GOOD BINES

Enhancing farm resiliency through education and collaboration.

Introduction

- Increasing focus on best practices, food safety, sustainability
  - Customer driven
  - Regulatory – FSMA

- Launch of new USA Hops website Member Area provides educational content as a membership benefit

Funding and Support

- WSDA Specialty Crop Block Grant funded consulting and web development (3 years)
  - Good Bines platform
  - Food Safety, Risk Assessment, Fertility, and Water Testing modules
- GLOBALG.A.P. Hop Sub-Scope support and training
  - Sub-scope development time and expertise donated by hop industry partners

- Brewers Association funded development of public-facing Best Practices Directory

ADMINISTRATION

Administered by Hop Growers of America

GOVERNANCE

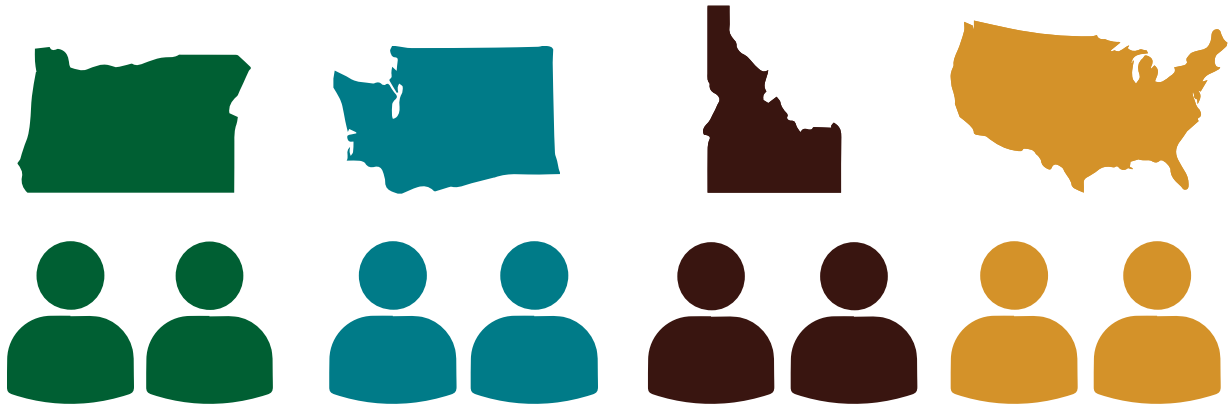
Governed by the HGA Best Practices Committee consisting of 8 voting members representing PNW states and overall U.S growers.

CONTRIBUTORS

Additional Best Practices Committee non-voting seats reserved for representatives of hop merchants, breweries and industry experts.

USAHOPS

HOP GROWERS OF AMERICA



Merchants, Brewers, Experts

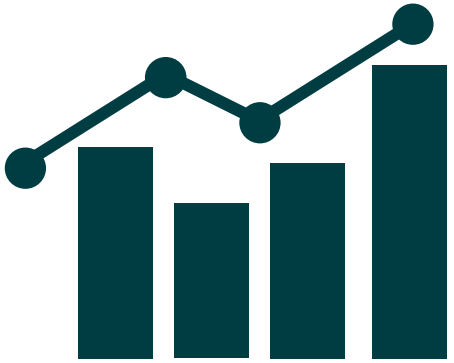
CURRENT LANDSCAPE

TRANSPARENCY

- Customers demand insight into farming practices
- More food safety & sustainability schemes to fulfill
- Increase in domestic and international regulations

OPPORTUNITIES

- New farms - some very small
- Diverse HGA membership leads to diverse challenges
- Commercial & global markets now available to even the smallest farm

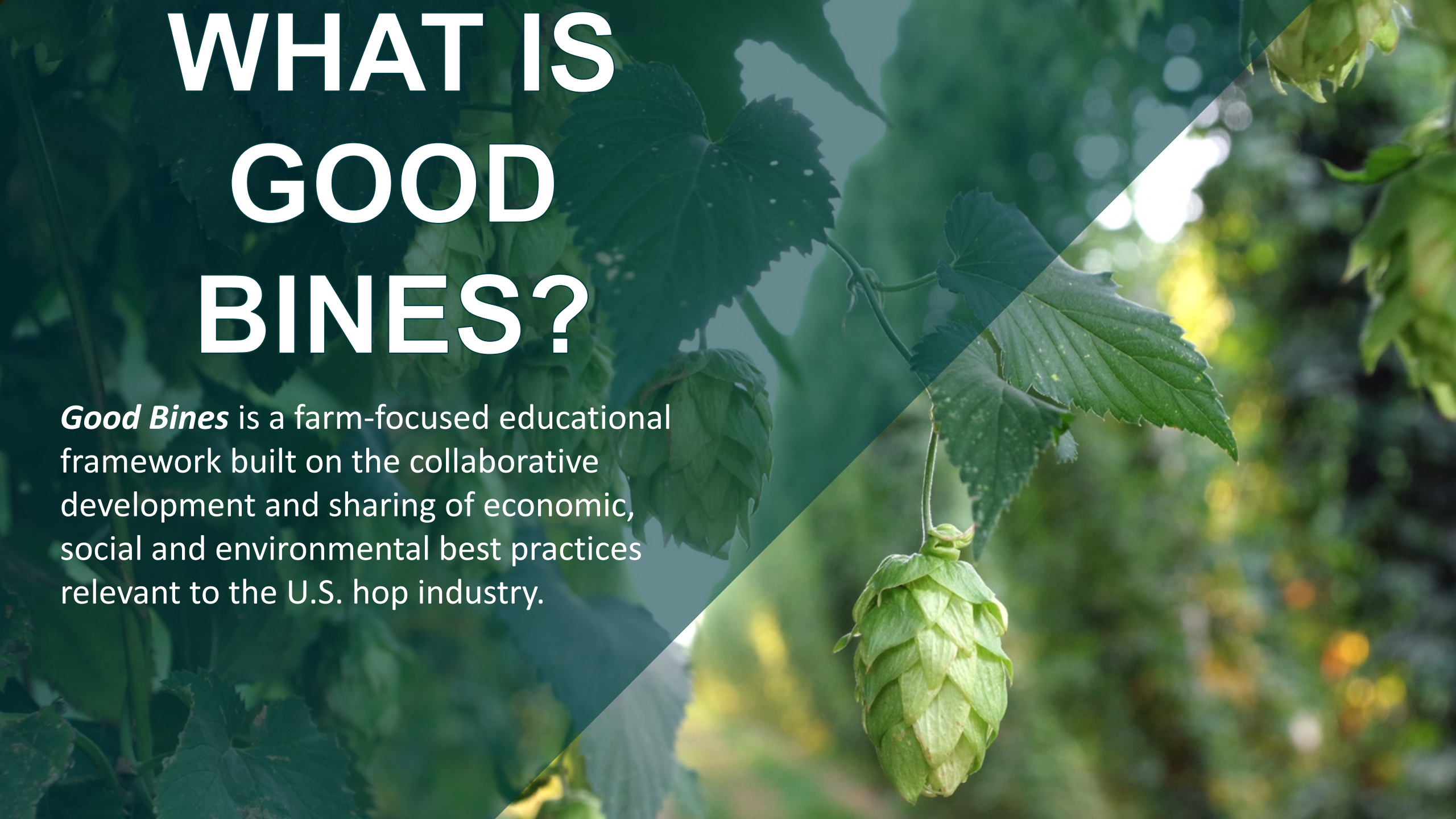


BALANCE

- Market fluctuations lead to shift in supply and demand
- Craft slow down, global changes, new expectations
- Farms must be leaner and more competitive to ensure profitability

WHAT IS GOOD BINES?

