Yes You Can!
The Art of Home Food Preservation
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Today’s Topics

• Why do we preserve food?
• Methods of food preservation
• Selecting foods to preserve
• The costs of preserving food
Why do we preserve food?

• To extend shelf life
• To control the quality and ingredients of what we eat
• Personal fulfillment/self reliance
• It can be a family/friends/neighborhood bonding activity
• To be sure we have a food supply for our family
What bacteria needs to grow

• Food
• Acidity
• Temperature
• Time
• Oxygen
• Moisture

FIGHT BAC!
Methods to preserve food

• Cold Storage
  – Refrigeration
  – Freezing
• Drying/Dehydration
• Acidification/Pickling/Fermentation
• Heat Processing/Canning
  – Boiling Water Bath
  – Pressure Canning
Cold Storage (refrigeration)

- Most biological systems run slower in cooler temperatures
  - Microorganisms grow slower or cease growth (but not kill!)
    - Slow spoilage and foodborne illness microorganisms
  - Enzyme Activity
    - Slows browning
    - Slows enzymatic breakdown of tissue (mushiness)
- Recommended Storage Temperature
  - 40°F or lower to slow bacterial growth and maintain quality
  - Freezing occurs at 32°F
  - Adjust refrigerator between 32°F and 40°F to prevent unwanted freezing
Freezing

• Great way to extend shelf life of food!
• Nutrition is unaffected
• Faster freezing is better for food texture
• Lower storage temperature = longer shelf-life

• Freezing Fruits and Vegetables Publication
• Food Storage Guidelines for Consumers
Drying/Dehydration

• Drying preserves food by removing the moisture (80-95%) to prevent microbial growth

• Methods
  – Oven
  – Food Dehydrator (recommended)

• Using Dehydration to Preserve Fruits, Vegetables, and Meats

• Safe Processing of Meat and Poultry Jerky
Electric Dehydrators

• Horizontal Air Flow
  – Heating element and fan located on side
  – Reduces flavor mixing
  – All trays receive equal heat penetration
  – Juices and liquids do not drip into heating unit

• Vertical Air Flow
  – Heating element and fan located at base of unit
  – Flavors can mix
  – Liquids drip into heating unit making difficult to clean
Acidification/Pickling/Fermentation

• Two Main Ways to Achieve Acidification (pH below 4.6)
  – Adding Acid to the food
    • Vinegar
    • Lemon juice
    • Citric Acid
  – Fermentation
    • Encouraging the growth of good bacteria while controlling the growth of the bad
    • By-products of microorganisms are acidic in nature
Acidification of food

- Level of acidity in a pickled product is as important to its safety as it is to taste and texture.

- Use only recipes with tested proportions of ingredients.
  - Ratio of acid to vegetables is extremely important and should not be changed
Fermentation

• 3 weeks or more for process
• Salt content important; do not deviate from recipe
  – Canning salt recommended
  – Table salt has anti-caking additives that make brine cloudy
• Container choice important
  – Old crocks may contain lead in paint

• Vegetable Fermentation Publication

Virginia Cooperative Extension
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Canning

- Uses heat
- Destroys microorganisms
- Inactivates enzymes
- Seals container to prevent recontamination
- Prevents moisture loss
- Drives off oxygen/creates a vacuum
Canning Types

• **Water bath canning**
  – Uses boiling water to process the canned food
  – Used for acidic foods (pH below 4.6)
    • Generally all fruits
    • Tomatoes and figs are borderline – (specific amounts of citric acid or lemon juice must be added before canning to acidify)
    • Sauerkraut
    • Foods to which large amounts of acid are added (pickles)
Canning Types continued

• **Pressure canning**
  – Uses pressure to raise the temperature inside the canner to 240°F or higher
  – Used for low acid foods (pH 4.6 or above)
    • Generally all vegetables
    • Meats
    • Poultry
    • Seafood
    • Soups
    • Mixtures of acid and low acid foods (spaghetti sauce/soups – mixtures of meat, vegetables and tomatoes)
Why Do Low Acid Foods Have to be Pressure Canned to be Safe?

*Clostridium botulinum*

- *C. botulinum* forms protective, heat-resistant spores
- Spores require higher temperatures for destruction in a reasonable period of time (usually 240ºF or above at sea level)
- Botulism only grows in a low oxygen environment and as it grows it produces a deadly toxin
Botulism continued

• Canned food can contain toxin without showing any signs of spoilage.
• Symptoms usually appear within 12 to 72 hours:
  – Digestive upset (in some cases)
  – Blurred, double vision
  – Difficulty swallowing, speaking and breathing
  – Death
Preventing Botulism

In Home Canned Foods

– Spores won’t germinate in acid environments.
– Spores are destroyed when heated long enough at a specific temperature.
– USDA recommends a canner temperature of at least 240°F at sea level for canning low acid foods. (Be sure to account for altitude adjustments).
– Pressure canner must be used for all low acid foods.
Canning “Musts”

• Food must be properly prepared and processed the correct amount of time
• Canner must be accurate and operated correctly
• Only use recipes from a reputable source must be followed (www.swvafoodsafty.org/resources)
• Up-to-date methods and information must be used; beware of “granny’s method” or internet “blog type” recipes
Selecting foods to preserve

Before preserving any food consider the **types of foods** your family **enjoys** and the **usefulness** of the preserved product in your **lifestyle**.
If you are growing what you preserve

• Harvest at the peak of ripeness/readiness

• Poor handling of produce causes 5-25% loss of nutrients after harvest

• Handle food safely and preserve as close to harvest as possible (within 24 hours is best)
If you are buying what you preserve

• Look for quality
• Does it have a firm texture?
• Does it smell good?
• How fresh is it? (Ask the grower when it was harvested)
• Is where it was grown important? (Is it local?)
Consider the costs

- Produce and ingredients
- Equipment and supplies
- Fuel and water Usage
- Large equipment
  ✓ e.g., Freezer, pressure canner, etc.
- Time and energy

Note: Food preservation is an investment. For some it can save $ but for others it may not. (Cost of Preserving and Storing Food)
Questions?

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