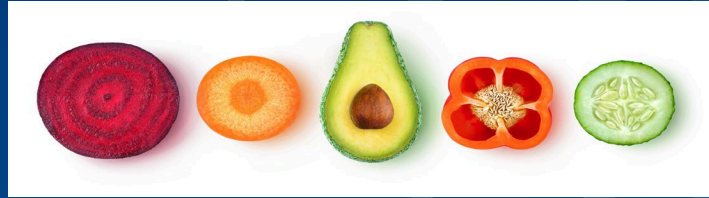


DE AgWeek Produce Safety Update



Kyle McCaughan

Produce Safety Microbiologist

PhD Student, Department of Animal and Food Sciences

Kali Kniel, Ph.D.

Professor, Department of
Animal and Food Sciences

Jennifer Jones

Produce Safety Specialist,
UD Cooperative Extension

Produce Safety Update

- Briefly review *Salmonella*
- Review of important recent outbreaks
 - Reminder that outbreaks drive food safety guidance, rules, and regulations
 - Focus on outbreaks caused by *Salmonella* in cantaloupe
 - Details from a recent FDA environmental investigation of a 2022 cantaloupe outbreak
- Reducing risks of *Salmonella* in key areas on your farm



Salmonella



- This is a ubiquitous bacterium
- Can make humans sick, but can be carried by mammals, birds, reptiles, and amphibians and may not make these animals sick
- Shed in the feces of birds and mammals and on the skins of reptiles and amphibians
- There are over 2,500 different types of *Salmonella*
 - While many will not make humans sick, others can make humans sick
 - They survive well in the environment
 - For example, *Salmonella* can survive for >250 days in the soil

