

IAFP's From Farm to Fork: Ranking Food Safety Priorities in the Fresh Produce Industry

Organized by IAFP's Fruit and Vegetable Safety and Quality PDG

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- It is important to note that all opinions and statements are those of the individual making the presentation and not necessarily the opinion or view of IAFP.
- All attendees are muted. Questions should be submitted to the presenters during the presentation via the Questions section at the right of the screen. Questions will be answered at the end of the presentations.
- This webinar is being recorded and will be available for access by IAFP members at www.foodprotection.org within one week.

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Alexis M. Hamilton:

Alexis is an Assistant Professor and Extension Specialist at Virginia Tech. Her position aims to help food manufacturers produce safe, high quality food products through an integrated research and extension appointment in food processing microbiology. Her research program identifies evidence-based approaches to enhance food safety while preserving quality for food manufacturers by evaluating management strategies in production and storage environments, designing improved cleaning and sanitation regimens, and examining the changing microbiome and functional dynamics within food production and storage environments.



Bashiru Charles Bakin:

Charles Bakin is a Ph.D. student in Food Science and Technology at The Ohio State University, specializing in food safety data analytics and risk assessment. Charles holds a European master's degree in Sustainable Food Systems, and a BSc. in Nutrition from the University for Development Studies in Ghana. Prior to starting his Ph.D., Charles worked as a Regulatory Officer with Ghana's Food and Drugs Authority (FDA) where he was responsible for conducting inspections in food businesses to ensure responsible safe food production.



From Farm to Fork: Ranking Key Food Safety Priorities in the Produce Industry

B. Charles Bakin, The Ohio State University

Alexis M. Hamilton, Ph.D., Virginia Tech

Monday, March 4, 2024



Outline

- Overview of the study
- Study findings
- Key learnings
- Emerging concerns for the fresh produce industry
- How to utilize study findings



Overview of the study

Background and methodology



FSMA Produce Safety Rule

- FSMA Produce Safety Rule
 - Significant impact on how we teach and prioritize food safety
- Current lack of broad understanding of stakeholder food safety priorities around fresh produce
 - Lack of consistent information and understanding about different food safety topics



FSMA Produce Safety Rule

- Such information is essential to improve food safety knowledge and practices



Study overview

- Objectives
 - Identify the top five food safety priorities for the fresh produce industry
 - Identify emerging concerns in the fresh produce supply chain landscape



Study overview

- Study design
 - Design and approval of produce safety priorities
 - IRB approvals from Rutgers University and participating institutions
 - Distribution of anonymous survey to ~4,000 produce industry members via Qualtrics™ from November 2020 – February 2021



Statistical analysis – descriptive statistics

- Determine distribution of responses
 - Descriptive statistics
- Determine top five ranked priorities
 - Assign weights (5, 4, 3, 2, 1) to priorities 1 to 5
 - Calculate weighted scores



Statistical analysis – logistic regression

- Logistic regression
 - Assign score of 1 for top 5 ranked priorities and 0 otherwise
- Interpretation
 - Odds ratio plots
 - OR below 1 = less likely
 - OR above 1 = more likely
 - OR contains 1 = no difference

Study findings – fresh produce industry

Results



Respondents geographic distribution

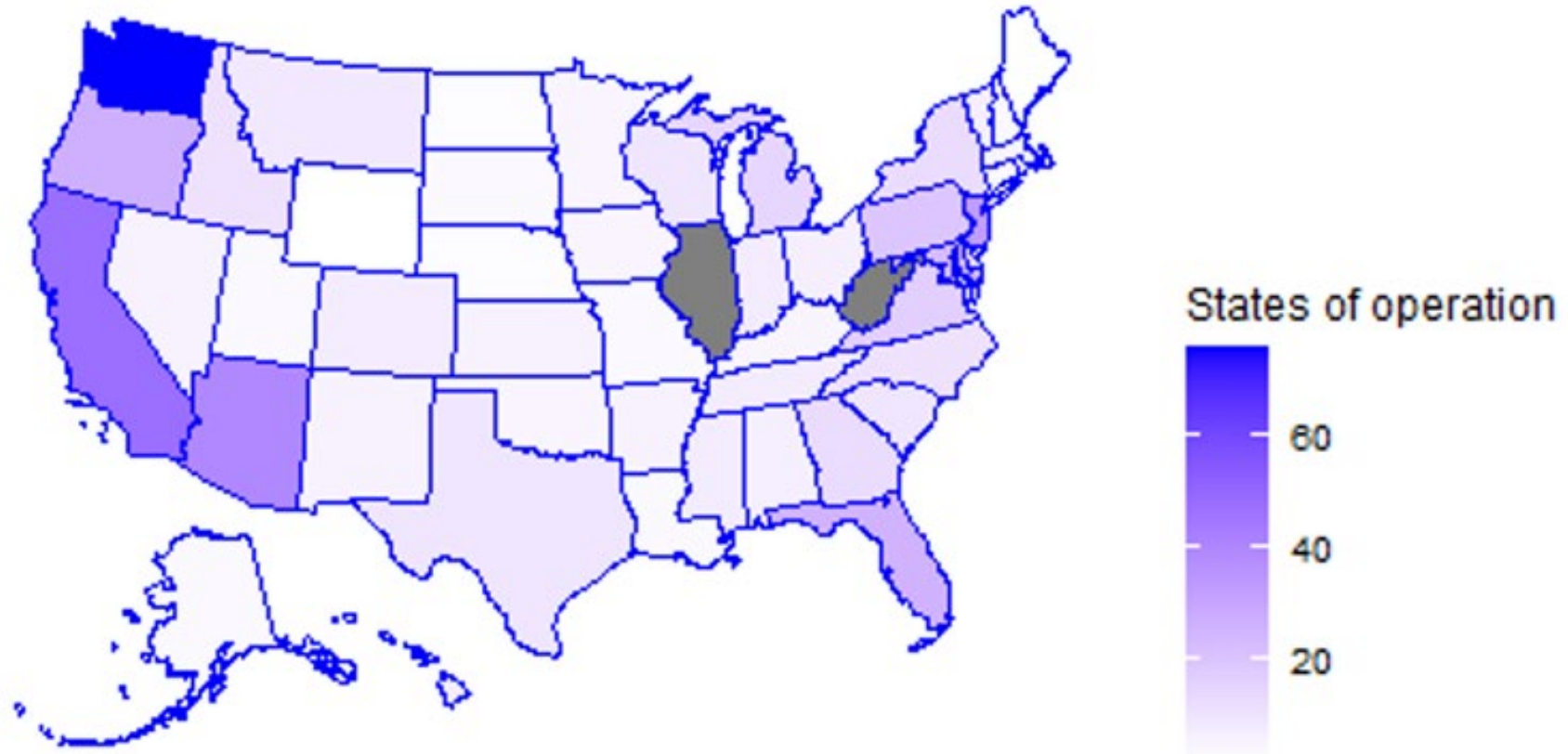


Photo credit: Bakin *et al.* (2023)



