

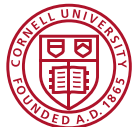


Local Food Safety Collaborative Needs Assessment Survey Report

Elizabeth A. Bihn, Lindsay Springer, and Laura Pineda-Bermúdez

Cornell University, Department of Food Science, Geneva, NY 14456

May 20, 2019



Cornell University

Table of Contents

- Executive Summary** 2
- Section 1: Introduction**..... 5
- Section 2: Scope and Methodology**..... 6
 - Participant Demographics 7
 - Understanding if Local Food Producers are Subject to the FSMA PSR or PCHF rule 13
- Section 3: Results** 16
 - Food Safety Trainings 16
 - Motivations 18
 - Knowledge Acquisition 19
 - Food Safety Practices 21
- Section 4: Local Processors**..... 37
- Section 5: Limitations and Communication Preferences**..... 40
 - Limitations to Implementation of Food Safety Practices for Local Food Producers..... 40
 - Preferred Way to Get New Information 41
 - Communication Preferences..... 41
- Section 6: Conclusions and Recommendations**..... 42
 - Acknowledgements 42
 - References 42
- Appendix**..... 42

Executive Summary

The Local Food Safety Collaborative Needs Assessment Survey was designed to determine the food safety practices, knowledge, barriers, and attitudes of food producers considered local. Since there is no universal definition of “local”, for this survey it was defined as food producers selling all or most of their products within 275 miles of their food operation. Farmers, food processors, and food packers/aggregators were recruited to complete online or paper-based surveys, yielding responses from over 1,000 food producers from across the United States, of which 599 met the definition of local food producers. According to sales and product distribution data, the majority (90%) of the surveyed local food producers are predicted to be exempt from the 2011 Food Safety Modernization Act (FSMA) Produce Safety Rule (PSR), and/or Preventative Control for Human Foods Rule (PCHFR). Among all surveyed local food producers, direct-to-consumer sales accounted for 60% of their average total market, followed by domestic wholesale and small retail entities. Despite being small, local farms reported growing and handling a wide diversity of raw agricultural commodities covered by the FSMA PSR, and were diversified with egg production (30.6%), meat production (24.5%), or animal food production (20.0%). Almost a third (30.7%) of local food producer survey participants identified as food processors, with the majority (81.5%) of this group also identifying as farmers. The ratio of farmer+processor survey participants is likely due to the survey distribution channels of National Farmers Union stakeholders and presents a valuable insight into local value-added processing agricultural businesses. The top produced processing commodities included: jams/jellies, peeled/chopped/dehydrated or frozen goods, and canned products, such as sauces.

Survey results indicate that motivations to learn about food safety are driven by a personal commitment to producing a safe product, followed by reduced liability, and maintaining market access. Local food producers were confident in their ability to assess food safety risks in their operations, despite more than a third of participants indicating that they had not been to any formal food safety training, such as a Good Agricultural Practices or a Produce Safety Alliance grower training. Those that did attend food safety trainings were very likely to implement changes to improve food safety in their food operations and/or use the information gained to make more informed decisions in the future. Among all local food producers, trainings such as ServSafe, food handlers training, and pesticide training were listed frequently by those who cited they had attended “other” food safety trainings. Approximately 71% of survey participants had never experienced a third-party audit or didn’t know if they had one or did not know what a third-party audit was. Over a third of survey takers expressed that they had never performed a self-audit, but would like to.

Interestingly, it was observed that certain questions, particularly those surrounding worker training, were answered as “N/A” or not applicable by local food producers. We hypothesize that this may be result of two phenomena: 1) small, local food businesses may only be run by one person and do not have workers to train, and 2) small, local food businesses may recruit friends, family, and volunteers to help with their operations, but business owners may not consider them as workers or employees.

While it was evident that formal worker training programs were not prevalent among local food producers, documentation of worker training was even more deficient. This lack of documentation trend for worker training stretched to other areas as well. For example, over half of local farmers indicated they were proactive in monitoring wild and domesticated animals in fields via scouting, but very few reported documenting actions to reduce food safety risks due to animals.

Biological soil amendments of animal origin represent a rich source of soil fertilization that is economically beneficial to diverse farming operations, especially those that incorporate egg and meat production. When local farmers responding to the survey utilize biological soil amendments of animal origin on fields, most (71%) apply amendments to fields before the growing season begins while approximately 45% of local farmers may also apply these amendments throughout the growing season. It is unclear whether the FSMA language regarding a “validated process to reduce human pathogens” is fully understood among local farmers since N/A responses to validated process inquiries about soil amendments were prevalent. Efforts to limit cross contamination from tools used to handle biological soil amendments of animal origin (BSAAO) by either using designated tools or cleaning and sanitizing tools that contact BSAAOs is never or only sometimes done by about a third of local food producers.

Survey results indicate that production water sources for local farms are mainly wells and municipal water, in addition to surface water sources such as rainwater catchment systems (as indicated by “other” write-in options). Less than 15% of local farmers reported regularly utilizing surface water sources during the growing season for food production, but it is unclear if local farmers understand what water is surface water. In the survey, “ponds and streams” were used as example sources of surface water, but rainwater catchment was written by farmers in the “other” category, so it appears that some farmers may not think of rainwater catchment as a surface water source. Of the farms that were consistently testing their water sources for generic *E. coli*, only about half were testing more than once per year. Local growers indicated they were aware of the potential sources of contamination of water sources, despite not testing their water frequently.

Respondents indicated postharvest water came predominantly from wells or municipal sources; 94% of local farmers remarked that they never used surface water for postharvest application. When applicable, the majority of local farmers and packers changed their postharvest dump tank water on a schedule, while less than a quarter of survey respondents reported using a sanitizer in their postharvest water, and less than 20% indicated they monitored postharvest water temperature. All local food producers including farmers, packers/aggregators, and processors, were asked about postharvest handling and storing of produce. The majority of survey participants indicated that areas where produce was handled/stored was “always” clean and organized, cleaned and sanitized regularly, with culls/garbage removed daily.

Additional analyses included comparing organic and non-organic farming operations for specific food safety practices. Since organic farms need to meet specific requirements for organic certification, we sought to understand if local organic farmers were employing food safety practices

more frequently than non-organic local farmers. It was found that organic farmers are more likely to be implementing food safety practices involving recordkeeping, wildlife scouting, worker training, and water testing. Organic local farmers were also more likely to use biological soil amendments of animal origin during the growing season, and more frequently indicated that their amendments had gone through a “validated process” to reduce human pathogens compared to non-organic local farmers. Forty six percent of local organic farmers reported they had a written food safety plan, while only 27% of local non-organic farmers reported they had written one. In summary, these results suggest local organic producers are more likely to be FSMA-ready than non-organic local producers, despite no significant difference in third-party audit experience.

Local food processors responded that they were regularly cleaning and sanitizing food contact surfaces to prevent cross contamination. However, less than half of food processors indicated that allergens were clearly labeled on product packaging. This may be the result of the types of products that the surveyed food processors were producing, such as jam/jellies, that may not typically contain one of the 8 major allergens recognized in the United States. Additional inquiries into allergen knowledge and management are encouraged. Only 40% of local food processors are regularly documenting monitored activities during food processing, such as pH or temperature. Slightly less than half of the local food processors have worked with a food processing authority, while about 20% of local food processors have a scheduled process with the FDA.

Local food producers identified top resources to learn new information or acquire a new skill such as websites, written materials, and extension meetings. Among the local food producers at large, barriers to implementing food safety practices were ranked as financial resources, time, and farm/facility infrastructure. However, having a written farm food safety plan seemed to influence farmers’ perceptions about potential barriers and the severity of the limitation. Collectively, farmers who did NOT have a written farm food safety plan (61.8% of local farmers) ranked financial resources, farm infrastructure, and time as their greatest barriers. Those who did have a written farm food safety plan (29.3% of local farmers), ranked perceived barriers as time, financial resources, and ability of labor. Additionally, those with a written farm food safety plan were less likely to select “greatly limiting” when assigning levels to perceived barriers to implementing food safety practices.

Even though formal food safety training/education and worker training programs were not prevalent across local food producers, food safety “information & knowledge” and “the ability of labor” were not among the top listed perceived barriers to implementing food safety practices. The results of this national needs assessment provide evidence and context for the development of new tailored resources for local food producers. A summary of requested resources from local food producers is provided in the [Conclusions and Recommendations](#) section of this report.

Section 1: Introduction

The growing local food movement across the United States is driven by consumers' increasing desire for a better understanding and connection to their food and its origin. According to results from the 2015 Local Food Marketing Practices Survey, U.S. farms sold \$8.7 billion in food directly to consumers, retailers, institutions, and local distributors. This rising sector of the food supply is characterized by small to medium-sized farms, many of which also perform value-added food processing and utilize diversified farming practices, such as raising livestock, to improve business viability (USDA NASS, 2015 Local Food Marketing Practices Survey).

Both food producers and consumers have a vested interest in food safety, though they may not always consider food safety during food production or while purchasing foods. Most Americans assume their food will be safe. Many food producers believe they are innately doing the right thing in terms of food safety. Unfortunately, foodborne illnesses and outbreaks continue to increase. This has led to the FDA developing regulations in an attempt to reduce foodborne illness outbreaks.

The 2011 Food Safety Modernization Act (FSMA) was signed into law and is the most significant food safety regulation since the Food Drug and Cosmetic Act. It outlines a preventative approach to food safety throughout the entire food supply chain. It also represents the first ever federal regulation governing the production of fruits and vegetables as outlined in the *Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption (a.k.a., Produce Safety Rule)*. These requirements include standards for worker health and hygiene, soil amendments, wild and domesticated animals, agricultural water quality, and sanitation practices. As written, the FSMA regulation generally affects producers with expansive distribution networks and annual sales, leaving many local food producers outside of the scope of the rule. Small farm businesses that sell less than \$25,000 of produce on a three-year rolling average, adjusted for inflation, are exempt from the rule, while those making under \$500,000, adjusted for inflation, that have over half of their sales to qualified end-users are eligible for a qualified exemption. While compliance with FSMA regulation may not be required for these operations, the marketplace may require food safety practices that meet the FSMA Produce Safety Rule standards. Given the growing local food movement and the contribution of FSMA-exempt operations to the United States' food supply, understanding the food safety practices and resource needs of those who supply local markets is an important consideration for both public health and economic viability of small food businesses. In addition to understanding food safety in local food systems, enhancing FSMA knowledge and compliance among all exempt small farm businesses serve to support the economic and geographic expansion of these operations as they grow from exempt to covered status.

With these interests in mind, the LFSC survey was designed to address the following research questions:

1. *What is the extent of understanding of FSMA regulation by local food producers?*
2. *What types of food safety trainings have local food producers participated in?*
3. *What food safety practices are currently implemented by local food producers?*
4. *What FSMA related resources are being utilized by local food producers?*
5. *What barriers to FSMA compliance exist for local food producers?*
6. *What types of education and resources are needed or desired?*
7. *How do local food producers prefer to receive information?*

Section 2: Scope and Methodology

The Local Food Safety Collaborative (LFSC) National Needs Assessment Survey was designed to assess a multitude of factors surrounding food safety practices, knowledge, motivations, and barriers among local food producers. In addition to general summary statistics, the survey provides a depth of information to allow more complex analyses of research questions relevant to food safety and local food producers. The Local Food Safety Collaborative Needs Assessment Survey was deemed exempt from review by the Cornell Institutional Review Board for Human Participants, ref: protocol #1706007212, on June 5th, 2017.

The LFSC Needs Assessment Survey was launched on June 20th, 2017 and distributed by LFSC partners and stakeholders. The online platform was designed and delivered in Qualtrics software via Cornell subscription and was provided in both English and Spanish. Because of the complexity of survey logistics to direct specific participants to the applicable questions, the paper version of the survey was reformatted for ease of use, but survey questions were kept consistent with the online version. The data presented in this report combines both the online English and Spanish results with the paper survey results. A total of 1,273 survey participants completed the survey, and of these 82 (or approximately 6.5%) completed the paper survey, with the majority completing the survey online. **Figure 1** shows the national distribution of survey participants as well as by Regional Centers.

Survey participants are identified in three main categories: Farmers, Packers and Aggregators, and Food Processors. Demographic information also includes location by state, the number of participants who attended food safety trainings, participant self-confidence in food safety principles, and their self-identification with USDA groups such as limited resource, woman farmer, and organic.

Businesses can be characterized by gross sales, what they grow/produce, market types, approximate percentage of their sales sold within 275 miles of their business, and if they also produce food for animals. Information regarding recordkeeping practices, third-party safety audits and self-audits of food safety practices was also collected.

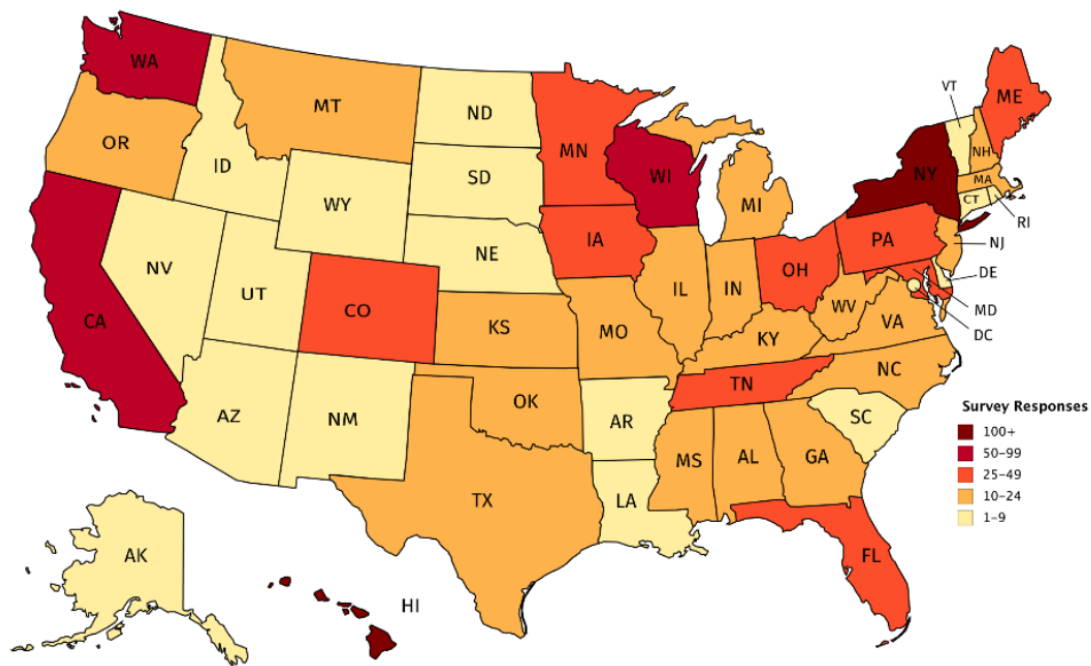
Participant Demographics

Survey participants were asked to identify their food production operation as any of the following four categories:

1. **Farmers:** involve growing and harvesting crops and/or raising animals
2. **Packers:** involve placing produce into containers for sale and is also inclusive of prior activities such as grading, culling, or weighting
3. **Aggregators:** involve collecting produce from many growers, after it has been harvested and packed;
4. **Processors:** involve applying any kind of mechanical or chemical operation to raw foods including chopping, peeling, heating, dehydrating, or freezing.

