**GAPs – Summary of questions to help assess risk and potential ways to minimize them**

Good Agricultural Practices are about understanding the potential food safety risks associated with your operation and practical practices that farmers need to adopt/adapt in order to minimize the risk of contaminating the food they produce. (Note there is no such thing as “Zero-Risk.”)

There are 2 steps:

1. Understanding & implementing GAPs
2. Documenting what you are doing, when you are doing it, and in some cases how (Basic records are important for all growers but those needing a 3rd party certification will need extensive documentation)

5 Key areas to focus on for GAPs:

1. Water
2. Manure/Compost & Chemicals
3. Land Use & Animal Access
4. Equipment, Tools & Buildings
5. Employee Training (Health & Hygiene)
6. Water – what is your source(s) & how is the water being used

* Is it coming in to direct contact with the edible portion of the produce?
* Has it been tested? (Generic E.coli & Fecal Coliform)
* What are you using it for? Irrigation? Washing (what are you washing)? Chemical application?
* Are you monitoring potential risk of water source contamination? (i.e. is the well maintained? Are there activities happening on or adjacent to your property (feedlots, industrial sites, garbage dumps, high volumes of animals with access to water, etc…) that could be contaminating the water source, particularly for surface water?

\*Water used for washing crops or tools/equipment used for harvesting must have zero generic *E. coli*.

Minimizing risks by understanding your practices and adapting/adopting new ones where necessary and practical:

* Converting from overhead irrigation to drip, if feasible
* Increasing the time interval between irrigation and harvest (exposure to UV has been found to kill bacteria)
* Only use a potable (microbiologically speaking) water source for misting, taking field heat out or for making chemical applications close to harvest. (Note: chemical content of the water may impact effectiveness of chemicals and/or result in some quality issues for produce)

1. Manure / Compost – what is the source & how is it being used / stored?
   * For compost that is purchased always make sure the provider is able to give you either a Certificate of Analysis showing that it meets compost standards or a letter of guarantee.
   * If composting yourself, ensure temperature and turning are happening according to composting rules & records are kept. Follow static or turned composting processes described below:
     + Static composting: maintains aerobic conditions at a minimum of 131 degrees for three consecutive days and is followed by adequate curing
     + Turned composting: maintains aerobic conditions at a minimum of 131 degrees for 15 days (which do not have to be consecutive), with a minimum of five turnings, and is followed by adequate curing.
   * Manure – understand how you are using it, when you are using it and for what crop
     + How is it spread? – Side dressed / broadcasted, etc…
       - Is it incorporated into the soil?
       - What is the time interval between applying manure to harvesting? At least 90\* days prior to harvest for those crops whose edible portions are not touching the ground or 120\* days prior to harvest for crops whose edible portions have ground contact. The longer the interval between application and harvest the better. (\*based on the National Organic Program. FSMA has adopted this standard as well.) Note: Animal grazing in the crop growing area is treated as if it was manure so the same 90/120 rule applies prior to harvest.
     + Where is it being stored (for both manure & compost)?
       - Is there a risk of cross contamination with growing area / equipment / water minimized?

Minimizing risks by understanding your practices and adapting/adopting new ones where necessary and practical:

* Increase intervals between application & harvest (where possible)
* Minimize/eliminate contact between plant and manure
  + Where possible: Store away from growing areas. Cover it. Minimize contact with equipment/tools used for harvest.
* Store compost in a way that it does not have potential for being contaminated.

1. Chemicals – only use product that is registered for use on particular crops.
   * Labels should be intact and legible
   * Follow proper safety precautions as per label
   * Understand the difference between restricted & non-restricted chemicals and applicator license requirements. Store according to labels and as per regulations.
   * Follow pre-harvest intervals (PHIs) and re-entry intervals (REIs)

\*Note if you are using OMRI approved chemicals make certain you are following the re-entry intervals (REIs)

1. Land Use (Both crop growing area and adjacent land)
   * Know what your growing area has been used for in the past and if it is prone to issues such as flooding
     + Land being converted from industrial use to growing may be at a higher risk of soil contamination depending on previous use
   * What is happening adjacent to your growing area? Be cognizant of practices adjacent to your land and how they could be contaminating your crops. Example of neighboring practices that could be impacting your crops may include but are not limited to the following:
     + Chemical application – drift
     + Manure spreading – particulate entry into your area or contaminating water source
     + Animal Access – if they allow animals to graze do they have access to the water you use? Can they enter your property? Etc…
     + Barns used for animal housing vents may be blowing into your crop area etc…

Minimizing risks by understanding your practices and adapting/adopting new ones where necessary and practical:

* Setbacks – creating more distance between your growing area and neighboring property
* Buffers – could be hedgerows, vegetative ditches etc…to prevent some of the drift/dust from making its way over

1. Animal Access – Companion/livestock/wild
   * Do any animals have access to your growing area when in production?
   * Are you / do you monitor activity regularly?
   * Have you identified steps in case you do find droppings/trampling/carcasses etc…?
   * Do you / employees move between crop growing areas and livestock/animal housing areas?
     + Have you considered potential for cross contamination?

