Working Committee 3

Farm Review

Date: 05/02/2012
Revision: Final
Introduction

This working committee was tasked with discussing the following areas related to review of fresh fruit and vegetable farm land use, with a special emphasis on co-management and NOP related issues.

3.1. Land History

3.2. Adjacent Land Use

Working Committee Chairs

Hank Giclas  
*Senior Vice President of Science and Technology, Western Growers*

Robert Hadad  
*Cornell Cooperative Extension*

Meetings Held

<table>
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<tr>
<th>Date</th>
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<td>May 24, 2011</td>
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<td>August 30, 2011</td>
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<td>March 23, 2012</td>
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Total Meetings: 8  
**Total committee members**\(^1\): 45  
\(^1\) See [Appendix I](#) for full list of members
Data Collection

Information from committee members was collected during seven teleconferences held over the months of May 2011 to March 2012. Each meeting held was approximately one hour long with open discussion between all participants. Detailed notes were taken and submitted to the committee after the meeting so that all participants, including those unable to attend, could review the content. Completed notes were then posted online at the PSA website.

From the overall outline of discussions, the committee co-chairs and members moved forward to identify priority areas for the committee’s discussion and final recommendations to the PSA Executive committee. Topics which were prioritized as lower importance will be kept on file in the committee’s original meeting note document.

Due to the similarity of topics covered between the ten working committees that constitute the PSA, some priority areas, such as land use and history, are covered in multiple groups. The depth to which they are covered vary between groups but all outcomes are retained and will be represented in the overall PSA documents.
Priority Areas

3.1. Land History
- Farm Review
  - Evaluating Risk
    - Biological Risks
    - Physical Risks
    - Chemical Risks
- Documentation of Risks
- Corrective Actions
- Teaching Tools
  - Case studies
  - Risk assessment tools
- Current Audit Schemes

3.2. Adjacent Land Use
- Evaluating Risks
  - Animals, domestic and wild
  - Manure and compost
  - Landfills
  - Septic fields
  - Adjacent crops
  - Recreation areas/agritourism
  - Residential areas
  - Flood history
- Documentation of Risks
- Corrective Actions
Summary

3.1. Land History

I. Evaluating Risk

The main focus of this committee was to evaluate food safety risks present as a part of farm land history and adjacent land use assessments. Committee members agreed that it is the grower’s responsibility to evaluate risk on their property and adjacent properties which might affect their production practices and subsequently, the safety of the produce they grow. Growers must continue to be aware of risks, understand how they may impact their specific operation, and adapt to new information as it becomes available. Risk assessments, the first crucial step in management of food safety risks on the farm, should be incorporated into the curriculum and educational media.

The committee discussed three major risk categories that relate to the overall farm review and adjacent land use. The areas listed below identify specific issues which should be addressed within the curriculum. Small farmers might not encounter all of the issues detailed below, but should be aware of potential risks that could occur.

1. Biological Risks

These biological microorganisms, the cause of human foodborne illness, include bacteria, viruses, parasites, yeasts, and molds. Since the potential for contamination from microorganisms can occur at every stage of the production handling process, major focus areas include:

- **Water**: Water is a critical component in the production of fresh fruits and vegetables. Its proper use is essential in preventing the contamination of produce crops. Harmful microorganisms may be present in water sources (for both irrigation and postharvest use) and can proliferate given the proper conditions. The type of water source (e.g. surface, well, municipal), irrigation method (e.g. overhead, flood, drip), and disinfection practices (e.g. chlorination of postharvest water) should be reviewed as part of the risk assessment.

- **Manure (Livestock)**: Several harmful pathogens found in livestock manure can cause illness in humans. Priority should be placed on first assessing the risks related to the manure source and application practices. Secondly, manure storage and handling practices should be reviewed. Additionally, unintentional amendments, such as those from grazing livestock, should be assessed as a potential risk for contamination of fresh produce crops.

- **Biosolids**: Biosolids present a high risk due to their origin (human) and potential to carry human pathogens. Depending on location, biosolids may or may not be approved for use on fresh produce crops. Biosolids are also listed as a chemical risk due to the potential heavy metals present.

