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Evaluating Alternate Curricula for the Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption: Guidance for Industry

Draft Guidance

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For questions regarding this draft document contact the Center for Food Safety and Applied Nutrition (CFSAN), Office of Food Safety at 240-402-1700.

**U.S. Department of Health and Human Services
Food and Drug Administration
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Evaluating Alternate Curricula for the Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption Produce Safety Rule: Guidance for Industry¹

This draft guidance, when finalized, will represent the current thinking of the Food and Drug Administration (FDA or we) on this topic. It does not establish any rights for any person and is not binding on FDA or the public. You can use an alternative approach if it satisfies the requirements of the applicable statutes and regulations. To discuss an alternative approach, contact the FDA staff responsible for this guidance as listed on the title page.

I. Introduction

In the *Federal Register* of November 27, 2015, FDA published a final rule titled “Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption” (80 FR 74353) (Produce Safety Rule). The Produce Safety Rule established science-based minimum standards for the safe growing, harvesting, packing, and holding of produce grown for human consumption. The rule requires covered farms to take appropriate measures to minimize the risk of serious adverse health consequences or death from the use of, or exposure to, covered produce, including those measures reasonably necessary to prevent the introduction of known or reasonably foreseeable hazards into covered produce, and to provide reasonable assurances that the produce is not adulterated under section 402 of the Federal Food, Drug, and Cosmetic Act. (21 CFR 112.11). Requirements of the rule focus on different topics, including major routes of contamination; personnel qualifications and training; growing, harvesting, packing, and holding activities; and sprouts. Subpart C includes the specific requirements for personnel qualifications and training, including the requirement for at least one supervisor or responsible party for your farm to successfully complete food safety training at least equivalent to that received under the standardized curriculum recognized as adequate by FDA. (see 21 CFR 112.22(c)).

For farms covered by the Produce Safety Rule, version 1.1 of the standardized curriculum developed by the Produce Safety Alliance (PSA) is adequate as the standardized curriculum in 21 CFR 112.22(c) (see Subpart C – Personnel Qualifications and Training of the Produce Safety

¹ This guidance has been prepared by the Division of Produce Safety in the Center for Food Safety and Applied Nutrition at the U.S. Food and Drug Administration.

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Rule). The purpose of this guidance is to provide recommendations on the factors that covered farms should consider if they are selecting an alternate curriculum training to meet the requirements of 21 CFR 112.22(c), and that educators should consider when developing or evaluating alternate curricula. This guidance focuses on the standardized curriculum developed by the PSA.

FDA's guidance documents, including this guidance, do not establish legally enforceable responsibilities. Instead, guidances describe our current thinking on a topic and should be viewed only as recommendations, unless specific regulatory or statutory requirements are cited. The use of the word *should* in FDA guidances means that something is suggested or recommended, but not required.

II. Questions and Answers

Q: What is the Standardized Curriculum?

A: Version 1.1 of the standardized curriculum for the Produce Safety Rule may be used to train individuals on the requirements of the Produce Safety Rule. The standardized curriculum covers fundamental food safety topics as they relate to produce and the requirements of the Produce Safety Rule, including an introduction to produce safety, worker health and hygiene, training, wildlife and domesticated animals, land use, agricultural water, produce handling, and sanitation. It was developed by the Produce Safety Alliance (PSA). The PSA is a partnership between Cornell University, the U.S. Department of Agriculture, and FDA.

The PSA conducted extensive outreach to understand training needs and what food safety training was available prior to the publication of the final Produce Safety Rule. The PSA has actively engaged with stakeholders, including the farming community, academia, cooperative extension, and regulators to develop the standardized curriculum. Numerous working groups assessed course content needs, established learning objectives, and defined essential elements for the curriculum. Staff from FDA participated as technical advisors in the development and review of the PSA standardized curriculum.

Q: How Can Covered Farms Use the Standardized Curriculum or Equivalent Alternate Curricula to Meet Training Requirements of the Produce Safety Rule?

