

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

NCR FSMA 2022 Evaluation Report

Center impact and recommendations for improvement

February 2023

Executive Summary

The North Central Region Center for FSMA Training, Extension, and Technical Assistance (NCR FSMA) formed in 2016 with funding from the US Food and Drug Administration (FDA). The purpose of the center is to equip produce safety educators, professionals, and regulators from 12 midwestern states to help small scale farmers and food processors understand and comply with the Food Safety Modernization Act (FSMA).

After three years with funding from the FDA, the NCR FSMA was funded for three more years (NCR FSMA 2.0) by the United States Department of Agriculture (USDA) and was funded again for three years in September 2021 (NCR FSMA 3.0).

The center was evaluated in 2022 using 11 evaluation methods. The following are highlights of the evaluation results, organized by four questions:

1. What is going well with the NCR FSMA 3.0?

- Networking and collaboration are the greatest benefits of being a part of the NCR FSMA.
 - Six of seven interviewees expressed that being a part of a professional produce safety network has been the greatest benefit of being a part of the NCR FSMA. They appreciate being able to learn from one another, collaborate on projects, and gather new ideas based on others' experiences. This theme has consistently emerged from the interview process every year.
 - Similarly, 11 of 12 respondents to the fall professional development survey agreed they strengthened relationships with other professionals during the event and that those relationships will improve their work.
- The NCR FSMA network plays a pivotal role in helping new produce safety educators and regulators learn how to do their jobs.
- Several NCR FSMA resources are widely used by partners. Nearly all respondents to the 2022 communications survey indicated that they use the NCR FSMA website and electronic newsletters, as well as attend monthly listening sessions.
- NCR FSMA partners have access to the information they need regarding FSMA and its rules. All but one respondent to the communications survey reported being very or moderately confident that they have the information they need.
- The 2022 NCR FSMA annual conference was well attended and included several impactful sessions. The first breakout session held on day 1 about hydroponics was found to be especially useful, as were two large group sessions on day 2: Why Big Six Produce: Science Behind Decisions and FDA Research Update: Water and BSAAO.
- The two online Environmental Monitoring Program (EMP) trainings for NCR FSMA partners were well received.
- The NCR FSMA evaluation work confirmed that On-Farm Readiness Reviews offered by NCR FSMA partners have proven to be effective tools in helping farmers identify changes that need to be made and make them. While few follow-up survey respondents have participated in an OFRR, the majority (64 percent) of respondents who have participated in an OFRR indicated they made a change to practices or infrastructure as a result of what they learned.

- Attendance at NCR FSMA listening sessions remains high, with an average of 29 attendees per session in 2022.
 - In addition, the NCR FSMA facilitated two online meetings for NCR FSMA partners with FDA staff. One was about the use of hydrogen peroxide as a sanitizer and the other about pre-harvest water. Attendance was high at these meetings (36 and 35 attendees, respectively).
2. What impacts has the NCR FSMA had?
- NCR FSMA partners glean information to share directly with growers.
 - When asked how they implement the information or ideas they learn from NCR FSMA events, participants in annual interviews most often said that they share the information directly with growers.
 - Similarly, all respondents who attended the fall professional development and responded to the survey agreed or strongly agreed that they learned information from the training that they can directly apply to their work.
 - In addition, six respondents to the annual conference survey indicated they plan to use what they learned by integrating it into trainings they host or teach.
 - Similarly, respondents to the communications survey indicated they have passed on NCR FSMA communications to growers. Communications survey respondents most consistently shared NCR FSMA resources with First Nations growers, controlled environment growers, beginning farmers, and local food growers.
 - The NCR FSMA conducts an evaluation to help partners assess their impact on growers:
 - An NCR FSMA evaluation project found that participants in the PSA grower trainings offered by NCR FSMA partners consistently make changes based on what they learn.
 - 46 percent (99 of 214) of non-farm respondents have made a change since attending the training.
 - 76 percent of growers who responded to the follow-up survey made a change to on-farm food safety practices and/or infrastructure/equipment since attending the PSA grower training.
 - The NCR FSMA conducted a long-term behavior change study that found growers who participated in the interviews continue to recall years later information learned at the PSA Grower Training and most indicated they had made behavior changes after the training related to what they had learned.
 - The NCR FSMA knowledge assessment found growers consistently increase knowledge about food safety and FSMA from Produce Safety Alliance Grower Trainings taught by NCR FSMA partners. Over the course of the five years during which the knowledge assessment has been conducted, participants' scores have increased on average by 4.4 points from 15.9 on the pre-test to 20.3 on the post-test.

3. What could the NCR FSMA do better?

- Facilitate discussion among partners of how to approach educating and serving those who do not fall under the FSMA Produce Safety Rule.
- Continue discussions of what is needed to prepare growers for the new water rule. Ideas include recording a webinar to post on partners websites and creating a water assessment tool for audiences who do not use technology.
- Provide opportunities for partners to learn more about the FDA on-farm inspection data, including differences that might exist between states.
- Sharing about financial or other supports that might be available to help growers implement food safety plans.
- Exploring further the interplay between FSMA compliance and GAP certification and the need for FSMA education versus GAP education.
- Explore the implications for noncompliance with the FSMA PSR and what type of message should be given to growers related to compliance, so they have a reason to care about FSMA.
- Advise presenters at future listening sessions to integrate interactive components in their presentation, such as polling the audience, asking a question that audience members can answer in the chat box, or asking the audience to share their experience related to the topic by unmuting and speaking.

4. What direction could the NCR FSMA take if there is an opportunity to apply for a 4.0 round of funding?

- The NCR FSMA could play a role in developing a water assessment tool appropriate for Plain clothes growers.
- Develop approaches to serve audiences that are not covered by the FSMA Produce Safety Rule.
- Provide professional development, especially for those who are new to their work in produce safety.
- Implement a collective impact strategy for helping the farmers overcome the barriers to making food safety changes.

The 2022 evaluation demonstrated that produce safety professionals continue to value the work of the NCR FSMA. Its role in providing professional development will continue to be relevant, as more people enter the field of produce safety for the first time. Challenges moving forward include serving audiences that are not covered by FSMA, serving underrepresented audiences, and identifying strategies for helping farmers overcome the greatest barriers to making on-farm food safety practice changes: financial constraints, time constraints, and lack of access to skilled labor.

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North Central Region
Center for FSMA Training, Extension
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Introduction

The North Central Region Center for FSMA Training, Extension, and Technical Assistance (NCR FSMA) formed in 2016 with funding from the US Food and Drug Administration (FDA). The purpose of the center is to equip produce safety educators, professionals, and regulators from 12 midwestern states to help small-scale farmers and food processors understand and comply with the Food Safety Modernization Act (FSMA).

After three years with funding from the FDA, the NCR FSMA was funded for three more years (NCR FSMA 2.0) by the United States Department of Agriculture (USDA) and was funded again for three years in September 2021 (NCR FSMA 3.0).

