

What it takes to instill a food safety culture in your business

Doug Powell, Kansas State University

Originally part of a PMA Fresh Connections: Australia-New Zealand session entitled '*What it takes to instill a food safety culture in your business*' by Doug Powell, Thursday 13 June 2013, Sydney

Case Studies & Resources

For full details, please see the Case Studies & Resources presentation:

Salmonella in mangoes

- <http://www.cdc.gov/salmonella/braenderup-08-12/index.html>
- <http://barfblog.com/2012/08/when-the-mango-bites-back/>

Salmonella in Cantaloupe, 2012

- <http://www.cdc.gov/salmonella/typhimurium-cantaloupe-08-12/index.html>
- <http://barfblog.com/2012/08/2-dead-178-sick-are-consumers-responsible-for-salmonella-in-the-field-or-packing-shed-fda-confirms-outbreak-strain-in-cantaloupe/>
- A table of cantaloupe-related outbreaks is available at <http://bites.ksu.edu/cantaloupe-related-outbreaks>
- <http://barfblog.com/2012/08/not-worth-the-liability-nc-cantaloupe-farm-positive-for-listeria-done-with-melons/>
- <http://www.youtube.com/watch?v=0TakuTlBk74>
- <http://www.youtube.com/watch?v=-v4DYoKjwFw>

E. coli O157 in Romaine lettuce, Dec. 2011, Missouri

- <http://bites.ksu.edu/leafy-greens-related-outbreaks>
- <http://barfblog.com/2011/12/60-sick-with-e-coli-o157-in-10-states-it-was-romaine-lettuce-grown-in-california-served-at-schnucks-salad-bars-by-mr-green/>

Sprouts – A special problem

- <http://vm.cfsan.fda.gov/~dms/sprougd1.html>
- <http://vm.cfsan.fda.gov/~dms/sprougd2.html>
- <http://bites.ksu.edu/sprouts-associated-outbreaks>

Fresh Produce



Fresh fruits and vegetables are raw agricultural commodities that are often consumed without being subjected to a microbiologically lethal step

