Nasco Education

LESSON PLAN

FCS

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Canning 101

Volume 71 | Gr. 9–12

Time: 3 days

Standards

FPP.01.02.

Apply food safety and sanitation procedures in the handling and processing of food products to ensure food quality.

FPP.03.02.03.c.

Devise and apply strategies to preserve different foods using various methods and techniques.

FPP.01.03.01.c.

Prepare plans that ensure implementation of proper food storage procedures.

Materials list

- Berries (4–5 cups per group)
- Pectin (4½ Tbsp. per group)
- Sugar (3 cups per group)
- Half-pint (8 oz.) mason jars (6 per group)
- Crackers and bread, if allowing students to taste
- Canning set (1 per group) (**NE40309**)
- Measuring cups (1 set per group) (**WA31542**)
- Food labels (**WA34954**)
- Ladle (**WA35377**)
- Pressure cooker (depending on recipe) (**WA25113**)
- 8-quart sauce pan (depending on recipe) (**WA32172**)

Note: *Ingredients above may vary depending on the recipe. Options for other recipes are included in the activity below under Day 2.*

Day 1

1. Start by leading a discussion about food safety by asking the following questions:
   - Have you ever had food poisoning or gotten sick from food?
   - What was that experience like?
   - Why is food safety important?
2. Display the food safety information on pp. 3–9, and introduce the essential question: How do we keep food safe? Then, discuss well-known foodborne illness cases and the symptoms of food poisoning.
3. Reproduce the "Web quest" worksheet on p. 11. Have students complete the worksheet in class or as homework.

Day 2

1. Reproduce and walk through the "Lab work: Preventing bacteria" worksheet on p. 10 as a class to activate prior knowledge and make connections. Ask the following questions:
    - How many of you have canned before?
    - How many of you have family members who can?
    - Why do so few people can now compared to the number of people who canned in the past?
2. Then, have students follow this recipe to make **berry jam**. Explore **additional recipes** if you have time.
3. All recipes require the following steps:
    - Preheat jars in simmering water (~180° F)
    - Wash lids and bands
    - Prepare recipe
    - Fill jars to height noted in recipe
    - Cover
    - Place in boiling water for recipe's required time
    - Remove and let sit for 12–24 hours
    - More information on water-bath canning is available **here**.
4. After students have finished the canning process, reflect on what they liked or didn't like about it. What was difficult about it? What other foods would they like to try to can?

Day 3

1. Ask students how they think their canning turned out. Then have them return to their jars, and check the seals:
    - Push the button on the top. It should not move.
    - Remove the band and try lifting the jar by the lid. It should hold.
2. Discuss the results and recap what they learned with the following questions:
    - How does canning foods prevent them from spoiling? (high temp, removing oxygen, lowering pH)
    - How did our jams turn out?
    - How long do we think our jams will last? (typically 12–18 months depending on seal)
3. Allow students to open one jar and enjoy their jam with some bread or crackers while they complete one of the reflection sheets on p. 12.

Essential Question:

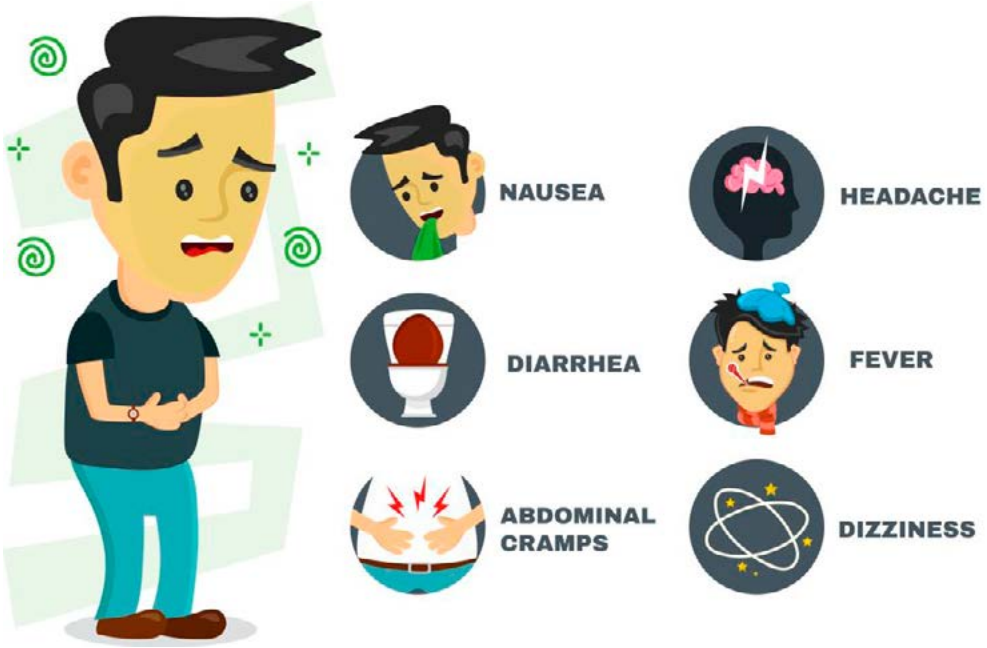
How do we keep food safe?

