Practical Produce Safety for Small-Scale Saffron Production

Hans Estrin, Produce Safety Specialist

University of Vermont Extension

hestrin@uvm.edu, 802 380 2109

Post-harvest Handling of Saffron

for Safety and Quality and Efficiency

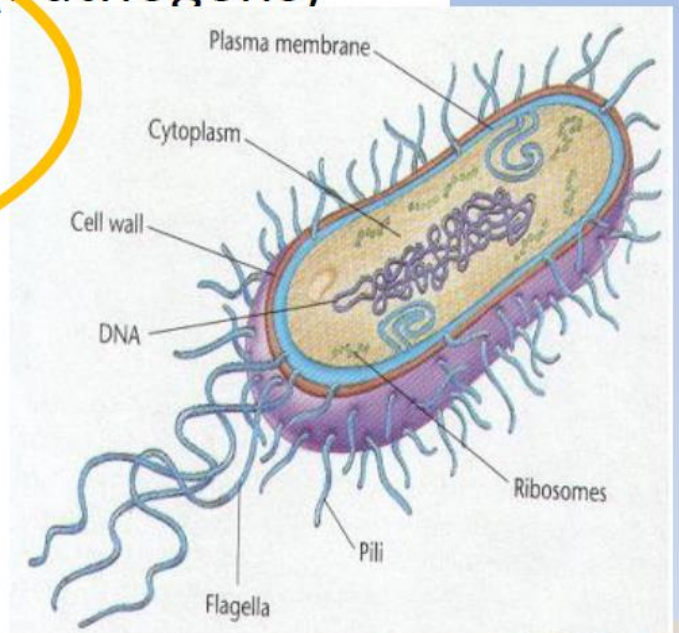
UVM Extension
Agricultural Engineering
ageng@uvm.edu
go.uvm.edu/ageng
@uvmextageng

Hans Estrin,
Produce Safety Specialist
Chris Callahan
Agricultural Engineer

Growing “SAFE” Saffron?
….What’s up with that?

Concerns?

- **Biological Microorganisms** (Pathogens)
  - Bacteria
  - Virus
  - Parasites

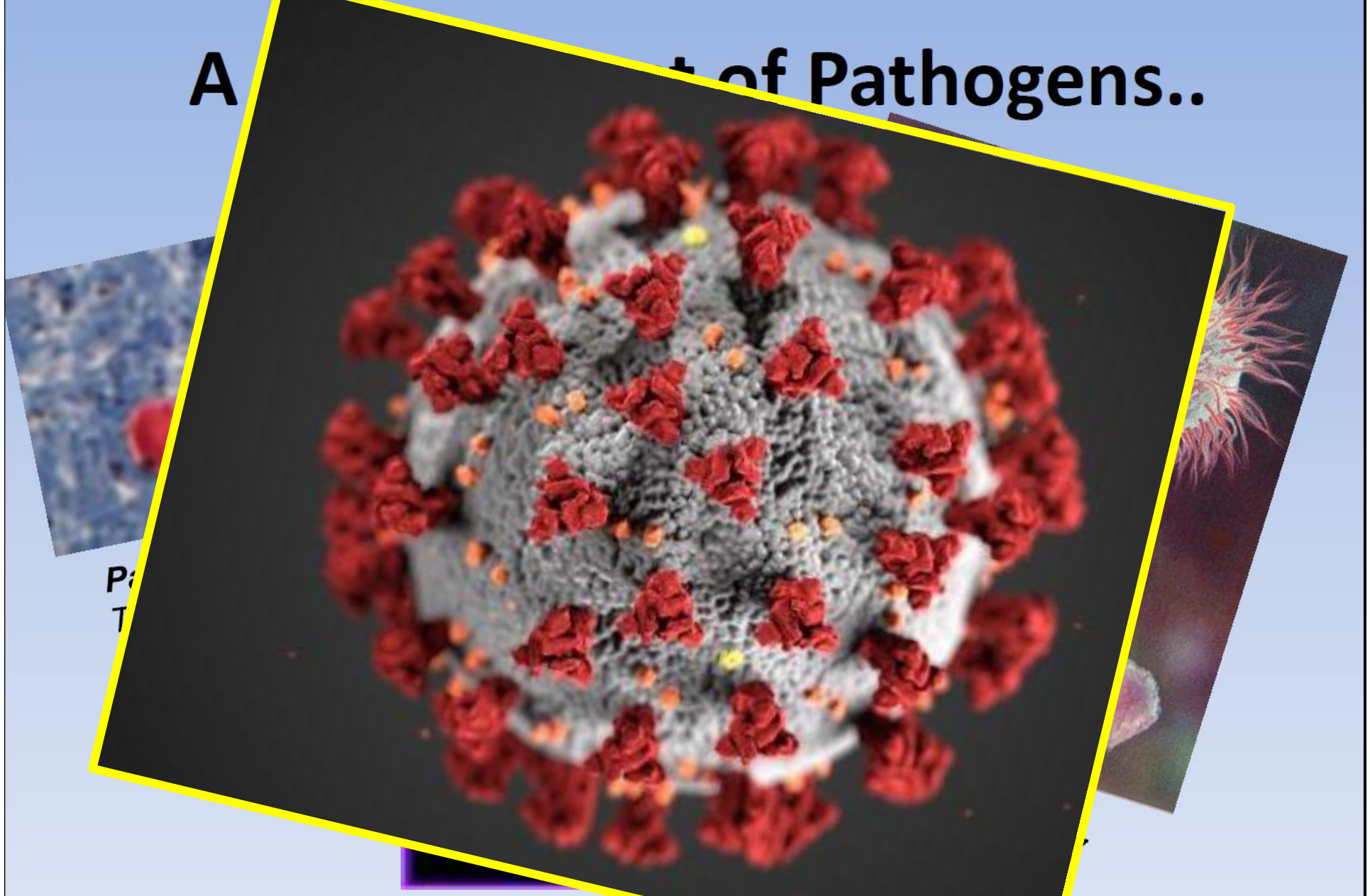


  - **Natural Toxins**
    - Fish
    - Mushrooms

- **Chemical**

- **Physical**
  - Rocks
  - Metal, glass

A ...t of Pathogens..



Viruses: Nor...
Hepatisis A

What Contamination Looks Like:

What is the Risk From Fresh Produce?