- **Four Important Sources of Pathogens in Primary Production Environments:**

- Soil
- Water
- Farm Workers
- Domestic and Feral Animals

Risks Associated with Fresh Produce

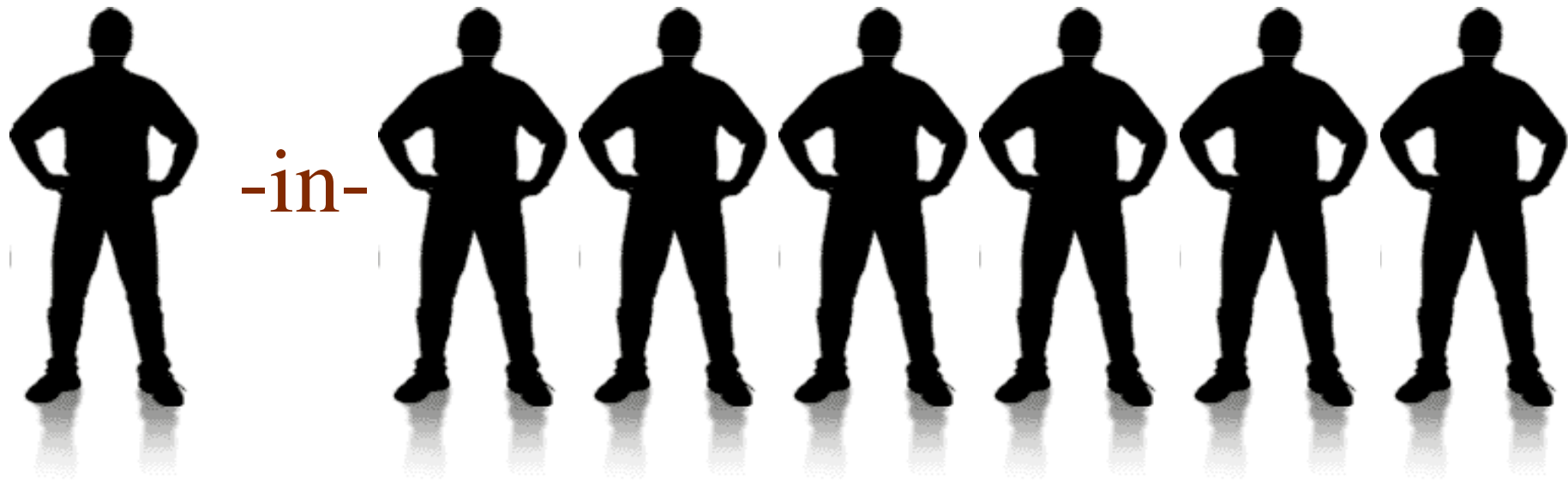


- **Healthy eating guidelines recommend fresh fruits and veggies;**
- **Changing food systems; wider distribution, outbreaks affect more people.**
- **Changing consumer preferences: Increased consumption of raw or minimally processed products. “Natural Foods”**
- **Changing Microorganisms; adaptation to stress and the environment, small infectious dose.**

