Produce Safety Alliance Grower Training One-Year Follow-Up Survey Results: NCR FSMA regional results

North Central Region
Center for FSMA Training, Extension and Technical Assistance

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Results compiled by Arlene Enderton, evaluator for the North Central Region Center for FSMA Training, Extension, and Technical Assistance at Iowa State University

Introduction

The Food Safety Modernization Act (FSMA) was signed into law in 2011. The law is the first in decades to regulate fruit and vegetable farms and handlers. The law includes seven rules, one of which is the Produce Safety Rule.

One requirement of the Produce Safety Rule is that produce growers who are covered under the rule participate in an approved food safety course. The Produce Safety Alliance Grower Training is currently the only approved course.

The North Central Region Center for FSMA Training, Extension, and Technical Assistance (NCR FSMA) works with food safety professionals and regulators from 12 Midwest states (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin). The NCR FSMA has worked extensively with its partners to share ideas and best practices to more effectively teach the Produce Safety Alliance Grower Training.

The NCR FSMA also works with partners to evaluate the course. During the fall and winter of 2018-19, partners offered 93 PSA grower trainings. Approximately one year later (January 2020), the NCR FSMA worked with eight states to follow up with training participants with a survey to learn what changes they made following the training.

Methods

Eight states participated in the survey (Illinois, Indiana, Kansas, Michigan, Missouri, Nebraska, South Dakota, and Wisconsin).

The survey was conducted electronically using Qualtrics™. Partners from each state (all Extension educators) sent an invitation to participate in the survey to people who took the training in their state. The invitation was sent via email to those who use technology and on paper to those who do not use technology. At least one reminder was sent to those who received the electronic invitation, and no reminder was sent to those who received paper invitations. The only variation was in Wisconsin, where they sent a paper copy of the survey to all participants as well as an electronic invitation to those who use technology. Nine hundred twenty-six individuals were invited to participate in the survey.

Three hundred sixty-four people responded (181 electronic and 183 paper). Therefore, the response rate was 39 percent. This is a very good response rate for this type of survey.

Partners in Iowa had recently surveyed participants from their state (in November 2019), so they did not participate in the NCR FSMA survey in January 2020; however, they shared their data which was added to the NCR FSMA follow-up survey data set for a few questions that both surveys had in common. They received responses from 60 participants. Therefore, the dataset included a total of 424 responses, although most questions only 364 responses.

Arlene Enderton, evaluator for the North Central Region Center for FSMA Training, Extension, and Technical Assistance, analyzed the data using SPSS™ (version 26).

Figure 1 shows the number of responses from each state. More people responded from Wisconsin (155 responses) than from any other state. Wisconsin also had the highest response rate of any state (45 percent), which may be due to sending the survey on paper to all participants in addition to sending electronic invitations to those who use technology. Offering participants more than one way to participate and making multiple contacts with them appears to have boosted Wisconsin's response rate.

One hundred four respondents participated in a training offered primarily for Plain community growers (Figure 2). Not counting Iowa trainings (for which we have limited data), 29 percent of respondents attended a training for Plain community growers. While we do not know if all participants in these trainings belong to a Plain community, throughout this report we assume that the majority who took part in those trainings do belong to a Plain community.

Figure 1: The data set includes responses from trainings in nine states.

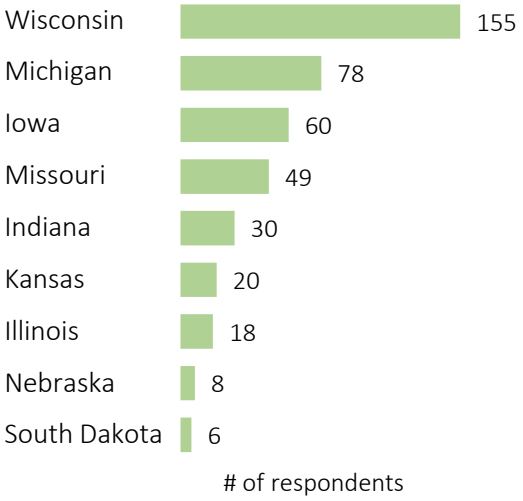
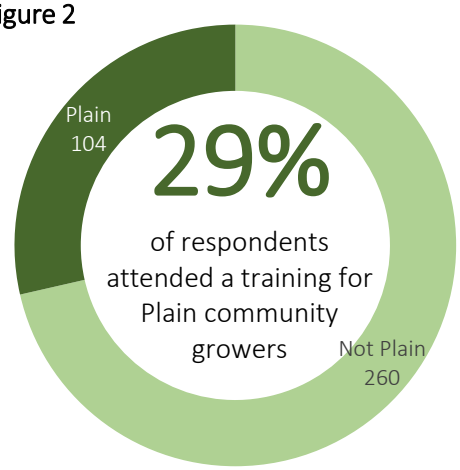