1 in 6 get sick with food born illness symptoms (48 million)—self reporting

SOLVED cases related to fresh produce (underestimate—2004-2013 averages)

- 64 produce -linked outbreaks/ year
- 2,000 produce-linked illnesses/ year (hospital)
- Less than 40 produce-linked deaths/year

Not much Risk….But it is worth it because…

1. Local outbreak would have **HUGE COSTS**

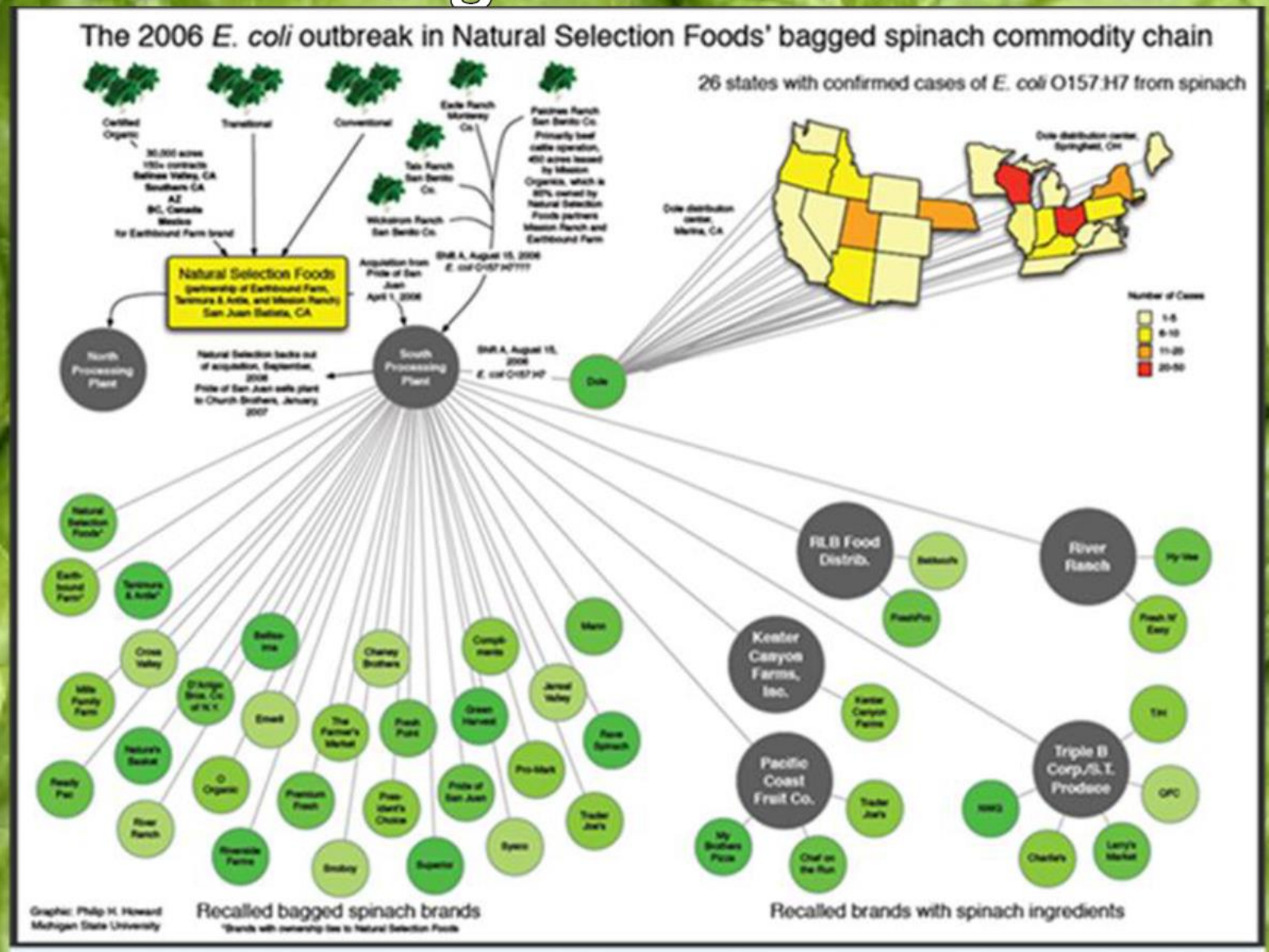
2. We **CAN EASILY do something** to lower risk

1. Risk reduction can have **multiple full farm benefits**

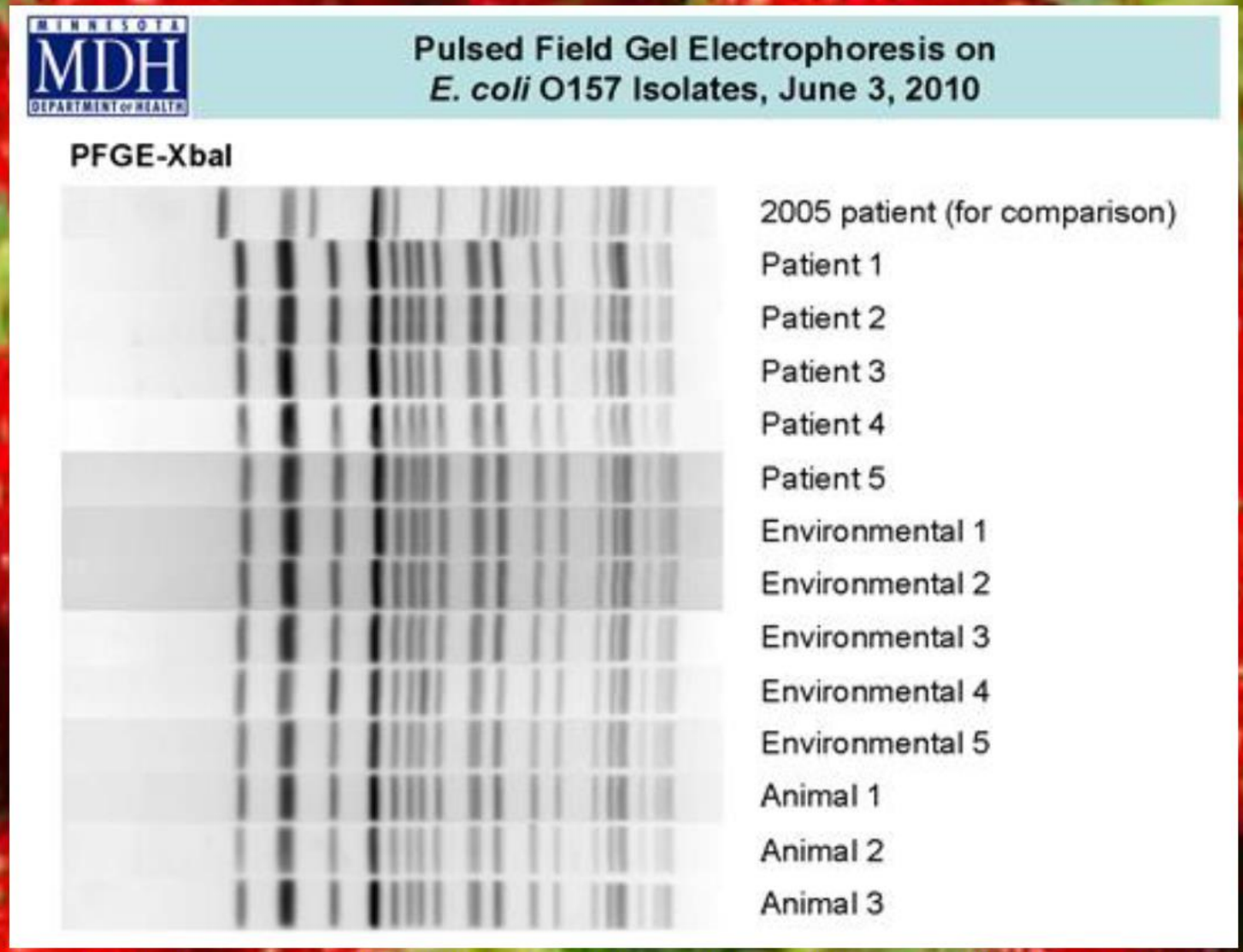
Source: http://go.uvm.edu/yxijp

Why now?: More people with developing or compromised immune systems

Why now? Centralized food system = larger outbreaks



Why now?: DNA fingerprinting = Improved detection



Source: http://www.foodsafetynews.com/2010/06/minn-evidence-links-e-coli-to-raw-milk-dairy/#.VMWUAy5cikk

Government Response …2011

Food Safety Modernization Act (FSMA)

OMG HELP!! PANNIC!!

