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Jumpstart to Produce Safety: Tailored Technical Assistance Increases Adoption of Food Safety Practices on Small and Underserved Farms

Abstract

Small and mid-sized produce operations frequently face complex technical and economic barriers to adopting food safety practices. The Jumpstart to Produce Safety Program, a collaborative effort between the University of New Hampshire (UNH) and University of Maine (UMaine) Extension, provides a model for overcoming these hurdles through individualized, on-farm technical assistance and peer-to-peer micro-learning videos. By shifting the focus from "perfection" to incremental risk reduction, the program successfully empowered 28 New Hampshire farms to implement measurable practice changes.

Introduction and relevance

Ensuring a safe food supply is a national concern, particularly following the 2011 passage of the Food Safety Modernization Act (FSMA). Smaller operations often lack

the resources to navigate these new requirements. While many small farms in New Hampshire and Maine are not fully covered by the FSMA Produce Safety Rule, adopting safe handling practices is critical for protecting customers, meeting buyer standards for retailers, wholesalers, food hubs, and schools, and strengthening the local food economy.

Methods

The program utilized an observational, outcome-based approach rather than a statistical experimental design. The methodology was structured into three distinct phases:

1. **Recruiting farmer participants:** Farmers learned about and enrolled in the program via the Jumpstart website through partner announcements, food co-ops, agencies, newsletters, social media, local media, and direct outreach.

2. **Individualized On-Farm Assessment:** Extension specialists conducted one-on-one visits to 10 farms per state per year. These visits included a comprehensive food safety risk assessment of the field-to-market flow.

3. **Tailored Technical Assistance:** Following assessments, specialists provided one-on-one help writing customized Standard Operating Procedures (SOPs) and Farm Food Safety Plans**.** Farmers were provided with tools including cleaning checklists, worker training logs, and guidance for selecting appropriate EPA-labeled sanitizers.

4. **Peer-to-Peer** Micro-learning Videos**:** Specialists and farmers collaborated to record a series of over 70 micro-learning videos (each under three minutes). These videos showcased real-world, low-cost solutions—such as DIY handwashing stations and wildlife mitigation strategies—to make safety practices more accessible and "doable" for busy growers.

Evaluation and Results

Evaluation was conducted through follow-up farm visits and reports to track the implementation of recommended practices.

- **Practice Adoption:** In New Hampshire, 28 farms completed the program, implementing dozens of practical changes. Farmers reported that having standardized procedures (SOPs) allowed them to maintain high safety standards even during staff turnovers or owner absences.

