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# Extension Resources for Farmers Markets



H. Lester Schonberger, Ph.D.  
Associate Extension Specialist  
Department of Food Science and Technology  
[hlschon@vt.edu](mailto:hlschon@vt.edu)



Melissa Wright, M.S.  
Associate Extension Specialist  
Department of Food Science and Technology  
[mwright@vt.edu](mailto:mwright@vt.edu)

# Virginia Cooperative Extension

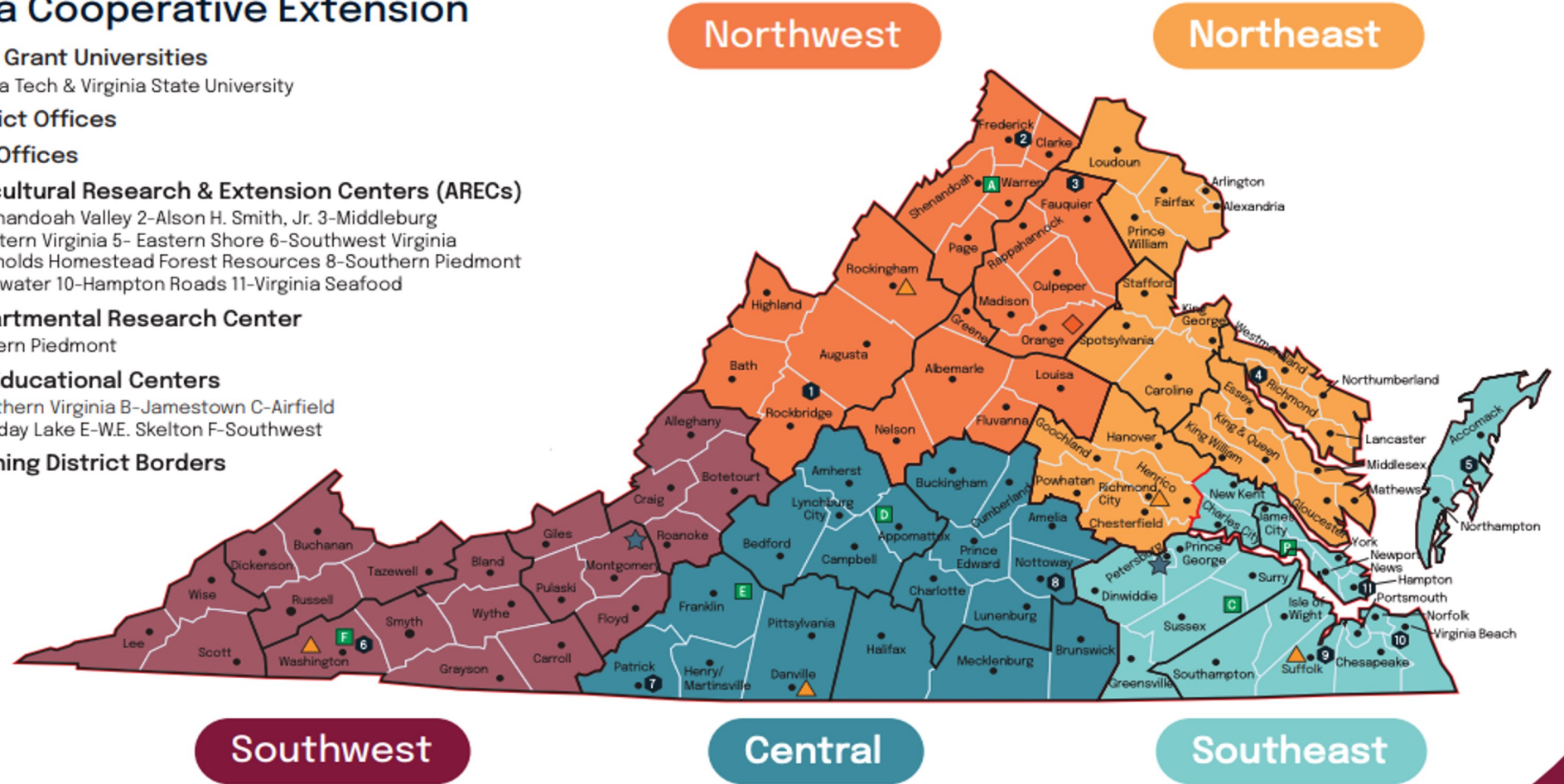
- Transfers expertise from Virginia Tech and Virginia State University into Virginia's communities
- Faculty specialists, regional/local agents, program assistants, volunteers
- Collaborative partnership with local, state, and federal governments



