Drying Fruits & Vegetables

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Master Food Preservers & Master Gardeners

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Drying is New Again

• Oldest method of preserving food
• Alternative to canning & freezing
• Simple, safe and easy to learn
• Drying can be done year round
• No refrigeration needed
• Takes little space
How Drying Preserves

• Removes moisture from food so bacteria, yeasts & molds can’t grow and spoil food

• Slows down action of enzymes but doesn’t inactivate them
Temperatures for Drying

• Optimum temperature: 140°F or less
  • Depends upon food and process

• Higher temps cook food instead of drying

• Avoid “case hardening”
  • Dried outside and moisture trapped inside
  • old results

• Drying is more effective when humidity is low & air current is moving
  • Speeds up drying, removes air around food
Ways To Dry CFO Food

- Oven
- Electric food dehydrator
- Room Drying—herbs, hot peppers, nuts
- Vine Drying – beans only
Drying Fruit as a CFO Food

• Prepare fruit – wash fruit and core, if needed
  • Fruits: halved, sliced or some left whole
  • Apples: cored and sliced, wedges, rings
  • Bananas: sliced

• Thin, uniform, peeled slices dry fastest

• If fruit dried whole, “check” or crack the skin to speed drying and prevent case hardening
  • Grapes: place in boiling then cold water to “check”
Pretreating Fruit

- Sulfite Dip – beware of allergies
- Ascorbic Acid
- Ascorbic Acid Mixtures
- Fruit Juice Dip
- Honey Dip
- Syrup Blanching
- Steam Blanching
Drying Foods Indoors

- Conventional ovens
  - Convection ovens

- Electric Food dehydrators

- Room Drying
Oven Drying

• Slower than dehydrators
  • Unless you have a convection oven

• Take 2 times longer to dry in oven than dehydrator
  • Not as efficient
  • Uses more energy
Using Your Oven

- Temperature needs to go down to 140°F
- Leave oven door propped open 2-6 inches
- Best if you place a fan outside oven door
- Oven temp varies...so need accurate oven thermometer to be sure 140°F is achieved
- Trays should clear sides of oven & 3-4” shorter front to back of oven, 2-3” between racks in oven
Food Dehydrators

- Small electrical appliance for drying foods indoors
- Electric element for heat & fan and vents for air circulation
- Dries foods fast between 85 to 140°F depending upon product
- Buy at department stores, mail-order, garden supply, internet
Costs?

• Costs vary depending on features
• Some are expandable for extra trays
• Twelve square feet of drying space dries about a half-bushel of produce
• Major disadvantage is limited capacity
Dehydrator Features

- Double wall construction of metal or high grade plastic
- Enclosed heating element
- Counter top design
- Enclosed thermostat from 85°F-160°F
- Fan or blower
- 4 to 10 open mesh trays, plastic, sturdy, washable
- UL seal
- Guarantee
- Dial for regulating temp
- A timer, auto-shut off is a good idea, not always available
Types of Dehydrators

**Horizontal Air Flow:** Heating element & fan located on side

- Major advantages
  - All trays get equal heat
  - Reduces flavor mixing so different foods can be dried at once
  - Juices don’t drip into heating element

**Vertical Air Flow:** Heating element & fan at base or in lid

- Major disadvantages
  - Must rotate trays for even drying
  - If different foods dried at the same time
  - Flavors can mix and liquids can drip into heating element
Horizontal Air Flow
Food Dehydrator
Vertical Air Flow
Food Dehydrator
Drying Fruit

- Follow directions given
- Place fruit in single layer
- Follow approximate drying times given
- Monitor food; it dries much faster at end of drying period
Determining Dryness

- Most fruit should have 20% moisture content when dried
- Cut several cooled pieces in half...should be no visible moisture and should not be able to squeeze any moisture from fruit
- Not sticky or tacky – feels like soft leather
- If piece folded in half, shouldn’t stick to itself
After Drying...