Survey participants identified themselves as farmers only (48%), with the total majority (89%) being farmers including those having either processing, packing, and/or aggregating operations. The breakdown of total survey participants by type of food production operation appears in [Table 1](#).

Figure 1 – Distribution of Participants by State and Regional Center



Created with mapchart.net ©

Figure 1 Continued

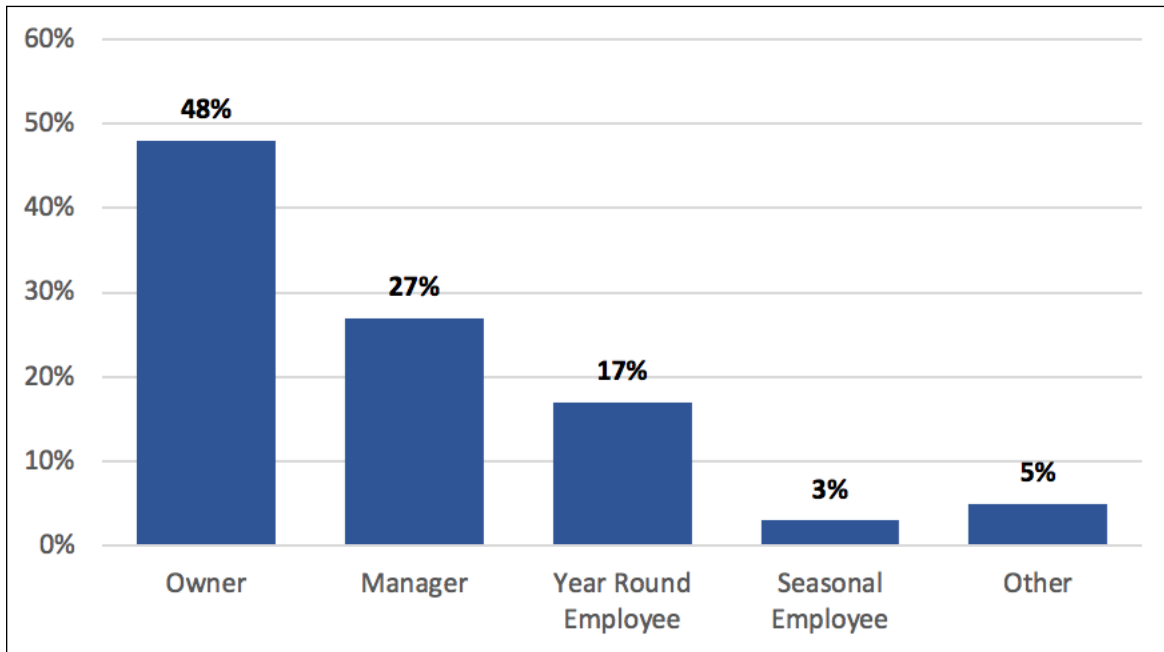
Regional Center	n	%
Northeast Center	341	27%
Southern Center	217	19%
Western Center	381	33%
North Central Center	225	19%
Total	1164	100%

Table 1 – Type of Food Production Operation

Identifier(s)	n	%
Farmer Only	615	48%
Farmer and Processor	94	7%
Farmer and Packer/Aggregator	205	16%
Farmer and Processor and Packer/Aggregator	222	17%
Packer/Aggregator Only	56	4%
Packer/Aggregator and Processor	26	2%
Processor Only	55	4%
Total	1273	100%

Total Farmers	1136	89%
Total Processors	397	31%
Total Packer/Aggregators	509	40%

Figure 2 – Role within the Food Production Operation (n=1771)



As seen in Figure 2 above, the majority of survey takers are owners and/or managers, followed by year-round employees and less than 3% are seasonal employees. Of the survey participants, four out of five (80%) produce food only for people, with approximately 20% producing food for both people and animals. Since the focus of this research concerns food for human consumption, survey participants who indicated that they ONLY produced food for animals were thanked and no further survey questions were asked.

In order to understand the context of specialized food safety challenges that individuals face, questions were given based on the participants self-identified groups: farmer, packer and/or aggregator, and/or processor. For example, the farmers had questions related to what they grow on the farm, whether or not they had a written farm food safety plan, the types of biological soil amendments they are using, concerns about wild and domesticated animals, and information about the agricultural water they use during production. Farmers, packers, and aggregators were asked about postharvest water and postharvest handling practices. Finally, food processors were asked about the processed foods produced and current practices in their food processing facility.

The survey sought to identify farmers that belong to groups recognized with federal USDA classifications. The top three identifiers among local farmers in this dataset are 1) Women Farmers (24%), 2) New and Beginning Farmers (22%), and 3) Limited Resource Farmers (16%); many of participants self-identified with more than one category ([Table 2](#)).

Table 2 – Farmers Self-Identification within USDA Classifications

Identifier(s)	n	% *
Woman Farmer	307	24%
New and Beginning	280	22%
Limited Resource	206	16%
Registered with a Farm and Track #	160	13%
USDA Organic	111	9%
NRCS (Natural Resources Conservation Services) Cooperator	94	7%
Socially Disadvantaged	65	5%
None of these	46	4%
Plain Sect Farmer	15	1%

**percent of total participants*

Defining Local Food Producers

There is no universal definition of local or local food across publications or consumers. FSMA uses a food sale distance of 275 miles as part of a qualification for exemption from some of the Produce Safety Rule (PSR) and so for this report, local is defined as food producers who sell over 50% of their food within 275 miles of their farm or food facility.

The survey participants were asked what percentage of the food they sell within 275 miles of their farm/food facility. A total of 599 out of 704 who responded to this question qualified as local food producers. The distribution of these 599 local food producers by type of food production operation is shown in [Table 3](#). Similar to the overall group of participants, about 19% of local food producers also produced food for animals. It was also observed that many local food producers were diversified operations; 30.6% of local farms supplied eggs in addition to fresh produce; 24.5% of farms also supplied meat in addition to fresh produce. While food business diversification provides a more viable business strategy for small operations, it highlights the complexity of managing food safety practices in these operations.

Table 3 – Local Food Producers by Type of Food Production Operation

Identifier(s)	n	%
Farmer Only	281	47%
Farmer and Processor	42	7%
Farmer and Packer/Aggregator	134	22%
Farmer and Processor and Packer/Aggregator	108	18%
Packer/Aggregator Only	0	0%
Packer/Aggregator and Processor	12	2%
Processor Only	22	4%
Total	599	100%

Total Farmers	565	94%
Total Processors	184	31%
Total Packer/Aggregators	254	42%

Figure 3a – Distribution of Local Food Producer LFSC Survey Participants by State

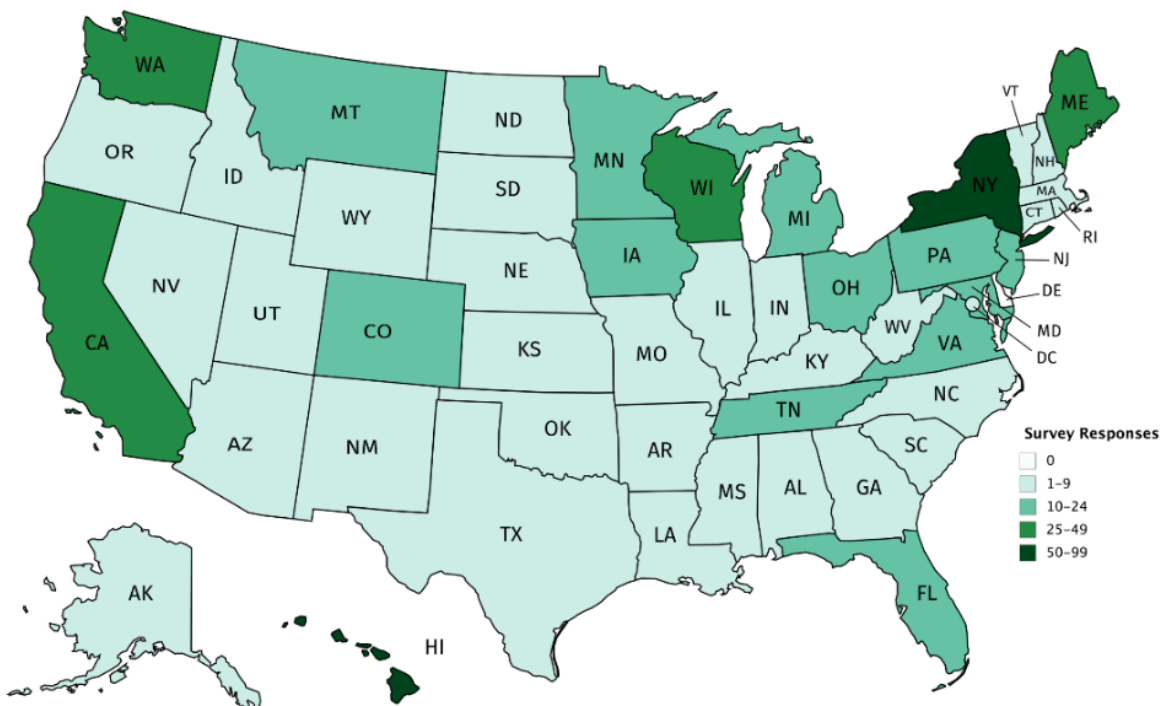
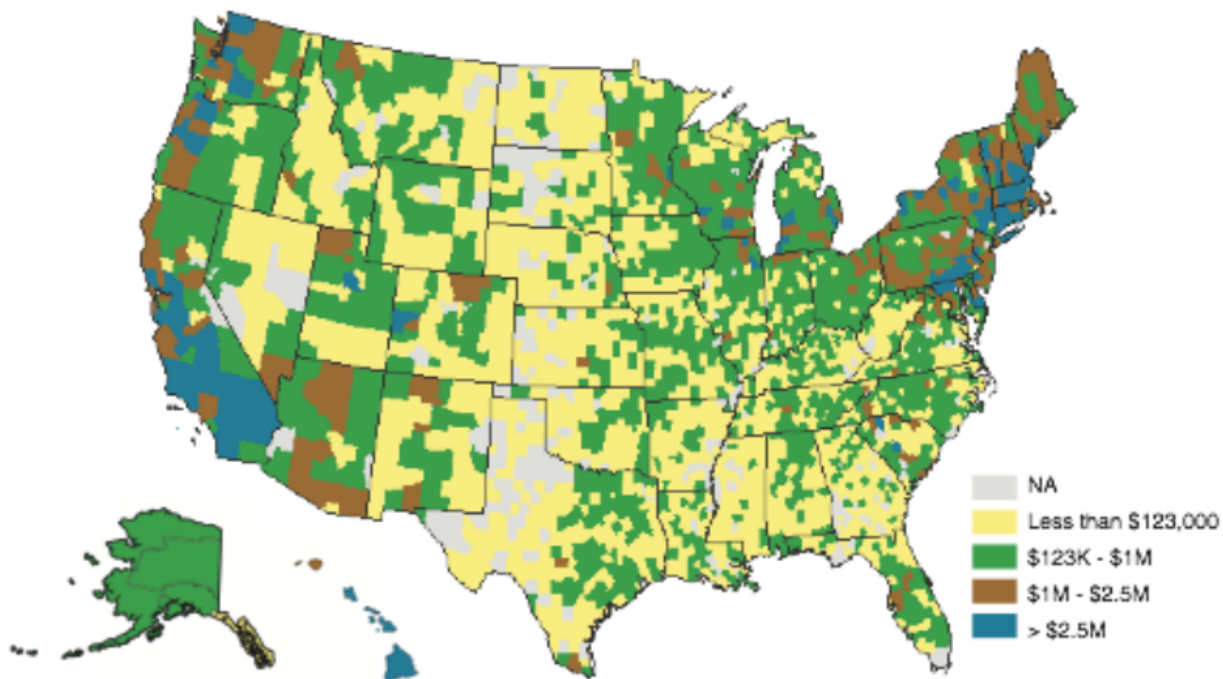


Figure 3b – Density of Direct-to-Consumer Sales (USDA)



Total direct-to-consumer sales, by county.

Source: USDA Economic Research Service, data from Census of Agriculture, 2012

Figure 3a shows the density of survey responses from local food producers throughout the United States. **Figure 3b** is a map from USDA's Trends in Regional Food System Report showing the density of direct-to-consumer sales in 2012. The density of sales aligns well with the distribution map of survey respondents (**Figure 3a**) that fit the definition of local food producers. For the majority of the United States, these sales play a significant economic role at the county-level. This trend is reflected in the survey data, shown in **Table 4**, as approximately 60% of local food producers' sales are direct-to-consumer. This direct-to-consumer market majority agrees with previous local food producer reports (Martinez et al, 2010).

Though the direct-to-consumer category was the largest market by far, local food producers are also selling into wholesale markets (14%), to retail (11%), and to many other markets. This highlights the importance of local food producers understanding and implementing food safety practices, because they are engaged in all market distribution channels.

Table 4 – Local Food Producers’ Main Markets

Market	Mean (%)	n
Direct to Consumer	60.4	596
Wholesale (domestic)	13.5	592
Small retail entities (specialty food shops, restaurants)	11.4	599
Aggregate entities (such as food hubs, cooperatives, produce auctions)	3.5	596
Other	3.4	598
Regional or national food suppliers (grocery stores or wholesale clubs)	2.7	599
Processors	2.6	599
Emergency food assistance providers (food banks, meal programs, distribution providers)	1.6	598
Direct to institutions (such as hospitals, prisons, child care)	0.8	596
Online/catalog/mail order	0.3	599
Export-Wholesale or direct buyer outside the United States	0.3	599
USDA foods - commodity program	0.1	599

Understanding if Local Food Producers are Subject to the FSMA PSR or PCHF rule

In order to understand if local food producers were subject to FSMA PSR, we inquired about the types of produce grown, gross sales, and geographic range of produce sales. As it was discussed previously, local food producers are defined as those who sell over 50% of their food within 275 miles of their farm or food facility, which is one of the 3 criteria to meet for a FSMA PSR exemption. The FSMA Produce Safety Rule (PSR) does not cover crops that are rarely consumed raw, so farmers growing those crops exclusively are **not** subject to the PSR. Survey participants were asked to select which crops or commodities they grew or supplied to determine if they were growing covered commodities. Participants were allowed to select as many commodities as applicable. The top commodities are listed in [Table 5](#).