# Locations

## Virginia Cooperative Extension

- ★ **Land Grant Universities**  
Virginia Tech & Virginia State University
- ▲ **District Offices**
- **Unit Offices**
- ◆ **Agricultural Research & Extension Centers (ARECs)**  
1-Shenandoah Valley 2-Alson H. Smith, Jr. 3-Middleburg  
4- Eastern Virginia 5- Eastern Shore 6-Southwest Virginia  
7-Reynolds Homestead Forest Resources 8-Southern Piedmont  
9-Tidewater 10-Hampton Roads 11-Virginia Seafood
- ◆ **Departmental Research Center**  
Northern Piedmont
- **4-H Educational Centers**  
A-Northern Virginia B-Jamestown C-Airfield  
D-Holiday Lake E-W.E. Skelton F-Southwest
- **Planning District Borders**

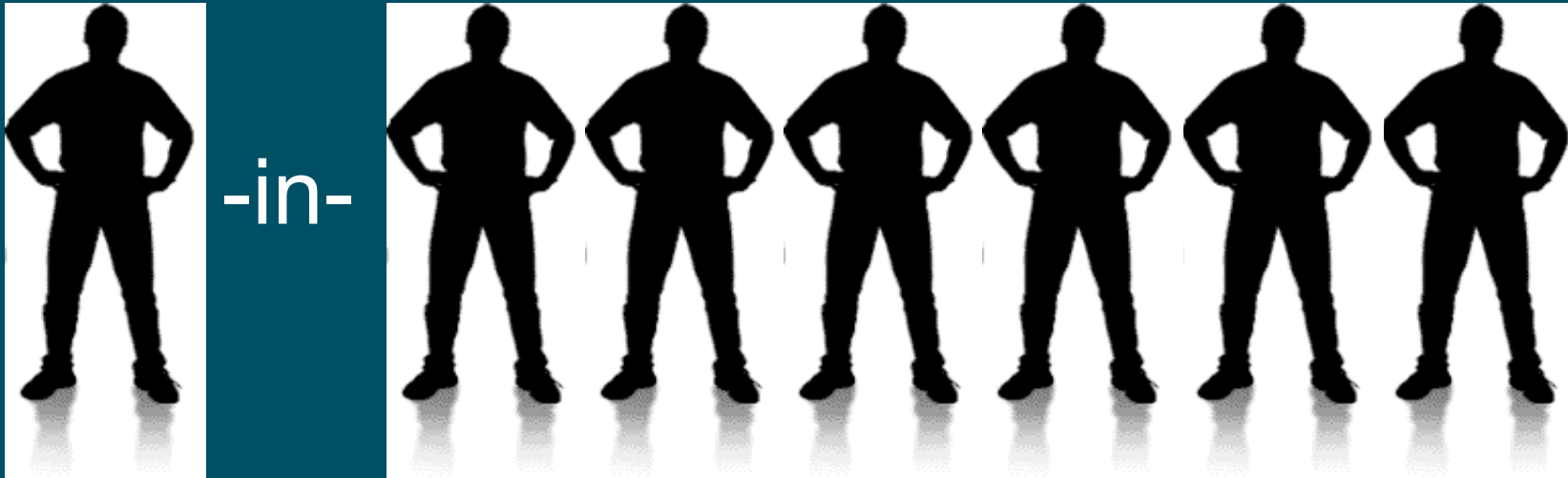


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VCE/0922/VCE-231NP (VCE-1122NP)



# Foodborne Illness



- Estimate 48 millions cases of foodborne illnesses annually
- 128,000 hospitalizations
- 3,000 deaths

# What's the big deal?

- **Symptoms:**

- Diarrhea
- Vomiting
- Nausea
- Abdominal pain
- Fever

- **Complications:**

- Reactive arthritis
- Guillain-Barre syndrome
- Spontaneous abortion, stillbirths
- HUS (kidney failure)
- TTP (blood clots, can lead to stroke)
- Death