Good Bines is a farm-focused educational framework built on the collaborative development and sharing of economic, social and environmental best practices relevant to the U.S. hop industry.



GOOD BINES

MISSION (Short)

Enhancing farm resiliency through education and collaboration

MISSION (Full)

To foster an environment where U.S. hop growers can develop best practices and promote enhanced farm and industry resilience through education and collaboration

VISION

To help farms achieve long-term success by developing and sharing trusted practices and resources to create lasting, positive global impacts

PRINCIPLES

EDUCATION

- Provide farms with tools to fulfill industry education needs
- Industry expert insights
- Seminars, mini courses, learning modules

COLLABORATION

- Growers, Merchants and Brewers
- Work with similar industry programs
- Unbiased, no agenda discussions

COMMUNICATION

- Case studies, blog posts, social media help farms share experiences
- Webinars and online resources to maximize engagement
- Tools to help U.S. hop growers communicate best practices

MEMBERSHIP BENEFITS

Good Bines provides HGA members with access to educational resources ranging from essential food safety programs and operational risk assessments, to enhancement of environmental stewardship goals.

Educational materials include case studies, mini-courses, learning modules and links to approved third-party programs. Content is the result of a collaborative network of farms, industry experts, scientific researchers, regulatory agencies and community NGOs.

3-YEAR GOALS

GOAL #1 - Launch Good Bines

GOAL #2 – Build Education Resources

GOAL #3 – Develop Industry Partnerships

USA HOPS
HOP GROWERS OF AMERICA

GOOD BINES

Enhancing farm resiliency through education and collaboration.

HOP ENTHUSIAST

HOP FINDER

NEWS & MEDIA

GROWER TOOLS

RESEARCH & TECHNICAL

WHAT IS GOOD BINES?

Good Bines is a farm-focused educational framework built on the collaborative development and sharing of economic, social and environmental best practices.

Administered by Hop Growers of America, *Good Bines* acts as a communication platform where members of the hop supply chain can access trusted resources, ensuring the overall resiliency of the U.S. hop industry. **Learn more.**

Explore Best Practice Topics

Translate

Videos

Other Educational Resources (Not included in these categories)

There are currently no posts in this category.

USA HOPS
HOP GROWERS OF AMERICA

HOP ENTHUSIAST

HOP FINDER

NEWS & MEDIA

GROWER TOOLS

RESEARCH & TECHNICAL

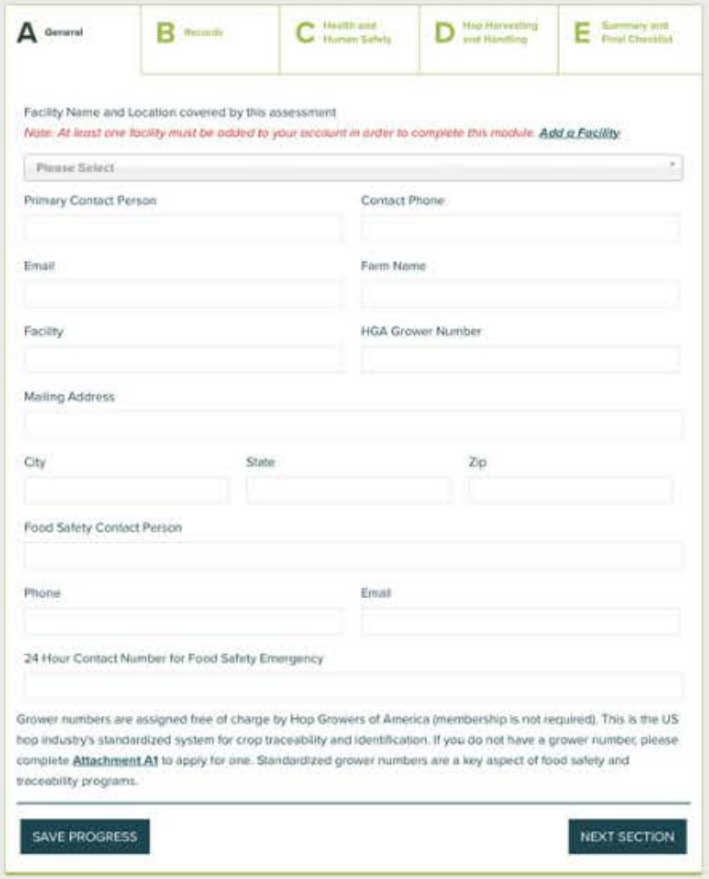
Food Safety & Quality

In response to increasing customer requirements for certifications and auditing systems, growers must develop robust on-farm programs to meet industry expectations for hops carrying the promise of quality and safety. Hop Growers of America has developed a self-assessment educational module, **"Foundations of Food Safety"**, to assist growers in the implementation of best practices for harvesting operations to ensure industry standards for food safety are achieved. The practices included in this module will establish the foundation for continued improvement, should your farming operation seek future certification under third-party audited and Global Food Safety Initiative (GFSI) programs, including GLOBALG.A.P.

RESEARCH & TECHNICAL

CONVENTION

INFO HUB



START TRAINING

Case Studies

Other Food Safety & Quality Resources

There are currently no posts in this category.

Translate

Videos

USA HOPS
HOP GROWERS OF AMERICA

HOP ENTHUSIAST
HOP FINDER
NEWS & MEDIA
GROWER TOOLS
RESEARCH & TECHNICAL
CONVENTION

Education Modules

Search...