- **Fecal Contamination (Wildlife)**: Pathogens can also be carried by wildlife and present a unique challenge to growers to minimize their presence and mitigate any
fecal contamination events that are identified in the field. Active controls and wildlife deterrents should be used whenever possible.

- **Cropping Systems:** Production methods may involve the use of non-synthetic soil amendments such as bone, fish, and blood meal. The use of no-till practices and crop rotation which may increase risks, depending on the method. For instance, crop rotation may require that fresh produce is grown on land which recently had an application of fresh manure.

- **Green Wastes:** This type of waste is often produced from the packing shed, processing, or daily activities on the farm (e.g. grass clippings). The storage and removal of green waste should be evaluated to make sure it does not attract wildlife or other rodents to produce growing and postharvest processing areas. Green waste may also be considered a physical risk due to glass, metal, or other hazards present in the area.

2. **Physical Risks**
Physical hazards represent a broad category of naturally occurring and man-made hazards that generally present risks of choking, lacerations, or tooth damage, if present in the final product.

- Glass, wood, rocks, metal (e.g. nails)
- Green waste (often has glass)
- Plastics/metal from irrigation system
- Worker Clothing (jewelry, gloves, etc.)
- Allergens, if in processing environment (e.g. peanuts)

3. **Chemical Risks**
Contamination of food by chemical hazards may occur through environmental pollution of air, water, and soil or through intentional use of various chemicals such as pesticides and other agrochemicals.

- **Municipal Biosolids:** Pose a high risk due to their potential to contain heavy metals, pharmaceuticals, or human pathogens, if not treated properly.
- **Landfills:** Risks may be identified through adjacent land use and previous land use assessment for potential of chemicals leaching into soils and contaminating ground water sources.
- **Petrochemicals:** Can pose a threat to food safety in stored near growing areas or are used in the packinghouse (e.g. food grade lubricants). In additional, spill response plans should be available in the event that they are needed. In the event of flooding, underground storage tanks for petrochemicals are also a major concern.
- **Heavy metals:** This topic is primarily a regional issue and may not be an area of concern for most growers. Heavy metal contamination may be caused by a flood event or result from contaminated sediment basins.
- **Pesticides/Herbicides:** The application of pesticides and herbicides not only affect the safety of the product if applied improperly, but can also affect adjacent crops which may be certified organic or sensitive to specific chemical applications if drift occurs. The storage of pesticides and herbicides should be evaluated for proximity
to produce growing or handling areas and accessibility to only those workers who are trained to handle such chemicals.

- **Industrial Run-off**: These risks may be identified through the adjacent land use assessment.

II. **Documentation of Risks**
Documentation highlights a grower’s commitment to produce safety by reducing food safety risks to fruits and vegetables. Keeping all records of risk assessments is not only a good business practice for the farm but may, in the event of a foodborne illness outbreak, prove that the contamination did not originate on the farm. Organized and thorough documentation of risks also facilitates ease of auditing by buyers and independent third party auditing firms.

III. **Corrective Actions**
Corrective actions should be carefully designed to address each documented risk. The development, design, and implementation of corrective actions should reduce or eliminate the identified risk, where feasible. In addition, corrective actions should be evaluated for potential unintended consequences that would work against other on-farm goals and objectives. Each corrective action should be documented as part of the overall food safety plan.

IV. **Teaching Tools**
   a. **Case studies**
   Case studies and scenarios have been documented as an effective method in several training programs offered by committee members. The use of scenarios can provide growers with an idea of actual risks which may exist on their farm and what action was taken to mitigate them. Case studies and scenarios should be focused on practical events which may occur on the farm or during evaluation of land use and history.

   b. **Risk Assessments**
   Knowledge and understanding of risk and how to manage it are constantly evolving. Growers skilled in implementing a systematic process to evaluate risk, while seeking knowledge on how it impacts their specific operation, should be better able to adapt as new information becomes available. Simple risk assessment sheets or charts serve as an easy method for growers to walk through the process in their own operation.

V. **Current Audit Schemes**
Many audit schemes exist for growers to choose, in the event that they should need a third party audit conducted. Two audit schemes listed below were looked at in further detail for requirements specific to land review. One concern of the committee is the notion of ‘teaching to the test’ where growers may not understand the food safety risks on their farm, but are able to follow audit schemes to answer simple questions about their operation.