Respondents geographic distribution

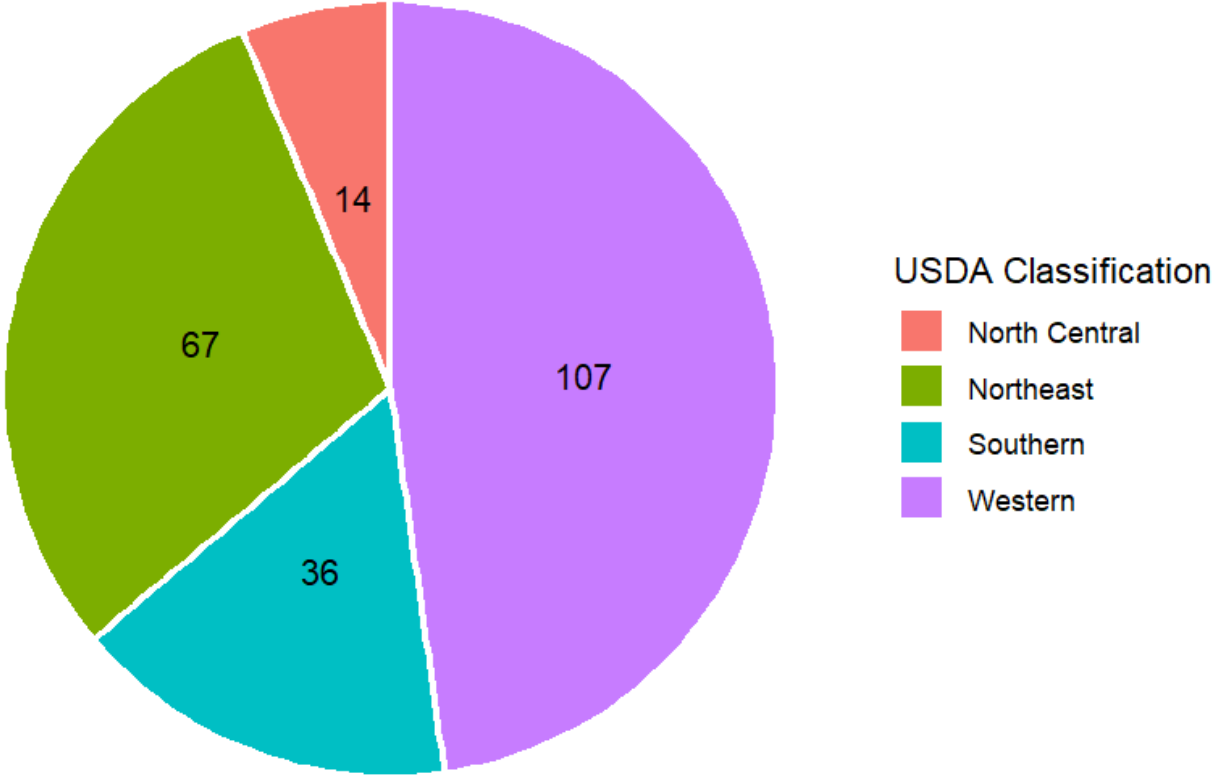


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Respondents by role

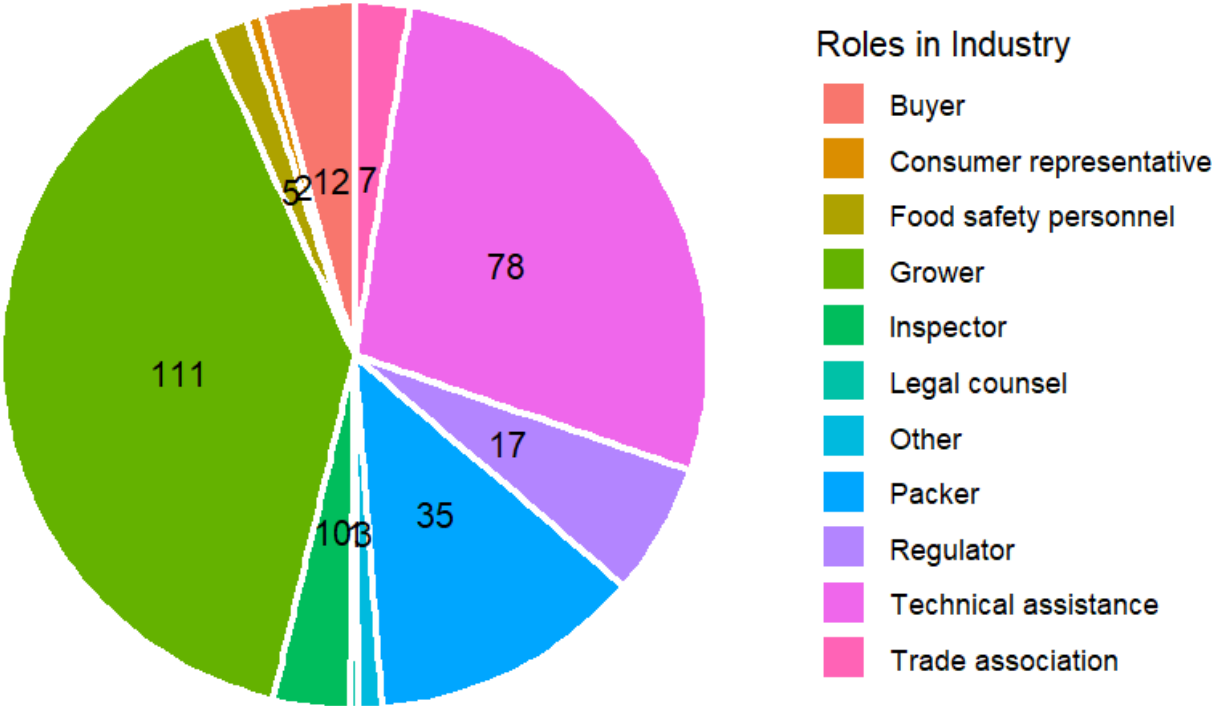


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Respondents by farm size

