot water or remove skins. Wash apricots if skins are not removed. Dip quickly in cold water and slip off skins. Cut in half, remove pits, and slice if desired. To prevent darkening, keep peeled fruit in water with vitamin C made by mixing 1 teaspoon of ascorbic acid crystals or six 500-milligram vitamin C tablets in 1 gallon of water.



FREEZING PROCEDURE

Don't freeze more than 2 pounds of food per cubic foot of freezer capacity per day. These fruits may be packed with syrup or dry sugar.

TO MAKE A SYRUP PACK

Mix and dissolve 2½ cups of sugar and ¼ teaspoon of ascorbic acid or three 500-milligram vitamin C tablets in 4 cups of water. Add 1 cup of this syrup to each quart of prepared fruit.

TO MAKE A DRY PACK

Mix ½ cup of dry sugar per quart of prepared fruit. To retard darkening, sprinkle ¼ teaspoon ascorbic acid dissolved in 3 tablespoons cold water over each quart of fruit before adding sugar.

TO PACKAGE

Fill pint- or quart-size freezer bags to 3 to 4 inches from their tops, squeeze out air, seal, and label. Before freezing, bags may be inserted into reusable rigid plastic freezer containers for added protection against punctures and leakage. If using rigid containers, allow ½-inch headspace for dry pack and 1-inch headspace for syrup pack fruit in quarts.

CANNING PROCEDURE

Wash jars. Prepare lids according to manufacturer's instructions. Fruits in jars may be covered with your choice of water, apple or white grape juice, or, more commonly, with a very light, light, or medium syrup. To make a very light syrup for a canner load of quarts, mix 1½ cups of sugar in 10½ cups of water and heat to dissolve; mix and dissolve 2½ cups of sugar

PENNSSTATE



College of Agricultural Sciences
Agricultural Research and Cooperative Extension

Learning Objectives

- We...
- Understand safe handling, preparation and preservation of food including important practices in preventing foodborne illnesses and avoiding cross contamination.



Learn More

Contact: Cornell Garden-Based Learning

<http://gardening.cals.cornell.edu/>

Author: Cailin Kowalewski, Nutrition and Science
Coordinator CCE Wayne

Reviewer: Michelle Podolec

Published: April 2019

