

Food Preservation

Summary

Major food preservation methods and their relationship to the conditions that encourage or inhibit growth of microorganisms.

Main Core Tie

Food Science

[Strand 4](#)

Background for Teachers

Why Preserve Food? - When you walk into a grocery store, it is obvious that commercially-preserved food is big business. Even so, there are a number of good reasons to preserve food at home. Many people enjoy gardening and caring for fruit trees as a hobby. Although it is hard work, it can serve as an outlet to relieve stress. A sense of satisfaction can come from caring for a garden and seeing the end result. The fruits and vegetables produced in the garden can be enjoyed for a long time after the growing season if preserved by canning, drying, or freezing.

Preserving food can save money. If you do not grow your own food, canning may cost more than purchasing food from the grocery store because of the expense for equipment. If you do grow your own garden and have time to care for it, food preservation can be economical. The cost of canning depends in part on the food you can and the amount. It is important to evaluate your resources when deciding what is best for you. Time, money, and energy are important considerations. So is the quality control, and, often, home canning, carefully done, produces a superior product. This is not always true, but many people prefer the taste of home-canned over mass-produced products.

Recipes for foods your family enjoys but which cannot be purchased can be preserved at home. You can control what goes into the food. For example, you decide the amount of sugar, salt, and other additives desired. If one of your family members has sugar diabetes, canning fruit with less sugar or none at all may be important to you.

Intended Learning Outcomes

If students can preserve food utilizing a variety of methods and science principles, they will be better prepared to keep safe and have more alternatives when planning and preparing meals.

Instructional Procedures

See attachments below:

The students will participate in a PREASSESSMENT to determine their current knowledge about food preservation and production by interviewing at least five students in class concerning home vegetable gardening and home food storage using the questions from GARDENING IS PRODUCTION. Discuss the findings of the interviews as a class. CANNING:

The students will complete the FOOD PRESERVATION - CANNING, INTRODUCTION, AND BASIC INFORMATION worksheet utilizing a textbook and/or teacher discussion.

The teacher will invite a speaker from the Health Department, a local hospital, and/or the Cooperative Extension Service to discuss proper sanitation and control of microorganisms in food preservation.

Have groups of students summarize the presentation by making a chart showing specific steps taken to control microorganisms in food preservation and consequences which would occur if these steps were not followed.

The students will watch a demonstration on blanching vegetables and take notes on the procedure. Vegetables must be blanched to destroy enzymes that deteriorate the quality of vegetables-frozen or

canned.

The students will watch a demonstration on treating fruit with an antioxidant to prevent enzyme deterioration.

The students will participate in a canning lab to practice proper canning methods using fruit(s) in season. (See FOOD PRESERVATION - CANNING.)

The students will participate in a lab illustrating that acids are a factor in inhibiting growth of microorganisms.

CAN whole tomatoes. Refer to PREPARING AND PROCESSING TOMATOES. The tomatoes can be used in lasagna or another recipe during the course.

OR

CAN USDA SALSA - HOT TOMATO-PEPPER SAUCE. A pint of salsa could be given to each student to take home if he/she want to bring an empty canning jar from home. Or, it can also be utilized in a recipe later in the course. FREEZING:

The teacher will discuss the worksheet on FOOD PRESERVATION - FREEZING, INTRODUCTION AND BASIC INFORMATION as the students complete it. The students will participate in a lab illustrating that temperature is a way of inhibiting growth of microorganisms.

FREEZE peaches, apples, strawberries (whichever is in season). The peaches or apples can be used in pie later in the course. The peaches or apples could also be canned. Refer to FOOD PRESERVATION - FREEZING.

As a homework assignment, prepare a FREEZER STORAGE CHART to show what is put into your freezer, when it was put in, and the date by which it should be removed. Post the chart by the freezer and encourage everyone to help keep the chart up to date.

NOTE TO TEACHER: Options 11-13 are from a Jam and Jelly Unit by MCP Pectin as a way to demonstrate that sugar inhibits the growth of microorganisms.

The students will complete the FOOD PRESERVATION - JAMS AND JELLIES worksheet as the teacher discusses INTRODUCTION AND BASIC INFORMATION ON FREEZER JAMS AND JELLIES.

During the lecture, the teacher may wish to emphasize the BULLETIN BOARD IDEA (POSTER).

Other teacher resources for the making of jams and jellies included in the guide are:

ADDITIONAL POINTS TO EMPHASIZE

JAM AND JELLY INGREDIENTS AND THEIR FUNCTIONS

DIFFERENCE BETWEEN COOKED AND UNCOOKED (FREEZER) JAMS AND JELLIES The teacher will demonstrate a freezer jam recipe. For content, refer to:

PREPARATION OF FREEZER JAMS AND JELLIES

PREPARATION STEPS FOR FREEZER METHODS

Recipes to choose from include:

APRICOT-PINEAPPLE FREEZER JAM

BLUEBERRY-PEACH FREEZER JAM

STRAWBERRY-PEACH-KIWI FREEZER JAM

STRAWBERRY-RASPBERRY FREEZER JAM

APPLE FREEZER JELLY

While the pectin and fruit are sitting for 30 minutes as called for in the recipes, the teacher will help the students plan a work schedule for the comparison lab to follow.

NOTE TO TEACHER: If any jams or jellies form crystals, save the product for a result demonstration to be used in the unit on CRYSTALLIZATION in this guide.

The students will prepare one cooked jam or jelly recipe and an uncooked jam or jelly recipe in a lab experience.

Recipes to choose from include:

STRAWBERRY JAM

PEACH JAM
GRAPE JELLY
ORANGE JELLY

After the recipes are completed, properly store the jams and jellies to cool. They will be compared and evaluated in a later class time. After the teacher reviews how to use COMPARISON SCORECARD, the students will complete their scorecard.

The students will taste test their uncooked jams and jellies using a bread product (toast, hot bread, etc). They will then complete SCORE YOUR JAM and SCORE YOUR JELLY worksheets. The remainder of the jam and/or jelly can then be utilized for other food classes during the course.

As class time permits, option 13 can be repeated using different recipes. DRYING

The students will participate in a lab illustrating that water and moisture removal are factors to inhibit growth of microorganisms.

DRY fruit leather. Refer to FRUIT DRYING.

In groups of four, the students will brainstorm on paper the advantages and disadvantages of each preservation method. The students will share the lists with the class and check against resources. Ask students if there may be circumstances under which a method might be impossible or impractical to use.

NOTE TO TEACHER: Be sure that the students connect preservation methods to microorganisms control.

Upon completion of this unit on food preservation, the students will take a UNIT TEST discussing the common problems of canning, their causes, and solutions. The teacher will discuss the test with the students.

Assessment Plan

Upon completion of this unit the students may choose to enter their product in a local, county, or state fair. If the unit is not completed in time for fair entry, elect to have a fair in the school, and use display ribbons, winners, etc. A judging team from the County Extension Service or Home Economists in Home and Community could be asked to judge. Make certain that the display features science, microorganisms, etc.

Authors

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