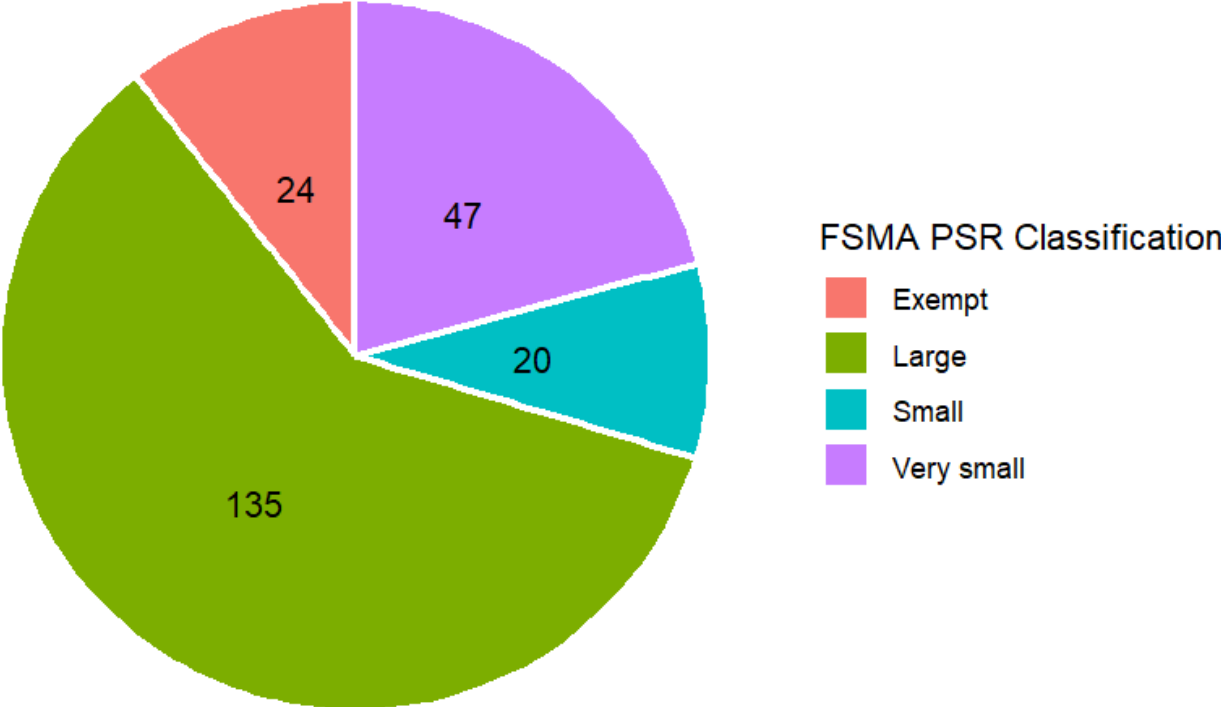
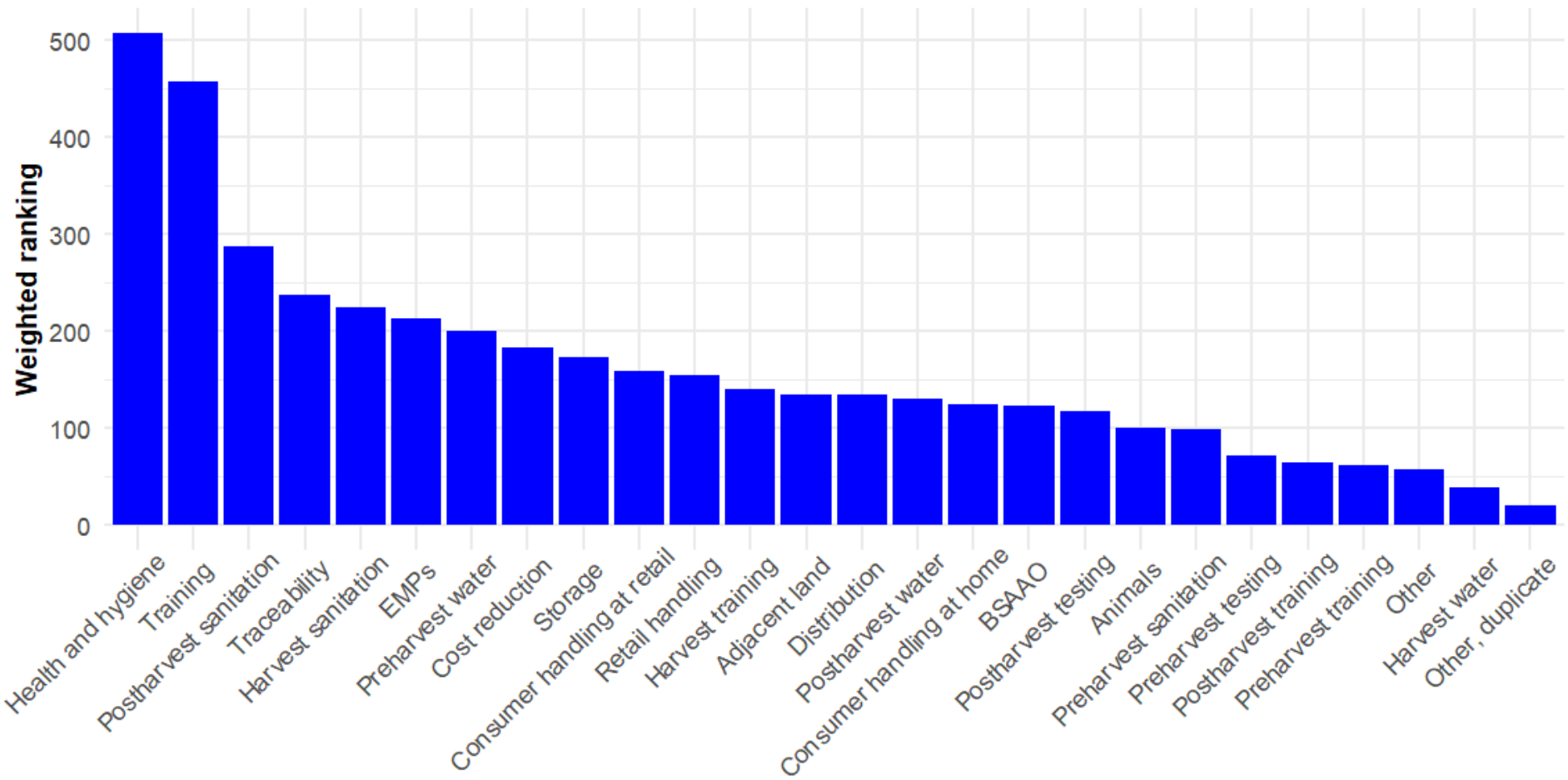


Photo credit: Bakin *et al.* (2023)



Overall ranking of priority areas



Priority areas



Photo credit: Bakin *et al.* (2023)

Ranking of “health and hygiene”