Food safety

- America has the safest food supply in the world
- Can anyone think of any famous or recent foodborne illness outbreak?

Foodborne illness

- Symptoms
  - 24-hour fever
  - Diarrhea
  - Upset stomach
  - Vomiting
- By the numbers
  - 120,000 hospitalizations a year
  - 3,000 deaths
  - 48 million cases per year
  - Estimated most do not get reported
  - Possibly 200 million cases per year



What causes foodborne illnesses?

Bacteria

- Even a few bacteria can cause illness
- E. coli and salmonella are two popular strains
- Standard Plate Count (SPC) is a measurement of all living microorganisms and serves as a way to measure cleanliness and sanitation
    - Most foods have standard limits

Processing food prevents bacteria growth

- Cooling
- Heating
- Lowering pH
- Removing oxygen
- Removing moisture

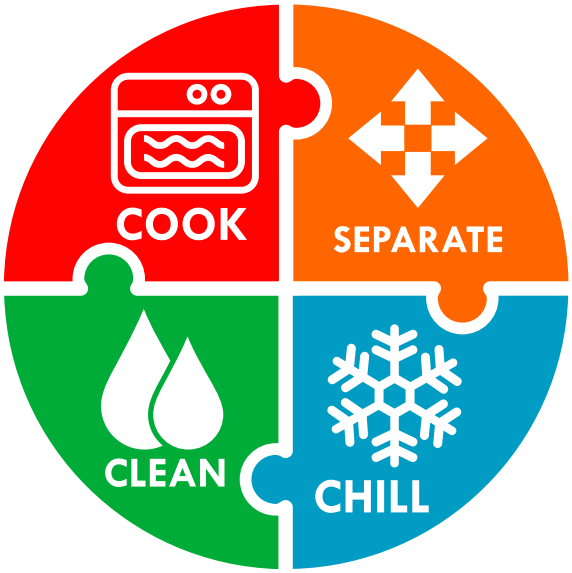
Controlling microorganisms in meat processing

Hazard analysis and critical control points

1. Analyze hazards
2. Identify critical control points
3. Establish preventative measures
4. Set procedures to measure critical control points
5. Establish corrective actions
6. Verify system is working properly
7. Establish an effective record keeping-system

What are some ways we can keep food safe in our homes?

- Keep food refrigerated or frozen until it is needed
- Wash ALL fruits and vegetables before eating
- Cook food and meat to the proper temperature
- Wash your hands
- Keep counter, pots, pans, and utensils clean



FIGHT BACTERIA

Controlling microorganisms while cooking meat at home

- Cook meat to proper temperature
  - Beef — 145° F
  - Ground beef — 160° F
  - Poultry — 165° F
  - Pork — 145° F
  - Fish — 145° F
- Keep refrigerated (7 days max) or frozen
- Ensure juices do not get on other food
- Wash hands after handling and before touching anything else

Lab work: Preventing bacteria

Name: _____ Period: _____ Date: _____

We will be testing one method to prevent bacteria that includes heating, removing oxygen, and often lowering pH — any guesses?

That is right, we will be canning!

- We will have one minute
- Brainstorm as many foods as you can think of in one minute
- Let's see who can discover the most!

Quick brainstorm

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

16.

17.

18.

19.

20.

