

Food Safety Concerns for Berry Growers



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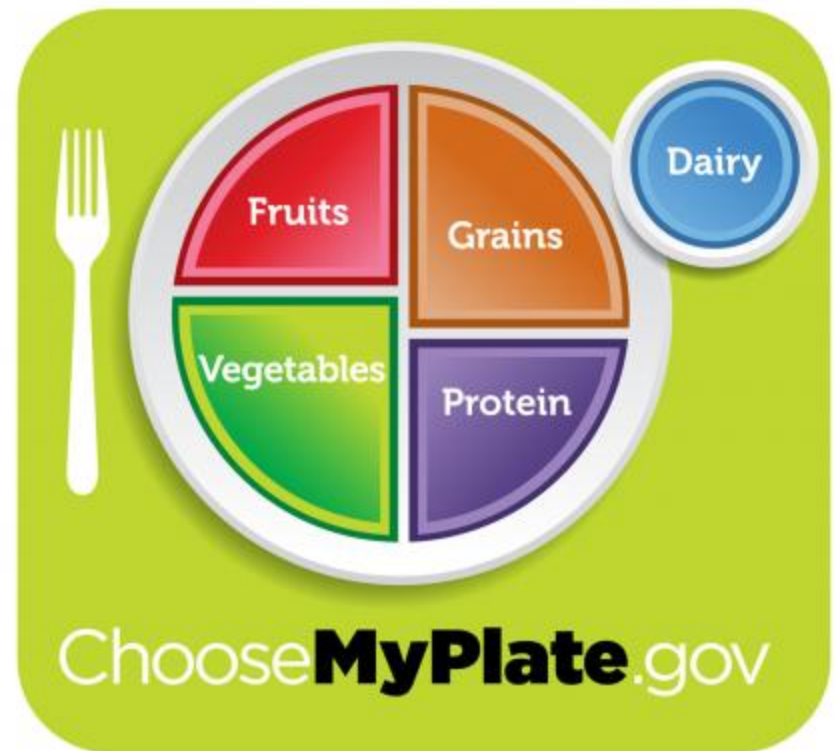


Outline

- Introduction
- Why are berries vulnerable?
- What is GAP?
- Components of a farm food safety plan for berry growers
- Strategies to reduce food safety issues during berry production

Introduction

- Americans are eating more fruits and vegetables
 - 1976 – 622 lbs/person
 - 2003 – 712 lbs/person



Introduction

- In the U.S., an estimated 76 million people contract some type of food-borne illness each year, and this is on the increase.
 - *Salmonella* (tomatoes & cantaloupes)
 - *E.coli* 0157:H7 (lettuce, spinach, apple juice)
 - Hepatitis A on strawberries
 - *Cyclospora* on raspberries





Introduction

- Why the increase in food born illness?
 - Changes in demographics
 - Changing food systems
 - Changing consumer preferences
 - Changing microorganisms

Your job as a berry farmer...

...is to minimize pathogen contamination during production, harvest, and storage of berries





On Farm:

- Soil, manure, water, animals, equipment and workers may spread organisms
- Produce chain: Farm-processing plant-repacking plant-store-institutions and homes
- Each place there is opportunity for harmful microorganisms to enter the food supply



How much food borne illness originates on the farm?

- No one knows
- Are there steps a farmer can take to reduce the risk of pathogens contaminating food?
- You bet!!

Why are Berries Vulnerable?

■ Production practices

- Fruit is close to soil
- Irrigation water is used in production
- Pesticides used in production



Why are Strawberries Vulnerable?

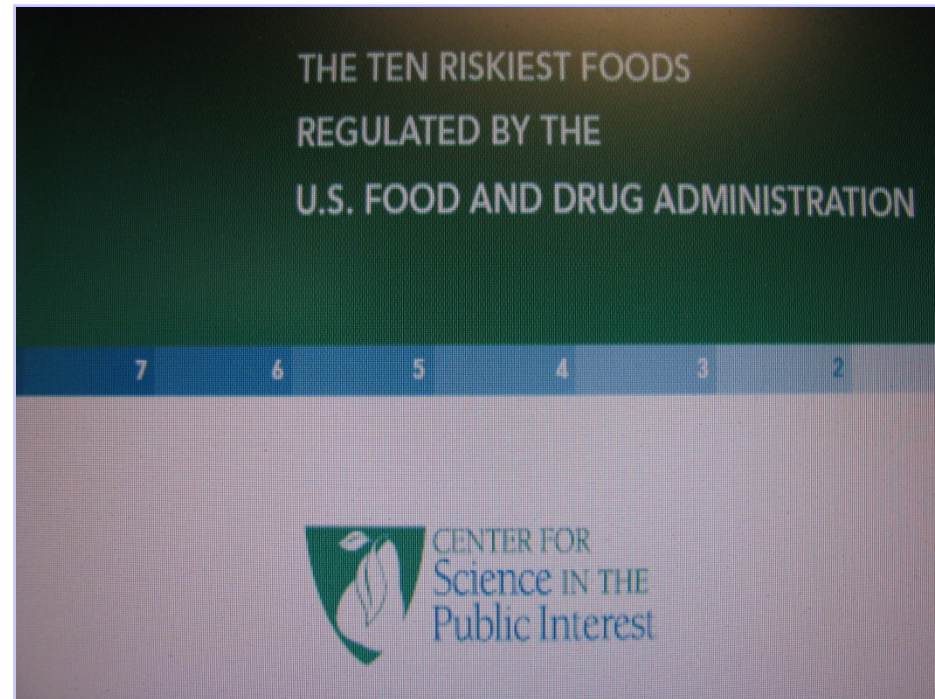
- Handling and marketing realities
 - Strawberries are hand harvested
 - PYO is a common way to market
 - Prepicked fruit is not washed before sales
 - Fruit is often not washed before consumption
 - Fruit is often consumed fresh, without cooking
 - Strawberries are a good substrate for survival and growth of pathogens (*E. coli*, Hepatitis A)