# Farmer's Market Outbreak

- In 2000, *Escherichia coli* O157:H7 linked to produce samples offered at a farmer's market in Fort Collins, CO
  - 14 People were ill and two elementary school-aged children required dialysis



# Farmer's Market Outbreak

- In 2010, *Salmonella* linked to guacamole, salsa and uncooked tamales at a farmer's market in east-central Iowa
- 44 People sick and five hospitalized





# Farmer's Market Outbreak

- In 2011, *Escherichia coli* O157:H7 linked to strawberries sold at multiple farm stands and farmer's markets in Oregon
  - 12 Females and four males became ill
  - 4 hospitalized
  - 2 suffered kidney failure
  - Linked back to deer on the farm



# Farmers Market Outbreak

- In 2017, *Salmonella* Thompson outbreak linked to shelled peas at Farmers Markets in Wisconsin
  - 11 cases confirmed
  - 3 counties
  - Likely linked to one vendor selling at several markets



# Liability?

Table 1 Compensation in Court Cases by Severity Category, 1988-97*			
Illness Severity	Court Cases with Award Information	Percent Won by Plaintiff	Average Award
Premature death	6	66.7%	\$274,580
Hospitalized & survived	60	31.7%	\$141,199
Other cases	109	29.4%	\$110,916

\* Only 175 of 178 court decisions had award information. All awards are in 1998 dollars.

Buzby et al. (2001). Agricultural Economic Report 799. Economic Research Service, USDA,

# VCE Resources

- Food safety trainings for vendors & market managers
- Fact sheets
- Online trainings
- Volunteer programs







## Farmer/Vendor

- Food safety on the farm
- Land use
- Water use
- Manure & soil amendments
- Hygiene, health & training
- Toilet & handwashing facilities
- Harvesting & Storage
- Transporting produce safely
- Training & certification options
- Food safety at the market
- Current events
- Additional resources

## Market Manager

- Market review self-study
- Food safety at the market



# Factsheet Example



## Farm Worker Toilet and Handwashing Facilities

Promoting good worker hygiene is one of the most important steps farmers can take to prevent contamination of their fruits and vegetables with foodborne disease-causing microorganisms referred to as pathogens. A key step in promoting good hygiene is ensuring that there are handwashing stations and toilet facilities available on the farm in close proximity (not more than 1/4 mile) to the workers.

### Setting up a good handwashing station

Thorough handwashing is a "best practice" for keeping food safe. Thorough washing will cut down on the numbers of microorganisms present which in turn helps to enhance the effectiveness of the sanitizer. Hand sanitizers should only be used after proper handwashing, not in place of it.

#### ▶ A good handwashing station should be equipped with the following items:

- ◆ A clean container holding clean water that has been tested to be sure it has no detectable generic *E. coli* present.
- ◆ Single use paper towels.
- ◆ Hand soap or antibacterial soap in a pump dispenser.
- ◆ Trash receptacle.

### Additional tips for a good handwashing station

- ◆ Use a large, closed, plastic container such as a carboy that has a spigot to hold the potable water.
- ◆ Use another large plastic container or bucket to catch the wash water, and avoid letting it get into growing areas.
- ◆ The handwashing station should be located close to where the workers are working in order for it to be easy for them to use.
- ◆ If your farm is large enough, house the handwashing station on a trailer so that it can be moved around your farm as the workers move from plot to plot.
- ◆ Include a sign with handwashing instructions or pictures for workers to follow. The instructions should be in English and/or Spanish or other native language.
- ◆ The station should be monitored on a regular schedule to ensure that it is clean and stocked with water, soap, paper towels, etc.

#### ▶ Examples of handwashing stations that farmers have created on their properties



▶ **Picture 1.** The farmer constructed the station on a small trailer so that it can be moved around on the property. It has a sink with a faucet and mounted soap and paper towel dispensers.



▶ **Picture 2.** This is a simpler station, with the water container sitting on stacked pallets and a funnel collecting the wash water into a bucket underneath. A bottle of soap with a pump dispenser is on the pallet. Paper towels are stored in a covered plastic container beside the pallet.



▶ **Picture 3.** This station is set outside of a packing house or outbuilding and is not mobile. Here a sign with handwashing instructions is mounted below the water source.