Web quest

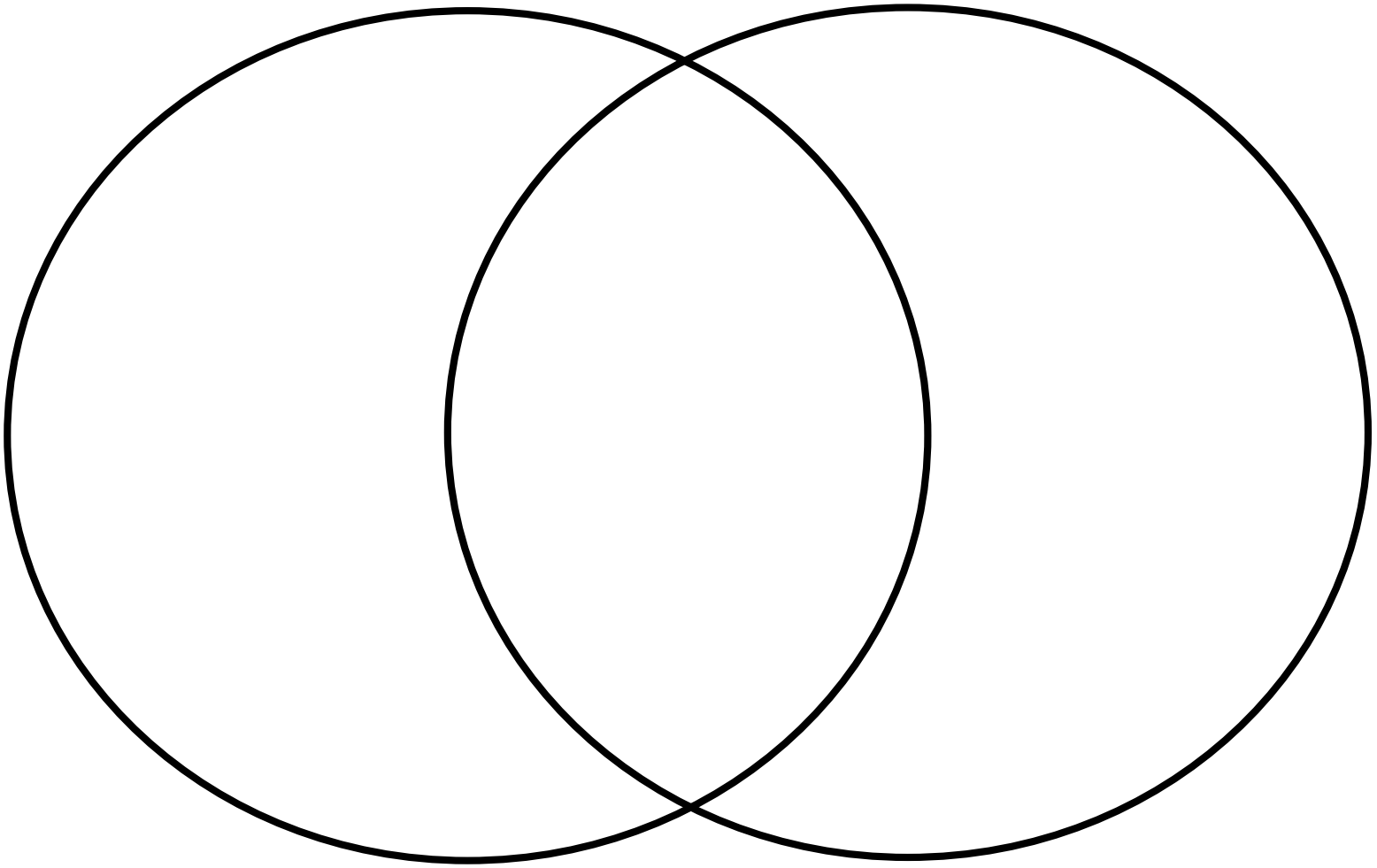
Name: _____ Period: _____ Date: _____

Visit the Ball Jar site to start your web quest.
https://www.ballmasonjars.com/canning-and-preserving-101.html

What are the two main types of canning? Compare and contrast the two main types of canning by completing the venn diagram below.

Canning type #1: _____

Canning type #2: _____



Reflecting on canning

Name: _____ Period: _____ Date: _____

What steps did you take to complete the activity?

Do you feel your canning activity went well? Why or why not?

If you could do the activity again, what would you do differently?

What did you learn?