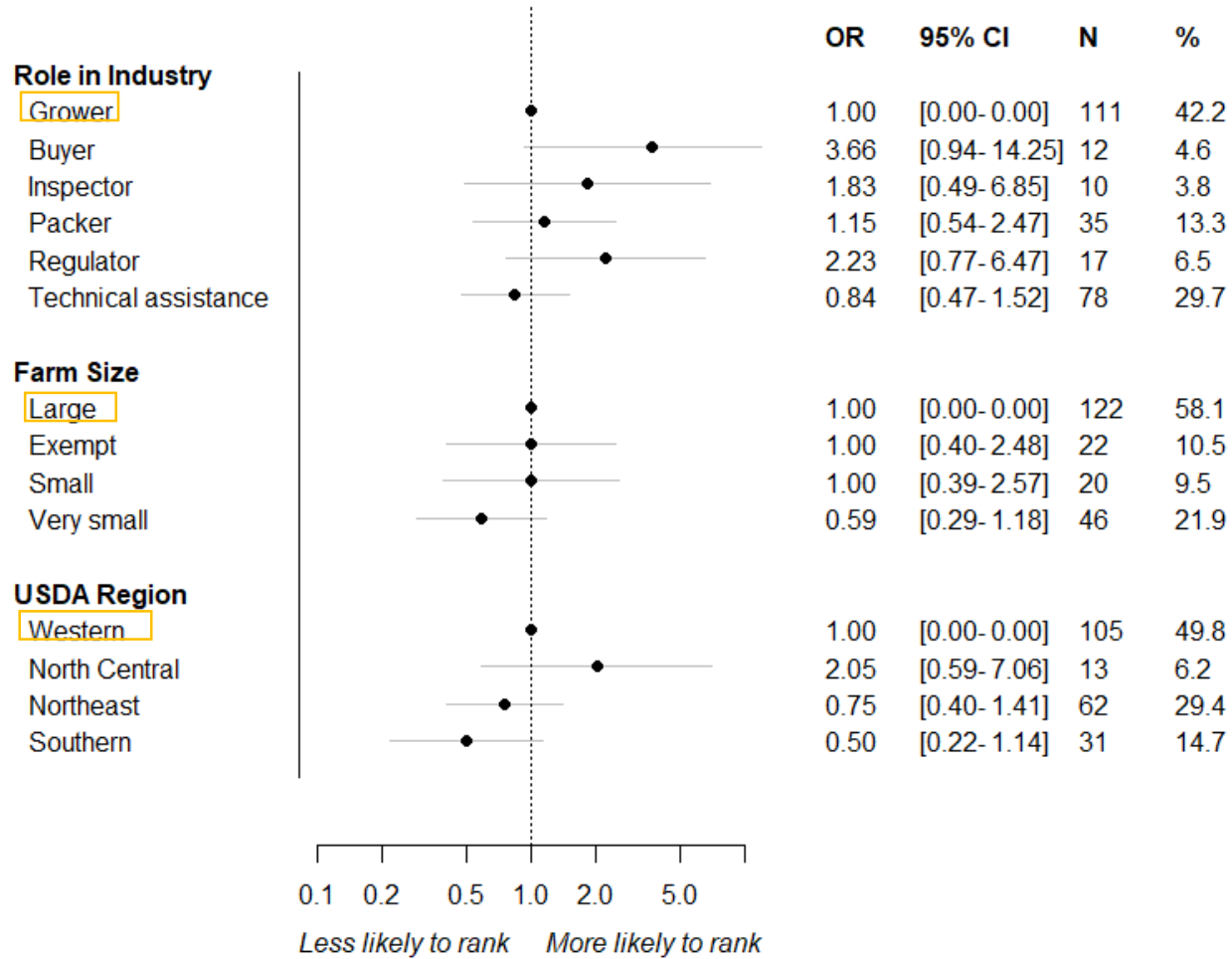


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Ranking of “training”

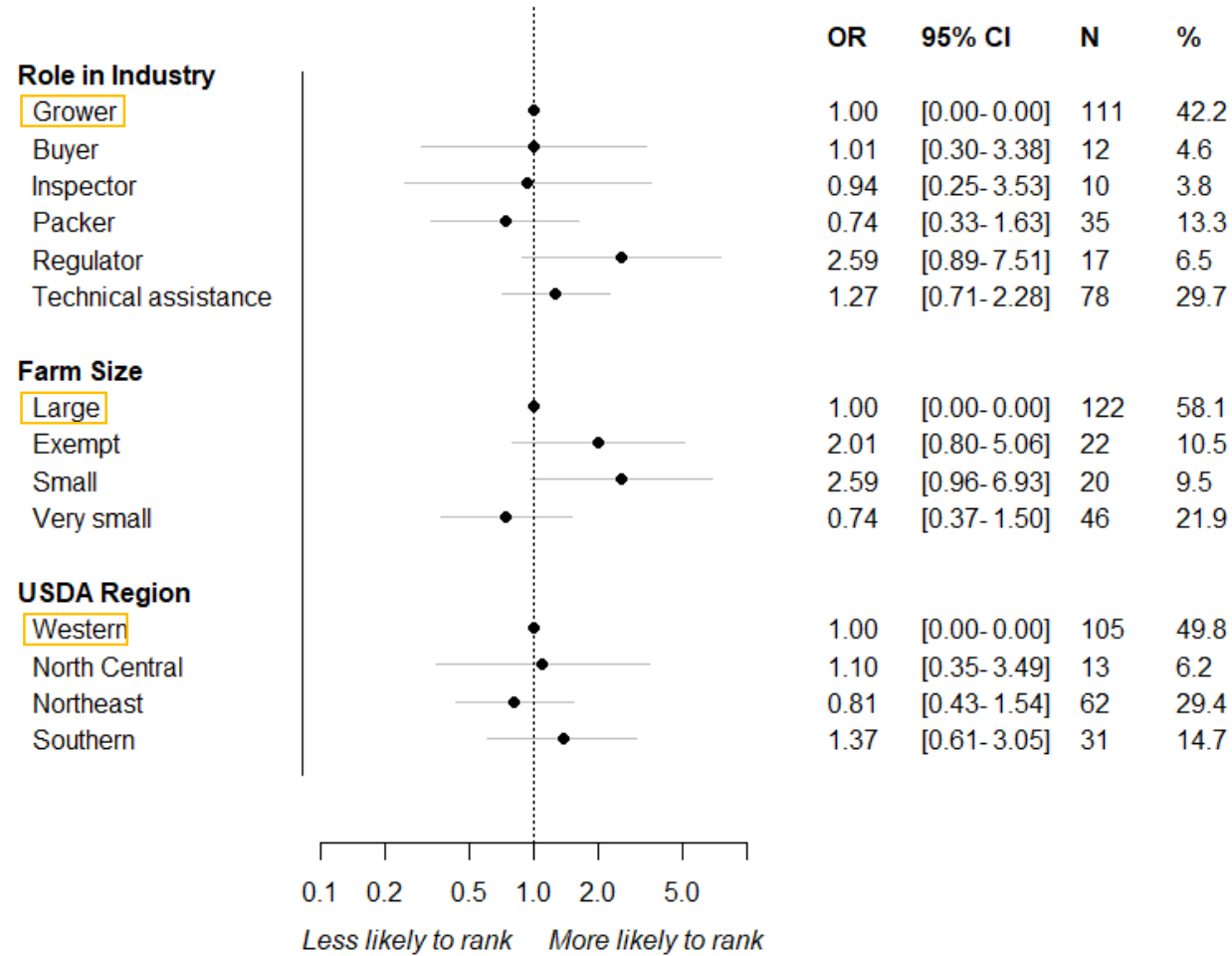


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Ranking of “postharvest sanitation”