▶ **Picture 4.** This is a more substantial handwashing station on a trailer which also holds the portable toilet facilities.

### Setting up adequate toilet facilities

On the farm, the most common toilet facilities are rented portable toilets. One portable toilet for every 15 to 20 workers is recommended. Facilities should be located not more than a 1/4 mile walk from each worker's place of work in the field.

- ◆ Facilities should be located next to or in close proximity to the handwashing station so that workers can wash hands after using the toilet.
- ◆ The portable facility can be mounted on a trailer so that it can be moved around the farm from plot to plot to make it easier for the workers to use.
- ◆ It should be serviced and cleaned on a regular basis.




Very small farm operations may have primarily family or neighbors harvesting product. In this case a home toilet is acceptable. However, single use paper towels are recommended and the toilet facilities should be serviced and cleaned on a regular basis. You must still train these helpers, just as you would other workers, on proper handwashing and hygiene practices for your farm.

Going to the bathroom in the woods or other areas adjacent to growing areas should be avoided due to the risk of run-off or transfer into the fields.


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# Farmers Market Farmer/Vendor Course:


FST-FS-FM-02

- Home
- Modules
- Grades
- Badges
- People
- Announcements
- Discussions
- Assignments
- Files
- Syllabus
- Outcomes
- Rubrics
- Quizzes
- Collaborations
- Pages
- Settings

## Enhancing the Safety of Locally Grown Produce - Produce Growers/Farmers Market Produce Vendors (Virtual Program)







### Enhancing the Safety of Locally Grown Produce - Farmers/ Farmers Market Produce Vendors




Welcome, and thank you for joining us. This self-paced course will provide you with the knowledge to understand the science and causes of foodborne illness as well as the proper procedures to decrease the risk of contamination of the food products you produce and sell. Before getting into the course material, familiarize yourself with the information presented on this page related to the modules you'll work through, how the course is set-up and how we're available to support you.

#### Instructors


 <p>Lester Schonberger, Ph.D. <a href="mailto:hschon@vt.edu">hschon@vt.edu</a></p>	 <p>Sarah Sharpe <a href="mailto:seweaver@vt.edu">seweaver@vt.edu</a></p>	 <p>Joell Eifert <a href="mailto:joell.eifert@vt.edu">joell.eifert@vt.edu</a></p>	 <p>Renee Boyer, Ph.D. <a href="mailto:rboyer@vt.edu">rboyer@vt.edu</a></p>
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#### Course Objectives


- Gain knowledge about potential issues that could affect the safety of produce



## Enhancing the Safety of Locally Grown Produce



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# Covered by the FSMA Produce Safety Rule

- Take a Produce Safety Alliance course (only FDA approved curriculum; satisfies PSR training requirement)
  - Understand required PSR records
  - Classes held throughout the year
  - Scan QR code to see if there are any open classes or contact [lstrawn@vt.edu](mailto:lstrawn@vt.edu)

**Water System Inspection Record Template**

Name and address of farm: \_\_\_\_\_

See farm policy for specific water distribution system inspection procedures.

Date	Time	Water Source and/or Distribution System	Observations	Corrective Actions Taken	Initials
4/22/16	7:00 AM	Well 1, north field	Well casing in good shape, backflow prevention device in place, no broken pipes	None	EAB
4/22/16	9:00 AM	Pond, south field	Significant geese presence	Introduced swan decoys. Will monitor	EAB

