**Training Concepts for PSA Grower Training Curriculum Modules:   
Core Recommendations to Assist Delivery of the PSA Train-the-Trainer Course**

**Purpose**

**Key Acronyms:**

**BSAAO**, *Biological Soil Amendment of   
 Animal Origin*

**FSMA**, *Food Safety Modernization Act*

**GAPs**, *Good Agricultural Practices*

**GT**, *Grower Training course*

**LT**, *Lead Trainer*

**MWQP**, *Microbial Water Quality Profile*

**PSA**, *Produce Safety Alliance*

**PSR**, *Produce Safety Rule*

**ToTs**, *Trainers-of-Trainers*

**TTT**, *Train-the-Trainer course*

The purpose of this document is to help trainers understand key design and technical content in the Produce Safety Alliance (PSA) Grower Training (GT) curriculum to aid them in presenting the modules. These recommendations are geared toward Trainers-of-Trainers (ToTs), to guide delivery of the modules to prospective PSA Trainers during Train-the-Trainer (TTT) courses. It may also be useful to PSA Trainers after they have attended the TTT as a refresher of key elements. Although TTT courses and GT courses both use the same GT curriculum slides, the delivery during TTT courses should focus on delivery strategies, foundational research, and technical content. Familiarity with these key design concepts and content recommendations will assist PSA ToTs in effectively delivering each module’s content. This will prepare PSA Trainers to both cover required content and meet presentation timelines when delivering a PSA GT.

As PSA ToTs, one of our goals is to help PSA Trainers deliver the curriculum consistently in terms of standardized content, while tailoring information to highlight sections of relevance to the participant group in a way that is meaningful to every participant. PSA Trainers and Lead Trainers are strongly encouraged to understand each GT course participant’s general background, goals, and particular challenges. This is usually achieved by allowing participants to introduce themselves at the beginning of the GT and by having them share a little about their farm operation as well as questions or concerns they have at the beginning of the training. This knowledge allows the PSA Trainers to engage growers, further their understanding of produce safety, and discuss ways to implement practices. This document provides key goals and information to support achieving these goals. Within these goals, there is flexibility for each PSA ToT to tailor their presentation to their own style as well as ensure they prioritize information relevant to their course participants. The key is to help PSA TTT participants understand the critical information in each module and to help them present it effectively.

**Module Highlights and Recommendations** (click to navigate)**:**

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## Module 1: Introduction to Produce Safety

**Goals**

Module 1 is intended to develop a foundation for the PSA Grower Training. There are six main goals a trainer needs to achieve in Module 1 to set participants up to have a successful training:

* Invite course participants to introduce themselves
* Introduce key course attributes and the training team
* Provide regulatory background and cover exemptions and exclusions
* Inform and empower participants to be leaders in their operation
* Provide a baseline knowledge for all participants of relevant microorganisms and how they exist and persist in farm and packinghouse environments
* Introduce module flow used throughout the curriculum to help participants manage the content of the course

**Achieving Goals**

* *Invite course participants to introduce themselves*

For both TTT and GT courses, participant introductions are critical to trainers and participants. Understanding participant goals and their concerns will allow trainers to tailor their presentations to make the training as relevant as it can be to participants. For GT courses, it is also important to understand types of farming and packing operations that participants own, operate, or manage. It is highly recommended that trainers take notes during the introductions to remind them of questions and concerns expressed by participants. Introductions also help participants feel valued, engender trust which is necessary for learning, and facilitate peer-to-peer learning by allowing participants to get to know one another and by encouraging collaboration throughout the training.

* *Introduce key course attributes*

Use the course objectives to outline the course. Slides contain important cues, such as the section (§) symbol in the bottom of slides that calls out Produce Safety Rule requirements. It is also critical that participants know the difference between “must” and “should” as well as other course terminology. Part of the course objectives are making sure growers can communicate with buyers and regulatory personnel using common terminology.

* *Provide regulatory background and cover exemptions and exclusions*

A basic FSMA overview is valuable to place the PSR in context of the other rules. For both PSA ToTs and Trainers, it is important to know the details about exemptions and exclusions. It is easy to spend the entire time allotted to Module 1 on this topic, so all trainers need to be prepared to handle these questions concisely. It is highly recommended that at the very least, ToTs show participants the FDA decision tree that is included in the manual. The PSA has created supplemental slides that can also be useful in covering this topic, but trainers must be aware of the time that will be added to the presentation if they are included. Alternatively, trainers can make themselves available at breaks or lunch to answer questions specific to exemptions and exclusions.

* *Inform and empower participants to be leaders in their operation (slides 4 and 25)*

Growers and packinghouse owners are independent business people and have chosen a lifestyle that requires a certain level of risk management resulting from the nature of the job (e.g., weather, pests, markets, labor). If they are not committed to food safety, it will never become a true part of their operation. If they do not believe food safety is an issue or that their operation does not have any microbiological risks, they can attend many trainings and nothing is going to change in regard to food safety. This is why trainers must provide relevant examples of risks that exist on farms and in packinghouses and be able to answer participant questions. It is equally important that trainers empower growers to learn this food safety information so they can identify risks in their operations and begin to implement practices to reduce risks.