A: At least one supervisor or responsible party for your farm must have successfully completed food safety training at least equivalent to that received under standardized curriculum recognized as adequate by FDA (21 CFR 112.22(c)). Version 1.1 of the standardized curriculum developed by the PSA is offered as one way to meet this requirement. For example, if a supervisor for your farm successfully completes training with the standardized curriculum, you have fulfilled the requirement in 21 CFR 112.22(c). Covered farms may use other training programs if the curriculum is at least equivalent to the standardized curriculum.

Q: What Factors Should Covered Farms and Educators Using an Alternate Curriculum Consider?

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A: Alternate curricula should achieve the same course goals and include at least equivalent learning objectives to those from the standardized curriculum which have been identified as critical in this draft guidance (see Appendix). In addition, alternate curricula should accomplish the course goals and learning objectives and be technically accurate.

Course goals describe what participants should know and be able to do at the end of the training. The course goals of the standardized curriculum that should be included in alternate curricula are to provide a basic understanding of:

- Good Agricultural Practices (GAPs);
- Microorganisms relevant to produce safety and where they may be found on the farm;
- Identification of microbial risks, practices that reduce risks, and how to implement produce safety practices on the farm; and
- Requirements of the Produce Safety Rule.

FDA identified the critical learning objectives that should be included in alternate curricula, which are found in the Appendix. Learning objectives in an alternate curriculum do not have to be identical to those described in the Appendix; however, they must be equivalent. (see 21 CFR 112.22(c)).

For example, the standardized curriculum includes a learning objective on explaining how each type of human pathogen can be transmitted to fresh produce. An equivalent learning objective in an alternate curriculum could be to provide examples of how each type of human pathogens can be transmitted to fresh produce. In both curricula, farmers are expected to demonstrate an understanding of the information and the ability to interpret information provided during the training (level of complexity of knowledge).² Additionally, in both curricula, farmers could explain correctly how each type of human pathogen can be transmitted to fresh produce (level of specificity of knowledge).² In this example, the objectives from both curricula offer the same level of complexity and specificity of knowledge.

The Appendix also includes optional learning objectives. These are learning objectives that may be excluded from an alternate curriculum without affecting whether it is considered equivalent to the standardized curriculum. However, if optional learning objectives are included in an alternate curriculum, these should also be equivalent to the optional learning objectives described in the Appendix.

We note that certain learning objectives related to specific agricultural water requirements are identified as being optional in the Appendix. FDA has extended, for covered produce other than sprouts, the dates for compliance with the agricultural water provisions to address questions about the practical implementation of compliance with certain provisions and to consider how we might further reduce the regulatory burden or increase flexibility while continuing to protect public health. (See 84 FR 9706, March 18, 2019). As we continue to consider how best to

² See Bloom, B. H. (1956). *Taxonomy of Educational Objectives, Handbook 1: Cognitive Domain*. New York: David Mackay Co.

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achieve public health protections related to agricultural water, inclusion of objectives related to specific agricultural water requirements is not required for an alternate curriculum to be considered equivalent to the standardized curriculum.

Q: Does an Alternate Curriculum Need to be Formally Recognized by FDA?

A: Official recognition by FDA is not required for training curricula to be “at least equivalent to that received under standardized curriculum recognized as adequate by the Food and Drug Administration” under 21 CFR 112.22(c).

FDA is currently working to develop a process for evaluating alternate curricula for equivalence to the standardized curriculum. If established, this process could result in formal recognition.

An evaluation should be conducted of any alternate training curriculum used by a covered farm. Covered farms and others may choose, for example, to rely on an evaluation done by a third party, such as an educational organization. When evaluated, alternate training curricula should be evaluated against the training goals and learning objectives included in the Appendix and the requirements of the Produce Safety Rule.

Q: What are FDA’s Recommendations for Covered Farms and Educators on Training Delivery Using an Alternate Curriculum?