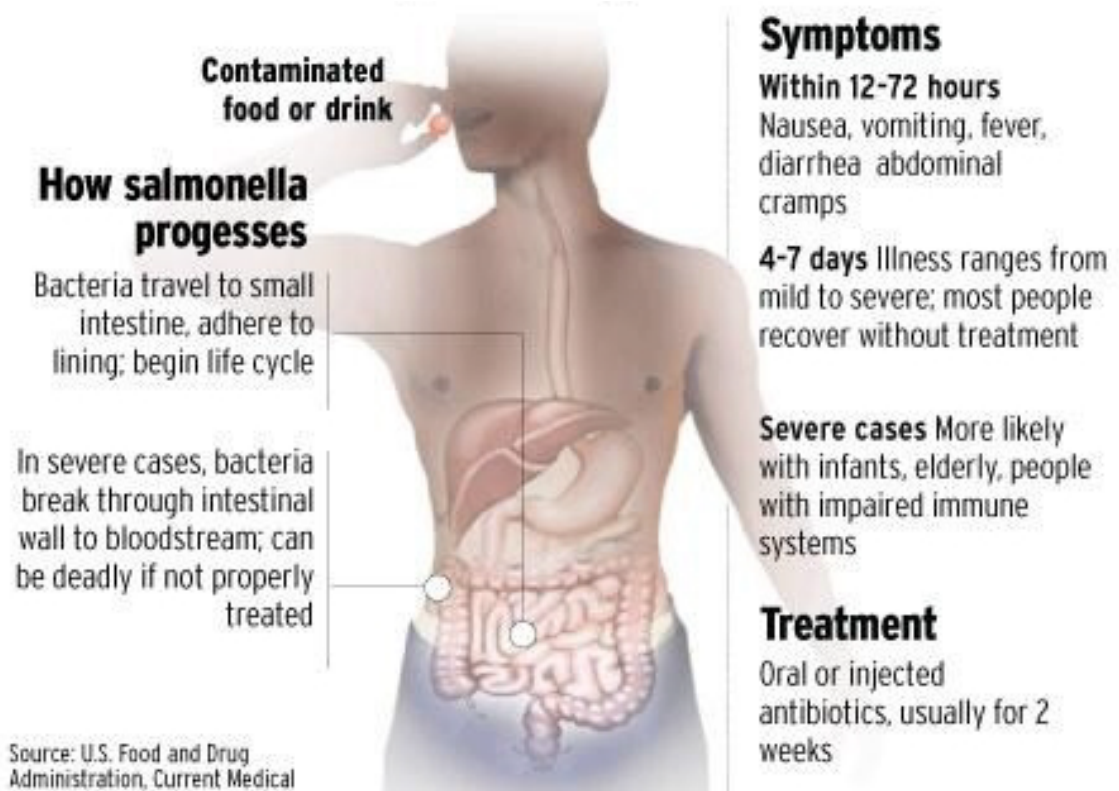


Salmonella Infection

Can occur by consumption of contaminated food or beverages

Outbreaks in 2023

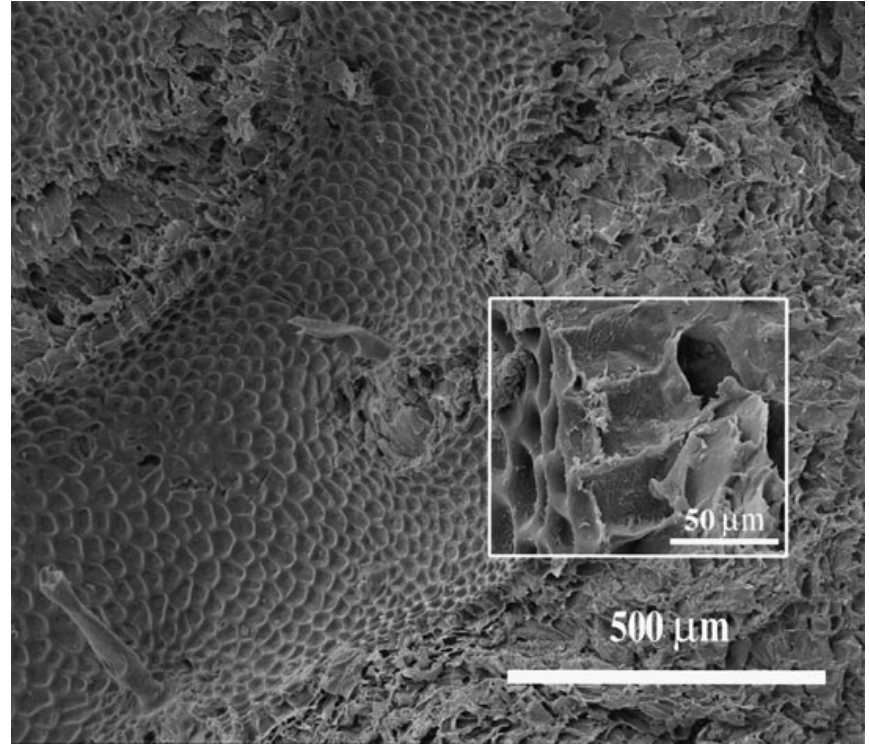
- Cantaloupes
- Dry Dog Food
- Fresh Diced Onions
- Small Turtles
- Ground Beef
- Raw Cookie Dough
- Flour
- Backyard Poultry

