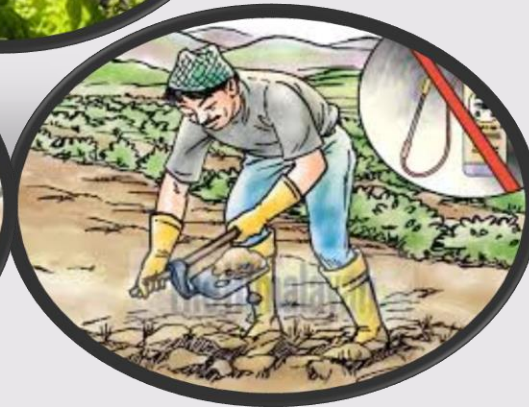




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Module 9: GOOD AGRICULTURAL PRACTICES



Session 2: AT FARM



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INTRODUCTION:

When a farmer follows Good Agricultural Practices, he or she is taking steps to lower the risk of contaminating produce with dangerous pathogens on the farm. Taking these food safety steps is extremely important to keep a farm business operating successfully.





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- In the last several years, many people have gotten sick from eating fruits, vegetables, and meat contaminated with dangerous pathogens. You may have heard of some of these pathogens, such as Salmonella, E. coli, and Listeria.
- These bacteria are not generally found in fresh produce, but they can find their way to fresh produce via contaminated animals, humans, or water.



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MATERIAL:

- There are seven sections of the GAP audit, and each section covers a different part of the supply chain.
- When a farm is audited, it does not need to be audited for all seven sections. Instead, it can choose which sections it would like to have audited. The sections of the audit are:





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- General Questions
- Part 1 – Farm Review
- Part 2 – Field Harvest & Field Packing Activities
- Part 3 – House Packing Facility
- Part 4 – Storage and Transportation
- Part 5 – (No Longer Used)
- Part 6 – Wholesale Distribution Center/Terminal Warehouse
- Part 7 – Preventative Food Defense Procedures



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Farm Review:

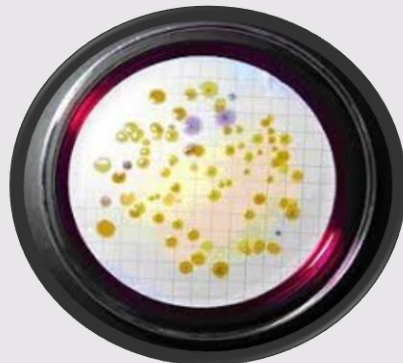
- This section addresses questions about crop production areas, domestic and wild animals, and water and soil amendments.
- ❖ **Water use:** It is very important to know the quality of the water being applied to crops. This information, along with knowledge about the type of irrigation method and the crop being irrigated, allows you to understand the risk of pathogen contamination from your water source.



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- Water standards vary by state, but acceptable levels of pathogens for irrigation in Massachusetts are:
- Fecal Coliform – 200 CFU/100 ml
- E. coli – Geometric mean of 5 samples <126 CLF/100 ml with no sample over 235 CFU/100 ml. For non foliar contact (if water is not touching the leaves), the acceptable level of E. coli is <576 CFU/100 ml.





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- You are required to test your water quality, with different testing frequencies depending on your water source. Required testing frequencies are as follows:
- Municipal water: Obtain results once a year from the local water authority.
- Well water: Test water once during the growing season, and if fecal coliforms are detected, treat well with a sanitizer and retest.
- Surface water: Test water three times during growing season – once at planting, once at peak use, and once at harvest.



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- If you find high levels of pathogens in your water source, you should change water sources or reduce pathogen levels in your water by finding ways to reduce harmful inputs to your water source (such as manure).





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Sewage treatment:

- Farm and municipal sewage treatment systems should not contaminate farm fields

❖ Good Agricultural Practices

- **Manure and Biosolids:** Many people use manure and municipal biosolids (treated sludge from municipal wastewater treatment plants) as fertilizer on their fields. Preventative measures should be taken when using these products to guarantee their safety.

