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Workers on prison farms in the United States commonly grow produce and row crops and raise livestock. Teaching good agricultural practices to prisoners and prison staff increases the safety of the food produced and reduces the likelihood of an illness outbreak. We developed a food safety curriculum for use on prison farms in Iowa. In developing the curriculum, we encountered many challenges that resulted in modifications in the content and delivery method. We present the content of the curriculum and provide educators with a better understanding of challenges and potential solutions related to working with prison farms.

Keywords

prison farm, food safety, good agricultural practices, training curriculum

Disciplines

Agricultural and Resource Economics | Food Processing | Food Science | Food Studies | Human and Clinical Nutrition | Place and Environment

Comments

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Introduction

According to the Bureau of Justice Statistics, in 2015 there were an estimated 1.53 million persons in state and federal correctional facilities across the United States (Carson & Anderson, 2016). Prison systems across the United States have implemented many programs to help rehabilitate prisoners and teach them skills they can use when they reenter society. Extension programs on financial planning, parenting, and cooking are a few examples (Iowa Prison Industries, 2017; Reilly, 2003, Richel, 2013). Among these programs are prison farms focused on agricultural food production involving fruits, vegetables, grains, cattle, chickens, and pigs. Prison farm programs provide prisoners with horticulture and animal husbandry knowledge and management skills that relate to potential career options (Robinson & O'Callaghan, 2008).

On-Farm Food Safety Training

Fresh produce and nuts account for 46% of reported food-borne illnesses (Painter et al., 2013). Iowa State University Extension programs have been educating fruit and vegetable growers about good agricultural practices (GAP) through workshops targeted to all sizes of fruit and vegetable operations for over a decade. GAP education programs cover best practices in four key areas (water, soil, facilities, and people), with the goal being to improve growers' food safety behaviors (Shaw, Strohbehn, Naeve, Domoto, & Wilson, 2015a, 2015b). It is known that education about proper fresh produce handling from farm to fork helps prevent contamination on the farm; during packing, processing, and distribution; and within retail settings (Lynch, Tauxe, & Hedberg, 2009). Accordingly, GAP programs can benefit prison farms by ensuring safer products and teaching new life skills to

prisoners.

Prison Farms in Iowa

In 2013 Iowa prison systems included nine prison farms that provided 21,198 hr of prisoner training as part of rehabilitation programs (Iowa Prison Industries, 2014). Iowa prison farmworkers grow fruits, vegetables, and row crops and raise cattle and poultry. It was estimated that in 2013, over 40,000 lb of produce was grown and sold to local prison facilities or donated to local food pantries (Iowa Prison Industries, 2014). The purpose of this article is to describe a food safety curriculum developed for prison farms and highlight the challenges and potential solutions for implementing such a curriculum. Extension educators can use this information to assist state and federal prison farms in ensuring that food safety is priority.

Development of a Food Safety Training Curriculum for Prison Farms

We developed a food safety training curriculum according to the latest GAP recommendations (National Good Agricultural Practices Program, 2018). A convenience sample of four farm managers and administrators who worked across the state's nine prison farms reviewed the training material to ensure appropriateness and accuracy of the content relative to Iowa prison system rules and regulations. The food safety curriculum was developed in PowerPoint with notes for a print-only form and was translated into PowerPoint voiceover format for conversion to DVD use. We had wanted to develop an online curriculum for the prison farmer but due to state regulations, these two formats were used instead. Table 1 details the content of the food safety training curriculum. The content of the training was designed to be covered in less than 1 hr.

Table 1.

Food Safety Training Curriculum Content

Subject covered	Objective	Focal topics
Biological hazards	To provide definition, best practices, and prevention methods to reduce risk of biological hazards	<ul style="list-style-type: none"> • Sources of biological hazards on a farm • Symptoms and sources of illness • Sickness and illness policy • Injury policy • Reporting protocols, methods for standard operating procedures, and record keeping