A: When deciding whether to use an alternate curriculum, covered farms or educators should consider whether the person or organization delivering the training has a process in place to:

- Identify, train, and evaluate qualified trainers delivering the alternate curriculum;
- Identify, develop, and provide refresher training to qualified trainers;
- Review and update the training content, for example, following FDA issuance of industry guidance; and
- Address feedback from course participants.

Information on training organizations implementing FDA’s Strategy for FDA Food Safety Modernization Act (FSMA) Training, including delivery of the standardized curriculum, is currently available on FDA’s website:

<https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-training>

Q. Are Certificates Required for Alternate Curricula?

A: Certificates are not required to meet the training requirements in 21 CFR 112.22(c) of the Produce Safety Rule. Training programs using alternate curricula may choose, for example, to offer certificates to farms who have completed training; however, FDA is not developing a system or recommending a specific certification process or certification body to enable such an approach.

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III. Appendix

This appendix includes FDA’s recommendations on critical and optional learning objectives for inclusion in alternate curricula in order to be considered equivalent to the standardized curriculum. A learning objective refers to a specific and measurable description of what students will be able to do after the course is complete and supports the overall course goals.

This table includes two levels of learning objectives: terminal learning objectives (TLO) and enabling learning objectives (ELO). The terminal learning objectives are at a higher level and may be broken into specific knowledge and skills in the enabling learning objectives that support the terminal learning objective. FDA identified the critical learning objectives.

Module	TLO	ELO	Objective	Critical
1			Introduction to Produce Safety	X
	1		Discuss produce safety	X
		1.1	Explain how FSMA supports food safety	X
		1.2	Explain how the Produce Safety Rule supports produce safety	X
		1.3	Describe challenges associated with produce safety	
		1.4	Discuss the impact of produce-related outbreaks on public health	X
	2		Explain how produce safety may impact your operation	X
		2.1	List compliance dates for Produce Safety Rule	X
		2.2	Explain why someone familiar with the farm should be involved in assessing “known or reasonably foreseeable hazards” related to produce and implementing the requirements of the Rule	X
	3		Identify the types of human pathogens that can contaminate produce	X
		3.1	List the three types of human pathogens that can contaminate produce	
		3.2	Describe the characteristics of each type of human pathogen	X
		3.3	Explain how each type of human pathogen can be transmitted to produce	X
		3.4	Describe the conditions that impact survival and growth of each type of human pathogen	X
	4		Provide an example of each type of pathogen that can contaminate produce	
		4.1	List examples of bacteria that can contaminate produce (<i>E. coli</i> O157:H7, <i>Salmonella</i> , <i>Listeria monocytogenes</i>)	
		4.2	List examples of viruses that can contaminate produce (Norovirus, Hepatitis A)	
		4.3	List examples of parasites that can contaminate produce (e.g., <i>Giardia lamblia</i> , <i>Toxoplasma gondii</i> , <i>Cyclospora cayetanensis</i> , <i>Cryptosporidium parvum</i> , <i>Angiostrongylus cantonensis</i>)	
	5		List common ways that produce may become contaminated on the farm	X
		5.1	List how contamination is spread by humans	X
		5.2	List how contamination is spread by animals	X
		5.3	List how contamination is spread by water	X
		5.4	List how contamination is spread through soil amendments	X
		5.5	List how contamination is spread by contact surfaces such as equipment, tools, and buildings	X
	6		Describe strategies to prevent and reduce risks of contamination by human pathogens	X
		6.1	Differentiate between cleaning and sanitizing	X