Minimizing risks by understanding your practices and adapting/adopting new ones where necessary and practical:

* + FDA allows cats and dogs on the farm provided that you develop a system for and implement adequate control of their feces and litter.
  + Where possible use appropriate animal repelling devices i.e. propane cannons, reflectors, owl boxes, etc…
  + If you have buffers & hedgerows see if it makes sense to grow a food source for the wildlife that coming into your crop growing area, hopefully this limits any reason for the wildlife to go into growing areas.
  + Have a checklist/monitoring step prior to harvest to assess wildlife access
  + Keep livestock out of growing area during the producing period (limit grazing to after season harvest is over)
  + Create a procedure/policy to deal with entry of animals in producing area

1. Equipment, Tools & Buildings – how are they being used, cleaned (how often) and stored (storage for tools & equipment & chemicals)
   * If equipment/tools are being modified understand how cleaning may be impacted
   * Ensure they are being used only in a manner that you have identified and not for other purposes (particularly any harvest tools/equipment – unless there is a process identified for proper cleaning)
   * How are produce contact surfaces being cleaned? How often?
   * Packinghouse/Buildings: Is there any pest monitoring taking place if so how?
   * Pesticide are stored according to regulations?

Minimizing risks by understanding your practices and adapting/adopting new ones where necessary and practical:

* Ensure tools & equipment are being used as intended and only for intended purposes
* Create cleaning schedules /logs to verify that cleaning has taken place
* For 3rd party audits create \*SOPs (Standard Operating Procedures) washing/cleaning
  + [\*SOPs – are documents that enable people to carry out a task, they include what needs to be done, how it is done, when, where (is there a specific location to carry this activity out) and who (is there a specific person responsible for this task)]
* Pesticides and chemicals are stored to minimize contamination, locked, ventilated cabinet/shed, etc…

1. Employee Training (Health & Hygiene)
   * Ensure all employees are trained prior to starting work (particularly harvest) and that they understand the importance of what you are trying to achieve (See sample training policy & log for what training should include)
   * Make sure trash cans with lids are available (outside of growing area) and employees use them
   * Portable toilets are available, clean, and close by for use
   * Hand washing stations (preferably outside of toilets) with liquid soap, clean water & single use paper towels (reusable towels are consider poor practice as they may harbor bacteria)
   * Have a proper first kit fully stocked & available and ensure that employees are aware of where it is located and steps dealing with cuts and blood (see sample Blood policy & Injury log)
   * Make sure they understand where the designated\* areas for things like eating, smoking (if you allow it), breaks, etc… [\*designated can be anywhere outside of the growing area, it does not mean creating structures just that it is not inside the growing area]

Minimizing risks by understanding your practices and adapting/adopting new ones where necessary and practical:

* + Training employees is essential, but there has to be some follow up training every so often (refresher training)
  + Signage to reinforce training is a great tool (wash your hands, use toilets etc…)
  + Lead by example

Traceability – is understanding one step forward and one step back (this means knowing where your inputs are coming from & which field your crops are harvested from [one step back] and where you are selling your produce [one step forward])

* Harvest logs, invoices, planting logs, site maps with blocks/field numbers, etc…are all tools that could help with traceability.
* When selling to food service/retail or wholesale growers can create codes (lot numbers) and place a sticker with the number on individual boxes/bags to keep track of products at an individual unit level. This is a great way to minimize the extent of a recall (if it is ever necessary). These numbers are generated by the grower and could be a way of identifying specifics of the content in the box/bag. Some growers use the invoice number, others make up their own unique identifier/code.

Make sure you are keeping records as it is the only way to prove that you did what you say you were doing. Templates are available for growers who wish to use them or to customize them for their own operations. For more food safety / GAPs resources or to download the templates visit [www.caff.org/programs](http://www.caff.org/programs) .