Figure 2



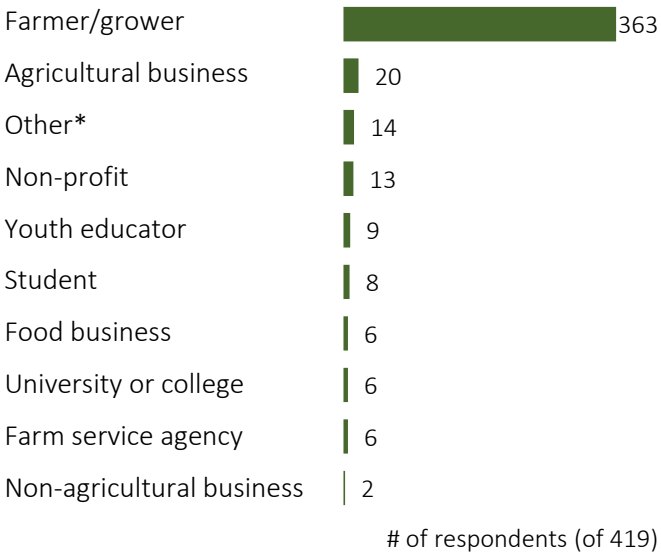
Results

In what industries do respondents work?

Respondents are most commonly growers or farmers.

When asked their occupation, respondents were able to answer with multiple categories. Three hundred sixty-three (87 percent) respondents were produce farmers/growers (Figure 3). The remaining respondents fill a variety of occupations, such as agricultural business (20), nonprofit (13), youth educator (9), student (8), food business (6), college or university (6), farm service agency (6), and non-agricultural business (2).

Figure 3: Most respondents are farmers or growers.



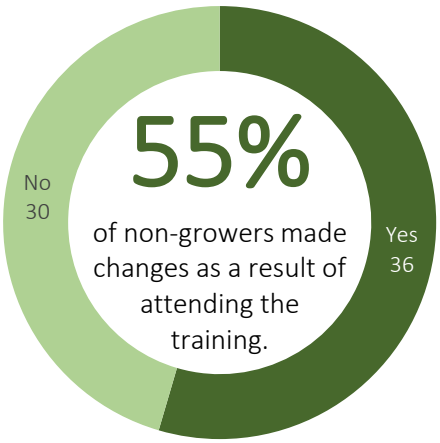
*aspiring farmers, gardeners, land owner, regulator, local or tribal government, economic development, policy advocate

What types of changes have non-farmers made since the training?

Thirty-six of 66 (55 percent) respondents who have non-farm jobs indicated they had made a change related to produce safety since taking the training.

Twenty-nine of these respondents described the changes they had made, described here:

Figure 4:



- 7 agricultural businesspeople provided different **food safety advice or information** to growers that he or she interacts with. For example, an educator modified information shared during ServSafe trainings.
- 5 described development of a **food safety culture** within their organization or business.
- 5 respondents **changed food safety practices in off-farm contexts**. For example, a packing shed operator assigned regular cleaning duties and changed cleaning products. A warehouse operator changed light coverings, and a youth educator improved handwashing.

- 4 respondents improved agricultural practices. An aspiring farmer improved sanitation of picking containers, and an agricultural business switched their focus to crops not covered by FSMA and another businessperson built elevated gardens.
- 4 respondents wrote or modified food safety plans and/or standard operating procedures.
- 3 respondents modified how they wash produce.
- 3 respondents disseminated information about food safety or changed food safety practices at farmers markets.
- 1 nonprofit used the information to include food safety educators as speakers at a conference that they organize.
- 1 person who works at a food bank discussed how to handle donated produce during times of flooding.

Are farmer/grower respondents required to comply with the FSMA Produce Safety Rule?

Farmer respondents most commonly were not required to comply with the FSMA Produce Safety Rule.

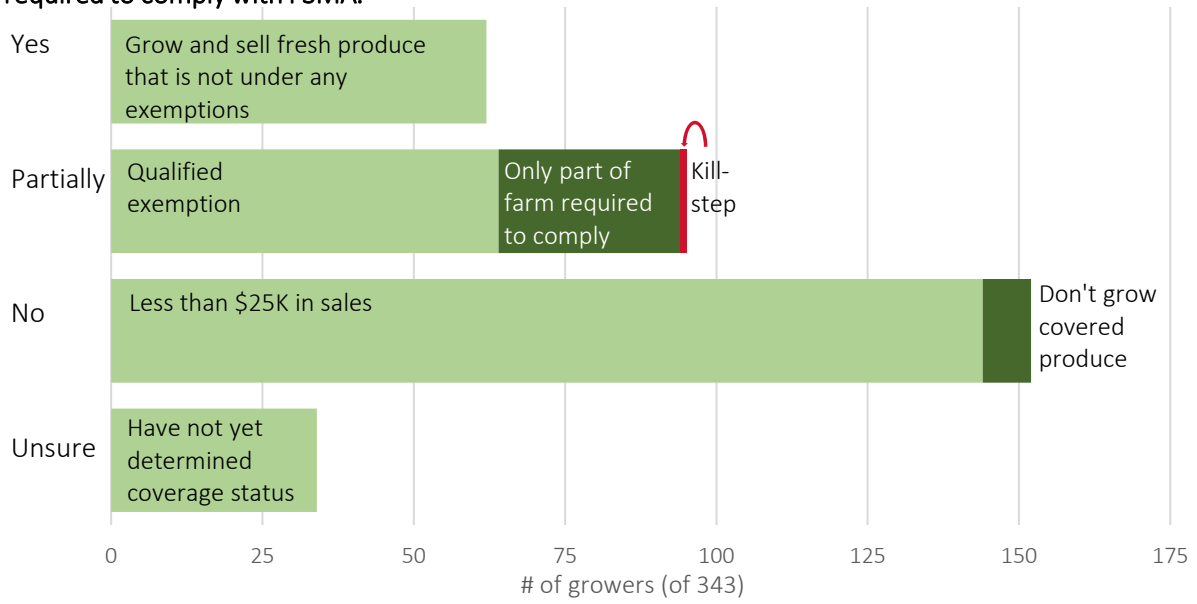
Forty-four percent of grower respondents (152 of 343) indicated they are not required to comply with the FSMA Produce Safety Rule, most often because on average they sell less than $25,000 of produce per year (144 respondents), making this the most common FSMA status. Hence, respondents most commonly operate very small farms, which might be a source of supplementary income as opposed to their primary occupation.