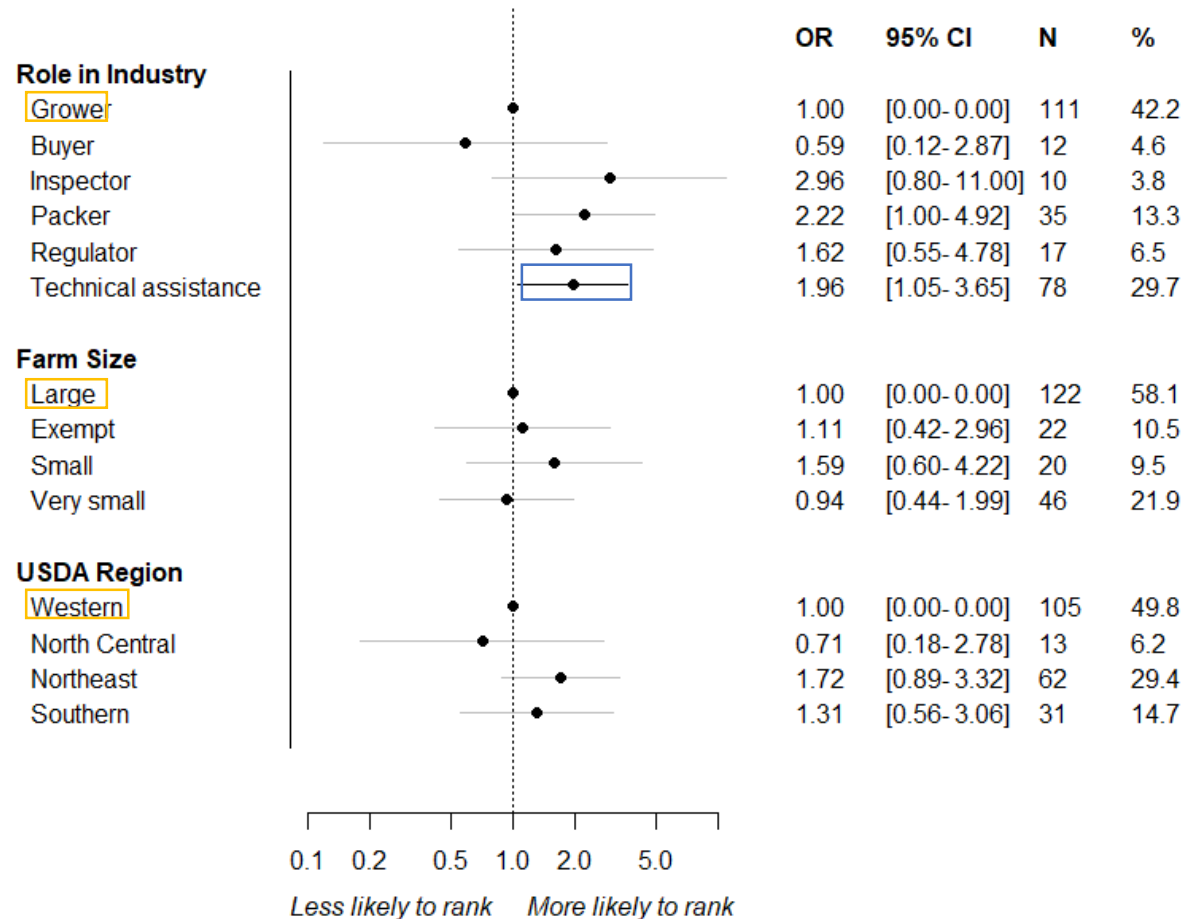
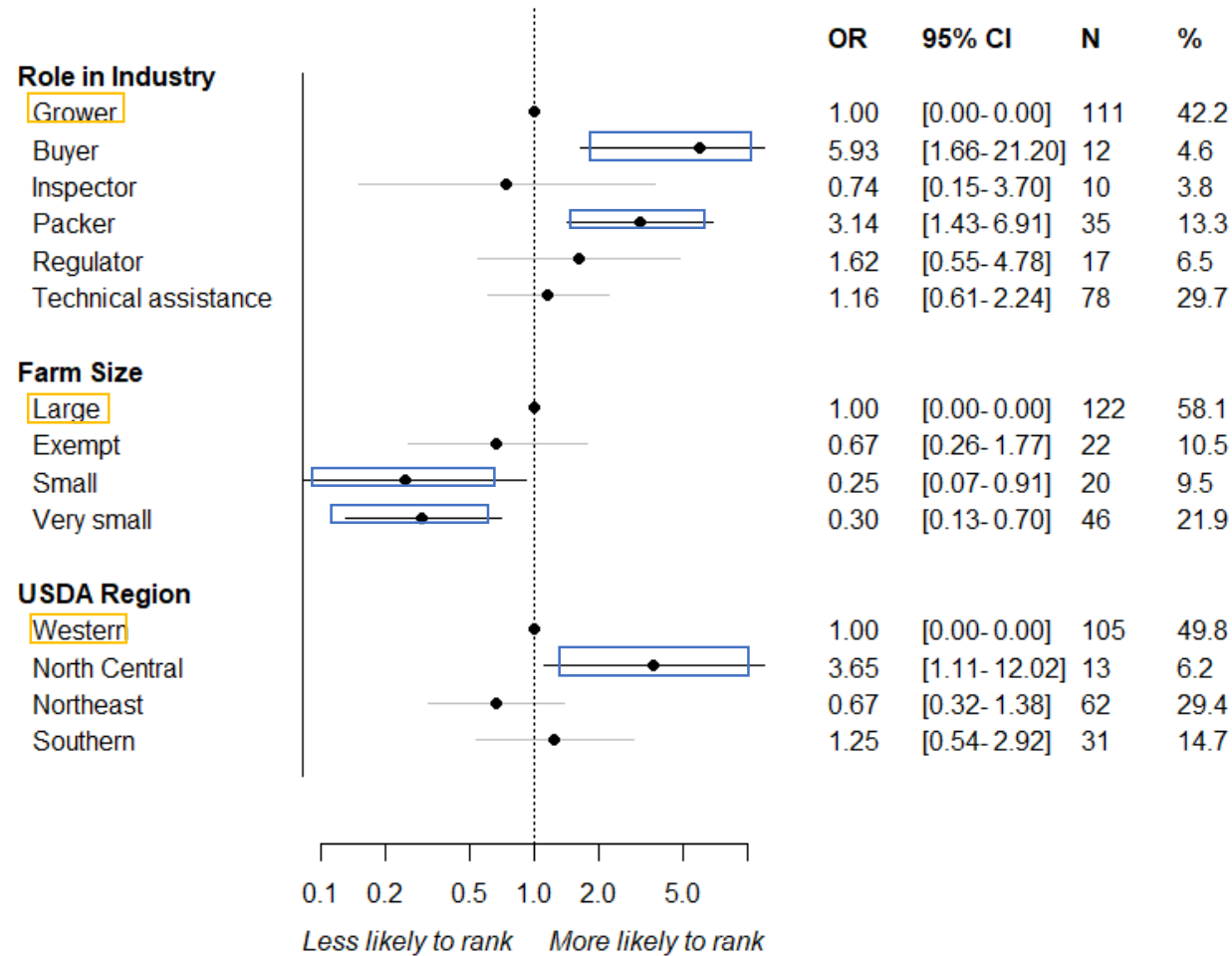


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Ranking of “traceability”



Ranking of “harvest sanitation”