Reviewed by: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

FSMA PSR reference § 112.50(b)(1) Confidential Record





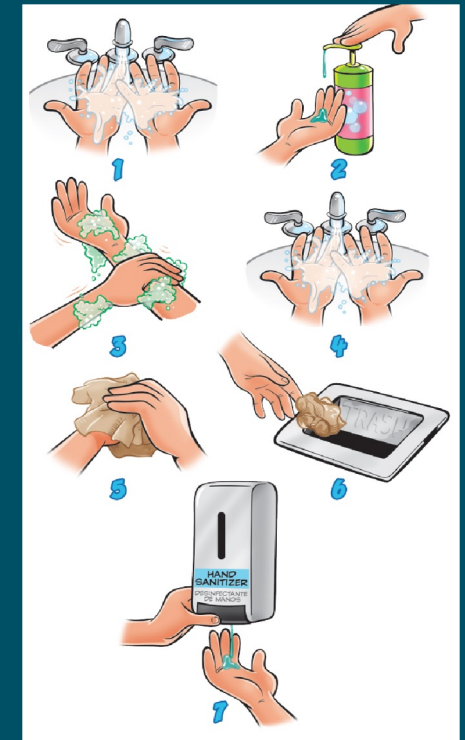


# A training guide for farm employees:

## Best Practices for Growing, Harvesting, and Handling Produce in the Field and the Packinghouse

Mejores Prácticas de Cultivo, Cosecha y Manejo de Productos Agrícolas en el Campo y en la Empacadora

A Training Guide  
Guía de Entrenamiento



# Going to Market

- VCE booklet covering basic information for being able to serve/sell a variety of products
- Reviewed and reissued in 2024

## Going to Market: A Guide to Selling Raw, Processed, and Prepared Food Products from Your Home, at Farmers' Markets, Stores, and Roadside Stands

Authored by H. Lester Schonberger, Associate Extension Specialist, Department of Food Science and Technology, Virginia Tech; Katheryn Parraga-Estrada, Muscle Food Safety Extension Specialist, Seafood Agricultural Research and Extension Center, Virginia Tech; Melissa Wright, Director, Virginia Food Producer Technical Assistance Network, Virginia Tech; Joell Eifert, Extension Specialist, Department of Food Science and Technology, Virginia Tech; and Renee Boyer, Professor and Extension Specialist, Department of Food Science and Technology, Virginia Tech



### Do I need to be inspected? By whom?

This guide will detail the answers to those questions, which vary depending on the type of food product and preparation process used. All food producers should follow the relevant good manufacturing practices (for example, those outlined in [21 CFR 114](#) and/or [21 CFR 117](#)). The contact information for permitting and/or inspection requirements is on the last page.



ENHANCING  
THE SAFETY OF

# LOCALLY PREPARED FOODS



Publication FST-310NP



- Jams & Jellies
- Refrigerated/Frozen Meals
- Fermented Vegetables
- Refrigerated Dips, Spreads, Dressings and Salads
- Maple Syrup
- Dehydrated foods
- Acidified foods
- Meats
- Dairy
- Honey
- Baked goods
- Pet food
- Eggs
- Samples
- Labelling





# ENHANCING THE SAFETY OF LOCALLY PREPARED FOODS



Publication FST-310NP

## What do I need to know to provide SAMPLES at the farmers market?

### Why should I provide samples at the farmers market?

Offering samples at the farmers market allows customers to sample your food before purchasing. This is a great way to promote your business. Even though samples are given away and not sold, vendors should follow safe practices when preparing and offering these food items.

### Where should I prepare my samples?

There are two ways to prepare samples:

- ▶ Prepare and package samples in your home kitchen and transport them to the market.
- ▶ Prepare samples while at the market.

Regardless of how you choose to prepare your samples, safe food handling and preparation practices, and regulations associated with your business should be followed. This document will provide best practices for sample preparation.

### What are some guidelines to follow for preparing and serving samples at the farmers market?

Apply the same food safety practices for preparing your samples as you do when making your product.

#### 1. Follow good personal hygiene.

- Pull your hair back, wear a cap, visor or hairnet
- Wash hands frequently with soap and water. (The use of hand sanitizers does not replace good hand-washing). Be sure to wash hands after doing other tasks, like smoking, eating, drinking, handling money etc.
- Wear food-safe gloves during food handling and preparation to prevent contamination.

#### 2. Clean and sanitize surfaces and utensils to prevent cross-contamination.

- A good sanitizer to use that is easy to transport to/from the market is a mild bleach solution (1 tsp of regular strength unscented household bleach per gallon of water) in a spray bottle.
- Keep samples that require refrigeration in a cooler on ice.
- Use a calibrated thermometer to confirm that samples are kept cold at a temperature below 41°F (5°C).

#### 4. Hold hot samples at hot-holding temperatures.

- Use a calibrated thermometer to confirm that your samples are kept above 135°F (57.2°C).

#### 5. Limit exposure of your samples to outside temperatures to four hours or less if they require temperature control.

- After four hours, discard any uneaten samples.
- If outside temperatures are greater than 90°F (32.2°C), then samples should not be left without temperature control for more than 1 hour.