The data for this question includes responses from the Iowa dataset. One should note that this dataset did not include some of the categories that were included at the regional level: partial compliance (only part of farm required to comply), partial compliance (produce sent through a kill step), and not covered (do not grow covered produce).

Twenty-eight percent (95 of 343) of respondents were partially required to comply, because they are qualified exempt (64 respondents), part of their farm is required to comply but others not (30), or their product goes through a kill-step (1).

Thirty-four respondents (10 percent) had not yet determined their coverage status. A closer look at which farmers are unsure of their coverage status showed that Plain community growers are more likely to be unsure of their FSMA status (15 percent) than other farms (eight percent). This indicates that Plain community growers may need one-on-one help to determine their coverage status.

Figure 5: Most respondents know their coverage status. Respondents most commonly are not required to comply with FSMA.



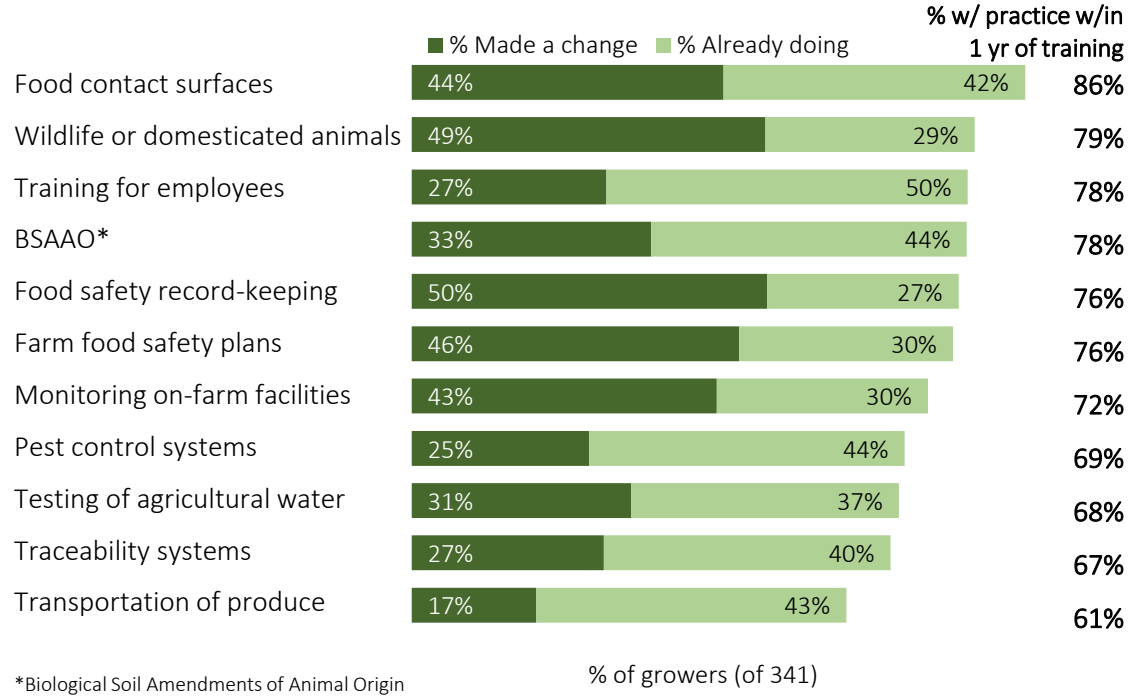
What kinds of changes have farmers made since attending the training?

76% of grower respondents (259 of 341) made some sort of change on their farm to improve food safety practices since attending the training.

Figure 6 shows which changes farmers/growers made, as well as which practices they already had in place prior to the training (and therefore did not need to change). By the time the NCR FSMA conducted the follow-up survey (approximately one year after the training), 86 percent of farms had adequate practices for cleaning and sanitizing food contact surfaces and 79 percent had a practices for deterring wildlife or domesticated animals from growing areas.