* *Provide a baseline knowledge for all participants of relevant microorganisms and how they exist and persist in farm and packinghouse environments (Slides 18-23)*

Many participants have never taken a course in microbiology, so the section on microorganisms is the one chance during the course to bring each participant up to a basic understanding of the types of microorganisms that need to be addressed in their food safety program. Participants do not need to be microbiologists. Participants do need to understand common types of microorganisms, how these microorganisms exist and persist on the farm, and how risks can be reduced. There will likely be participants who do not think they have microbiological risks on their farm. It is important to use the knowledge gained during participant introductions as a guide to this discussion. If there are grower participants who have animals on their farm as well as produce, spend time highlighting risks and practices on the ’How Contamination is Spread: Animals’ slide (slide 21). If they have concerns about surface water use, provide examples on that slide (slide 22). It is important to note that slide 24, ‘Cleaning and Sanitizing’, is the only slide that appears twice within the curriculum. This area might be new to many growers and packers, but its importance cannot be overstated. Use these slides to highlight key points but avoid going into too much detail as that will be done in the specific modules. Use this time to engage participants to help them start to think about risks. Let them know in what module the information will be shared.

* *Introduce module flow used throughout the curriculum to help participants manage the content of the course*

The final goal is to guide participants through the flow of each module so they are prepared to handle the content of the course. This helps participants begin to think about how to identify risks in their operation as well as how they might begin to implement food safety practices. Each module begins with identifying risks then moves through implementing practices to reduce identified risks, monitoring practices to ensure they are completed, considering corrective actions that may be necessary, and recordkeeping that can support an effective food safety program. **Establishing this systematic thinking in Module 1 and reinforcing it throughout the day will help participants manage the content and begin applying the information.** In the discussion of recordkeeping, be sure to mention that many templates are available. Even after attending the GT, evaluation comments indicate that growers are still not aware of the templates that are available to help them achieve recordkeeping goals.

## Module 2: Worker Health, Hygiene, and Training

**Goals**

There are six main goals a trainer needs to achieve to effectively deliver Module 2:

* Emphasize the module flow
* Discuss the value of training for building a food safety culture as well as its additional benefits
* Review who must be trained versus who should be trained
* Review required resources versus suggested resources
* Outline why grower responsibilities and commitment are critical
* Review recordkeeping requirements and resources available to trainers and growers

**Achieving Goals**

* *Emphasize the module flow*

As with all the modules in the curriculum, the concepts of assessing risks, implementing practices, monitoring practices, identifying corrective actions, and recordkeeping all appear in Module 2. In addition, Module 2 has three natural divisions to break up the content and provide opportunities to pause for discussion. It is helpful to point out these transitions for trainers so that they can learn to emphasize the relevant requirements and how they differ from one another.

1. **Slides 6-9:** Concepts that support effective training of personnel who contact covered produce or food contact surfaces (soft skills)
   * **Note:** Trainers need to be aware of the main training challenges that course participants may face. For example, are the course participants from larger scale farms that are training many workers over the season or are course participants from small family-run farms that may have complex interpersonal relationships (e.g., husband, wife, children, siblings) to navigate? This information may be shared in participant introductions. Slide 7 (Potential Training Challenges) is a good place for trainers to seek examples of situations and questions from participants.
2. **Slides 10-19:** Training requirements and resources that must (or should) be provided for personnel and visitors
   * **Note:** Slide 11 (Visitors) is a key slide to emphasize as there are specific visitor requirements. Slide 13 (Training Programs Must…) outlines training requirement provisions in detail in the notes. Slide 20 (Training versus Practices) is a transition slide that divides required training and resources (i.e., where the responsibility is on the farm business or manager) from required actions and outcomes (i.e., where the responsibility is on the worker). It is also a good opportunity to pause and engage the audience with a quiz or poll to check their knowledge gain.
3. **Slides 21-27:** Practices personnel must follow to meet regulatory requirements, as well as additional practices they should do to reduce risks
   * **Note:** Corrective actions may create an uncomfortable situation for growers, especially when related to worker health and hygiene. Trainers can provide tools to course participants for addressing compliance issues – this is often called the ‘carrot or stick’ approach. A worker might be rewarded (carrot) for doing the right thing, and therefore more likely to do it again in the future. A worker might be sent home if they are found not to be following the farm’s policies (stick), which may prevent them from making the same mistake again.

* *Discuss the value of training for building food safety culture as well as its additional benefits*

Training provides many benefits to the farm, even beyond food safety. Workers who are well trained and understand how to do their jobs properly are often more efficient and effective at achieving the farm’s goals. As inspections and On-Farm Readiness Review data have become available, it is clear that training employees is still a challenge on many farms. Good communication between management and workers about food safety expectations is key and should be emphasized during training. Trained workers are more likely to see and respond to food safety issues that arise if they know what those risks are, what they should do, and who they should contact to resolve the problem. Spending time and money here is a good investment for the farm owner because an effective food safety program requires all employees to be committed to food safety. Establishing a food safety culture will make food safety relevant every day and advance the farm’s overall food safety practices.