Create New:

Foundations of Food Safety Module

CREATE

Form	Started	Last Updated	Completed	
Foundations of Food Safety for G2 LLC	ageorge@wahops.org *01/03/2019 16:56:24*	ageorge@wahops.org *01/15/2019 10:26:27*	ageorge@wahops.org *01/03/2019 16:56:42* Print Certificate	Edit . Delete Expires: 2020-01-03
Foundations of Food Safety for Home Ranch	media@thefieldgroup.net *04/05/2018 14:31:58*	ageorge@wahops.org *08/09/2018 17:21:54*	media@thefieldgroup.net *04/05/2018 14:34:30* Print Certificate	Edit . Delete Expires: 2019-04-05
Foundations of Food Safety for Home Ranch	ageorge@wahops.org *04/05/2018 13:57:29*	ageorge@wahops.org *05/01/2018 10:45:08*	ageorge@wahops.org *04/05/2018 14:02:54* Print Certificate	Edit . Delete Expires: 2019-

Good Bines: Foundations of Food Safety

This educational module is intended to assist farms in the development of a farm food safety policy by drawing on principles of operational risk assessments and industry-recognized certification programs. By working through this module, any U.S. hop grower, regardless of access to 3rd party programs or resources, can still strive to provide their customers with a food-safe and quality crop.

Foundations of Food Safety outlines practices from common industry and 3rd party audited food safety programs. Examples are provided for reference only. Each grower should consider their farm's unique operations when determining how to implement practices. The practices outlined in this module focus on the harvesting portion of the hop production cycle, rather than field operations prior to harvest.

Hop Growers of America is providing this module as an educational tool to help Members evaluate their current farming practices and develop their own, personalized set of best practices for their particular operation. This guidance tool was developed by Hop Growers of America Best Practices Committee, drawing on primary principles found in the Hazard Analysis and Critical Control Points (HACCP) approach. Hop Growers of America does not specifically endorse or recommend any of the provided text, policies or practices referenced in the module. The policies and practices contained in this module should be customized to reflect your specific goals and particular circumstances. Ultimately, Members must comply with all local, state, federal and international laws and practices and you should consult with the appropriate professionals if you have questions or concerns related thereto.

Foundations of Food Safety includes five sections:

1. General
2. Records
3. Health and Human Safety
4. Hop Harvesting Field and Handling
5. Summary and Final Checklist

USA HOPS
HOP GROWERS OF AMERICA

Facility Name and Location covered by this assessment

Note: At least one facility must be added to your account in order to complete this module. ***Add a Facility***

Home Ranch

Primary Contact Person	Contact Phone
Ann George	5099302334
Email	Farm Name
sage57.ag@gmail.com	Home Ranch
Facility	HGA Grower Number
	982

Mailing Address

USA HOPS
HOP GROWERS OF AMERICA

✓	B.1.	Chemical Application Record Requirements
✓	B.2.	Chemical Application Training Records
✓	B.3.	Export Chemical Regulations
✓	B.4.	Irrigation Water Testing
✓	B.5.	Traceability Records
✓	B.6.	Maintenance Records

B.6. Maintenance Records

Cleaning and maintenance records are complete and available for review.

Maintain records for the following maintenance conducted both before harvest and daily during harvest season: (**Pre-harvest** and **Daily Checklist**)

- Harvesting equipment/tools such as:
  - Trucks
  - Tractors
  - Field tools and equipment
- Receiving area & Picking Machine maintenance such as:
  - Floors are cleaned and free of debris
  - Belts and conveyors are clean
  - No loose clothing or tools near equipment
- Kiln, cooling and baling area maintenance such as:
  - Burner area is secure
  - Kiln cloths are clean
  - Floors are cleaned and free of debris
  - Magnets and foreign material mitigation are functional
  - Pest traps are checked
  - Bird netting is intact

☐ **I have implemented these practices on my farm and will continue to do so. (Check box to confirm**

Luptopia Farms
Smalltown, USA

DAILY HARVEST HYGIENE ASSESSMENT CHECKLIST

Hop Harvesting & Handling

This checklist is to be completed every day during the harvest season and must be kept on record and made available in the event of a farm inspection.

Location/Field ID _____ Shift AM / PM _____ Inspected by _____

Hazard Item Preventative Measures	Date:	Date:	Date:	Date:	Date:	Date:	Date:
Field Assessment: Inspection for animal contaminants, nests, human waste, trash, glass, debris, fuel spills, etc.							
Harvesting Equipment: Includes tractor, top/bottom cutter, truck, forklifts, telehandler. All equipment must be inspected and cleaned before and during harvest with no oil/fluid leaks.							
Picking Machine: Check facility for animal contaminants (droppings, nests, live/dead animals), glass trash, debris, fuel spills. All lights must be covered. Inspect all belts and moving equipment. No clothing or tools on equipment. No outside food/ beverages. Floors and platforms are cleaned/swept daily.							
Kiln Facilities: Check Kiln facilities for animal/bird contaminates (live or dead animals/birds, feces/droppings), nests, litter, glass, debris, trash, fuel spills. All lights must be covered. Kiln cloth must be inspected and cleaned/replaced before harvest. Floors must be cleaned before and/or during harvest.							

Complete Form on Back →

FOUNDATIONS OF FOOD SAFETY

Certificate of Completion

GOOD BINES

Home Ranch -

350 Hoff Rd
Moxee, Washington 98936
United States of America

Grower Number: 982

Valid from: April 5, 2018 to April 5, 2019

24-Hour Food Safety Contact: 5099302334

Ann George
Primary Contact
Phone: 5099302334
Email: sage57.ag@gmail.com

Ann George
Food Safety Contact
Phone: 5099302334
Email: ageorge@wahops.org

Hop Growers of America is providing this module as an educational tool to help Members evaluate their current farming practices and develop their own, personalized set of best practices for their particular operation. This guidance tool was developed by Hop Growers of America Best Practices Committee, drawing on primary principles found in the Hazard Analysis and Critical Control Points (HACCP) approach. Hop Growers of America does not specifically endorse or recommend any of the provided text, policies or practices referenced in the module. The policies and practices contained in this module should be customized to reflect your specific goals and particular circumstances. Ultimately, Members must comply with all local, state, federal and international laws and practices and you should consult with the appropriate professionals if you have questions or concerns related thereto.

USAHOPS
HOP GROWERS OF AMERICA

RECORDS

- All chemical application records meet USDA/EPA requirements. Records are complete and available for review.
- Agricultural chemicals (organic and conventional) are applied only by trained, licensed and/or certified application personnel, as required by prevailing regulations and the pesticide label.
- If the product is intended for export, all agricultural chemical use complies with regulatory requirements of the intended country of destination.
- Irrigation water testing requirements have been fulfilled and records are complete and available for review.
- Records for harvesting, drying, cooling and baling are complete and available for review to ensure full traceability from farm to customer.
- Cleaning and maintenance records are complete and available for review.

