

# Reagan-Udall Foundation for the FDA

## Work Group Summaries

January-March 2025

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## Background

The safety of fresh fruits and vegetables presents complex challenges owing to the lack of a “kill step”, the difficulty in controlling environmental hazards in an outdoor (and even indoor) environment, and the need for multiple controls throughout the supply chain. “Produce” is also a fragmented industry, with much of the industry only recently subject to produce-specific federal food safety regulations. At the same time, produce is generally regarded as important for health, and consumer risks must be balanced against health benefits. There have been many failed efforts to convene and align industry-wide produce safety improvements. To conceptualize a long-standing working model to address this need, the Reagan-Udall Foundation for the FDA led a stakeholder dialogue process to explore new strategies for produce safety and the development of a collaborative entity to drive progress. Ensuring the safety of fruits and vegetables requires a holistic approach. To aid in the goal of improved protection of public health and establishing a collaborative entity, the Foundation collaborated with stakeholders from agricultural communities, industry, academia, and government to develop a shared understanding of the challenges and a vision for protecting public health.

## Dialogue Process

In the fall of 2024, a public questionnaire on produce safety (See Appendix 1) was developed and launched. The survey was sent through a variety of mechanisms including 70+ personal contacts of the Reagan-Udall team members, a Reagan-Udall e-blast reaching ~23,000 contacts, FSMA Regional Centers and Alliances, associations and grower organizations (e.g., International Fresh Produce Association, Western Growers, Partnership for Food Safety Education (PFSE)), Plain growers (Amish/Mennonite communities), and via LinkedIn shares and reshares. The survey was open through November 8, 2024. Eighty-five English and fifteen Spanish questionnaires were returned. The information collected from the questionnaire was used to develop the focal areas of discussion, leading to the development of eight working groups. Work group leaders were identified by their content expertise and leadership in produce safety. Work groups began recruiting members in November and December 2024, with most convening their first meeting by January 2025. All work groups were provided with a framing document (See Appendix 2) to help guide the discussion and collect consistent information. Each work group leader had varying approaches to facilitating their discussions; some chose to convene their discussions online as a group (e.g., on Zoom), while others chose to first interview key stakeholders privately before bringing the entire group together for discussion. The information presented in this report reflects the discussions and priorities of each work group. These insights will be shared, discussed, and prioritized at the April 24, 2025 hybrid meeting in Washington, D.C.

## Acknowledgements

We would like to express our gratitude to all individuals who have been involved in the produce safety dialogue process. With over 170 people engaged in eight work groups, a diverse set of perspectives, challenges, and opportunities were able to be shared. Under the leadership of the work group leaders listed below, each work group was expertly facilitated to arrive at the key takeaways outlined in this document. Special thanks to the work group leaders for their dedication and service to this project:

- **One Health / The Agricultural Ecosystem**  
Joelle Mosso, Western Growers & Natalie Krout-Greenberg, California Department of Food & Agriculture
- **Industry-Regulatory Collaboration**  
Natalie Dyenson, International Fresh Produce Association & Joe Reardon, National Association of State Departments of Agriculture
- **Extension & Outreach**  
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- **Policy & Economic Opportunities**  
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- **Produce Imports**  
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- **Produce Safety Research Needs**  
Dr. Michelle Danyluk, University of Florida & Dr. Don Stoeckel, Cornell University
- **Buyer-Supplier Collaboration for Produce Safety**  
Mike Taylor, STOP Foodborne Illness
- **On-going Government/Private Sector/Non-Profit Collaboration**  
Susan Winckler, Reagan-Udall Foundation

Support in organizing and convening the produce safety dialogue was provided by:

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- The Reagan-Udall Foundation for the FDA
  - Susan Winckler, RPh, Esq., CEO
  - Hannah Grey, Engagement Associate
  - Perpetue Backer, Regulatory Science, Innovation, and Health Equity Fellow
  - Lee Ann McNee, Director of Communication and Stakeholder Engagement
  - Brianna Flamenco, Executive Assistant

# Work Group Summaries

## One Health / The Agricultural Ecosystem

### Problem Statement

The agricultural ecosystem is complex, encompassing natural/man-made/biotic/abiotic elements that introduce risks that cannot be wholly identified/controlled directly by producers/growers. The US regulatory, legal, and economic framework does not naturally reward proactive wholistic food safety management across sectors and federal agencies, and instead, unintentionally optimizes industry segment risk/finances instead of managing the overall system for improved food safety and health outcomes.

### Work Group Purpose

The agricultural ecosystem/One Health system, if monitored, balanced, and managed as a system could optimize food safety outcomes for consumers and create successful business, regulatory, and economic outcomes for companies.

### Key Participants

- Industry: Growers, livestock operations, compost operations, plant protection providers (e.g. pesticide applicators, consultants), related industry/adjacent land operations.
- Regulatory agencies: FDA, USDA, EPA, State Departments of Agriculture, State Health Departments
- Researchers/associations/industry groups
- Buyers/Retailers/Consumer Groups/Consumers
- Food legal experts

### What are 3 steps that can be taken by the end of 2025 that will result in progress?

There are four key themes around which solutions are needed in order to find a productive path forward: [Legal], [Regulatory], [Economic], [Communication, Collaboration, Education]

- 1.) Establish group of food legal experts to determine the feasibility & design of Safe Harbor Policy for food safety data [Legal]
- 2.) Create formal collaboration and synchronization between USDA/FDA efforts [Regulatory]
  - Establish a Federal workgroup and Steering Committee that is inclusive of individuals identified in the “Key participants” named.
    - Bolster USDA authority/activity to promote prevention activities
    - Inform USDA activities based on learnings from FDA outbreak data investigations
    - Develop actionable guidance for co-management solutions to address regulatory requirements and answer regulatory questions overlapping across multiple agencies.

- The Steering Committee will offer [Communication, Collaboration, Education] to One Health efforts that currently exist as a means to build an integrated food safety system.
- 3.) Create data-sharing pilot [Regulatory]
  - Create a pilot program with industry participants in produce, animal industries, processing industries
    - Incentivize participation by/with regulators focusing investigation and inspection efforts focused on characterizing the data gap
  - Identify Data Curator (non-gov't entity) for pilot for management of data
    - Ensure structure, data elements, security & accessibility
    - Develop data guardrails/policies to ensure data quality/value
    - Work to ensure consistencies on reporting, harmonization of structure, data elements

### **What are 3 steps that can be accomplished by the end of 2026?**

- 1.) Establish a draft Safe Harbor Policy for food safety data [Legal]
  - Formalize draft policies that allow/encourage food safety data collection (pathogens, WGS, strain tracking)
  - Develop implementation path and timeline
- 2.) Incentivize growers to invest in improved food safety practices at the entities in the agricultural ecosystem level [Economic]
  - Grants/economic funding for food safety (e.g., Organic Market Development Grants, NRCS, etc.)
  - Economic/trade opportunities for those with evidence of food safety systems
- 3.) Establish transparency on buyer/retailer purchases [Economic]
  - Develop means to make transparent if/how buyers/retailers adhere to purchasing policies (e.g., favoring supply chain that contributes to data-sharing & increased efforts for improved food safety practices)
  - Food safety should not be a competitive advantage, this point is intended to provide visibility on whether buyers adhere to stated food safety policies.
  - Data-sharing participation by industry could help identify for buyers who/what suppliers to source from.

### **3 Key Performance Indicators of Success [how will we measure progress]**

- 1a.) Successful creation of working group of food legal experts for Safe Harbor data.
- 2a.) Successful formation and convening of a Federal workgroup and Steering Committee to carryout USDA/FDA activities discussed above.
- 2b.) Focus and invest in the creation of food safety practice incentives within current legislative authority and within potential new legislative authority (e.g., grants).
- 3a.) Select a data curator for a data-sharing program and establish a pilot data-sharing program.
- 3b.) Establish a cohesive structure/roadmap for capturing food safety retailer/buyer purchase policy adherence.

### **How might a public-private partnership support these efforts?**

A public private partnership (PPP) can play a crucial role in strengthening collective food safety efforts and driving important stakeholder engagement at a local level, state level, or nationally by leveraging the strengths and organization of expertise, leadership, and funding. Depending on the nature of the topic, it may be more appropriately suited to be led at a local level versus a national level, but there are times when a local level issue may need greater engagement on a national level because limitations of progress have been reached whether that is by nature of confines in policy, funding or expertise. In these instances, it may require advanced strategies and a new level of organization and leadership to ensure alignment, progress and/or greatest value. Additionally, in order for these efforts to initiate and remain successful, continuous leadership as well as visibility to them will be important. Given a topic as large as One Health, the recommendation for an organized Steering Committee lends itself to a place where these topics of broader engagement could be organized and remain visible to measurable collective progress.

Some examples of where a PPP could be effective for One Health/Ag Ecosystems work include:

#### **1. Driving Stakeholder Engagement and Public Awareness**

- Industry, Government, and Consumer Engagement and Trust Building: When entities work together transparently, it fosters trust and accountability in food safety measures.
  - Examples of current efforts that foster advancing produce safety through a One Health lens include:
    - Healthy People 2030 - The Healthy People initiative is designed to guide national health promotion and disease prevention efforts to improve the health of the nation. Released by the U.S. Department of Health and Human Services (HHS) every decade since 1980, Healthy People identifies science-based objectives with targets to monitor progress and motivate and focus action. In 2023, HP2030 members indicated the desire to create a new Work Group focusing on One Health and its impact on food safety through the interaction of plants, animals, and humans. As such, the One Health Work Group made its own independent Work Group in order to broaden its scope, while still focusing on areas of importance such as Produce and Escherichia coli (E. coli) O157:H7.
    - USDA and FDA Farm to Fork meeting - The first Farm to Fork meeting was held in May 2024 near Washington, D.C., during which USDA and FDA brought together academic, industry, and agency individuals working on multiple food safety research projects, including potential food safety innovations for poultry, cattle, and leafy greens. The conference focused on several studies already in progress, the outcome of the meeting was that much more research is needed to understand STEC transference and survivability in the environment.
    - California Agricultural Neighbors - California Agricultural Neighbors (CAN) was established in 2021 in response to continued outbreaks of pathogenic *E. coli* O157:H7 associated with leafy greens in the California coastal region. The California Department of Food and Agriculture (CDFA) and the Monterey County Farm Bureau (MCFB) have led efforts to foster collaboration and discussion to

protect public health through efforts shared among the production, processing, retail industry, agricultural industry, and regulatory entities.