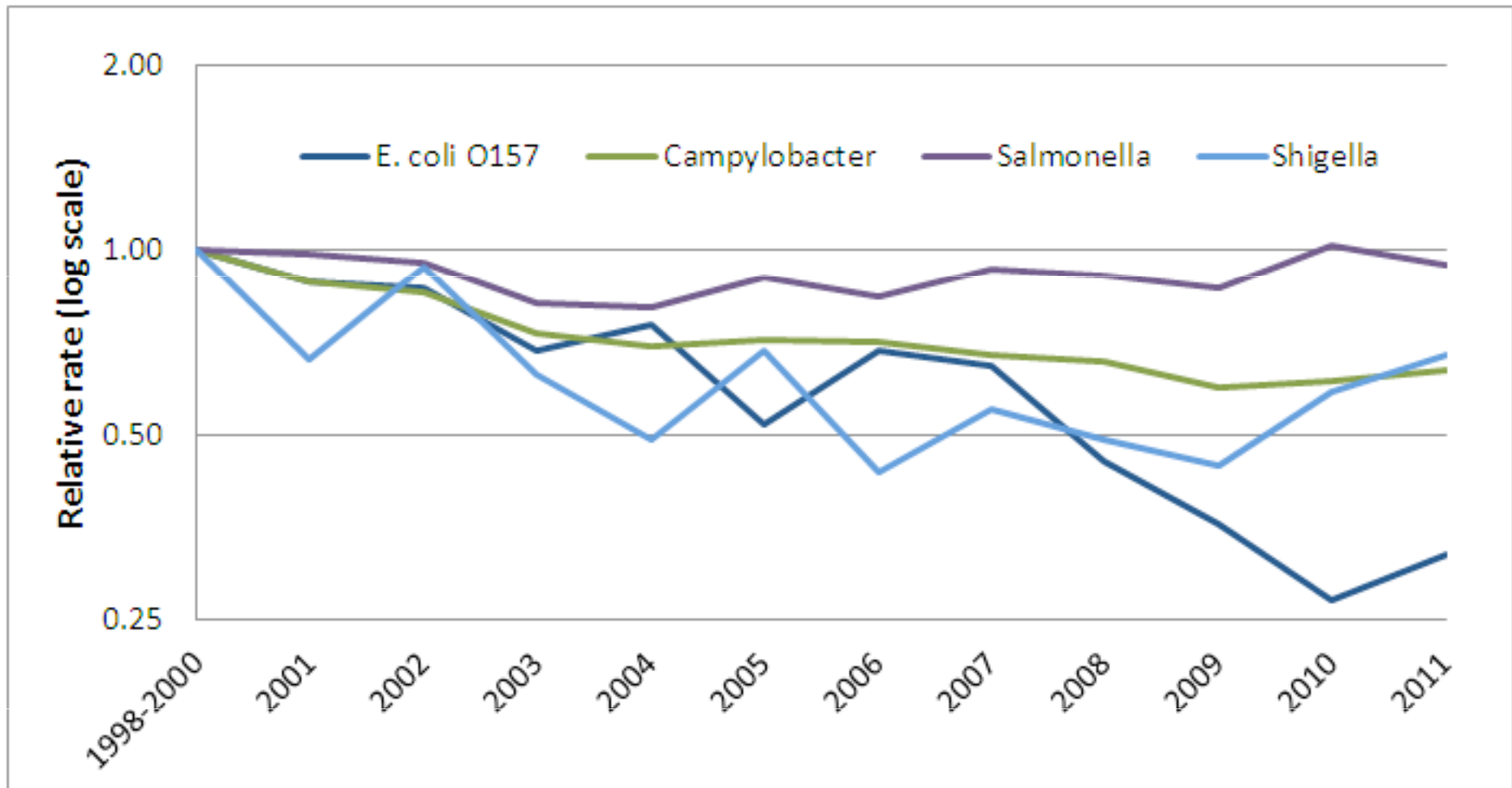
Soil as a Source of Enteric Pathogens

- Most pathogens are only transiently present in the soil (e.g. *Salmonella*)
- Exceptions are:
 - *C.botulinum*, *C. perfringens*, & *B. cereus* (part of soil microflora)
 - *L. Monocytogenes* (associated with decaying plant material)
- Soil is not an important direct source of enteric pathogens (with the exception of the above microorganisms)
- Soil is an important vehicle for enteric pathogens derived from feces, especially if fertilized with inadequately composted manure

Foodborne illness in the US



- 48 million cases of foodborne illness
- 55,961 hospitalizations
- 1,351 deaths



WHO factors contributing to foodborne illness

- Improper cooking procedures
- Temperature abuse during storage
- Lack of hygiene and sanitation by food handlers
- Cross-contamination between raw and ready-to-eat foods
- Foods from unsafe sources
 - All human factors, behavior based
 - WHO, 2002

Lessons learned?

- Food safety begins on the farm
- Biological systems, not conspiracies
- Systems are only as good as the weakest link
- Stop blaming consumers

Third-party audits

“No one should rely on third-party audits to ensure food safety.”

– Will Daniels, food safety, Earthbound Farm

“There is no scientific basis for certification/validation in audits” and audits often are not “transparent enough for the scientific community to survey and critically analyze what they are actually measuring”

– Robert Buchanan, director of the Center for Food Systems Safety & Security at the University of Maryland

Improving audits and inspection

- More companies evaluating risks of suppliers themselves
- More companies evaluating own practices internally, at arms length
- An auditor industry that polices itself better
- Auditors with better risk identification
- Companies using audit results
- Adopting new technologies such as social media, infosheets, video observation
- Combat indifference

The Alternative to HACCP: Faith-Based Food Safety

"We've always done it this way and we've never hurt anyone before..."

Water and fresh produce; does it matter?

- US onion growers say almost none of the surface water will meet the new standards
- little correlation between indicator pathogens in water and indicator pathogens
- food safety policy science-based or not?



Potential Sources of Contamination



Water:

- Carrier of Microorganisms: *E. coli*, *Salmonella*, *Vibrio*, *Shigella*, *Cryptosporidium*, *Cyclospora*, *Giardia*
- Quality must be adequate for intended use. If quality cannot be controlled, GAP's can minimize risk.
- Outbreaks: *Salmonella* in Tomatoes



Handwashing, Health and Hygiene

- Pathogens can be transferred by workers picking, packing or handling produce
- Includes worker education and appropriate facilities
- Sanitation of all facilities, equipment containers and storage.