HEALTH & HUMAN SAFETY

- All employees receive at least the required health and safety training per OSHA guidelines. A written policy on Personal Protective Equipment (PPE) is available for employees to review at all times.
- Employees receive food safety training specific to the Farm's Food Safety Policy.
- First aid kits, supplies, and protocols are available and clearly labeled throughout the farm. First aid kits are located near working areas and are fully stocked.
- "NO SMOKING" signs are clearly posted throughout the Farm in both English and other major languages spoken by employees.
- Formal visitor check-in/check-out protocol is in place. All visitors are made aware of safety expectations in the Farm Food Safety Policy.
- A health and human safety policy specific to the Farm is posted and clearly communicated to all employees. Farm must be able to provide documentation of training.
- Lock-out/Tag-out Policy and procedures are in place and clearly communicated to all employees.
- No animals (wildlife or domestic) are allowed in harvesting and handling areas.
- Safety precaution signs are clearly posted throughout the Farm.
- No food or drink (except water) in harvesting/crop handling areas; designated eating/break areas are clearly defined.
- Policy for employee toilets, hygiene and health is included in Farm Food Safety Policy.
- Drinking water is always available to all employees.
- Using tobacco products, chewing, eating, drinking (other than water), urinating, defecating, or spitting is not permitted in any crop growing areas, harvesting or handling facilities.
- The Farm has an Injury & Illness Policy as well as a Contamination Policy that has been clearly communicated to all employees.

HOP HARVESTING & HANDLING

- Employees have access to adequately stocked sanitation and handwashing facilities with clear signage and hygiene expectations.
- Only water is allowed in the Harvest and Handling areas, all other food and drink are prohibited. Food and drinks are allowed only in designated eating/break areas.
- Only food grade lubricants are used on equipment that may come in contact with product. All lubricants are clearly labeled if food grade or not.
- All equipment is properly maintained, calibrated and serviced; anything that comes in contact with produce is in good repair and not a source of contamination.
- Cleaning and maintenance records are maintained for buildings and facilities. All maintenance logs and checklists are completed during a pre-harvest inspection and daily during harvest the season.
- Pest management plan has been established and preventative measures are in place to protect harvesting/handling areas.
- All floor areas and conveyor belts are free of grease, dust, dirt and other potential contaminants.
- All safety guards are installed and maintained.
- Shatter-proof lighting throughout all facilities.
- Emergency stop buttons are in place and functional.
- Tools and spare parts are collected and properly stored.
- All facility entrances and openings to harvesting/handling areas are secured.
- Farm Food Safety Policy includes procedures to prevent, inspect and remove significant physical hazards.
- All packaging, bale cloth, and other primary packaging are stored in clean and dry conditions to prevent contamination. All material directly contacting product is inspected prior to use.
- All bales are clearly labeled with a numbering scheme that includes grower number, lot number, crop year, and variety.
- Loading and unloading of product are conducted in a way to minimize damage and prevent contamination.
- Loose and baled hops are protected from contamination.
- All chemicals are stored in a secured, separate area to prevent contamination with product. All chemicals are properly labeled.
- If using ambient air or sun for the drying of harvested hops in the field, adequate methods to prevent contamination and maintain product integrity have been implemented.

SUMMARY & FINAL CHECKLIST

- Traceability and contamination policies in place.
- The Farm Food Safety Policy is in place.
- The Farm Food Safety Policy is reviewed at least annually.
- Corrective action plans for food safety violations are in place.
- All documentation is readily available for inspection.
- Documentation kept demonstrates the Farm Food Safety Policy is being followed.

USAHOPS
HOP GROWERS OF AMERICA

GOOD BINES

Self-Assessment vs. Audits

What's the difference?

Which is best for me?

Self Assessments

2nd Party Audits/Surveys

3rd Party Audits

Self-Assessment vs. Audits

EDUCATIONAL TOOLS & SELF ASSESSMENTS

A self-evaluation of on-farm practices to identify ***potential*** food safety hazards and programs that have been implemented and maintained to reduce and/or eliminate the risk to an acceptable level.

- Assessments and supporting documents reviewed annually (at minimum), or when major changes occur
- No audit takes place
- Costs are minimal (HGA grower member fee, your time)

GOOD BINES

Self-Assessment vs. Audits

2nd PARTY AUDITS/EVALUATIONS

- 2nd Party typically provides a checklist or questionnaire for supplier to complete
- Documents generated by GB self-assessment may be used to provide verification that you have implemented basic food safety fundamentals, which may suffice certain supplier-customer survey requirements
- Costs are minimal, occasionally free

SAI PLATFORM

GreenChief

Sedex

FIRST, VERIFY™ Vendor Information Management

Self-Assessment vs. Audits

3rd PARTY AUDITS

- Audits take place annually during harvesting window. Employees interviewed. All activities observed
- Checklists are complex and require numerous supporting documents (risk assessments, food safety plan, policies and procedures, etc.)
- Required to show *VERIFICATION & VALIDATION* of compliance criteria
- Costs are high (depending on farm size), and typically require full-time person to manage.

The tools in the Good Bines "Foundations of Food Safety" modules are designed to help get you started on your path to becoming third party certified – if you choose to do so.

What is “GFSI”?

GLOBAL FOOD SAFETY INITIATIVE

- Primary Focus = FOOD SAFETY
- Secondary = Employee Health & Welfare, Sustainability, etc.

Ten global programs currently available ☛

Others?