DO I NEED to comply with FSMA?

FDA FOOD SAFETY
MODERNIZATION ACT

Must you comply with the Produce Safety Rule?

Maybe so…

FSMA says that saffron dehydration is a Farm Activity…

"Dehydration of a raw agricultural commodity on a farm that does not result in the creation of a distinct food commodity and does not involve other manufacturing/processing **operations is considered a farm activity**. For example, the drying of hay, cinnamon bark quills, or ginkgo leaf on a farm is a farm activity."

Well…. Who is covered?

Gross annual sales of produce <$25,000

Small Farms: Exempt

$25,000 - $500,000

& > 50% to QEU

Mid-Sized: Qualified Exemption

*** Unless….**

* >$25,000 + > 50% sales not to QEU or *out of state/over 275 miles*

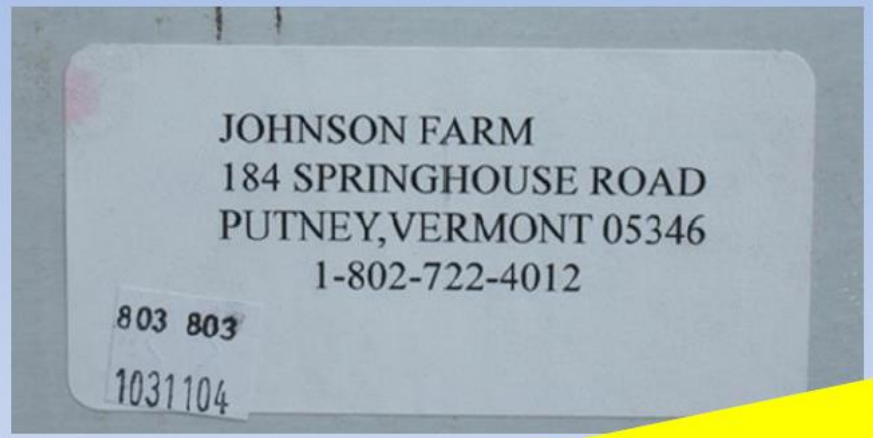
> $500,000 gross sales

Large Farms: Not Exempt

***Produce not usually eaten raw is not covered

Qualified Exempt

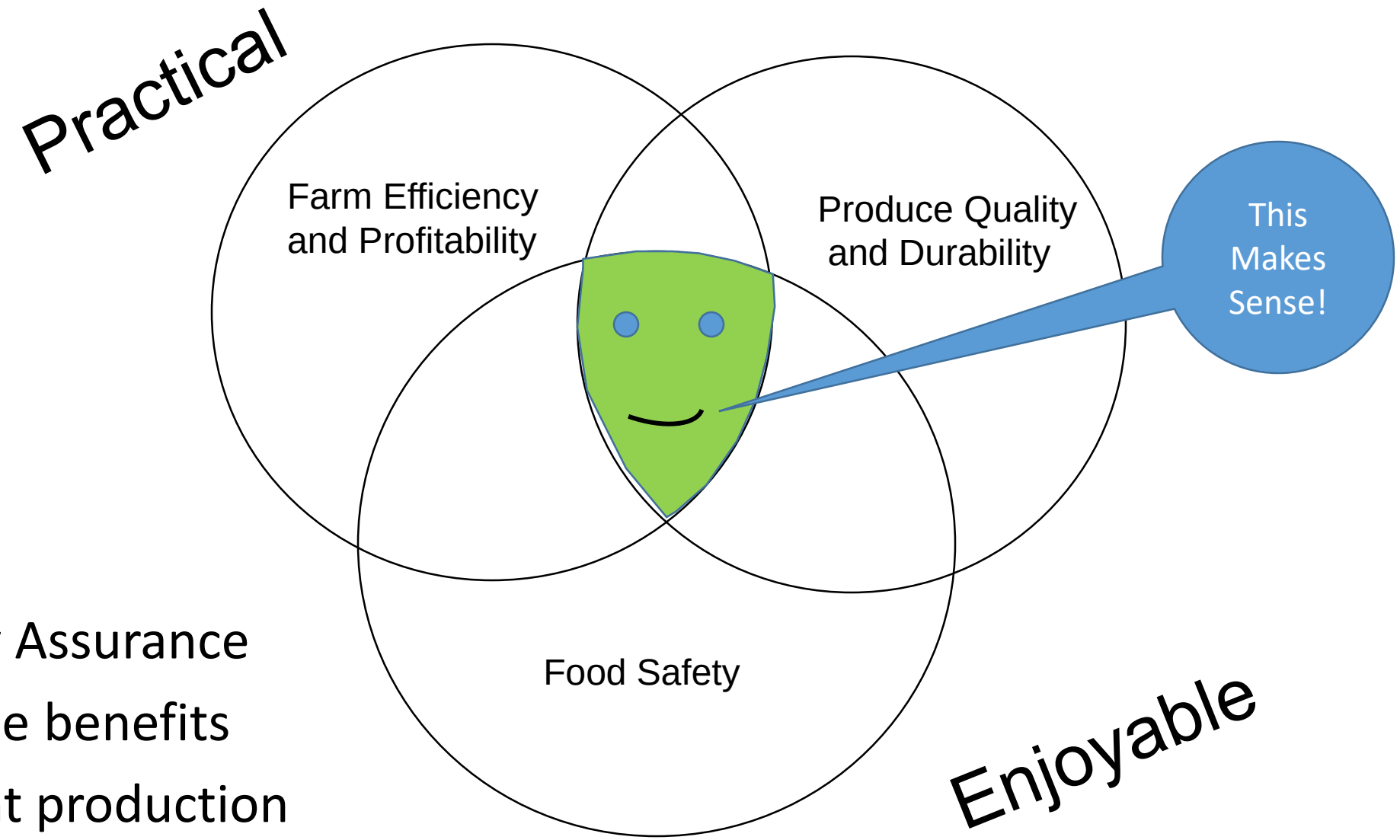
Wholesale:
Master Carton, Case or Pallet



On Label:

