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Coimbatore-35
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DEPARTMENT OF FOOD TECHNOLOGY

19FTT305-FRUIT AND VEGETABLE TECHNOLOGY

UNIT 3 - MINIMAL PROCESSING AND CANNING



Canning involves placing food into containers (usually cans or jars), sealing them, and then heating them to kill harmful microorganisms and deactivate enzymes that could cause the food to spoil. The process also creates a vacuum seal, which prevents the entry of air, further protecting the food.

Processing Steps in Canning (for Fruits and Vegetables)

a) Preparation:

- Selection:** Choose fresh, ripe fruits and vegetables free from blemishes or defects.
- Cleaning:** Wash the produce thoroughly to remove dirt, pesticides, and any contaminants.
- Peeling & Cutting:** Depending on the type of food, you may need to peel or chop the fruits or vegetables into appropriate sizes.
- Blanching (for some vegetables):** Blanching involves briefly boiling vegetables and then cooling them rapidly in cold water. This step helps preserve the color, flavor, and texture, and it also deactivates enzymes that can cause spoilage.



b) Packing the Jars/Cans:

- **Hot Pack Method:** The food is pre-cooked or simmered in water or syrup before being packed into jars or cans. This method is commonly used for fruits and vegetables that are more delicate.
- **Raw Pack Method:** The food is packed into the containers without being pre-cooked. This method is more common for firmer vegetables.

c) Adding Liquids:

- **Syrups, Juices, or Water:** Depending on the food type, syrup (for fruits), brine (for vegetables), or plain water is added to the containers to cover the food and prevent air pockets. The liquid also helps with heat transfer during processing.

d) Sealing:

- The jars or cans are sealed with lids or covers, ensuring that no air can enter.



e) Heat Processing (Sterilization):

- The sealed containers are then heated to a specific temperature for a predetermined amount of time. This process destroys bacteria, yeasts, molds, and enzymes.
 - **Boiling Water Bath:** Common for high-acid foods like fruits, tomatoes, and pickles. The jars are submerged in boiling water.
 - **Pressure Canning:** Used for low-acid foods like vegetables, meats, and poultry. It requires a pressure cooker to reach higher temperatures that boiling water alone cannot achieve.

f) Cooling and Storage:

- After processing, jars or cans are allowed to cool, which forms a vacuum seal. Once cool, they should be checked to ensure they are properly sealed.
- Store the sealed jars or cans in a cool, dark, dry place to maintain their shelf life. Proper storage can preserve the food for months or even year



Equipment Used in Canning



a) Canning Jars and Lids:

- **Canning Jars:** Typically made of glass, these jars come in different sizes. Mason jars are the most common choice for canning fruits and vegetables.
- **Lids:** Lids are used to seal the jars and create a vacuum. Modern lids have a rubber seal that forms the vacuum once the jar cools.
- **Ring Bands:** These screw onto the jar to hold the lid in place during the canning process, though they are not used for the actual seal after processing.

b) Pressure Canner:

- This equipment is essential for processing low-acid foods (like most vegetables) because it allows you to reach the higher temperatures needed to kill harmful microorganisms. It uses steam and pressure to increase the temperature above the boiling point of water.



c) Boiling Water Canner:

- Used for high-acid foods (fruits, jams, and pickles), the jars are immersed in a large pot of boiling water. This canner typically has a rack for placing jars in the pot.

d) Jar Lifter:

- A specialized tool for safely lifting hot jars out of boiling water or the canning pot without burning yourself.

e) Canning Funnel:

- A wide-mouthed funnel designed to help pack food into jars without spilling. It ensures that food goes directly into the jar and not around the rim, which could prevent a proper seal.

f) Canning Tools (Tongs, Bubble Remover, Headspace Tool):

- Tongs** are used to handle jars and lids.
- A **bubble remover** is a thin, flat tool that helps release any air bubbles trapped inside jars.
- A **headspace tool** measures the distance from the food to the top of the jar, which is important to ensure proper sealing and prevent spoilage.

g) Timer and Thermometer:

- For accurate processing times and temperature, it's essential to have a timer and thermometer. This ensures that food is heated for the correct amount of time at the appropriate temperatu



Cans and Containers in Canning Fruits and Vegetables

a) Cans:

Tin Cans: These are the traditional containers for commercial canning. They are sealed with metal lids and are very effective at creating a vacuum seal, keeping the food inside preserved.

Aluminum Cans: Similar to tin cans but lighter, often used for certain beverages and packaged foods. However, for home canning, glass jars are more commonly used.

b) Glass Jars:

Mason Jars: These are the standard glass containers for home canning. They are made of thick glass and are designed to withstand the heat from processing.

Wide-Mouth vs. Regular Mouth Jars: Wide-mouth jars are easier to fill and clean, making them a good choice for larger fruits or vegetables.

c) Plastic Containers (less common in home canning):

Some newer methods of food preservation use BPA-free plastic containers, though they are not as common or recommended as glass jars for canning, especially for long-term storage.



Thank You