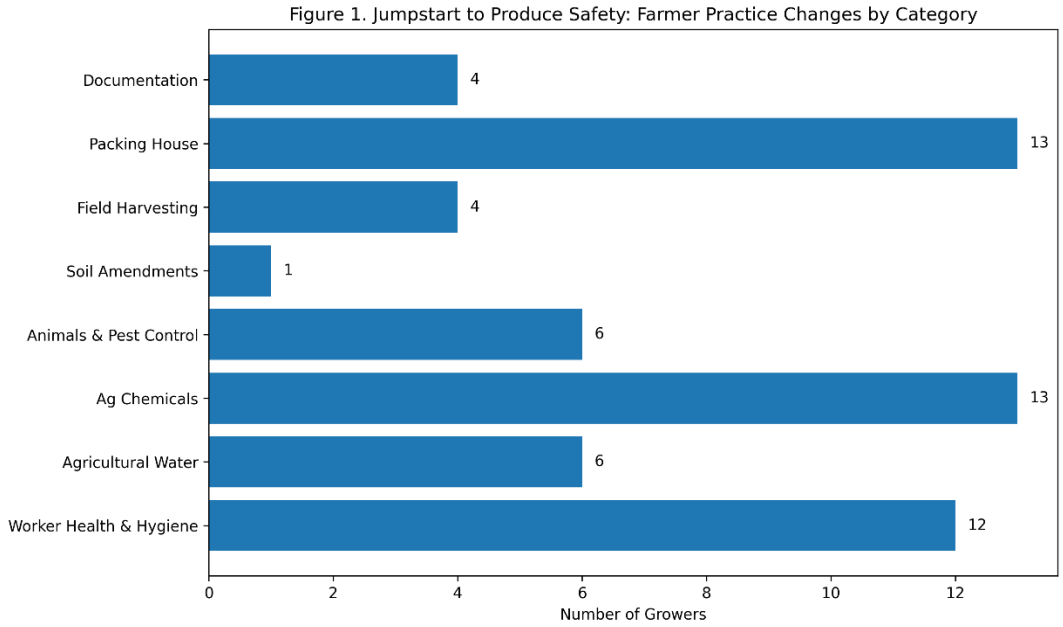

Figure 1. Number of growers implementing food safety practice changes following participation in the Jumpstart to Produce Safety program. The most common improvements were in packing house activities and agricultural chemical management, followed by worker health and hygiene practices. Changes were also observed across agricultural water use, pest control, harvesting practices, documentation, and soil amendments, demonstrating broad adoption of risk-reduction strategies across the production system.

- **Infrastructure Improvements:** Major documented changes included the installation or relocation of convenient handwashing sinks, the addition of wildlife fencing (deer and bird netting), and upgrading wash-pack areas with efficient redesign of the postharvest flow through the wash pack area to cooling, storage, and transport.
- **Impact:** Participating growers implemented or modified one to five food safety practices within a year of training.

Discussion

Jumpstart Farmers produced a number of important food safety modifications and are described below.

Worker Health and Hygiene

Twelve growers made changes to improve Worker Health and Hygiene by: installing handwashing sinks near the produce washing area, adding training and signage, and making other sanitation improvements including moving the handwashing sink to a convenient location and improving plumbing.

Agricultural Water

Six growers started testing the water used on the farm to ensure it was of adequate sanitary quality. One farmer learned that they had to treat their well water to reduce bacteria to safe levels. Another took the recommended step of clearing the brush away from their well head to prevent harborage of rodents and contamination of the well.

Agricultural Chemicals (Sanitizers and Pesticides)

Thirteen growers improved the way they managed agricultural chemicals such as sanitizer by adding a food safe sanitizer to their cleaning regime or by using the sanitizer more mindfully by measuring the mixture following label directions closely.

Animals and Pest Control

Six growers enhanced their management practices for effective animal and pest control. They used a variety of methods including adding secure deer fencing, installing bird netting in the rafters above the wash pack area to prevent contamination from above, and strengthening the procedure of discarding any produce contaminated by draft animals in the crop fields.

Soil Amendments

To prevent contamination of crops with partially cured compost, one grower moved their compost pile away from its previous location, where it was abutting crop fields.

Field Harvesting

Four growers developed more efficient and safer field harvesting procedures including writing harvest Standard Operating Procedures (SOPs) for training and consistency, changing to smooth and easily cleanable harvest containers, establishing a flow for how totes are cleaned and stored, and sanitizing harvest tools.

Packing House Activities

Thirteen growers upgraded their wash-pack room activities by: writing SOPs for produce flow from the field to the final transport of produce, improving and documenting cleaning steps, creating a separate, clean wash pack area, adding a spray table for root washing (for removing dirt from root vegetables like radishes and carrots), managing water use mindfully by limiting time the

harvested produce spends in dunk tank cleaning water (to limit potential for infiltration of pathogens into the produce), adding a three-bay sink for efficient triple washes, adding sanitizer to wash water, and keeping hoses sanitary by storing them off of the ground.

Documentation

Four growers strengthened food safety practices by writing SOPs for handling produce and handwashing, developing and using checklists and logging sheets to document cleaning activities, and putting cleaning procedures in place such as those for cleaning harvest totes, bins, sinks, and other food contact surfaces.The impacts of the changes made by participating growers in their produce safety practices at small and medium-sized farms include:

- Improved standardization and implementation of risk-reducing practices.
- Increased ability to meet requirements of retailers, wholesalers, and institutional buyers (like schools and hospitals), resulting in expanded business opportunities.
- Efficient use of inputs (like water and chemicals), preserving soil and reducing runoff and pollution with the result of long-term sustainability of farmland.