Other Sources of Contamination:

- Transportation vehicles
- Improper storage temperatures
- Improper packaging
- Cross contamination

OGVG On-Farm Food Safety Program Checklist

OGVG ON-FARM FOOD SAFETY PROGRAM CHECKLIST



Name of Operation: _____

Contact Name: _____

Month/Year: _____

Product: _____

Areas Important For Food Safety	Are These Complete?	Comments/Description/Action Taken
Greenhouse/Packing Shed Maintenance Program		
Have bins, containers, carts, brushes, buckets, gloves or other harvesting materials that come in contact with the product been cleaned and sanitized?		
How and when?		
Produce-touching parts of sorting lines (brushes, cups, rollers) have been cleaned and sanitized		
Dump tank has been drained and cleaned		
Windows and screens are maintained in good repair		
Report any other repairs/maintenance as necessary		
Equipment Maintenance Program		
Clean and sanitize bins, containers, carts, brushes, buckets, gloves or other harvesting materials that come in contact with the product		
Remove vegetable residue from tables, floors, belts, lines or conveyors that could cause contamination		
Repair, clean or discard damaged and dirty crates, pallets, or boxes to reduce contamination of produce		
Packinghouse equipment in contact with fresh produce is not used for other materials (tools, fuel, manure, garbage, etc) in order to reduce potential contamination		
Field product is kept separate from greenhouse product if applicable		
Equipment was sanitized between product runs		
Sanitation Program within Greenhouse/Packing Shed (during the season)		
All floors, walls and lines have been cleaned		
Hand sanitizer dispensers are in working order and full		
Before production start-up, a visual inspection of processing equipment is conducted to ensure sanitation		
Waste and inedible material is kept separate from product		
Sewage lines are enclosed, and well-maintained		
End of Season		
Bags and Groundcover were removed/cleaned?		
What chemicals were used in sanitation?		

On-Site Visits

- Discuss On-Farm Food Safety Program
- Explain manual checklists
- Answer questions or problems
- Distribute handwashing signs
- Take samples for microbiological testing

Facility Inspections

Main Problems:

- cloth towels
- bar soap
- wooden crates
- unwashed crates
- unsanitary workers

Solutions Suggested:

- paper towels
- pump soap
- plastic crates
- wash 2-3 times/year
- train and provide good facilities

KEEPING FOOD SAFE /

MANTENIENDO LA SEGURIDAD EN LOS ALIMENTOS

KEEPING CLEAN MANTENERSE LIMPIOS



Always wear clean clothing
Siempre use ropa limpia



Don't pick produce up from the floor
No recoja frutas y verduras del suelo



Make sure hands are clean at all times
Asegúrese de que sus manos estén limpias todo el tiempo



Avoid dirty habits in the production area (coughing, smoking, eating, nose picking, touching hair or face)
Evite hábitos sucios en el área de producción (estornudar, fumar, comer, introducirse el dedo en la nariz, tocar el cabello o la cara)

SICKNESS AND INJURY ENFERMEDADES Y LESIONES

Tell your boss if you are:
Informe a su jefe si usted:



not feeling well
no se siente bien

sneezing
esta estornudando
vomiting
tiene vómito

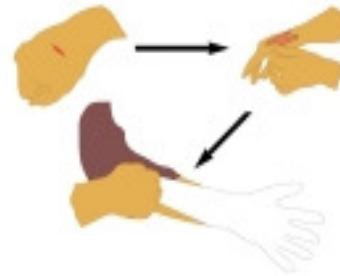


coughing
esta tosiendo frecuentemente



have diarrhea
tiene diarrea

Always wear latex gloves if you have an open sore on your hands
Siempre use guantes de látex si tiene una herida en sus manos



HAND WASHING LAVADO DE MANOS



Wash hands for at least 20 seconds and use hand sanitizer
Lávese las manos por lo menos durante 20 segundos y use sanifcante para las manos

ALWAYS WASH YOUR HANDS BEFORE:
SIEMPRE LÁVESE LAS MANOS CUANDO:



starting work or handling product
iniciar el trabajo o manejar el producto

eating or drinking
Comer

ALWAYS WASH YOUR HANDS AFTER:
SIEMPRE LÁVESE LAS MANOS DESPUÉS DE:



using the washroom
ir al baño

touching ears, eyes, nose, mouth and hair
tocar orejas, ojos, nariz, y cabello

coughing
tosar

sneezing
estornudar

touching animals
tocar animales

handling garbage
manipular basura

smoking
fumar

Quicktime version of movie: <http://www.foodsafetynetwork.ca/food/handwash-eng.mov>