* *Review who must be trained versus who should be trained*

Slide 10 (Everyone Needs Training) builds upon the concept of building a food safety culture. Though the regulation specifies who must be trained in § 112.22(a), there are quite a few other individuals who might work, volunteer, or visit the farm that can also impact the safety of the produce. For example, an office staff member might share a restroom facility with workers who are required to wash their hands, but the office staff member does not wash their hands after using the toilet. What message does that send to employees required to wash their hands? Even though an office worker does not legally need to be trained because they do not handle produce or necessarily touch food contact surfaces, training them is very important. Slide 11 (Visitors) is important because there are regulatory requirements specific to visitors (i.e., sharing the farm’s food safety policies, providing toilet and handwashing facilities).

* *Review required resources versus suggested resources*

Trainers should establish the relationship between “should” recommendations and “must” requirements. One example is that garbage cans are not explicitly required (i.e., they are not a “must”) in the FSMA PSR, however § 112.130(c) requires that “appropriate disposal of waste must be provided for dirty towels and wastewater.” By providing a garbage can, the grower is meeting the requirement to adequately dispose of dirty towels and other trash. This is a subtle difference, but trainers need to be able to convey this type of detail to growers.

* *Outline why grower responsibilities and commitment are critical*

As mentioned in Module 1, action will not happen on the farm unless the grower thinks it is important and is willing to invest the resources (i.e., time, money) necessary to implement food safety practices. The grower’s leadership and example will set the standard, so they need to be aware of their importance in establishing a productive food safety culture and providing the necessary resources to make implementation of practices possible for all employees. Slide 17 (Resources Provided to Support Food Safety Practices) is a good place to emphasize what resources must be provided. Trainers may also want to be familiar with and note for participants that other regulatory requirements may apply, such as those of the Occupational Safety and Health Administration (OSHA) relating to the number of restrooms per number and gender of workers.

* *Review recordkeeping requirements and resources available to trainers and growers*

Recordkeeping requirements for workers appear in nearly every module. As each module is presented, trainers will need to highlight practices that growers must include in their training program, as well as additional practices that should be included. There are many recordkeeping templates available to growers, so trainers should spend some time reviewing where these resources can be accessed and which ones apply to worker training. Module 2 is a good place to introduce the ‘[Records Required by the FSMA Produce Safety Rule](https://resources.producesafetyalliance.cornell.edu/documents/Records-Required-by-the-FSMA-PSR.pdf)’ fact sheet. This document is a comprehensive list of records that are required by the PSR and includes example templates such as the Worker Training log.

## Module 3: Biological Soil Amendments of Animal Origin

**Goals**

There are four main goals a trainer should focus on to accomplish effective delivery of Module 3:

* Use the module flow effectively for your audience
* Understand the definitions that are specific to BSAAO
* Clarify key risk reduction concepts, including:
  + Treatment status
  + Application and timing restrictions
  + Handling requirements
* Review recordkeeping requirements and resources available to trainers and growers

**Achieving Goals**

* *Use the module flow effectively for your audience*

Remember each module follows the flow of assessing risks, implementing practices, monitoring practices, identifying corrective actions, and recordkeeping. Not every farm uses BSAAO. Though Module 3 is an essential part of the curriculum, the delivery should be customized to reflect what you know about your participant group including information learned during introductions. Keep in mind the key question, “*Why does this information matter to my participant group?”* and cover the concepts at appropriate depth in allotted time.

* Even for participant groups that do not use BSAAO trainers must cover the material in this module. These concepts help to set the stage for Module 4.
* Some groups (e.g., organic, sustainable, regenerative farmers) may be highly focused on soil fertility. For trainers who work with these growers, trainers should highlight slide 11 (The Value of Manure) and recognize that manure is a valuable resource, when used in ways that minimize and control risks.

The slides in this module are clustered by topic:

1. **Slides 5-13:** Understanding and assessing risk related to soil amendments
2. **Slides 14-21:** GAPs and PSR requirements for implementing risk reduction practices, along with suggestions for what to monitor
3. **Slides 22-24:** Recordkeeping
4. **Slide 25:** Corrective actions

* *Understand the definitions that are specific to BSAAO*

Many of the terms in Module 3 may be new to participants or used in different ways, so it is important to make sure definitions are clear. Words such as “compost” can mean different things to different people. It is important to understand things like why post-consumer vegetative waste is a BSAAO but sewage biosolids are not a BSAAO. During Train-the-Trainer courses, stop and confirm that PSA Trainers understand specific terms and definitions.

* Slide 4 (What is a Soil Amendment?) is a good place to refer to the notes for the definitions of soil amendment, biological soil amendment, and BSAAO.
* Slide 13 (Untreated Soil Amendments) is the end of the section about risk assessment and a good place to stop and review the impact of the definitions in prior slides.
  + Non-BSAAO: Not regulated under PSR. Includes, in review, physical and chemical soil amendments and biological soil amendments that are not of animal origin (e.g., pre-consumer vegetative waste).
  + Human waste biosolids: Technically not a BSAAO per FSMA PSR definition. Biosolids may not be used as soil amendments for growing produce except as allowed by EPA regulations (i.e., Class A biosolids) (§ 112.53).
  + BSAAO: PSR divides BSAAO based on treatment status. Treatment status is not just a definition; treatment status leads directly to different restrictions on application timing and contact with produce.   
    **Note:** This concept can be used as a transition into practices that reduce risk.
* *Clarify key risk reduction concepts: Treatment status*

Slide 15 (Treated Soil Amendments) is where the regulatory meaning of “treated” should be explained in a direct and clear way. This depiction clears up confusions such as when compost (e.g., composted manure products) is treated, and when compost (e.g., aged manure) is not treated. The following optional slide (slide 16: Composting Options) can be used to reinforce concepts of “scientifically validated” and “controlled”.  
**Note:** Be sure to emphasize that the two options described in the PSR § 112.54 are not the only options. They were provided as examples.