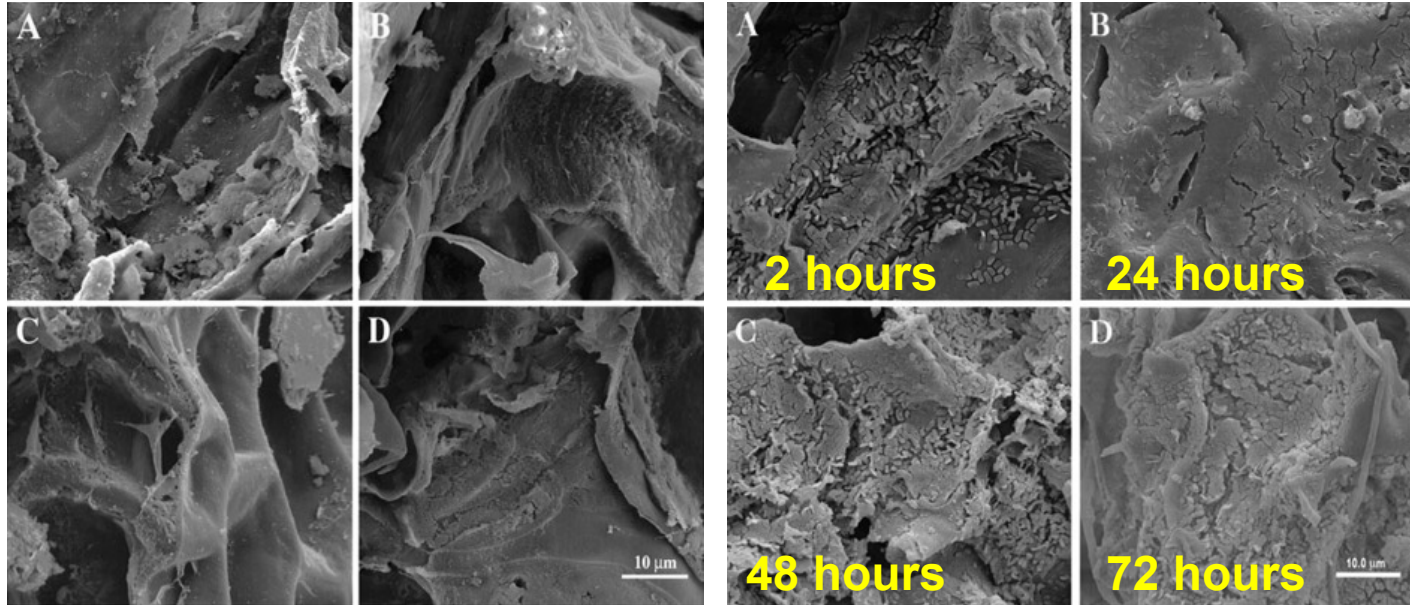




Cantaloupe

- The netting is the problem!
- Can be made worse by wet/moist rinds





Control

Inoculated with Salmonella

JOURNAL OF FOOD SCIENCE R25. Annous, Bassam & Fratamico, Pina & Smith, James. (2009)



Current outbreak

Salmonella Outbreak Linked to Cantaloupes

- Investigation is ongoing
- *Salmonella* Sundsvall
- Pre-cut and whole cantaloupes may be involved
- Might have a sticker that says “Malichita” or “Rudy,” with the number “4050”, and “Product of Mexico/produit du Mexique”
- Product was sold and recalled at numerous retailers (> 11 retailers across 42 states)
- ***To date >466 sick, 190 hospitalized with 10 deaths***
- ***Hardest hit are children under 5 and adults over 65***



Produce safety outbreaks drive research and regulations

Pathogen	Commodity	Year	Illnesses	Likely source
<i>Listeria monocytogenes</i>	Leafy greens(?)	2023	19	?
<i>Salmonella</i> Newport	Cantaloupes/ watermelons	2023	11	?
<i>Salmonella</i> Typhimurium	Cantaloupes	2022	87	Turkey Manure(?), packing house(?)
<i>Salmonella</i> Typhimurium	Pre-packaged salads	2020	31	Hydroponic water?
<i>Salmonella</i> Newport	Onions	2021	1127	?
<i>Salmonella</i> Oranienburg	Onions	2021	1040	?
<i>Escherichia coli</i> O157:H7	Leafy greens	2018	210	Agricultural water?

U.S. FOOD & DRUG ADMINISTRATION

Home / Food / News & Events from CFSAN / CFSAN Constituent Updates / FDA Proposes Changes to Agricultural Water Requirements in the Produce Safety Rule

FDA Proposes Changes to Agricultural Water Requirements in the Produce Safety Rule

FDA FACT SHEET

Produce Safety Rule (21 CFR 112)

BIOLOGICAL SOIL AMENDMENTS OF ANIMAL ORIGIN

What are Biological Soil Amendments of Animal Origin (BSAAO)?

- *Biological soil amendment[s] of animal origin* are biological soil amendments which consist, in whole or in part, of materials of animal origin, such as manure or non-fecal animal byproducts including animal mortalities, or table waste, alone or in combination. The term "biological soil amendment of animal origin" does not include any form of human waste¹.
- *Biological soil amendments* are any soil amendment containing biological materials such as stabilized compost, manure, non-fecal animal byproducts, peat moss, pre-consumer vegetative waste, sewage sludge biosolids, table waste, agricultural tea, or yard trimmings, alone or in combination.
- *Biological soil amendments of animal origin* include untreated: cattle manure; poultry litter; swine slurry; or horse manure.