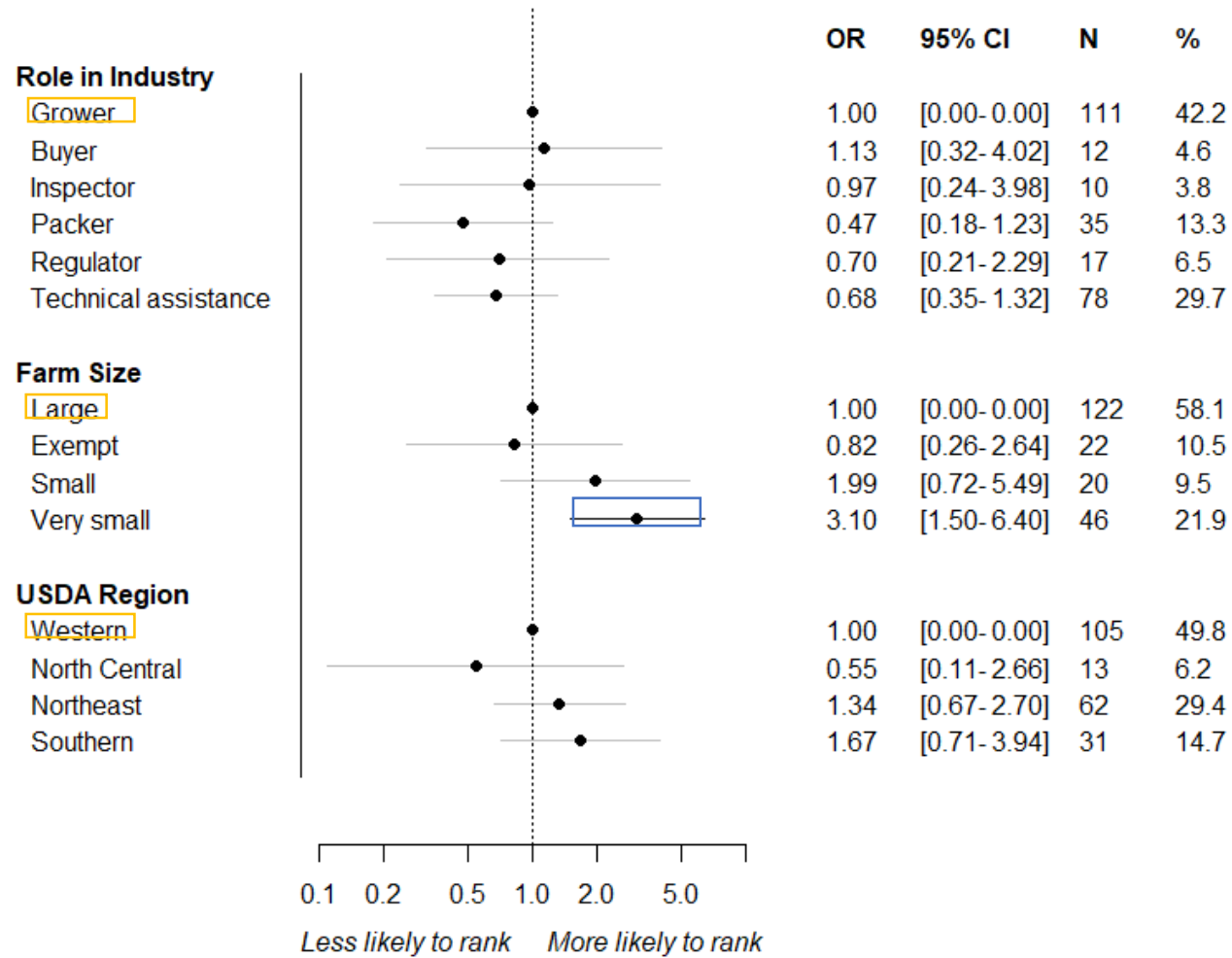


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Study findings – Produce Advisory Committee (PAC)

Results



PAC as upper management

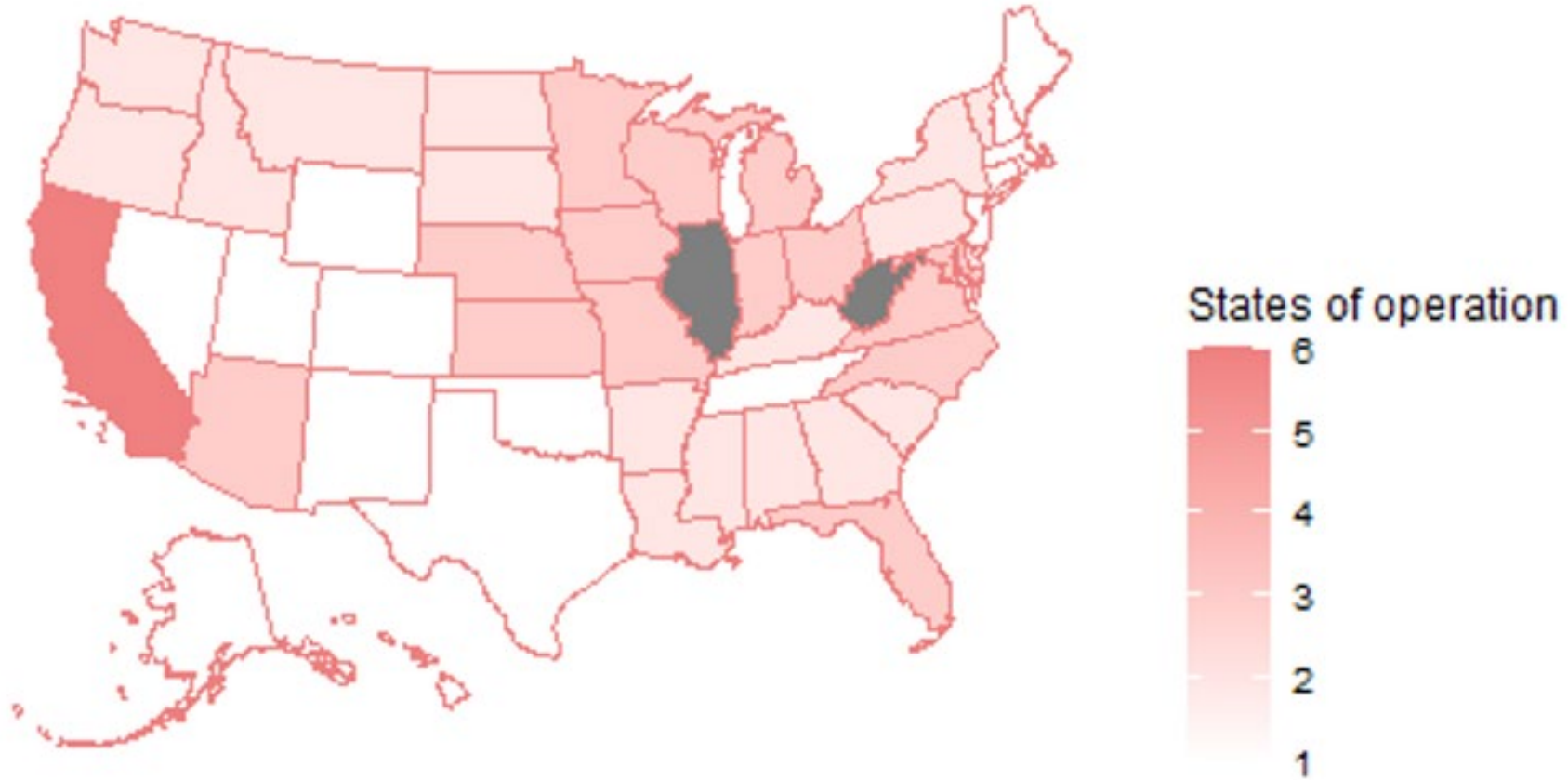


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Overall ranking of PAC priority areas