Objectives of the NCR FSMA 3.0 include:

- Objective 1: Expand the produce safety network within the NCR to include underserved produce industry partners, more diverse producers, processors, and educators
- Objective 2: Collaborate with and support the NCR produce safety network
- Objective 3: Create, modify, and validate produce safety training materials based on a needs assessment, focusing on underserved and diverse production and processing environments and new educators
- Objective 4: Professional development and technical assistance of NCR produce safety educators, growers, and processors

Throughout the life of the NCR FSMA, evaluation has been used to measure its impact and receive continuous feedback to improve its work. This report shares highlights of evaluation results of the NCR FSMA 3.0 in 2022. It aims to answer four questions:

1. What is going well with the NCR FSMA 3.0?
2. What impacts has the NCR FSMA had?
3. What could the NCR FSMA do better?
4. What direction could the NCR FSMA take if there is an opportunity to apply for a 4.0 round of funding?

Methods

In 2022, 11 evaluation methods were conducted, listed in chronological order.

1. Follow-up survey with Produce Safety Alliance Grower Training participants, January 2022

The survey was first conducted in January 2018, sent to participants who took the course during the training season of 2016-17. The most recent survey was sent in January 2022, to participants who took the course during 2020-21. In total, partners from 11 states (all except Minnesota, who conduct their own survey) have participated in the survey, although not every state has participated in every year. The survey has followed up with participants from 280 trainings (although responses have not been received from all trainings).

Partners from each state sent invitations 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. The electronic survey was conducted using Qualtrics™. 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 variations were in Wisconsin in years 2-4 and North Dakota in year 4, when they sent a paper copy of the survey to all participants as well as an electronic invitation to those who use technology.

Table 1 shows the number of people invited to take the survey in each year and the number of responses received. The yearly response rate has ranged from 18 percent (year 1) to 26 percent (years 2 and 3). In total, 5,412 people were invited to take the survey and 1,279 responded. Therefore, the overall response rate is 24 percent, which is good for this type of survey.

Table 1: 1,279 people responded to the follow-up survey over the course of five years.

	# invited to take survey	# of responses	Response rate
Year 1 2016-17	781	141	18%
Year 2 2017-18	1,436	367	26%
Year 3 2018-19	1,426*	366*	26%
Year 4 2019-20	1,080	253	23%
Year 5 2020-21	766	152	20%
TOTAL	5,412	1,279	24%

* does not include 60 responses collected by Iowa to their own survey.

The response rate to surveys distributed on paper (29 percent) was higher than the response rate to the electronic survey (18 percent). This may mean the sample is skewed to include a higher proportion of Plain clothes growers than participated in the training, because this population received paper copies of the survey only. (Year 1 is not included in paper versus electronic response rates, because whether responses were received electronically or on paper was not tracked.)

In two cases, partners shared data from the follow-up surveys that they had conducted themselves.

In the first instance, partners in Iowa surveyed training participants who had taken the course in the previous two years (the 2017-18 training season, and the 2018-19 training season). They sent their survey in November 2019. They shared raw, de-identified data, and their data was added to the year 3 regional dataset for a few questions that both surveys had in common. Iowa received 60 responses to that survey. These responses are not included in Table 1.

In the second case, Minnesota has conducted their own follow-up survey for three years, following up with participants from trainings starting in the 2017-18 training season (year 2) through 2019-20 (year 4). They shared aggregated results from four questions that were similar enough to the regional survey to be added to the regional results. They received 108 responses. The results were shared in aggregate, rather than raw data that could be added to the NCR FSMA dataset. It is not known how many invitations were sent for that survey. These responses are not included in Table 1.

Data was analyzed using descriptive statistics and t-tests using SPSS™(version 26) software.

2. Annual conference evaluation survey, March 2022

The NCR FSMA held its 2022 annual conference on Tuesday, March 1 and Thursday, March 3. The meeting was held virtually, and 94 people participated. Participants were invited to participate in a short electronic survey, conducted using Qualtrics™. The survey link was shared in the chat box at the end of the meeting, emailed to participants following the conference, and shared in the NCR FSMA newsletter. Twenty-three people completed the survey (24 percent response rate). Three respondents participated in the conference only on Tuesday, and hence answered questions exclusive to that day. The remaining 20 respondents participated both days.

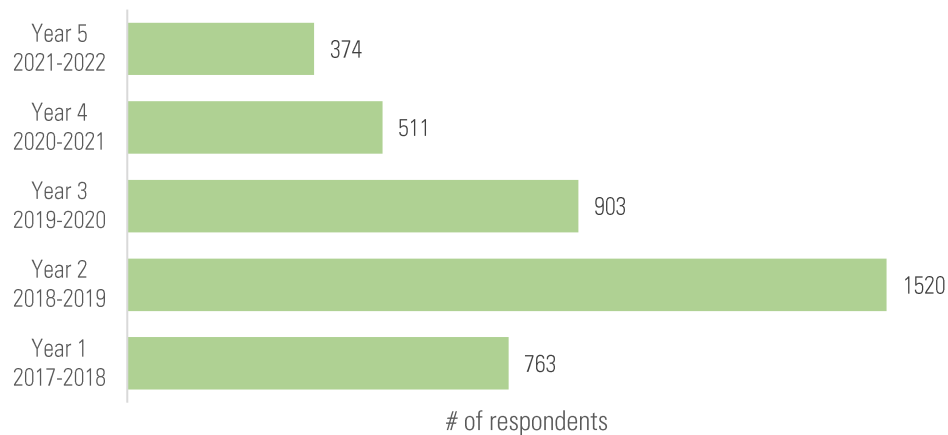
3. Produce Safety Alliance Grower Training Knowledge Assessment, July 2022

The knowledge assessment was developed by Dr. Catherine Shoulders at the University of Arkansas. The knowledge assessment is a quiz with 25 questions related to the seven modules of the PSA Grower Training. The NCR FSMA has been utilizing the knowledge assessment since 2017.

Training participants were asked to complete the quiz before beginning the training and again after the training. Remote delivery participants completed the assessment online and face-to-face participants completed it on paper. The online survey was conducted using a Qualtrics™ survey, which the NCR FSMA evaluation team set up. Pre-test and post-test responses were matched using a unique identification number or word, along with the date of the training, and the state.

Only responses which included both a pre-test and a post-test from the same person were included in the analysis. (In a few cases, a person completed only the pre-test or only the post-test.) In total, 4,071 complete responses have been received from the region since year 1 (2017-18), from 272 trainings. Figure 1 shows the number of responses collected in each year. The number of responses has steadily declined since year 2, reflective of the number of people trained in each year.

Figure 1: The number of responses has steadily declined since year 2.



The NCR FSMA evaluation team analyzed the data using SPSS™.