The program demonstrates that individualized technical assistance is a powerful driver for practice changes on small farms. While this study measured adoption outcomes rather than direct health results, the increased proper use of sanitizers, redesign of wash pack flow to increase efficiency and prevent cross-contamination, and selection of tools and equipment with hygienic design in mind directly supports the reduction of contamination risks.

Limitations

- **Sample Size and Scope:** The primary project focused on a targeted cohort in New Hampshire and Maine, which may not reflect the full diversity of national produce operations.
- **Self-Selection Bias:** Participating farms were those that voluntarily signed up for produce safety training assistance, potentially representing a group already motivated to change.
- **Evaluation Constraints:** The study relied on observational practice changes and lacked quantitative measures of grower confidence or formal long-term longitudinal follow-up beyond the grant cycle.

Scopes for Future Work

Future research and program development should focus on strengthening the evidence base and expanding the impact of produce safety education in several key areas.

First, there is a clear need for more rigorous evaluation methods that move beyond knowledge gain to measure actual behavior change and on-farm outcomes. This could include observational studies, longitudinal tracking, or the use of validated behavior change frameworks. Integrating these approaches would help clarify which training strategies most effectively reduce food safety risks.

Second, future work should explore how microlearning programs can be integrated into broader educational pathways. For example, aligning Jumpstart modules with formal training programs such as those offered by the Produce Safety Alliance could create a more cohesive learning continuum, supporting growers from initial awareness through full regulatory compliance.

Third, research should examine the role of hybrid models that combine microlearning with hands-on, in-person experiences. Blending the efficiency of short-form digital content with the depth of experiential learning may offer a more comprehensive and effective approach to behavior change.

Conclusion

This study demonstrates that the Jumpstart to Produce Safety program offers a practical, scalable model for advancing produce safety on small and underserved farms through tailored, relationship-based Extension programming. By combining individualized on-farm assessments, customized technical assistance, and peer-to-peer microlearning, the program successfully translated complex food safety concepts into feasible, farm-specific actions.

Across participating farms, measurable improvements were observed in worker hygiene, water management, infrastructure, documentation, and postharvest handling, indicating broad adoption of risk-reduction practices throughout the production system. These changes not only strengthen on-farm food safety but also support growers' ability to meet buyer expectations, improve operational consistency, and enhance long-term farm viability.

Importantly, this work highlights that incremental, low-cost improvements can drive meaningful behavior change when paired with trusted technical support. While the study is limited by its scope and observational design, the consistent adoption of practices across diverse farms suggests strong potential for replication.

Taken together, the findings reinforce the value of Extension-led, farmer-centered approaches that prioritize practicality, accessibility, and trust. Expanding and refining this model, alongside more rigorous evaluation, could further strengthen its impact and contribute to a more resilient and food-safe local and regional food system.

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References

Enderton, A., Johnsen, E., Shaw, A., Deering, A., & Omolo, M. (2024). Comparing the effectiveness of delivery style in produce safety training for growers. *Journal of Food Science, 89*(7), 4551–4562. https://doi.org/10.1111/1750-3841.17100

McGilvery, C., et al. (2025). A systematic literature review of produce safety training research: Do we know what works? *Journal of Food Protection, 88*(5), 100491. https://doi.org/10.1016/j.jfp.2025.100491

Produce Safety Alliance. (2023). *Produce Safety Alliance grower training curriculum*.

U.S. Food and Drug Administration. (2015). *Standards for the growing, harvesting, packing, and holding of produce for human consumption (Produce Safety Rule).* https://www.ecfr.gov/current/title-21/chapter-I/subchapter-B/part-112