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Module	TLO	ELO	Objective	Critical
		6.2	Describe the items you should consider when assessing risks associated with your farm and practices	X
		6.3	Describe how to implement practices to reduce specific risks	X
		6.4	List the Good Agricultural Practices that can be implemented to reduce risk	
		6.5	Describe how Standard Operating Procedures help ensure that strategies are implemented effectively	
		6.6	Describe the monitoring process as it relates to reducing the risk of contamination by human pathogens	
		6.7	Describe how corrective actions help minimize the risk of contamination of produce by human pathogens	
		6.8	Describe practices to ensure appropriate records are maintained	X
		6.9	Describe the importance of a farm food safety plan	
	7		Describe the importance of your operation's commitment to food safety	
		7.1	Describe the impact outbreaks have on consumers	
		7.2	Explain how your commitment to food safety practices impacts implementation	
2			Worker Health, Hygiene, and Training	X
	1		Describe potential routes of contamination associated with workers and visitors that could result in the contamination of produce in fields and packing houses	X
		1.1	Explain why workers can be food safety concern	X
		1.2	Describe the ways workers and visitors can introduce contamination to produce	X
		1.3	List the required qualifications for workers and supervisors	X
		1.4	Describe information to provide to visitors to minimize contamination of produce on the farm	X
	2		List adult learning concepts that should be considered when developing a training program	
		2.1	Describe why training is an important component of a produce safety program	
		2.2	List the challenges associated with implementing a produce safety training program	
		2.3	List adult learning principles that should be incorporated in produce safety training programs for an operation	
		2.4	Identify who should receive produce safety training	X
	3		List the topics that must be included in a worker training program	X
		3.1	Identify what trained workers must know at the completion of the training program	X
		3.2	List the topics that must be included in the training program	X
		3.3	Describe the elements that make a training program successful	
		3.4	List the topics that must be covered in a harvest training program	X
		3.5	Describe how resources can be used to reinforce food safety training	
	4		Describe what hygiene sanitation facilities and supplies should be provided to workers and visitors to reduce the risk of produce contamination	X
		4.1	List the hygiene sanitation facilities and supplies to be provided to workers and visitors to support food safety practices	
		4.2	Describe the requirements for toilet and handwashing facilities that must be provided to workers	X
		4.3	Describe the drinking water and break area resources that should be provided	X
	5		Describe practices workers must follow to reduce the risk of produce contamination	X

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Module	TLO	ELO	Objective	Critical
		5.1	Differentiate between training and food safety practices	
		5.2	List the food safety practices that must be followed by workers	X
		5.3	Describe handwashing requirements and best practices	X
		5.4	Describe requirements and best practices related to proper toilet use	X
		5.5	Describe worker clothing/glove use requirements and best practices	X
		5.6	Describe food safety requirements and best practices related to ill workers	X
		5.7	Describe best practices related to worker injury	
	6		Describe the practices for monitoring toilet/handwashing facilities and worker's hygiene	X
		6.1	Explain why monitoring health and hygiene practices and sanitary facilities for workers and visitors is critical	
		6.2	List items that may be included in a monitoring program for toilet and handwashing facilities	
	7		Describe corrective actions that can be taken if a food safety issue related to worker health and hygiene is identified	
		7.1	Provide examples of when corrective actions may be needed	
		7.2	Provide examples of types of corrective actions that could be implemented	
	8		Identify recordkeeping tools to monitor and manage a worker health, hygiene, and training program	X
		8.1	List the information that must be documented for worker health, hygiene, and training	X
		8.2	List additional information that should be maintained for worker health, hygiene, and training	
		8.3	Identify available resources for documenting worker health, hygiene, and training programs	
3			Soil Amendments	X
	1		Describe soil amendment use on a farm	X
		1.1	Define a soil amendment (SA) , Biological Soil Amendment (BSA), and Biological Soil Amendment of Animal Origin (BSAAO)	X
		1.2	Provide an example each type of soil amendment and how each would be used in produce production	
		1.3	Differentiate between treated and untreated soil amendments	X
		1.4	Define untreated soil amendments	X
		1.5	Define treated soil amendments	X
		1.6	Explain the risks associated with using untreated soil amendments	X
		1.7	Describe the treatment requirements for soil amendments	X
		1.8	List examples of untreated soil amendments	X
	2		Identify risks and potential routes of contamination that could be associated with different types of soil amendments	
		2.1	List the questions you should ask as part of a risk assessment for soil amendments	
		2.2	Discuss the risks associated with all SA (including chemical/inorganic)	
		2.3	Describe the risks associated with untreated human waste and biosolids	X
		2.4	Define pre-consumer vegetative waste	X
		2.5	Identify the risks associated with pre-consumer vegetative waste	X
		2.6	Describe requirements for untreated BSAAO (including non-manure based)	X
		2.7	Describe the benefits of using untreated BSAAO (including manure) as SA	
		2.8	Discuss the risks associated with untreated BSAAO (especially manure-based)	X