Respondents most commonly made changes to food safety record keeping systems (50 percent) and wildlife or domesticated animals (49 percent).

Figure 6: Growers most commonly had implemented practices for cleaning and sanitizing food contact surfaces within one year of training.



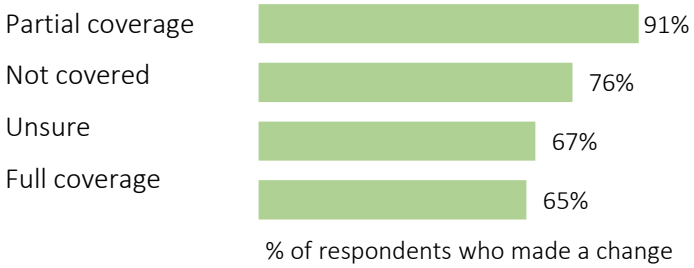
*Biological Soil Amendments of Animal Origin

What types of farms made changes?

Farms partially covered by FSMA made changes at a higher rate than farms of other FSMA statuses.

Figure 7 shows what percentage of farms belonging to each FSMA coverage status made a change to improve food safety practices. Farms that are partially required to comply with FSMA made changes at a higher rate (91 percent) than all other coverage statuses.

Figure 7: Farms that are partially covered by FSMA made changes at a higher rate than other FSMA statuses.



Farms that are required to fully comply with FSMA made changes at the lowest rate (65 percent). These farms may have already been implementing good agricultural practices to meet buyer requirements.

How have On-Farm Readiness Reviews impacted growers?

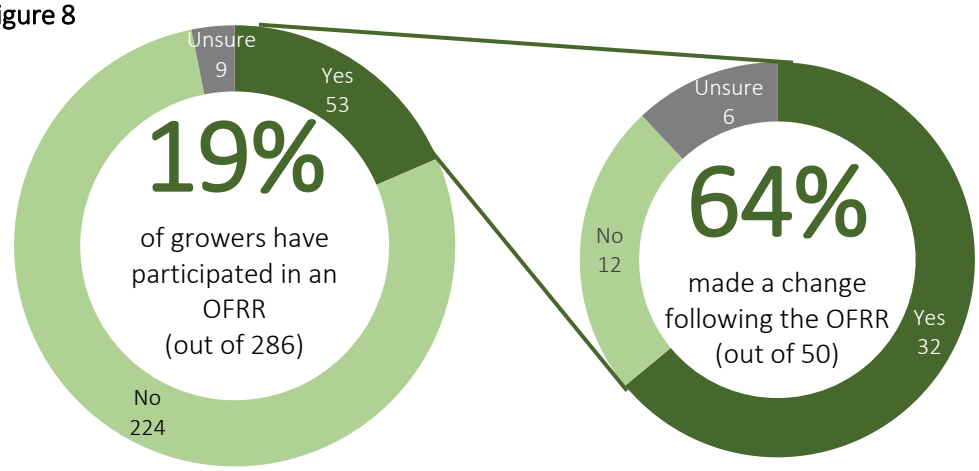
64% of growers who have participated in an OFRR made changes to on-farm food safety practices as a result.

Fifty-three growers (19 percent) who responded to the survey indicated they had participated in an On-Farm Readiness Review (OFRR, Figure 8). During these reviews, Extension food safety specialists visit a farm, observe the food safety practices in place, and advise growers on how they can improve their practices. Of those growers, 32 (64 percent) indicated they made some sort of change to their food safety practices following the OFRR (Figure 8). Changes included:

- 7 growers created **clean zones** to reduce contamination of produce. For example, one took steps to keep horses away from their pack area.
- 6 changed how they **clean or sanitize** food contact surfaces. Two of these growers are now more intentional about cleaning and sanitizing picking crates or pallets.
- 4 improved **food safety record keeping systems**.
- 4 improved **water or irrigation systems**. For example, one respondent installed back flow prevention on irrigation pivots.
- 4 growers made changes to **worker training**, such as creating an employee handbook (two respondents).
- 3 growers improved **signage** related to food safety and posted them in produce areas or pick your own areas.
- 2 growers improved **hygiene in the field**. For example, one began keeping picking crates off of the ground by having two pallets in the field, one for empty crates and the other for full crates.
- 2 added **hand washing stations.**
- 2 upgraded **equipment**.

- 2 began **water testing**. For example, one said, "I take more care that the well used for spraying is tested."
- Other changes, each made by one respondent, included not allowing drips in the cooler, improved pest control, and improved hygiene in a you-pick operation.

Figure 8



Analyzing the data at the regional level, the evaluator tested whether those who had participated in an OFRR were more likely to have made changes to on-farm food safety practices than those who had not participated in one. While the data showed that those who had participated in an OFRR had made changes at a slightly higher level (77 percent making a change) than those who had not participated in an OFRR or who were unsure (72 percent), the difference was not statistically significant (p=0.401).

