

Food Safety on the Farm: Good Agricultural Practices and Good Handling Practices—Field Sanitation¹

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As part of the Food Safety on the Farm series, a collection that reviews the generally recognized principles of GAPs as they relate to produce, primarily at the farm level and with particular focus on fresh Florida crops and practices, this publication focuses on GAPs and GHPs relating specifically to field sanitation. The publications in this series can be found online at the EDIS website at http://edis.ifas.ufl.edu/topic_series_food_safety_on_the_farm.

Introduction

Good agricultural practices (GAPs) and good handling practices (GHPs) encompass the general procedures that growers, packers, and processors of fresh fruits and vegetables should follow to ensure the safety of their product. GAPs usually deal with preharvest practices (i.e., in the field), while GHPs cover postharvest practices, including packing and shipping. This factsheet covers harvest practices associated with sanitation in the field. There are seven other UF/IFAS Extension factsheets in the ‘Food Safety on the Farm’ series focusing on specific aspects of the GAPs program and how they relate to Florida crops and practices.

Under the new Food Safety Modernization Act (FSMA), GAPs are the foundation of the Produce Safety Rule (PSR). Other than for round tomatoes in Florida (T-GAPs regulation), GAPs have mainly been a voluntary program. Additionally, the PSR mandates all non-exempt operations to follow these new FSMA federal guidelines (9), but for

all exempt commodities and for those producers exporting to foreign countries, GAPs may still be required. Both the mandatory PSR and GAPs aim to reduce the foodborne illness burden associated with produce.

Microbial Hazards

Fresh produce can become contaminated with pathogenic microorganisms any time before, during, and after harvest. Sources of microbial hazards in the field can include soil, soil amendments (any input intentionally added to the soil), water, workers, and equipment. Improper management and cleaning of field equipment and unsanitary harvesting practices are examples of poor field sanitation that can increase the risk of contaminating fresh produce.

Regulatory Background

The enactment of the FSMA requires operations and facilities to comply with the specific regulations in which they are covered. However, certain businesses that fall short of meeting a coverage criteria may have to comply with a different regulation. Thus, businesses may find it prudent to refer to other applicable regulations to guide the creation of a food safety plan.

Similar to the recommended GAPs derived from the Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables, Title 21 of the Code of Federal Regulations (CFR), part 117, sections 20, 37, and 40 delineates

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provisions for grounds of food plants, sanitation facility and controls, and equipment and utensils, respectively (1, 2, 3, 6). These provisions may be relevant for operations that partially meet the farm definition, such as a farm mixed-type facility. Included are requirements for proper maintenance and storage of equipment and pest control that can be applied towards controlling hazards in produce fields (1, 2, 3). Previously, these provisions were located in part 110, but have been reorganized into part 117 since the enactment of the FSMA. New considerations also include protection from allergen cross-contact, which may be a concern for a co-op packing tree nuts (e.g., coconuts, almonds, etc.), and/or peanut, along with other produce. Additionally, a farm mixed-type facility that creates a distinct raw agricultural commodity (RAC) processed beyond drying, dehydrating, packaging, and/or labeling, such as dried, diced mangoes, would have to comply with these regulations unless that facility meets the specifications for an exemption or a qualified exemption. Conversely, if a farm or farm mixed-type facility dries or dehydrates a RAC to create a distinct commodity without further processing, such as dried, whole blueberries, that entity can meet the FSMA requirements for packing, packaging, and holding activities by either complying with the PSR found in 21 CFR part 112 or by complying with GMPs in subpart B of the Preventive Controls for Human Food (PCHF). Any activities of a farm mixed-type facility that fall within the farm definition are exempt from GMPs and may have to comply with the PSR.

