Trends in Consumer Food Safety and Preservation

Stephanie Smith, Ph.D.

Washington State University

Assistant Professor

Statewide Consumer Food Safety Specialist

WASHINGTON STATE UNIVERSITY

Overview

- Consumer Food Safety (CFS) programming in WA
- Food safety challenges
- Food preservation
- Where to go from here

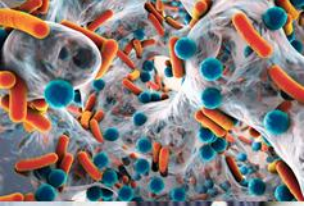
Consumer Food Safety Program

Dr. Stephanie Smith
Consumer Food Safety Statewide Specialist

7 faculty (11 counties)
Colville reservation
22 Extension staff (22 counties)

39 counties
1 Reservation

= Master Food Preserver Volunteers







Statewide Level Programming

- Food Safety for Consumers
  - Training county-based faculty and staff
  - Technical support and continuing education
- Food Service
    - Education and training (ServSafe)
    - Food Safety Advisory Council – Food code revisions
- Direct to Consumer Markets
  - Produce Safety – very small growers, community gardens
  - Produce Safety Alliance Grower’s Training

Statewide Level Programming

- Very small processors
  - FSMA Preventive Controls for Human Foods
  - Cottage foods
- Testing and Research
  - Non-routine microbiology testing for industry
  - Research
    - *B. cereus* in food
    - Microbial survival under adverse environments







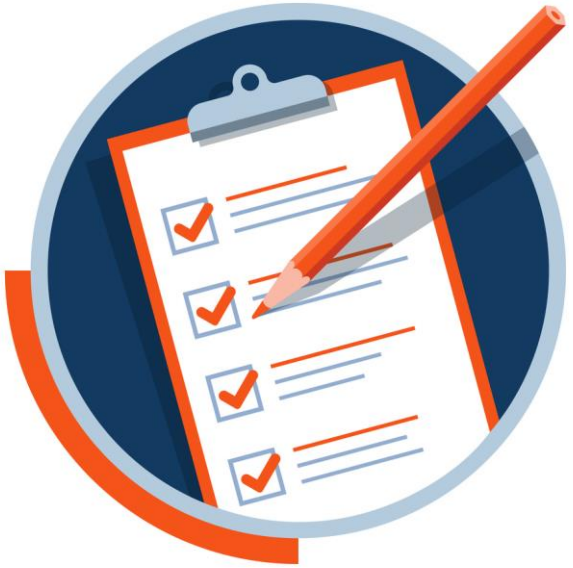
County-Based Programming

- Minimum Programming
  - Testing pressure gauges
  - Answering food safety and preservation questions
  - Providing resources
- Expanded programming
  - Preservation workshops (hands on or demos)
  - Work with schools, foodbanks, tribes, food service
  - Person in Charge training (foodservice)
  - WA Food Worker Card testing
  - ServSafe
  - Helplines
  - Master Food Preserver – volunteer program
    - Benton
    - Franklin
    - Lewis

Statewide Consumer Survey

Statewide Consumer Food Safety Survey

- 20-50% of foodborne illnesses attributed to improper handling and storage of food in the home (Redmond & Griffith, 2009)
- 375 Surveys collected in 2016
- Questions focused on:
  - Personal practices
  - Consumers' beliefs and concerns
  - Food safety information sources
  - Identifying symptoms of foodborne illness
  - Replacement of kitchen towels and sponges
  - Respondents who have taken a food safety course