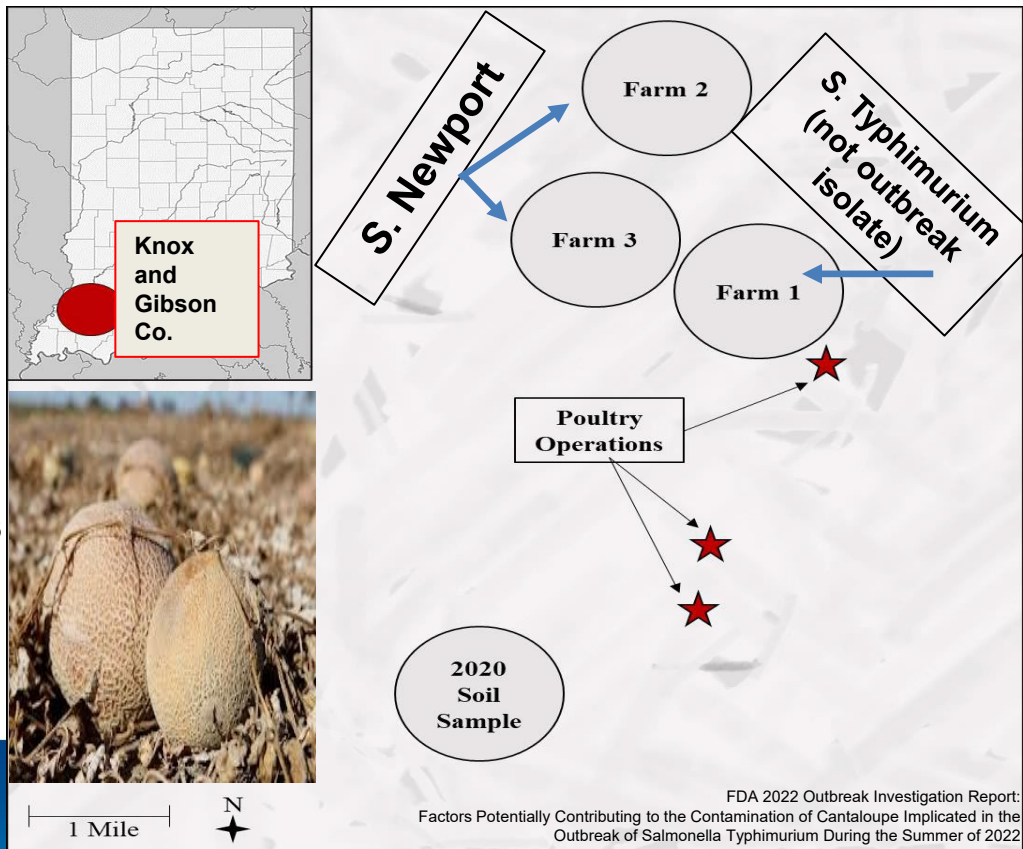
Slide courtesy of M. Sharma



Salmonella serovars Typhimurium and Newport isolates found on multiple cantaloupe farms, Indiana, 2022

- A single packinghouse served all three farms
- Well water samples negative for *Salmonella*; **drainage ditch samples positive**
- Farm 1:
 - Turkey feeding operations < 1 mile
 - No manure (BSAAO) used in cantaloupe production or row crop production, adjacent land use unknown
- Farm 2
 - Cantaloupes grown on a 3/5 year rotation
 - No manure
 - Drag swabs yielded **30 S. Newport isolates**
- Farm 3
 - Turkey feeding operation within 2 miles of farm

Slide courtesy of M. Sharma



Cantaloupes are either field-packed or taken to a packing house



<https://www.goodfruitandvegetables.com.au/story/5493252/melon-industry-aims-to-win-back-consumers/>