Why are strawberries vulnerable?

- Past history

- Several well publicized outbreaks of food borne illness traced to strawberries





USDA GAP and GHP Certification

- What is the USDA GAP and GHP certification?
 - **GAP** – **G**ood **A**gricultural **P**ractices
 - **GHP** – **G**ood **H**andling **P**ractices
 - Managed by the USDA Agriculture Marketing Service
- Certification is a result of an audit of production and handling practices
- Many buyers/packers/processors are requiring some type of food safety certification; growers should communicate with their respective buyers before completing a food safety plan.
 - USDA certification
 - Private party certification



Components of a Farm Food Safety Plan

- Water
- Manure
- Worker health and hygiene
- Sanitary facilities
- Field sanitation
- Packing facility sanitation
- Traceback



Water



Water is Critical

- Water for production
 - Irrigation
 - Frost protection
 - Pesticide applications
- Water can carry and spread pathogens
- Many types of water
 - Surface, well, municipal,
- Lots of things impact safety
 - Water quality at time of use
 - How water is applied
 - Timing of application





Irrigation Water

- Well water- minimal risk of contamination if well casing is good and there are no animals in the recharge area
- Surface water (ponds) highest contamination risk especially if livestock areas or human waste is nearby
- Municipal/rural drinking water lowest risk



Irrigation Water

- Test water in advance of the season if used for frost protection
- During the season (beginning, high draw and harvest) if water source is near livestock or human sewage (health department)
- Use drinking (potable) water for pest sprays
- Maintain records of water tests
- Use drip irrigation to reduce crop wetting
- Overhead water early in the day to allow leaves to dry quickly

Livestock Manure Use



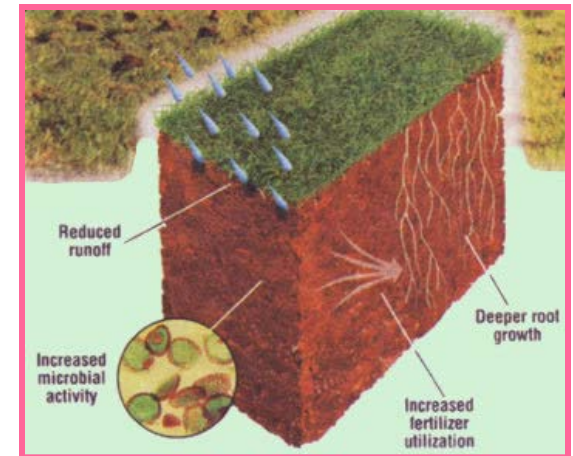
Manure Use

- Benefits for berries

- ☐ Improve soil tilth and fertility
- ☐ Good use of waste

- Risks

- ☐ Manure can transmit human pathogens
- ☐ Must be applied properly and in advance of harvest
- ☐ Must be stored properly to avoid environmental and food safety issues



Livestock Manure Use: Problems and Solutions

Pathogens...

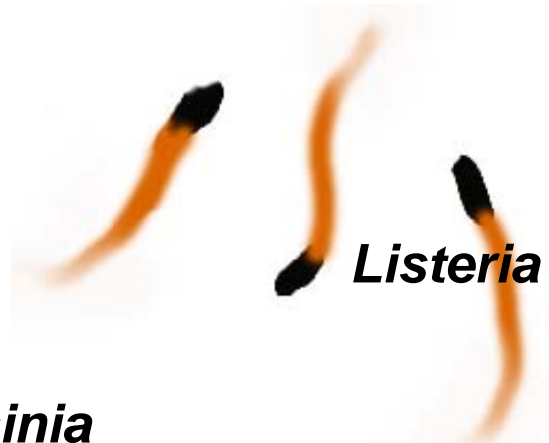


E.Coli 0157:H7

Salmonella



Yersinia



Listeria



Livestock Manure Use

- In theory there are three ways a contaminate can taint berries:
 - Surface contamination – the most common source of contamination with berries
 - Transfer to plant tissue through injury
 - Through the plant's root system – not documented with berries