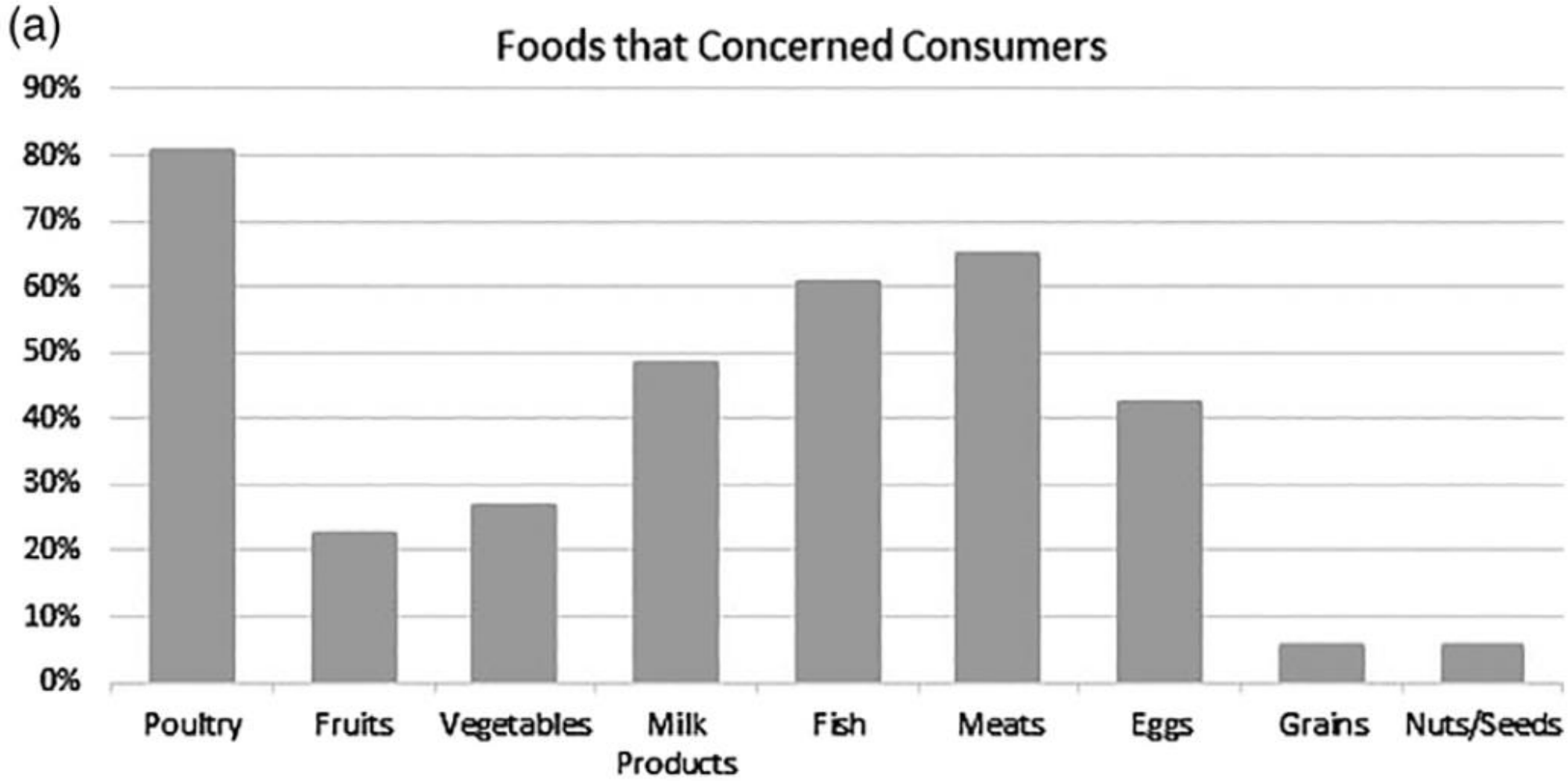


Results

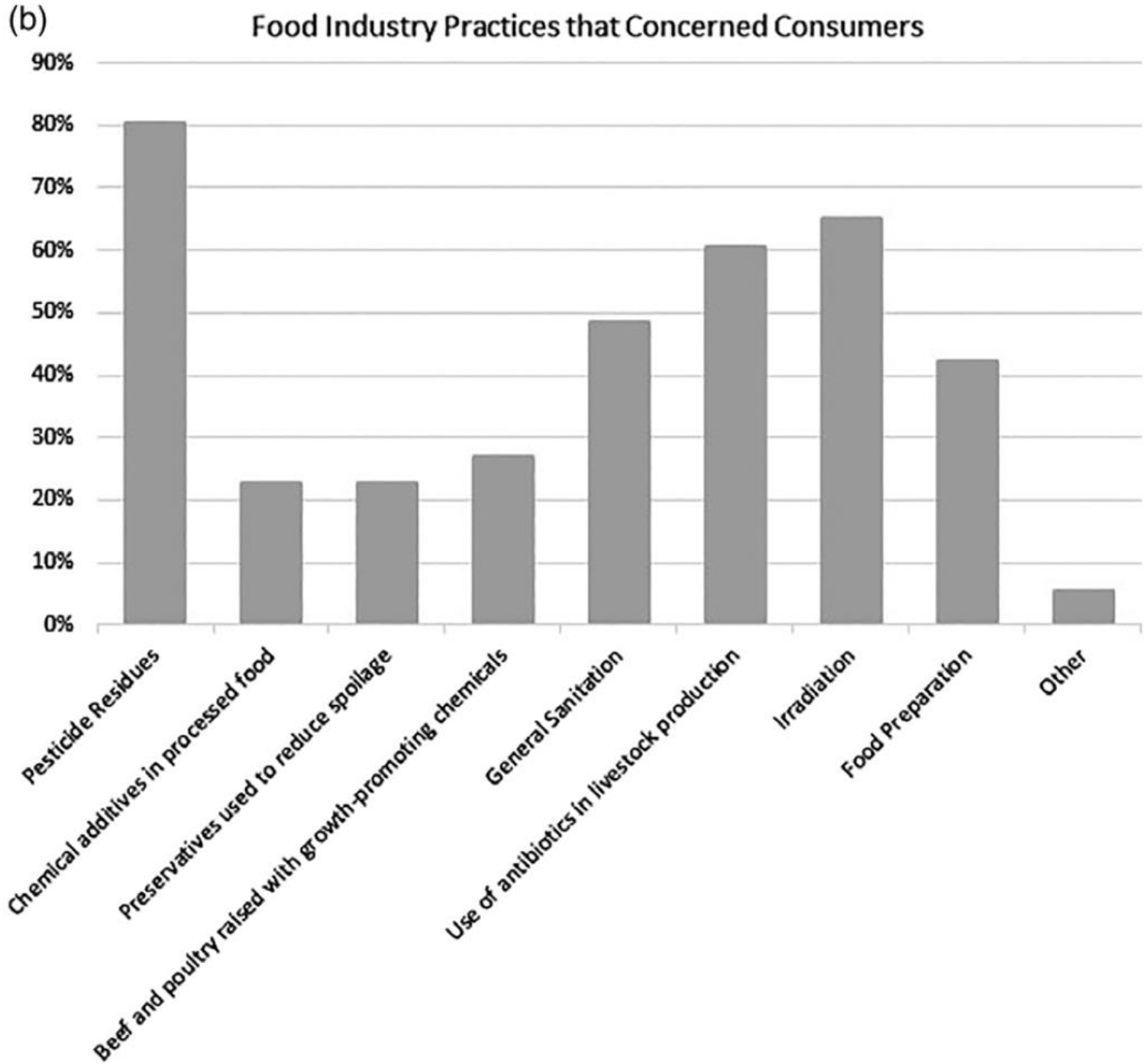
TABLE 3 T s of the consumer food safety knowledge questions (n = 375)

Consumer food safety knowledge	Agree (%)	Disagree (%)	Unsure (%)
It is dangerous to eat raw meat.	87	8	5
Refrigerator temperature can affect the shelf-life of food.	91	4	5
Between 40 and 140 °F is the danger zone where harmful bacteria can multiply rapidly.	86	8	6
Food and beverages that are past their best before are not consumable.	25	70	5