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- If applying any raw manure to fields, make sure it is applied at least 2 weeks before planting, and at least 120 days before harvest.
- If applying composted manure and/or treated biosolids to fields, make sure they have been properly composted and treated to lower pathogen levels. Store composted manure and treated biosolids in a contained area to avoid recontamination. Composting is a process that breaks down organic matter and kills harmful pathogens.



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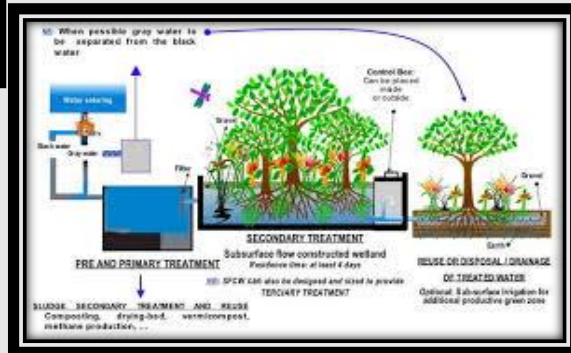
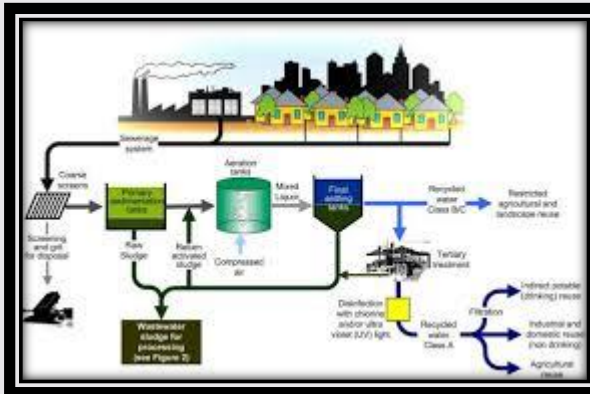
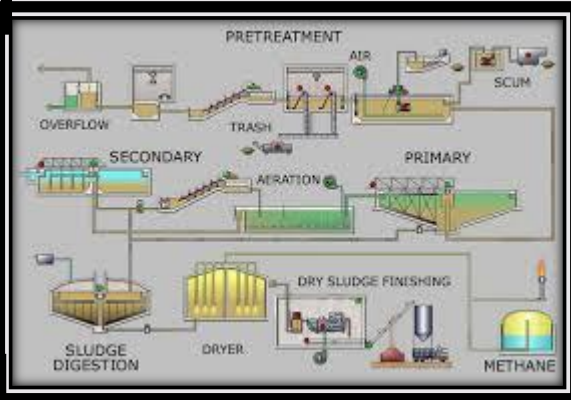
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- In order for composting to be successful at killing pathogens, the temperature of the manure pile must be brought up to 140-150°F and held there for a number of days.
- Generally, active composting requires approximately 10-12 weeks altogether, during which time the manure pile must be turned five times to ensure uniform mixing and proper aeration.



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Soils:

- Know the history of the land where you are farming
- If previous uses of the land may have provided opportunities for pathogen contamination (such as if the area used to be a dairy farm), test the soil for contaminants and take steps to minimize risk of contamination.
- If flooding occurs, test the area that was flooded for contamination by pathogens.



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Session 2: POST-FARM





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Field Harvest and Field Packing Activities:

- This section addresses the safety of your operation while harvesting and packing produce in the fields.
- **Field Sanitation and Hygiene:**
- Make toilet and hand washing facilities available for all workers.
- Locate toilet facilities in areas that are easily accessible for transporting and servicing, and that are also far enough away from production fields to avoid contamination in case of a spill.
- Make sure you have a plan in case a field toilet has a spill or a leak.