- Desert Food Safety Coalition – The purpose of the Desert Food Safety Coalition (DFSC) is to bring together area agricultural industry groups to further collaborate on the subject of food safety in the desert southwest.
- Other examples include: Imperial Valley Collaboration, and the Sustainable Alliance for Food Ecosystems (SAFE) Think Tank, discussed in greater detail below.
- Consumer Education Campaigns: Partnerships can promote food safety awareness through public service announcements, digital platforms, and community outreach.

## **2. Enhancing Food Safety Standards and Compliance**

- Collaboration on Regulations: Governments can work with private sector stakeholders to develop and refine food safety regulations (and non-regulatory standards), ensuring they are practical, science-based, and enforceable.
- Standardized Best Practices: Industry leaders can contribute expertise in food safety protocols, while public agencies ensure compliance and accountability.
  - Examples of current efforts that foster advancing produce safety include:
  - California and Arizona Leafy Greens Marketing Agreement – California and Arizona farmers made an unprecedented commitment to protecting public health through the creation of the California and Arizona Leafy Green Products Handler Marketing Agreement (LGMA). The program’s goal is to assure safe leafy greens and confidence in our food safety programs. At the heart of LGMA is a set of food safety practices that are implemented on leafy greens farms throughout the states. Working collaboratively with university and industry scientists, food safety experts, government officials, farmers, shippers and processors, the LGMA created this unique and rigorous science-based food safety system that protects public health by reducing potential sources of contamination and establishes a culture of food safety on the farm.
  - LGMA Test and Learn program – The CA LGMA has initiated a two-year food safety study called "Romaine Test & Learn." This program aims to gather and analyze pathogen test data for romaine lettuce, including both pre-harvest and post-harvest testing. The study was approved unanimously by the CA LGMA Advisory Board and is designed to enhance food safety practices within the CA LGMA.

## **3. Expanding Resources, Data Sharing, and Encouraging Innovation and Continuous Improvement**

- Investment in Technology and Training: Public-private partnerships can fund food safety research, inspection technologies, and workforce training programs.
- Improved Data Sharing: Private sector data aggregation and sharing can enhance a greater understanding of the current state of an operation and improve future progress. The future vision being that predictive analytics can help prevent food safety incidents before they occur.

- Supporting Research & Development: PPP through funding, research, innovation, and expertise can drive advancements in food safety, contamination detection, and future sustainability (economic).
- Adopting One Health/Ag Ecosystem Best Practices: Diverse partnerships and scientific expertise can help align food safety standards that have long-term benefits for public health and agriculture economics (sustainability of a domestic food supply).
  - Examples of current efforts that foster advancing produce safety include:
  - Western Growers GreenLink® Data-Sharing Platform: a confidential platform developed to support food safety by streamlining data collection and sharing among growers and industry stakeholders. It transforms raw data into visual dashboards, facilitating risk-based decision-making and fostering collaboration within the industry. There are two programs functioning on the platform, including the CA Leafy Green Marketing Agreement (LGMA) Romaine Test & Learn Program, and additional programs are in development.
  - Data Standardization Efforts – Recognizing the challenges posed by inconsistent data formats, Western Growers established the Data Standardization Working Group. This group comprises academic experts and data scientists working to harmonize data across the fresh produce industry, ensuring more accurate analytics and insights.
  - Center for Produce Safety (CPS) – CPS brings together diverse leaders to work collectively toward the common goal of enhancing fresh produce food safety. The many and varied organizations that fund CPS and are leaders in fresh produce food safety, these include: the fresh produce supply chain, including growers, packers, processors, retailers, food service, and industry suppliers and service providers and governments of major specialty crop-producing states who supply Specialty Crop Block Grant funds, including California, Washington, Florida, and Texas.
  - Longitudinal Studies - Delmarva, Southwest Longitudinal Study (SWLS), California Longitudinal Study (CALs) – Understanding which environmental factors are favorable to the presence or spread of foodborne pathogens in growing areas is important to achieving food safety. These studies enable regulatory officials and industry groups to refine guidance on best practices for growers, so they may continually improve the safety of their products. These three studies were designed to improve understanding of the environmental factors that may impact the presence of foodborne pathogens in the agricultural region.
  - Sustainable Alliance for Food Ecosystems – the Sustainable Alliance for Food Ecosystems (SAFE) Think Tank serves as a collaborative think tank focusing on One Health solutions for agriculture. In recent years, concerns have emerged surrounding the interaction within food ecosystems and the potential for environmental pathogen transport. The mission of SAFE is to develop helpful, sustainable solutions and resources for food producers who work across the spectrum of agricultural ecosystems. Thus, the objective for SAFE is to bring together subject-matter experts in government, industry, and academia for a collaborative think tank setting to help identify research gaps, develop project approaches, and ideate potential partnerships and funding opportunities that



respect agricultural production and public health.

## Industry-Regulatory Collaboration

### **Problem Statement**

Currently there is a lack of transparency, accountability and trust between industry and regulatory agencies. Lines of communication are either deficient or muddled and information is not being shared fast enough or with enough detail from industry to regulatory or from regulatory to industry to help develop prevention and mitigation strategies to prevent future issues. Members of industry and regulatory only engage in times of crisis and do not have established relationships which creates tension, suspicion and animosity which leads to companies being unwilling to share data for fear it will be used against them in a punitive way.

### **Work Group Purpose**

Improving the level of collaboration between industry and regulatory as well as between states and federal authorities could lead to several improvements: First, by working in a collaborative manner with a common goal of protecting public health, trust will be built, and that trust will foster more collaboration. Second, the cadence and amount of communication can be improved allowing all parties to share information and work together to come to collective conclusions or align on actions to be taken. Finally, openly sharing data and information helps break down silos of misperception, action and communication (or miscommunication) as everyone would work from the same version of truth however this can only be done if agencies stop using data against the industry in a punitive manner (lack of data sharing is a direct result of the lack of trust on both sides).

### **Key Participants**

Everyone from all segments of industry; all levels of state, tribal and local regulators; and all employees at all levels from groups within the federal government who regulate, develop policy, interpret the statutes, enforce compliance to regulations or conduct inspections needs to engage in improving collaboration. Representatives from industry and regulatory need to come to the table to implement these recommendations to solve the problem.

### **What are 3 steps that can be taken by the end of 2025 that will result in progress?**

1. To promote trust and transparency with all stakeholders working to improve the safety of produce, align industry and all levels of regulatory around communication principles for two-way sharing of information, especially when the sharing of such information will lead to stronger prevention strategies to protect public health.
2. Initiate a review of the reasons regulatory requests data across all jurisdictions to specifically identify what is being requested, why it is being requested, how the data is being used and what data protections exist to inform the development of an incentive based strategy around data collection and sharing (two-way) to protect against punitive use of data against cooperating companies.

3. Establish an industry – regulatory work group to identify how FDA can leverage data (testing data, 3<sup>rd</sup> party audit data, etc...) in a way that will incentivize industry to capture and share data (vs the current approach in which data can be used against them in punitive ways).

### **What are 3 steps that can be accomplished by the end of 2026?**

1. Establish a regular meeting of industry and regulatory officials during times of “peace” (the cooling off period) when no outbreaks or issues are going on to provide a forum for improving communication, conducting a post-event assessment to determine where there are information and/or communication gaps and use this to improve the current system.
2. Evaluate how FSIS defines trade secrets and information sharing with the industry and consumers vs FDA. Compare equivalent regulation under this to Trade secrets act 21 CFR 20.61c and make recommendations to take to congress to update the legislation to improve information sharing between federal, state, local and tribal authorities and with industry and consumers.
3. Standardize communication of data requests and data formats used across agencies to facilitate collection of information but also sharing of information back to the industry.

### **3 Key Performance Indicators of Success**

1. Reduction of miscommunication and confusion between agencies
2. Increased industry compliance/acceptance with sharing data
3. Legislative roadblocks to sharing mission critical data are eliminated

### **How might a public-private partnership support these efforts?**

Provide funding and help lead ongoing efforts. Work advocate on the Hill for changing regulations. Sharing/disseminating progress updates, information or other communication to help keep stakeholders informed.

## **Extension & Outreach**

### **Problem Statement**

The "Make America Healthy Again" (MAHA) initiative emphasizes the importance of fresh produce in improving public health; it is critical for fresh produce to be safe (i.e., free of contamination to prevent foodborne illness) for MAHA to be successful. Cooperative Extension is a trusted partner that has provided unbiased, research-based solutions for farmers since 1914, and it is currently facing a critical shortage of technical expertise and limited food safety support due to funding cuts, staff shortages, and declining Extension programs. Systemic changes are needed to strengthen Extension programs, including long-term funding for Extension positions to develop necessary expertise, sustain relationships within the grower community, provide critical technical support to enhance the safety of fresh produce, ensure regulatory and buyer compliance, and ultimately strengthen the supply chain to maintain access to safe and healthy fresh produce.

### **Work Group Purpose**

Producers rely on the best research and scientific understanding to make informed decisions on their farms, with Extension professionals serving as their most trusted source of information for over a century. Without strong Extension support, many growers are left without affordable access to critical technical assistance and food safety knowledge to avoid threatening their long-term business sustainability. Systematic change is necessary to support domestic production and safeguard national food security and safety. A sustainable framework must be developed to support Extension’s critical role in the U.S. food system and create strong Extension programs. Sustainable funding frameworks should include consistent federal funding as well as state, industry, and public-private contributions that ensure public access to technical experts and resources that support all farmers as they implement food safety practices to ensure consumer health and safety.

### **Key Participants**

To create a successful extension and outreach system, broad participation and collaboration are essential across multiple stakeholder groups.

- **Universities** – Land-grant institutions and extension programs that offer expertise and training.
- **Extension Professionals** – County-based agents, regional or area agents, state specialists, and researchers with extension appointments.
- **Growers & Producers** – Large, medium, and small-scale operations that require training and technical support.
- **Government** – Federal, state, and local agencies to align outreach with their priorities.
- **Industry Stakeholders** – Trade associations, private companies, and food safety organizations.
- **Funding Bodies** – Federal and state governments, private foundations, and public-private partnerships.
- **Non-Profits & Training Entities** – Organizations that provide food safety resources and outreach, including the Produce Safety Alliance.
- **For-Profit Consultants** – All expertise in food safety will be necessary to meet demand across the nation and internationally where extension programs are absent.