#### 6. Protect your samples from the environment, people, and pests.

- Serve samples with
  - Toothpicks (see fig. 1).
  - Single-serve disposable utensils (e.g., small spoons or forks; fig. 2).
  - Single-use deli paper.
  - Single-use cups with lids (see fig. 3).
- Keep samples covered (with a dome or plastic covering; see fig. 4).

"This work is supported by Food Safety Outreach Program [grant no. 2016-0020-25888/project accession no. 1010671] from the USDA National Institute of Food and Agriculture"



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2019

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Publication FST310NP

# ENHANCING THE SAFETY OF LOCALLY PREPARED FOODS



Publication FST-352NP

## What do I need to know to sell HONEY at the farmers market?

### What is honey?

Honey is a naturally sweet and viscous food created by honeybees. The flavor of honey is created either naturally from the plants where bees harvest their nectar or through added flavorings. Some varieties of honey include:

- ▶ Tupelo honey.
- ▶ Orange blossom honey.
- ▶ Lavender honey.



Figure 1. There are many different types of honey; honey will appear differently depending on its variety and processing. (Photo courtesy of Pixabay Creative Commons License.)

### Why produce honey?

Honey is a natural sweetener and can be a value-added product.

### Does the honey I produce require state inspection?

It depends on where your honey comes from and how much you produce. You can sell honey without a state inspection if (1) you produce AND process less than 250 gallons per year of pure honey

from your own personal hives at your private residence AND (2) you do not produce other food products that require inspection (VDACS 2017).

State inspection is required if you (1) produce more than 250 gallons of honey per year, (2) produce a value-added honey product, and/or (3) produce other foods requiring inspection (VDACS 2017).

### What is pure honey?

Pure honey is honey that has not been altered. If you wish to sell honey with added flavors or ingredients, the product becomes a value-added product and is considered an infused honey. If you sell infused honey, your process and product require inspection and may need process validation and product testing to determine safety.

### What is raw honey?

Raw honey is pure honey that has not been heat-processed. Raw honey maintains its original content from the combs (it might still contain pollen, bee parts, honeycomb, and royal jelly). Raw honey is exempt from inspection.



Figure 2. Honey is a natural sweetener than can also be added to various types of foods. (Photo available at pxhere.com; CCD public domain.)

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Publication FST352NP



# ENHANCING THE SAFETY OF LOCALLY PREPARED FOODS



Publication FST-300P (FST-363P)

## What do I need to know to sell REFRIGERATED DIPS, SPREADS, DRESSINGS, and SALADS at the farmers market?

What are refrigerated dips, spreads, dressings, and salads? Many prepared foods such as dips, spreads, dressings, and salads are popular items to sell at a farmers market. Most of these items require refrigeration to ensure safety. These foods contain a lot of moisture and do not have enough acidity to control microbial growth. They require time and temperature control for their safety, and they are often referred to as TCS foods. Some examples include:

- ▶ Hummus
- ▶ Refrigerated salsa
- ▶ Pesto (see fig. 1)
- ▶ Mayonnaise-based salads (e.g., potato salad; see fig. 2)
- ▶ Guacamole (see fig. 3)
- ▶ Salad dressings.



Figure 2. Refrigerated potato salad. (Photo: "Potato Salad Food Meal Healthy Dinner" by kartynas, licensed under CC0 1.0)(Photo credit: Pixabay, Creative Commons License.)



Figure 1. Example of a tomato-based pesto refrigerated product. (Photo: "Pesto, Tomatoes, Eat, Food, Healthy" by Einladung zum Essen, licensed under CC0 1.0) (Photo courtesy of Pixabay, Creative Commons License.)



Figure 3. Preparation of guacamole. (Photo courtesy of Susan Chen, Virginia Tech)

**Note:** All packaged, refrigerated foods require facility inspection by the Virginia Department of Agriculture and Consumer Services (VDACS 2017).

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Publication FST-300P (FST-363P)

# ENHANCING THE SAFETY OF LOCALLY PREPARED FOODS



Publication FST-297P (FST-361P)

## What do I need to know to sell KOMBUCHA at the farmers market?

What is kombucha?