Table 5 – Distribution of Top Commodities – Local Food Producers (n=599)

Commodity	n	%
Tomatoes	337	56%
Herbs (sage, cilantro, parsley, etc.)	306	51%
Salad greens (lettuce, spinach, etc.)	302	50%
Peppers (bell, chili, etc.)	302	50%
Cucumbers	299	50%
Cooking greens (kale, bok choy, collards, etc.)	294	49%
Summer squash or zucchini	287	48%
Carrots or radishes	286	48%
Garlic, onion, celery, scallions	286	48%
Winter squash or pumpkin	285	48%
Beets, parsnips, rutabagas, turnips	281	47%
Fresh market beans (green, wax, etc.)	251	42%
Potatoes or sweet potatoes	244	41%
Broccoli or cauliflower	238	40%
Brussels sprouts, eggplant, okra	217	36%
Bush berries (raspberries, blueberries, blackberries, etc.)	198	33%
Tree fruits (apples, pears, cherries, etc.)	190	32%
Corn or sweet corn	185	31%
Eggs	183	31%
Melons (honeydew, watermelon, cantaloupe, etc.)	178	30%
Strawberries	147	25%
Meat	147	25%
Rhubarb	137	23%
Asparagus	129	22%
Dry beans, peas, lentils	120	20%
Other***	93	16%
Grapes (table grapes, wine grapes)	62	10%
Dairy (milk)	53	9%
Tree nuts (almonds, pecans, etc.)	51	9%
Grains (barley, wheat, spelt, etc.)	49	8%
Hops	26	4%
Cranberries	9	2%

Table 6 – Distribution of Processed Foods – Local Food Producers (n=599)

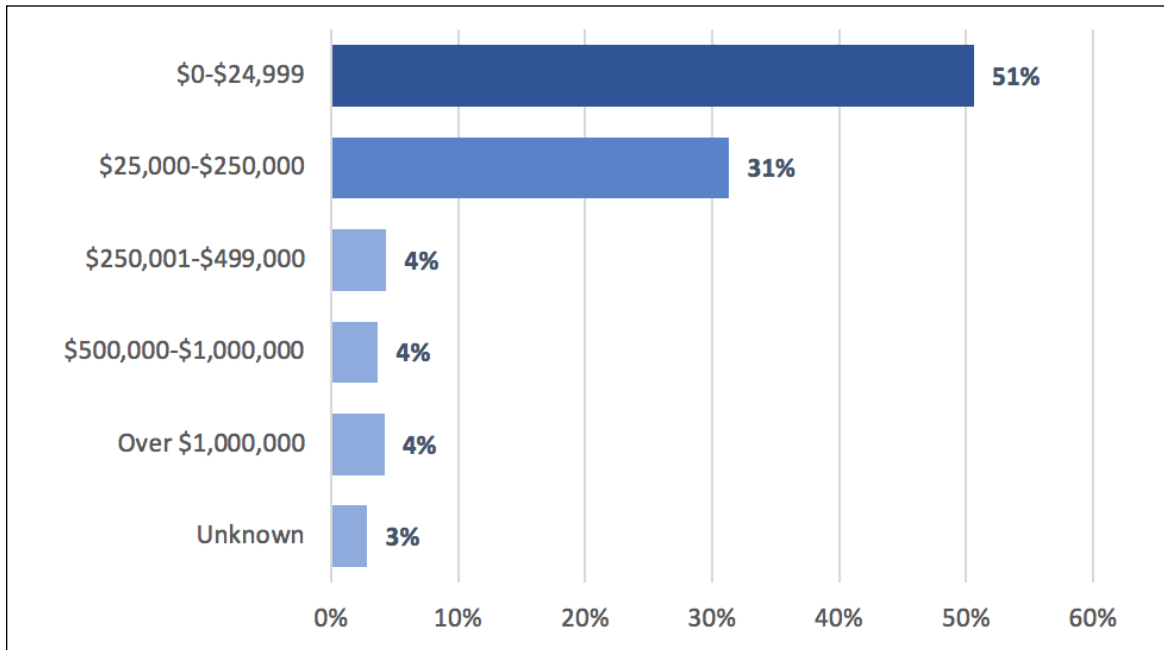
Commodity	n	%
Jams, jellies	72	15%
Peeled, chopped, dehydrated or frozen products	50	11%
Canned goods (sauces, etc.)	46	10%
Pickled vegetables	44	9%
Other***	43	9%
Pies, cakes, breads, other baked goods	40	8%
Dry goods (dip mixes, soup mixes, seasoning packets, etc.)	33	7%
Honey	31	7%
Fermented foods (such as sauerkraut)	27	6%
Cheese	25	5%
Juice	23	5%
Fermented beverages (beer, wine, cider, etc.)	16	3%
Maple syrup	12	3%
Jerky	8	2%
Pickled eggs	6	1%

Figure 4 represents the distribution of gross annual sales for local producers. Any food producer whose three-year average gross sales of produce is less than \$25,000 annually (adjusted for inflation) is also exempt from the FSMA PSR. This represents slightly more than one out of two survey participants (51%; see **Figure 4**). Those that sold over \$25,000 but less than \$500,000 in annual sales, which includes approximately 31% of respondents, would be considered qualified exempt from the FSMA PSR given their identified distribution of product within 275 miles of their farm or facility. Since the survey did not ask about in-state vs. out-of-state distribution, some qualified exempt food producers who are distributing beyond 275 miles but in the same state are not represented here. About 8% of the local farmers and packers responding would be subject to the full rule for covered produce (PSR) based on sales (over \$500,000 in food sales).

For those who produce processed foods, the local food producers were asked to select which processed foods they produced. The foods are listed in Table 6 above. It is worth noting that some of those who produce processed foods could be subject to the FSMA Preventive Controls for Human Foods (PCHF) Rule. Food processors may qualify for the modified requirements of the Preventive Controls for Human Foods Rule based on annual sales of human food or a combination of sales and qualified end users. This survey did not differentiate sale of food for humans vs. animals, only collective gross food sales, and thus the exact number of processors qualifying for the modified

rule was not able to be calculated. As an estimate from the available data, assuming the reported gross sales are for human food, about 90% of local food producers that identified as food processors would qualify for the modified requirements.

Figure 4 - Distribution of Gross Annual Sales for Local Food Producers (n=597)



Section 3: Results

Food Safety Trainings

Within the past five years, the top food safety programs that have been attended by local food producers are Good Agricultural Practices (GAPs) (44%), trainings through the local Extension Office (36%), and other types of training (28%). ServSafe and other food handler trainings, as well as pesticide training, were most often cited by those who indicated “I have participated in another type of training.”

Table 7 - Attendance of Any Food Safety Training

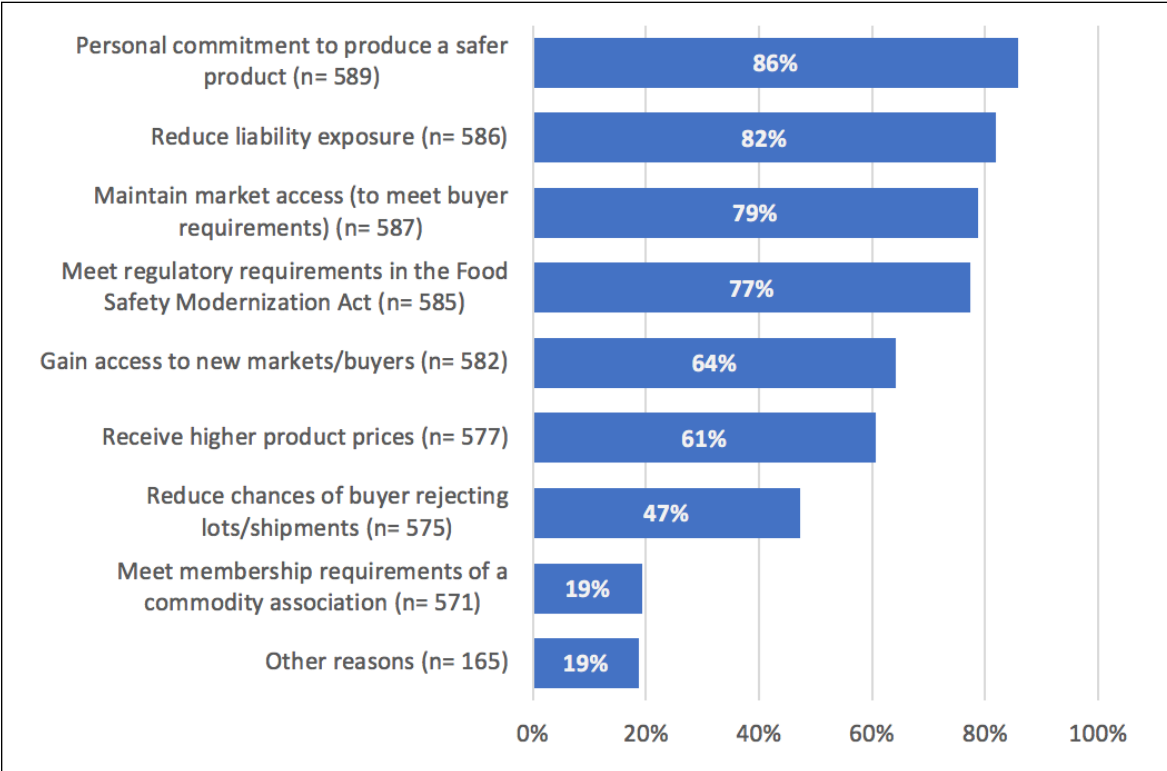
Type of Training	Within past 2 years	2 and 5 years ago	5+ years ago	Never	n
Good Agricultural Practices (GAPs) training	27.9%	16.2%	3.6%	52.3%	555
Produce Safety Alliance (PSA) Grower Training	13.0%	1.4%	1.2%	84.5%	515
Sprout Safety Alliance Training	0.8%	0.2%	0.0%	99.0%	497
Family Farmed Wholesale Success	3.2%	4.4%	0.2%	92.3%	503
Family Farmed On-Farm Food Safety Project	3.2%	2.6%	0.2%	94.0%	497
Food Safety Trainings through my local Extension Office	25.8%	10.5%	6.0%	57.7%	532
Basic HACCP Training	10.2%	7.7%	4.4%	77.7%	519
Juice HACCP Training	0.8%	0.8%	1.2%	97.2%	493
Seafood HACCP	0.6%	0.2%	0.4%	98.8%	491
Food Safety Preventive Controls Alliance (FSPCA) Trainings	5.0%	1.8%	0.6%	92.6%	497
Better Process Control School	1.8%	2.4%	0.8%	95.0%	499
Good Manufacturing Practices (GMP) Training	7.5%	3.6%	2.6%	86.4%	506
Safe Quality Food (SQF) Training	3.0%	2.2%	1.8%	93.0%	500
British Retail Consortium (BRC) trainings	0.2%	0.4%	0.0%	99.4%	497
I have participated in another type of training	20.6%	7.0%	5.4%	67.0%	315

Motivations

When asked for the motivations behind learning about food safety, the top four categories of importance for the majority of local food producers were: personal commitment to producing a safer product (86%); reducing liability exposure (82%); maintaining market access to meet buyer requirements (79%); and meeting regulatory requirements in the Food Safety Modernization Act (77%) (Figure 5). Several other reasons were also important to participants, including gaining new markets, receiving higher prices, and preventing loads from being rejected.

Open-ended responses for “other” about motivations for learning about food safety primarily center around responsibility to themselves, their families, their consumers, and access to the market. Producers focus on having a safe, healthy product for consumption, especially if their main markets are comprised of local and susceptible populations like schools or hospitals, and although there are liability concerns, they pride themselves in having a high-quality product. The other side of this issue is that there are high market standards and in order to have access to those markets, they need to meet the high standards for food safety, or else their family and businesses’ survival is on the line. The last major motivation was their responsibility to the environment to reduce their carbon footprint by selling to local markets and adopting practices that are beneficial to the natural environment around them. These responses all highlight the myriad of reasons why implementing food safety practices are important to food producers.

Figure 5- Motivations to Learn About Food Safety



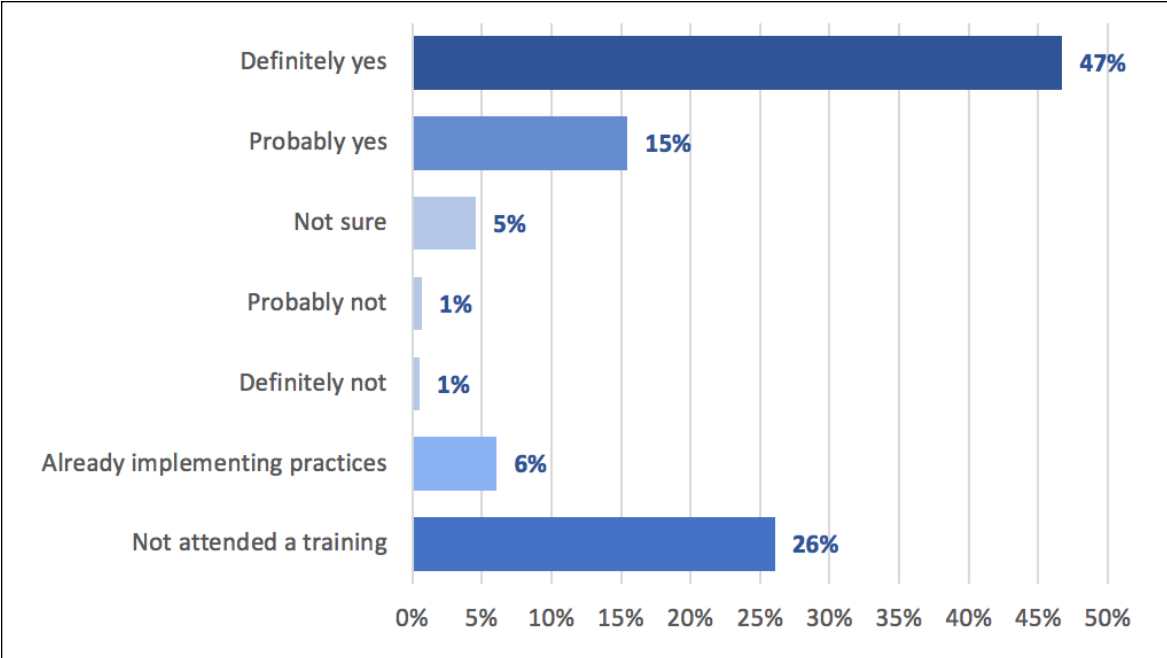
Knowledge Acquisition

Implementing Food Safety Practices As a Result of Trainings

Of the local food producers who attended a food safety training, 47% reported they planned to implement food safety practices as a result of attending a training (**Figure 6**). The second biggest category, nearly one out of 4 (26%) local food producers, was made up of survey respondents who had never attended a food safety training. Of the people who responded, only 2% felt that they definitely would not or probably would not implement practices as a result of training. There were 36 respondents, 6%, who were already implementing the necessary food safety practices before the training. About 5% of local food producers were unsure of how they could use the information learned. It is encouraging to see that once food producers attend a training, they begin to implement practices. This aligns with an earlier study that surveyed growers after they had attended a GAPs training (Bihn et al, 2013).