In addition, training organizers completed a cover sheet for each training. The cover sheets provided information including the date of the training, the location, names of trainers, the number of participants, types of supplemental educational activities conducted during the training, and whether the training was targeted towards any special population. Special populations tracked included Plain clothes growers (which includes Amish and Mennonite growers), minority growers, local food growers, military veterans (although no trainings have been offered in the NCR to this population), non-English/limited English language (all have been for Spanish-speaking audiences), students, tribal growers, beginning farmers, professionals, and other.

4. Environmental Monitoring Short Course evaluation, June and August 2022

A short course divided over two days and taught by Dr. Byron Chaves was offered online for NCR FSMA partners in June 2022 and again in August 2022. The course was evaluated using a survey administered electronically using Qualtrics™ immediately after the completion of the course. The survey was developed by University of Nebraska Lincoln evaluators. Ten people completed the evaluation for the June course and 12 completed the evaluation for the August course, for a total of 22 responses.

5. Communications survey, August 2022

A survey regarding NCR FSMA communications was conducted online using Qualtrics™ in summer 2022. People were invited to take the survey via email and the NCR FSMA electronic newsletter. These emails are sent to approximately 200 people. Respondents were given the opportunity to enter a drawing to win one of four \$25 gift cards as an incentive to participate. In total, 21 people responded to the survey, so the response rate was 10.5 percent. Data was analyzed using SPSS™ (version 26) using descriptive statistics. A similar, but not identical, survey was also conducted in 2019.

6. Long-term Behavior Change Study, September 2022

The NCR FSMA conducted a research study in 2022 to determine the long-term impacts of the Produce Safety Alliance (PSA) Grower Training with growers who participated in the course between July 2016 and June 2018. They interviewed 30 growers during the spring of 2022. Detailed methods and results will be published in the academic journal *Food Protection Trends* in the May/June 2023 issue.

7. Fall Professional Development evaluation survey, October 2022

The NCR FSMA offered its annual fall professional development on October 4-5. In total, 32 people attended the training. An invitation to complete a brief online survey was sent to participants as part of a follow-up email. A reminder to complete the survey was sent in the NCR FSMA monthly newsletter. The survey was conducted using Qualtrics™. Twelve people completed the survey including five educators, four service providers or technicians, and three regulators. A response rate was 37.5 percent.

8. Annual partner interviews, December 2022-January 2023

A total of 18 states leads, state regulators, and Food Safety Outreach Program (FSOP) awardees from the region were invited to participate in the interview process in 2022. Seven responded to the invitation and were interviewed. Interviewees included two regulators, four state leads, and two FSOP awardees (one interviewee was a state lead and FSOP awardee). Interviews were conducted over Zoom™ in December 2022 and January 2023. Interviews were semi-structured, using a common interview template. The evaluator took notes during the interviews. Interviews were recorded and transcribed in some cases when the interviewee spoke faster than the evaluator could record manually. Interviewees were promised confidentiality, meaning identifying information would not be associated with their responses and were informed that they could skip any question they did not want to answer. Most interviews lasted approximately 20 minutes.

Data was coded using NVivo software.

9. Produce Safety Alliance post-training evaluation, December 2022

In December 2022, the NCR FSMA was given the opportunity to access data from the Produce Safety Alliance Grower Training course evaluation. This evaluation consists of a six-page survey completed by participants after completing the course. It includes ratings of each module as well as extensive demographic questions. Data was obtained from 194 trainings held in the North Central region between 11/1/2017 and 6/30/2021. Data was obtained only for courses for which the NCR FSMA had obtained permission from the lead trainer. The data set includes 3,425 responses.

10. Participant observation, continual

The evaluator participated in monthly listening sessions and took extensive notes during the sessions, noting the level of participant engagement. She also received the monthly newsletters and participated in team lead meetings.

11. Success stories, continual

In a continual process, NCR FSMA partners identify success stories and inform the NCR FSMA evaluator or program coordinator that they have a story. The NCR FSMA evaluator or program coordinator contacts the people involved, usually farmers, processors, or food safety educators, and interviews them about their experience with the NCR FSMA. The evaluator or program coordinator then writes a story based off interview data and shares the story back with interviewees for their approval. In this way, the stories are verified to be true.

Starting in 2021, NCR FSMA partners were invited to submit stories which they had written. Stories are posted to the NCR FSMA website at: <https://www.ncrfsma.org/impacts>. Twenty-four stories have been posted since 2017.

Results

1. What is going well with the NCR FSMA 3.0?

Serving partners

Networking and collaboration are the greatest benefits of being a part of the NCR FSMA.

Six of seven interviewees expressed that being a part of a professional produce safety network has been the greatest benefit of being a part of the NCR FSMA. They appreciate being able to learn from one another, collaborate on projects, and gather new ideas based on others' experiences. This theme has consistently emerged from the interview process every year.

Similarly, 11 of 12 respondents to the fall professional development survey agreed they strengthened relationships with other professionals during the event and that those relationships will improve their work.

The NCR FSMA network plays a pivotal role in helping new produce safety educators and regulators learn how to do their jobs.

One theme emerged from annual interviews for the first time in 2022. Two interviewees expressed the idea that people who are new to working in produce safety learn how to do their jobs from other members of the NCR FSMA network. One interviewee explained that attending Cooperative Agreement Program (CAP) program manager meetings was essential for understanding what the CAP program was about.

"When I was a new person, meetings for regulators helped me create the institutional knowledge of what the CAP [Cooperative Agreement Program] is about and what other states are doing."

~CAP program manager

Similarly, other interviewees have noticed many people joining the NCR FSMA network who are new to produce safety work. (Confirming this observation, the survey of people who attended the fall professional development meeting showed that over half, seven of 12, of respondents had been in their job two years or fewer.) One person described how the NCR FSMA network serves an essential role in teaching these people how to do their jobs.

"You need to have [people with years of experience in produce safety learning alongside people who are new in their job]. That's the only way to learn to do this stuff."

~ State lead

As an illustration of how the NCR FSMA has helped people learn to do their jobs, two interviewees described Cooperative Agreement Program reports as a difficult task they must complete as a part of their job. One found support from other program managers through the monthly program manager calls, while the other seemed unaware that these calls could help him/her better complete that task.

“When it comes to quarterly reporting, we are all in the same boat. [In the program manager meetings] we vent frustrations and share what is working and how we worded things that seemed to communicate well.”