### **What are 3 steps that can be taken by the end of 2025 that will result in progress?**

1. **Develop a framework to address funding challenges** – Engage funders to discuss high administrative costs, short-term grant limitations, and reporting expectations. Advocate for long-term funding that supports multi-state and university collaboration, while reserving short-term grants for rapid response projects. Maintain funding for sustaining programs that are critical to supporting producers to ensure consistency.
2. **Develop and manage an “Extension Hub”** – A collaborative platform for land grant universities, the Produce Safety Alliance, trade associations, and non-profits to share training opportunities, technical assistance, and outreach efforts—enhancing coordination and maximizing impact. For example, maximize the use of existing

training materials for various audiences by collaborating with trade associations and other relevant entities to increase reach/impact to a wider audience.

- 3. Elevate the profile of extension work** - Establish recognition programs and industry-backed awards highlighting Extension professionals' contributions to public health and agriculture. Although extension is part of the land-grant mission (i.e., extension, research, teaching), it is often deprioritized at universities with efforts in extension undervalued. Effort needs to be placed in raising the profile of extension so that motivated, high-achieving professionals continue to be attracted to extension and to ensure their promotion and sustainability within the profession.

### **What are 3 steps that can be accomplished by the end of 2026?**

1. Create a sustainable funding framework for produce safety outreach integrating multiple sources:
  - Federal Funding (FDA & Other Agencies) – Consistent federal support for produce safety education and technical assistance, filling gaps, and making information public. For example, recent federal funding cuts have forced prior collaborative partnerships with university Extension professionals and State Departments of Agriculture for education, outreach, and extension of the Food Safety Modernization Act’s Produce Safety Rule to be severely crippled. Last poll, nearly 67% (16 of 24) of university Extension’s budgets were cut to zero leaving many worried about the future of produce safety.
  - State Funding – Flexible state-level funding supporting Extension and outreach without being tied to inspection quotas, allowing resources to be allocated based on industry needs.
  - Private Funding (Checkoff Program) – A small per-unit fee at the point of sale ensuring all buyers contribute to produce safety outreach (i.e., distributing costs more equitably across the supply chain).
2. Recruit and train extension professionals through active and retired experts and provide professional development and mentorship. Engage with university leadership to address the prioritization of extension positions for new hires and maintaining FTEs in extension.
3. Establish a dedicated “Outreach and Education” division within the Center for Produce Safety (CPS) or other entities such as Trade Associations – Secure funding to ensure research findings are effectively communicated to extension professionals and industry stakeholders. Additionally, if trade associations work on industry-sweeping food safety guidance documents, Extension could be engaged through this division of CPS to partner on dissemination efforts to the produce industry.

### **3 Key Performance Indicators of Success**

- 1.) Workforce growth and impact - In addition to tracking the number of Extension professionals, key indicators include industry engagement, adoption of food safety practices, resource utilization, and grower feedback regarding expertise or service offered.

- 2.) Training & technical assistance reach – Measure the number of trainings and technical assistance events provided through collaboration on the “Extension Hub.” Quantify extension appointments at land-grant universities and if possible, determine if they are expanding or shrinking and the impact to the fresh produce industry.
- 3.) Equitable funding & extension program value – Ensure funding reflects the value of Extension and the target audience's needs, prioritize impact, and maintain transparency in funding decisions.

### **How might a public-private partnership support these efforts?**

Public-private partnerships play a critical role in strengthening Extension programs and advocating for Extension funding. Extension has been a trusted resource for over a century, and consistent, dedicated funding is necessary to ensure its continued impact on fresh produce safety, and farm viability. Food safety is a matter of national security, and the effectiveness of Extension programs depends on maintaining trained and qualified "boots on the ground." To strengthen Extension's role, public-private partnerships can serve as a bridge between food safety professionals, industry stakeholders, and policymakers. Advocacy efforts should focus on securing long-term investment, ensuring that food safety education and technical assistance remain accessible to all growers - especially small and mid-sized farmers who may lack independent resources. Educating producers on the importance of advocating for these programs with elected officials is crucial. Their support—beyond just financial contributions—can help sustain Extension efforts and reinforce its critical role in ensuring a resilient and secure food supply. Clear communication in partnership development ensures alignment of goals and maximizes impact across all regions.

## **Policy & Economic Opportunities**

### **Problem Statement**

Daily consumption of fresh fruits and vegetables is the cornerstone of maintaining human health. To support the safety, accessibility, and affordability of fresh produce, critical and urgent changes are necessary in both federal policy and funding for fresh produce food safety resources, research and outreach programs, particularly as administered by the FDA and the USDA.

Domestic production of these important crops is decreasing, due in large part to increasing costs of production (water, labor, inputs, transportation, etc.) and local, state and federal policies that hinder economic development. Loss of domestic production is being replaced by increases in imported fresh produce. Domestic production lost to foreign farms will not return to the United States because of the cost advantages gained by moving to international locations.

Food safety for fresh produce is challenged by climate changes, pest pressures, limited scientifically trained resources, absence of pragmatic, cost-effective tools, and non-value add buyer and regulatory requirements. According to the USDA ERS, the total estimated economic impact of foodborne illness in the United States is \$15.6 billion/year (including direct medical,

lost productivity, death and other costs). Fresh produce accounts for approximately one-half of all foodborne illnesses, making the estimate of economic impact of produce foodborne illness \$8 billion. In a 2017 study, the estimated economic burden of foodborne illness related to leafy green vegetables alone was \$3.7 billion. Furthermore, foodborne illness has also been shown to contribute to residual health effects such as chronic digestive disorders, reactive arthritis, food sensitivities and neurological disorders.

CDC promotes eating fruits and vegetables daily for healthy growth, brain development, and to lower the risk of serious health problems including obesity, type 2 diabetes, and heart disease. Increased consumption of fresh fruits and vegetables requires a compensatory focus on food safety to avoid an overall increase in foodborne illness. Efficient use of government funding to improve the safety of fresh produce would strengthen societal health and economic gains of increased consumption.

Addressing support for domestic fresh produce production, including food safety and the necessary supportive infrastructure, is critical to the nation's nutritional and national security.

### **Work Group Purpose**

This Working Group considered, reviewed, and recommended public policies and development ideas that can be emphasized, adapted, or created to support, incentivize, or establish systematic solutions for continuous improvement in fresh produce food safety while also addressing the following needs:

- Leveraging the states as intended under FSMA (integrated food safety system) as key partners for educational outreach, technical assistance, and compliance verification.
- Promoting and supporting domestic production of fresh produce,
  - projecting long-term needs to support productivity of current growing regions
  - assuring an even “playing field” for domestic and foreign grown fresh produce.
- Ensuring regulatory requirements don't cause undue burdens to entry across scale or product diversification
- Addressing the complex food safety challenges of mixed and complex (animal/plant) farming ecosystems and their wildlife borders
- Fostering the development and application of data science and artificial intelligence in food safety and integration of such tools across agricultural operational systems

### **Key Participants**

- Agricultural industry (growers, packers and shippers)
- Producers and Buyers (processors, retailers, wholesalers, etc.)
- Consumer advocacy groups
- Public policy experts
- Academia representatives

- Government Agency representatives
- Members of Congress and their staff

### **What are 3 steps that can be taken by the end of 2025 that will result in progress?**

1. Digital Infrastructure: Convene a broad stakeholder task force to provide recommendations regarding the needs and funding requirements for a digital infrastructure federal agencies that support fresh produce
2. FDA Public Health Advocacy:
  - a. Invest in foodborne illness outbreak (cross agency) investigations that to achieve rapid identification of the outbreak source, resolution of the outbreak, and dissemination of lessons learned and associated data
  - b. Ensure effective education and outreach programs through strong and consistent state CAP programs. *Requires Congressional Funding and FDA Budget Allocation.*
3. Agricultural Water: Convene a stakeholder task force to address a national strategy regarding the microbiological quality of agricultural water before the farm gate or to assist the grower in improved management on the farm.
4. Additions per recommendations from other working groups.  
*\*The working group prepared a detailed list of potential policies or action that was provided in an addendum to the submitted Appendix A. See Appendix C.*

### **What are 3 steps that can be accomplished by the end of 2026?**

1. Digital Infrastructure: Initiate action on recommendations from task force (per projected timeline and funding availability).
2. FDA Public Health Advocacy: Address next priority recommendation
3. Agricultural Water: Initiate action on a national strategy (per priorities and projected timeline)
4. Food Safety Infrastructure: Congressional appropriations language/earmarks ready for '28 budget (pilot or full programs as negotiated).  
*\*The working group prepared a detailed list of potential policies or action that was provided in an addendum to the submitted Appendix A. See Appendix C.*

### **3 Key Performance Indicators of Success**

1. Task forces formed and strategies available (Digital infrastructure and Agricultural Water)
2. At least two FDA Public Health Advocacy Priorities Enacted
3. Congressional strategy ready for food safety infrastructure

### **How might a public-private partnership support these efforts?**

A public-private partnership is necessary to support the outcome of these efforts for the following reasons:

- 1) The recommendations put forth by this working group seek to change the status quo of government support for fresh produce, both for food safety but also protections for

domestic production (because of the importance of accessibility and affordability to consumption). Changing the status quo requires significant engagement from a broad group of stakeholders. The fresh produce industry, alone, cannot advocate for, or achieve, these changes.

- 2) The recommendations of this working group include efforts to be taken on by government agencies.
- 3) There is a need for a broad cross section of stakeholders to provide advocacy for recommendations that will require Congressional support for funding.

## Imports

### **Problem statement**

The working group has identified the following challenges that should be addressed to achieve consistent food safety for imported produce:

1. Inconsistencies in the interpretation and implementation of regulatory requirement verification activities, varying by industry and importers of record,
2. limited resources, technical expertise, and awareness of food safety regulations and best practices for medium and small foreign producers/suppliers, and
3. limitations with data collection platforms—including limited interoperability, accessibility and usability for foreign producers/suppliers, and restricted publicly available data—hinder transparency, traceability, and data verification for effective decision-making.

Addressing these challenges requires aligning the way parties (producers/suppliers, buyers, importers of record) verify food safety practices and requirements, developing and improving access to training and resources for foreign producers/suppliers, and developing standardized data-sharing systems to access immutable information to understand food safety verification metrics, improve traceability, and drive risk-based decision-making by focusing on the most relevant and impactful data.