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Module	TLO	ELO	Objective	Critical
	3		Identify key strategies that will reduce the risk of human pathogens contaminating produce	X
		3.1	List the key strategies that reduce soil amendment risks	X
		3.2	Describe how treating BSAAO can reduce the associated risks	X
		3.3	Describe the two codified composting options as examples of scientifically validated BSAAO treatment process	X
		3.4	Discuss the application method and days to harvest interval requirements for BSAAO to reduce the risk of human pathogens contaminating produce	X
		3.5	Describe the BSAAO storage area requirements and best handling practices to reduce the risk of human pathogens contaminating produce	X
		3.6	Describe expectations for training workers who handle BSAAO	X
	4		Describe the considerations for developing a corrective action plan for soil amendments	
		4.1	Describe when a corrective action may be necessary	
		4.2	Describe what should be included in a corrective action plan	
	5		Recall the information that must be documented related to soil amendments to reduce the risk of contaminating produce	X
		5.1	List the information that must be documented related to treated BSAAO	X
		5.2	List the information that must be documented related to on-farm BSAAO treatment processing	X
		5.3	List the information that must be documented related to treated BSAAOs obtained from a third party	X
4			Wildlife, Domesticated Animals and Land Use	X
	1		Identify the potential routes of contamination associated with wildlife, domesticated animals, and land use	X
		1.1	Describe why animals are a produce safety concern on the farm	X
		1.2	Describe how to assess the risk posed by wildlife on your farm	X
		1.3	Describe how to monitor for wildlife activity on your farm	X
		1.4	Recall why domesticated animals can pose a produce safety concern on the farm	X
		1.5	Describe how to assess the risks posed by domesticated animals on your farm	X
		1.6	Describe how to assess the risks associated with land use	
	2		Describe practices to mitigate risks associated with wildlife, domesticated animals, and land use	X
		2.1	Describe how to mitigate the risks associated with wildlife	
		2.2	Describe how to mitigate the risks associated with domesticated working animals	
		2.3	Describe how to mitigate the risks associated with pets	
		2.4	Describe how worker training can mitigate the risks associated with wildlife, domesticated animals, and land use	
	3		Describe co-management strategies that address both conservation and food safety goals	
		3.1	Define co-management	
		3.2	Describe why co-management strategies are important	
		3.3	Describe strategies that support co-management	
	4		Describe the importance of conducting a pre-plant and pre-harvest assessment of fields	X
		4.1	Describe how to conduct a pre-plant assessment of fields to identify potential produce safety risks	X

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Module	TLO	ELO	Objective	Critical
		4.2	Describe the process of conducting a pre-harvest assessment of fields to inform harvest practices	X
	5		Describe corrective actions to be used if significant risks from wildlife and domesticated animals are present in production fields	X
		5.1	Describe the corrective actions to use if there is evidence of contamination from wildlife and domesticated animals in production fields	X
	6		Recall the information that should be documented related to management, monitoring, or corrective actions that are taken to reduce produce safety risks in and around produce fields	X
		6.1	List the information that should be documented related to wildlife, domesticated animals, and land use	
5-1			Agricultural Water Used During Growing Activities	X
	1		Describe types of water use on the farm	X
		1.1	Define agricultural water	
		1.2	List examples of agricultural water used during growing activities	
	2		Describe risks that may impact the microbial safety of water sources	X
		2.1	Describe why water used during growing activities can be a produce safety concern on the farm	
		2.2	List the three main impact points for produce safety risks related to water used during growing activities	X
		2.3	Recognize probability for contamination of water used during growing activities based on its source	X
		2.4	List potential sources of surface water contamination	X
		2.5	Describe the level of risk water used during growing activities poses based on its application method / degree of contact	X
		2.6	Determine the risk posed by water used during growing activities based on the timing of application	X
	3		Describe practices that can reduce produce safety risks due to water used during growing activities	
		3.1	Identify the three sources of water specified in the Produce Safety Rule	
		3.2	Define ground water and surface water	
		3.3	Describe the steps you need to take to reduce the produce safety risk due to water used during growing activities from a public water supply source	
		3.4	Describe the steps you need to take to reduce the produce safety risk due to water used during growing activities from a ground water source	
		3.5	Describe the steps you need to take to reduce the produce safety risk due to water used during growing activities from a surface water source	
		3.6	Describe practices related to method of irrigation that can reduce the produce safety risk due to water used during growing activities	X
		3.7	Describe the requirements for inspecting water sources and distribution systems to reduce the produce safety risk due to water used during growing activities	
	4		Describe the importance of testing the quality of different water sources used for agricultural water during growing activities	
		4.1	Explain the importance of testing water sources	
		4.2	Describe the information obtained by creating a microbial water quality profile	
	5		Describe the agricultural water sampling and testing practices needed to build microbial water quality profiles	
		5.1	Describe the testing requirements for public sources of water	