- Farm Name &Address
- Pack Date
- Optional: Lot #, harvest field ID

Practical Produce Safety Concept

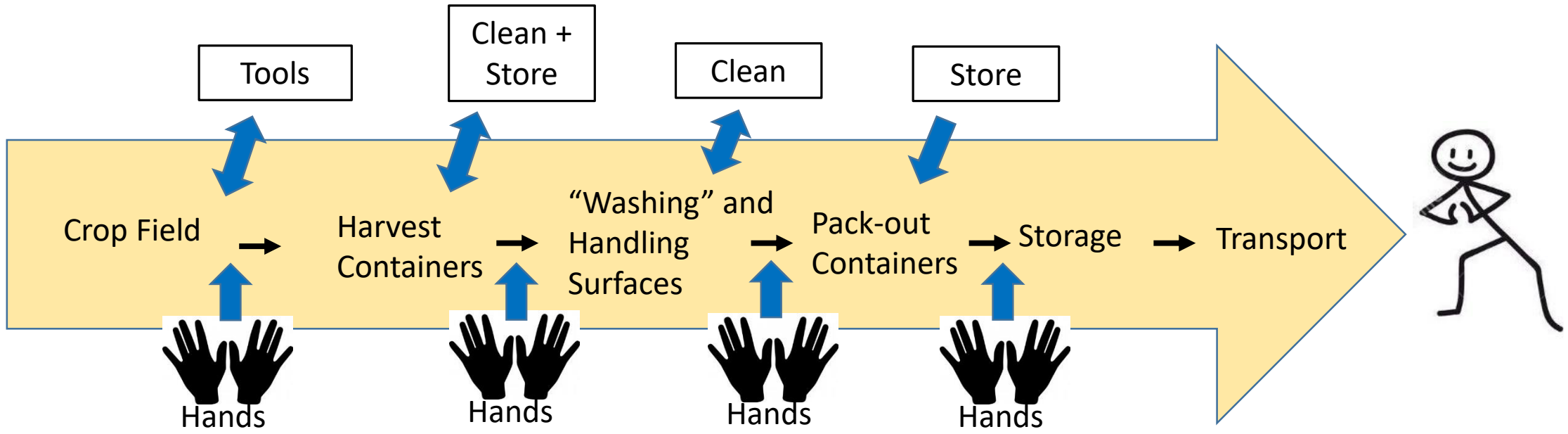


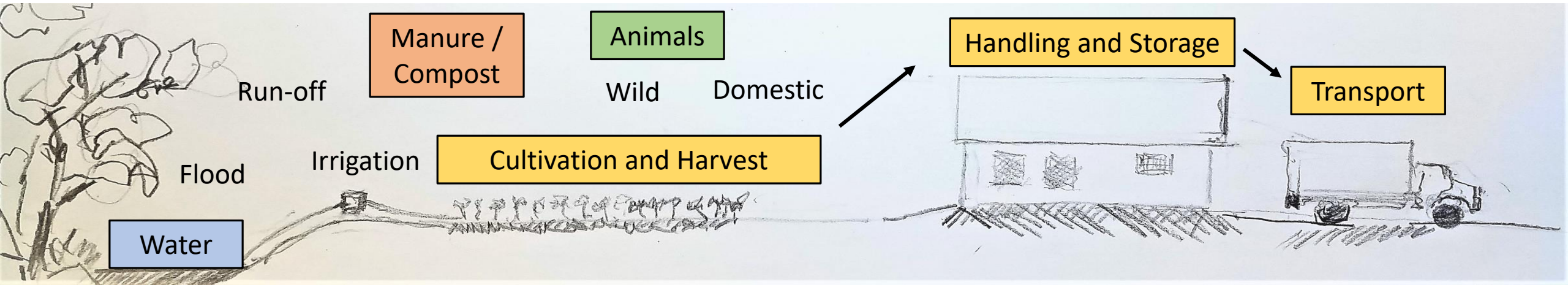
- Quality Assurance
- Multiple benefits
- Efficient production

Just put on your Risk Reduction Sunglasses

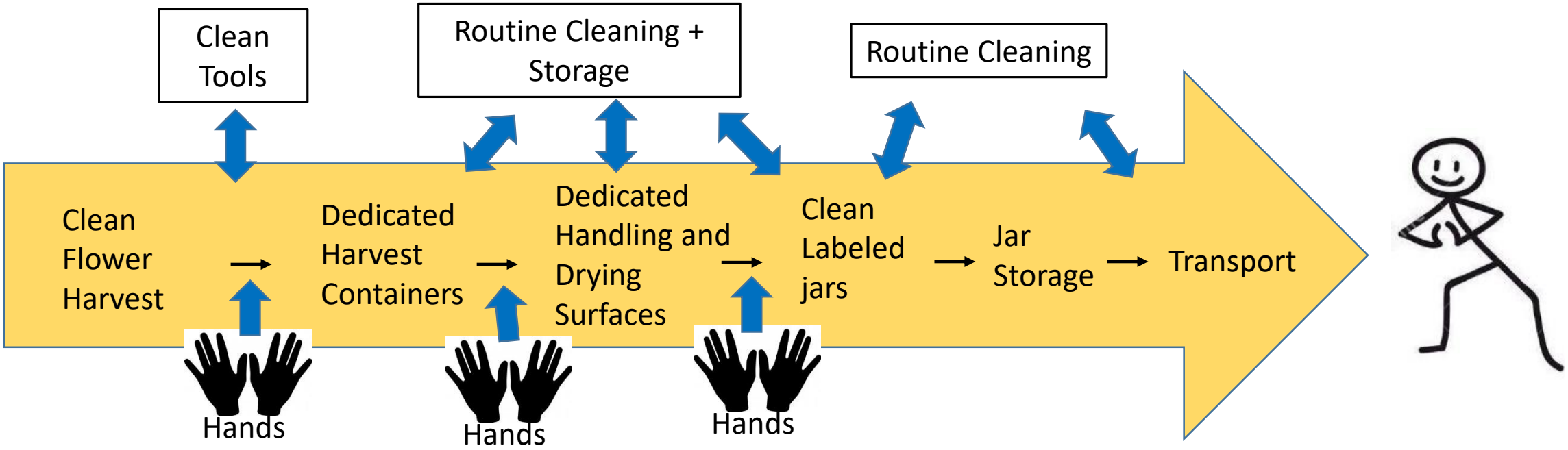
Managing for Risk Reduction

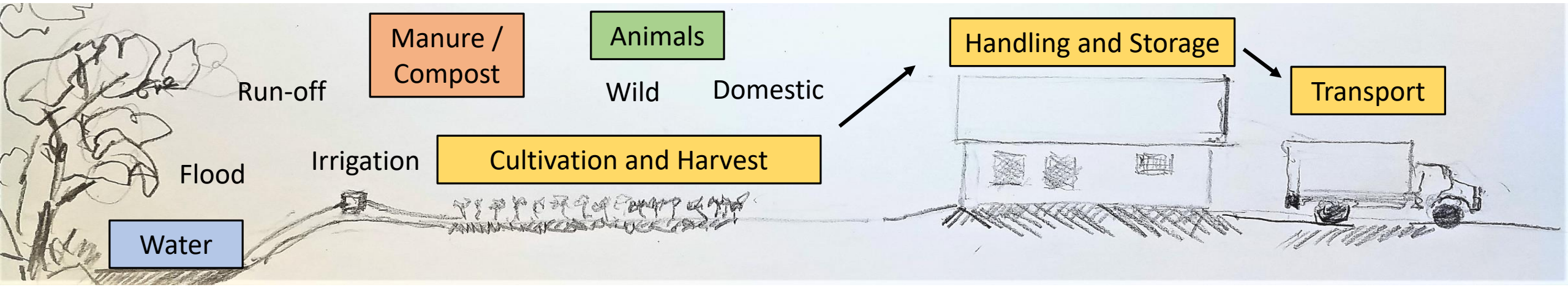
Produce Production Flow—Risk Reduction





Saffron Production Flow





Crop Field Risk Assessment

- Land-based risk—Floods, animals, run-off, toxic dumps, UFOs landing?
- Manure and Compost—Treatment records, or time?
- Irrigation—Water quality and application method?