**Note:** Be clear that the treatment processes are controlled (i.e., they include ranges that must be maintained) and scientifically validated (i.e., done properly, the end product always meets the microbial standards of § 112.55(a) or (b)). This is why lot-by-lot testing for pathogens is not required.

* *Clarify key risk reduction concepts: Application and timing restrictions*

Understanding treatment status is essential to understanding application timing and produce contact restrictions in § 112.56. Although those restrictions may be new to some participants in the course, in other cases, current on-farm practices are consistent with the restrictions on untreated BSAAO. Slide 18 (Minimum Application Intervals) states that there are no application intervals for raw manure. This requires explanation. In particular, § 112.56(a)(1)(ii) allows a zero-day application interval for special circumstances where the untreated BSAAO “does not contact covered produce during or after application”. Trainers should emphasize that this restriction is not possible in many cropping systems.

**Note**: The USDA National Organic Program 90/120-day rule has a special role as described in the notes for slide 18. The application interval for untreated BSAAO, when the potential for contact with covered produce after application is minimized, is marked as “reserved”.

* *Clarify key risk reduction concepts: Handling requirements*

Slides 19 (Handling Recommendations) and 20 (Storage Area Recommendations) include risk reduction concepts. Practices, including segregation of equipment used for untreated BSAAOs and proper storage of BSAAO, should be emphasized at the same level of importance as treatment and application intervals to reduce risks of cross-contamination.

* *Review recordkeeping requirements and resources available to trainers and growers*

Trainers should reinforce that maintaining effective records helps the farm supervisor/owner keep track of risk reduction practices. GAPs include recording information such as time to harvest after application (slide 18). Required records specific to this module are described on slide 23 (Recordkeeping: On-Farm Composting) and slide 24 (Recordkeeping: Soil Amendments Supplied by a Third Party). There are other records that may be relevant to this module including worker training and sanitation practices. The PSA Required Records fact sheet and Model Certificate of Conformance for Third-party Suppliers of Treated BSAAO fact sheet can be found under General Resources on the PSA website.

## Module 4: Wildlife, Domesticated Animals, and Land Use

**Goals**

There are five main goals a trainer needs to achieve to effectively deliver Module 4:

* Emphasize the module flow
* Acknowledge that growers already manage risks associated with animals to minimize crop loss
* Define co-management and its relationship to food safety
* Discuss ways to minimize risks associated with wildlife and domesticated animals
* Review corrective actions, required training, and recordkeeping

**Achieving Goals**

* *Emphasize the module flow*

As with all the modules in the curriculum, remind the participants that the concepts of assessing risks, implementing practices, monitoring, corrective actions, and recordkeeping all appear in Module 4. In addition, Module 4 breaks the discussion of wildlife and domesticated animals into different sections because even though they are all animals, assessing and managing risks can be different. Breaks between these sections provide opportunities to pause for discussion. It is helpful to point out these transitions for trainers so that they can learn to emphasize the specific PSR requirements.

1. **Slides 6-14:** Concepts related to wildlife and co-management
   * **Note:** Slide 11 (Monitoring Wildlife Activity) provides an opportunity to reassure growers that the PSR requirements are about *reducing* rather than *eliminating* risks. Zero risk is not possible, but it is important to take steps to understand and reduce risks.
2. **Slides 15-19:** Concepts related to domesticated animals including livestock, working animals, and pets
   * **Note:** Slide 17 (Assess Risks BEFORE Planting) is a key slide to emphasize as the PSR requirements in this module are generally about monitoring for contamination at two points in the growing cycle, before planting and before harvest. The last bullet in the notes highlights the difference between the requirement in § 112.83 (monitoring during the growing season) and the requirement in § 112.112 (determining if produce can be safely harvested).
3. **Slides 20-24:** Practices to meet regulatory requirements
   * **Note:** Slide 20 (Pre-Harvest Assessment) highlights key requirements before harvest. The last bullet in the notes details the requirements in § 112.112 and would be worth asking an audience member to read aloud.

* *Acknowledge that growers already manage risks associated with animals to minimize crop loss*

Growers usually take steps to exclude and deter animals from their produce fields to minimize crop loss and optimize sales. Trainers should acknowledge that preventing animal intrusion is likely something growers are already doing. It is important to allow growers an opportunity to discuss their challenges and control strategies. For example, on slides 12 and 13 (Deterring Wildlife), trainers can ask growers in the audience to share how they discourage common wildlife in the area.