~CAP program manager

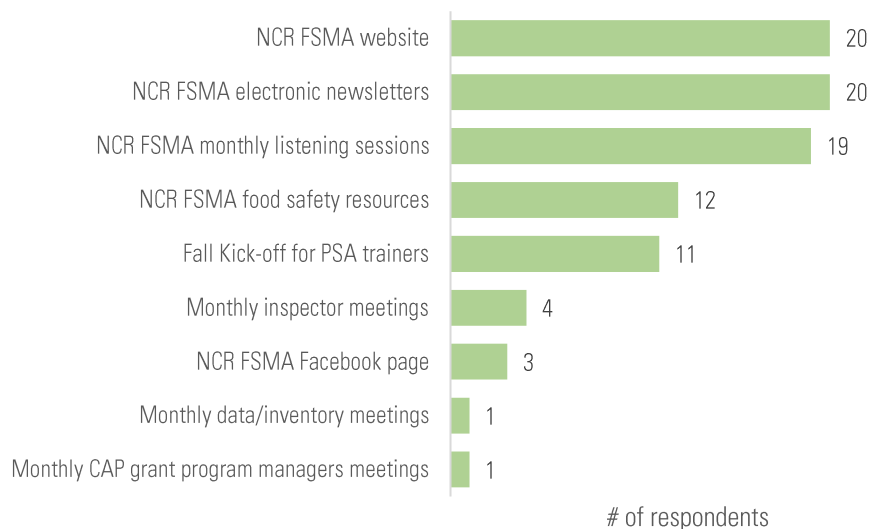
Several NCR FSMA resources are widely used by partners.

Nearly all respondents to the 2022 communications survey indicated that they use the *NCR FSMA website* and *electronic newsletters* as well as attend *monthly listening sessions*.

Figure 2 shows communication methods that have reached respondents. Nearly all respondents have used the NCR FSMA website and the NCR FSMA electronic newsletters. Nearly all have attended NCR FSMA monthly listening sessions.

Half of respondents (12) have utilized NCR FSMA food safety resources, which include add-ons, such as fact sheets and checklists. These resources were created in the first three years of the NCR FSMA. It is possible that some people who joined the NCR FSMA in more recent years are less aware of these resources than those who have participated since the beginning. Half (11) of respondents have also attended a fall kickoff for PSA trainers.

Figure 2: Nearly all respondents have used the NCR FSMA website and used NCR FSMA electronic newsletters and attended monthly listening sessions.

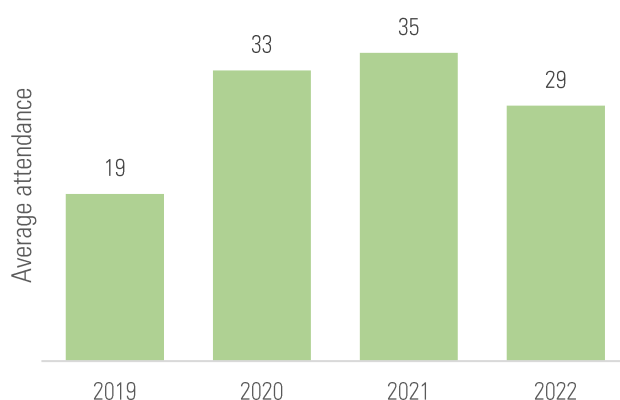


Corroborating evidence collected through participant observation showed attendance at listening sessions increased from 19 people in 2019 to 33 people in 2020 (Figure 3). It is believed that attendance increased in 2020 due to the restrictions put in place to slow the spread of COVID-19. NCR FSMA partners were unable to attend live events or visit farms, giving them more time to attend listening sessions. Attendance has remained high ever since.

In 2022 average attendance of listening sessions was 29 people. On average twelve people spoke or wrote in the chat box during the listening sessions.

In addition, the NCR FSMA facilitated two online meetings for NCR FSMA partners with the people from the Food and Drug Administration (FDA). One was about the use of hydrogen peroxide as a sanitizer and the other about pre-harvest water. Attendance was high at these meetings (36 and 35 attendees, respectively)

Figure 3: Average attendance at listening sessions jumped in 2020 and have remained high ever since.

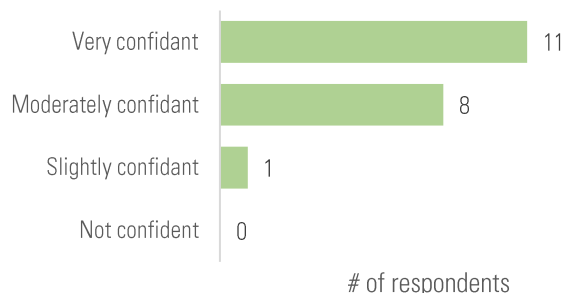


NCR FSMA partners have access to the information they need regarding FSMA and its rules.

All but one respondent to the communications survey reported being very or moderately confident that they have the information they need.

Eleven respondents indicated they are very confident they have access to information they need regarding FSMA and its rules (Figure 4). Eight are moderately confident. Only one is slightly confident and none indicated that they are not confident. This may indicate that the NCR FSMA is disseminating needed information and respondents are connected with other important sources of information.

Figure 4: Respondents are confident they have access to information they need regarding FSMA and its rules.



The 2022 NCR FSMA annual conference was well attended and included several impactful sessions.

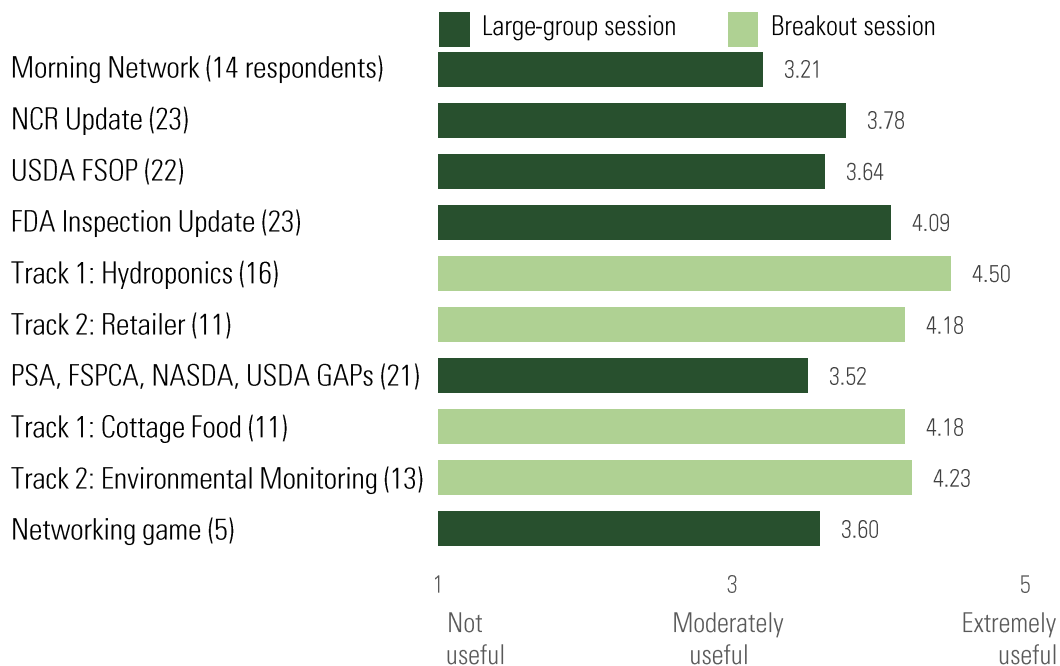
The NCR FSMA held its 2022 annual meeting on Tuesday, March 1 and Thursday, March 3. The meeting was held virtually, and 94 people participated.