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Module	TLO	ELO	Objective	Critical
		5.2	Describe the testing requirements for untreated ground water sources	
		5.3	Describe the testing requirements for untreated surface water sources	
		5.4	Discuss where you should collect samples for public water sources	
		5.5	Discuss where you should collect samples for ground water sources	
		5.6	Discuss where you should collect samples for surface water sources	
		5.7	Explain the process for collecting agricultural water samples	
		5.8	Describe what to look for when selecting a laboratory to analyze samples	
	6		Describe water quality requirements and numerical criteria for agricultural water used during growing activities	
		6.1	Explain general water requirements applicable to all agricultural water use on the farm	
		6.2	Describe the geometric mean (GM) as a measure of water quality	
		6.3	Describe the statistical threshold value (STV) as a measure of water quality	
		6.4	Explain why generic <i>E. coli</i> is used as the indicator of water quality in the FSMA Produce Safety Rule	
		6.5	List the geometric mean (GM) numerical criteria for colony forming units (CFU) generic <i>E. coli</i>	
		6.6	List the statistical threshold value (STV) numerical criteria for colony forming units (CFU) generic <i>E. coli</i>	
		6.7	Describe how the microbial water quality profile results are used to determine compliance with the FSMA Produce Safety Rule requirements	
	7		Describe corrective measures and corrective actions that could be taken if agricultural water used during growing activities does not meet the specific numerical criteria	
		7.1	List the three types of allowed corrective measures agricultural water used during growing activities does not meet the numerical criteria	
		7.2	Explain why water application timing is an allowed corrective measure when agricultural water used during growing activities that does not initially meet the numerical criteria	
		7.3	Describe re-inspection and corrective actions as a corrective measure when agricultural water does not meet the numerical criteria	
		7.4	Describe the use of water treatment as a corrective measure when agricultural water does not meet the numerical criteria	
		7.5	Describe corrective actions that can be used when produce is unintentionally contacted by water	
		7.6	Describe what actions should be taken if your water test results are higher than expected	
	8		Recall the information that must be documented related to agricultural microbial water quality and monitoring of any water treatment (if used)	
		8.1	List the information that must be documented related to agricultural microbial water quality and monitoring of water	
5-2			Agricultural Water: Agricultural Water Used During Harvest and Post-Harvest Activities	
	1		Describe postharvest water use on the farm	
		1.1	Define agricultural water	
		1.2	List examples of agricultural water used during harvest and postharvest activities	
	2		Describe the water quality requirements for agricultural water used during and after harvest	