Windows version of movie: <http://www.foodsafetynetwork.ca/food/handwash-eng.avi>

Spanish version of movie: <http://www.foodsafetynetwork.ca/food/handwash-esp.mov>

Qualitative Conclusions

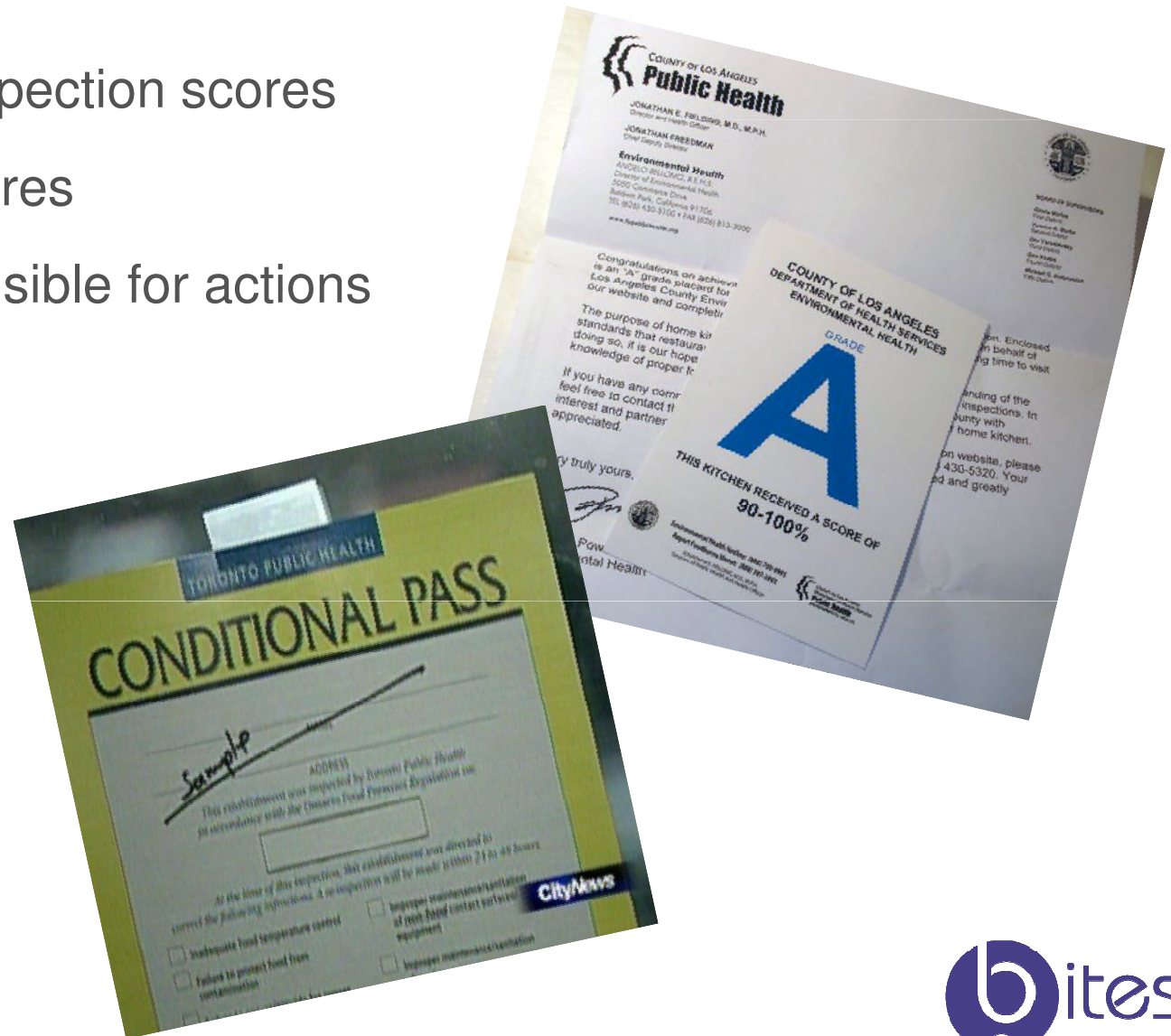
- Small and local does not mean its safer
- Producers forget and dislike documentation
- Producers want to protect brand, liability
- Cost is the biggest barrier and once implementation can be shown as practical it will be gone