Participants were asked to rate the usefulness of sessions held each day.

On Tuesday, March 1, the breakout sessions (labeled as track 1, track 2, etc. and with lighter colored green bars, Figure 5) received high ratings, on average. The first breakout session about hydroponics was found to be especially useful, receiving an average rating of 4.5, where five equals extremely useful.

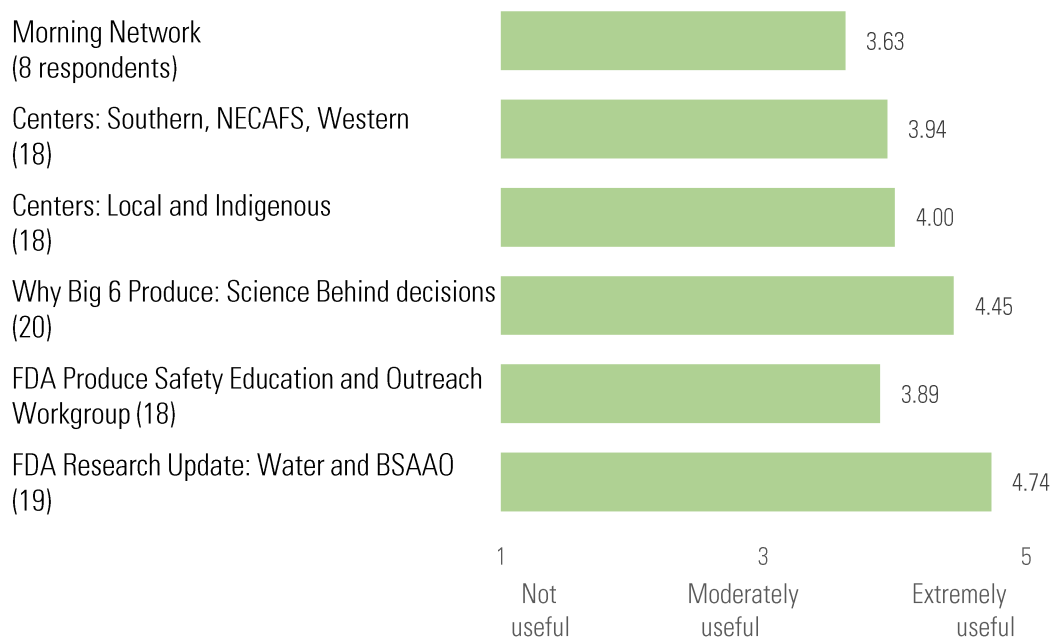
(Four respondents gave a rating for both the hydroponics and the retailer session, which were held concurrently. It is not known if these individuals attended part of one session and then part of the other, or if they mistakenly rated a breakout session which they did not attend. The same is true for the second set of breakout sessions, because two people rated both the cottage food and environmental monitoring sessions.)

Figure 5: On Tuesday, March 1, breakout sessions received higher ratings than the large group sessions



On Thursday, March 3, only large group sessions were held (no breakout sessions). Two of the sessions very highly rated: Why Big Six Produce: Science Behind Decisions (average rating of 4.45) and FDA Research Update: Water and BSAAO (4.74). Through open ended comments, three individuals applauded the Big 6 produce presentation, while two said they found the BSAAO presentation by the FDA to be especially useful. One said, “I loved the Big 6 Produce talk - probably my favorite if I had to choose.” Another said, “The Big 6 Produce and BSAAO presentations were the most interesting topics to me and were covered very well and thoroughly.”

Figure 6: FDA updates on water and BSAAO research and the presentation about Big 6 Produce were the highest rated on Thursday, March 3



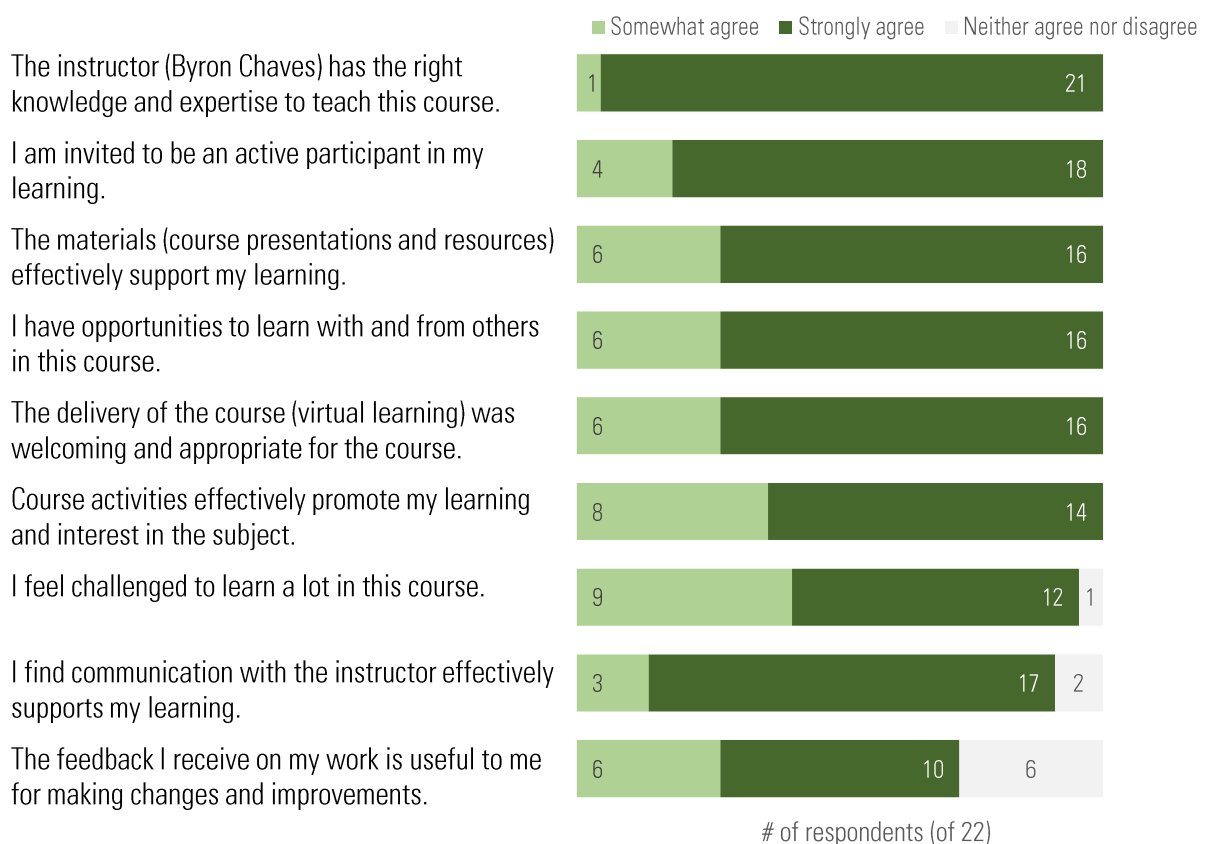
The online Environmental Monitoring Program (EMP) training for NCR FSMA partners was well received by survey respondents.