Clean Hands, Good Hygiene

- **Easy Access** to toilet facilities and first aid kits
- Health and hygiene policy and on-board farm workers.
- Farm workers --hand cleaning and self care.
- Annual “training” of all workers
- Corrective actions

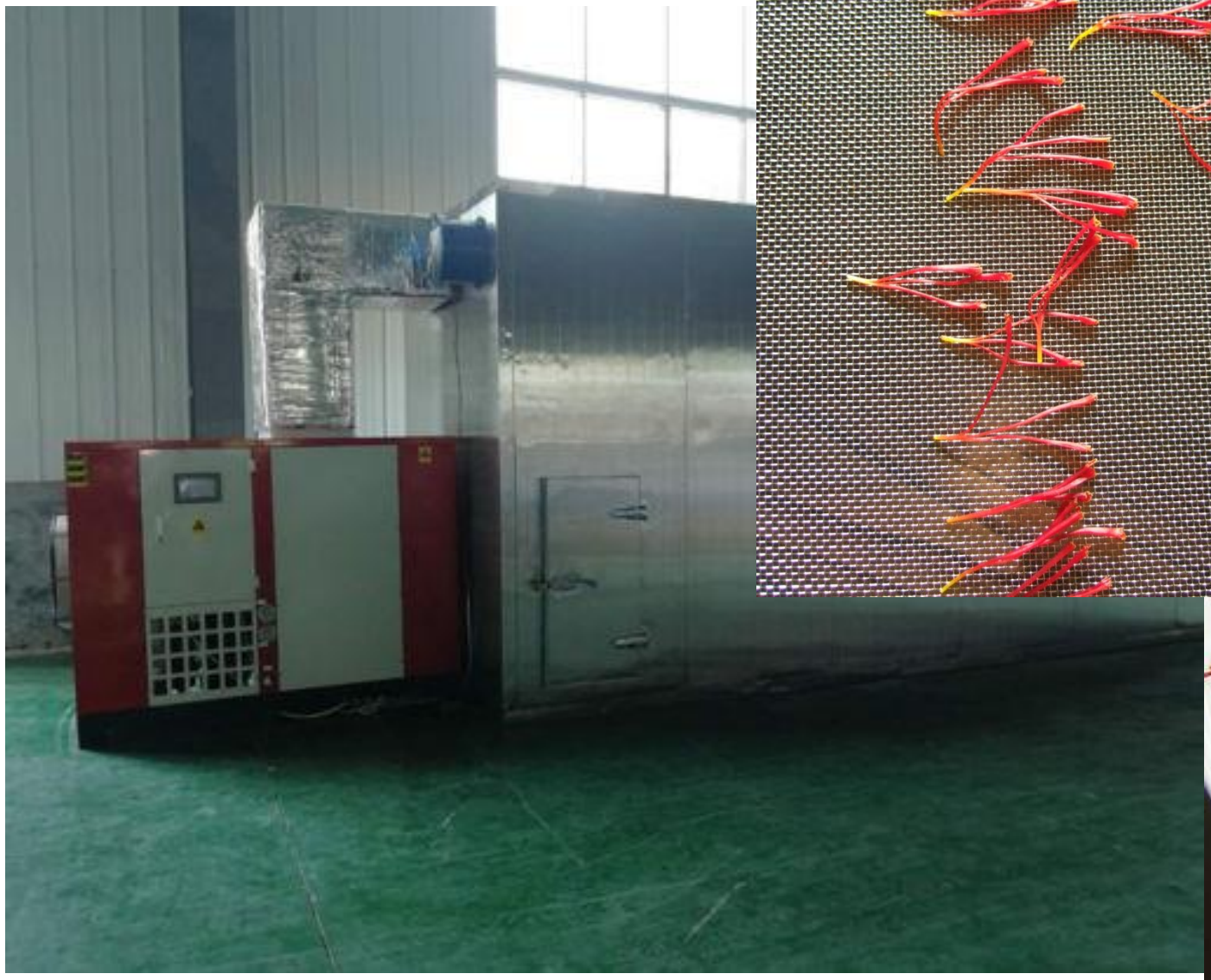
Health and Hygiene Training-
Time to get serious!