Perishable foods (refrigerated), including meat, poultry, and eggs, must be kept cold at all times.	86	8	6
Uneven heating in the microwave can cause food poisoning.	79	13	8
Food should not be left out at room temperature more than 2–1 hr if the temperature is above 90 °F.	65	7	28
It is safe to consume raw cake butter and cookie dough.	34	61	5
A dishcloth can spread germs that cause food poisoning.	93	2	5
Cleaning the work surfaces is important before and during food preparation.	98	1	1

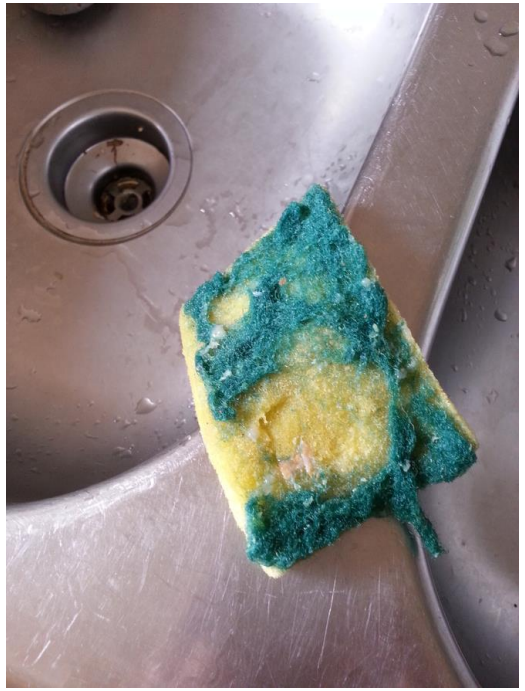
(a)