How many growers who were about to be inspected participated in the PSA grower training last year?

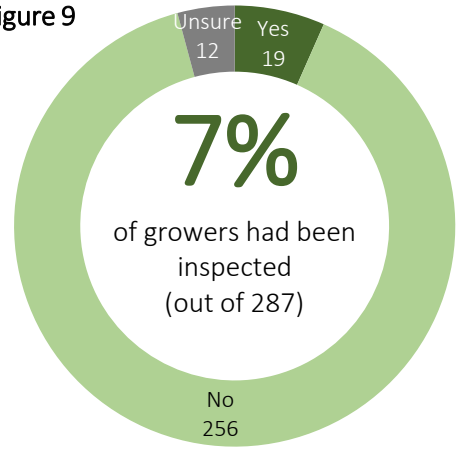
Nineteen respondents (7 percent of growers) indicated they have been inspected.

A small number of respondents indicated that they had been inspected.

In most states, only farms fully covered by FSMA will be inspected. However, farms of all FSMA statuses indicated they had been inspected, which may indicate some states are inspecting all types of farms or that respondents misunderstood the question.

Eight farms that are required to fully comply with FSMA indicated they had been inspected. This is 15 percent of fully covered respondents.

Figure 9



What kinds of infrastructure or equipment changes have growers made to improve on-farm food safety?

25% (69 of 276) of growers made changes to infrastructure or equipment to improve food safety practices after taking the training.

This demonstrates that they made not only practice changes, but system changes to support food safety, which is a higher level of change.

Changes included the following:

- 20 growers added **hand washing stations**.
- 15 growers replaced or updated **washing or sanitizing equipment**, such as stainless steel surfaces and crate washing stations.
- 9 improved **water or irrigation systems**, with such as switching to drip irrigation or drilling a well.
- 8 added or upgraded restrooms, including adding portable tiolets.
- 7 growers added or upgraded **buildings,** which included 4 new pack sheds, an addition, and two replaced ceilings.
- 5 upgraded **food contact surfaces**, including tables, shelving, and walls.
- 5 growers switched to different types of **storage or picking bins** that can be sanitized.
- 4 growers added **fencing or netting** to deter wildlife from entering growing areas.
- 2 respondents rearranged storage areas to create **clean zones**.
- 2 growers made changes to **growing areas** to improve food safety practices. One moved some growing stations to more isolated and contaminant free areas and the other put up a new hoop house designed with food safety in mind.
- Other changes, made by one grower each, included new lighting, improved produce transportation, and adding a loading dock to help keep dirt out of a pack shed.

What difficulties have impeded growers from making on-farm food safety improvements?

Lack of time and money are the top limitations.

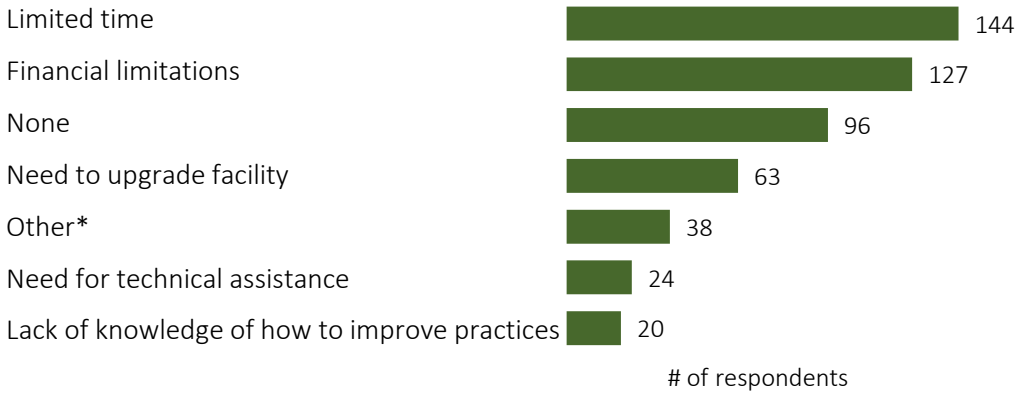
Respondents most commonly cited limitations on time and finances as the top reasons they have had difficulties making changes to on-farm food safety practices (Figure 10). These results are similar to results of a survey conducted by the Local Food Safety Collaborative, which found that farmers ranked financial resources, time, and farm or facility infrastructure as their top barriers to implementing food safety practices (Bihn, Springer, & Pineda-Bermudez, 2019).

Ninety-six growers indicated that there were no barriers to making food safety changes. These farmers may have already been implementing good food safety practices.

Thirty-eight growers identified "other" challenges not listed in the question. Common themes included:

- 4 respondents believed that FSMA is not practical for small scale farms. One said, "Lots of things to look after for a small-scale grower."
- 4 also explained that they need to upgrade equipment.
- 3 growers found it difficult to make changes because the FSMA requirements are "vague" or have "gray areas."
- 3 also cited record keeping as a difficulty, all agreeing that it's easier to implement food safety practices than to keep records proving they were done. One said, "Food safety is no problem, but recording is a pain."
- 3 indicated there is no financial benefit to implementing different food safety practices.