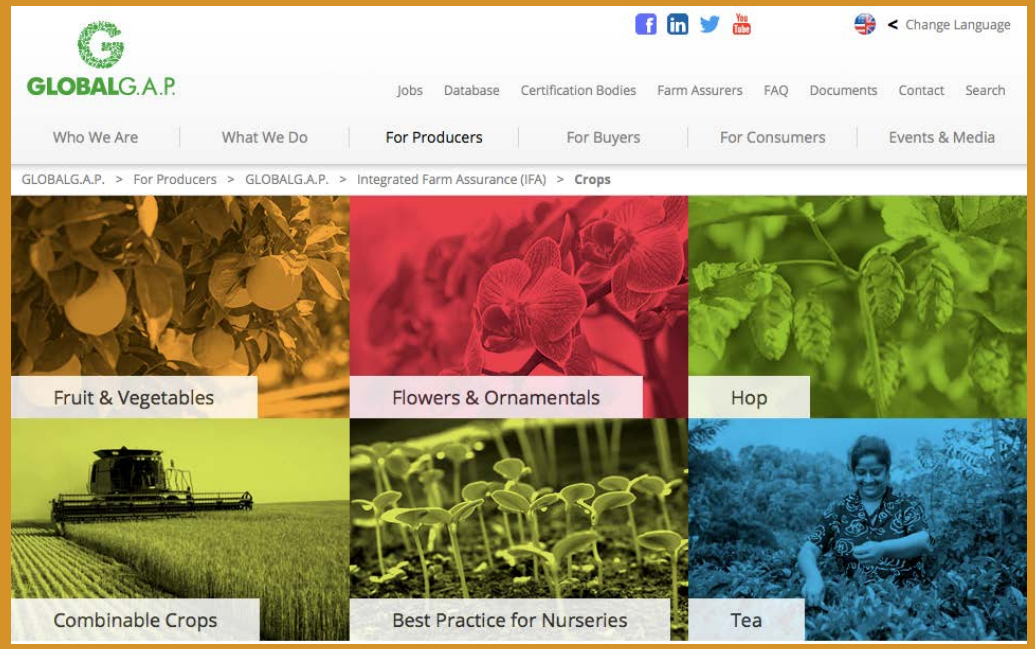
NON-GFSI CERTIFICATIONS

- USDAGAP or USDAHGap
- USDA-NOP – Primary focus on organic farming and handling practices
- Salmon-Safe – In alignment with organic farming practices, focus on sustainable farming, elimination of high-risk inputs used on farm, and biodiversity enhancement
- Kosher – Primary focus on use of ingredients, food additives and processing aids that comply with Jewish religious dietary law

GlobalGAP & Hops

GlobalGAP HOP SUB-SCOPE (HO)

- July 2016: GlobalGAP eliminated the drying and baling from certification. HGA and working group of growers and processor/merchants collaborated on the development of the Hop Sub-scope to submit to GG for consideration
- February 2017: GlobalGAP BOD and NTWG unanimously vote to adopt Hop Sub-scope
- August 2017: Hop Sub-scope v.1 released globally for use. IHGC supported
- Current: Over 50% of US hop crop certified - 22 growers certified globally (18 US + 4 NZ)
- Hop representative seat on the North American National Technical Working Group



Explore Best Practice Topics

Translate

Videos

Other Educational Resources (Not included in these categories)

There are currently no posts in this category.

Risk Assessment Module

OVERVIEW

- Developed on HACCP principles and ISO 31000 Risk Management Standard
- Biological, Chemical, Physical risks
- Foundation for building a basic food safety plan specific for farm
- Key in the development and implementation in policies and SOP’s
- First steps in moving towards 3rd party certification
- Fits any size of farm

Risk Assessment Module

- Agricultural Sites
- Irrigation Water
- Harvest Hygiene
- Food Defense
- Reports

Used as a guidance tool - not as official food safety or HACCP training, or documentation for food safety certification.

Each farm and business is unique; therefore every risk assessment will hold different levels of risks and preventative controls.

Risk Treatment

CODE	IMPACT RATNG	LIKELIHOOD RATING	CATEGORY	ACTION PLAN	RESPONSIBLE PARTY	CHECK DATE
				AGRICULTURE USE		
B.1.1	1	1	LOW	All state and local agriculture laws pertaining to agricultural practices are strictly adhered to (chemical application, worker health & safety, etc). GAP implemented and maintained.	Peter Stein	1/1/2019
B.1.2	4	2	MEDIUM	Fumigation of soil prior to planting hops. Numerous soil samples analyzed prior to planting to ensure optimum soil health and readiness for planting.	Elisa Stein	3/1/2019
B.1.3	2	2	LOW	Fumigation of soil prior to planting hops. Numerous soil samples analyzed prior to planting to ensure optimum soil health and readiness for planting.	Max Pint	3/1/2019
B.1.4	5	4	HIGH	Other scary risk found on a farm!	Mary-Ann Tulip	7/1/2018
				IRRIGATION WATER		
C.1.1	1	3	LOW	Underground, pressurized irrigation canals have limited exposure to pollution sources like cattle feed lots of known agricultural pollution. Delivery systems are inspected routinely by irrigation districts for any leaks or opportunity for contamination. Water is analyzed for E. coli during the growing season under approved method as per FDA FSMA Produce Safety Rule sec. 112.41-112.50 to determine Water Quality Profile to ensure compliance.	Elisa Stein	11/1/2018
C.1.2	5	3	HIGH	Irrigation canals need to be surveyed for ready access of pollution sources like cattle feed lots, wildlife, debris and trash, or known agricultural pollutions. More frequent testing must be done if these pollution sources are present along the canal system. Water is analyzed for E.coli during the growing season under approved method as per FDA FSMA Produce Safety Rule sec. 112.41-112.50 to determine Water Quality Profile to ensure compliance.	Elisa Stein	11/1/2018

- Formulating and selecting risk treatment options
- Planning and implementing risk treatment
- Assessing the effectiveness of that treatment
- Deciding whether the remaining risk are acceptable

B.1 Land Use
B.2 Ground & Soil
B.3 Water Evaluation
B.4 Impact Analysis
B.5 Other

B.1.3. Does the adjacent ground use pose a risk of product contamination, risk to the workers, or health of the crop?

Hazards for this topic have been identifi… these categories:

Biological

Describe Biological Hazard(s):

Impact (1-4)

Likelihood (1-4)

elihood (1-4)

elihood (1-4)

Pre-formed questions guide through a basic risk assessment.

Fumigation of soil prior to planting hops. Numerous soil samples analyzed prior to planting to ensure optimum soil health and readiness for planting.

BACK

SAVE & CONTINUE

B.1 Land Use
B.2 Ground & Soil
B.3 Water Evaluation
B.4 Impact Analysis
B.5 Other

B.1.3. Does the adjacent ground use pose a risk of product contamination, risk to the workers, or health of the crop?