* *Define co-management and its relationship to food safety*

Co-management may be a new topic to some PSA Trainers, so it should be defined and discussed to ensure understanding. Slides 8-10 (Co-Management: Striking a Balance, Co-Management Considerations, and Skills to Support Co-Management) were developed with collaborators from the USDA Natural Resources Conservation Service because of the importance of balancing environmental goals with food safety goals. A key message for this sequence of slides is that implementing food safety practices does not require growers to destroy their conservation areas or break their conservation contracts.

* *Discuss ways to minimize risks associated with wildlife and domesticated animals*The PSR requirements help growers avoid the harvest and sale of fresh produce items that are contaminated, or reasonably likely to be contaminated, with animal feces. The PSR requirements do not require farms to control animal access to growing areas, but they do require that farms appropriately deal with produce that might be contaminated by animals in growing areas.
  + *Wildlife:* Nothing in the regulation authorizes the “taking” of threatened or endangered species as that term is defined by the Endangered Species Act (§ 112.84) and trainers should be aware that other federal, state, and local regulations may limit on-farm options for wildlife management. Trainers may ask participants about local wildlife management options they use that are effective or search for local wildlife agencies and information to help growers implement effective management strategies.
  + *Domesticated Animals:* Discussing livestock, working animals, and pets as contamination risks can be a sensitive topic for growers as many consider them to be an integral component of the farm. Slide 16 (Assessing Risks: Domesticated Animals) is a good place for trainers to remind their audience that this module is about more than just animals; it’s also about land use, including areas of manure and compost storage (as discussed in Module 3) and adjacent land not owned by the produce grower. Trainers should be prepared to discuss when a field can be safely planted with covered produce crops after it has been grazed, assessing risk when using a dog to keep wildlife away, and what the trade-off is for farms that choose to use working animals (e.g., horse-drawn wagons, farm implements) in the fields. The PSR does not forbid use of working animals in growing areas. However, farms that use working animals near covered produce must control the risks associated with their use. As detailed in the notes of slide 19 (Pets), animals must be excluded or separated from areas where covered produce activities are performed in fully enclosed buildings (e.g., do not use cats for rodent control in packinghouses).
* *Review corrective actions, required training, and recordkeeping*Slides 21 and 22 (Corrective Actions) list options for growers if contamination is detected. Trainers should encourage growers in the audience to share how they currently manage fecal contamination on-farm and be prepared to give examples and answer questions related to no-harvest buffer zones. The practices outlined on slides 21 and 22 are closely linked to the training detailed on slide 23 (Worker Training: Establishing Your Front Lines of Defense) that must be included for harvest workers and the responsibility of one supervisor or other responsible party to ensure that PSR requirements are carried out on the farm (§ 112.23). Worker training is the only required record in this module, but slide 24 (Recordkeeping) lists several recommended records and explains that keeping records will help growers review past animal issues and evaluate the effectiveness of management strategies.

## Module 5: Agricultural Water

**Goals**

Provide an overview of Module 5 because it has two distinct parts. There are 2 main goals to focus on when introducing Module 5:

* Explain compliance with Subpart E as it is currently written
* Review definitions: is this ‘Agricultural Water’?

**Achieving Goals**

* *Explain compliance with Subpart E as it is currently written*

It starts off with slides (3-5) that set up the delivery for Subpart E: Agricultural Water, as a whole. It is very important not to skim through these sides because they provide important background information necessary to understand content and they help explain requirements in both 5-1 and 5-2.

* **Slides 3:** Make a point to highlight that Subpart E is under review and subject to change, but the following modules outline how the PSR requirements are currently written. While the information must be presented, trainers must make certain participants know they do not have to rush to implement the practices and testing requirements in 5-1 and 5-2.
* **Note**: It can be helpful to insert slide 8 from module 1, ‘*FSMA Produce Safety Rule Compliance’*, to reiterate that water compliance dates begin in 2022.
* *Review definitions: Is this ‘Agricultural Water’?*

This introduction to Agricultural Water includes the comprehensive qualitative standard in Agricultural Water Quality (slide 5) that applies to all agricultural water: *must be safe and of adequate sanitary quality for its intended use*. When water does not meet the qualitative standard, use as agricultural water must immediately stop until the quality issue is resolved.

* In addition to highlighting the overall qualitative standard for agricultural water, supplemental material reviewing the definitions of **Agricultural Water** & **Covered Produce**, can help remind participants of key points to identifying agricultural water in their own operation.
* **Note**: The [Is This Agricultural Water?](https://resources.producesafetyalliance.cornell.edu/documents/Supplemental-Info-Agricultural-Water-Definitions-Final-12-7-17.pptx) supplemental activity can be used to reinforce the agricultural water definition and can be found on the PSA website under Training> Trainer Resources. Not all of the slides need to be used; many trainers choose to use the slide Helpful Definitions (slide 2) to highlight the definitions related to agricultural water and pick a few of the commodity slides to use before moving into 5-1.