• Cool fruit 30-60 minutes before packaging

• Don’t pack too soon or moisture buildup could occur
  • But don’t wait too long or could pick up moisture
Fruit is dried correctly when it feels like ‘kid leather’
Conditioning Fruits

• Conditioning equalizes the moisture
• Pack cooled fruit in plastic or glass jars, seal and let stand for 7-10 days
• Shake jars daily to separate pieces and check for moisture condensation
• If condensation forms, return to dehydrator for more drying. If mold formed, **DISCARD!**
Fruit Leathers

- Fresh Fruit
- Canned or Frozen Fruits
- Puree fruits until smooth
- Add sweetener to taste, if desired
Drying Fruit Leathers

• Pour ⅛ to ¼-inch thick on drying tray
• Take 6-8 hours to dry in dehydrator, up to 18 in oven
• Dry at 140°F
• Done when no indentation in center of leather or no longer sticky to touch
• When warm, peel from plastic and roll, cool and rewrap roll in plastic
• Keep up to 1 month at room temp OR freeze up to 1 year
Drying Vegetables

- Prepare vegetables
  - Wash, trim, peel, according to directions
  - Uniform pieces
- Pretreat
- Dry as soon as possible after picking
Pretreating Vegetables

• **Water blanch** – follow times given, start counting time as soon as water returns to boil. If takes more than 1 minute to return to boil, are putting in too many vegetables at a time.

• **Steam blanch** – Vegetables should be no more than 2 inches deep above boiling water. Cover and steam according to directions given for each vegetable.
Cooling Vegetables

• Dip briefly in cold water only long enough to stop cooking
• Spread out on a paper towel to cool and dry
• Cool so they feel only slightly hot to touch ... about 120°F
• Place in dehydrator and dry
Determining Dryness

• Dry vegetables until brittle or “crisp”
  • Vegetable leathers should be ‘crisp’ too, not pliable rolls like fruit leathers

• 10% moisture

• Don’t need conditioning like fruits because of lower moisture content

• Store in air tight and dry conditions; longer storage is best in the freezer
Room Drying

• Herbs, hot peppers, & nuts in shell are most common air dried foods

• Herbs & peppers – strung on string or tied in bundles and suspended from overhead racks in air until dry.

• Herbs can be enclosed in paper bags, with openings for air circulation

• Spread nuts in single layer on paper

• Persimmons can be slowly dried whole
Vine Drying

• Beans only
• Leave bean pods on vine until beans inside rattle
• If not dried thoroughly, can dry further in oven or dehydrator
Pasteurization

*For room & vine-dried products: kills insect eggs*

- **Freezer Method**
  - Seal food in freezer plastic bags
  - Freeze at 0°F for at least 48 hours

- **Oven Method**
  - Place food in single layer on tray or in shallow pan
  - Place in 160°F preheated oven for 30 minutes
Packaging Dried Foods

• Airtight containers
• Rigid or flexible
  • “Crushability”
• Vacuum sealers
Storage

• Cool, dark, dry
• Freezer
  • Packaged for freezing
• Refrigerator
Cottage Food Labels

Must Include:

• “Made in a Home Kitchen” in 12-point type.
• Name commonly used to describe the product.
• Name, city, county, state and zip code of CFO
• If CFO is not listed in a current phone directory then street address must also be declared
Cottage Food Labels

Must Include:

• Registration or permit number of CFO
• Ingredients in descending order of predominance by weight, if product contains two or more ingredients
• Net quantity (count, weight, or volume) of the food product, stated in both English (pound) units and metric units (grams)
Cottage Food Labels

Must Include:

• Declaration if food contains any of the eight major food allergens: milk, eggs, fish, shellfish, tree nuts, wheat, peanuts, & soybeans

• Two approved methods:
  • separate summary statement immediately following or adjacent to the ingredient list, or
  • within the ingredient list
Cottage Food Labels

• If nutrient content claims or health claim is made, the label must contain a “Nutrition Facts” statement on the information panel
• Labels must be legible and in English
• Labels, wrappers, inks, adhesives, paper, and packaging materials that come into contact with CFs must be food-grade
MADE IN A HOME KITCHEN  
Registration #12345, County of Sacramento  
Dried Cinnamon Apples  
Susie’s Samples  
123 Extension Lane  
Sampletown, CA 94101  
Ingredients: Apples, Cinnamon  
Net Wt. 3 oz (89 g)
Comply with local regulations

• Business license from local government
• Planning and zoning:
  • Need approval from local city or county planning department
  • If selling at Certified Farmers Market or community event, may need a Temporary Food Facility permit
  • May have requirements regarding parking spaces, hours of operation, etc.
• Food Handler Card

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Reference:
“So Easy To Preserve”
Cooperative Extension Service
The University of Georgia, 5th Edition, 2006
Acknowledgments

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