Livestock Manure Use

- Reducing contamination

- Minimize direct contact of the crop with manure

- Raw manure may not be applied to food crops within 120 days of harvest where edible portions have soil contact – strawberries are a case in point
 - Apply only properly composted manure



Livestock Manure Use

- Reducing contamination

- ☐ Take measures to protect produce from dust from manure
- ☐ Take measures to prevent manure contamination on clothing, shoes, containers, transport vehicles, equipment

Unauthorized Manure Issues

- Unauthorized presence of wild or domestic animals in crop production areas
- Exclude animals from production fields for at least 120 days before harvest
- Scout harvest fields daily, note any contamination, and mitigate the issue.
- Instruct PYO customers



Health and Hygiene





Worker Health and Hygiene

■ Personal health and hygiene

- Be familiar with signs and symptoms of infectious diseases
 - Do not let sick workers contact produce directly or indirectly; at the farm, at the packing facility, or at market
- Provide protection from wounds
 - If a wound cannot be covered to prevent contact, do not let the worker contact produce directly or indirectly
- All visitors to the farm must abide by good hygiene practices if they contact produce

Worker Health and Hygiene

- Training – toilet facilities
 - Use only facilities connected to sewage disposal system, or proper field units





Sanitary Facilities

- Toilet facilities and handwashing stations
 - All toilet facilities accessible
 - Locate toilet facilities properly
 - Keep toilet and handwashing facilities well supplied
 - Keep toilet and handwashing facilities clean

Hygiene, PYO and Roadside Stands



- Promote good hygiene
- Provide toilets for customers
- Encourage washing of all produce that will be eaten raw



Further Considerations for PYO

- Customer education is an important component in minimizing contamination risks – “GAP for PYO”
 - You won’t insult the customers by asking to “wash their hands before entering the field or orchard”
 - Liquid, antibacterial soap
 - Single use hand towels & trash can
 - What if there is no water?
 - Use hand wipes to remove soil.
 - Use hand sanitizer.

Sanitary Facilities



Source: midwestportablerestrooms.com



Further Considerations for PYO

- Customer education is an important component in minimizing contamination risks
 - Infants and toddlers - the children are not the issue...the diaper is. Discourage diaper changing in the field/orchard
 - All children must be with an adult - offer alternatives for time occupation such as sand box, train, playground



Further Considerations for PYO

- Customer education is an important component in minimizing contamination risks
 - ☐ Use bathroom facilities provided
 - ☐ Ask them not to pick berries that have fallen on the ground.
 - ☐ Don't allow harvest into containers from customers
 - ☐ Designate a picking area, check it before harvest, and enforce it
 - ☐ Dispose of garbage in the trash bin provided
 - ☐ No pets in the field – provide a dog park

Field Sanitation



Rowcovers

- Some thoughts...
 - Rowcovers should be clean!
 - Supports?
 - Consider replacing soiled rowcovers





Field Sanitation

- Field harvesting and transportation
 - Berries are hand-harvested – consider harvest worker cleanliness; what about gloves?
 - Clean and sanitize harvesting containers and bulk hauling vehicles
 - Repair or dispose of damaged containers
 - Keep harvest equipment and machinery that comes into contact with berries in good repair
 - Use covered transport from field to storage

Field Sanitation

- Handling berries at harvest
 - Wash and sanitize buckets or other harvest containers prior to harvesting
 - Use only food-safe containers
 - Consider plastic bag liners
 - Don't reuse containers
 - Use care not to bruise produce
 - Keep produce out of the sun, cool quickly, and store properly



Packing Facility Sanitation





Packing Facility Sanitation

- Clean and sanitize loading, grading and sorting, and other surfaces that produce touches
- Keep animals, rodents, birds, and pets out of packing area
- Don't eat or smoke in packing area
- Clean wagons and trucks prior to loading
- Sanitize if animals have been hauled



Packing Facility Sanitation

- Protect all light bulbs or glass to prevent contamination from breakage
- Have standard operating procedure for glass/plastic breakage
- Have SOP for contamination by chemicals, petroleum, pesticides, or other substances



Packing Facility Sanitation

- Cool berries quickly to minimize growth of pathogens, and store at proper temperatures and humidity to maintain quality
 - begin cooling within 1 h of harvest
 - Strawberry - store at 0 °C (32 °F) with 90 to 95% RH (USDA)
- Don't overload coolers

Traceback



Traceback

- The ability to trace back produce to the source
- Packaged berries should have the following documentation:
 - ☐ Farm identification
 - ☐ Field identification
 - ☐ Date of harvest



So, what have we learned today ...

- Food safety is your responsibility!
- Fruits and vegetables are vulnerable to contamination
- Consider a Farm Food Safety Plan to minimize risks



Questions or Comments?