Foods that Concerned Consumers
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Poultry
Fruits
Vegetables
Milk Products
Fish
Meats
Eggs
Grains
Nuts/Seeds

(b)

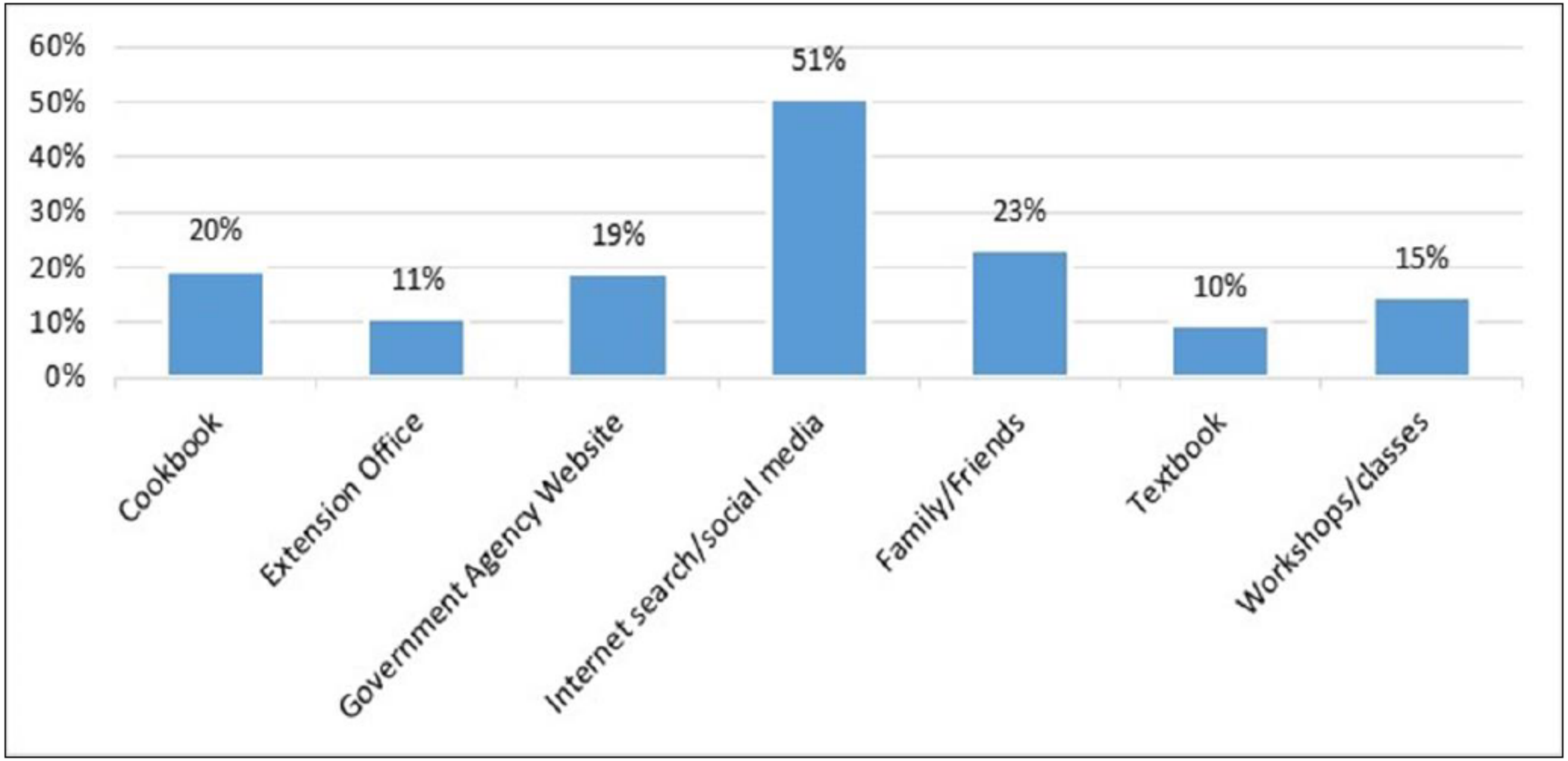

Food Industry Practices that Concerned Consumers
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Pesticide Residues
Chemical additives in processed food
Preservatives used to reduce spoilage
Beef and poultry raised with growth-promoting chemicals
General Sanitation
Use of antibiotics in livestock production
Irradiation
Food Preparation
Other

