Land Use Food Safety Action Plan – Co-Management Strategy & Examples

You now have a clear illustration of risk areas on your farm that need management attention to minimize risk. Your next step is to create a Land Use Action Plan. This plan will be a valuable tool to establish and implement practices that address the "areas of food safety actions" you've now identified. It will describe the steps you will take to reduce these risks. Your Land Use Action Plan will be the heart of the land use section of your Food Safety Plan

Jo Ann Baumgartner of Wild Farm Alliance developed the following Land Use Action Plan example guide and template based on "co-management" strategies. It is designed to utilize the many ecosystem service benefits of nature to minimize land-based food safety risks. A few examples of these ecosystem services that can be "co-managed" as part of your production system to minimize food safety risks include:

> **"'Co-Management'** means farm system management approaches that respond to site specific conditions by integrating cultural, biological, and mechanical practices that promote ecological balance and public health by conserving biodiversity, soil, water, air, energy and other natural resources, while also reducing pathogen hazards associated with food production." (National Sustainable Agriculture Coalition)

- Ultraviolet (UV) radiation from the sun may desiccate or inactivate recently deposited pathogens on the surfaces of soil and leaves, as well as in clear water.
- Windbreaks can trap dust-containing pathogens and prevent it from entering produce fields.
- Grass strips can trap organic matter and soil carrying pathogens in runoff from pastures and divert potentially contaminated water away from produce fields.
- Vegetation can filter/trap pathogen laden dust on leaves where it is exposed to UV sunlight and drying, and serve as a structure for biological competition.
- Restored wetlands can considerably reduce pathogen transport by slowing the water, which increases the interaction time, and providing a matrix for beneficial microbes.
- Diverse microbial populations compete with and consume pathogens in water and soil and on plant surfaces.
- Wildlife corridors allow wildlife to access resources (water, food, and cover) without having to cross crop fields or leave their preferred habitat

For more examples and details of how you can manage your farm to maximize eco-system services for food safety, read Wild Farm Alliance's publication, *Co-Managing Farm Stewardship with Food Safety GAPs and Conservation Practices: A Grower's and Conservationist's Handbook*

Examples for Land Use Action Plan

The following examples are divided into four categories that help to minimize pathogens from a) entering the farm, b) contaminating crops, c) spreading from livestock to crops, and d) moving to the wider landscape. The farmer can pick and choose from the examples in these categories, and/or use their own experiences to appropriately fill out their Land Use Action Plan with the three-page template that follows these examples.

1st Barrier—Assess Risk of Pathogens Entering the Farm

1a. <u>Area of Food Safety Action</u>

- **<u>Airborne Pathogens (coming from surrounding area)</u>**
  - Compost or manure piles
  - Domestic animal areas
  - Industrial waste
- **What: Policy/ Actions to Reduce Risk**
  - Reduce the risk of airborne pathogens getting on the farm by intercepting them with a Windbreak and/or

- Hedgerow.

- **How Is this Done?**
  - Determine parameters of planting (height, width, species) and strength of wind.

1b. <u>Area of Food Safety Action</u>

- **<u>Waterborne Pathogens (coming from surrounding area)</u>**
  - Domestic animal areas
  - Areas where significant numbers of wildlife are present
  - Compost or manure piles
  - Industrial waste
- **What: Policy/ Actions to Reduce Risk**
  - Reduce the risk of contaminated water getting on the farm by intercepting it with a
  - Grass filter strip,
  - Grassed waterway,
  - Riparian area, or
  - Wetland;
  - Storing it in a Waste storage pond; and/or
  - Redirecting it with Diversion ditch.
- **How Is this Done?**
  - Determine parameters of planting, conservation practice or conserved area.