### **Purpose**

This initiative aims to improve food safety for imported produce by addressing the gaps in uniformity of how food safety requirements are verified, increase access to resources and awareness for foreign producers/suppliers, and streamline data collection related to food safety parameters that would allow for verification and traceback of imported produce. Expanding food safety knowledge and technical support will improve food safety practices, and compliance with specified requirements, and facilitate standardization of verification activities. Data collection, reporting, and traceability will enhance decision making allowing stakeholders to operate from a shared framework. Collectively, these efforts, applications, and learnings will protect public health by reducing the number of illnesses, lowering food safety incidence costs, and increasing consumer confidence in safe produce.

### **Key Participants**



- **Industry (Buyers, Retailers, and Foreign & Domestic Producers/Suppliers):** Act as part of a Public-Private Partnership (PPP); industry buy-in is essential for adopting verification requirements, sharing data, and securing funding.
- **Domestic Regulatory Agencies (FDA, USDA):** Participate in the PPP, foster relationships with industry and foreign regulators, and provide funding through grants and programs.
- **Foreign Regulatory Agencies (SENASICA, CFIA, SENASA, others):** Foreign regulatory agencies' buy-in is crucial for PPP participation and working groups. They facilitate data sharing, promote resource and guidance dissemination, encourage adoption, and provide funding through international partners such as regional produce associations.
- **Trade Associations and Extension Services (WGA, IFPA, PSA, TIPA, others):** Offer expertise in developing guidance documents, resources, and data-sharing platforms. They provide funding and resources for working groups and serve as connectors between industry and regulators.
- **Data Service Providers:** Specialize in data solutions and the establishment and adoption of data standards.
- **Compliance Experts for Different Commodities and Regions (e.g., FoodSafetyCTS):** Offer expertise in regulatory mapping and requirements across various commodities and geographical regions. Ability to develop resources and guidance in multiple languages.
- **Certification Bodies, Auditing Firms (Primus, GlobalGAP, others):** Support standardized verification activities and data submissions, requiring their buy-in for successful implementation.
- **Academics:** Conduct research in relevant areas, contribute expertise, and provide access to funding through academic institutions.

**What are 3 steps that can be taken by the end of 2025 that will result in progress?**

1. Identify gaps in the outline inconsistencies in execution against regulatory requirements, buyer expectations, and practices between domestically and internationally grown produce. Additionally, develop a data map to identify compliance requirements that will inform data collection strategies, resource development, and standardization efforts to support regulatory alignment.
2. Utilizing a science-based approach (e.g., expert elicitation, analysis of data) categorize and prioritize the gaps identified in Step 1 by product, producer, and country, and assess which gaps present the greatest opportunity for improving the current import system.
3. Establish a collective Public-Private Partnership (PPP) representing **all** stakeholders: International Partners (regulatory and industry) and Domestic (identified in question 3) to:
  - a. Secure buy-in from the identified parties to work on solutions and create working groups for the three problem areas.
  - b. secure funding to support the identified solutions for the three problem areas identified in the problem statement

- c. align the identification and development of incentives for foreign producers/suppliers, importers of record, and
- d. acquire support from auditing companies and data service providers to align verification requirements, and data sharing efforts

**What are 3 steps that can be accomplished by the end of 2026?**

1. Establish the construct for a data collection platform to collect food safety verification and traceability data from foreign suppliers and importers. Developing this construct includes mapping the data to be collected, data governance, and identifying who and how the data will be hosted and shared. In addition, identify the legalities and liabilities associated with sharing data.
  - a. **\*\*Establishing alignment with other working groups' data projects is crucial to ensure consistency and efficiency. Additionally, securing funding is a key consideration, as these programs are costly to operate and sustain\*\***
2. Develop guidance with standardized food safety information that should be verified by importers, and buyers. Establish minimum food safety verification standards for imports that can be used for data standardization & interoperability, reducing inconsistencies in food safety verification between domestically and internationally grown produce.
3. Develop a comprehensive framework for creating and addressing critical resources needed to fill the gaps identified in Steps 1 and 2 of 2025. This framework should outline the specific types of resources required, their intended audience, and the appropriate formats for delivery (e.g., written guides, training videos, webinars, workshops). Additionally, define language accessibility requirements to ensure materials are available in multiple languages as needed. In parallel, design a strategic plan for establishing a user-friendly platform to effectively distribute these resources, particularly to small and medium-sized growers, including those in non-English-speaking countries.

**3 Key Performance Indicators of Success**

- 1) Outline the inconsistencies in domestic and foreign supplier verification programs. By the end of 2025, utilize this outline to assess which gathered data and verified GAPs/GHPs will be the most valuable for an FSVP program and overall produce safety.
- 2) By the end of 2024 successfully engage and secure a public private partnership between domestic and international stakeholders by establishing regular virtual and in-person communication, as well as securing funding to build solutions such as resource sharing, data sharing, traceability, and education solutions.
- 3) Development of at least one solution for the problem areas by the end of 2026
  - a. Development of a guidance document that outlines standardized Food Safety information to be verified by importers and buyers, this to serve as a baseline to establish minimum food safety verification standards for imports
  - b. Develop a comprehensive framework that outlines the specific types of resources required by small and medium size foreign suppliers, their intended

audience, and the appropriate formats and languages for delivery (e.g., written guides, training videos, webinars, workshops).

### **How might a public-private partnership support these efforts?**

A Public-Private Partnership (PPP) plays a crucial role in securing and managing funding while aligning stakeholders across industry, regulatory bodies (domestic and international), and buyers to ensure a unified approach to food safety, including imports. Key functions of a PPP include:

- **Funding & Resource Allocation:** Identifies and secures financial resources through private funding, government support, and international opportunities while ensuring funding stability and allocation.
- **Stakeholder Coordination:** Align industry, regulatory bodies (domestic and international), and buyers, fostering collaboration and ensuring shared food safety priorities identified earlier in this document are accomplished.
- **International Feasibility and Collaboration:** Ensures foreign suppliers are involved in solution development (working groups) to confirm practical implementation, but also incorporation of solutions as part of them of food safety systems.
- **Identification of needs:** Helps identify additional needs and gaps, potentially leading to additional research when science-based data is lacking.

## **Buyer-Supplier Collaboration for Produce Safety**

### **Problem Statement**

For decades, produce buyers and suppliers have operated in a largely arm's length commercial culture in which price, supply and quality have been at the center of their relationship. FSMA's enactment and the persistence of outbreaks have elevated awareness of the importance of safety in the buyer-supplier relationship, but safety concerns have also given rise to today's system of conflicting purchase specifications and a multiplicity of private audits largely focused on compliance with FDA's requirements rather than risk-reducing growing practices.

These efforts have led to elevation of practices in some areas, especially for commodities and hazards implicated in significant outbreaks, and farmers and many others across the produce sector are working hard every day to provide consumers safe and abundant produce. However, insufficient progress has been made in avoiding visible outbreaks and reducing the burden of illness associated with fresh produce as a category.

Produce safety is a widely shared responsibility, but many stakeholders see a produce safety system that is fragmented, reactive, and providing too little support to growers – large and small, domestic and foreign – to make produce as safe as reasonably possible.

### **Work Group Purpose**

To protect consumers and provide the safety assurances needed to support increased consumption, the Buyer-Supplier Working Group has focused on the possibility of building a new culture of collaboration among buyers and growers based on a sense of mutual ownership and responsibility for the safety of produce. The group's dialogue has centered

specifically on the idea of buyer-grower collaboration to develop, harmonize and support implementation of risk-reducing growing practices and audits that can help prevent illnesses and outbreaks. The working group has found substantial alignment among buyer companies for pursuing such collaboration. It has also identified challenges that need to be overcome through broader dialogue, especially with growers, to establish and operationalize a new culture of collaboration that better supports growers in making produce safer.

## Key Participants

Harmonizing and implementing practices to better target and reduce risk requires the collaborative participation of a broad range of groups and individuals.

- The *buyer community* – retailer, food service, and processing – is critical because it has the economic incentive, market power, and financial resources to create a new business culture of collaboration with growers and drive harmonization of best practices that can make produce safer.
- Buyer company *business leaders* are essential to the dialogue because changing the culture of the buyer-grower relationship is a business decision and will need business investment to operationalize and sustain.
- Buyer company *food safety leaders* are key for their expertise and their experience managing safety across the produce supply chain.
- The *grower community* is an essential partner in any new model of buyer-supplier collaboration. Leaders in the grower community need to be at the table as an integral part of the process of building a new culture and models for collaboration and for harmonization of risk-reducing practices
- The *audit community* is an important partner in streamlining the audit system and focusing audits on verifying implementation of harmonized practices for reducing key risks, as well as verifying regulatory compliance.
- *FDA* can play a public health leadership role by encouraging private sector leadership on harmonization of best practices and contributing expertise to their development.
- *Experts in academia and university centers of excellence* provide critical expertise and independence to support development of credible and effective best practices and support their implementation.
- *The Center for Produce Safety* is an important source of research funding to support development of new understandings of risk and practices for reducing risk.
- *USDA extension and the states* have key roles in providing education and technical assistance for implementing recognized best practices; the *Produce Safety Alliance* is a critical resource for training small and medium scale growers in new safety practices.
- The *consumer and public health communities* need to be at the table both to advocate for change to make produce safer and support greater consumption based on consumer awareness and earned trust of industry actions to make produce safer.

**What are 3 steps that can be taken by the end of 2025 that will result in progress?**

**Caveat:** Taking into account the tight timeframe for the RUF stakeholder dialogue and the great diversity of the produce sector, the Buyer-Supplier Working Group process focused on (1) generating dialogue among leaders in the buyer community, (2) gathering perspectives from a limited number of growers and grower representatives, and (3) engaging consumer and public health stakeholders on the opportunities for collaboration to make produce safer. The process was not designed to reach consensus on an action plan or next steps, and no commitments to next steps were requested or made.

The process did reveal, however, broad alignment on the need for new forms of buyer-supplier collaboration to better support growers in providing safe produce, including collaboration on the development and implementation of best practices for reducing key risks. The discussions also considered the need for “safe space” venues and mechanisms for such collaboration between buyers and growers and surfaced interest in continuing dialogue on ways to move forward on buyer-grower collaboration beyond the RUF process.

In light of that, illustrative possibilities for immediate next steps include:

1. Crystalizing business leader sponsorship of new mechanisms for buyer-grower collaboration, including a collaborative program to develop and implement harmonized best practices for reducing risk.
2. Pursuing buyer dialogue with growers and other stakeholders and experts on objectives and possible governance mechanisms for ongoing collaboration, including on best practices.
3. Finding or creating a venue and defining organizational needs and mechanisms for buyer-grower collaboration.