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Module	TLO	ELO	Objective	Critical
		2.1	Explain general water quality requirements applicable to all agricultural water	
		2.2	Describe the generic <i>E. coli</i> criterion for water used during harvest and postharvest activities	
		2.3	List the harvest and postharvest water uses that must meet the generic <i>E. coli</i> criterion	
		2.4	Describe the testing frequency requirements for untreated ground water	
		2.5	Describe the testing frequency requirements for public water supply	
		2.6	Describe corrective measures when agricultural water used during or after harvest does not meet criteria	
	3		Describe importance of postharvest water management	X
		3.1	Describe how postharvest water may contribute to contamination of produce	
		3.2	Describe the conditions that lead to cross contamination from postharvest water	
	4		Describe how to manage the risk of infiltration	X
		4.1	Describe the impact of infiltration on produce safety	
		4.2	List the conditions that increase the risk of infiltration	
		4.3	List ways to reduce the risk of infiltration	
	5		Explain use of antimicrobial products, including sanitizers, for postharvest water	X
		5.1	Explain why antimicrobial products are added to postharvest water	
		5.2	Recognize that antimicrobial products may be subject to other local, state, and federal laws	X
		5.3	List categories of antimicrobial products, including sanitizers, that may be used in postharvest water	
	6		Describe practices that can be used to monitor and maintain the quality of water used in postharvest activities	X
		6.1	List key water quality variables that impact the quality of water used in postharvest activities	X
		6.2	Describe why it is important to monitor the pH of water used in postharvest activities	X
		6.3	List methods used to monitor the pH of water used in postharvest activities	
		6.4	Describe why it is important to monitor the temperature of water used in postharvest activities	X
		6.5	List methods used to monitor the temperature of water used in postharvest activities	
		6.6	Describe why it is important to monitor the turbidity of water used in postharvest activities	X
		6.7	List the methods used to monitor the turbidity of water used in postharvest activities	
		6.8	Describe the requirements for monitoring antimicrobial treatments in postharvest water	
		6.9	Identify when postharvest recirculated water needs to be changed	
		6.10	Describe the requirements for disposing of used water	X
		6.11	List SOPs that may be developed to aid in the management of postharvest water	
	7		Recall the type of information that needs to be documented related to monitoring the microbial quality of postharvest water and managing use to reduce the risk of contaminating produce	
		7.1	Describe why it is necessary to maintain records related to monitoring the microbial quality of postharvest water	

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Module	TLO	ELO	Objective	Critical
		7.2	List the information that must be documented related to monitoring the microbial quality of postharvest water	
	8		Describe when corrective actions are needed related to postharvest water	
		8.1	Describe when it might be necessary to implement corrective actions	
6			Postharvest Handling and Sanitation	X
	1		Identify potential routes of contamination associated with harvest and postharvest activities	X
		1.1	List everything that contacts produce during harvesting and postharvest activities	
		1.2	Describe potential routes of contamination for open areas or partially-enclosed buildings used for packing	
		1.3	Describe potential routes of contamination for fully-enclosed building used for packing	
	2		Identify key practices that can be implemented and maintained to reduce identified risks in produce packing areas	X
		2.1	Describe the process you should use to assess risks	
		2.2	Describe the factors you should look for when assessing the risks	
		2.3	List the basic practices that can be implemented to reduce risks in any produce packing areas	X
		2.4	List key worker training requirements that must be implemented to reduce identified risks during harvest and postharvest activities	X
		2.5	Describe the purpose for defining zones in a packinghouse	
		2.6	Define the zones in a packinghouse	
		2.7	Describe cleaning and/or sanitizing requirements for food contact surfaces and non-food contact surfaces in a packinghouse	X
		2.8	Describe practices that can be implemented before produce enters the packing area to reduce the risks in produce packing areas	
		2.9	Describe practices that can be implemented in the packing area to reduce identified risks	X
		2.10	Describe practices related to packing containers that can be implemented to reduce identified risks	X
		2.11	Describe practices related to cold storage areas that can be implemented to reduce identified risks	X
		2.12	Describe the required water quality criterion and practices related to ice and ice slurries that can be implemented to reduce identified risks	
		2.13	Describe the purpose of clean breaks	
		2.14	Describe how the sanitary design of equipment contributes to the cleaning and sanitizing of food contact surfaces	X
		2.15	Describe how to maintain equipment that is not designed using sanitary design principles	X
		2.16	Describe considerations for retrofitting older equipment	
	3		Identify the steps involved in cleaning and sanitizing food contact surfaces	X
		3.1	Differentiate between cleaning and sanitizing	
		3.2	Describe the four steps for cleaning and sanitizing food contact surfaces	
	4		Describe key parts of a pest control program that will reduce or eliminate rodents, birds, insects, and other pests from postharvest packing areas	X
		4.1	List basic practices that can exclude and discourage pests	
		4.2	Describe the elements of a pest control program	
		4.3	Describe the pest control practices for cold storage areas	