Chemical hazards	To provide definition, best practices, and prevention methods to reduce risk of chemical hazards	<p>Chemical handling policy</p> <ul style="list-style-type: none"> • Reporting protocols for chemical hazards detection
Physical hazards	To provide definition, best practices, and prevention methods to reduce risk of physical hazards	<ul style="list-style-type: none"> • Harvest tool maintenance policy • Reporting protocols for physical hazards methods for standard operating procedures
Water and soil quality/safety	To provide definition of soil and water quality, best practices with soil and water, and prevention methods and policies to reduce risk of associated food safety hazards	<ul style="list-style-type: none"> • Sources of contamination from water and soil • Manure policy • Animal policy • Bodily fluids policy • Chemical policy • Water use policy
Worker hygiene	To provide best practices and policies to reduce food safety risk associated with prisoners and farm employees	<ul style="list-style-type: none"> • Boots and clothing policy • Illness policy • Hand-washing technique demonstration and policy
Harvest and harvest tools	To describe best practices and policies for harvesting, sorting, and cleaning To define best practices for	<ul style="list-style-type: none"> • Sorting policy • Standard operating

	<p>harvest tools and policies for tool care and maintenance</p>	<p>procedures during produce harvest</p> <ul style="list-style-type: none"> • Standard operating procedures for cleaning food contact surfaces • Standard operating procedures for storage containers/bins/totes • Sanitation best practices for harvest tools • Harvest tool and container policy
<p>Cooler thermometer calibration</p>	<p>To provide guidance on thermometer calibration for any cooler unit on the farm</p>	<ul style="list-style-type: none"> • Thermometer usage and calibration methods • Guidance for when calibration is needed
<p>Cleaning food contact surfaces and nonfood contact surfaces</p>	<p>To provide guidance on what is considered a food contact surface and sanitation steps for cleaning food contact surfaces</p>	<ul style="list-style-type: none"> • Guidance for what is considered a food contact surface • Importance of cleaning food contact surfaces • Sanitation policy • Steps for properly cleaning and sanitizing food contact surfaces
<p>Record keeping</p>	<p>To provide guidance and best practices related to record-keeping</p>	<ul style="list-style-type: none"> • Importance of logs for record keeping

	needs within the farm setting	<ul style="list-style-type: none"> • Guidance on what records should always be kept • Examples of record-keeping forms
Eating and breaks	To provide guidance on employee eating and drinking and breaks within the farm setting	<ul style="list-style-type: none"> • Eating and drinking policy • Employee break policy • Location for breaks • Bathroom policy • Location of bathroom facilities

Challenges and Limitations of Implementing the Food Safety Curriculum

We conducted pilot testing of our program at the Montrose Prison Farm, where prisoners grow fruits, vegetables, row crops, and trees and raise cattle. The farm has a full-time staff of 3–4 state employees along with a maximum daily capacity of 14 prisoners (estimated at over 100 prisoners working at the farm over a growing season).

We developed our food safety training curriculum to assist Iowa prison farms in obtaining U.S. Department of Agriculture GAP certification and complying with local food market requirements. However, every state's prison system has specific rules and regulations that must be followed, in addition to various federal regulations, and these circumstances add to the challenges of implementing a program such as ours on a particular prison farm.

Our experience with the Iowa prison farms revealed several challenges, including high employee turnover, a rigorous materials approval process, and time limitations. Working with the prison farm managers to understand the rules within the prison system allowed us to overcome these challenges. Table 2 specifies challenges educators may face if implementing a food safety program in a prison farm system and possible solutions to those challenges.

Table 2.

Summary of Challenges and Possible Solutions Related to Implementing a Food Safety Curriculum at a Prison Farm

Challenge	Details	Suggestion(s) for overcoming challenge
Food safety training requirements	<ul style="list-style-type: none"> Employee food safety training may not be required by the local food market; therefore, it is optional and requires prison management support and budget if compliance concerns arise 	<ul style="list-style-type: none"> Present food safety statistics that indicate the impact of a food-borne outbreak from food produced on a farm Provide evidence of additional market options if food safety training occurs on the farm
Technology use	<ul style="list-style-type: none"> Prisoners may not be allowed to use the Internet, thus making development of online training not an option DVD versions of a training may not be an option due to farms' lack of TV/DVD equipment Prisoners may not be left alone with some technology (such as a portable DVD player) because parts can be used as weapons 	<ul style="list-style-type: none"> Determine what technology is allowed within the prison farm system to ensure that training is formatted appropriately Develop curriculum that does not require Internet or video equipment (such as flip chart, printed manual, picture book, etc.)
Time restraints of food safety training	<ul style="list-style-type: none"> Prisoners may have a set amount of hours to work on the farm each day (7 hr a day on the Iowa pilot testing farm) Additional mandated federal trainings may be required (i.e., forklift training, tractor training), thereby reducing time allowed for food safety training 	<ul style="list-style-type: none"> Develop a short worker safety and hygiene training for daily use, and develop job-specific training to provide before a task is completed (such as harvesting training prior to harvesting but not on other days)
High employee turnover	<ul style="list-style-type: none"> The length of time inmates work on a farm may vary (e.g., 1 day, 1 week, or 1 	<ul style="list-style-type: none"> Use technology, if allowed, or self-guided material for training so that the training is consistent