On-farm food safety

- Commodity-based programs
- Numerous certification schemes
- Auditing versus verification
- Command-and-control versus extension
- Jurisdiction issues

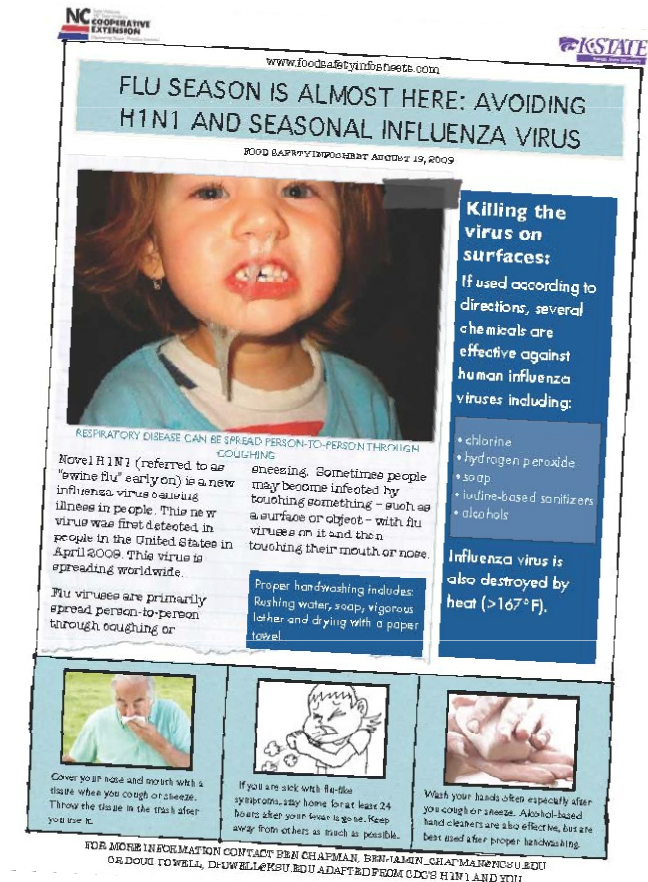
Incentives and motivation

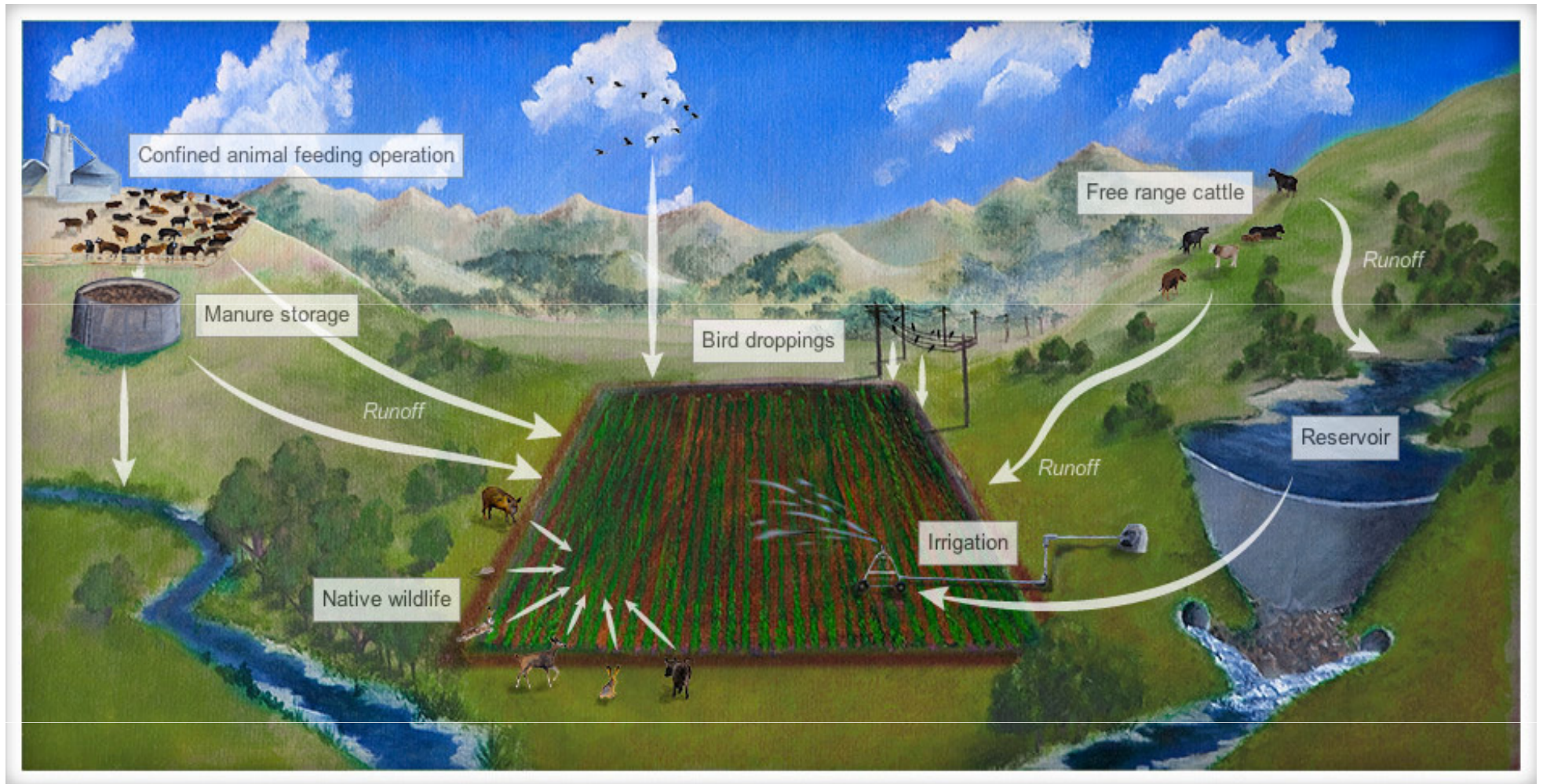
- Bonuses based on inspection scores
- Posting inspection scores
- Food handlers' responsible for actions via fines



Food safety stories can improve safety of restaurant meals

- Use of food safety infosheets in the back kitchens of restaurants can help reduce dangerous food safety practices and create a workplace culture that values safe food
- Video observation in eight commercial restaurant kitchens validates that infosheets work
- Cross-contamination events decreased by 20% and handwashing attempts increased by 7% after introduction of infosheets





Credit: Adam Cole and Alyson Hurt / NPR

Should lettuce be washed?

- pre-packaged, says it's washed, no
- other, yes
- but washing does little
- greens in bins at retailers?
- what's a consumer to think?



Food safety culture

- A set of shared values within an organization
- “Dude, wash your hands”
- A new area of study/emphasis



Cultural factors influencing food safety performance

- leadership
- food safety management systems and style
- commitment to food safety
- food safety environment
- risk perception
- communication

Griffith, Livesey & Clayton (2010)



A food safety culture program

Develop tools
Designed to address target audience needs

Getting dirty
Reality-based research

Evaluation
Did our efforts work?

Risk assessment and microbial modeling

Behavior



What to do?