The following audit schemes were reviewed for field history and adjacent land use requirements:
a. **Harmonized GAP Audit**, Section 2 - Field Production – Field History and Assessment:

   **Requirement** - “The food safety plan shall, initially and at least annually thereafter, evaluate and document the risks associated with land use history and adjacent land use including equipment and structures”

   **Procedure** – “When land use history or adjacent land use indicates a possibility of physical, chemical or biological contamination, preventive controls shall be performed and documented to mitigate food safety risk. The assessment is re-performed, and documented, at least annually for environmental conditions or risk awareness that has changed since the last assessment. The assessment shall include indoor growing facilities and structures such as green houses and hydroponics.”

b. **Primus Labs Pre-Season Risk Assessment**

   Contains a variety of risk factors, most notably for this committee is the section on environmental factors which covers land use history, wildlife activity, flood events, and adjacent land use.

3.2. Adjacent Land Use

I. **Evaluating Risks**

   The following list builds upon the risks identified in Section 3.1, Land History. These are additional considerations for evaluating surrounding land for potential hazards.

   a. **Animals, domestic and wild**
   
   - May include biological risk of fecal contamination or risk of damage to the crop in overall loss.

   b. **Manure and compost**
   
   - If manure and compost is stored close to production and processing areas, there is potential biological risk from wind or water run-off.

   c. **Landfills**
   
   - Chemicals may leach from landfill areas and contaminate soil or ground water. Landfills also tend to attract pests, such as birds, rodents, or other wildlife.

   d. **Septic fields**
   
   - Underground septic systems should be inspected annually to ensure they are not leaching into soil or ground water sources.

   e. **Adjacent crops**
   
   - Producers should be aware that the application of pesticides/herbicides might affect adjacent crops which are being grown organically or have sensitivity to specific chemicals.

   f. **Recreation areas/agritourism**
   
   - Any farm guests, including agritourism visitors or areas with high recreation, should be aware of your farm policies or communicated to the supervisor of the nearby activities (such as the neighbor hosting the event).

   g. **Flood history**
   
   Risk assessments should identify if there has been any history of flooding in the past and where any flood plains might exist.
- Post-flood farmers should assess:
  1.) What might be present in flood water
  2.) Where the flood water may have originated from
  3.) What crops have been affected
- Guidance from FDA is available for evaluations of heavy metals, toxins, and other contaminants present in flood waters.
- Flood distinctions - two types of flooding have been categorized.
  1.) Catastrophic events
  2.) Flood events from a known flood plain/geography
- Testing: Testing of water sources used for drinking water or postharvest production should be tested for potability. Baseline water tests of sources used for production (irrigation) should be compared to post-flood testing to determine whether the water quality has deteriorated.
- Guidance: FDA recommends that growers discuss their testing plans with state and local regulators and technical specialists for case-specific evaluations.

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III. **Corrective Actions**

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Recommendations

**Recommendation #1:** Training materials must address the concept of risk assessments and hazard analysis. The committee has developed a non-exhaustive list of common hazards, whether biological, chemical, or physical, that may compromise the safety of fresh produce on the farm. Understanding which hazards represent the biggest risks on each individual farm is a critical concept to learn in order to prioritize the effort and resources needed to implement food safety practices.

**Recommendation #2:** The delivery of training materials in an educational setting, whether in a classroom or online, should utilize real-life case studies that include examples of hazards identified and risks mitigated. Providing several different examples that take into account specific audiences, regions, and commodities will allow trainers to select examples that are relevant.

**Recommendation #3:** Training materials must provide a solid foundation for understanding the principles of Good Agricultural Practices (GAPs) including supporting science and how the action mitigates risks on the farm. Once a grower has performed an assessment to identify risks, the grower must then understand which GAPs to implement to effectively mitigate the risks.

**Recommendation #4:** The curriculum needs to be updated frequently to reflect changes regarding risk assessments, land use history, and adjacent land based on future regulations and other industry requirements. Trainers may be responsible for providing their audience with updated applicable requirements that pertain to the grower’s operation based on geographic location, production practices, local regulation, or commodity.