Figure 10: Limited finances and time are the most common barriers to making food safety changes.



*Need to upgrade equipment (4 respondents), small scale (4), gray areas (3), record keeping (3), lack of financial benefit (3), water testing issues (3), negative attitude (2), farm is exempt (1), consumers need to change (1).

Do challenges differ by FSMA status?

Yes. Qualified exempt farms faced the highest number of challenges, on average.

Limited time was a top challenge for farms of all types of FSMA coverage, except farms with less than $25,000 in sales, for whom limited finances was the most common challenge.

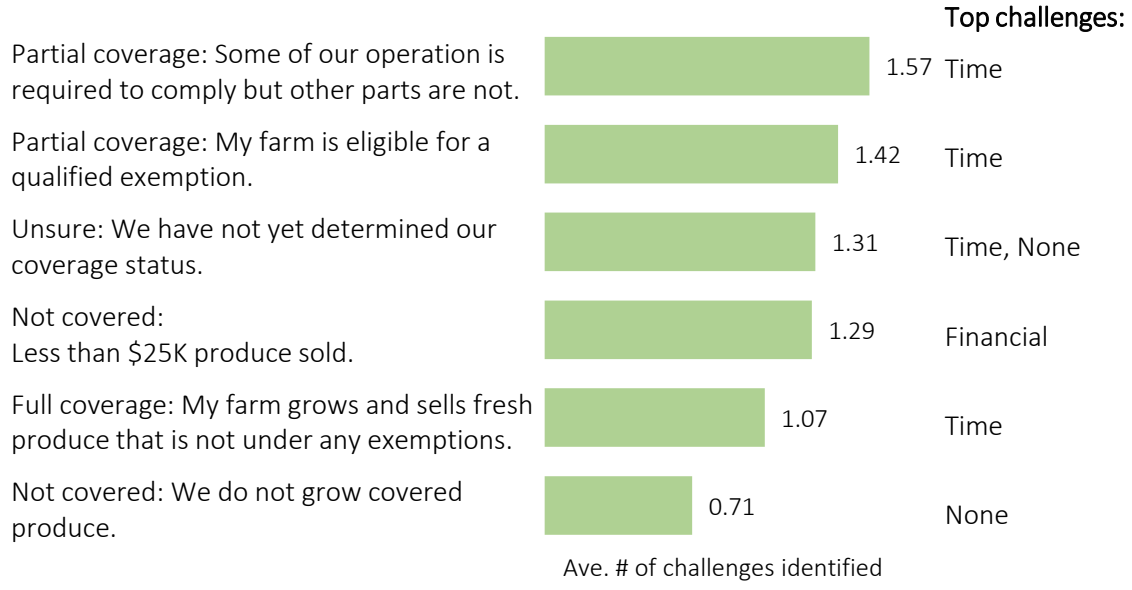
The challenges that growers faced differ according to their FSMA coverage status. Figure 11 showed growers whose farms are qualified exempt identified more challenges on average than other types of farmers (an average of 1.57 challenges selected). These growers most often identified lack of time as one of their challenges.

Farmers who are required to fully comply with FSMA or who are not covered by FSMA identified the lowest number of challenges food safety changes. Those who are fully covered by FSMA identified an average of 1.07 difficulties. These growers may face fewer difficulties, because they may have already been implementing good agricultural practices to meet buyer requirements. Alternatively, they might be operating at a larger scale and have greater access to financial resources with which to make food safety changes.

Growers who are not covered by FSMA most commonly identified that they face no challenges, likely because they will not be inspected and only need to improve food safety practices if there are other motivations.

Growers of all FSMA statuses most commonly identified lack of time as a difficulty except for growers who sell less than $25,000 of produce annually. For them, they most commonly identified financial limitations as a challenge. This makes sense, because these growers are likely earning very little from their farms.

Figure 11: Respondents partially required to comply with FSMA identified the most challenges.



Are challenges faced by Plain community growers different than challenges faced by non-Plain community growers?

Growers who attended trainings for Plain community growers were less likely to identify financial limitations as a challenge than growers who attended trainings for general audiences.

The evaluator performed an analysis to compare the difficulties identified by Plain community growers with those identified by non-Plain growers. Twenty-six percent of growers who attended trainings for Plain growers identified lack of finances as a difficulty, whereas 44 percent of growers who attended trainings for general audiences identified finances as a difficulty. This difference is statistically significant ($p = 0.002$). This may indicate that Plain community growers have better access to funds or are operating businesses that are financially more stable or successful than non-Plain growers.

Plain community growers also identified fewer difficulties on average (1.20 difficulties) than growers who attended trainings for general audiences (1.32). However, the difference in these averages is not statistically significant at the state level ($p = 0.379$).

What are the financial implications of FSMA for respondents?

96 respondents spent an estimated $209,350 to improve food safety practices and infrastructure.