1c. <u>Area of Food Safety Action</u>

- **<u>Domestic Animals (coming from surrounding area)</u>**
  - Significant numbers of escaped livestock, or neighbor dogs
  - Significant amounts of animal excreta
  - Significant crop destruction
- **What: Policy/ Actions to Reduce Risk**
  - Monitor for presence during growing season and take appropriate action.
- **How Is this Done?**
  - Work out with neighbors

1d. <u>Area of Food Safety Action</u>

- **<u>Wildlife (coming from surrounding area)</u>**
  - Significant numbers of animals, especially feral pigs
  - Significant amounts of animal excreta
  - Significant crop destruction
- **What: Policy/ Actions to Reduce Risk**
  - Monitor for presence during growing season and take appropriate action.
- **How Is this Done?**
  - Trap or hunt non-native feral pigs.
  - Discourage native wildlife with light, sound, etc.
  - Take animal control measures only after any necessary environmental permits are obtained.
  - Use portable electric fencing or
  - Install expensive stationary fencing as last resort.

2nd Barrier—Reduce Likelihood of Pathogens on the Farm Contaminating Crops

----------Choosing Appropriate Sites----------

2a. Area of Food Safety Action

- **Avoid flooded land**
  - Water may be contaminated
  - Deposited sediments may be contaminated
- **What: Policy/ Actions to Reduce Risk**
  - Destroy part of crop that is contaminated and determine next steps.
- **How Is this Done?**
  - Mow contaminated crop and let dry out before incorporating in the soil.
  - Establish a waiting period after flooding and next harvest of crop for human consumption, or
  - Possibly plant next crop for livestock consumption.

2b. Area of Food Safety Action

- **Avoid nearby contamination**
  - Farm's nearby compost or manure piles
  - Farm's nearby livestock
  - Nearby landfill
- **What: Policy/ Actions to Reduce Risk**
  - Plant crop that will reduce risk.
- **How Is this Done?**
  - Plant crop for livestock feed.
  - Plant crop that is not eaten raw.
  - Plant tree crop.

2c. Area of Food Safety Action

- **Avoid overhead contamination**
  - Bird feces on crop
  - Bird feces in irrigation pond or canal
- **What: Policy/ Actions to Reduce Risk**
  - Don't plant or harvest under tree limbs and discourage bird roosting over crops.
- **How Is this Done?**
  - Trim overhanging vegetation without disturbing birds during nesting season.
  - Plant upright trees that don't tend to branch out much near crop or water source.
  - Provide branching trees for birds at a distance away from crop or water body.

2d. Area of Food Safety Action

- **Avoid areas of abundant wildlife**
  - Significant numbers of animals
- **What: Policy/ Actions to Reduce Risk**
  - Take wildlife use patterns into account
- **How Is this Done?**
  - Assess wildlife use of resources (water, habitat, cover) before determining crop site; also
  - Take wildlife movement patterns into account.

----------Preventing Pathogens from Coming in Contact with the Crop----------

2e. Area of Food Safety Action

- **Monitor for animal signs**
  - Significant numbers of animals (grazing animals, working animals, wildlife)
  - Significant amounts of animal excreta

- Significant crop destruction

- **What: Policy/ Actions to Reduce Risk**
  - Monitor for presence during growing season and take appropriate action.
- **How Is this Done?**
  - Flag or cordon off contaminated crop areas.
  - Encourage a few predatory animals, such as hawks and owls, so there is less of a risk of more numerous rodents.
  - Trap or hunt non-native feral pigs.
  - Discourage native wildlife with light, sound, etc.
  - Take animal control measures only after any necessary environmental permits are obtained.
  - Use portable electric fencing, or
  - Install expensive stationary fencing as a last resort.

2f. <u>Area of Food Safety Action</u>

- **<u>Monitor water quality</u>**
  - Surface water
  - Groundwater
  - Water distribution systems
- **What: Policy/ Actions to Reduce Risk**
  - Check that water is of correct quality depending on intended use (food contact surfaces vs. irrigation water), and water distribution system is clean.
- **How Is this Done?**
  - Possibly test water.
  - Possibly treat water.
  - Possibly use time interval between last irrigation and harvest.
  - Possibly use time interval between harvest and end of storage.
  - Develop water quality change schedules for re-circulated water used during harvest, packing and holding.
  - Monitor and clarity and temperature of water used during harvest, packing and holding.
  - Keep water sources and systems free of debris, trash and domestic animals.
  - Don't allow pooled water to collect in fields.
  - Don't allow water used to wash tractors, equipment and animals to drain into crop fields.