Considering the FSMA regulations are science-based, minimum standards for safe food practices, growers must be aware and comply with more stringent regulations. State and local regulatory authorities can adopt mandatory and more specific regulations to improve food safety. Tomato operations in Florida must follow sanitary facility standards among other Tomato Good Agricultural Practices (T-GAPs) during all steps of production (5). Sewage biosolid land application is prohibited for Florida tomato growers due to T-GAPs restrictions, despite being allowed for use under the PSR if 40 CFR part 503 is met. These guidelines found in the Tomato Best Practices Manual have been made into rule (Chapter 5G-6) pursuant to Tomato Inspection Law Section 500.70 of the Florida Statutes, which took effect July 1, 2008 (4).

In response to and recognition of growing food safety issues, the FSMA was passed by Congress and signed by the President in January 2011 (8). The new law requires companies to implement a food safety program that significantly minimizes potential hazards and risks of foodborne illness.

The PSR, one of the foundational rules of the FSMA, establishes standards to ensure safe growing, harvesting, packing, and holding of covered produce on farms. GAPs programs are currently intended as guidance, not as a regulation (except for round tomatoes grown in Florida), but are usually mandated or enforced by the buyers. Successful implementation of state-mandated regulations has set the precedent for the recent PSR covering commodities intended to be consumed raw or in their natural state. Currently, the PSR is required for all non-exempt operations that fall under the farm definition (9, 10). A coverage and exemptions flow chart is available on the FDA website for operations to help determine compliance with the PSR (7). In the PSR, Subparts E (Agricultural Water) and F (Biological Soil Amendments of Animal Origin and Human Waste) set requirements that aim to prevent pathogens introduced by the agricultural water (that may potentially contact the harvestable portion of produce or food-contact surfaces) and soil amendments during production (9). Subpart I (Domesticated and Wild Animals) of the PSR is directed at preventing biological hazards resulting from either domesticated or wild animals depositing excreta on covered produce. Whether covered or exempt, taking immediate steps to implement field sanitation GAPs will benefit a company's financial viability and overall produce safety. Moreover, even farms exempt from the PSR are subject to the provisions of the Food, Drug and Cosmetic Act (FD&C Act) preventing adulterated food from entering commerce.

How to Control Potential Hazards

For FSMA regulations such as the PSR to be successful, prerequisite programs such as GAPs are necessary to bolster such broad, scalable provisions. GAPs are critical in ensuring the safety and quality of fresh produce. The US Food and Drug Administration identified the following GAPs that should be considered during harvesting and equipment maintenance to mitigate microbial risks in the field (6).

General Harvest Considerations

- Clean and disinfect storage facilities used for harvest containers prior to use.
- Inspect facilities for evidence of pests, such as rodents, birds, and insects.
- Clean and sanitize reusable containers before using them to transport fresh produce.
- Discard containers used to store produce if they are damaged or cannot be thoroughly cleaned.
- Take care not to contaminate fresh produce that is washed, cooled, or packaged in the field. Contact with

any source of pathogens, such as manure or biosolids, contaminated water, workers with poor hygiene, and unclean containers and boxes can contaminate fresh produce in the washing, cooling, packaging, or storage process.

- Remove as much dirt and mud as practicable from the produce before it leaves the field. In times where removing mud in the field is not practical, mud should be removed at the packing facility before sorting, grading, and packing.

Equipment Maintenance

Improperly managed field equipment, such as harvesting machinery, knives, containers, tables, baskets, packaging materials, brushes, buckets, etc., can be a source of contamination. Regularly cleaning and maintaining equipment can help prevent contamination of fresh produce. The following GAPs should be considered:

- Use harvesting and packing equipment appropriately and keep it clean. Equipment used to haul garbage or manure should be cleaned and sanitized before coming in contact with or hauling fresh produce. Document the cleaning and sanitizing of equipment to help establish “clean breaks” between different lots of produce.
- Keep harvest containers clean to prevent cross-contamination of fresh produce. If containers are used repeatedly during a harvest, they should be cleaned after each load is delivered, prior to each reuse. Containers stored outside should be inspected and/or cleaned before use.
- Assign responsibility for maintenance to the person in charge of managing equipment. The person in charge must know what and how equipment is being used, ensure equipment is functioning properly, and make sure equipment is cleaned and sanitized regularly.

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Resources

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