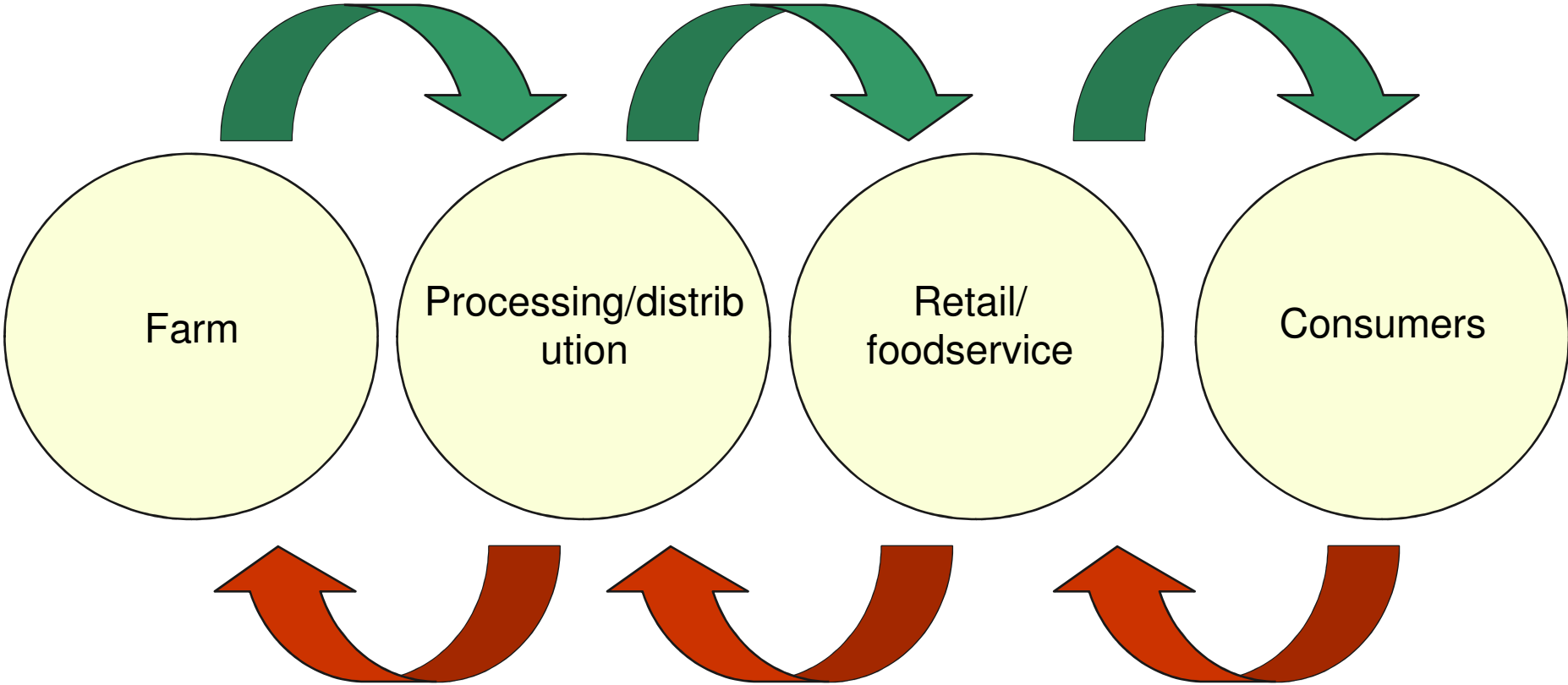


- Try not to make people sick
- Create a culture of food safety in your organization
- Embrace evidence-based microbiologically safe food
- Market it (and back it up)
- Be the bug

Marketing food safety

- Source food from safe sources
- Public disclosure of food safety inspection results
- Mandatory food handler certification
- Rapid, relevant, reliable and repeated information
- Compel rather than educate

Marketing food safety culture



Customer feedback

Food safety leaders do more than follow perceptions



Leaders create perceptions

Leafy greens food safety culture

- government inspection is a minimal standard
- food safety culture jumped the shark
- make actual inspection data public
- continuous on-line surveillance
- market microbial food safety at retail,
- stop stonewalling every time there is an outbreak linked to leafy greens.
- A table of leafy green related outbreaks is available at <http://bites.ksu.edu/leafy-greens-related-outbreaks>



Information must be:

- Rapid
- Reliable
- Relevant
- Repeated

4 C's of Food Safety

- Complex
- Constant
- Commitment
- Compelling



Produce food safety culture

Dr. Douglas Powell | professor

Department of Diagnostic
Medicine/Pathobiology

Kansas State University

dpowell@ksu.edu

dpowell29@gmail.com

barfblog.com