Respondents to the evaluation survey for the environmental monitoring program training taught by Dr. Byron Chaves in the summer of 2022 gave positive feedback. Figure 7 shows that all participants strongly agreed or somewhat agreed with nearly all of the statements measuring the quality of the course.

“Thank you again for teaching this course. I found it very intriguing, and I gained so much from it. I can't wait to recommend it to my colleagues.”

~ Participant in the June EMP workshop

Figure 7: A knowledgeable instructor taught the EMP course, and he invited people to be active participants in their learning.



Evaluating the impact of partners

The behavior change/follow-up survey conducted by the NCR FSMA found that On-Farm Readiness Reviews offered by NCR FSMA partners have proven to be effective tools in helping farmers identify changes that need to be made and make them.

While few follow-up survey respondents have participated in an OFRR, the majority of those who have participated made changes on their farm as a result.

Nineteen percent of farm respondents indicated they have participated in an OFRR (Figure 8). These reviews are intended to prepare farmers for inspection by conducting an on-farm visit during which food safety professionals identify practices or infrastructure that could be improved.

Sixty-four percent of respondents who have participated in an OFRR indicated they made a change to practices or infrastructure as a result of what they learned, demonstrating that OFRRs are effective at helping growers make on-farm changes (Figure 9). Therefore, NCR FSMA partners should continue to offer OFRRs to the extent possible.

Figure 8: 19% of farm respondents have participated in an OFRR.
(of 620 respondents)

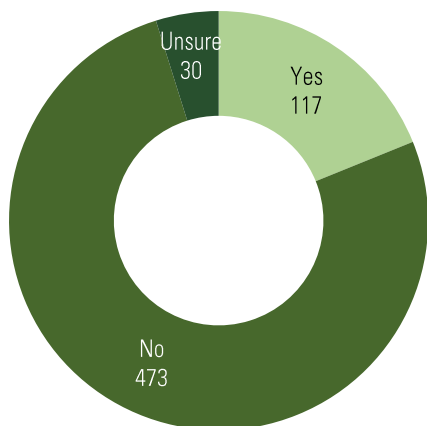
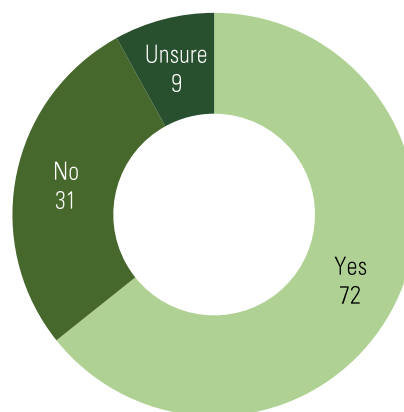


Figure 9: 64% of OFRR participants made a change based on what they learned during the review.
(of 112 respondents)



To illustrate this point, an NCR FSMA success story tells how the new owners of a U-pick blueberry farm in Indiana, Drew and Stephanie McCulley, requested an OFRR soon after taking over the farm business from the previous owners. The story shares, “While on their farm, the state employees found cleaning products that were previously approved but had been taken off the approved list just recently. The previous owners had left the extra supplies. For Drew and Stephanie, it was valuable to have outside experts who know the most recent regulations visit. ‘We wouldn’t have known that those regulations had changed.’ They also learned more about record keeping and best practices for cleaning and sanitizing buckets for their U-pick operation. The McCulleys learned more about water testing and general care of the irrigation well, too.”

The full story can be found at: <https://www.ncrfsma.org/new-farm-owners-invite-educators-and-regulators-their-farm>

2. What impacts has the NCR FSMA had?

Serving partners

NCR FSMA partners glean information to share directly with growers.

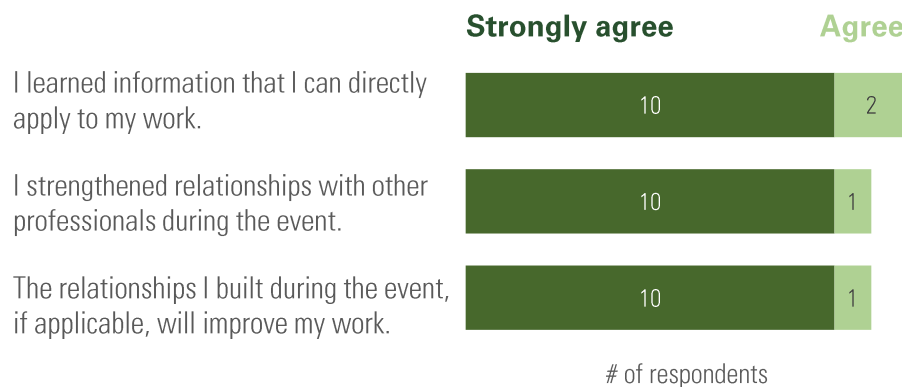
When asked how they implement the information or ideas they learn from NCR FSMA events, participants in annual interviews most often said that they share the information directly with growers. The information they learn prepares them to answer questions they receive from growers as well as improve trainings they teach.

“The FDA came and talked about the new water rule. We’ve been getting a lot of questions [from growers about the water rule] and I had questions of how it would roll out and the main takeaways.”

~State lead

Similarly, all respondents who attended the fall professional development and responded to the survey agreed or strongly agreed that they learned information from the training that they can directly apply to their work (Figure 10). When asked what they would do differently in their work as a result of attending the fall professional development training, one theme emerged: respondents will apply the information they learned about how to talk with farmers.

Figure 10: All respondents learned information they can directly apply to their work.