Ninety-six respondents (91 of whom are growers) indicated they spent money on food safety or FSMA compliance since the training (Figure 12). Seventy-eight of these respondents estimated spending a total of $191,350. Half of respondents spent more than $1000 and the other half spent less than $1000 (this is the median). If the 18 respondents who did not share a specific dollar amount spent the median of $1000, we can estimate the 96 respondents together spent $209,350.

Which types of respondents made financial investments for FSMA compliance? Forty-three of 73 (59 percent) respondents whose operation is partially required to comply with FSMA spent money to improve food safety practices. In contrast, 22 percent of all other farms invested money to improve food safety practices (Figure 13). These findings corroborates an earlier finding that farms that are only partially required to comply with FSMA made changes at a higher rate than farms with other coverage statuses.

Of the growers who indicated they had made financial investments to improve food safety practices, roughly half (45) of them identified financial limitations as one difficulty they faced in making food safety changes. This indicates that for at least some of those who invested money to make food safety changes it was a sacrifice. It could also indicate that these growers could have made additional changes had additional funds been available.

Figure 12: 96 people spent money on food safety improvements

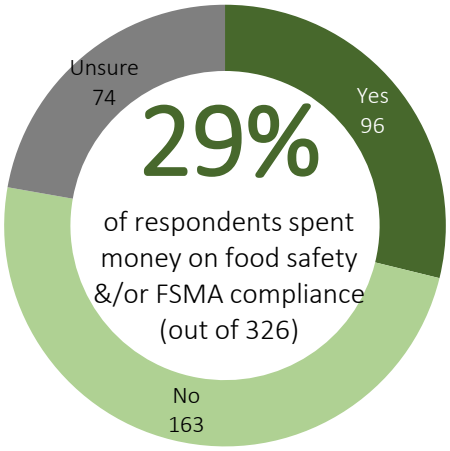
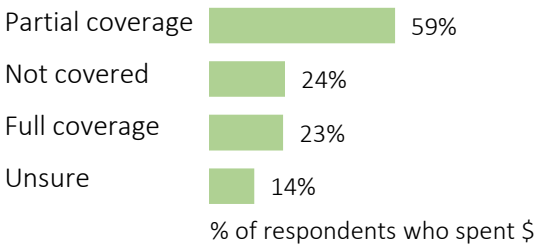


Figure 13: Farms of all types spent money to improve food safety practices.



How do participants in Plain grower trainings differ from the general population?

Plain community growers differ from non-Plain community growers in a number of ways identified through the survey.

The evaluator performed several analyses to determine what differences might be found between growers who participated in trainings for the Plain community and growers participating in trainings for the general population. Findings are summarized here:

- Growers participating in trainings for Plain community growers were more often fully covered by FSMA and less often qualified exempt than non-Plain growers.
- Plain community growers are more likely to have left a negative comment on the survey than growers who do not belong to that community. Twelve percent of growers who attended trainings for Plain community growers left a negative comment, whereas only two percent of non-Plain growers shared a negative comment. It appears that Plain growers may see FSMA as a threat to their way of life. During an interview with a Plain community grower for a success story in Wisconsin, the grower shared that some Plain community growers believe that the extra requirements of FSMA might be impossible to meet on a Plain community farm. In particular, the fact that Plain growers may use horses for field work and transportation means they must take extra precautions to prevent produce from being contaminated with manure. A grower from Michigan seemed to be in tune with these types of sentiments, saying, "Convince or confirm to growers that this process is helpful to get compliant with the new food safety rules. No one is trying to shut you down; they are trying to help so you don't get shut down."
- Plain community growers were also less likely to report having made a change to food safety practices since attending the training. Fifty-seven percent of Plain community growers reported making a change, whereas 83 percent of growers who do not belong to a Plain community reported making a change. The difference in these percentages is statistically significant ($p=0.001$). It is not surprising that if negative views of FSMA or food safety are prevalent in the Plain community or if community members believe that their current practices are already enough, they are not likely to make additional changes to their food safety practices.
- It appears Plain community growers may be less likely to spend money to improve food safety practices. Thirty-one percent of respondents who attended trainings for general audiences spent money to make food safety changes, whereas twenty-four percent of Plain growers reported spending money. However, the difference in these this is not statistically significant ($p = 0.173$).
- On average, Plain community growers identified fewer challenges to making food safety changes (1.20 challenges on average) than growers who attended trainings for general audiences (1.32 challenges). However, this difference is not statistically significant ($p = 0.379$).

