COOPERATIVE EXTENSION SERVICE
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Food Dehydrators

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Drying is the oldest method of food preservation we know. Some of the dried foods we use today are instant beverages, juices, fruit leather, tomatoes, dehydrated soups, spices, raisins and dates. Dried foods are light weight, easy to store and travel without refrigeration, making them ideal for backpacking and camping. Drying surplus foods from gardens, or those purchased during peak season sales, saves food as well as money. Small quantities, which might otherwise be wasted, can be dried and stored. Food dehydration is an economical way of storing summer's bounty of fruits and vegetables so you can add them to your diet throughout the year. For more information on how to dry food at home, ask for Extension publication HE3-501 - Drying Food At Home.

TYPES OF FOOD DEHYDRATORS

A food dehydrator is basically a box-shaped cabinet with a heat source and several trays. It can be commercially made or homemade. The heating chamber includes a heat source and a way for the heat to circulate through the chamber. Most dehydrators operate with a small fan, while other models depend on natural air flow for the air movement. Some homemade dehydrators depend on solar energy for the source of heat.

Most food dehydrators available today are commercially made and utilize electricity to power a small heater and fan.

BUYING CONSIDERATIONS

Important considerations in selecting a dehydrator are the capacity, construction, operating parts, economy and safety. Read the manufacturer's specifications and operating instructions carefully before purchasing a dehydrator.

Capacity. The capacity determines how much food you can dry at one time and is expressed in square feet. The capacity should be adequate for the largest amount of food you will dry frequently during a twenty-four hour period. Approximately one pound of food can be dried per square foot of drying area. The amount of drying area needed varies with the type and thickness of food dried. If food is wasted because the capacity is too small, a low purchase price on the food may not be a saving.

Design. The dehydrator may be round or rectangular. Round units consist of stack-on trays. In the smallest of these units, no more than three to five pounds of food can be dried on two to three trays. The largest round units may have five or more trays. Rectangular units are available in sizes from compact to large (7.5 to 30 inches) with slide-out trays. Compact units require less storage space, but they increase preparation and clean-up time when large amounts of food are to be dried in a short time. Limited amounts of food can be dried at one time.

Weight. Weight is important when space is limited and the unit must be moved frequently. Lightweight units have metal or high-grade plastic wall construction rather than the wood typical of homemade units.

Walls. Metal and high-grade plastic walls are superior to wood for safety, durability and ease of cleaning, but metal diffuses heat to the room. Wood walls may expand and contract with heat more than metal. A double-wall construction with an air space or insulation material will conserve energy by reducing heat loss and will help keep the surrounding area comfortable.

Air intake vent. An air intake vent should have a washable or easy to replace filter and be adjustable to permit more fresh airflow at the beginning of the drying period than at the end.

Air escape vent. An air escape vent is more desirable than relying on loosely fitting doors for the escape of moisture. The vent, usually located on or near the top, should be screened to prevent the entry of insects.

Drying can cause condensation of moisture inside the home. The dehydrator should be used in a dry, well-ventilated room. Other humidity-producing activities such as cooking, can hinder its operation.

Door. The door on rectangular units should open and close easily or be removable for easy access to trays. Covers or doors should fit smoothly when in a closed position. A see-through door allows observation of the drying process without disruption. However, the only visible pieces of food are the ones near the see-through opening.

Trays. Good tray design and construction let air circulate freely on all sides of the food. Trays should slide in and out easily. Smooth, level guides allow trays to be pulled out without tipping. Durable and lightweight frames and smooth edges are desirable. Screening should be made of stainless steel, Teflon-coated fiberglass, polypropylene or other durable plastic safe for food. Metal screening, except stainless steel, can cause chemical reactions, discoloration and flavor loss. Fine mesh prevents finely diced food from falling through. Screen shelves may sag with the load. Careful handling is necessary when loading. Screening material that can be tightened easily is desirable. Flexible, dishwasher-safe materials facilitate cleaning. Reasonably priced, replaceable trays should be available. Some models have stackable trays, which allow you to adjust the capacity of the dryer.

In some units, trays may need frequent rotating because of the difference in heat between top and bottom or front and back. When the dehydrator is kept between 90° and 100° (32° and 43°C) and a fan is operated, tray rotation may be unnecessary, but more evenly dried products may be obtained when trays are rotated at least once during the drying period.

Heat source. The heating element should provide a stable temperature to ensure continuous drying. One or more lamp bulbs may be used, but rod-type heating elements are the most durable. These rods should be enclosed for protection and located to allow even heating without a fire or shock hazard. Wattage should be adequate for the area of drying space. Wattage of round factory made units varies from 60 to 300. Wattage of rectangular models varies from 165 for small units to 600 watts for units up to 16 square feet. For units having 24 square feet of drying area, the wattage is 1,000 or higher.

Controls. The on/off switch and the heat selection dial or indicator should be located at the front. Some of the dials have only low, medium and high temperatures indicated. The temperature in degrees increases accuracy.

Fan or blower. A fan helps remove moisture. Some round units and most compact units have no fan; drying time per pound is likely to be longer in these units. Two fan speeds allow use of high speed when the drying period begins and a low speed toward the end of the drying period when less air circulation is needed. A 6-inch fan may be used or an 8-inch fan may be found on some units having a 1,000 watt, 120 volt heating element.

Safety features. Several safety features should be on all electric dehydrators. Check for these:

- Underwriters Lab (UL) listing on all units or electrical parts (including homemade units);
- non-flammable walls and trays;
- properly wired, grounded, enclosed electrical components;
- smooth edges and corners;
- non-toxic paint, screening, finishes;
- Adjustable thermostat (85° to 160°F, 30° to 70°C);
- Easy-to-reach switches and controls.

ECONOMICS

Initial cost. Electric dehydrators vary in price from $30 to more than $400 for large rectangular units. The cost per square foot of drying area should be compared for both compact and larger models. The model with the lowest cost per square foot may not be the most economical if the capacity does not accommodate the size of loads you will usually dry. Cost of factory made units should be compared with cost of materials and labor for a homemade unit.

Energy. The amount of electricity used can be reduced with an accurately adjusted thermostat and when the wattage of the element is adequate for the total area of drying surface. For units with up to 18 square feet of drying area, 660 watts may be adequate if the unit does not lose much heat to the room. For 24 square feet, 1,000 watts may be needed.

The cost of drying may be calculated using the following formula:

$$\text{Cost} = \frac{\text{watts}}{1{,}000} \times \text{hrs. used} \times \text{cost per 1,000 kwh}$$

For example:

$$\text{Cost} = \frac{600}{1{,}000} \times 8 \times \$.06 = \$.288 \text{ or } \$.29$$

If the heating element has a thermostat, the cost will be lower than that calculated above because the heating element is cycled off and on during dehydrator operation.

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