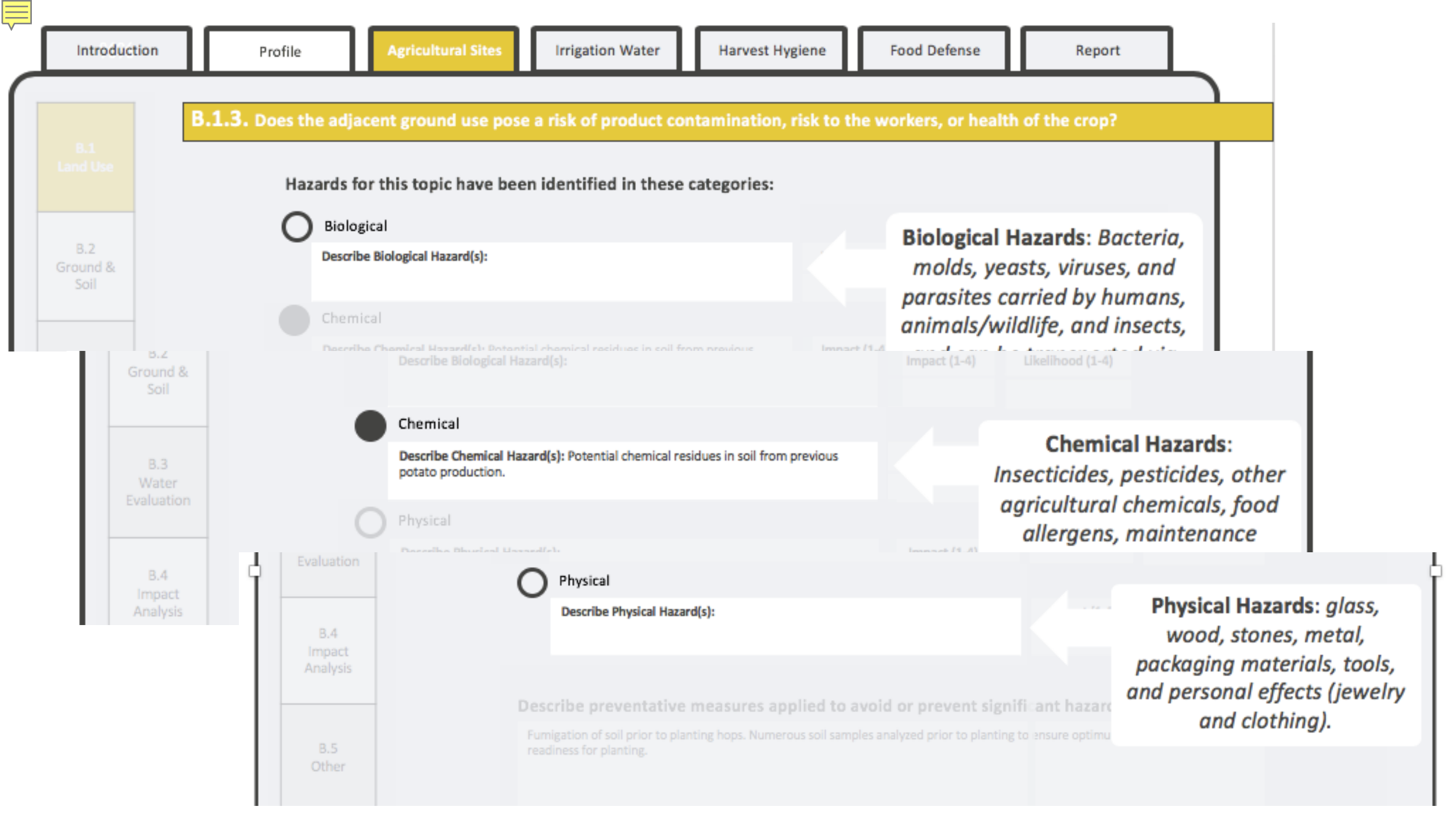
Hazards for this topic have been identified in these categories:

Biological

Banner on left side tracks progress through each tab. Sub-categories outline specific topics to be considered for risk presence. Additional risks not addressed in the pre-formed questions can be written in at the end of the tab in the “Other” sub-categories.

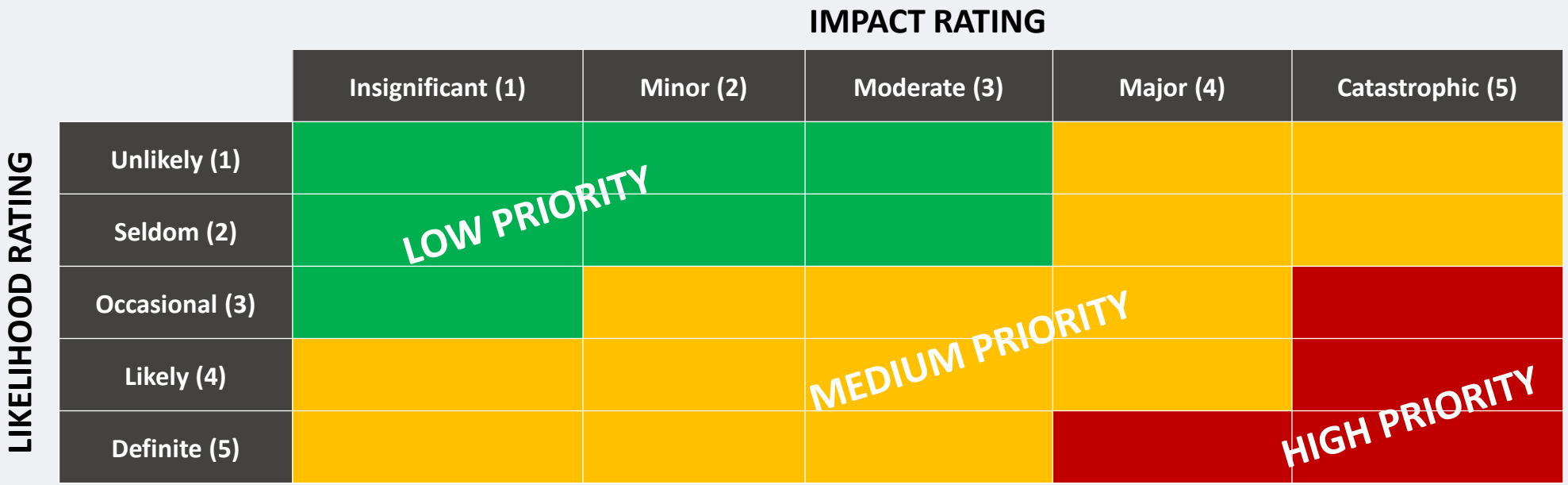
Describe preventative measures applied to avoid or prevent significant hazards:

Fumigation of soil prior to planting hops. Numerous soil samples analyzed prior to planting to ensure optimum soil health and readiness for planting.