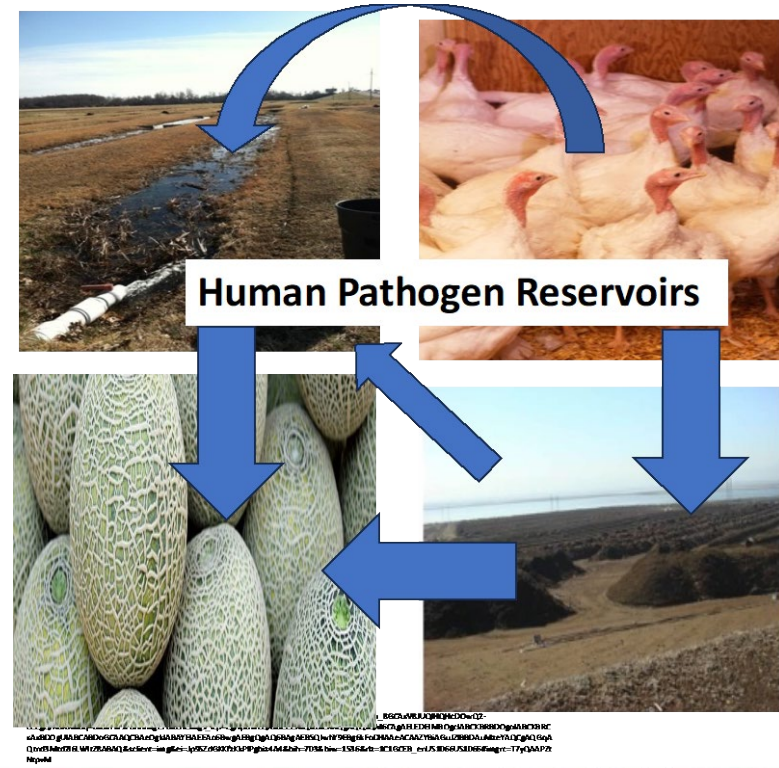
- Melons are taken to a packing house, washed and graded before packing and cooled
 - Remove field heat for quality reasons
- Usually antimicrobial in washwater/ spray solution
 - Not just municipal or well water
- In Indiana outbreak, ***S. Newport* isolate from Farms 2 & 3** found on brush roller
- Sanitation conditions of packing house?
 - Post-harvest Standard Operating procedures (sanitizer concentrations, effectiveness of cleaning guidelines, verification steps for cleaning and sanitizing)

Slide courtesy of M. Sharma



FDA 2022 Outbreak Report Recommendations

- Common contamination sources
 - Outbreak strain of *S. Typhimurium* was not found
 - *S. Newport* found on Farm and in post-harvest packing house
- “Off-season” land use
 - Land use was not under consistent control, so history not known
 - Unclear if turkey manure was used in preparation of cantaloupe-growing
 - If used some guidelines (time interval, type of soil amendment) need to be followed
- *S. Newport* isolates closely related to previous melon outbreaks and also poultry-related isolates
- Support multiple serovars of *Salmonella*



Important Takeaway from 2022 Outbreak Investigation

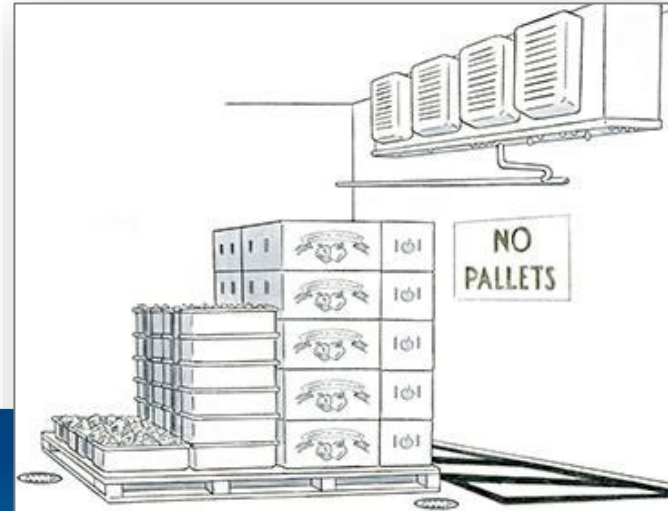
“FDA’s 2022 traceback investigation identified 11 points of service [firms], of which 8 traced back to a common packinghouse. Although a common packinghouse was identified, there was no convergence to a single shipment of products, and therefore three farms that supplied the common packing house were identified as potential sources of cantaloupe.”

Eventually, Salmonella wins. It can be at a low level in the environment but w/o appropriate controls, it will cause problems – a recall, in this case an outbreak where people got sick. If there is a common resource or facility that growers share, then it’s even more important to know what procedures that facility is using to clean and sanitize to prevent cross contamination so that commodities from your operation are not contaminated, or that the contamination is limited.