## Module 5, Part 1: Production Water

**Goals**

There are five main goals a trainer needs to achieve to effectively deliver Module 5-1:

* Emphasize the module flow
* Present current PSR requirements explaining that Subpart E is subject to change
* Define and explain Corrective Measures
* Explain the value of testing water for generic *E. coli*
* Review recordkeeping requirements and resources available to trainers and growers

**Achieving Goals**

* *Emphasize the module flow*

By this time, participants should know the flow of assessing risks, implementing practices, monitoring, corrective actions, and recordkeeping. It is helpful to ask one participant to name them all. This can also be a good time to let them know this module has corrective measures outlined in § 112.45 that must be taken if agricultural water does not meet the requirements of § 112.41 or § 112.44, in addition to corrective actions. Beyond the normal flow, Module 5-1 can be divided into two parts that provide a break in content and an opportunity to review and discuss the content. It is helpful to point out these transitions for trainers so that they can be sure to emphasize the relevant requirements and how they differ from one another.

1. **Slides 8-18:** Assessing water-related hazards
   * This section is organized into 3 segments:
     1. Source water quality
     2. Method of application
     3. Timing of application
   * These three core areas can be used to assess risks and implement practices to reduce risks. “Source, application, and timing” is a mantra that can be used to reinforce the process.
   * The end of slide 18 provides a good place to pause to reinforce the core areas and for discussion. There are optional quiz slides (slides 43 and 44) that can be used to reinforce this point by moving them up in the presentation or for review later.
2. **Slides 19-38, 45:** PSR current requirements for implementation of practices to identify and address risks
   * The regulatory considerations, including sampling, testing, corrective measures, and other content in this module are all based on the three core areas outlined above.
   * Slide 19 is the first regulatory slide of Module 5-1. This is the first opportunity to introduce the requirement of inspecting the water distribution system. This also requires a record to be kept.
   * These slides also provide detailed information about the Microbial Water Quality Profile (MWQP). Remind participants, this is not required at this time.

* *Present current PSR requirements explaining that Subpart E is subject to change*

It can be a hard concept to grasp that Subpart E is subject to change and it creates a fine line to walk when presenting this information. Over-emphasis on the PSR not being final may lead participants to think this section is not important to focus on, while too little emphasis could result in anxious or upset participants. Focusing on understanding risks, the value of water testing in understanding the quality of agricultural water, and how to reduce risks introduced by water is a good way to strike the balance. Providing resources and information on how to use the water test results is key. Growers that are already testing water as a requirement for third party audits should continue to do so. It is key to drive home the understanding that even without current regulatory ramifications, growers should still assess risks associated with their agricultural water use to prevent produce contamination.

* Highlight slide 38. Describe ‘Flood Events’ and if flood waters from overflowing waterways contact the harvestable portion of a crop, it is considered adulterated by the FDA and cannot be sold as food. Make sure to define ‘Flood Events’ using FDA terms, differentiating a flood event from pooling of water due to heavy rain, a leaking hose, or a broken emitter. Even if Subpart E changes, this part will still be true, so reinforce that if flood waters resulting from overflowing waterways contact produce, it is adulterated.
* *Define and explain Corrective Measures*

It is important to specify that corrective measures are measures allowed legally, when requirements outlined in the numerical criteria standards of the microbial water quality profile (MWQP) in the PSR are not met. They are distinct from Corrective Actions. §112.45(b) requires that if the water source MWQP does not meet numerical Geometric Mean and Statistical Threshold Value criteria (see the slide *Water Quality Criteria for Water Used During Growing Activities* for details), growers subject to the PSR must discontinue use of the water as soon as practicable and no later than the following year unless a corrective measure is implemented.

**Note:** Growers should be told thatjust because corrective measures are legally allowed, it does not mean they are always the prudent course of action.The PSR qualitative standard is required *“that agricultural water must be safe and of adequate sanitary quality for its intended use.”*

* *Explain the value of testing water for generic E. coli*

Testing source water for generic *E. coli* will help growers assess the likelihood that the water is contaminated with fecal material. Understanding the value and limitations of generic *E. coli* as an indicator organism is important and can be explained when going over slide 21. Emphasize that generic *E. coli* is an indicator of fecal contamination, not an indicator of pathogens in water. Testing for an indicator of fecal contamination is relevant because feces from humans and other warm-blooded animals has the potential to carry human pathogens.

* *Review recordkeeping requirements and resources available to trainers and growers*

There likely will be questions from participants about required records at the end of the module. Required records are easily discussed throughout the entirety of Module 5-1, but slide 45 lays out everything growers need to know to comply with recordkeeping requirements. Even though the information is provided for participants on the slide and in the slide notes, this is a good place to highlight the ‘[Records Required by the FSMA Produce Safety Rule](https://resources.producesafetyalliance.cornell.edu/documents/Records-Required-by-the-FSMA-PSR.pdf)’ fact sheet. This document is a comprehensive list of records that are required by the PSR and includes example templates such as a water system inspection record. This document is an ideal reference when a participant wishes to not search back through the curriculum to find answers.

## Module 5, Part 2: Postharvest Water

**Goals**

There are six main goals a trainer needs to achieve to effectively deliver Module 5-2:

* Emphasize the module flow
* Emphasize the definition of agricultural water
* Review the initial water quality requirements for postharvest water
* Discuss the key variables for maintaining water quality to ensure the water treatment is effective
* Review the purpose of an antimicrobial product
* Emphasize the importance of recordkeeping

**Achieving Goals**

* *Emphasize the module flow*

Assessing risks, implementing practices, monitoring, corrective actions, and recordkeeping once again flow through the module. In addition, these divisions break up the presentation of the content. It is helpful to point out these transitions for trainers so that they can learn to emphasize how PSR requirements are grouped.