Even though many local producers do implement practices after attending a training, there still remain challenges. Survey respondents listed several reasons for not being likely to implement food safety practices. Some local food producers felt the practices were onerous, pesky and not applicable, while some did not feel it necessary to implement them unless regulation forced their operation to do so. Another consideration is the perceived financial burden placed on the local food producers if the food safety practices were adopted.

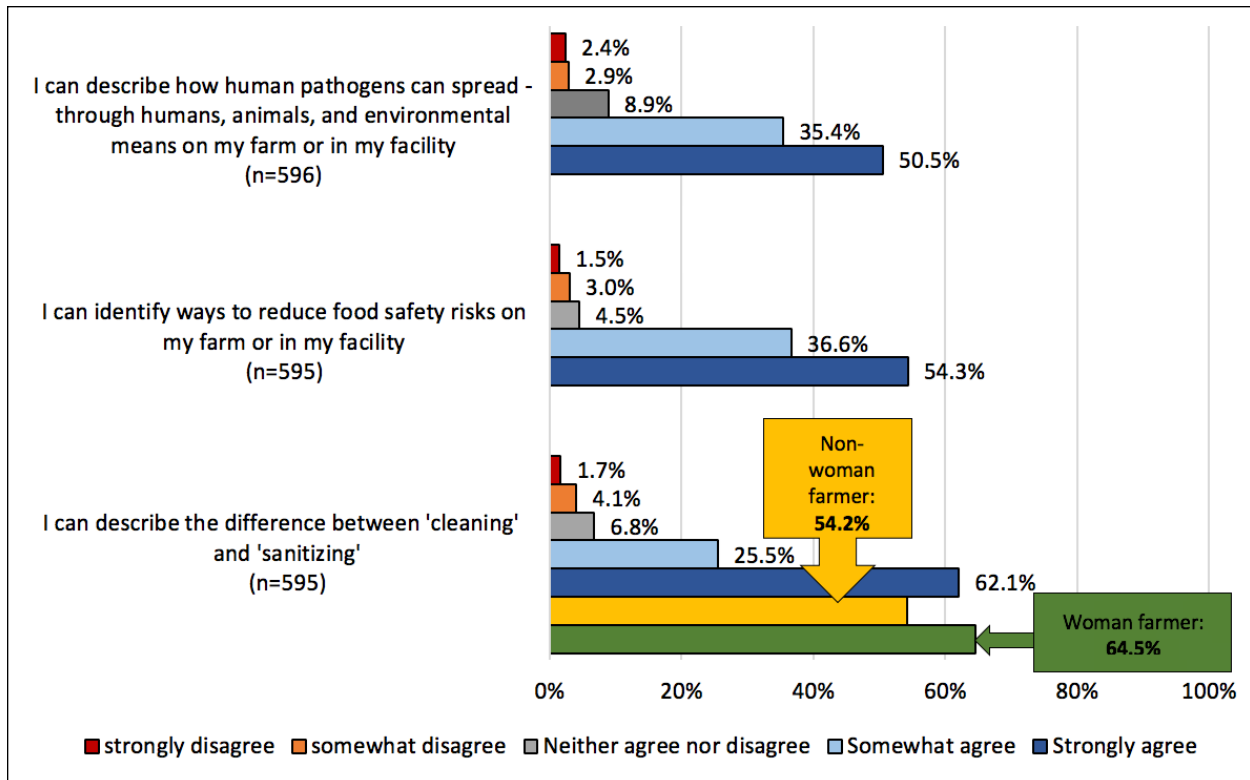
Figure 6 – Plan to Implement Food Safety Practices as a Result of Training (n=595)



Understanding Food Safety Principles

Despite less than 50% of respondents saying they have attended any produce safety training (Table 7), the majority of local food producers felt confident in their ability to identify how human pathogens spread (86%), how to reduce food safety risks (90%), and in their ability to describe the difference between ‘cleaning’ and ‘sanitizing’ (88%). This is one of the most perplexing results of the survey. Within this data set, there is also gender disparity in the reported understanding of these terms between man and woman farmers; woman farmers report a greater understanding of food safety principles compared to man farmers (65% vs. 54% respectively) (Figure 7).

Figure 7 – Understanding Food Safety Principles



Food Safety Practices

Worker Health and Hygiene

More than half (~62%) of local food producers reported they always provided adequate restroom and handwashing facilities for workers and visitor (Table 8). A few of the questions dealt with trainings, which a large percentage of local food producers have not attended. This could explain the large number of “not applicable” responses. Another possible explanation for this large number of responses is an uncertainty surrounding the term ‘training’.

Table 8 – Worker Health and Hygiene

	Always	Most of the Time	Sometimes	Never	Unsure	N/A	n
Workers and visitors are provided with adequate restroom and hand washing facilities	61.8%	7.9%	3.7%	2.2%	1.5%	22.8%	592
Food safety training is provided in a language that workers understand	40.5%	5.6%	3.5%	4.1%	1.4%	45.0%	593
Food safety trainings are provided for all workers	26.7%	12.4%	11.9%	7.1%	1.7%	40.2%	595
There is a system of monitoring in place to ensure food safety practices are completed	24.8%	15.8%	11.7%	12.0%	7.0%	28.8%	590
Visitors are made aware of our food safety policies	23.1%	14.8%	17.2%	9.8%	3.5%	31.5%	593
Records are kept for all food safety trainings	22.1%	8.1%	9.3%	15.4%	3.9%	41.3%	593

Due to the significant number of respondents who answered not applicable (“N/A”) to this question, additional analysis was conducted to see if the N/A responses were more common in smaller farms. The results (Table 9) show that the very smallest farms (0-\$24,999) make up the majority of N/A responses. It is not possible to know exactly why they responded this way, but it is noteworthy for future efforts. It may be that on small farms that are one farm owner/operator, there are not additional workers that need trained so N/A is a reasonable response. It may also be that on smaller farms the work force is comprised mostly of family or close friends. In listening sessions with growers, they have expressed discomfort with discussing hygiene expectations with family and friends, as growers feel it is insulting to their family and friends to suggest they do not know how to wash their hands or that they are “dirty” in some way. This may provide an opportunity to help growers develop training programs for audiences where these types of concerns are present.

**Table 9 – Worker Training/Health and Hygiene:
All those who Responded N/A to the Questions, by Income Level**

	\$0- \$24,999	\$25,000- \$250,000	\$250,001- \$499,999	\$500,000- 1,000,000	Over \$1,000,000	I prefer not to answer	Unknown	Total n (by question)
Workers and visitors are provided with adequate restroom and hand washing facilities	106	19	1	3	2	3	2	135
Food safety training is provided in a language that workers understand	187	54	3	4	9	6	9	267
Food safety trainings are provided for all workers	176	43	2	3	7	5	7	239
There is a system of monitoring in place to ensure food safety practices are completed	124	30	2	2	5	4	5	170
Records are kept for all food safety trainings	172	48	3	3	9	6	9	245
Visitors are made aware of our food safety policies	135	33	4	2	6	4	6	187

It was suggested by the LFSC Steering Committee that some data be analyzed to see if organic local food producers responded differently from those that did not self-identify as organic. Since organic farms need to meet specific requirements for organic certification, we sought to understand if local organic farmers were employing food safety practices regarding worker health and hygiene more frequently than non-organic local farmers. This section compares local organic farmers and local non-organic farmers and chi-square analyses show statistically significant differences between the two groups in a number of areas related to health and hygiene practices (Table 10). Organic local farmers reported always providing workers and visitors with restroom and handwashing facilities 73.9% of the time, while those not identifying as organic reported 57.5%. Organic local farmers reported always providing food safety training in a language that workers understand (60.4%), but only about half as many non-organic local farmers do so (34.6%).

Table 10 – Comparing Local Organic and Non-organic Farmers’ Worker Health and Hygiene

Worker Health & Hygiene	Always (%)		Most of the time (%)		Sometimes (%)		Never (%)		Unsure (%)		N/A (%)		n	
	Organic	Non	Organic	Non	Organic	Non	Organic	Non	Organic	Non	Organic	Non	Organic	Non
Workers and visitors are provided with adequate restroom and hand washing facilities	73.9*	57.5*	9.9	7.8	0.9	4.7	0.9	2.7	3.6	1.1	10.8	26.2	111	447
Food safety training is provided in a language that workers understand	60.4*	34.6*	7.2	5.1	5.4	2.9	2.7	4.5	0.9	1.3	23.4	51.6	111	448
Food safety trainings are provided for all workers	32.4	24.9	23.4*	9.6*	17.1*	10.2*	5.4	8.0	0.9	1.8	20.7	45.6	111	450
There is a system of monitoring in place to ensure food safety practices are completed	31.8*	21.3*	22.7*	13.9*	10.0	12.1	10.9	13.2	9.1	6.7	15.5	32.7	111	446
Records are kept for all food safety trainings	27.9	20.1	10.8	7.6	11.7	7.8	19.8	15.0	6.3	3.1	23.4	46.4	111	448
Visitors are made aware of our food safety policies	25.2	20.3	19.8	13.8	20.7	17.0	9.9	10.3	1.8	4.0	22.5	34.6	111	448

*Statistically significant differences, $p < 0.01$

This trend continued when asking organic local farmers about a system of monitoring in place to ensure food safety practices are completed; organic local farmers reported “always” and “most of the time” significantly more often than non-organic local farmers. Local organic farmers were also more likely to provide food safety training for all workers, though it was only significantly different in the “most of the time” and “sometimes” categories.

When asking local producers about practices related to wild and domesticated animals, the practices that are done “most of the time” or “always” include monitoring for signs of animal intrusion (65%) and acting to reduce food safety risks introduced by animals on the farm (73%) (Table 11). In terms of documenting actions, 38% of respondents never document the actions they take to reduce food safety risks from animals.

Table 11 – Farm Practices Regarding Wild and Domesticated Animals

Practice	Always	Most of the Time	Sometimes	Never	Unsure	N/A	n
Action is taken to reduce food safety risks introduced by animals on my farm.	39.7%	22.3%	12.5%	6.7%	3.6%	15.2%	552
Fields are monitored for signs of animal intrusion including trampling, rooting, feeding, tracks, and feces	38.8%	26.5%	15.4%	5.7%	1.3%	12.3%	559
Domesticated animals, such as dogs and cats, are kept out of my fields and food production/postharvest handling/processing areas	33.3%	26.8%	13.1%	13.4%	2.5%	10.9%	559
Fields are actively assessed before harvest to determine if there is significant risk of fecal contamination from animals	32.7%	16.9%	12.2%	15.8%	3.6%	18.7%	556
Actions to reduce food safety risks from animals on my farm are documented	12.1%	9.9%	12.5%	38.4%	6.1%	20.9%	554

Local producers were asked to share their use of biological soil amendments of animal origin on their farm. Table 12 shows the practices for those local producers. More than half of survey respondents (54%) reported that they (“always” or “most of the time”) store biological soil amendments of animal origin in a place that minimizes amendment runoff. Of the local producer respondents, 41.2% apply biological soil amendments to farm fields before planting “most of the time” or “always”. Thirty eight percent of the local producers never apply biological soil amendments to farm fields during the growing season. Efforts to limit cross contaminating biological soil amendments of animal origin from tools by either using designated tools or cleaning and sterilizing tools that contact biological soil amendments of animal origin is never or only sometimes done by about a third of local food producers.

Table 12 – Use of Biological Soil Amendments of Animal Origin

Practice	Always	Most of the Time	Some-times	Never	Unsure	N/A	n
Biological soil amendments of animal origin are applied to farm fields before planting	17.3%	23.9%	29.4%	14.3%	0.9%	14.3%	561
Biological soil amendments of animal origin are applied to farm fields during the growing season	7.0%	8.1%	30.2%	38.4%	1.8%	14.5%	557
The compost or other treated biological soil amendments that are applied to farm fields have undergone a validated process to reduce human pathogens	25.6%	7.3%	7.2%	20.4%	14.3%	25.2%	559
Biological soil amendments of animal origin are stored in a place that minimizes amendment runoff/leeching	38.8%	14.6%	6.9%	7.1%	5.7%	26.9%	562
Tools, such as shovels, that contact untreated biological soil amendments are cleaned and sanitized after use to prevent cross contamination	18.0%	9.9%	15.3%	20.0%	6.3%	30.6%	556
Certain tools, such as shovels, are used exclusively for biologic soil amendments of animal origin	18.2%	10.4%	8.6%	24.8%	8.5%	29.5%	556

Since organic farms need to meet specific requirements for organic certification, we sought to understand if local organic farmers were employing food safety practices regarding biological soil amendments of animal origin more frequently than those that did not identify as organic local farmers; chi-square analyses showing statistically significant differences between the two groups are detailed in this section. A significantly larger percent of local organic farmers “always” use biological soil amendments of animal origin as compared to local non-organic farmers. Whereas 60.4% of all local organic farmers “always” store biological soil amendments in a place that minimizes runoff and leeching, and more than half (56.8%) ensure that soil amendments have undergone a process to reduce human pathogens, only one-third (33.5%) and less than one-fifth (17.9%) of local non-organic farmers “always” follow these two practices ([Table 13](#)).