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Module	TLO	ELO	Objective	Critical
	5		Describe key practices for transporting produce that will minimize produce safety risks	
		5.1	Describe the requirements for equipment used to transport produce	X
		5.2	Describe what to look for when inspecting vehicles that are used to transport produce	
	6		List additional practices that can help ensure that sanitary practices are being followed during postharvest handling	
		6.1	List SOPs a farm may want to consider	
	7		Describe risks non-microbial risks farms should consider	
		7.1	List the other types of non-microbial risks farms should consider	
		7.2	List sources of chemical food safety risks	
		7.3	List practices to reduce chemical risks	
		7.4	List examples of physical food safety risks	
		7.5	List practices to reduce physical risks	
	8		Describe the use of corrective actions related to produce packing, storage, or transportation	
		8.1	Describe when you should use corrective actions	
		8.2	Describe the steps that should be taken when a corrective action is needed	
	9		Recall the type of information that needs to be documented related to postharvest handling practices that prevent the contamination of produce	
		9.1	Describe best practices for maintaining postharvest handling and sanitation records	
		9.2	List the information that must be documented related to postharvest handling practices	X
		9.3	List information that should be documented related to postharvest handling practices	
7			How to Develop a Farm Food Safety Plan	
	1		Explain why a farm would want to develop a farm food safety plan	
		1.1	Describe the reasons why a farm may want to develop a farm food safety plan	
		1.2	Describe why the farm food safety plan should be specific to your farm	
	2		Name essential parts to include in a Farm Food Safety Plan	
		2.1	Describe risk assessment factors to include in food safety plan	
		2.2	Describe practices to reduce risk to include in food safety plan	
		2.3	List the parts that should be included in a farm food safety plan	
		2.4	List additional information that may be included in a farm food safety plan	
	3		Describe why one qualified person should be designated as the person responsible for developing the food safety plan on every farm	
		3.1	Describe why one person should be designated as the person responsible for the food safety plan on the farm	
	4		Describe how to conduct a risk assessment of the farm's practices and environment	
		4.1	List things you should consider when conducting a risk assessment of the farm's practices and environment	
		4.2	Describe how to prioritize identified risks	
	5		Describe management steps and food safety practices to include in the food safety plan	
		5.1	Describe the things you must consider to develop practices to reduce identified risks	

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		5.2	Describe what should be documented as part of identifying and managing risks	
		5.3	Describe best practices for reviewing and updating the food safety plan	
	6		List key steps involved in developing a traceability system that can trace produce one step forward and one step back	
		6.1	Define traceability	
		6.2	List the reasons why traceability is important to a farm	
		6.3	Define traceability and what it means for a farm	
		6.4	Describe the process for testing your traceability system	
	7		Discuss the process for establishing lots	
		7.1	Define a lot	
		7.2	Describe the information that should be included in a lot code	
		7.3	Describe how to develop a lot code	
	8		Describing labeling practices	
		8.1	Describe the process for labeling a lot	
		8.2	Describe labeling requirements for qualified exempt farms	X
	9		Describe the purpose of clean breaks	
		9.1	Describe the relationship between a clean break and “lot” establishment	
	10		Identify resources available to assist in developing a Farm Food Safety Plan and related documentation	
		10.1	List educational resources available to help you write a farm food safety plan	
		10.2	Describe how to use templates that are available to help write a farm food safety plan and related documentation	