1. **Slides 51-54:** Discuss the initial water quality requirements
   * **Note:** Trainers need to reinforce the importance of starting with water that has no detectable generic *E.coli* for harvest and postharvest uses, even before water management is discussed. Slide 51 (Postharvest Water Management) can be used to introduce water quality and cross-contamination as risk factors.
2. **Slides 55-56:** Categories of postharvest water use
   * **Note:** These slides establish two categories: single pass water and recirculated water. Recirculated water (also called batch water) is a higher risk for cross-contamination.
3. **Slides 57-63:** Key water quality variables
   * **Note:** These slides introduce variables that may impact the efficacy of antimicrobial pesticides (i.e., sanitizers): pH, temperature, and turbidity.
4. **Slides 64-65:** Selecting a sanitizer
   * **Note:** These two slides introduce a topic that many growers may find challenging – how to choose a postharvest water treatment that fits into their operation. These slides introduce a few sanitizer chemistries and remind participants that the product must be used as labeled.

* *Emphasize the definition of agricultural water*
* Trainers need to remind growers of the definition of agricultural water which applies to water in direct contact with food contact surfaces as well as produce at or after harvest. Additionally, water used for handwashing and making ice fall under the same category. Emphasizing the diverse uses for harvest and postharvest water is important, so growers can identify the use of this water in their own operations.
* Trainers should remind growers that washing produce postharvest is not a requirement in the PSR. The decision to wash produce is a business decision made for other reasons, such as buyer or market requirements. Washing produce introduces complexity into the post-harvest process and may introduce new cross-contamination risks. If produce undergoes a washing step, growers must realize that additional management practices must be put into place.
* The PSR requirements in this module fall under Subpart E. Therefore, the compliance date extension applies and regulatory requirements may be revised in the future.
* *Review the initial water quality requirements for postharvest water*
* Reviewing the water qualitycriteria is a great place to remind participants that the qualitative rule requirement in § 112.41 (“agricultural water must be safe and of adequate sanitary quality for its intended use”) still applies to postharvest water.
* Participants should be reminded that the qualitative (presence/absence) water testing methodologies can be used to test postharvest water. Although these qualitative methodologies are not recommended for production water, the presence/absence results are sufficient for the no detectable generic *E. coli* standard established for water used during harvest and postharvest activities. Optional slide 33 from Module 5-1 (Equivalent Water Testing Methodologies) can be referenced as a reminder.
* Trainers should emphasize the requirement that untreated surface water must not be used for harvest and postharvest activities (§ 112.44(a)) even if there is no detectable generic *E. coli* in a tested water sample, which can be highlighted when presenting slide 53.
* *Discuss the key variables for maintaining water quality to ensure the water treatment is effective*
* The PSR requires that water treatments are monitored to ensure that treated water is consistently safe and of adequate sanitary quality for its intended use (§ 112.43(b)). This module introduces pH, temperature, and turbidity as variables that may impact the efficacy of water treatment, and therefore should be monitored. These variables may not apply to all operations or sanitizer chemistries; however, it is important for growers to consider each of these factors. Monitoring the temperature of postharvest water is most important when produce is going to be submerged in a dump tank or other form of batch water, since a large temperature differential (i.e., hot produce, cold water) may lead to infiltration.
* The PSR requires that water be visually monitored for buildup of organic material and changed as necessary (§ 112.48(a) and b)). The FSMA PSR does not specifically require that turbidity of postharvest water be monitored, however it can be used as a tool when determining whether the water should be changed. It is also important for trainers to know that turbidity can be caused by both organic matter (e.g., crushed produce, leaves, soil) and inorganic matter (e.g., sand). Some sanitizers, such as chlorine, can be impacted by organic matter in the water so it is important to know what is causing the turbidity.
* *Review the purpose of an antimicrobial product*
* It is important for trainers to emphasize that sanitizers are used to minimize cross-contamination, NOT sanitize the surface of produce. Slide 52 (Cross-Contamination) reinforces this concept by introducing water as a risk factor.
* Additional benefits of using a water treatment, such as enhanced produce quality and longer shelf life, can also be highlighted in this module. Slide 56 (Recirculated and Batch Water) is a place where this message can be shared.
* *Emphasize the importance of recordkeeping*
* Water treatment, if used, must be documented and monitored (§ 112.43(b)). This can be a challenge for many growers, especially those just getting started. Monitoring records discussed on slide 70 (Recordkeeping) can help identify general patterns, allowing growers to predict factors such as how often new sanitizer needs to be added to the system.
* This is a good module to recommend the development of Standard Operating Procedures (SOPs) for water treatment to aid in successful practice implementation.

## Module 6: Postharvest Handling and Sanitation

**Goals**

There are five main goals a trainer needs to accomplish to effectively deliver Module 6:

* Emphasize the module flow
* Highlight resources necessary to implement a farm specific sanitation program
* Describe considerations for use of water for cleaning and sanitation practices
* Promote the value of worker training
* Highlight the importance of corrective actions and recordkeeping in postharvest handling and sanitation practices

**Achieving Goals**

* *Emphasize the module flow*

This module is likely to contain information growers may not have thought about much in the past. It is important to remind them that the flow of assessing risks, implementing practices, monitoring, corrective actions, and recordkeeping applies here too. Remind trainers to keep in mind that this module has the greatest number of slides, so it is important to know the content to move through the slides within the planned time.