**Recommendation #5:** Growers should be encouraged to record and update documents critical to Farm Review including Land History and Adjacent Land Use. Without a baseline understanding of potential risks, practices that reduce the risk of contamination cannot effectively be implemented.
APPENDIX I

Working Committee Members (45)

1. Aller, Marion ; Assoc. of Food & Drug Officials ; FL Dept. of Agriculture & Consumer Services
2. Baumgartner, Jo Ann ; Director ; Wild Farm Alliance
3. Beckman, Edward ; CEO ; California Tomato Farmers
4. Bihn, Elizabeth ; PSA Program Director ; Cornell University
5. Biltonen, Mike A. ; Consultant ; Red Jacket Orchards
6. Blakely, Bob ; Director of Industry ; California Citrus Mutual
7. Brandenberger, Lynn ; Horticulturist, Professor ; Oklahoma State University
8. Brown, Reggie ; Association Manager ; Florida Tomato Exchange
9. Food Safety Program Manager
10. Crowley, Cecilia ; Consumer Safety Officer ; USFDA
11. DeSantis, Valeria J. ; Farm Products Grading Inspector ; NYS Dept. of Agriculture
12. Dessaint, Louis ; Field Project Manager ; Brooks Tropicals, LLC
13. Giclas, Hank ; Senior Vice President ; Western Growers
14. Gombas, David ; SVP Food Safety and Technology ; United Fresh Produce Association
15. Hadad, Robert G. ; Regional Vegetable Specialist ; Cornell University
16. Haskins, Cynthia ; Consultant ; Illinois Farm Bureau
17. Johnson, Donna ; DLJ Food Consulting ; Owner
18. Kanitz, William ; ScoringAg.com ; President
19. Kiger, Luana E. ; Special Assistant to STC ; USDA NRCS
20. Koenig, Mark ; Extension Educator ; OSU Extension
21. Kulhanek, Ashley L. ; Food Safety Education Associate ; The Ohio State University
22. Langdon, Sue J. ; Extension Director ; North Carolina Sweet Potato Commission
23. Lanini, Sharan A. ; Raw Product Food Safety Mgr. ; Chiquita Brands International/Fresh Express
24. Lowell, Karen L. ; Agricultural Scientist ; L&L Consulting
25. McGinnis, Yvonne R. ; CEO ; Remembering Mary, LLC
26. Miele, Brendan ; Director CA Farming Ops ; Jacobs Farm/Del Cabo, Inc.
27. Miller, Bill ; Farm Prod. Grdg. Insp. 3 ; NYS Dept. of Agriculture and Markets—Div. of FSI
28. Mills, Laura G ; Consultant ; Metz Fresh, LLC
29. Morales, Saul ; Senior Department Manager, QC ; Sysco Quality Assurance
30. Mountjoy, Daniel ; Asst. State Conservationist ; USDA NRCS
31. Nolte, Kurt D. ; Extension Agent ; University of Arizona
32. Queenan, Mark ; VP of Quality ; Backyard Farms, LLC
33. Roberts, Martha Rhodes ; Special Assistant to Dean for Research ; University of Florida
34. Robins, Paul ; Executive Director ; Resource Conservation District of Monterey County
35. Rubbo, Colby ; Food Safety Manager ; Costa Farms, Inc.
36. Rushing, Jim ; Training and Program Manager ; University of Maryland
37. Schneider, Keith ; Associate Professor ; University of Florida
38. Sharp, Adam J. ; Public Policy ; Ohio Farm Bureau Federation
39. Scott, Vicki ; Director of Quality ; Amigo Farms
40. Sullivan, Bradley W. ; Managing Attorney ; Lombardo & Gilles, LLP
41. Suslow, Trevor ; Extension Specialist ; University of CA
42. Viazis, Stelios ; Produce Safety Staff ; USFDA
43. Villaneva, Michael, L. ; Consultant ; California Leafy Greens Marketing Agreement
44. Wall, Gretchen ; PSA Program Coordinator ; Cornell University
45. Weddle, Kami S. ; Food Safety Manager ; Rousseau Farming Company