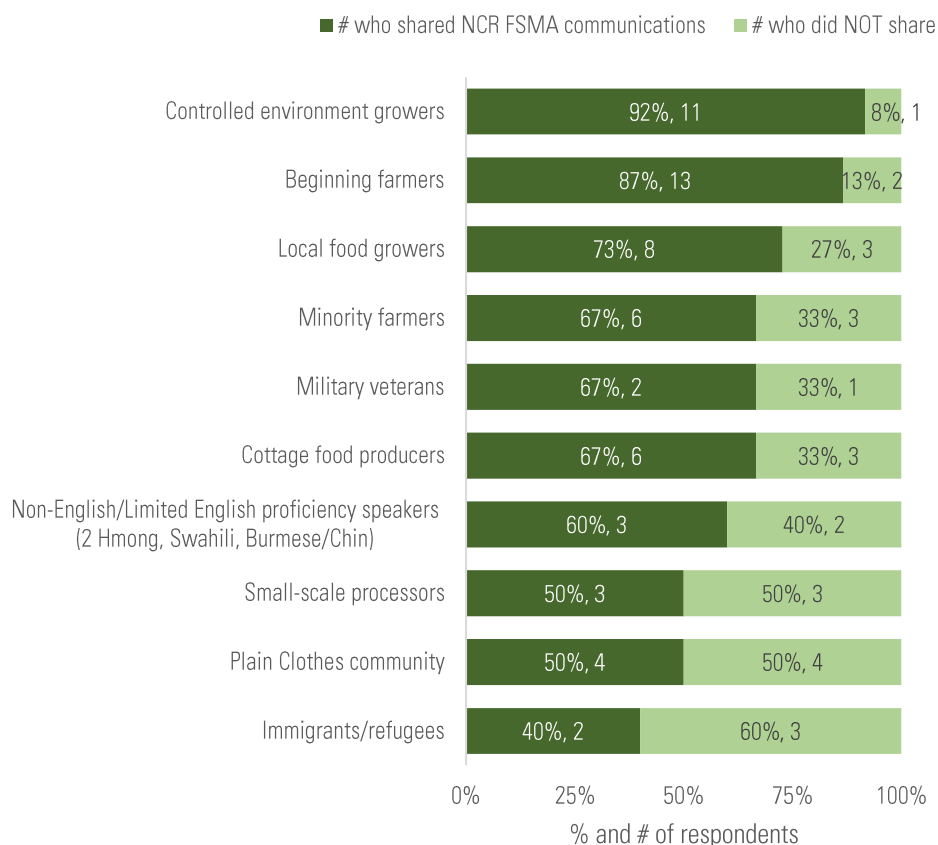
In addition, six respondents to the annual conference survey indicated they plan to use what they learned by integrating it into trainings they host or teach. Specifically, they mentioned integrating new information into PSA Grower Trainings, trainings of retail food inspectors, and trainings about environmental monitoring. (Three respondents did not specify the type of training or education.) For example, one respondent said, “I will use the science research information during PSA trainings to emphasize the importance of science in training.”

Similarly, respondents to the communications survey indicated they have passed on NCR FSMA communications to growers. Respondents were asked which NCR FSMA communications they have shared with special populations with whom they work. They could select one of the following options for each

special population: NCR FSMA newsletter, NCR FSMA website, or NCR FSMA add-on resources. (They could also choose none of the above.)

Figure 11 shows that communications survey respondents most consistently shared NCR FSMA resources with controlled environment growers, beginning farmers, and local food growers. They less commonly shared resources with small-scale processors, Plain clothes community members, and immigrants or refugees. To explain one respondent said the NCR FSMA communications did not share information that was pertinent to small-scale processors and cottage food makers. Another respondent explained that they haven't shared NCR FSMA resources with Plain clothes growers because technology is required to access them.

Figure 11: NCR FSMA communications were most commonly shared with controlled environment growers, beginning farmers, and local food growers.

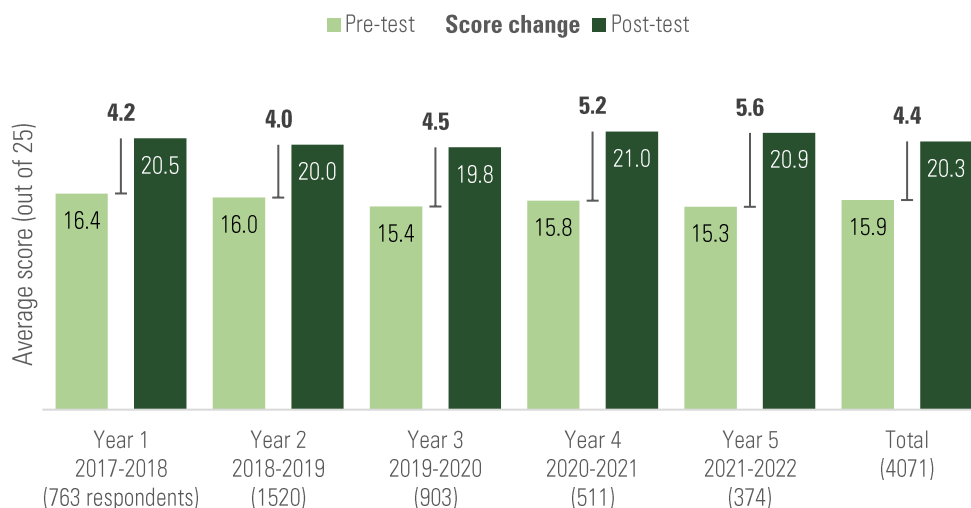


Evaluating the impact of partners

The NCR FSMA organized the knowledge change assessment that showed growers consistently increase knowledge about food safety and FSMA from Produce Safety Alliance Grower Trainings taught by NCR FSMA partners.

Over the course of the five years during which the knowledge assessment has been conducted, participants' scores have increased on average by 4.4 points from 15.9 on the pre-test to 20.3 on the post-test (Figure 12). The difference between the average pre-test and post-test score is statistically significant ($p=0.001$).

Figure 12: Score change was highest in years 4 and 5.



Similarly, the PSA post-training evaluation showed growers agreed their knowledge of the topics covered in the seven modules of the training increased (Figure 11). They also strongly agreed their instructor was able to answer questions and was effective in delivering the content.

Figure 13: Participants in the PSA training rated their instructors highly and agreed their knowledge increased.



Participants in the PSA grower trainings offered by NCR FSMA partners consistently make changes based on what they learn, as measured by the NCR FSMA behavior change/follow-up survey.

46 percent (99 of 214) of non-farm respondents have made a change since attending the training.

The most common change made by *non-farm* respondents was updating or improving education offered to clients, mentioned by 20 respondents. For example, one respondent shared, “I used the knowledge to develop a farmer coaching program which gives farmers a better understanding of the regulations and how to apply food safety best practices to their own farm through a written food safety plan.” Another said, “I used my training to better inform the Amish farmers I weekly buy produce from as an agent for [a local market and deli].”

Many of the changes made by non-farm respondents were related to agricultural practices, showing that these respondents are involved in the growing and harvesting fresh produce, although in a noncommercial setting. Changes that they made include:

- improved harvest and postharvest practices (8 respondents),
- improved health and hygiene practices (8), and
- changing crop mix to focus on crops not covered by FSMA (1).

Additional changes made by non-farm respondents include:

- writing or implementing new or improved standard operating procedures, good agricultural practices, or food safety plans (13 respondents),
- identifying or improving credentials that buyers or market managers require from producers (7),
- improved record keeping (5), and
- new or improved infrastructure (3).

76 percent of growers who responded to the follow-up survey made a change to on-farm food safety practices and/or infrastructure/equipment since attending the PSA grower training.

Beginning or modifying farm employee training was the most common type of food safety practice change made since the training by respondents.

Adding new or upgrading existing handwashing stations or facilities was the most common type of infrastructure or equipment change.

When responding to the long-term behavior change interviews conducted by the NCR FSMA, growers continue to recall years later information learned at the PSA Grower Training and most indicated they had made behavior changes after the training related to what they had learned.