### **What are 3 steps that can be accomplished by the end of 2026?**

If buyer community business leaders decide to proceed with new mechanisms for collaboration, possible steps in 2026 include:

1. Establishing a diversely representative Steering Committee as the body responsible for strategically planning, prioritizing, and overseeing collaborative best practice initiatives.
2. Determining staffing and resources needs to support a sustained best practices program.
3. Identifying initial priorities for commodities and/or hazards for which new harmonized practices are needed and initiating one or more targeted pilot projects to demonstrate how a collaborative best practice program could work.

### **Key Performance Indicators of Success**

Without a specific plan, it's premature to identify indicators of success that relate directly to food safety, but mileposts for developing a collaborative best practices program include:

1. Establishment and financing of governance mechanisms.
2. Alignment on initial priorities.
3. Launch of one or more pilot best practice initiatives.
- 4.

### **How might a public-private partnership support these efforts?**

The role of a formal public-private partnership is not clear. A collaborative buyer-grower best practices initiative needs encouragement from government and engagement of a range of stakeholders, but to succeed it needs to be a private sector-led initiative able to operate with streamlined decision processes and predictable private funding.

## **Produce Safety Research Needs**

*See Appendix D for additional work group documents.*

### **Problem Statement**

The existing produce safety research ecosystem lacks overall unified direction; continuity and coordination among funders, leaders, and implementers of research programs; and connection between researchers and end users. The current ecosystem is fragmented, with multiple platforms and stakeholders that largely rely on unidirectional communication that can result in unsupported or unintended application of research results as metrics. Coordination, bidirectional communication, and collaborative leadership for establishing goals are needed to improve effectiveness and impacts of produce safety research endeavors, and enhance strategies to effectively achieve produce safety goals, by:

- 1) increasing cross-disciplinary interactions among the research community;
- 2) supporting a culture within the research system toward identification, design, delivery, translation, and application of actionable science; and
- 3) cultivating champions and leaders to enhance understanding of the diversity of produce systems, define crucial research objectives, and translate the outcomes of new science into application.

### **Working Group Purpose**

The Produce Safety Research Needs working group discussed characteristics of a dynamic and productive produce safety research system, including:

- 1) establishing priority research areas with stable support;
- 2) organizing a regional network for produce safety research plots and facilities; and
- 3) developing goals and measures of success for produce safety research programs that extend beyond typical academic metrics.

The outputs of this working group are intended to support an efficient and pragmatic produce safety research system that continues to rely upon government agencies, and to enhance productive interactions among stakeholders across the produce-based food system.

The working group focused their efforts on microbiological hazards but acknowledges that research challenges associated with chemical hazards (e.g. heavy metals, pesticides, PFAS), behavior change (at both the industry and individual levels), and epidemiology (i.e. traceback and attribution to produce commodities, including genomics-based approaches) also exist and can benefit from the suggested approach.

## Key Participants in Produce Safety Research

Key participants in the produce safety research system are decision makers in the process of strategy, creation, and use of research-based data to make progress towards produce safety goals, including:

- **Industry Representatives:** Essential for providing practical insights, needs assessments, and contributory funding. Includes agribusiness and growers.
- **Trade Associations:** Important for stakeholder engagement in multiparty coordination and dissemination of best practices.
- **Researchers and Academics:** Crucial for developing and validating fundamental knowledge and data-informed options for solutions.
- **Government Agencies:** Federal, State, Regional, and Local. Needed for financial support, representation of science-based regulatory positions, and research at government-operated laboratories.
- **Outreach/Extension Professionals:** Vital for identification of research needs and translating research into practical applications for key stakeholders in the fresh produce supply chain, including training.

## Target Outcomes to Enhance the Produce Safety Research System

Target outcomes were not part of the template provided in the charge to the working group, but identifying target outcomes was essential to the arc of discussions leading to key steps.

- 1) Continuous and Stable Support Structure - Creation or enhancement of a public-private partnership, including Federal, industry, and philanthropic dollars, that directly establishes research priorities and supports projects
  - Create and fulfill a produce safety research agenda
  - Provide oversight of funded research and resource allocation
  - Support information transfer to end users
    - Moving research from hyper-local or regionalized to replicated/cross-region
  - Mediate information exchange across silos/ firewalls to address current issues
    - Federal investigations, audits, industry monitoring, research applications
  - Build a dynamic community that attracts new members and provides mentorship to individuals in key functions like outreach/ extension
- 2) Continuity between Priority Setting, Data Creation and Data Use - Enhance the bidirectional connection between researchers (data creators) and industry (data users) such as by creating a network of Regional Hubs.
  - Enhanced evolution of research products via a feedback loop with industry to help ensure relevance and usefulness
  - Improve, update, and/or create:
    - Extension publications
    - Industry guidance
    - Field days at demonstration plots; including units capable of using a diversity of pathogens and other model organisms in research settings

- Engaging, responsible, and actionable outreach via social media
  - Curated library of research reports/ annotated bibliographies/ decision matrices or other tools
- 3) Integrated Data System - Development of an integrated data system to track, analyze, and utilize produce safety data across the supply chain
- Produce-safety relevant data that are generated every day, but currently not mined and utilized to the best of our ability
  - A process to track and analyze produce safety data, encourage development of a data depository that would make ‘hidden data’ available for use by other researchers
  - Develop, or prioritize and standardize, methodologies and field sites for research that is developed from data-driven hypotheses
  - Systems-based development of research objectives

**What are 3 steps that can be taken or initiated by the end of 2025 that will result in progress?**

- 1) Identify an independent and driving stakeholder relevancy and leadership entity or organization
  - Goal: Create a mechanism for gathering, vetting, and prioritizing input for research priorities
  - Model: Past commodity-specific efforts (tomato, leafy greens)
- 2) Host a “think tank” meeting
  - Goal: chart a path forward to Regional Hubs that coordinate research and outreach across produce safety stakeholders
  - Support and oversight: Public-Private Partnership
- 3) Working group for data, new hypothesis-generation mechanisms
  - Goal 1: ‘Go teams’ that mobilize in response to time-sensitive learning opportunities and root cause evaluations, collect relevant data
    - Coordinated at a national level to triage and define the opportunity.
    - Supported across Regional Hubs, primed and ready to respond
    - Science-oriented, reduced direct regulatory or industry involvement
  - Goal 2: Leverage accessibility to routine/internal or firewalled data
    - Examples of data are audit findings and inspectional observations, routine industry data, unpublished research including routine monitoring at public health laboratories
    - Build on efforts by Western Growers, IFPA, CPS, others in the field; government agencies, NASDA, ComBase, NCBI data standards and ontologies, etc.
    - Must consider legalities, liabilities, incentive and confidentiality assurance hurdles to data sharing

**What are 3 steps that can be accomplished by the end of 2026, or in a 2-3-year timeframe?**



- 1) Create a public-private partnership structure to develop a produce safety research agenda
  - a. Comprised of stakeholders (including Regional Hubs)
  - b. Charged with “lobbying” sources of research funding to obtain a participatory role in establishment of research priorities
  - c. Looking forward, anticipated role identifying sources of support and, ultimately, distributing research support
- 2) Establish a framework of Regional Hubs
  - a. Advisory/Steering committee of stakeholders including Public-Private Partnership
  - b. Consistent operational support mechanism
    - i. Determine mechanism. Check-off program? Federal line item? Other?
  - c. Regionally located near significant commodity growing areas
    - i. Determine hosting strategy. Land Grant research stations? Other comparable sites? Permanent?
  - d. Residencies/stipend program to bring in outside or cross-disciplinary expertise
  - e. Demonstration field plots, pilot processing plants, and other research facilities to repeat and confirm the effectiveness of data-driven best practices (return on investment)
  - f. Serve as a physical host structure for organized “go teams”
    - i. Stockpiled resources, mobile labs enable rapid response
    - ii. Collaboration with regulatory and industry partners to pursue testing positives or situational risk potential vs risk exposure.
- 3) Build an integrated data system for information sharing and dissemination
  - a. Compilation of research results
    - Goal: Host and pre-digest primary research data that are relevant to best practices and other operational decisions
    - Model: Library of Congress archives
  - b. Accessibility for end users
    - Approach: Integrate with Extension Dialogue group
  - c. Server for existing data
    - Goal: Enhanced data sharing across firewalls
    - Model: Bounded trolling AI, other approaches

### **Key Performance Indicators of Success**

- 1) **Generation and adoption of best practices:** Use/download statistics for guidance documents and tools generated through the Regional Hubs
- 2) **Public health outcomes:** Trends in measurement-effort-normalized pathogen surveillance data in pre-harvest (industry), post-harvest (industry, Dept Health monitoring) and medical outcomes (reportable diseases)
- 3) **Funding and research output:** Traditional metrics include amount of funding secured, publication numbers, students, postdocs and fellows trained. Metrics beyond these include number of impactful research projects, adopted/changed practices, behaviors

changed/adopted, identification and implementation of new control/mitigation strategies, identification of new sources and routes of contamination.

### **How might a public-private partnership support these efforts?**

Public-Private Partnership is seen as crucial to the progress of an enhanced produce safety research system

A partnership of this sort is envisioned to:

- Establish research priorities
- Work to generate, and ultimately distribute, research support
- Actively participate in a fully interconnected produce safety research ecosystem
  - Industry
  - Researchers
  - Regulators
  - Other Funders (e.g., philanthropy)

## Enduring Collaboration Infrastructure

### **Problem Statement**

Achieving the goals and objectives of the strategic roadmap requires a collaborative organization providing the **leadership** and **infrastructure** (such as project management)) to help collaborators achieve objectives of the Strategic Roadmap (being developed in other Work Groups) and have a mechanism for tracking progress against goals.

A successful organization will have:

- **Transparent governance, funding, and decision-making structure** to help keep partners together, pursuing a **unique** purpose
- Structure **aligned** with **stakeholders' mission/goals** and be practical for various participants, including buyers and growers.
- **Flexibility & Adaptability** – The infrastructure must evolve with industry, regulatory, and environmental changes, based on candid governance discourse addressing shifting government policies and industry trends.
- **Centralized Resource Hub** – Place to **pool resources** (financial, personnel, and information) and reduce redundancy
- **Facilitate Communication & Community Development** – Venue for candid discussions, breaking down silos especially for stakeholders who don't typically have a forum to talk to each other.
- **Uniqueness & Complement (Not Duplicate) Association Efforts**– Avoid redundancy by ensuring the structure offers a distinct value proposition compared to existing efforts--coordinating association efforts and bringing in other voices/partners.
- **Inclusive Representation** – Must engage participants of all sizes from private sector (academia, consumer organizations, industry, public health organizations) and all jurisdictions across government (state, local, territorial, and tribal).