	<p>month) depending on their prison situation</p> <ul style="list-style-type: none"> • May need to train every day if there are new prisoners (daily training was required at the Iowa pilot testing farm) 	<ul style="list-style-type: none"> • Insert food safety training topics into mandatory federal training requirements (such as pesticide application training with chemical policy discussion) • Ensure that all management and staff can provide the training
<p>Cleaning chemicals</p>	<ul style="list-style-type: none"> • All cleaning chemicals must be approved for institution use (usually sold for institution use only) • Some of the most common chemicals may not be allowed (e.g., no alcohol- or bleach-based products are allowed on Iowa prison farms) 	<ul style="list-style-type: none"> • Request approved chemical list prior to teaching the chemical policy module to ensure alignment with the facility policy
<p>Tools usage</p>	<ul style="list-style-type: none"> • All tools regardless of material are considered a weapon and likely must be used under supervision • Hoses are considered weapons and their use likely is not allowed without supervision • Small knives for harvest may be allowed only for limited use • Small scissors, such as those found in first aid kits, may not be allowed 	<ul style="list-style-type: none"> • Develop tool check-in and check-out procedures • Request specific guidance for the farm to ensure that all items are in compliance
<p>Breaks</p>	<ul style="list-style-type: none"> • Breaks may be allowed only in a designated break room • Federal regulations require 	<ul style="list-style-type: none"> • Develop break, eating/drinking, and bathroom policies to be maintained in the prison farm setting (such as

	<p>the presence of drinking water at all times</p> <ul style="list-style-type: none"> • Bathroom availability may be limited due to location of farm (GAP certification requires bathrooms accessible to workers at all times) • Smoking is not allowed, so a no-smoking policy is required 	<p>water stations at the edge of the farm, portable hand-washing stations, portable toilets, breaks at designated times)</p>
<p>Sickness policy</p>	<ul style="list-style-type: none"> • All prisoners who are sent to the farm are expected to be healthy enough to work • Limited wording on the sickness policy may be required as prisoners may try to get out of work due to "symptoms" • If a prisoner becomes sick, he or she is usually unable to be sent back to the institution unless the illness is serious 	<ul style="list-style-type: none"> • Determine activities that can be completed if a prisoner is sick but wants to work (such as paperwork) • Have a waiting list of prisoners who can work if someone is sick so that the farm is never short staffed
<p>Disease concerns</p>	<ul style="list-style-type: none"> • Hepatitis A and blood-borne illnesses are common in prison populations • Cuts/abrasions and sickness (i.e., vomiting) can occur during time on farm 	<ul style="list-style-type: none"> • Train prisoners on how to properly wash their hands • Train staff on how to identify symptoms of illness • Train staff on how to remove bodily fluids safely
<p>Mixed farm</p>	<ul style="list-style-type: none"> • Farms can produce several commodities, such as crops, livestock, and produce 	<ul style="list-style-type: none"> • Plan the order of chores on the farm to minimize cross-contamination (e.g., harvest produce and then clean cattle

- Prisoners may be expected to work on all parts of a farm
- Changing of clothing and boots for the livestock unit and the produce gardens may be limited
- barns)
- Consider using cleanable aprons and work boots that can be checked in and out

Note. GAP = good agricultural practices. Information is based on experience of pilot testing food safety training program at an Iowa prison farm.

Summary

Prison farms provide many opportunities for prison populations to expand on their skill sets, gain training hours, and work outside. On many prison farms, prisoners grow produce, thus making food safety training a priority. In creating our prison farm food safety curriculum, we prioritized personal hygiene, attention to clothing and boots, disease and sickness, and strategies for managing mixed farms. Development of a food safety training for prison farms does pose many challenges, but they can be overcome. High offender turnover rates along with time restrictions may limit the depth of information that can be provided. The number of challenges is dependent on the prison system's rules and regulations. It is important that educators understand the prison system they will work with and have flexibility when implementing any program.

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