Table 13 – Comparing Local Organic and Non-organic Farmers’ use of Biological Soil Amendments of Animal Origin

Practice	Always (%)		Most of the time (%)		Sometimes (%)		Never (%)		Unsure (%)		N/A (%)		n	
	Organic	Non	Organic	Non	Organic	Non	Organic	Non	Organic	Non	Organic	Non	Organic	Non
Biological soil amendments of animal origin are stored in a place that minimizes amendment runoff/leeching	60.4*	33.5*	12.6	15.1	7.2	6.9	0.9	8.6	0.9	6.9	18.0	29.0	111	451
The compost or other treated biological soil amendments that are applied to farm fields have undergone a validated process to reduce human pathogens	56.8*	17.9*	9.0	6.9	3.6	8.0	5.4	24.1	13.5	14.5	11.7	28.6	111	448
Tools, such as shovels, that contact untreated biological soil amendments are cleaned and sanitized after use to prevent cross contamination	31.8*	14.6*	12.7	9.2	10.9	16.4	16.4	20.9	5.5	6.5	22.7	32.5	110	446

*Statistically significant differences, $p < 0.01$

Table 13 Continued

Practice	Always (%)		Most of the time (%)		Sometimes (%)		Never (%)		Unsure (%)		N/A (%)		n	
	Organic	Non	Organic	Non	Organic	Non	Organic	Non	Organic	Non	Organic	Non	Organic	Non
Certain tools, such as shovels, are used exclusively for biologic soil amendments of animal origin	23.4	16.9	11.7	10.1	9.9	8.3	25.2	24.7	4.5	9.4	25.2	30.6	111	445
Biological soil amendments of animal origin are applied to farm fields before planting	18.0	17.1	31.5*	22*	36.9	27.6	7.2	16.0	0.0	1.1	6.3	16.2	111	450
Biological soil amendments of animal origin are applied to farm fields during the growing season	9.1	6.5	11.8	7.2	41.8*	27.3*	31.8	40.0	0.0	2.2	5.5	16.8	110	447

*Statistically significant differences, $p < 0.01$

Pre-Harvest Water Practices

When asked about pre-harvest water, 55% of local farmers were confident of their awareness of potential sources of contamination of their surface or well-water sources; of the 553 respondents, 38% were “always” aware, 17% were aware “most of the time”, 9% were “sometimes” aware, only 5% were “never” aware (Table 14). Although 9% were “sometimes” aware, only 5% were “never” aware. However, as many as 11% were unsure. About a third of respondents are testing for generic *E. coli* more than once per growing season. Most local farms are using well or municipal waters for agricultural production, whereas surface water sources, such as ponds or streams, are less commonly used for producing fruits and vegetables. As noted earlier, there were many respondents to these questions that chose “N/A”. This may be related to types of water sources as the percentage of respondents using municipal water were about the same number answering “N/A” on testing, perhaps because they know the municipality is doing the testing. If you are not testing, specific questions related to generic *E. coli* become moot.

Table 14 – Production Pre-Harvest Water

	Always	Most of the Time	Sometimes	Never	Unsure	N/A	n
I am aware of potential sources of contamination of my surface or well waters	38%	17%	9%	5%	11%	21%	553
The quality of production water is monitored through laboratory testing for generic <i>E. coli</i>	34%	6%	14%	21%	8%	17%	555
Well water is used on the farm for producing fruits and vegetables	33%	11%	16%	22%	0%	18%	558
Municipal water is used on the farm for producing fruits and vegetables	18%	3%	11%	43%	1%	23%	554
Production water is tested for generic <i>E. coli</i> more than once per growing season	17%	4%	10%	38%	10%	20%	553
Surface water sources, such as ponds or streams, are used for producing fruits and vegetables	7%	6%	11%	51%	1%	24%	557

Post-Harvest Water and Handling Practices

A majority of postharvest water sources for local producers come from well or municipal sources (Table 15). Of local producer respondents, 79% said they never use surface water in postharvest activities, but 23% responded “N/A” and there are a small percentage of respondents using surface water “always”, “most of the time” or “sometimes”. The concern about use of surface water is that it is high risk if it is not treated. Forty two percent of respondents said their postharvest water tests showed no detectable generic *E. coli* with only 18% always use a sanitizer when using a dump tank or tub of water to rinse produce. Of local producer respondents, 40% change the water on a schedule or manage the water to prevent the buildup of organic material when using a dump tank or tub of water to rinse produce and 12% always monitor the temperature of the water when using a dump tank or tub of water to rinse produce. Both of these are important as they are requirements outlined in the FSMA PSR so it is good to know if local food producers have these practices in place.

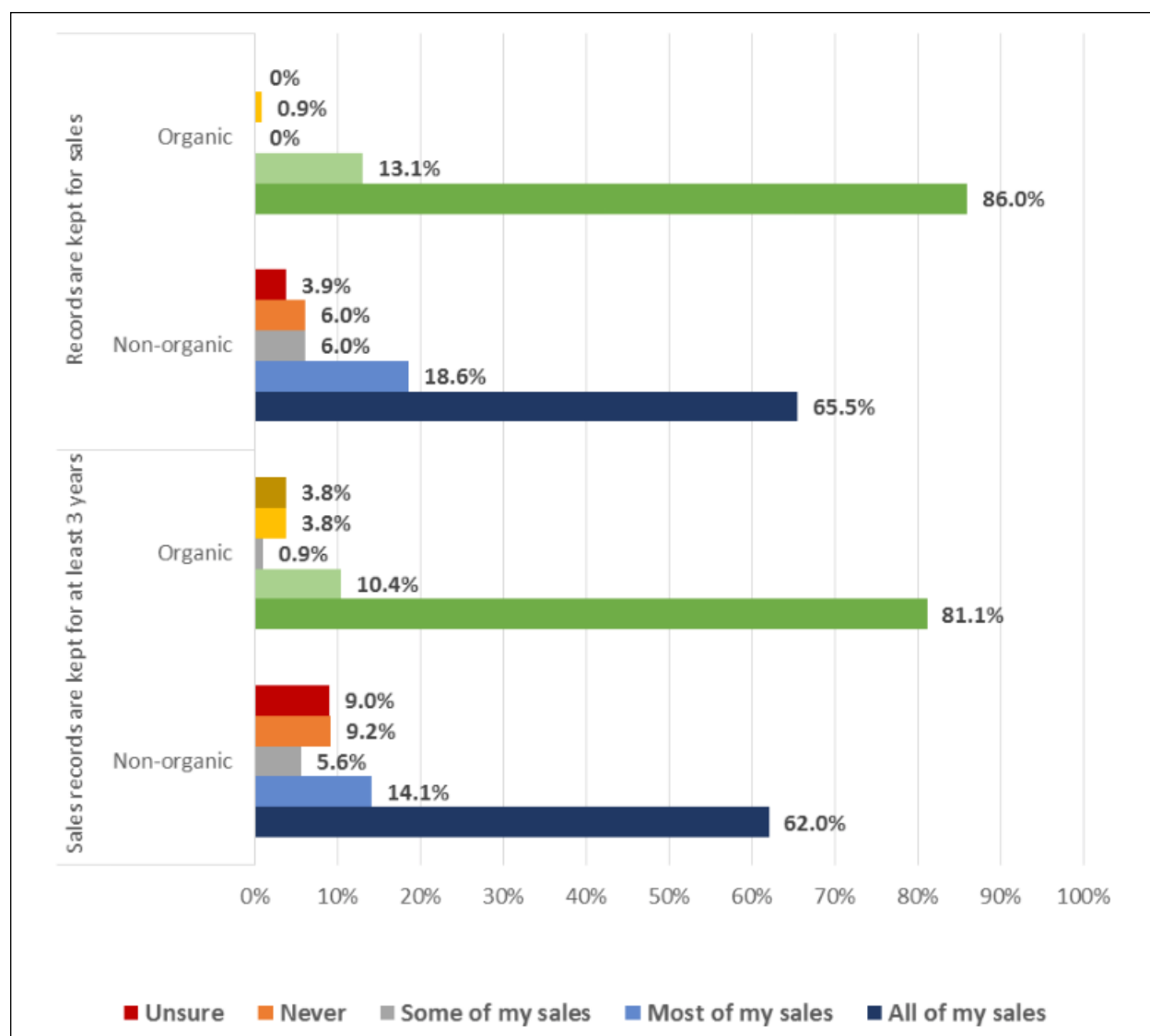
Table 15 – Post-Harvest Water and Handling

	Always	Most of the Time	Sometimes	Never	Unsure	N/A	n
The water used comes from a municipal water supply	29%	2%	4%	43%	1%	21%	570
The water used comes from surface water (ponds, streams, rivers)	1%	1%	3%	72%	0%	23%	571
The water used comes from a well source	46%	4%	5%	27%	0%	18%	572
Lab tests show that the postharvest water contains no detectable generic <i>E. coli</i>	42%	4%	2%	6%	13%	34%	570
When using a dump tank or tub of water to rinse produce, sanitizers are added to the water to prevent cross contamination	18%	6%	9%	21%	5%	42%	570
When using a dump tank or tub of water to rinse produce, the temperature of the water is monitored	12%	7%	8%	27%	6%	40%	568
When using a dump tank or tub of water to rinse produce, the water is changed out on a schedule or managed to prevent a buildup of material	40%	9%	5%	4%	2%	40%	571

Recordkeeping

When asked about recordkeeping, 70% of local food producers keep a record of all of their sales with 66% keeping all of their sale records for at least three years (Figure 8). A majority of local organic farmers (86%) keep sales records for all their sales, and 81% keep all of them for at least 3 years. In comparison, only 65.5% of local non-organic farmers keep records for all of their sales, and only 62% keep all of them for at least 3 years. Again, it highlights that local organic producers may be more prepared to meet regulatory expectations.

Figure 8 – Comparing Local Organic and Non-organic Farmers’ Record Keeping



Organic: n = 107 records kept for sales; n = 106 sales records are kept for at least 3 years
 Non-organic: n = 415 records kept for sales; n = 411 sales records are kept for at least 3 years
 No statistically significant differences found between organic and non-organic farmers

When local food producers were asked about having a written farm food safety plan, 61.8% responded no. Only 30% of local food producers had a written farm food safety plan (Figure 9). Those who reported “I prefer not to answer” were not included in the calculations. Further analysis was done to compare organic producers to non-organic producers since organic producers reported keeping records more often, so it warranted checking to see if this extended to having a farm food safety plan as this could be viewed as a type of recordkeeping. Local organic producers do report having a written farm food safety plan more than local non-organic producers and the difference was statistically significant (Figure 10).

Figure 9 – Written Farm Food Safety Plan (n=539)

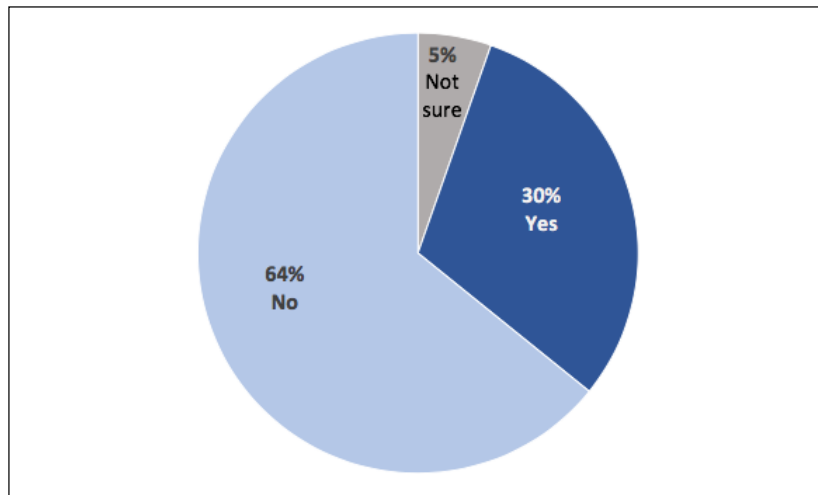
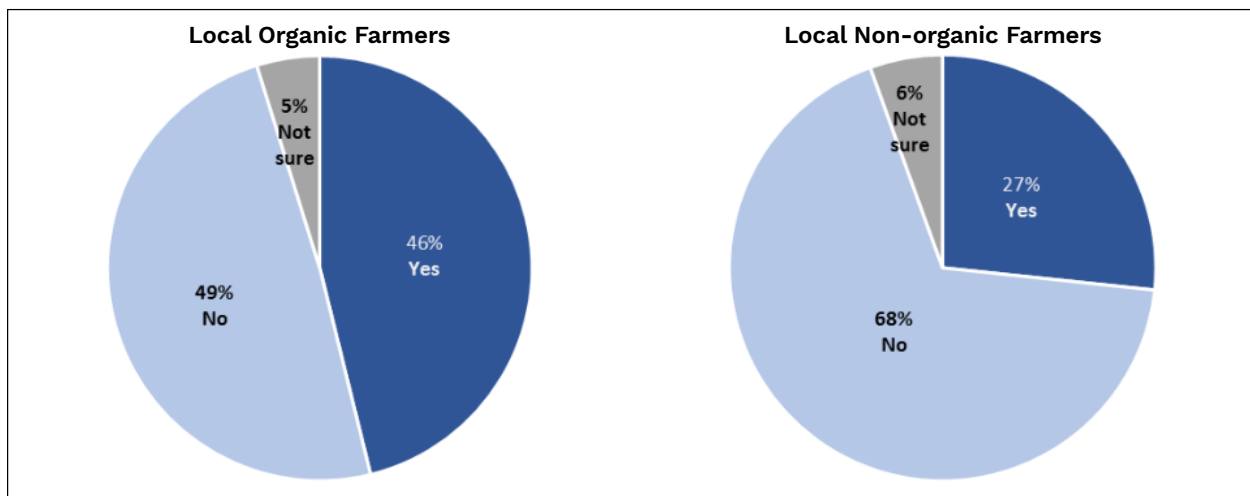


Figure 10 – Comparing Local Organic and Non-organic Farmers’ Written Farm Food Safety Plan



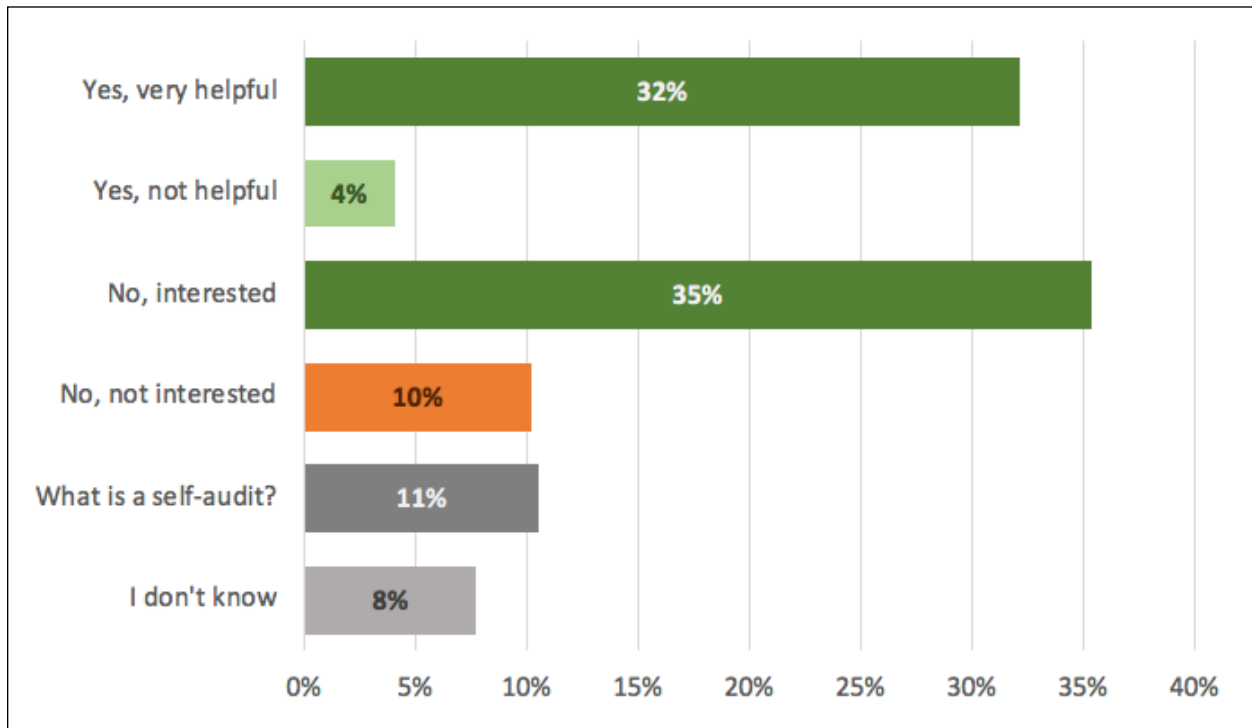
Organic farmers: n=104; non-organic farmers: n=435

Statistically significant differences, $p < 0.01$.