* *Highlight resources necessary to implement a farm specific sanitation program*

Just as a dirty surface cannot be sanitized, a disorganized and cluttered operation cannot establish an effective sanitation program. Stress that growers must begin with basic housekeeping measures and assess their resources such as infrastructure characteristics (e.g., enclosed buildings with running water or open-air temporary packing structures like tents). This assessment of resources extends to equipment used on the farm. Help participants learn how to identify food contact surfaces that produce contacts throughout the farm, including in the field, during transport to the packing facility, during packing and storage, and during distribution. Is the equipment used on the farm complex and difficult to clean (i.e., it requires tools to dissemble in order to clean it) or is it simple (i.e., no tools needed)? The farm may need to invest in new brushes and other supplies to properly clean all of its food contact surfaces.

* *Describe considerations for use of water for cleaning and sanitation practices*
  1. Be sure all participants know that cleaning with water is not required by the PSR. If participants are not prepared to manage water effectively (e.g., avoid standing water, have proper drainage), they should consider dry cleaning.
  2. Use of high-pressure water inside a packing area increases risks of spreading contamination over a large area. If using high pressure washers to remove dirt and mud from equipment, it should be done outside and away from other food contact surfaces.
* *Promote the value of worker training*

All personnel involved in the farm’s sanitation programs must be trained for their specific duties in order for implementation to be successful and safe. Stress the importance of understanding the differences between cleaning and sanitizing. Emphasize that although everything can be cleaned, not everything can be sanitized. The difference between cleaning and sanitizing is a particularly important concept to understand as it will impact growers’ choice of detergents and sanitizers and how they are used. Always protect personnel through the use of proper Personal Protective Equipment (PPE).

* *Highlight the importance of corrective actions and recordkeeping in postharvest handling and sanitation practices*

It is good to have corrective actions in place for things that are likely to happen. Perhaps the sanitation crew forgets to clean harvest containers or the packing line, so they are not ready for use. Having a plan in place will help keep the operation moving smoothly and safely. Growers must establish and keep records of cleaning and sanitizing of equipment used in covered harvesting, packing, or holding activities. Inform growers that there are template recordkeeping logs and SOPs available. Even after attending the GT, evaluation comments indicate that growers are still not aware of the templates that are available to help them achieve recordkeeping goals.

## Module 7: How to Develop a Farm Food Safety Plan

**Goals**

Module 7 is intended to wrap up the course and provide growers with information to help them begin implementing food safety practices. There are four main goals a trainer needs to achieve in Module 7:

* Explain the reason for Module 7
* Inspire participants to action
* Provide guidance for selecting a food safety person for the farm
* Describe the value of establishing a traceability system

**Achieving Goals**

* *Explain the reason for Module 7*

Farm food safety plans (FFSP) are not required by the PSR, so it is important to explain that this module is included by grower request. During nationwide focus groups, growers requested that the training program include information about how to develop a farm food safety plan since many farms need third party audits, which require a FFSP. It is important to let growers know there are many FFSP templates available. Even after attending the PSA Grower Training courses, evaluation comments indicate that growers are still not aware of the templates that are available to help them develop a FFSP. It is important to remind growers they need to modify the templates to reflect their own operation.

* *Inspire participants to action*

In this last module of the training, inspire participants to action by asking them what they plan to do when they get back to their farms. They may need to do 20 things but overwhelming them with pressure is not the goal. Help them think through a few areas (e.g., 3) where they have the most risks and how they can begin to take steps to reduce risks.

* *Provide guidance for selecting a food safety person for the farm*

One regulatory requirement that is highlighted in this module is the need for the farm to assign or identify personnel to supervise (or otherwise be responsible for) their operations to ensure compliance (§ 112.23). While this is a regulatory requirement for farms subject to the PSR, it is critical for growers to understand that the person chosen needs to be qualified and be capable of making decisions on the farm. This means they need to be able to set up programs, buy necessary food safety resources, and essentially lead the food safety program which means helping all employees understand what to do (or what not to do). Giving food safety responsibilities to employees who do not have the power to make decisions is a bad idea because they cannot functionally get things done. Picking the right person is key to success.

* *Describe the value of establishing a traceability system*

Although traceability requirements are not included in the PSR, there are many reasons why establishing a functional traceability system can benefit all farms, regardless of size. This includes minimizing the impact of food safety issues but also following product quality as it moves through the food system and knowing how much income a farm should be making. There are many other reasons, so ask participants for additional ideas or add your own. In order to have a traceability system, someone on the farm will need to establish lots and lot codes. It is important to discuss clean breaks if different lots touch the same food contact surfaces, such as sharing the same packing line. Lot codes will need to be incorporated into the farm’s labeling. Even qualified exempt farms are required to follow modified labeling requirements outlined in § 112.6. Lastly,it is important to mention that FDA is moving forward with a Traceability Rule, currently in draft format.