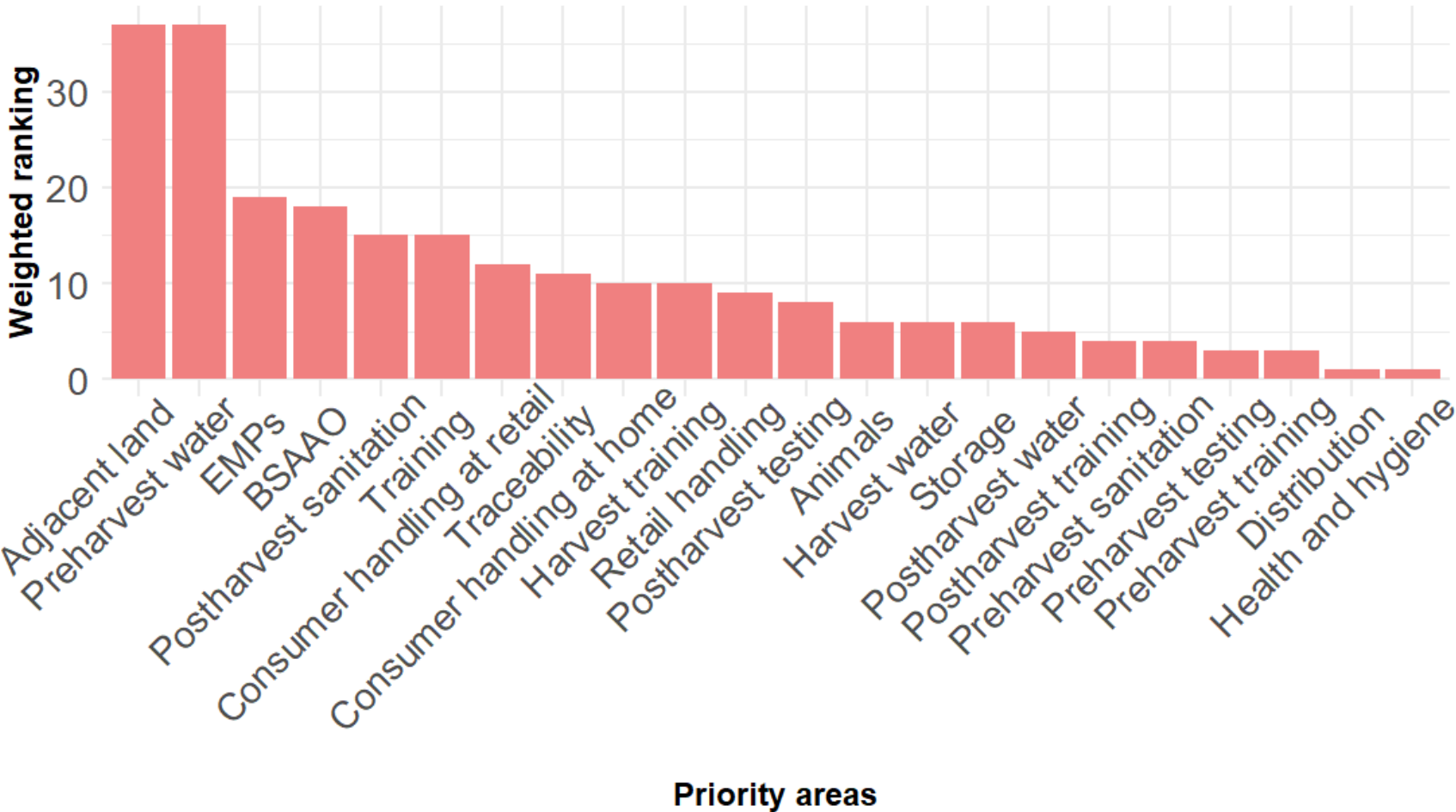


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Key learnings

Discussion of results



But first, a note on our findings

Headlines from The New York Times for Friday, Nov. 20, 2020

Top News

Page A1

Trump Targets Michigan in His Ploy to Subvert the Election

By MAGGIE HABERMAN, JIM RUTENBERG, NICK CORASANITI and REID J. EPSTEIN

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This survey was conducted during a period of time in the U.S. when the impact of COVID-19 on management of fresh produce operations was high.



“Health and hygiene” and “worker training”

- It is likely that the global emphasis on essential workers’ health and safety impact the results of this study given the changing landscape of recommendations to food production operations at this time.



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“Health and hygiene” and “worker training”

- It is likely that the global emphasis on essential workers’ health and safety impact the results of this study given the changing landscape of recommendations to food production operations at this time.
 - These were the **only two priorities** ranked in the top five by fresh produce operations, regardless of size
 - This was not observed in the upper management (PAC) data
 - “Health and hygiene” was ranked last



Priorities differ by level of management

- Variable perspectives at different management levels of produce operations
- What is your primary function in the day-to-day management of your operation?
 - Managing risk in the present
 - Anticipating risk in the future
- Multiple perspectives are needed to adequately identify and mitigate food safety risks



“Postharvest” and “harvest sanitation”

- FSMA PSR requirement for cleaning and sanitizing, when appropriate
- Cross-contamination of food contact surfaces has been implicated in outbreaks due to fresh produce
 - Active vs. latent failures in sanitation efficacy
- “Grower” and “technical assistance” groups agree sanitation is important
 - But not on **how** important



“Traceability”

- A solution and a barrier at the same time
 - Improve traceback investigations
 - Retaining field-specific identification on individual produce items when batch or repacking across multiple producers
- No difference in ranking between “grower” and “technical assistance” groups
- FSMA 204(d)
 - Produce-relevant CTEs:
 - Harvesting, cooling, initial packing, and shipping
 - Compliance date: January 20, 2026