### **Work Group Purpose**

The 'Enduring Collaboration' work group will propose up to 3 options for a time-limited organizational structure, principles for success, stakeholder leadership/engagement, and financing. The Work Group recommends an initial 5-year commitment, with annual check-points on process and progress against the objectives articulated by other Work Groups.

### **What are 3 steps that can be taken by the end of 2025 that will result in progress?**

- Step #1: Follow-up with Dialogue attendees to assess willingness to engage in ongoing effort, identify committed leaders from each sector
- Step #2: Convene interested parties (from each sector) to set/secure initial investment commitment (and timing for that commitment) and align on RFP for potential convener/facilitator/project manager
- Step #3: Issue RFP, review responses, choose convener/facilitator/project manager

### **What are 3 steps that can be accomplished by the end of 2026?**

- Step #1: Announce new effort, highlighting priority activity for 5-year timeframe
- Step #2: Align on metrics for assessing progress, begin measurement
- Step #3: Report, publicly, progress against metrics

### **3 Key Performance Indicators of Success**

- Organization convener/facilitator/project manager identified
- New organization structure established and announced
- At least two action items from Work Group roadmap pursued

# Appendix A

## Produce Safety Questionnaire Sent October 2024

### Background

The Reagan-Udall Foundation for the FDA is leading a stakeholder dialogue process to explore new strategies for produce safety and the development of a collaborative public-private partnership (PPP). Ensuring the safety of fruits and vegetables requires a holistic approach. To aid in the goal of improved protection of public health and establishing a PPP, the Foundation is collaborating with stakeholders from agricultural communities, industry, academia, and government to develop a shared understanding of the challenges and a vision for protecting public health.

The Reagan-Udall Foundation for the FDA (the Foundation) has developed this questionnaire to obtain a breadth of perspectives as we work toward facilitating a dialogue to advance produce safety. Other than the first question, all other questions are optional. Please scan the questions and respond to those of greatest interest.

This questionnaire is aimed at gathering input on existing produce safety efforts, gauging priority areas for future discussion (especially from stakeholders who represent diverse views), and seeking contributors to future dialogue.

### Question Title

\* 1. Which stakeholder group best describes you/your organization? (select up to three)

- |  |  |
|--|--|
| <input type="checkbox"/> Academia  | <input type="checkbox"/> Produce processor   |
| <input type="checkbox"/> Audit organization                                  | <input type="checkbox"/> Public health professional                                |
| <input type="checkbox"/> Consumer advocacy group                             | <input type="checkbox"/> Researcher  |
| <input type="checkbox"/> Consultant  | <input type="checkbox"/> Retail/foodservice/institution operator                   |
| <input type="checkbox"/> Educator (K-12)                                     | <input type="checkbox"/> State/local/tribal/territorial regulator                  |
| <input type="checkbox"/> Extension educator                                  | <input type="checkbox"/> Scientific/professional association professional          |
| <input type="checkbox"/> Federal regulator                                   | <input type="checkbox"/> Service provider (laboratory, software, sanitation, etc.) |
| <input type="checkbox"/> Food animal producer (cattle, poultry, swine, etc.) | <input type="checkbox"/> Trade assn. (animal agriculture) professional             |
| <input type="checkbox"/> Food distributor                                    | <input type="checkbox"/> Trade assn. (produce) professional                        |
| <input type="checkbox"/> Food industry member (non-produce, non-food animal) | <input type="checkbox"/> Trade assn. (other) professional                          |
| <input type="checkbox"/> Government, non-regulatory                          | <input type="checkbox"/> Other (please enter)                                      |
| <input type="checkbox"/> Importer  |  |
| <input type="checkbox"/> Nutritionist/registered dietician                   |  |
| <input type="checkbox"/> Produce grower/shipper/packer                       |  |

### General Produce Safety

2. What groups/organizations are you aware of that have produce safety (e.g., extension, education, research, policy, etc.) as one of its focal areas?
3. What stakeholders have *not* been sufficiently engaged in current and prior produce safety conversations?
4. What is working well for produce safety programs?
5. What can help improve produce safety?
6. What do you believe is a major obstacle to produce safety progress?
7. What major policy changes might improve produce safety?
8. What do you see as your organization's role in produce safety?
9. What do you see as your personal role in produce safety?
10. What is one thing that stakeholders can do to increase the safety of fresh produce?
11. With our goal of exploring new strategies for produce safety and the development of a collaborative public-private partnership, are there any additional comments you would like to share as we embark on this effort?

### Your Interest

12. If you are interested in engaging in further dialogue, please share your contact information and select your priority interests. (optional)

First & Last Name:

Organization:

Email/Phone:

13. I'm most interested in participating in further dialogue on the following priority areas (check all that apply): Workgroups will be formed around areas of priority interest.

- Buyer (including audit) specifications for produce safety
- Education and Training: Efforts and outreach to the produce industry on best practices
- Imports: Assessing the needs of a global produce supply chain
- Industry-Regulatory collaboration
- One Health: The intersection between produce production, agriculture, and public health
- Policy and economic opportunities to improve produce safety
- Public-Private Partnership: Developing the structure and governance of a Public-Private Partnership around produce safety
- Research: Brainstorming and prioritizing produce safety research needs
- Other (please describe):

## Appendix B

### Produce Safety Work Group Framing Document

#### Goals

The dialogue, facilitated by the Reagan-Udall Foundation for the FDA, is intended to build awareness and identify strategic opportunities to improve the safety of fresh produce and encourage greater consumption of fruits and vegetables. While the convenors propose an understanding of the problem and a theory of change, the goal is to elicit diverse views and identify common ground on fundamental changes and ongoing collaborations to better serve consumers and the produce sector.

#### Need for Change

Many individuals and organizations are working hard and in good faith to improve produce safety, but change is needed because:

- The nation's system as a whole is fragmented, uncoordinated, under resourced and not aligned around a common strategy for making produce safer.
- Doing more of the same and even doing it better will not suffice to reduce foodborne illness attributed to fresh produce and foster consumer confidence and thus also greater consumption.
- The production, harvest, and handling of fresh produce has become increasingly complex with extreme weather, advancing technologies, evolving consumer expectations, and globalization of trade.
- Current food safety, conservation, and other regulatory policies do not always incentivize the adoption of new approaches to growing, harvesting, packing, shipping, and storing fresh produce.

While this dialogue process will focus primarily on improving safety, a secondary benefit of this work will be to encourage greater consumption of produce as having a safe and abundant supply of produce can help increase consumer confidence and drive interest in seeking out the nutrition and health benefits of produce as part of a healthy diet.

#### Theory of Change

Produce safety starts on the farm, which means growers have a major role and responsibility, but growers are part of an agricultural and economic ecosystem that makes it unreasonable for growers alone to find solutions and bear costs for improvement. The lack of a "kill step" makes produce vulnerable at each supply chain point, necessitating protection at each step.

In addition to regulation, progress on produce safety requires supporting growers - domestic and foreign - in the implementation of best practices by providing them:

- Clarity about best practices for minimizing, managing and verifying reduction of significant risks,
- Needed technical assistance and cultural change/mindset,
- Shared accountability and responsibility, and

- Economic incentives and support to implement science-based risk management practices.

### Looking for Opportunities

The dialogue will be organized around working groups charged with addressing questions aimed at identifying opportunities for change. This is envisaged as a 3-step process:

1. **The focus of the dialogue is on Step 1- what are we trying to accomplish?**
2. Workgroups will begin to frame out Step 2- a strategic roadmap, which can be continued and refined through an ongoing, collaborative partnership.
3. Step 3 relates to implementation. While implementation will occur after the conclusion of the dialogue, we hope that current efforts can be connected and amplified through the dialogue process.

The three steps, in more detail are:

- What does success look like? Each workgroup will be asked to paint a picture of the ideal future related to the workgroup topic area.
- Identify the major steps, activities, resources, and changes needed to achieve success. Major changes are unlikely to happen quickly or easily, but if there is alignment on the objectives, groups should begin to frame out what it would take to reach the objectives – or develop a “roadmap”.
- Develop an implementation strategy of the roadmap outlined in Step 2.

### Produce Safety Dialogue Areas of Interest

#### 1. Education & Training: Building technical capacity

**Overarching:** How can a pipeline of educated and trained individuals (at all skill levels and roles) be created to support and fulfill produce food safety needs? How many are needed? What are the most important things they need to know?

- a. **Extension & Training** industry members on implementation of best practices and regulations
  - i. **Lead:** Sonia Salas, Western Growers; Dr. Laura Strawn, Virginia Tech
  - ii. What are current extension frameworks? What does a sufficiently funded produce safety extension system look like?
  - iii. Of the multiple efforts that support training, which are most effective and is there benefit to coordination?
  - iv. What depth of knowledge is needed for owners/executives, vs. those with produce safety responsibilities, vs. workers?
  - v. What are the best ways to convey and implement this information? What are current negative behaviors? How can behavior change be assessed? What is the most important behavior change that is needed?
  - vi. What are the key misconceptions that need to be corrected?
  - vii. What role does Extension play? What role should Extension play?
  - viii. How can ALL growers (including those exempt from the PSR, traditionally underserved, etc.) be motivated to implement practices, regardless of size?
  - ix. What is the appropriate balance of effort/ resources between growers, processors, and others in the supply chain when it comes to technical assistance and training?

## 2. Ongoing Govt/Private Sector/Non-Profit collaboration

- a. **Overarching:** What would be the goals of a collaboration and what would need to be accomplished to determine that it was no longer needed?
- b. **Lead:** Susan Winckler, Reagan-Udall Foundation
- c. Is there a need for sustained, managed collaboration body?
- d. What should be its goals? Who should be involved in determining them?
- e. What form should it take?
- f. How should it be funded?
- g. Who should be involved? How formal is the process?
- h. What are some examples of effective collaborations?