The long-term behavior change interviews showed that most interviewees were able to accurately recall information they learn at the Produce Safety Alliance Grower Training. The topic most often recalled by growers was cross-contamination, mentioned by 23 of 30 participants. The changes made in relation to cross-contamination included ceasing to wash produce and reducing the number of times produce was handled by picking directly into the containers that produce will be sold in.

Participants recalled learning about health and hygiene, especially hand washing, mentioned by 22 participants. Changes they made included updating equipment or infrastructure, such as adding handwashing sinks, as well as washing hands more frequently and relying less on gloves.

In addition, 22 participants learned about cleaning and sanitizing at the training. Examples of changes made related to cleaning and sanitizing included adding sinks for washing harvest containers and training employees on proper cleaning and sanitizing methods.

“You need to clean equipment before you sanitize it. Sanitize[ing] alone isn’t something that [...] qualifies as safe cleaning,”

~ Produce grower

Water testing for water quality was recalled by 18 participants. Seventeen participants recalled information related to animal feces, especially related to preventing contamination, such as by maintaining distance between livestock and produce production areas and ensuring employees washing hands and change boots after caring for livestock and prior to entering produce production areas.

3. What could the NCR FSMA do better?

Several evaluation methods asked participants to share recommendations for improvement or topics they would like to learn more about at NCR FSMA meetings or events. Respondents shared many unique ideas, with a few common themes emerging. Recommendations shared by multiple people include:

- Facilitate discussion among partners of how to approach educating and serving those who do not fall under the FSMA Produce Safety Rule.
- Continue discussions of what is needed to prepare growers for the new water rule. Ideas include recording a webinar to post on partners' websites and creating a water assessment tool for audiences who do not use technology.
- Provide opportunities for partners to learn more about the FDA on-farm inspection data, including differences that might exist between states.
- Share about financial or other supports that might be available to help growers implement food safety plans.
- Explore further the interplay between FSMA compliance and GAP certification and the need for FSMA education versus GAP education.
- Agree on a message for growers related to the implications of noncompliance and why they should care about FSMA.
- Advise presenters at future listening sessions to include interactive components in their presentations, such as polling the audience, asking a question that audience members can answer in the chat box, or asking the audience to share their experience related to the topic by unmuting and speaking.
- Facilitate discussion on novel ways to help growers overcome the most common barriers to making food safety improvements: lack of time, lack of money, and difficulty accessing skilled labor.

Unique recommendations shared by only one respondent included:

- Develop announcements over social media that partners can share with growers in their states. For example, one interviewee shared that they are not allowed to share press releases from other universities but are allowed to share social media pieces developed by other universities.
- Consider how the NCR FSMA might advocate before the FDA for the creation of tools and resources that are appropriate for audiences who do not use technology.
- Consider holding a monthly listening session or conference breakout about diverse cultural understandings of food safety.
- Create a repository of all the resources available in various languages on cottage food production.
- Continue to conduct needs assessments and develop educational or outreach materials, training programs, and workshops to meet the needs.

Finally, topics that NCR FSMA partners are interested in learning more about include:

- How to build relationships with farmers,
- More on hydrogen peroxide,

- More about self-reported traceback of outbreaks and whether implicit bias influences what gets inspected,
- Whether any case studies exist of distinctions between producers and on-farm processors,
- Hydroponics and aquaponics,
- Options for third party audits or self-audits for small-scale growers that would be acceptable to grocers, and
- Preventive controls.

4. What direction could the NCR FSMA take if there is an opportunity to apply for a 4.0 round of funding?

The NCR FSMA could play a role in developing a water assessment tool appropriate for Plain clothes growers.

In general, participants in annual interviews were aware of audiences in their state whose needs for produce safety education are not being fully met. Three interviewees work with Amish populations and believed more can be done to develop materials appropriate for them. Two explained that the online water assessment tool developed by the FDA is inappropriate for Amish growers, but because they do not use technology, and no alternative has yet been developed. One interviewee envisions developing an alternative tool but needs help from others with greater expertise on the water rule. Another believed the NCR FSMA could advocate before FDA regarding the need to provide tools that are accessible to populations who don't use technology. The third interviewee requested printable materials, in general, that would be appropriate for Amish audiences. This person explained that NCR FSMA partners could print materials on their own if such materials were developed and made available for download.

"Probably the biggest thing is the water assessment and Amish growers. How to do it because the online tool doesn't work. How do we create a resource that makes sense?"

~State lead

Develop approaches to serve audiences that are not covered by the FSMA Produce Safety Rule.

Two interviewees explained that the NCR FSMA could further the discussion on how to approach the dilemma that underserved audiences need food safety education, but most do not fall under the Produce Safety Rule. As a result, it is difficult to make the case to use funds earmarked for FSMA education for these audiences.

"Underrepresented populations often aren't under the rule, but the culture of food safety can be developed[...] The NCR FSMA can clarify why to give FSMA curriculum to those who are not under the rule."

~FSOP awardee

Finally, one interviewee believed learning more about how different cultures understand food safety would prepare produce safety educators to better work with people from other cultures or other parts of the world.

Provide professional development for those who are new to their work in produce safety.

The fall professional development survey as well as annual interviews confirmed that many people new to the arena of produce safety are starting jobs as inspectors and produce safety educators. Participants in annual interviews shared that the only way to learn many produce safety related jobs is from others. Therefore, the NCR FSMA could play a role in providing professional development for people who are new to produce safety. This might include a mentorship program, listening sessions or annual conference sessions teaching the basics of produce safety or how to connect with farmers, and networking (which the NCR FSMA already excels at).

Implement a collective impact strategy for helping the farmers overcome the barriers to making food safety changes.

The long-term behavior change study highlighted that for the most part growers don't need further education to be able to implement on-farm food safety changes. Rather, they requested personal interactions with food safety educators, such as on-farm visits.

They also indicated that constraints on their time and finances along with difficulty accessing skilled labor were barriers to implementing further changes. Clearly, it is outside the scope of most produce safety educators and regulators to address these barriers alone. Therefore, the NCR FSMA might want to consider a collective impact approach to addressing these barriers by expanding to build a multi-sector coalition. Each collective impact partner approaches the issue of improving on-farm food safety practices from different angles, appropriate for their role. The five conditions of collective impact include (Kania & Kramer, 2011):

- A common agenda,
- A shared measurement system,
- Mutually reinforcing activities,
- Continuous communication, and
- A backbone support organization.

Conclusion

The NCR FSMA continues to meet the needs of produce safety educators and regulators. As a result, farmers and processors have been educated about the FSMA Produce Safety Rule and have made changes to improve on-farm produce safety practices. As the center looks toward the future, it should continue to provide the very valuable networking and professional development it has become known for, as well as look for innovative ways to continue to serve special populations, new produce safety professionals and small-scale processors. The goal moving forward is to collaboratively implement strategies to help farmers overcome the biggest barriers to making on farm food safety practice change: financial and time constraints and lack of access to skilled labor.

Works cited

Kania, J., & Kramer, M. (2011). Collective Impact. *Stanford Social Innovation Review*, Winter 2011, 36–41.