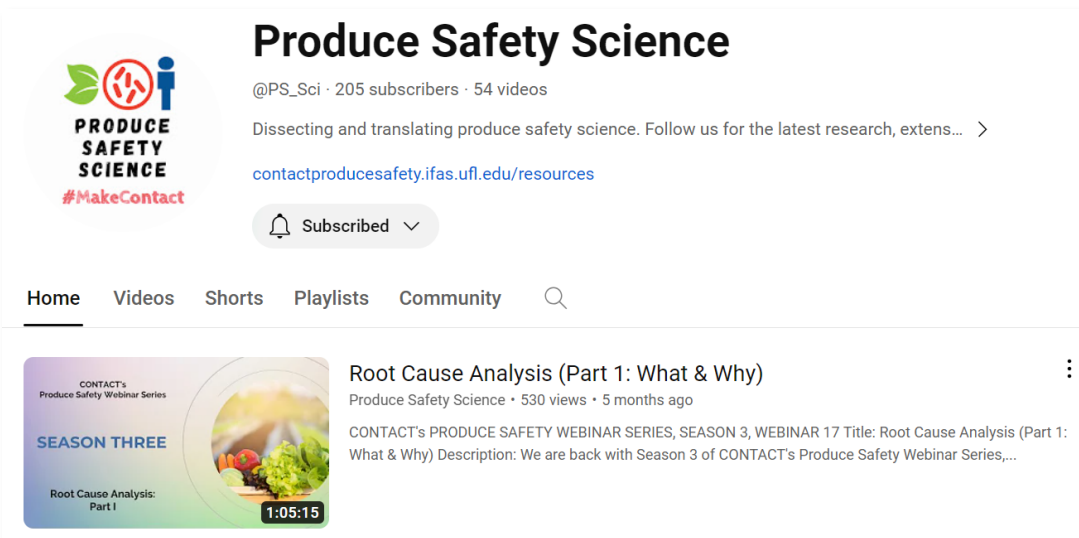
FSMA 204(d) resources from CONTACT

Upcoming webinar

- Produce Safety Webinar Series: April 2024

Virtual training

- Asynchronous and online
- Approximately 5 hours
- Topics include:
 - Understanding FSMA 204(d)
 - Identifying KDEs and CTEs relevant to your operation
 - Working with buyers
 - Developing the traceability plan



Emerging concerns

Next steps in research and extension for the fresh produce industry



PAC priorities reflect the unknown

- Identified priority areas more closely linked to emerging topics
 - BSAAOs
 - EMPs
 - Preharvest water



PAC priorities reflect the unknown

- Identified priority areas more closely linked to emerging topics
 - BSAAOs
 - EMPs
 - Preharvest water
- All of these have been discussed by FDA as vulnerabilities in fresh produce production

Investigation Summary: Factors Potentially Contributing to the Contamination of Romaine Lettuce Implicated in the Fall 2018 Multi-State Outbreak of *E. coli* O157:H7

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PDF - 80KB

February 13, 2019

This document provides an overview of the investigation approach and factors that potentially contributed to the contamination of romaine lettuce with *E. coli* O157:H7 in a multi-state foodborne illness outbreak in the Fall of 2018.

I. [Background](#)

II. [Investigation Approach](#)

III. [Factors Potentially Contributing to the Introduction and Spread of *E. coli* O157:H7](#)

IV. [Summary](#)

V. [Recommendations for Prevention of *E. coli* O157:H7 and other Shiga Toxin Producing *E. coli* \(STEC\) Contamination of Leafy Greens Based on these Findings](#)

PAC priorities reflect the unknown

- These topics were not reflected in the fresh produce industry responses from the first half of the study
 - Not an immediate concern, but...



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- These topics were not reflected in the fresh produce industry responses from the first half of the study
 - Not an immediate concern, but...
- These topics that are mentioned in other legislation or epidemiological traceback investigations often precede rapid changes in audit or buyer standards
 - Adjacent land use
 - Environmental monitoring programs
 - Sanitation preventive controls



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- These topics that are mentioned in other legislation or epidemiological traceback investigations often precede rapid changes in audit or buyer standards
 - Adjacent land use
 - Environmental monitoring programs
 - Sanitation preventive controls
- Industry, Extension, and government **must work together** to inform and equip the industry



Next steps

Research

- We know contamination through these routes is possible, but is it likely?
- Is it so much more likely that it should unseat or add to priorities the industry is currently managing?
- Be mindful of perspective

Extension

- Assess how constituent priorities align with technical assistance, regulator, etc.
- Additional support for preharvest water management
- Effective training and technical support related to sanitation and traceability



How to utilize study findings

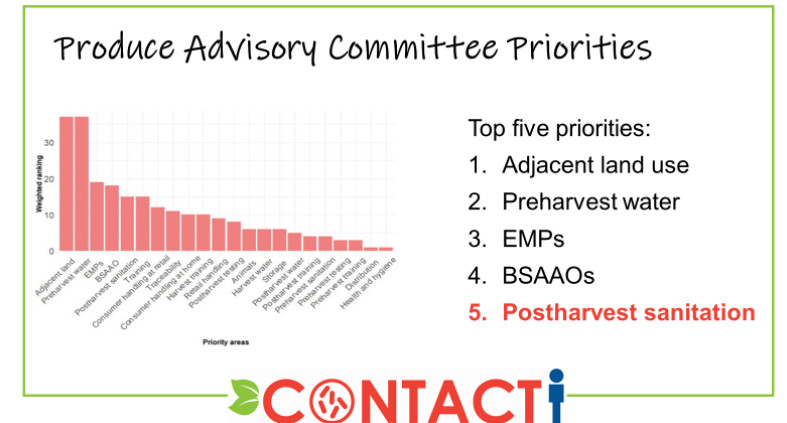
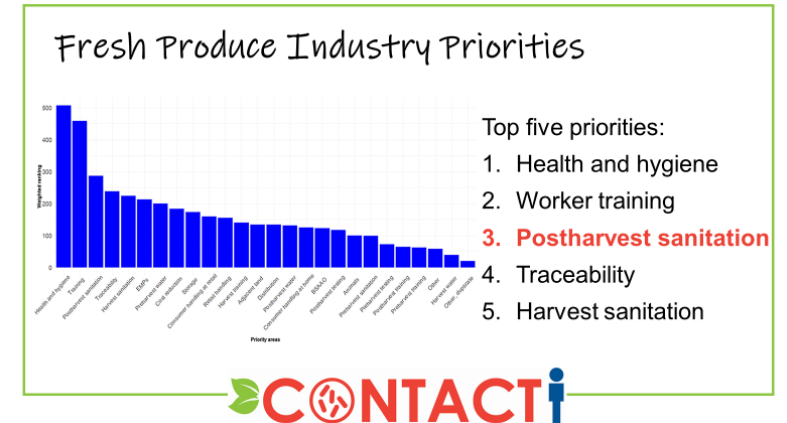
Accessing materials for training purposes



Access to teaching materials

- Teaching materials developed to fit seamlessly with existing training presentations
- Can be incorporated with internal or external training programs
 - Employee food safety onboarding or refresher trainings
 - Produce Safety Alliance Grower Trainings

All slides come with a script to aid training and interpretation



A special thank you to our co-authors

- Chloe J. McGovern, The Ohio State University
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**Check out
our paper!**

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Thank you for your time and attention today

What questions or concerns do you have?



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Upcoming Webinars:

Food Safety Culture PDG: Food Safety Culture – Yesterday, Today, Tomorrow

Mar 28, 2024 (1:00 PM - 2:00 PM Eastern Time)

Lessons Learned When Employees Work Sick

Apr 23, 2024 (2:00 PM - 3:00 PM Eastern Time)

Impact of Water Use and Reuse in Food Production and Processing on Food Safety at the Consumer Phase: Focus on the Dairy Products Sector

May 23, 2024 (11:00 AM - 12:00 PM Eastern Time)



Scan for link

How Can We Effectively Reuse Water End-To-End: Creating Equitable Future

Jun 17, 2024 (12:00 PM - 1:00 PM Eastern Time)

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