Audits

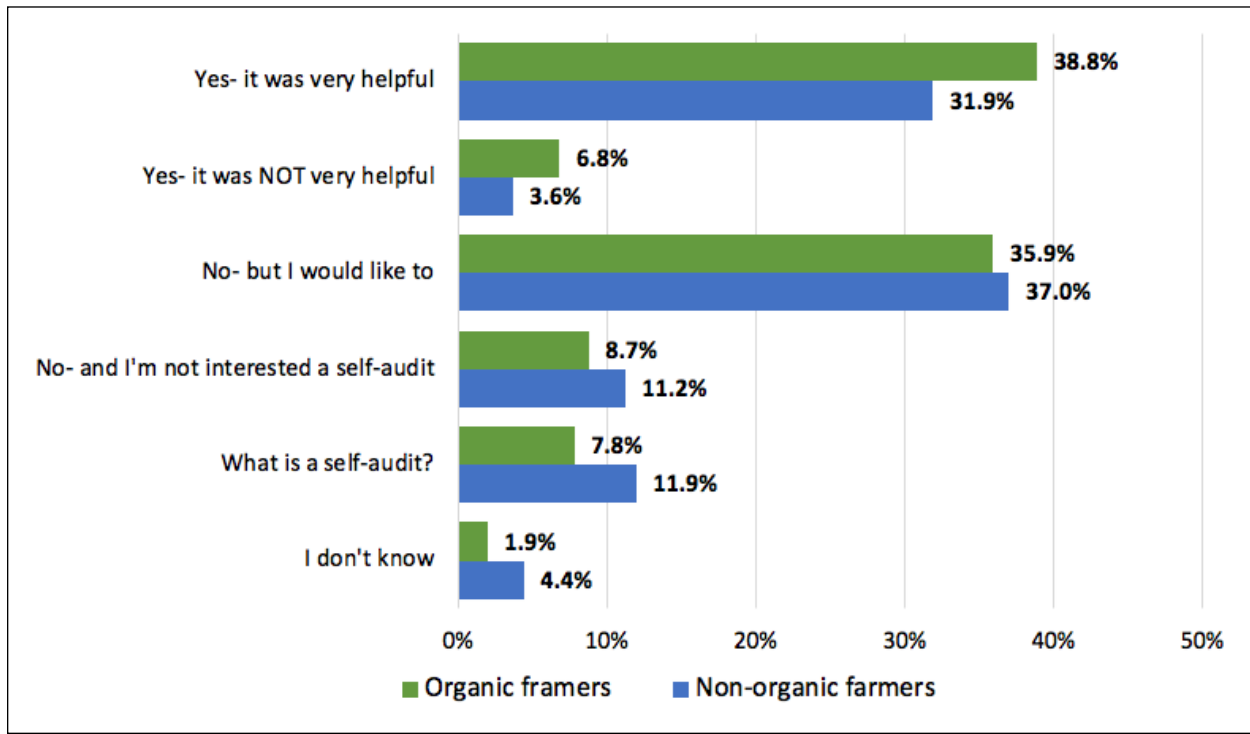
Local food producers were asked about self-auditing of their own food safety practices within their operations. Of the 569 local food producers who responded to this question, 36% had conducted a self-audit; out of those, 32% felt it was very helpful and only a small group of 4% felt it had not been helpful (Figure 11). However, 35% had not conducted a self-audit of their food safety practices but had an interest in doing so and 10% did not have any interest in performing one. A similar number of producers, 11%, did not know what a self-audit was, and 8% did not know whether they had performed a self-audit.

Figure 11 – Conducted a Self-Audit of Food Safety Practices on Your Farm or in Your Facility (n=569)



No major differences were found between local organic farmers and non-organic farmers when it came to them conducting a self-audit of food safety practices on their farm or facility (Figure 12).

Figure 12 – Comparing Local Organic and Non-organic Farmers’ Self-Audit of Food Safety Practices on Their Farm or Facility

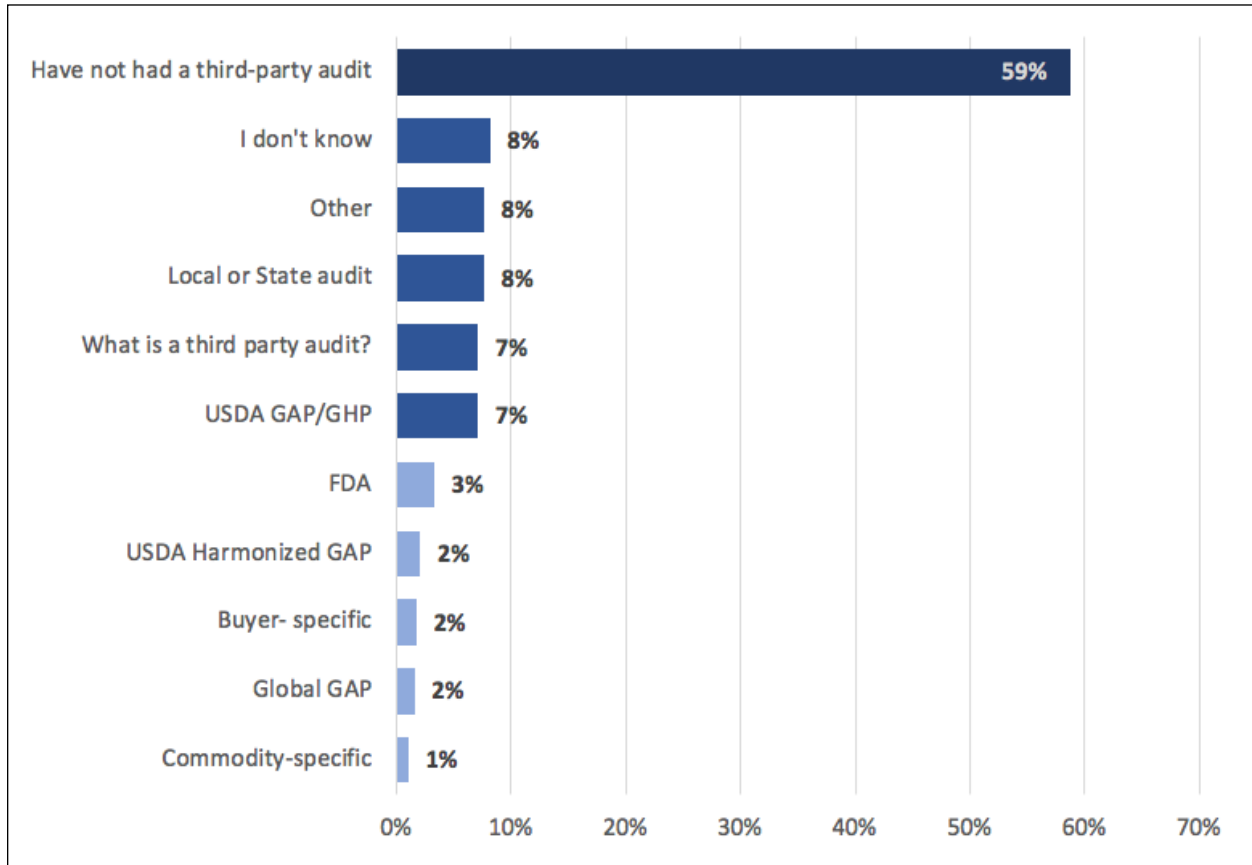


Organic farmers: n=105; non-organic farmers: n=411

No statistically significant differences between organic and non-organic farmers

On the other hand, when asked about third-party audits, more than half (59%) of the local producers had not had one conducted on their operation since January 2016. Respondents were permitted to select more than one audit from the list (Figure 13). One out of twelve (8%) do not know whether they have had a third-party audit and 7% selected “What is a third-party audit?”, which suggests some confusion about what an audit is. The most common third-party audit reported was local or state audits and by USDA GAP/GHP (reported by 8% and 7% of the local producers respectively).

Figure 13 – Third-Party Safety Audits Conducted on Farm/Facility Since January 2016 (n=528)



Section 4: Local Processors

Local processors were asked about current practices in their food processing facilities. The top two practices that were followed by a majority of the respondents (“always” or “most of the time”) were: cross contamination of human pathogens to foods and food contact surfaces are prevented through cleaning and sanitizing activities (87.8%); and the potential for microbial growth in the food product is minimized through cooking, pH, water activity control or other means (84%). All other practices were followed by a considerably smaller percent of the respondents (Table 16).

Table 16 – Local Processors’ Current Practices in Food Processing Facilities

Question	Always	Most of the Time	Sometimes	Never	Unsure	N/A	n
Cross contamination of human pathogens to foods and food contact surfaces are prevented through cleaning and sanitizing activities	79.0%	8.8%	2.2%	1.1%	0.6%	8.3%	181
The potential for microbial growth in my food product is minimized through cooking, pH, water activity control or other means	72.9%	11.1%	0.6%	1.1%	1.7%	12.7%	181
All major allergens in food and food ingredients are clearly indicated on packaging	47.5%	6.1%	1.7%	7.7%	1.7%	35.4%	181
A processing authority reviewed the processes used to produce foods	40.3%	6.1%	3.3%	16.0%	6.6%	27.6%	181
Monitored activities (such as temperature or pH) during processing are documented	39.4%	11.1%	10.6%	15.0%	2.2%	21.7%	180
There is a system to record food safety violations that are reported by food workers in our facility	25.8%	6.2%	3.4%	15.2%	8.4%	41.0%	178
The processing facility has filed a scheduled process(es) with the FDA	19.6%	1.1%	1.1%	19.6%	14.0%	44.7%	179

When asked about postharvest practices, almost all local processors responded that they kept the areas where produce is packed clean and organized “always” or “most of the time” (97.1%). More than three-fourths of respondents (76.3%) reported the areas where produce is stored were kept clean and organized, and a similar percent reported that there is a process to monitor and deter insects and pests in places where produce is stored (77.6%). Of all the practices, the least common that was used “always” or “most of the time” was cold storage; a little over half (52.8%) of respondents reported using this practice (Table 17).

Table 17 – Local Processors’ Postharvest Handling

	Always	Most of the Time	Some-times	Never	Unsure	N/A	n
The areas where produce is packed are kept clean and organized	70.9%	26.2%	2.8%	0.0%	0.0%	0.0%	141
The areas where produce is stored are kept clean and organized	61.3%	15.0%	7.5%	3.1%	1.3%	11.9%	160
There is a process to monitor and deter insects and pests in places where produce is stored	63.8%	13.8%	4.4%	0.0%	0.6%	17.5%	159
Cull piles and garbage are removed at least once a day from the packing area	56.9%	7.5%	6.9%	3.1%	0.6%	25.0%	160
All food contact surfaces are cleaned, inspected, and sanitized (when possible) on a schedule	60.6%	8.1%	2.5%	1.3%	0.0%	27.5%	160
The temperature in the cold storage area is monitored	64.8%	15.1%	3.8%	3.1%	0.6%	12.6%	160
The farm or facility utilizes cold storage	43.4%	9.4%	3.8%	0.6%	0.0%	42.8%	160
Pooled water in the packing shed and storage areas, including coolers, is eliminated daily	65.0%	20.6%	1.9%	0.0%	0.0%	12.5%	159

Regarding worker health and hygiene, local processors reported providing workers and visitors with adequate restroom and hand washing facilities (76%). However, for all other practices, respondents reported less frequent practices (Table 18). As was the case for local farmers, local processors responded “N/A” to many of the worker health and hygiene questions. It is possible they face the same issues outlined for local farmers.

Table 18 – Local Processors’ Worker Health and Hygiene

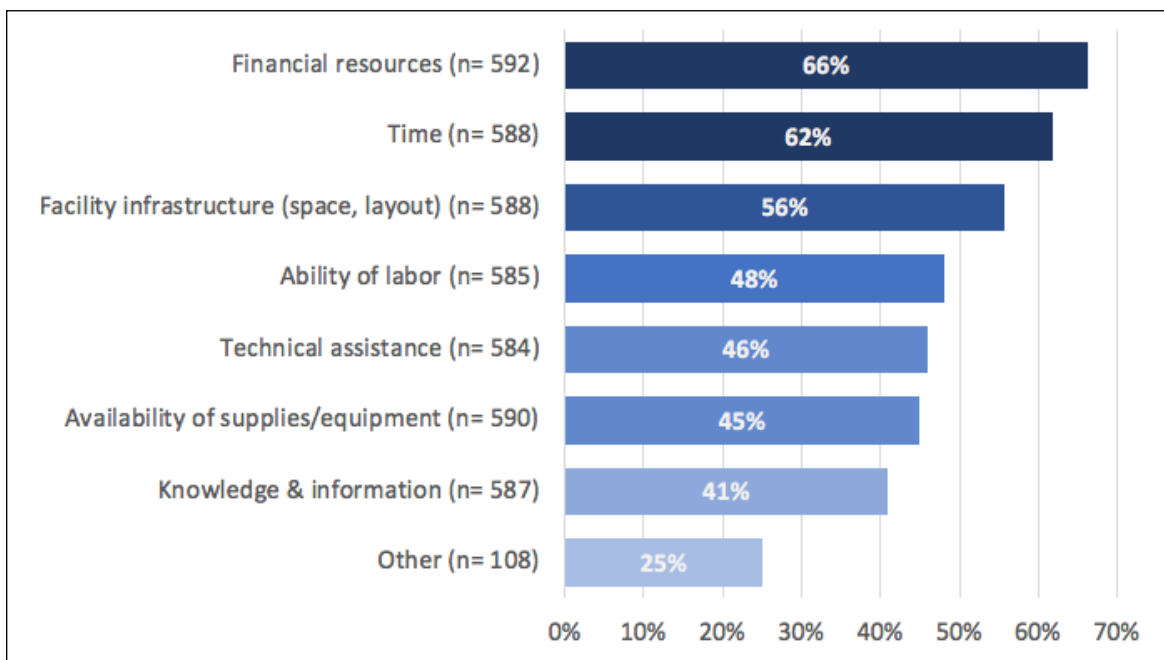
	Always	Most of the Time	Sometimes	Never	Unsure	N/A	n
Workers and visitors are provided with adequate restroom and hand washing facilities	73%	3%	2%	2%	0%	21%	184
Food safety training is provided in a language that workers understand	49%	5%	4%	4%	1%	37%	183
Visitors are made aware of our food safety policies	37%	16%	16%	5%	3%	23%	184
There is a system of monitoring in place to ensure food safety practices are completed	37%	19%	11%	7%	5%	21%	183
Food safety trainings are provided for all workers	34%	15%	13%	5%	2%	32%	184
Records are kept for all food safety trainings	31%	11%	10%	11%	4%	34%	184

Section 5: Limitations and Communication Preferences

Limitations to Implementation of Food Safety Practices for Local Food Producers

Respondents were asked to rank a list of potential barriers to implementing food safety practices on their farm and/or in their facility on a scale of not a limitation, minimally limiting, moderately limiting, and greatly limiting. Figure 14 reports the responses of moderately and greatly limiting. The greatest barrier for local food producers to implement food safety practices within their operation is lack of financial resources, reported by 66%. Time and infrastructure of operation were cited as the two next-most limiting factors for local food producers, by 62% and 56% of respondents, respectively. However, having a written farm food safety plan seemed to influence farmers' perceptions about potential barriers and the severity of the limitation. Collectively, farmers who did NOT have a written farm food safety plan (61.8% of local farmers) ranked financial resources, farm infrastructure, and time as their greatest barriers. Those who did have a written farm food safety plan (29.3% of local farmers), ranked perceived barriers as time, financial resources, and ability of labor. Additionally, those with a written farm food safety plan were less likely to select greatly limiting when assigning levels to perceived barriers to implementing food safety practices.