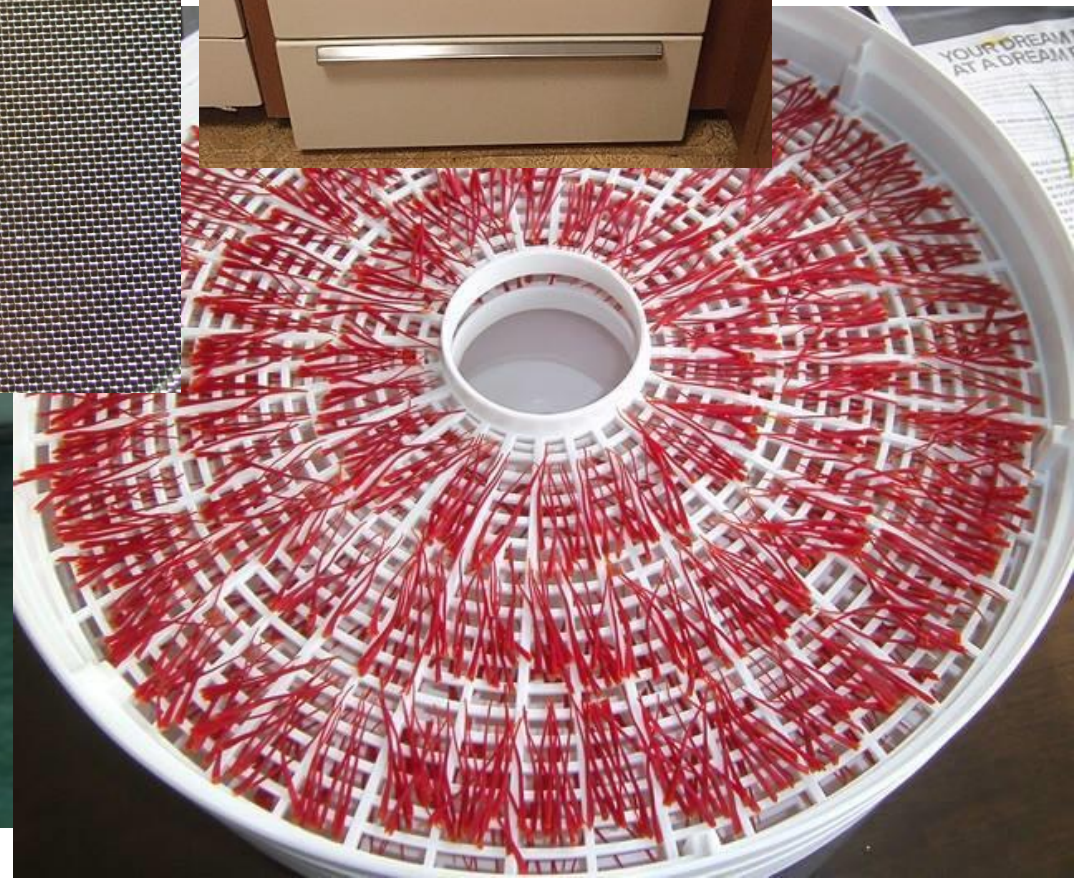
Clean Cultivation and Harvest

- Dedicated washable harvest containers
- Container cleaning and drying routine
- Clean cultivation and harvest practices for flowers
- Dedicated tools with clean storage

Handling and Drying Surfaces

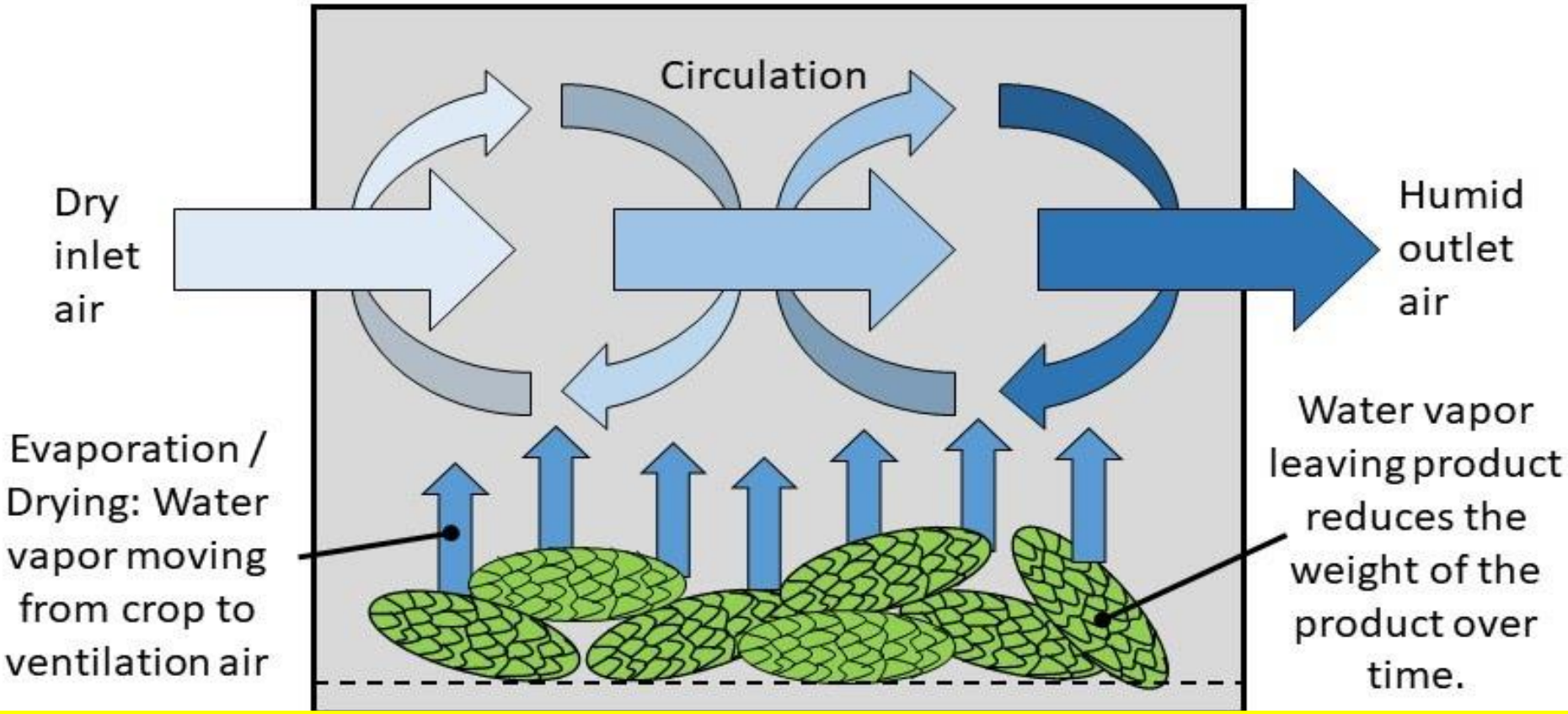
- Dedicated cleanable surfaces
- Cleaning routine, and
- Clean breaks and “Lots”
- Handling and Drying SOPs for good quality control
- ISO Saffron quality
  <12% moisture about 120
  F for 30m min





Uniform Drying = Quality Control and Risk Reduction

<12 % Moisture (About 120 F for 30 min, or equivalent)