What Can You Do To Avoid *Salmonella*

- What about in the packing house or cold room?
- Moisture can provide *Salmonella* what it needs to grow and increase in numbers.
- Another pathogen, *Listeria monocytogenes*, survives well and can even grow at cold temperatures.
- Proper **Cleaning first and then Sanitizing** can reduce the risk associated with harmful bacteria.
- Be aware of drains, condensation that may drip over produce, and places where moisture can puddle.



Wildlife in the Field Can Share *Salmonella*

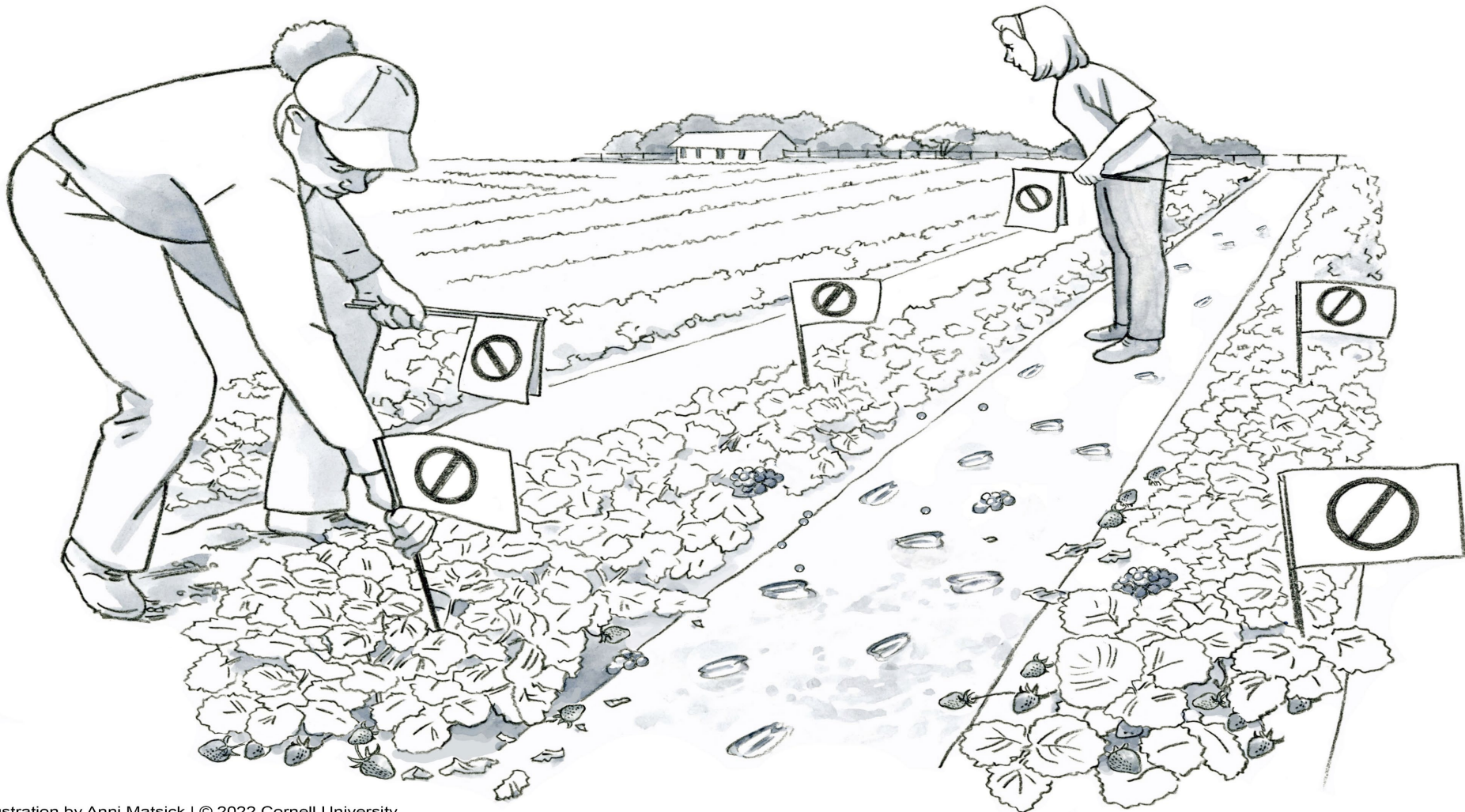
- Train your workers in all of these steps!
- Conduct a risk assessment to identify risks posed by wildlife and domesticated animals
- Prevent animal entry through use of fences, noise cannons, other deterrents
- Monitor and document animal activity in the field
- Conduct field assessments prior to harvest