2g. <u>Area of Food Safety Action</u>

- **<u>Use care with manure, other biological soil amendments and agricultural tea</u>**
  - Pathogens in manure
  - Pathogens in incorrectly made compost
  - Pathogens in incorrectly made agricultural tea
  - Pathogens, glass, heavy metals, pesticides in green waste
- **What: Policy/ Actions to Reduce Risk**
  - If applying manure or agricultural tea to produce, make sure it is safe to use, and it is handled correctly.
- **How Is this Done?**
  - Manage manure/soil amendment amounts, incorporating it quickly and thoroughly, and timing applications based on season and predicted rainfall or high winds.
  - Implement a waiting period between applications of manure and harvest.
  - Don't use untreated surface water or incorrectly made compost in agricultural tea.
  - Handle manure in a way that it *does not contact* produce or contaminate water system.

2h. <u>Area of Food Safety Action</u>

- **<u>Reduce pathogens in soil</u>**
  - Pathogens from manure

- Pathogens from feces of grazing animals, working animals or wildlife
- Pathogens from flooding

- **What: Policy/ Actions to Reduce Risk**
  - Foster diverse soil microorganisms that reduce pathogens by competing for nutrients, making conditions unfavorable, or killing them; with
  - Compost,
  - Cover crops, and
  - Crop rotations.
- **How Is this Done?**
  - Determine application rate, and parameters of plantings.

2i. <u>Area of Food Safety Action</u>

- **<u>Monitor compost making</u>**
  - Pathogens in manure
  - Pathogens in incorrectly made compost
  - Pathogens, glass, heavy metals in green waste
- **What: Policy/ Actions to Reduce Risk**
  - If applying compost to produce, make sure it is safe to use, and it is handled correctly
- **How Is this Done?**
  - If making compost, adhere to FDA standards for static and turned compost.
  - If purchasing compost, obtain certificate.
  - Handle compost in a way that *minimizes* contact with produce and keeps if from being re-contaminated (e.g. with raw manure).

3rd Barrier—Reduce Spreading Pathogens to Crops When Livestock are on the Farm

3a. <u>Area of Food Safety Action</u>

- **<u>Avoid crop contamination</u>**
  - Pathogens in livestock feces
- **What: Policy/ Actions to Reduce Risk**
  - Increase distance between livestock and crops.
  - Reduce incidence of pathogens movement by equipment.
  - Reduce the risk of pathogens in livestock feces contaminating the crop by intercepting them with a
  - Windbreak,
  - Hedgerow,
  - Grassed waterway,
  - Grass filter strip,
  - Riparian areas,
  - Wetland,
  - Storing it in a Waste storage pond; and/or
  - Redirecting it with Diversion ditch.
- **How Is this Done?**
  - Place livestock food and drinking water away from crops and water sources.
  - Use prescribed grazing that optimizes infiltration and reduces runoff of water that may have pathogens.
  - Wash any equipment that would otherwise spread manure onto crop.
  - Determine parameters of planting, conservation practice or conserved area.

3b. <u>Area of Food Safety Action</u>

- **<u>Monitor feces from domestic working (used for weeding, guarding or traction) and wild animals</u>**

    - Pathogens in livestock and guard dog feces
    - Pathogens in wildlife feces
- **What: Policy/ Actions to Reduce Risk**
    - Monitor for presence during growing season and take appropriate action.
- **How Is this Done?**
    - Flag or cordon off contaminated crop areas.
    - Trap or hunt non-native feral pigs.
    - Discourage native wildlife with light, sound, etc.
    - Take animal control measures only after any necessary environmental permits are obtained.
    - Use portable electric fencing/Install stationary fencing.

4th Barrier—Prevent Pathogens From Leaving the Farm

4a. Area of Food Safety Action

- **Avoid locating manure and compost piles near waterways**
    - Compost and manure piles
- **What: Policy/ Actions to Reduce Risk**
    - Reduce the risk of pathogens leaving the farm to contaminate the larger landscape by intercepting them with a
    - Sediment basin,
    - Riparian buffers, and
    - Wetland.
- **How Is this Done?**
    - Determine parameters of planting.

2.1.1 Field and Land History Assessment Record

The field history assessment is re-performed, and documented, at least annually for environmental conditions or risk awareness that has changed since the last assessment.

Date	Signature	Date	Signature