Kombucha is a beverage made from brewed tea and sugar that is fermented using a Symbiotic Culture of Bacteria and Yeast (generally abbreviated as SCOBY). Kombucha is slightly sweet and acidic often containing residual carbon dioxide. Some kombuchas also have fruit juice or other flavors added. Kombucha is generally made using the following steps (adapted from Nummer, 2013):

Table 1. General steps to produce kombucha

1	Boil water
2	Add tea and steep for 10 minutes
3	Remove tea leaves and cool
4	Add 10% inoculum (SCOBY).
5	Ferment at room temperature for 7 – 10 days
6	Refrigerate covered
7	Filter or remove culture mass

Why produce kombucha?

It is a beverage consumed in many countries and is quickly becoming a popular beverage in the United States because it has perceived health benefits.

What is the fermentation process and why is it important?

Kombucha is produced using a two-step fermentation process. In the first step, the yeast in the SCOBY ferments the added sugar and forms alcohol and carbon dioxide. In the second step, the bacteria in the SCOBY ferments the alcohol to produce vinegar (acetic acid). Production practices and fermentation conditions will influence the percent of alcohol and vinegar in the final product.

For this reason, alcohol production must be monitored closely! Food and beverage products that contain greater than 0.5% alcohol are subject to Alcohol Beverage Control Authority (ABC) and/or Alcohol and Tobacco Tax and Trade Bureau (TTB) regulation and taxation. Additionally, if fermentation continues for too long, excess vinegar may be produced making the product too acidic for frequent consumption.



Figure 1. Stirring tea on the stove during preparation of kombucha. Photo by Kevin Rail.

Why does kombucha continue to ferment after the SCOBY is removed?

Your kombucha will continue to ferment after the SCOBY is removed because tiny fragments of the SCOBY will remain in the beverage. If you do not pasteurize (heat treat) your product, the remaining yeast and bacteria will continue the fermentation process until there is no sugar left to ferment. This could lead to a beverage that is high in alcohol and/or dangerously acidic. Additional ingredients like juice or other flavorings could also contain sugar and allow for further fermentation, producing even more alcohol or vinegar.

How do I know if TTB Regulation is required for my product?

Kombucha producers must be aware that fermentation continues unless deliberately stopped. Therefore, the kombucha beverage could have less than 0.5% alcohol by volume when it is bottled, but the fermentation may continue after bottling. As a result the

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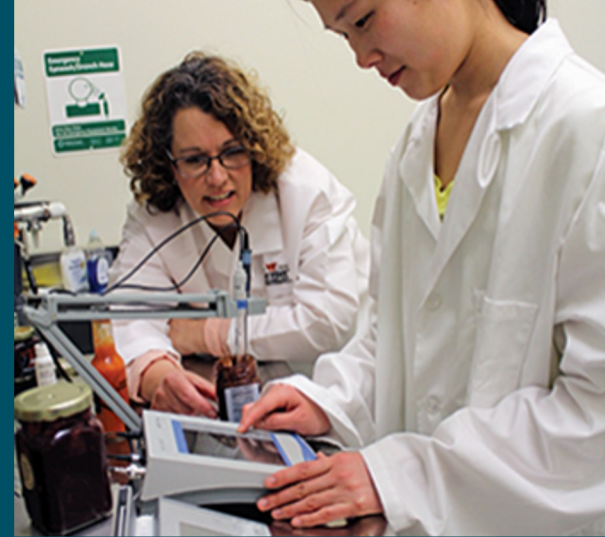
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Publication FST-297P (FST-361P)

# Food Producer Technical Assistance Network

- Provide testing of food products for safety and quality
- Provide guidance on reformulation and product design
- Provide product label review for completeness and accuracy
- Create Nutrition Facts Panel graphics



# Food Producer Technical Assistance Network: Regulatory Compliance

- Update and train on impact of Food Safety Modernization Act
- Inform clients of potential state and federal regulatory issues
- Act as acidified food processing authority providing clients with FDA-compliant scheduled processes
- Provide scientific rationale behind food regulation

FDA FOOD SAFETY  
MODERNIZATION ACT



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CONSUMER SERVICES*

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# Certified Food Protection Manager Certification