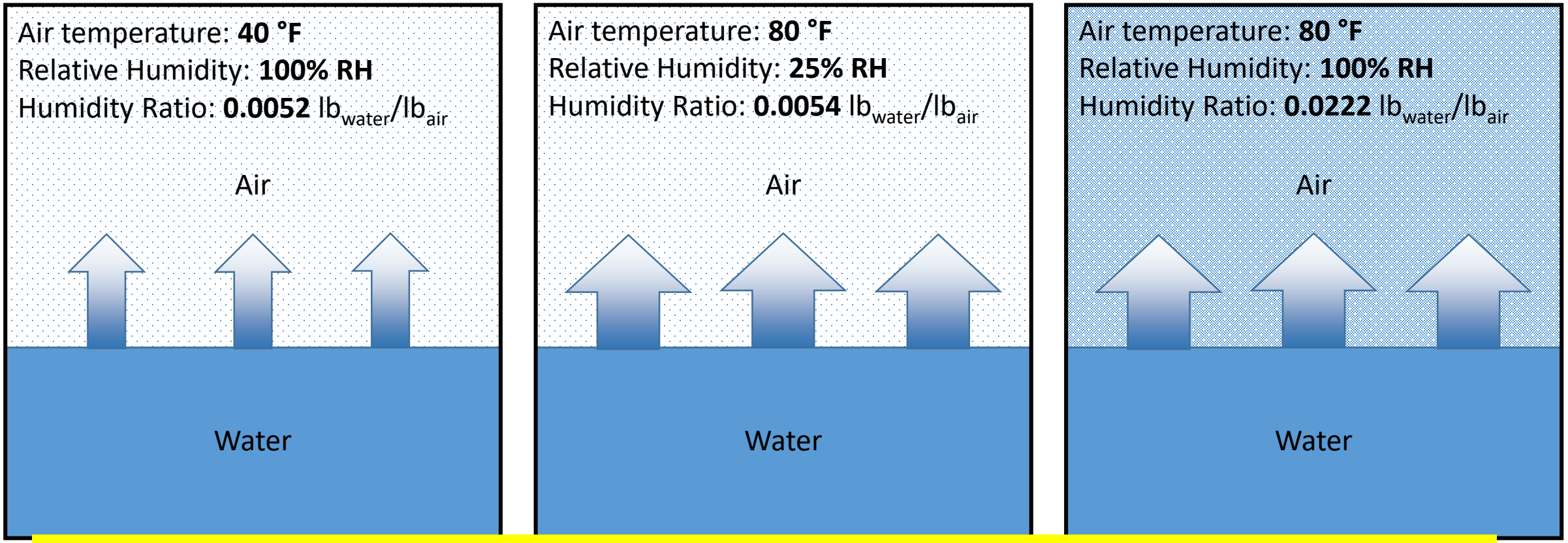
UNIFORM DRYING AND QUALITY=

Heat + Air IN and OUT + Air Circulation

Cold air can carry only a limited amount of moisture…

…heating the air reduces the RH, and drives more moisture into the air…

…because warmer air can carry more moisture.

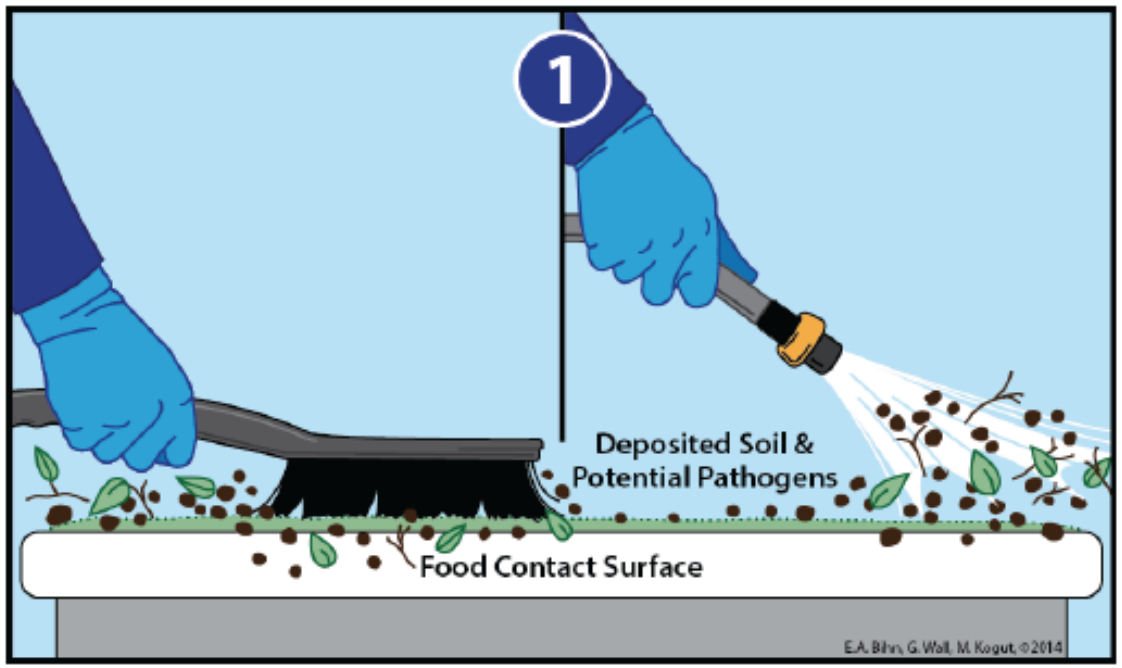


UNIFORM DRYING AND QUALITY=
Heat is needed to soak up moisture

Brush/
Rinse

Cleaning & Sanitizing Food Contact Surfaces

- **Step 1:** Remove any obvious dirt and debris from the food contact surface



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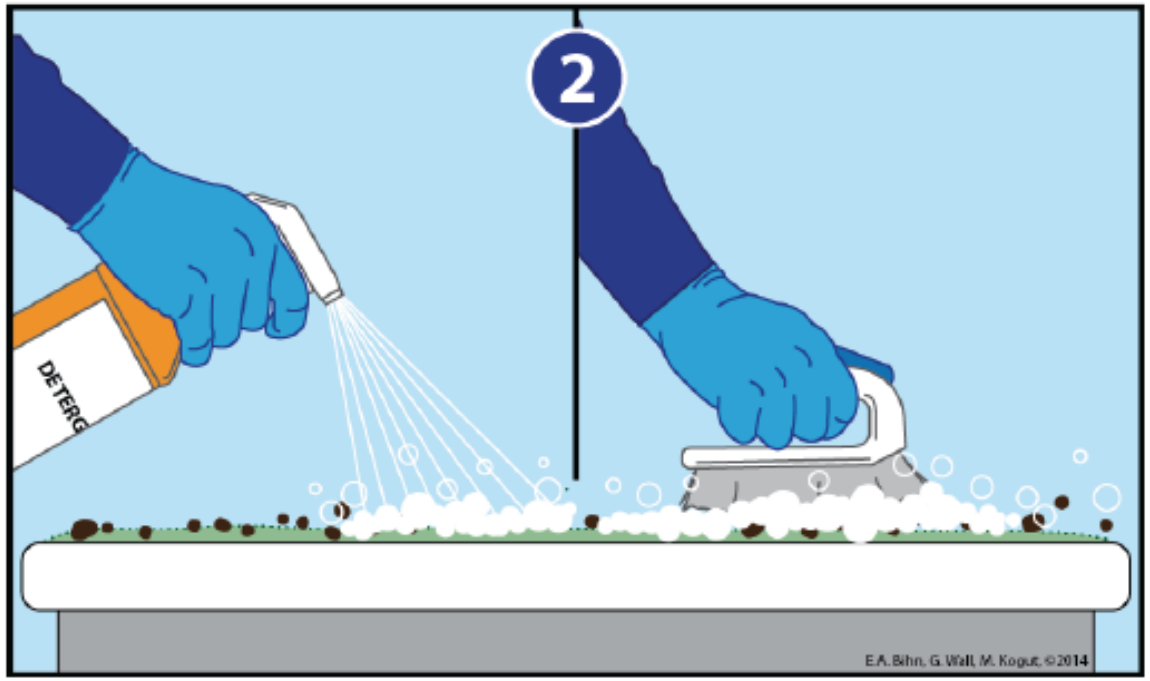
Produce Safety ALLIANCE