The evaluator also coded negative comments left by Plain growers for themes to better understand their views. These themes included:

- Small farms need “common sense” rules, implying that FSMA rules are not “common sense.” (3 growers)
- FSMA requires too much paperwork, and documentation does not ensure that produce is free of pathogens. As one grower said, “In my way of thinking we need to spend more time raising and packing a good, clean product, instead of sitting at a desk filling out more paperwork.” (3 growers) (One non-Plain grower also shared this view.)
- FSMA regulations are not a good fit for small farms. During an interview with a Plain grower in Wisconsin, the grower explained that they use the term “small farms” to refer to farms operated by Plain growers, which likely means that these comments mean they believe FSMA regulations are not a good fit Plain community farms. One respondent explained that they were GAP certified as well as covered by FSMA, but “none really fits our small farms.” (3 growers) (Two non-Plain growers also shared this view.)
- FSMA regulations cause confusion and create additional work for farms that are already GAP certified. One grower said, “What does FSMA compliance help when the public doesn't recognize it? Buyers are asking for GAPs plus+.” (3 growers)
- Consumers need to take better care of their health, so that their immune system is strong enough to fight any foodborne illnesses. One grower said, “A moderate amount of germs is the best way. Too much pasteurization cripples the body's immune system.” (3 growers)

Recommendations and conclusions

How can NCR FSMA partners better help produce growers attain FSMA compliance?

One hundred forty-six respondents shared suggestions for how NCR FSMA partners can help growers attain FSMA compliance. Their responses were coded for themes, shared here:

Continue to offer food safety education: Fifty-five respondents suggested that NCR FSMA partners continue to provide food safety education, making this the most common theme. Six respondents requested that education be offered locally, especially in rural areas.

Provide updates via email or newsletters whenever FSMA requirements change or are updated: Twelve growers requested periodic updates, tips, and reminders. One said, “Maybe a FSMA e-newsletter with updates, tips, and reminders (of what we need to do to be compliant) ... This would be great for us.”

Continue to offer On-Farm Readiness Reviews or similar on-farm activities: Eleven growers requested on-farm education or friendly inspections during which they can receive recommendations to improve food safety practices specific to their farm.

Technical assistance: Eleven growers requested technical assistance. While most requests were not specific, one grower specifically asked for: help with converting a washing machine into a produce spinner, how to implement good agricultural practices when using legacy equipment, and improving efficiency of washing and packing.

Inform growers of funding that may be available to make food safety practice improvements or of low-cost ways to improve food safety practices: Nine growers requested funding to improve on-farm food safety practices. This is corroborated by the fact that lack of finances was the second most common challenge identified by growers earlier in the survey. A respondent from Kansas said, "It would be great if there were small grants from USDA, FDA or other entities to help with the cost of the food safety improvements. Farmers are struggling to make ends meet as it is and while no one wants to make anyone sick the cleaning and sanitizing requirements and all of the recordkeeping add to the workload and therefore payroll of the farm budget. Most farmers want to do what's right, but in the end shortcuts will be made if we can't pay for all of the requirements." While NCR FSMA partners not likely able to provide funding, they can share ideas of low-cost ways to improve on-farm food safety practices or inform growers of funding that may be available from other sources.

Advocate for fewer regulations: While NCR FSMA partners are not likely to be able to lobby or advocate for specific policies, eight respondents requested this.

Clarify how GAP certification and FSMA can work together: Seven growers said they are already GAP certified, so FSMA regulations are not needed. Joe M Yoder, a food safety coordinator (who chose to share his name, although the survey was anonymous) said, "It is very confusing to me GAP and now FSMA is coming to picture and we do not want both if you do not have to." Helping growers access harmonized GAP may be a solution.

Share suggestions to make record-keeping easier: Seven respondents indicated that the record-keeping required by FSMA is overwhelming. One respondent shared, with a smiley face, "come pull weeds while I do my paperwork." One commenter implied that the increased need for documentation may cause growers to work more hastily and may have the effect of worsening food safety practices, "All the paperwork seems to create an attitude of getting things done too fast and not truthful documentation of what is actually happening on the produce, growing and packing farm. I think I see some people just skip some documentation! It bothers me to see this, it seems to me they think no documentation no evidence of occurrence. So I think we need simpler record-keeping[…]" Sharing more constructive comments, four respondents requested templates that they can use to simplify record-keeping or for writing food safety plans and SOPs.

Provide food safety education to others in the food chain: Six respondents requested that NCR FSMA partners provide food safety education to consumers, processors, and individuals who resell produce purchased at auction. Comments regarding consumer education often focused on teaching people how to build their immune systems, so they are less susceptible to foodborne illnesses. These comments came primarily from members of the Plain community. Another grower, who sends his or her produce through a kill step, said that they had sent letters to canners, who seemed to know nothing about this new regulation, and suggested that NCR FSMA partners offer classes specifically to canners and freezers.

Provide better access to water sampling: Five respondents requested better access to water sampling. Specifically, one respondent suggested making arrangements so that water samples can be dropped off at the produce auction. A grower from Missouri said, "Do some training at the local offices for water testing. I had an extremely hard time getting a test done. I am pretty sure it wasn't the right test that I ended up with. The test didn't go to the state, it was ran in office."

Networking: two growers requested opportunities to network with other growers to share ideas on cost effective options and alternatives.

In addition, 16 respondents shared that they believed NCR FSMA partners are doing a good job already and requested that it continue its work as is. One from Wisconsin said, "The personal follow-up has been impressive." Similarly, five respondents said that they believed the PSA grower training offered information that was especially relevant for beginning farms. For example, one said, "Info is good to know while I grow my business, so I can grow it and not have to go back and change and fix things."

References

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