Figure 14 – Limitations to Implementing Food Safety Practices

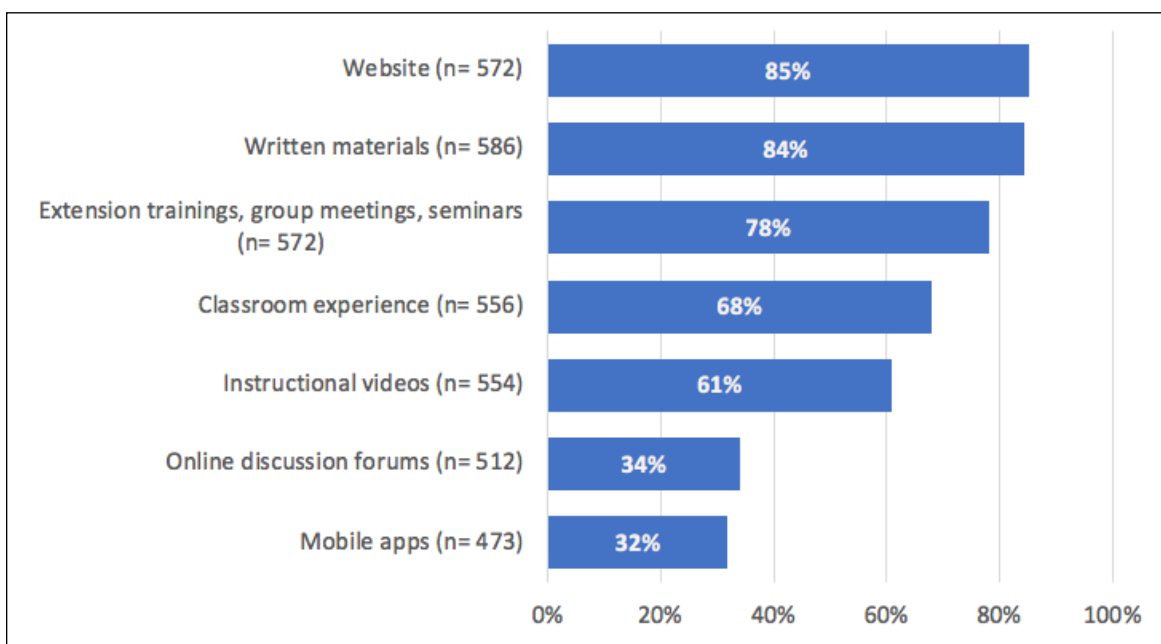


On a 4 point scale of: not a limitation, minimally limiting, moderately limiting and greatly limiting; the bars above include responses of those who chose moderately or greatly limiting.

Preferred Way to Get New Information

The top information and learning resources utilized by local food producers when looking to learn new information or a new skill were found to include websites, written materials, and extension trainings/group meetings/seminars (Figure 15). Other important resources identified through open-ended responses were farmer-to-farmer learning, hands-on learning and personal interactions with knowledgeable state or extension personnel.

Figure 15 – Importance of Sources to Obtain New Information or Learn New Skills – Local Food Producers



Communication Preferences

The best way to reach local food producers about food safety trainings and updates by far is via email (80%). The next two best ways included by mail (28%), and by social media (27%), but these responses were much less than by email. These results may be reflective of the online community of food producers who were recruited to participate in this assessment via LFSC stakeholder outreach, even though some paper surveys were submitted. It is important to note there are communities of farmers who do not use email, such as plain sect farmer communities. In addition, local food producers stated they use written materials to gain new information and skills (Figure 15).

Section 6: Conclusions and Recommendations

Local food producers sell into all types of markets which means they impact food availability not only in the communities in which they live, but regionally as well. Even though they may not be legally subject to the rule, there are many reasons why they should understand how to assess food safety risks in their operations and implement practice to reduce these risks. The most obvious reason is the safety of the consumers they feed, but there are clear economic reasons as well. Local food producers serve wholesale and retail markets that require food safety practices and their operations impact the economic health of local communities. One outcome of this needs assessment survey was that many respondents did not understand audits. This is relevant to those growers who serve or who would like to serve markets that require audits. Creating opportunities for growers to better understand food safety requirements in the marketplace and helping them meet these requirements is important to both food safety and economic viability of local food operations.

A challenge in reaching local food producers with food safety information and training is that it seems they do not necessarily feel like they need the information. Despite not having food safety specific training, many respondents feel confident in their food safety decision making. It is possible they have the food safety knowledge needed to assess risks and put practices in place to reduce risks either through training that was not reflected in their responses or through life experiences that have gained them this knowledge, so maybe it should not be a concern. However, if this confidence is not grounded in science-based knowledge, it could have negative consequences for the operations and the consumers they feed. Respondents did ask for additional tools, so perhaps outreach needs to be tailored to address the questions they have and less broadly advertised as “food safety training”.

Across different topics, local food producers were requesting transparent and easy to access information about state and federal regulations. Not only do they want to access the literature and scientific proof easily, but they also want fact-sheets in “common-speak” where anyone can quickly look at guidelines and recommendations about different topics. Having access to the legislation is not enough for many of the producers, they want direct instruction with examples on how to properly set-up their operations or conduct certain procedures.

Hands-on examples, in-person walk-throughs and communication with authorities or extension agents, and local collaboration of neighbors through farm-tours or field-days are all avenues of knowledge acquisition favored by these food producers. In-person tutorials and workshops are the preferred method of seeing good examples of how to run an operation, but many producers also requested these materials to be available virtually as well. Producers are looking for downloadable and customizable templates for recordkeeping and signage within their operations.

The signage and videos requested for worker training would be especially beneficial if it was multi-lingual, picture and graphic-heavy, and had plenty of “real-world” scenarios and examples.

Many beginners or producers looking to change their methods want comprehensive lists of their options for sanitizers, biological soil amendments of animal origin, etc. with costs, benefits, and risks associated with each. Many responses also mentioned that it would be helpful to have a list of vendors selling sanitizers or a way to connect with people looking to get rid of animal bedding, manure, and other materials that can be used as amendments or compost inputs.

It was requested that the open-ended responses be analyzed to see if growers were requesting “alternative” trainings to the Produce Safety Alliance (PSA) Grower Training that was developed to meet FSMA PSR requirement § 112.22(c) that “at least one supervisor or responsible party for your farm must have successfully completed food safety training at least equivalent to that received under standardized curriculum recognized as adequate by the Food and Drug Administration”. There were neither comments specifically about the PSA Grower Training nor requests for “alternative” curriculum. This could be a result of only 80 respondents having taken the PSA Grower Training or because the training is meeting their needs. The PSA curriculum was developed to be adaptable and trainers have the flexibility to incorporate additional information relevant to their audience. Prior to launching the curriculum, the PSA Grower Training was piloted with small and very small farm owners who provided evaluations that indicated the training was high quality and increased their confidence in assessing risks and implementing practices. Evaluation data after two years of PSA trainings indicate all farmers, regardless of farm business size, report the PSA Grower Training Course prepares them for implementing FSMA PSR requirements. Some open-ended responses did indicate that trainings were not applicable enough to their operations, whether it be for size considerations or commodity-specific reasons, but it was not specific to the PSA Grower Training. However, more frequent trainings available closer geographically was a main point that they felt was lacking. These comments point to the need for more trainings, and that new training programs focus on commodity specific, farm type (e.g., organic, diversified), or scale of operations (e.g., small versus large scale) that include on-farm technical assistance.

A common complaint was that there was an increase in cost to keep up with new food safety concerns but the price of their product did not reflect this. Due to this, there were many requests for funding and access to shareable resources within their communities, specifically for fencing. Some producers were sincerely worried about their family and businesses’ survival with the upcoming regulation changes.

There were significantly less responses from producers specifying why they are not likely to implement food safety practices. The main responses that were received included that practices were too cumbersome, the practices currently implemented were enough, or that they don’t feel pressure from regulation yet. Some producers went as far as to say that they would modify their market in order to continue to sell their product without changing their practices. As mentioned previously, many producers incur high expenses to adopt food safety practices and for some, this increase in cost is enough of a deterrent.

There is clearly room and a need for additional outreach and material development to help local food producers understand the value and importance of implementing food safety practices. The survey also indicates there are many good things already happening in the local food producing community. Even though many local food producers have no regulatory or market pressures to do so, many have implemented food safety practices in their operations. These include worker training, water testing, applying soil amendments in advance of the season, and even developing a written food safety plan. Local organic food producers appear to be closer to meeting regulatory expectations outlined in the FSMA PSR, but overall local food producers responding to this survey are engaged with the concept of food safety and are interested in additional information as reflected in their open-ended responses.

Acknowledgements

The authors would like to thank the farmers, packers, and processors who completed this survey and shared their thoughts on food safety. We would also like to thank the Local Food Safety Collaborative Steering Committee for providing feedback as this report progressed and Yasamin Miller and Vandana Shaw for their data analysis support. Lastly, we would like to acknowledge the National Farmers Union (NFU) for funding this effort and for all the valuable input provided by our colleagues at NFU.

References

Bihn, E. A., Smart, C. D., Hoepting, C. A., & Worobo, R. W. (2013). Use of surface water in the production of fresh fruits and vegetables: A survey of fresh produce growers and their water management practices. *Food Protection Trends*, 33(5), 307-314.

Martinez, S., Hand, M., Da Pra, M., Pollack, S., Ralston, K., Smith, T., Vogel, S., Clark, S., Lohr, L., Low, S., and Newman, C. (2010) Local Food Systems: Concepts, Impacts, and Issues, ERR 97, U.S. Department of Agriculture, Economic Research Service, May 2010.

USDA NASS, 2015 *Local Food Marketing Practices Survey: Report Highlights*. (December 2016). United State Department of Agriculture National Agricultural Statistics Service Census of Agriculture. Retrieved from:

nass.usda.gov/Publications/AgCensus/2012/Online_Resources/Local_Food/index.php

Appendix

The Local Food Safety Collaborative Needs Assessment Survey begins on the next page.



Local Food Safety Collaborative

The Local Food Safety Collaborative aims to provide specialized training, education, and outreach to farmers and food processors who serve local markets. Responses to this survey will help direct our resources to best enhance fundamental food safety knowledge and help small farmers and processors comply with applicable Food Safety Modernization Act (FSMA) regulations.

Survey participation is voluntary and will take approximately 20 minutes to complete. After completing the survey, you may elect to enter your personal information to be entered in a raffle for one of 20-\$100.00 gift cards.

Information gained through this survey will be shared in a collective format, where responses are not attributed to specific individuals. Your answers will remain anonymous and confidential.

We appreciate your time and thoughtful responses!

Survey Instructions

Please fill in the bubble completely for each question: Right Wrong

Your responses are very important to us! Our scanning software will only capture what is in the box so...

Please keep your response inside the box!

How do you define your food production operation? Fill in all choices that apply

- Farming** involves growing and harvesting crops, and/or raising animals (i.e. **FARMERS**).
- Food packing** involves placing produce into containers for sale and is also inclusive of prior activities, such as grading, culling, or weighing (i.e. **PACKERS**).
- Food Aggregating** involves collecting produce from many growers, after it has been harvested and packed (i.e. **AGGREGATORS**).
- Food processing** involves applying any kind of mechanical or chemical operation to raw foods including chopping, peeling, heating, dehydrating, or freezing (i.e. **PROCESSORS**).

**Note: If none of these choices apply to you, your participation in this survey is not needed at this time.*

My food production operation produces food for? Fill in all that apply:

- People
- Animals

*If you **only** produce food for animals, your survey participation is not needed at this time

How would you identify yourself within your food production operation? Fill in all that apply:

- Owner
- Manager
- Year-round employee
- Seasonal employee
- Other

State or U.S. territory where your farm or facility is located, please write in the box.

We would like to understand your motivation for learning about food safety. Please review the statements below and rate their importance to you.

	Not N/A	Important	Slightly Important	Moderately Important	Very Important
Maintain market access (meet buyer requirements)-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meet regulatory requirements in the Food Safety Modernization Act	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gain access to new markets/buyers-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Meet membership requirements of a commodity association-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Personal commitment to produce a safer product-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce liability exposure-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reduce chances of buyer rejecting lots/shipments-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Receive higher product prices-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other reasons, please specify in the box:					

Have you attended ANY food safety training(s)? Please indicate when.

	Never	Within the past 2 years	2-5 years ago	5+ years ago
Good Agricultural Practices (GAPs) training-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Produce Safety Alliance (PSA) Grower Training-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sprout Safety Alliance Training-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family Farmed Wholesale Success-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family Farmed On-Farm Food Safety Project-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food Safety Trainings through my local Extension Office-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Basic HACCP Training-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Juice HACCP Training-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seafood HACCP-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food Safety Preventive Controls Alliance (FSPCA) Trainings-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Better Process Control School-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good Manufacturing Practices (GMP) Training-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Safe Quality Food (SQF) Training-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
British Retail Consortium (BRC) trainings-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have participated in another type of training*-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Please specify in the box:

Have you or do you plan to implement food safety practices as a result of attending a training?