Other Interesting Results



- Changing Sponges and Kitchen Towels
  - 37% once a week
  - 36% after handling raw meats
  - 19% when they have an odor
  - 10% when they fall apart
- Identifying symptoms of Foodborne Illness
  - 7.7% identified all of the listed symptoms
  - >80% identified nausea and diarrhea
  - <40% identified other symptoms (e.g. hives, bloody diarrhea, trouble breathing, dizziness, and organ failure)
- Food Safety Training
  - 54% had previous food safety training
  - Many indicated that they had held, or currently hold, a Food Worker Card in WA

Where do they get food safety info from?



Where consumers get their food safety information from; average of all data.

Study Summary

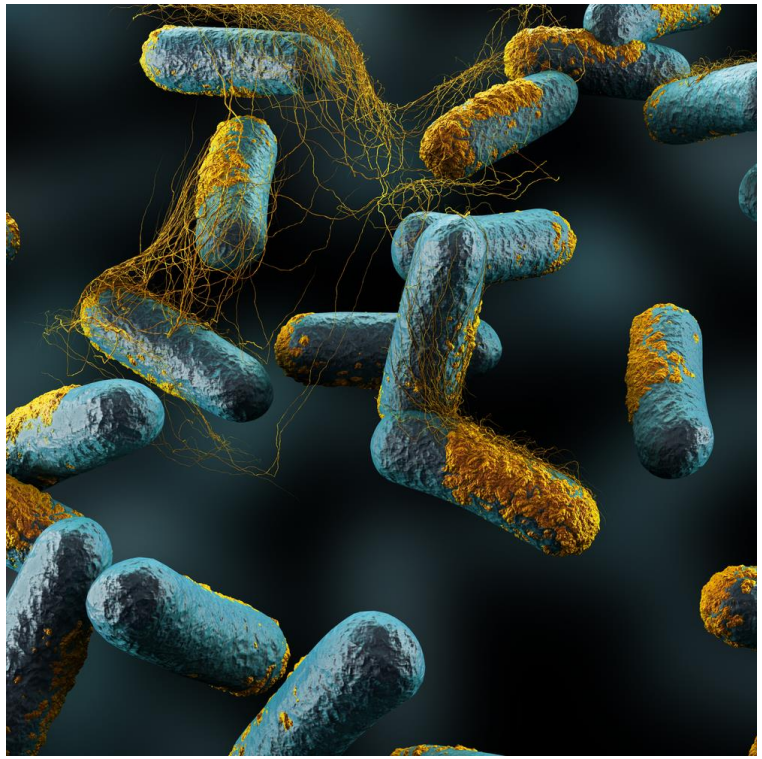
- Education needs:
  - Foodborne illness
  - Produce safety
  - Cooking temperatures
  - Hot/cold holding
  - Cleaning/sanitizing/cross contamination
  - Emerging risks
- Web based presence

Smith, SA, Rachmat, M, Beck, R, Sielaff, AC. (2019) Assessing consumer food safety education needs across the state of Washington: Implications for nationwide extension programming. J Food Saf. 39:e12613. https://doi.org/10.1111/jfs.12613

Food Preservation

Clostridium botulinum

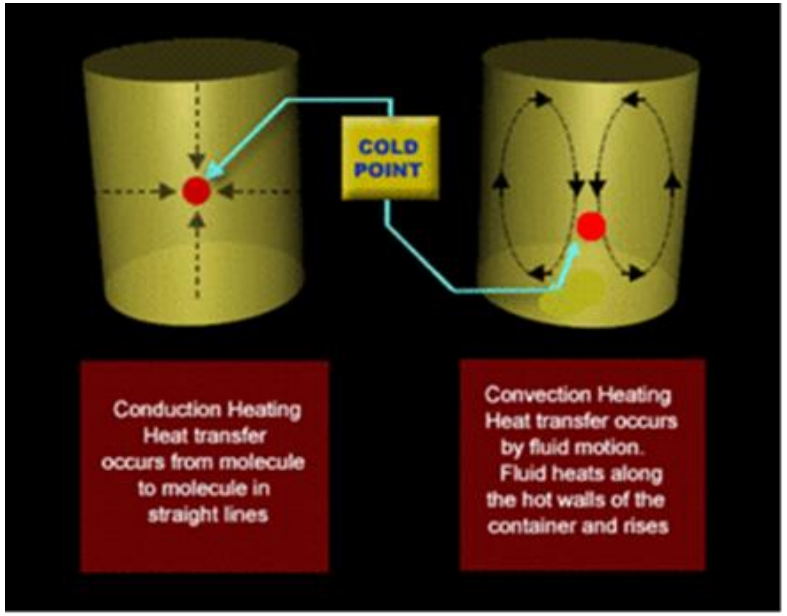
- Water activity
- Low-acid foods
- Temperatures between 40° and 120°F
- Less than 2 percent oxygen
- 0-4 cases per year in WA (110 in US)
  - 2 in 2016
  - 1 in 2018
  - 1 in 2022 (suspected)