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Field Harvesting and Transportation:

- ❖ Clean and sanitize field harvesting containers and hand harvesting equipment (knives, pruners, machetes) routinely. Throw out or fix broken containers and harvesting equipment.
- ❖ During the harvest season, only use harvesting containers for harvesting – not for any other use.





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- If any harvesting equipment contains light bulbs or glass, protect those parts so they do not contaminate produce if they break. If any glass or plastic does break in the field, make sure you have a written plan for how to isolate and clean up the area. During harvest, remove any foreign objects such as glass, metal, rocks, or other dangerous items.
- Have a plan for safely isolating and disposing of products that are contaminated by chemicals, petroleum, pesticides, or other harmful items.



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- Only use drinkable water on harvested products.
- Remove excessive dirt and mud from harvested products and harvesting containers.





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House Packing Facility:

- This section covers the washing and packing area on your farm, which is where products are brought for cleaning and packaging for sale.





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Receiving:

- Before packing, products should be properly transported and stored to protect against possible contamination. This includes keeping products covered and separated from sources of contaminants.





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Washing/Packing Line:

- All water used in cooling and washing products should be drinkable. Wash water cannot come from surface waters, such as ponds or rivers. Processing water can be treated with chlorine or a similar chemical substance to reduce microbial contamination. If you do this, regularly monitor and record levels of antimicrobial chemicals to make sure they are maintained appropriately.



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- When dunking produce in wash water, wash water temperatures should generally be kept no more than 10° F cooler than produce temperatures to keep pathogens from contaminating the produce. However, if rinsing produce with moving water this recommendation does not need to be followed.





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Packing House Worker Sanitation:

- Areas where employees eat and take breaks should be clean and kept separate from the packing area
- Employees and visitors should keep their hair contained in hairnets and take off jewelry.





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Packinghouse General Housekeeping:

- Any lubricants used on packing equipment and machinery must be food grade approved. Any chemicals not approved for food use must be kept away from the packing area.
- Keep the packing area and all things within it organized, clean, and free of litter and standing water. Make sure that trash cans in the packing area are closed with lids.
- Enclose the packing area. Walls, floors, and ceilings should be well maintained and free of major cracks.
- If any glass materials are in the packing area, make sure they are contained in case of breakage.



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Storage and Transportation:

- This section provides recommendations for controlling pests, controlling temperature, and appropriately storing and transporting your product after washing and packing.





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Product, Containers & Pallets:

- Keep the area where you store your product clean, and clean and seal your packing containers to protect them from contamination by birds, rodents, and other pests.
- Store non-food grade substances away from your product.
- Keep any mechanical equipment used during the storage process clean and well maintained.



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Pest Control:

- Keep animals and pests out of storage facilities.
- Walls, floor, and ceilings should be well maintained and free of major cracks .





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Ice:

- Use drinkable water for cooling/ice during storage and transportation
- Make sure the facilities making, storing, and transporting ice for your operation have been sanitized.

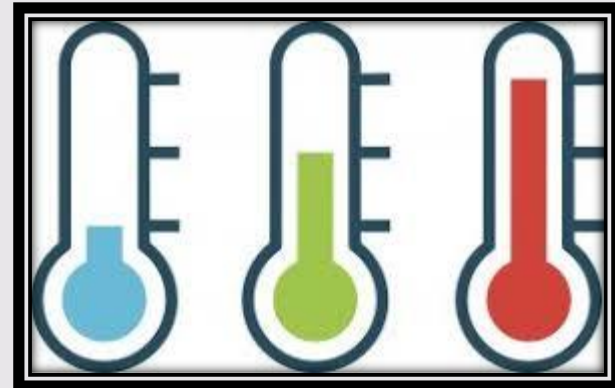




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Storage/Temperature Control:

- Keep the storage facility clean and organized.
- Make sure your refrigeration system works properly.





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Transportation/Loading:

- All trucks and trailers that contain your product should be clean and free of bad odors. Only load your products with other products that are free of contaminants.
- Keep products at appropriate temperatures to ensure quality and safety are maintained.





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