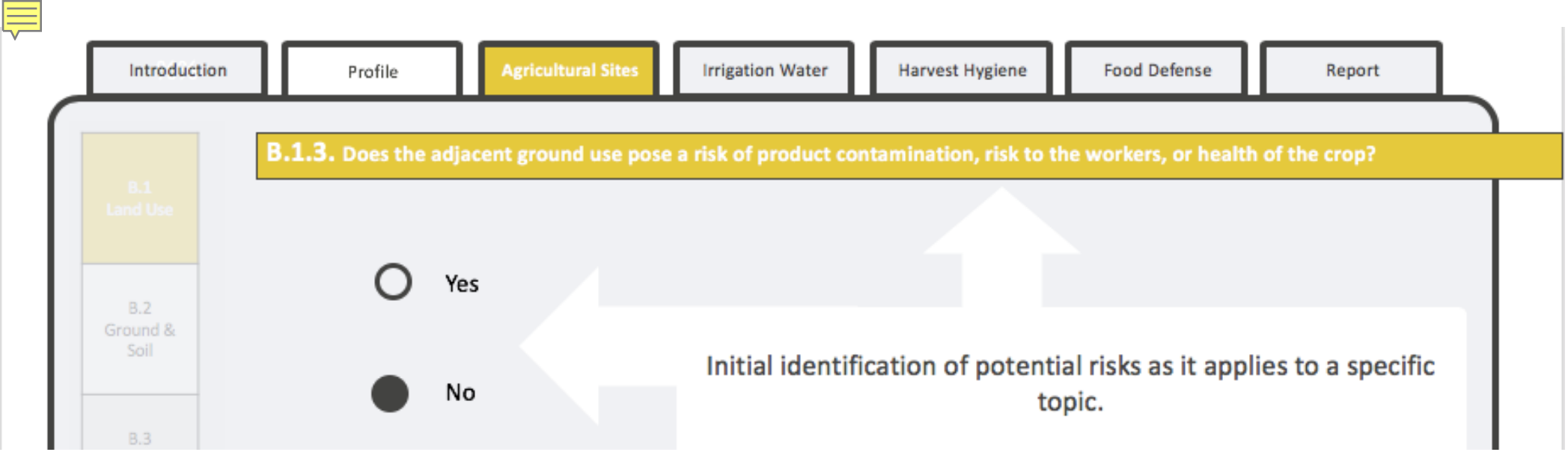

Introduction
Profile
Agricultural Sites
Irrigation Water
Harvest Hygiene
Food Defense
Report
B.1 Land Use
B.2 Ground & Soil
B.3 Water Evaluation
B.4 Impact Analysis
B.5 Other
B.1.3. Does the adjacent ground use pose a risk of product contamination, risk to the workers, or health of the crop?
Hazards for this topic have been identified in these categories:
Biological
Describe Biological Hazard(s):
Chemical
Describe Chemical Hazard(s): Potential chemical residues in soil from previous potato production.
Physical
Describe Physical Hazard(s):
Biological Hazards: Bacteria, molds, yeasts, viruses, and parasites carried by humans, animals/wildlife, and insects,
Chemical Hazards: Insecticides, pesticides, other agricultural chemicals, food allergens, maintenance
Physical Hazards: glass, wood, stones, metal, packaging materials, tools, and personal effects (jewelry and clothing).
Describe preventative measures applied to avoid or prevent signifi ant hazar
Fumigation of soil prior to planting hops. Numerous soil samples analyzed prior to planting to ensure optimu
readiness for planting.

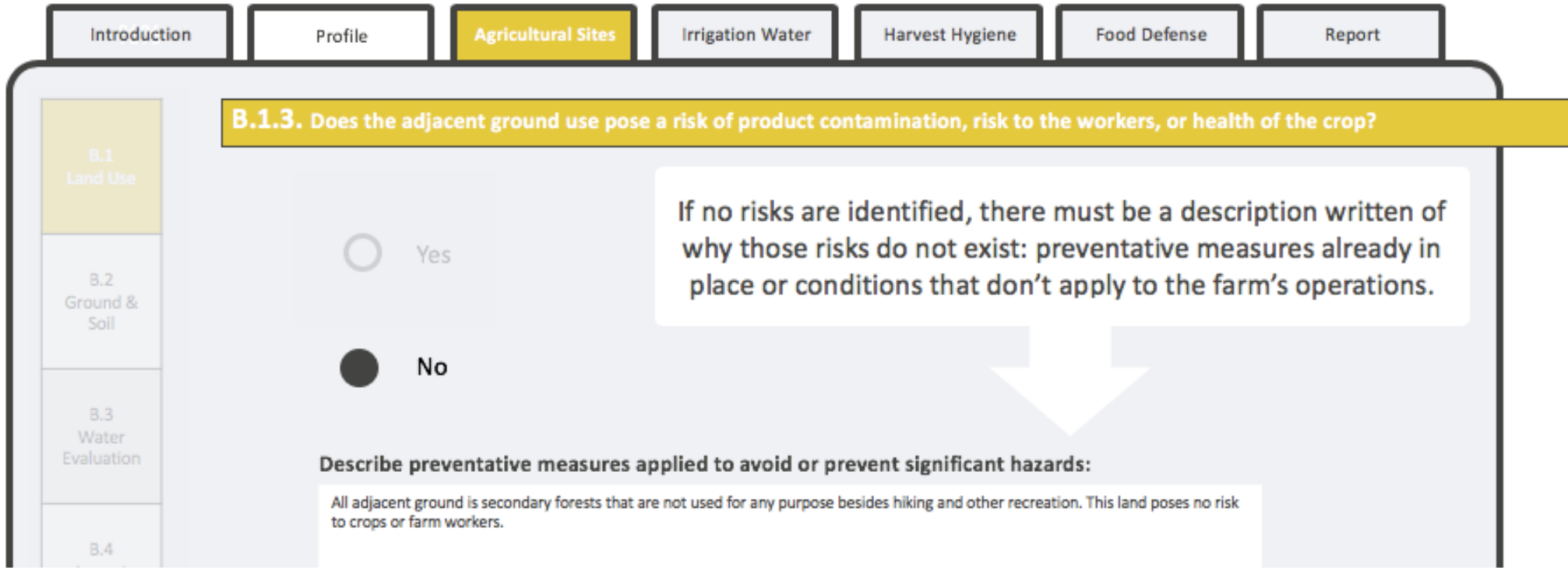
BLANK RISK ASSESSMENT MATRIX

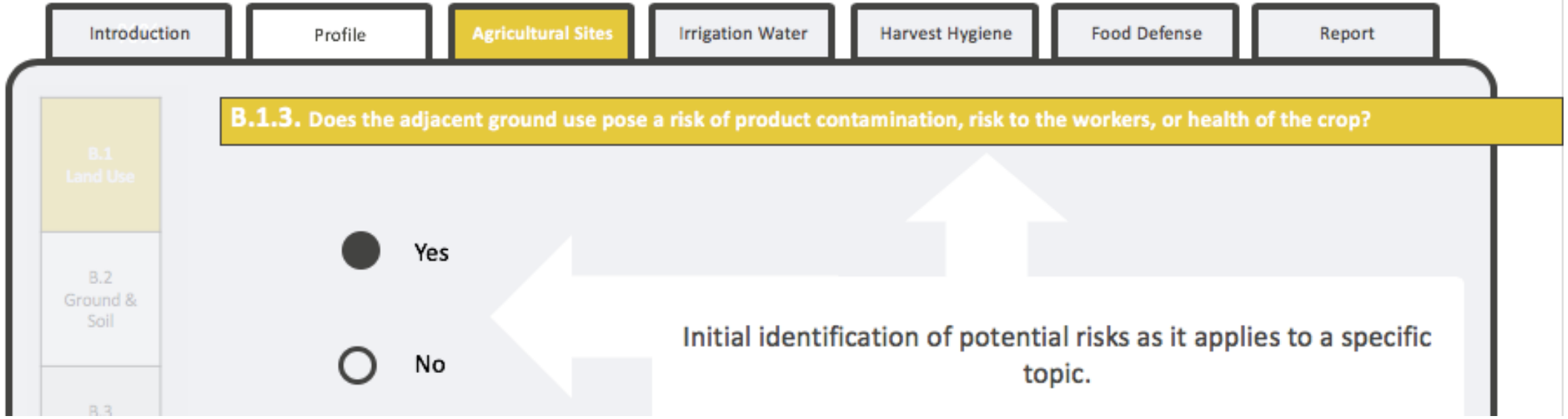
The Final Report is a compilation populated by the user's rankings of the impact and likelihood of risk categories.