Process Times

Affected by:

- Acidity of food
- Preparation style of food (e.g. Hot pack vs. raw pack)
- Composition of food (e.g. water activity, pH)
- Viscosity
- Tightness of pack
- Starches, fats, bones
- Transfer of heat through food
- Temperature of food when filled
- Processing temperature
- Size of jar
- Shape of jar



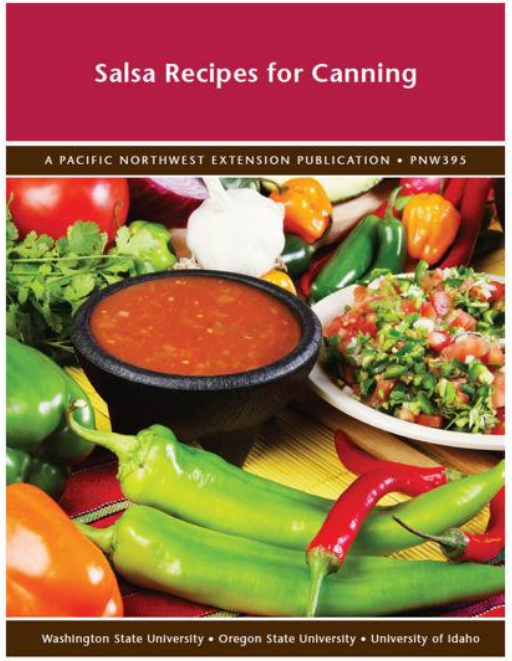
Research

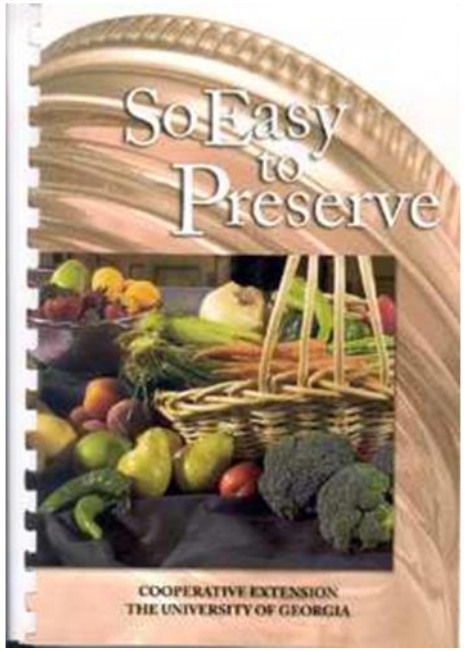
National Center for Home Food Preservation

- Developmental work on new or continued recommendations
  - Sporadic since the 1950s
  - Lack of resources
- National Center for Home Food Processing
  - Funding from the Cooperative State Research, Education and Extension Service (CSREES-USDA) in 2000
  - Ended 2015

Resources

- USDA Complete Guide to Home Canning
- Extension's Published Recipes
- National Center for Home Food Preservation (NCHFP)
- So Easy to Preserve (NCHFP)





New Appliances

- Steam Canner
  - Acid or acidified foods
  - Pure steam – thermometer
  - Can boil dry quickly

- Electric Pressure Canner
  - No research/validation
  - Warm up/cool down
  - Altitude adjustments
  - Heat penetration vs. canner size

Unsafe Methods

Bread in a Jar

Canning Dried Foods

Water Glassing Eggs

Dehydrating Complex Foods

Freeze Drying

Where to go from here….

- Western region food preservation group

Western Region Food Preservation Group

Where to go from here….

- Western region food preservation group
  - Shared resources
  - Identify funding opportunities
  - Conquer and divide
- Goals
  - Expand food preservation research and outreach to achieve greater impacts on community well-being through safely home-preserved products.
  - Identify research needs
  - Continuity and resource development
  - Program evaluation tools

Questions?

Go Cougs!