## 3. Produce Safety Research Needs: Solving problems

- a. **Overarching:** What does an adequately funded produce safety research program look like and how is success measured?
- b. **Lead:** Dr. Michelle Danyluk, University of Florida; Dr. Don Stoeckel, Cornell University
- c. How and who should determine research priorities?
- d. How can research priorities remain nimble and responsive to changing industry needs and evolving science?
- e. How should produce safety research inform best practices? How can a prevention-focused research agenda impact produce safety?
- f. How can we ensure that research dollars are available for regional and local food safety challenges?
- g. How can we assure that research activities address priority produce safety knowledge gaps, support the improvement of science-based standards, and/or provide pragmatic prevention solutions for use by the fresh produce supply chain?
- h. What role should USDA play in research vs. other federal agencies?
- i. What's the appropriate balance between publicly vs. privately (industry) funded research?
- j. How do we encourage researchers, scientists, and industry members to be involved in produce safety research (including new professionals, multi-disciplinary scientists, researchers at state and federal agencies, etc.)?
- k. How can existing resources be better utilized?
- l. How can we stimulate "out-of-the-box" approaches to innovative research and development in the produce safety space? How can we better understand the economic incentives of innovation in the produce safety space and thus the ROI of innovation?

## 4. Industry-Regulatory Collaboration

- a. **Overarching:** What does a productive, collaborative relationship between regulators and industry look like?
- b. **Lead:** Natalie Dyenson, International Fresh Produce Association & Joe Reardon, National Association of State Departments of Agriculture
- c. What produce safety progress is possible through implementation of FSMA rules that are applicable to the produce industry?
- d. How can FDA improve use of its regulatory tools?



- e. How can FDA contribute to prevention of illness beyond use of its regulatory tools?
- f. How should FDA use its expertise and standing to support voluntary grower adoption of best practices?
- g. What opportunities exist for FDA to improve collaboration with growers? Processors? Retailers? Others?
- h. What data should be collected and shared to improve produce safety? What barriers exist to data sharing and other forms of FDA collaboration with industry?
- i. What proactive and transparent policies and processes might enable and incentivize data sharing collaborative forums?
- j. What roles should states play in produce safety? Local, tribal, territorial? What resources do they need?
- k. How can states be best positioned as the front-line resource for prevention?
- l. How should the state roles be meshed with FDA's role?

## 5. Policy & Economic Opportunities

- a. **Overarching:** If improved safety of fresh produce is good for public health (lack of illness, and promotion of health resulting from increased consumption), what public policy mechanisms exist, could be adapted, or need to be created that support, incentivize, and motivate improvements to produce safety?
- b. **Lead:** De Ann Davis, Western Growers, Connor Kippe, National Sustainable Agriculture Coalition
- c. What would it take to fund produce safety initiatives through the Farm Bill?
  - i. What key diet and health related issues (talking points) support this?
  - ii. What alliances are needed to support this?
  - iii. What Farm Bill programs are desirable?
    - 1. Subsidies?
    - 2. Reimbursement for infrastructure upgrades (equipment, location/land use, buildings, etc.)?
    - 3. Training and extension?
- d. What public health leadership role can FDA play within the federal government?
- e. How should FDA link its nutrition and produce safety roles?
- f. Should USDA play a role in subsidizing or incentivizing One Health solutions related to animal proximity, investment in water technology and infrastructure, or other risk prevention interventions?
- g. What are the state funding needs and what are they needed for?
- h. How can FDA funding be made sustainable?
- i. What other policies changes/advances are needed to support fresh produce safety at the federal level, such as under One Health? Water Resource Management?

## 6. One Health / The Agricultural Ecosystem

- a. **Overarching:** Produce is not grown in isolation; environmental factors sometimes outside a growers control influence the risk to the product. The interrelationship between different forms of agriculture are increasingly recognized; how can they coexist in a way that is fair and enables all forms of agriculture to thrive?

- b. **Lead:** Joelle Mosso, Western Growers, Natalie Krout-Greenberg, CDFA, Connor Kippe, NSAC
- c. What existing efforts have been successful in focusing on One Health and its impact on produce safety? How can these successful programs be sustained or improved?
- d. Of the key areas addressed by the One Health approach [a.) prevention of zoonotic diseases in animals and people, b.) improvement of food safety and security, c.) reduction of antimicrobial-resistant infections, d.) protection of global health, and f.) protecting biodiversity and conversation], which approaches might show the greatest promise for addressing produce safety risks?
- e. Once these approaches are proposed, what is needed to support both their immediate and sustained implementation?

## 7. Buyer-Supplier Collaboration for Produce Safety

- a. **Overarching:** How can the influence of buyers be used to drive the adoption of produce safety best practices in a way that is based on science, grounded in practicality, and financially equitable?
- b. **Lead:** Mike Taylor, STOP Foodborne Illness
- c. What responsibility do buyers have for the safety of fresh produce beyond management of their own supply chains?
- d. What role can buyers play in promoting best practices through harmonization of purchase specifications?
- e. What change is needed to enhance the effectiveness of audits in verifying implementation of risk-based best practices? How can audit fatigue be minimized?
- f. Who should pay for private audits? Who should conduct them?
- g. How can the data collected by buyers be applied to help to understand priorities for produce safety?
- h. How do we assure that buyers have a sustained stake in continuous improvement?

## 8. Imports

- a. **Overarching:** what are the key components in effecting a safe global produce supply chain and how is this verified?
- b. **Lead:** Gustavo Reyes, Western Growers
- c. How can imported produce be held to the same produce standards as domestic produce to ensure consistency and safety? What is the current process in place to achieve this?
- d. How do we assure foreign growers/packers/processors adopt and implement best practices?
  - i. How can these be developed to consider regional and cultural differences?
- e. Are there any challenges or limitations in these standards that could hinder their application both overseas and domestically?
- f. What structures already exist for food safety training and outreach outside the US, and how effective are they? Are there successful models that could be replicated?
- g. What is the role of foreign governments and how can they best be engaged?

## Overarching Questions

Each workgroup should consider the following questions as they develop a vision for the ideal state relative to their issue area.

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| <b>WHY</b> are produce related foodborne illness outbreaks and recalls occurring?   |
| <b>Context:</b> Produce is often eaten raw with no kill step to eliminate harmful human pathogens. Fruits and vegetables are also grown in the environment (whether indoor or outdoor) and exposed to a number of biological, physical, and chemical hazards which can present food safety risks.   |
| <b>WG Charge:</b> Discuss the following in context of your work group's focus area: <ul style="list-style-type: none"><li>• Are there fundamental food safety failures that exist which have not been fully addressed? If so, what might be needed to overcome the challenge(s) (e.g., additional research, capital to invest in food safety improvements, education, etc.)?</li><li>• Is current policy and process contributing to outbreaks and/or reducing the industry's ability to address food safety failures?</li><li>• Are current investigative processes (by industry and/or regulatory agencies) helping to identify the root cause of produce safety outbreaks? What is working well and what can be improved?</li><li>• What role does root cause analysis play in making produce safer and reducing future foodborne illness outbreaks? How can root cause analysis be improved or better leveraged by government (investigators), researchers, and industry?</li></ul> |

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| <b>WHO</b> has a responsibility for produce safety?  |
| <b>Context:</b> There are many individuals throughout the supply chain who have varying levels (direct or indirect) of responsibility for keeping produce safe. Examples include growers, processors, packers, retailers, food service, distributors, importers, state and federal regulators, government professionals (non-regulatory), researchers, educators, consultants, auditors, compost/fertilizer producers, chemical suppliers, technology providers, laboratories, animal ranchers/producers, nutritionists/dieticians, consumers, and others. |
| <b>WG Charge:</b> For the responsible individuals/organizations relevant to your work group, discuss the following: <ul style="list-style-type: none"><li>• Have the individuals responsible for produce safety been sufficiently engaged? If not, how can they be engaged?</li><li>• Are there current barriers or knowledge gaps for those responsible for produce safety to do their jobs well?</li><li>• Is there an imbalance of responsibility? If so, is there opportunity to rebalance the spectrum of responsibility?</li></ul>                   |

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| <b>WHAT</b> are the best practices?   |
| <b>Context:</b> In fresh produce, there is no one size fits all approach to food safety. There's also an assumption that steps to make produce safer are known – but are they? How can a public-private partnership strengthen and/or develop practical and effective best practices that are supported by science? |

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| <p><b>WG Charge:</b> Discuss the following in context of your work group’s focus area:</p> <ul style="list-style-type: none"> <li>• What best practices are practical? Are they economical? Are they effective? Are they adaptable (for various regions and environments)?</li> <li>• Are the risks fully understood? Who gets to decide on the best practices? What are the tradeoffs?</li> <li>• What does the research say (if it exists)? What research is still needed to develop and implement best practices? <ul style="list-style-type: none"> <li>○ How much money has been invested in produce safety over the last 5, 10, 15 years across the industry? Have the outcomes matched the investment? What additional funding might be necessary to achieve produce safety goals? Are current funding streams and mechanisms working? If not, how can they be improved?</li> </ul> </li> <li>• How do we keep the best practices current and relevant? <ul style="list-style-type: none"> <li>○ What is the relationship between established best practices and safe harbors (e.g., the canal water in Yuma where the outbreak strain was found passed generic <i>E. coli</i> tests outlined in the PSR at the time)?</li> </ul> </li> <li>• What funding might be necessary to support their development and keeping them up-to-date?</li> </ul> |
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| <p><b>HOW</b> can we get people to implement the best practices?</p>   |
| <p><b>Context:</b> There are several motivators for implementing produce safety practices including regulations, personal commitment to safer produce, market access, reduction of liability, receiving higher prices, among other considerations. These may be influenced by intrinsic and extrinsic factors.</p>   |
| <p><b>WG Charge:</b> Discuss the following within context of your work group’s focus area:</p> <ul style="list-style-type: none"> <li>○ What funding might be necessary to support implementation?</li> <li>○ What education might be necessary to support implementation? <ul style="list-style-type: none"> <li>▪ How do we reach the people who need it?</li> <li>▪ How do we recognize if something isn’t working or if something changes, and what to do about it?</li> </ul> </li> <li>○ How do buyer requirements influence implementation?</li> <li>○ What other motivators influence implementation? (personal, legal, reputational, consumer pressure) <ul style="list-style-type: none"> <li>▪ How can these be leveraged or challenges overcome?</li> </ul> </li> <li>○ How is implementation verified? <ul style="list-style-type: none"> <li>▪ Regulation, audits, other? Are these mechanisms of verification working?</li> </ul> </li> <li>○ If practices are implemented and an outbreak/recall still occurs, then what? <ul style="list-style-type: none"> <li>▪ Are there safe harbors? What is the view on residual risk? Penalties?</li> <li>▪ Revise best practices?</li> <li>▪ More/better outreach and education?</li> <li>▪ How can key learnings/data/information be synthesized and shared without repercussions (non-punitive actions)?</li> </ul> </li> </ul> |

