Drying Fruits and Vegetables (Dehydration)

Introduction
Dried foods are tasty, nutritious, lightweight, and easy to store and use. The energy input is less than what is needed to freeze or can, and the storage space is less than that needed for canning jars and freezer containers.

Dried fruits make high-energy snacks. The fact that dried foods are lightweight and compact makes them desirable for hiking and camping trips.

Some fruits and vegetables suitable for drying include apples, pears, peaches, plums, apricots, bananas, cantaloupe, strawberries, blueberries, carrots, celery, corn, green beans, potatoes, and tomatoes. Fruits can also be dried as fruit leathers and rolls.

Meat can be dried as jerky (see “Let’s Preserve: Meat and Poultry”). Herbs are one of the easiest foods to dry (see “Let’s Preserve: Drying Herbs”).

How Foods Are Dried
Increasing the temperature of food makes its moisture evaporate, and air moving over the food carries the moisture away. A balance of temperature and humidity is needed to successfully dry foods.

Methods
Food dehydrators—either commercially made or homemade—give a good-quality dried product. Oven drying works well if you can set your oven to a temperature of 140 to 150°F. Open the oven door 2 to 3 inches to allow moisture to escape. A convection oven works well because it combines low heat with a fan to move the air. Room drying at room temperature works only if heat, humidity, and air movement are adequate. Today’s air-conditioned homes may be too cool to dry foods quickly enough. While sun drying works in dry climates, the high humidity in Pennsylvania makes this method impractical here.

Procedures
Peeling is optional; however, the skin tends to toughen on apples and pears. The skin reduces surface area, preventing moisture from escaping. Sliced pieces will dry more quickly than fruit or vegetables left whole or cut in half. Pieces of the same size, shape, and thickness will dry evenly. Some thinly sliced fruits and vegetables, such as apple chips or zucchini chips, will dry crisp. Pretreat foods as described below. Place pieces on drying racks without allowing them to touch or overlap.

Place trays in a preheated dehydrator. Initially, the temperature can be set at 145°F when there is surface moisture on the fruit or vegetable. After one hour reduce the temperature to 135 to 140°F to finish drying. If the food is dried at a temperature that is too high, the outer surface will harden, preventing moisture from escaping from the center of the slice—this is called case hardening. Food shrinks when it is dried, so use a fine mesh for smaller fruits and vegetables.

Pretreating Fruits
Some foods such as apples, pears, peaches, and apricots dry better when pretreated. Pretreatment reduces oxidation, giving a better color, reducing vitamin loss, and lengthening shelf life. Research studies have shown that pretreating with an acidic solution enhances the destruction of potentially harmful bacteria during drying. Place cut fruits in a solution of 3¾ teaspoons of powdered ascorbic acid (or crush 20 500-milligram vitamin C tablets) or ½ teaspoon of powdered citric acid in 2 cups of water for 10 minutes before placing on trays to dry. Equal parts of bottled lemon juice and water can be substituted for the above pretreatment.

Other methods of pretreating fruit include syrup blanching, water blanching, and sulfiting. Syrup blanching involves simmering the prepared fruit for 10 minutes in a syrup of 1 cup sugar,
1 cup white corn syrup, and 2 cups water and letting it stand in the hot syrup for 30 minutes before draining, rinsing, and placing on drying trays. Syrup-blanching fruit is sweeter but also stickier than fruit treated by other methods. Refer to a book on food drying for specific times and directions if you choose to blanch fruits. Although sulfites have been used in the past to prevent oxidation, this fact sheet does not include this method because sulfites are not recommended for use by individuals on restricted-sodium diets or who have asthmatic or respiratory conditions. Sulfitated food should be dried outdoors for safety reasons.

Some fruits such as blueberries and cranberries need to be dipped into boiling water to crack the skins. Be careful not to leave the fruit in the boiling water for too long or the fruit will turn to mush. Chill quickly after cracking skins and blot dry. Home-dried cranberries and dried blueberries are not like the commercially dried product, which is sweeter.

**Conditioning and Storing Fruits**
Fruits are dry when they are pliable and no beads of moisture form when pressed between your fingers. Condition dried fruit by packing it loosely into an air-tight glass or plastic container for several days to distribute the remaining moisture evenly. If condensation forms inside the container, further dehydration is needed.

Unpeeled or uncovered fruits need to be treated to destroy insect eggs that might have gotten on the fruit. Heat dried fruit in the oven at 160°F for 30 minutes or chill in the freezer at 0°F or below for 48 hours. The shelf life of dried fruit is increased when it is stored in the freezer or refrigerator.

**Blanching Vegetables**
Blanching in a solution that contains ¼ teaspoon of citric acid per quart of water is recommended for most vegetables. Steam blanching is an option. This enhances the destruction of potentially harmful microorganisms and slows the enzyme reactions that will continue during drying and storage. Blanching also softens the cell structure, allowing moisture to escape, and allows the pieces to dry faster and later rehydrate faster. Blanching vegetables should be drained and placed on dryer trays. The heat from blanching will give them a head start in the drying process. Onions, garlic, peppers, and herbs do not need blanching.

**Testing Dryness and Storage**
Vegetables are tough, brittle, or crunchy when dry and do not need conditioning. Store dried vegetables in air-tight containers to prevent food from absorbing the moisture in the air. Storing them in a dark place retains the vitamin content of the food.