Scrub with Detergent

Cleaning & Sanitizing Food Contact Surfaces

- **Step 2:** Apply an appropriate detergent and scrub the surface

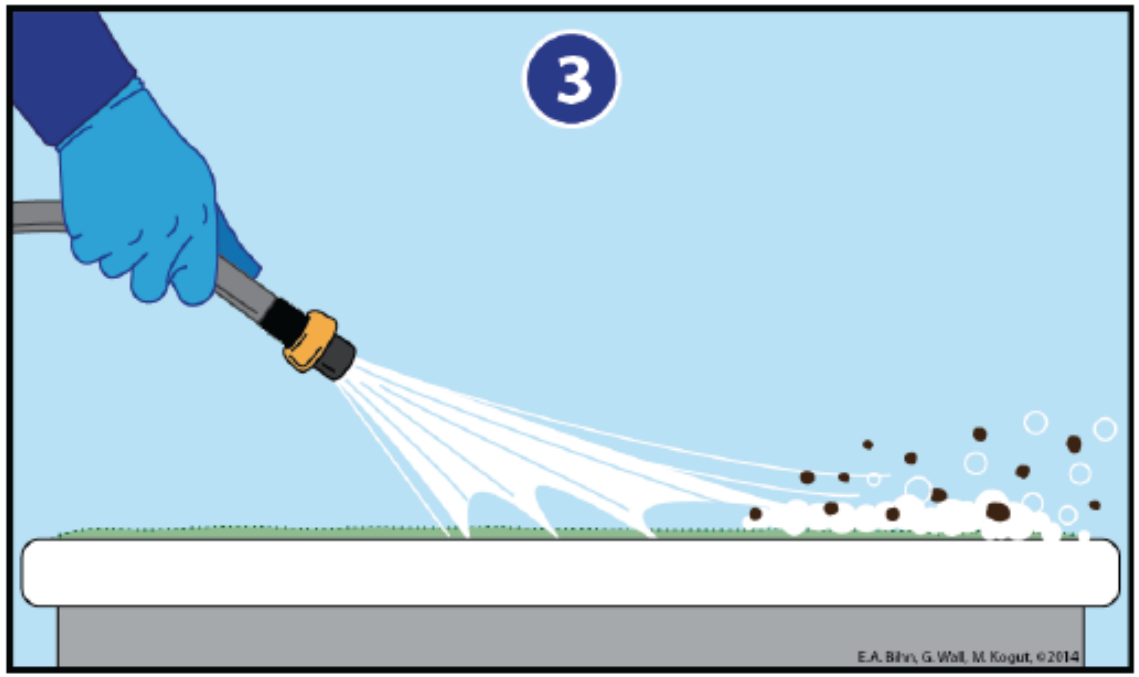


Produce Safety ALLIANCE

Rinse

Cleaning & Sanitizing Food Contact Surfaces

- **Step 3:** Rinse the surface with clean water, making sure to remove all the detergent and soil



Produce Safety ALLIANCE

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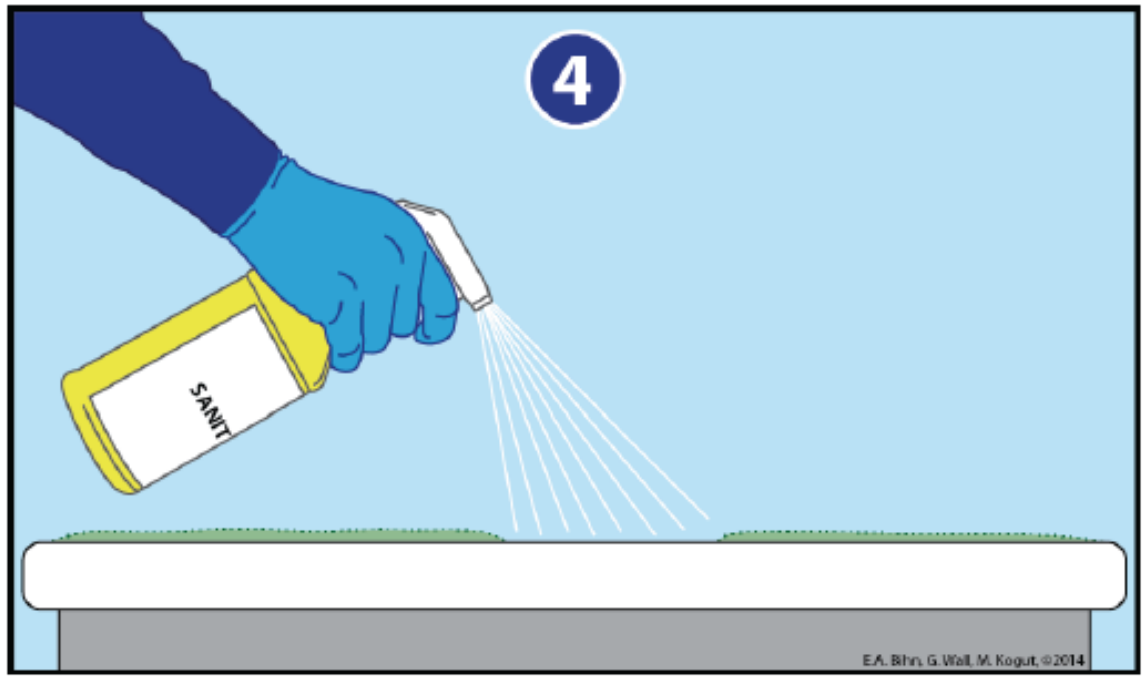
Sanitize clean surface

Cleaning & Sanitizing Food Contact Surfaces

- **Step 4:** Apply a sanitizer approved for use on food contact surfaces. Rinsing may be necessary. Let the surface air dry.



Produce Safety ALLIANCE

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Packing and Storage

- Dedicated cleanable surfaces and spaces
- Cleaning / Reset Routine
- Labeling and “Lots”
- Controlled Storage Conditions

Put on your Risk Reduction Sun Glasses

- Outline production flow
- Describe practices that minimize risk
- Outline cleaning or storing routines
- Highlight areas for improvement

Produce Safety Plan | Date

Topic	Writing Guidelines—to help you describe your current practice through a food safety lens	Your Practices – List or describe your current practices	Actions to Take
Crop Field Risk Assessment			
Land-based risk—Floods, animals, run-off, toxic dumps	List significant sources current or previous sources of potential contamination (run-off, flooding, wildlife or domestic animal's, dumps, etc.) Describe how each know in managed or minimized.		
Manure and Compost—Treatment records, or time?	If you apply animal-based manure or compost to crop, describe this use and explain how product is treated or managed to reduce risk (pre-treated and purchase, on-site management)		
Irrigation—Water quality and application method?	If you irrigate, assess contamination risk of the water source and irrigation method. Describe, if needed how you minimize risk of contamination.		
Clean Cultivation and Harvest			
Clean cultivation and harvest practices for flowers	How do you minimize contamination while harvesting? Describe any practices that minimize field dirt on leafy crops (e.g. high-tunnel, mulch, row covers, inter-bed vegetative strips, etc)		
Dedicated Harvest Containers	Describe harvest containers and how you use and clean them? (e.g.- dedicated for harvest only, spray-rinsed after use, stacked under cover to dry, kept off of muddy ground while harvesting, etc)		

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