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| <p><b>WHEN</b> will we achieve safer produce and what does that look like in 2, 5, 10, or 20 years?</p>  |
| <p><b>Context:</b> The field of produce safety is relatively new and continually evolving. Science, policy, and communication have shaped where the industry is now – but that has evolved over several decades.</p>   |
| <p><b>WG Charge:</b> Discuss the following in context of your work group’s focus:</p> <ul style="list-style-type: none"> <li>• What major produce safety challenges/priorities need addressed in the next 2, 5, 10, and 20 years?</li> <li>• What does a successful public-private partnership look like at its’ inception and at its’ fully functional capacity? How can it be sustained in a way that supports industry in perpetuity?</li> <li>• What future technologies and scientific applications are on the horizon that show promise to improving the safety of fresh produce?</li> </ul> |

## Appendix C

### Fresh Produce Food Safety “Marshall Plan”

#### Addendum to the Policy & Economic Opportunities Work Group

|                       | Data Infrastructure   | Food Safety Infrastructure  | Agricultural Water   | FDA Public Health Advocacy  |
|-----------------------|---|---|--|---|
| <b>Need</b>           | <b>Digital infrastructure to support food safety</b>  | <b>Grant or low-interest loan programs to address food safety investments in fresh produce growing, packing, and processing operations</b>  | <b>A national strategy to address the infrastructure and microbiological quality of the nation’s agricultural water supply</b>   | <b>Leadership in both safety fresh produce and important role fresh produce plays in the diet</b>   |
| <b>Recommendation</b> | <p>1. Improve FDA capabilities to receive, manage, analyze, and utilize a wide variety of data from fresh produce growers (domestic and imported). <i>Requires funding.</i></p> <p>2. Build private/public partnerships in data-sharing to allow for better use of government resources, understanding of food safety trends, risks, and faster resolution of food safety events.</p> <p>3. Facilitate broad access to FDA and USDA public datasets.</p> <p>4. Within produce industry promote data standardization and data science capacity-building, including technology access and technical support, and education/outreach to promote engagement. <i>Requires funding.</i></p> <p>4. Promote academic research in the application of data science to improve food safety, land utilization and grower resource management <i>Requires funding.</i></p> | <p>1. Provide funding sources for growers to make needed improvements within a fresh produce operation (to achieve food safety and efficiency improvements) <i>Requires funding.</i></p> <p>2. Provide funding sources for food safety infrastructure solutions necessary to address shared resources for mixed agricultural regions, including roadways, wildlife fencing, dust abatement, etc. <i>Requires funding.</i></p> <p>3 Programs should be based on risk reduction and management gains for food safety, farm income should not be a consideration</p> | <p>1. Enact a national cross-agency strategy that addresses the microbiological quality of agricultural water before the farm gate or assists the grower in improved management on the farm.</p> <p>2. Fund cost abatement or refund programs to address expenses and expertise related to management of microbiological quality of agricultural water on the farm. <i>Requires funding.</i></p> <p>3. Fund research and innovation programs that address improvements in microbiological quality of agricultural water prior to or during irrigation events to reduce reliance on costly chemical water treatment, address concerns related to long-term impact on soil health and minimize worker safety concerns <i>Requires funding.</i></p> | <p>1. Focus beyond implementation of the Produce Safety Rule to systems that are prevention-focused vs compliance-focused outcomes</p> <p>2. Invest in foodborne illness outbreak investigations (cross-agency) that assure rapid identification of source, actionable resolution and dissemination of lessons learned and associated data.</p> <p>3. Work with industry to understand best practices, support implementation, verification and validation strategies.</p> <p>4. Ensure effective education and outreach programs through strong and consistent state CAP funding is and CAP programs support all domestic growers (even those not under PSR)</p> <p>5. Address the impact of pathogen zero tolerance policy, establish risk tolerance levels.</p> <p>6. Resolve disincentives to pathogen testing to assure the right food safety outcomes.</p> <p>7. Address policy and/or internal practices that are barriers to data-sharing</p> |

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|  |  |  |  | and/or public data access.<br>8. Convene advisory boards/committees to support stakeholder engagement. |
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|                | Research and USDA Support   | Government Structure “Single Food (Safety) Agency”   | Farm Bill  |
|----------------|---|--|--|
| Need           |   | Achieve a coordinated and systematic government approach to fresh produce  |  |
| Recommendation | <p>1. Assure the highest priority food safety research is being funded through implementation of a transparent interagency process led by FDA and include a multi-disciplinary advisory committee, such as NIH’s. <i>Requires Funding.</i></p> <p>2. Adjust NIFA’s funding model to include the following:</p> <ul style="list-style-type: none"> <li>a. expansion of vision to include public health</li> <li>b. allowing for project continuity greater than 5 years.</li> <li>c. more accommodation for specialty crops, including farm size, broader crop inclusions, iterative research (no magic bullets), and more focus on the understanding of foodborne illness.</li> </ul> <p>3. Assure synchronization across the current existing research and support mechanisms (grants, extension) via an oversight mechanism</p> | <p>1. Improvements in food safety for fresh produce can be best achieved through a revised government structure that achieves the following:</p> <ul style="list-style-type: none"> <li>A. assure outcome-based implementation of PSR (beyond compliance) and focus on prevention of illness.</li> <li>b. focus on “Farm to Fork” safety, inclusive of full supply chain</li> <li>c. achieves goals on risk assessment, management, and reduction.</li> <li>d. support public health advocacy for food safety, domestic production through consumption and access</li> <li>i. improves agency budget priority within context of Secretary’s portfolio.</li> <li>ii. nimble responsiveness to food safety events, natural disasters, changes in science, other domestic production needs or improvements in import protections</li> </ul> | <p>1. Develop programs to address graduate level training gaps in food safety (National Needs Fellows as example)</p> <p>2. Address loss of extension funding and extension resources</p> <p>OTHERS AS PROVIDED THROUGH RUF STAKEHOLDER DIALOGUE GROOUPS</p> |

## Appendix D

### Produce Safety Research

#### Summary of Responses to Discussion Questions

Responses from 10 one-on-one interviews and one written response were summarized to capture areas of consensus as well as differing opinions among participants. Working group outputs in this document were based on the discussion summarized in this Appendix, and follow-up meetings and interactions with working group members.

#### How and who should determine research priorities?

##### Consensus:

- Collaborative effort
  - Industry representatives
  - Researchers
  - Trade associations
  - Government agencies
- Balance practical needs and scientific advancements

##### Differing Opinions:

- Strong role for industry established priorities
  - Direct involvement in day-to-day operations
- Alternate view: Equal input from academia and government
  - Avoid bias and ensure comprehensive coverage of issues

#### How can research priorities remain nimble and responsive to changing industry needs and evolving science?

##### Consensus:

- Flexibility in research funding and project scopes during execution of funded research
- Mechanisms such as rapid response grants and rolling submissions for emerging issues

##### Differing Opinions:

- Broad priority areas allow researchers freedom
- Alternate view: Specific scope with stable long-term support
  - Research program evolution and freedom to explore

#### How should produce safety research inform best practices? How can a prevention focused research agenda impact produce safety?

##### Consensus:

- Provide actionable insights, translate into best practices
- Ability to identify and mitigate risks before issues emerge

##### Differing Opinions:

- Not all research needs to directly inform best practices
  - Fundamental research is also essential

- Complementary view: Some research must have clear, practical applications for adoption

**How can we ensure that research dollars are available for regional and local food safety challenges?**

**Consensus:**

- Diversification of funding sources
  - State and local government support
  - Industry initiatives
  - Federal grants

**Differing Opinions:**

- Federal funding promotes consistency
- Alternate view: Industry investment can prioritize local needs

**How can we assure that research activities address priority produce safety knowledge gaps, support the improvement of science-based standards, and/or provide pragmatic prevention solutions for use by the fresh produce supply chain?**

**Consensus:**

- Communication and collaboration is key.
- Reviews and updates of research priorities for relevance
  - Base on current/emerging data and industry feedback

**Differing Opinions:**

- Pro and con: Structured oversight and accountability to an umbrella/governing organization
  - Alignment of funded research with knowledge gaps
  - Incentivization for delivery of practical solutions

**What role should USDA play in research vs. other federal agencies?**

**Consensus:**

- USDA should play a leading role
  - Leveraging its expertise and resources in agricultural research
- Other federal agencies collaboration to cover all aspects of produce safety
  - CDC, FDA along with NOAA, DoD, NIH, and others

**Differing Opinions:**

- USDA research focus on longer-term basic research challenges
- Alternate view: USDA should promote applied research that supports industry directly

**What's the appropriate balance between publicly vs. privately (industry) funded research?**

**Consensus:**

- Balanced is necessary
  - Ensures a broad range of perspectives and resources

**Differing Opinions:**



- Varied input on appropriate balance
  - More public funding to reduce industry bias
  - Industry investment to ensure practical relevance

**How do we encourage researchers, scientists, and industry members to be involved in produce safety research (including new professionals, multi-disciplinary scientists, researchers at state and federal agencies, etc.)?**

**Consensus:**

- Foster collaboration to attract and retain talent
  - Funding opportunities
  - Platforms for knowledge exchange

**Differing Opinions:**

- Targeted training programs, research stipends
- Alternate view: Broad outreach and engagement

**How can existing resources be better utilized?**

**Consensus:**

- Better coordination and collaboration
- Data sharing, stable infrastructure, and connecting expertise

**Differing Opinions:**

- Best specific structure
  1. Centralized control and oversight
  2. Decentralized, flexible structure that leverages local strengths

**How can we stimulate “out-of-the-box” approaches to innovative research and development in the produce safety space? How can we better understand the economic incentives of innovation in the produce safety space and thus the ROI of innovation?**

**Consensus:**

- Encourage interdisciplinary research
  - Seed funding for innovative ideas
  - Foster a culture of creativity
- Demonstrate that change in practices will yield ROI

**Differing Opinions:**

- Specific approaches
  1. Structured programs
  2. Flexibility and risk-taking

**Characteristics of a perfect produce safety research system:**

- Oversight
  - Priority Setting: Industry, academia, government, other
  - Accountability: Align research with priority gaps, deliver practical solutions
- Collaboration
  - Communication: Regular interaction, data sharing among researchers, industry, and regulatory bodies

- Innovation: Interdisciplinary research, dedicated support innovative ideas
- Funding
  - Stable Sources: Balance public and private funding
  - Flexible Allocation: Rapid response grants, and rolling submissions to RFPs

Relevant Outputs: Link research to clear, practical insights for best practices and prevention strategies