- Definitely yes**- I have implemented practices as a result of attending a training
- Probably yes**- I haven't implemented practices as a result of attending a training yet, but the information I learned will inform my future decisions
- Not sure**- I'm not sure how I will use the information I gained from attending a training
- Probably not**- I am not likely to implement practices as a result of attending a training
- Definitely not**- I will not implement practices as a result of attending a training
- I was already doing all the right things** – I attended training but found that my farm had already implemented the necessary food safety practices
- I have not attended a food safety training**

Please rate your own understanding of food safety principles in the following statements.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I can describe how human pathogens can spread- through humans, animals, and environmental means on my farm or in my facility-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can identify ways to reduce food safety risks on my farm or in my facility-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can describe the difference between 'cleaning' and 'sanitizing'-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What limits your ability to implement food safety practices on your farm or in your food facility? Indicate the level of difficulty that each barrier imposes.

	Not a Limitation	Minimally Limiting	Moderately Limiting	Greatly Limiting
Time-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability of labor-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information & knowledge-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Financial resources-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical assistance-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of supplies or equipment-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Farm or processing facility infrastructure (e.g. space, layout)-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other, please describe in the box below.

What are the best methods to reach out to you about food safety trainings and updates?

Fill in all that apply.

- Radio
- Newspaper
- Email
- Mail
- Mobile text
- Social media
- Commodity specific newsletter or list serve*
- Farm association newsletter or list serve*
- Other*

* Please specify in the box:

How important are the following sources to how you obtain new information or learn a new skill?

	N/A	Not Important	Slightly Important	Moderately Important	Very Important
Websites -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Written Materials -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Classroom Experiences -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mobile Apps -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online Discussion Forums -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Instructional Videos -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Extension Trainings, group meetings, and seminars -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other, please specify

The next few questions explore your buyers, sales, and record keeping practices.

What percentage of your food do you sell within 275 miles of your farm and/or food facility?

- 0%- None of it
- Less than 50%
- More than 50%
- 100%- All of it
- I'm not sure
- I prefer not to answer

What is your farm's and/or food facility's average annual gross SALES of food for people (e.g. dairy, meat, fruits, vegetables, etc.) and animals (e.g. hay, corn, etc.)?

Remember, food includes anything that people and animals eat.

- \$0-\$24,999
- \$25,000-\$250,000
- \$250,001-\$499,999
- \$500,000-\$1,000,000
- Over \$1,000,000
- I'm not sure
- I prefer not to answer

What percentage of your food is currently sold to the following markets?

Please indicate the percentage in the column on the left, the total should add up to 100%

- _____ Direct to Consumer (CSA, U-pick, on-farm market, local farmers market, or other)
- _____ Wholesale (domestic)
- _____ Small retail entities (specialty food shops, restaurants)
- _____ Aggregate entities (such as food hubs, cooperatives, produce auctions)
- _____ Regional or national food suppliers (grocery stores or wholesale clubs)
- _____ Direct to Institutions (such as hospitals, prisons, child care)
- _____ USDA foods -commodity program
- _____ Emergency food assistance providers (food banks, meal programs, distribution providers)
- _____ Online/catalog/mail order
- _____ Processors
- _____ Export- Wholesale or direct buyer outside the United States
- _____ Other, please specify in the box:

100% TOTAL

We are interested to know the information you collect and keep when selling food to buyers, excluding direct to consumer sales such as U-picks or CSAs.

Please indicate your practices below.

- | | Unsure | Never | Some of my sales | Most of my sales | All of my sales |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Records are kept for sales----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Sales records are kept for at least three years----- | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Indicate any third party safety audits you have had conducted on your farm and/or facility since Jan 2016.

Fill in all that apply.

- USDA GAP/GHP
- USDA Harmonized GAP
- Local or State audit
- Global GAP
- FDA
- Commodity-specific *
- Buyer- specific *
- Other *
- My farm or facility has not had a third-party audit
- What is a third party audit?
- I don't know
- I prefer not to answer

*Specify in the box below.

Have you ever conducted a self-audit of food safety practices on your farm or in your facility?

- Yes- it was very helpful
- Yes- it was NOT very helpful
- No- but I would like to
- No- and I'm not interested a self-audit
- What is a self-audit?
- I don't know
- I prefer not to answer

If you have conducted a self-audit or had an audit, have you made any changes to your food safety practices as a result?

Please describe in the box below.

The follow question asks about food safety trainings and practices at your establishment.

Please indicate how the following statements describe worker health and hygiene at your farm or facility.

	N/A	Unsure	Never	Sometimes	Most of the time	Always
Food safety trainings are provided for all workers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food safety training is provided in a language that workers understand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Records are kept for all food safety trainings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Workers and visitors are provided with adequate restroom and hand washing facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Visitors are made aware of our food safety policies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a system of monitoring in place to ensure food safety practices are completed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are there any additional tools, resources (e.g., training materials) or information regarding worker health, hygiene, and training that would help you enhance food safety?

Explain in the box below.

The next section of questions (pg. 7-10) are for *FARMERS* only.

If you are not a farmer, but you are a food *PACKER* and/or *AGGREGATOR*, please progress to page 11.

If you are not a farmer or packer or aggregator, but are a food *PROCESSOR*, please progress to page 13.

Do you or your farm identify with any of the following categories or registrations within the USDA?

Fill in all that apply.

- Limited Resource** - A person with direct or indirect gross farm sales not more than \$173,900 (for FY2017) in each of the previous two years AND a person with a total household income at or below the national poverty level for a family of four or less than 50 percent of county median household income in each of the previous two years.
- Socially Disadvantaged**- A farmer or rancher who is of a socially disadvantaged group whose members have been subjected to racial, ethnic, or gender prejudice because of their identity as a member of a group, without regard to their individual qualities. Those groups include African Americans, American Indians or Alaskan natives, Hispanics, and Asians or Pacific Islanders.
- New and Beginning** - Have not operated a farm or ranch, or have operated a farm or ranch for not more than 10 consecutive years.
- Veteran**- A person who served in the United States Army, Navy, Marine Corps, Air Force, and Coast Guard, including the reserve components thereof, and who was discharged or released therefrom under conditions other than dishonorable.
- Woman Farmer**- A person who identifies as a female or woman farmer.
- Registered with a Farm and Track # through USDA Farm Service Agency (FSA)** - Registered farms are eligible for programs administered by FSA such as, farm loans, crop insurance, and disaster assistance compensation. A Farm # is also required for programs through the Natural Resource Conservation Service.
- USDA Organic**- A labeling term that indicates that the food or other agricultural product has been produced through approved methods. The organic standards describe the specific requirements that must be verified by a USDA-accredited certifying agent before products can be labeled USDA organic. Overall, organic operations must demonstrate that they are protecting natural resources, conserving biodiversity, and using only approved substances.
- NRCS (Natural Resources Conservation Services) Cooperator** - Those individuals or organizations (governmental or nongovernmental) that assist NRCS with providing conservation-related services are known as NRCS Conservation Cooperators.
- Plain Sect Farmer**- A farmer who is a member of any of various Protestant groups who wears distinctive plain clothes and adheres to a simple and traditional style of life excluding many conveniences of modern technology.
- None of these
- I don't know
- I prefer not to answer

What do you produce on your farm? Mark all that apply

- Salad greens (lettuce, spinach, etc.)
- Cooking greens (Kale, bok choy, collards, etc.)
- Tomatoes
- Corn or sweet corn
- Beets, parsnips, rutabagas, turnips
- Carrots or radishes
- Dry Beans, peas, lentils
- Broccoli or cauliflower
- Fresh market beans (green, wax, etc.)
- Cucumbers
- Brussels sprouts, eggplant, okra
- Peppers (bell, chili, etc.)
- Asparagus
- Rhubarb
- Potatoes or sweet potatoes
- Winter Squash or pumpkin
- Summer Squash or zucchini
- Garlic, onion, celery, scallions
- Herbs (sage, cilantro, parsley, etc.)
- Tree fruits (apples, pears, cherries, etc.)
- Bush berries (Raspberries, blueberries, blackberries, etc.)
- Strawberries
- Cranberries
- Melons (honeydew, watermelon, cantaloupe, etc.)
- Grapes (table grapes, wine grapes)
- Grains (barley, wheat, spelt, etc.)
- Tree nuts (almonds, pecans, etc.)
- Hops
- Dairy (milk)
- Eggs
- Meat, please specify in the box below:

Any other, please specify in the box below:

Does your farm have a written farm food safety plan?

- Yes
- No
- I'm not sure
- I prefer not to answer

Biological soil amendments of animal origin= any soil amendment containing animal-derived biological materials. This includes, but is not limited to manure, compost, fish emulsions, biosolids, and agricultural teas.

Please indicate how the following statements describe your use of biological soil amendments of animal origin on your farm.

	N/A	Unsure	Never	Sometimes	Most of the time	Always
Biological soil amendments of animal origin are applied to farm fields before planting -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biological soil amendments of animal origin are applied to farm fields during the growing season -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The compost or other treated biological soil amendments that are applied to farm fields have undergone a validated process to reduce human pathogens -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Biological soil amendments of animal origin are stored in a place that minimizes amendment runoff/leeching -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tools, such as shovels, that contact untreated biological soil amendments are cleaned and sanitized after use to prevent cross contamination -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Certain tools, such as shovels, are used exclusively for biologic soil amendments of animal origin-----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are there any additional tools, resources or information regarding biological soil amendments of animal origin or their treatment that would help you enhance food safety on your farm? Please describe in the box below.

Please indicate how the following statements describe your farm in terms of wild and domesticated animals.

N/A Unsure Never Sometimes Most of the time Always

Fields are monitored for signs of animal intrusion including trampling, rooting, feeding, tracks, and feces ----- --- ----- ----- ----- -----

Domesticated animals, such as dogs and cats, are kept out of my fields and food production/postharvest handling/processing areas ----- --- ----- ----- ----- -----

Fields are actively assessed before harvest to determine if there is significant risk of fecal contamination from animals --- ----- ----- ----- -----

Action is taken to reduce food safety risks introduced by animals on my farm ----- --- ----- ----- ----- -----

Actions to reduce food safety risks from animals on my farm are documented ----- --- ----- ----- ----- -----

Are there any additional tools, resources or information regarding domesticated animals and wildlife that would help you enhance food safety on your farm? Please explain in the box below.

PRODUCTION (preharvest) water= any water that contacts fruits and vegetables, before harvest. This may include water used for irrigation, mixing sprays, or water applied directly to the harvestable portion of the crop prior to harvest. Please indicate how the following statements describe PRODUCTION (preharvest) water on your farm.

N/A Unsure Never Sometimes Most of the time Always

Surface water sources, such as ponds or streams, are used for producing fruits and vegetables ----- --- ----- ----- ----- -----

Well water is used on the farm for producing fruits and vegetables ----- --- ----- ----- ----- -----

Municipal water is used on the farm for producing fruits and vegetables ----- --- ----- ----- ----- -----

The quality of production water is monitored through laboratory testing for generic *E.coli* ----- --- ----- ----- ----- -----

Production water is tested for generic *E.coli* more than once per growing season ----- --- ----- ----- ----- -----

I am aware of potential sources of contamination of my surface or well waters ----- --- ----- ----- ----- -----

FARMERS and food PACKERS and food AGGREGATORS, please answer the following questions.

During and after harvest, water can be used for activities such as rinsing/washing produce, or cooling (ice) produce. Please indicate how the following statements describe your use of water POSTHARVEST (water used at or after harvest).

	N/A	Unsure	Never	Sometimes	Most of the time	Always
The water used comes from a municipal water supply	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The water used comes from surface water (ponds, streams, rivers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The water used comes from a well source	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lab tests show that the postharvest water contains no detectable generic E.coli	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When using a dump tank or tub of water to rinse produce, sanitizers are added to the water to prevent cross contamination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When using a dump tank or tub of water to rinse produce, the temperature of the water is monitored	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When using a dump tank or tub of water to rinse produce, the water is changed out on a schedule or managed to prevent a buildup of material	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are there any additional resources or information regarding PRODUCTION or POSTHARVEST water that would help you enhance food safety on your farm? Please explain in the box below.

Postharvest handling includes harvesting, packing and holding produce. Please indicate how the following statements describe your farm or facility in terms of postharvest handling.

	N/A	Unsure	Never	Sometimes	Most of the time	Always
The areas where produce is packed are kept clean and organized -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The areas where produce is stored are kept clean and organized -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a process to monitor and deter insects and pests in places where produce is stored -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
All food contact surfaces are cleaned, inspected, and sanitized (when possible) on a schedule -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cull piles and garbage are removed at least once a day from the packing area -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The farm or facility utilizes cold storage -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The temperature in the cold storage area is monitored -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pooled water in the packing shed and storage areas, including coolers, is eliminated daily -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are there any additional resources or information regarding postharvest handling that would help you enhance food safety on your farm or in your facility? Please explain in the box below.

The next page of questions is for food *PROCESSORS* only.

If you are not a food processor, please progress to page 15 to end the survey.

Please identify any processed foods you produce. Fill in all that apply.

- Maple Syrup
- Jams, Jellies
- Pies, Cakes, Breads, or other baked goods
- Pickled Vegetables (e.g. cucumbers)
- Pickled Eggs
- Jerky
- Fermented Foods (such as sauerkraut)
- Juice
- Fermented Beverages (beer, wine, cider, etc.)
- Canned goods (sauces, etc.)
- Dry Goods (dip mixes, soup mixes, seasoning packets, etc.)
- Peeled, chopped, dehydrated or frozen produce
- Cheese
- Honey
- Other, please specify in the box:
- I do not perform food processing (such as peeling, mixing, chopping, heating)
- I prefer not to answer

Please indicate how the following statements reflect the current practices in your food processing facility.

	N/A	Unsure	Never	Sometimes	Most of the time	Always
All major allergens in food and food ingredients are clearly indicated on packaging -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cross contamination of human pathogens to foods and food contact surfaces are prevented through cleaning and sanitizing activities -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The potential for microbial growth in my food product is minimized through cooking, pH, water activity control or other means -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monitored activities (such as temperature or pH) during processing are documented -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A processing authority reviewed the processes used to produce foods -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The processing facility has filed a scheduled process(es) with the FDA -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a system to record food safety violations that are reported by food workers in our facility -----	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Are there any additional resources, trainings, or information regarding food processing that would help you enhance food safety at your facility? Please explain below.



Local Food Safety Collaborative

Thank you for your time and thoughtful responses!

Please return this survey to:

Lindsay Springer

Institute for Food Safety at Cornell University
630 W. North Street
Jordan Hall- NYSAES
Geneva, NY 14456

If you would like to be entered in the drawing for a chance to win one of twenty-\$100 gift cards, please provide your name and address in the space below:

Name: _____

Address: _____

This information will be separated from your survey responses to maintain anonymity.