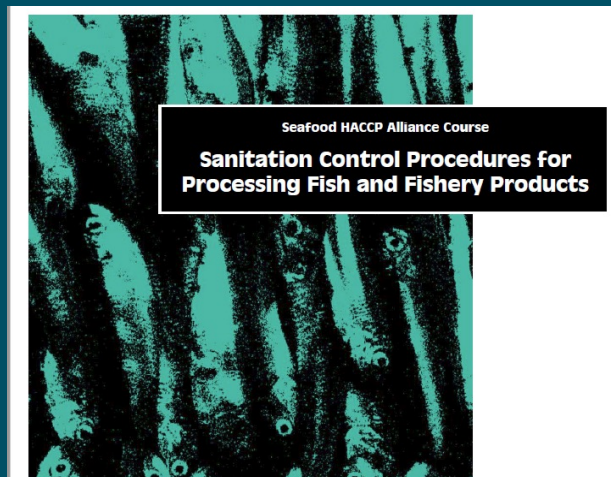
- Food establishments (including temporary food establishments) need to have at least one employee with supervisory and management responsibility and the authority to direct and control food preparation and service who is a **Certified Food Protection Manager (CFPM)**.
- VCE offers the ServSafe® Certified Food Protection Manager courses





# Covered by the Seafood HACCP Regulation

- Sanitation Control Procedures for Fish and Fishery Products
  - In-person class (1-day)
- Seafood HACCP Certification
  - Basic Seafood HACCP (3-day in-person class)
  - Segment 2 (1-day virtual option)



MARKET NAMES		LATIN NAMES		HAZARDS				
MARKET NAMES		LATIN NAMES		Parasites <sup>1</sup>	Natural Toxins <sup>2</sup>	Scombrotoxin (Histamine)	Environmental Chemicals	Aquaculture Drugs
MARKET NAMES		LATIN NAMES		Pathogens	Parasites	Natural Toxins	Environmental Chemicals	Aquaculture Drugs
MARKET NAMES		LATIN NAMES		CHP 4	CHP 5	CHP 6	CHP 9	CHP 11

POTENTIAL INVERTEBRATE SPECIES-RELATED HAZARDS	
Pathogenic Bacteria Growth - Temperature Abuse	CHP 12
<i>C. botulinum</i> Toxin	CHP 13
<i>S. aureus</i> Toxin - Drying	CHP 14
<i>S. aureus</i> Toxin - Batter	CHP 15
Pathogenic Bacteria Survival Through Cooking or Pasteurization	CHP 16
Pathogenic Bacteria Survival Through Processes Designed to Retain Raw Product Characteristics	CHP 17
Pathogenic Bacteria Contamination Alter Pasteurization and Specialized Cooking Processes	CHP 18
Allergens and Food Intolerance Substances <sup>4</sup>	CHP 19
Metal Inclusion	CHP 20
Glass Inclusion	CHP 21

POTENTIAL VERTEBRATE SPECIES-RELATED HAZARDS	
Pathogenic Bacteria Growth - Temperature Abuse	CHP 12
<i>C. botulinum</i> Toxin	CHP 13
<i>S. aureus</i> Toxin - Drying	CHP 14
<i>S. aureus</i> Toxin - Batter	CHP 15
Pathogenic Bacteria Survival Through Cooking or Pasteurization	CHP 16
Pathogenic Bacteria Survival Through Processes Designed to Retain Raw Product Characteristics	CHP 17
Pathogenic Bacteria Contamination Alter Pasteurization and Specialized Cooking Processes	CHP 18
Allergens and Food Intolerance Substances <sup>4</sup>	CHP 19
Metal Inclusion	CHP 20
Glass Inclusion	CHP 21



# Training in Meat and Poultry HACCP & Siluriformes Order Fish

- Meat and Poultry HACCP
  - In-person (3-day class)
- USDA inspects fish from the order Siluriformes (Catfish)
  - Obtain information about Grant of inspection and how to comply with USDA/FSIS



# Virginia Cooperative Extension Master Gardeners

- Volunteers trained by VCE to deliver gardening-related programming
- Local/regional Master Gardener chapters
- Booths at farmers markets to collect produce for donation
  - Customers who purchase extra
  - Vendors who do not want to take unsold produce





# Virginia Cooperative Extension Master Food Volunteers

- Trained volunteers who can deliver food demonstrations and other health-related programs at the market



# Thank you





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