Conduct field assessment prior to harvest

- **Option 1:** Flag feces or affected produce and do not harvest. Create a no-harvest **buffer zone** so that workers will know what areas not to harvest.
 - Suggest about 3-5 feet depending on the crop, climate, contamination event, and harvest equipment.
- **Option 2:** If feces or contaminated produce can easily be removed and the contamination is somewhat isolated, be sure to properly clean and sanitize all equipment used to remove contaminated produce or feces, and follow proper personal hygiene (i.e., hand washing) to reduce cross-contamination risks.
- **Option 3:** If fecal contamination or animal intrusion is extensive, do not harvest the field and/or disk the crop into the soil.





Wash away germs for

Clean Hands!

1



Wet your hands with warm, running water.

2



Apply soap.

3



Scrub hands and wrists for at least 20 seconds.

4



Rinse with warm, running water.

5



Dry your hands with a paper towel.

6



Turn off the faucet with the paper towel. Throw it away.

©2007 Channing Bete Company, Inc. All rights reserved. (02-07-A) To reorder call (800) 628-7733 or visit www.channing-bete.com and ask for item number PS91677 Price List B

FOOD SAFETY WARNING

WASH HANDS

ONLY

IN THIS SINK



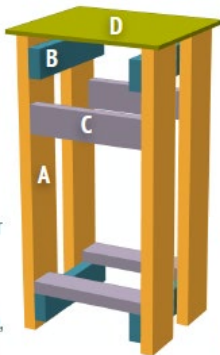
HOW TO BUILD A LOW-COST HANDWASHING STATION

ON-FARM FOOD SAFETY PROGRAM

STEP-BY-STEP INSTRUCTIONS

LUMBER

- A. Legs
4 - 2 x 6 cut to 36" long.
- B. Leg connectors
4 - 2 x 4 cut to 15" long, or to fit the length of the dishpan.
- C. Cross pieces
4 - 2 x 4 cut to 14¹/₄" long, or to fit the width of the dishpan.
- D. Plywood - 1/2" thick or more, cut to 16" x 18", or to fit top of stand with a small overhang.



SCREWS

36 - 2¹/₂" deck screws

PLASTIC DISHPAN

This design uses a standard 12-quart dishpan that is 15" L x 12³/₄" W x 6¹/₂" H. It serves as the drawer under the water container to hold single-use paper towels. Costs \$4 to \$8.



SUPPLIES TO STOCK YOUR STATION

WATER DISPENSER

This blue "Aqua-Tainer" holds 7 gallons of water and has an open/close continuous flow valve. Available online, and at some home stores and outdoor stores. Costs \$15 to \$20.



TRASH CAN WITH A LID

A 5 gallon bucket with a lid works well.

WATER CATCHING BUCKET

Standard 5 gallon bucket

SOAP - LIQUID OR BAR

PAPER TOWELS



Do you use Biological Soil Amendments of Animal Origin?

- Please take this quick survey to help us learn what you need



**DO YOU USE
BIOLOGICAL SOIL
AMENDMENTS OF
ANIMAL ORIGIN
ON YOUR FARM?**

TAKE THIS SURVEY
(ANONYMOUS & LESS THAN 10 MIN)
CLICK HERE:
[HTTPS://RUTGERS.CA1.QUALTRICS.
COM/JFE/Form/SV_8CQWVKW0WB
YTOPQ](https://rutgers.ca1.qualtrics.com/JFE/Form/SV_8CQWVKW0WB_YTOPQ)

Help us learn about your operation and how
you use biological soil amendments of animal
origin on the farm

For questions or concerns, email 
meredith.melendez@rutgers.edu

Let's Make Contact | Rutgers University
© 2014 Rutgers University. All rights reserved. This survey is for informational purposes only.
www.rutgers.edu

Interested in more produce safety?

Produce Safety Training

Friday January 26, 2024 8:00 AM – 4:30 PM

461 Wyoming Rd, Newark, DE 19716

For more information

please contact Jen Jones bjones@udel.edu

Thank You!