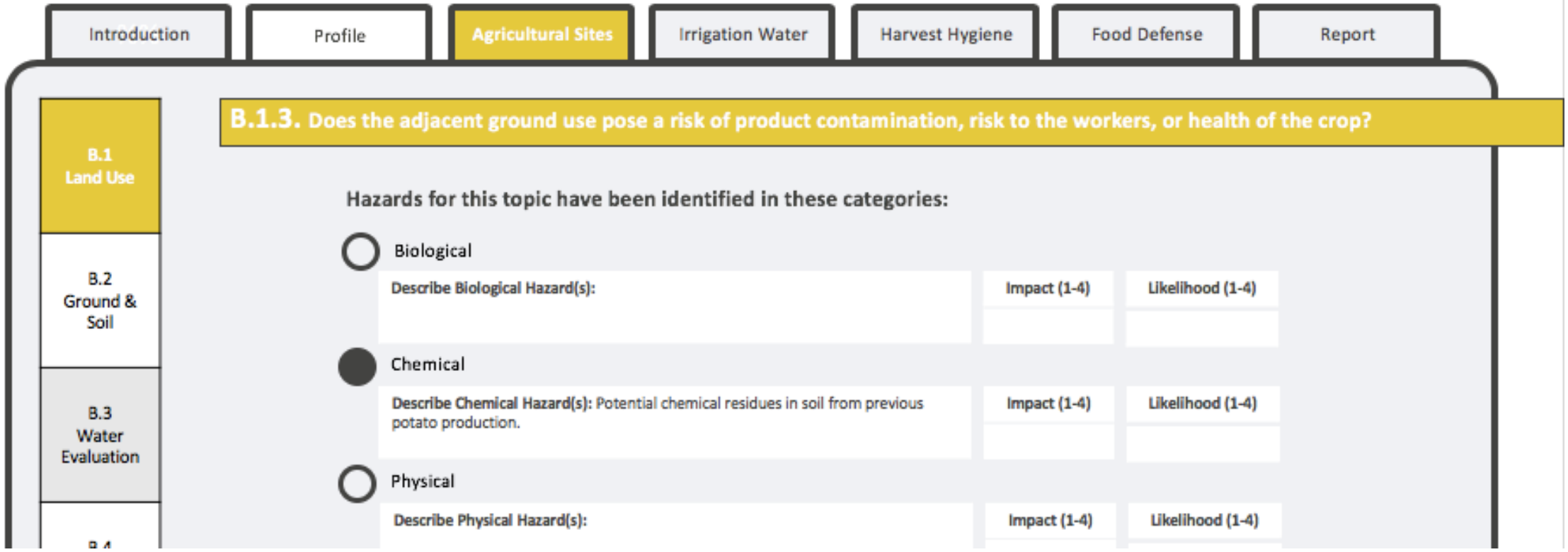


BACK NEXT


Introduction
Profile
Agricultural Sites
Irrigation Water
Harvest Hygiene
Food Defense
Report
B.1 Land Use
B.2 Ground & Soil
B.3
B.1.3. Does the adjacent ground use pose a risk of product contamination, risk to the workers, or health of the crop?
Yes
No
Initial identification of potential risks as it applies to a specific topic.


Introduction
Profile
Agricultural Sites
Irrigation Water
Harvest Hygiene
Food Defense
Report
B.1 Land Use
B.2 Ground & Soil
B.3 Water Evaluation
B.4
B.1.3. Does the adjacent ground use pose a risk of product contamination, risk to the workers, or health of the crop?
Yes
No
If no risks are identified, there must be a description written of why those risks do not exist: preventative measures already in place or conditions that don't apply to the farm's operations.
Describe preventative measures applied to avoid or prevent significant hazards:
All adjacent ground is secondary forests that are not used for any purpose besides hiking and other recreation. This land poses no risk to crops or farm workers.


Introduction
Profile
Agricultural Sites
Irrigation Water
Harvest Hygiene
Food Defense
Report
B.1 Land Use
B.2 Ground & Soil
B.1.3. Does the adjacent ground use pose a risk of product contamination, risk to the workers, or health of the crop?
Yes
No
Initial identification of potential risks as it applies to a specific topic.


Introduction
Profile
Agricultural Sites
Irrigation Water
Harvest Hygiene
Food Defense
Report
B.1 Land Use
B.2 Ground & Soil
B.3 Water Evaluation
B.1.3. Does the adjacent ground use pose a risk of product contamination, risk to the workers, or health of the crop?
Hazards for this topic have been identified in these categories:
Biological
Describe Biological Hazard(s):
Impact (1-4)
Likelihood (1-4)
Chemical
Describe Chemical Hazard(s): Potential chemical residues in soil from previous potato production.
Impact (1-4)
Likelihood (1-4)
Physical
Describe Physical Hazard(s):
Impact (1-4)
Likelihood (1-4)

EXAMPLE REPORT

CODE	IMPACT RATNG	LIKELIHOOD RATING	CATEGORY	ACTION PLAN	RESPONSIBLE PARTY	CHECK DATE
AGRICULTURE USE						
B.1.1	1	1	LOW	All state and local agriculture laws pertaining to agricultural practices are strictly adhered to (chemical application, worker health & safety, etc). GAP implemented and maintained.	Peter Stein	1/1/2019
B.1.2	4	2	MEDIUM	Fumigation of soil prior to planting hops. Numerous soil samples analyzed prior to planting to ensure optimum soil health and readiness for planting.	Elisa Stein	3/1/2019
B.1.3	2	2	LOW	Fumigation of soil prior to planting hops. Numerous soil samples analyzed prior to planting to ensure optimum soil health and readiness for planting.	Max Pint	3/1/2019
B.1.4	5	4	HIGH	Other scary risk found on a farm!	Mary-Ann Tulip	7/1/2018
IRRIGATION WATER						
C.1.1	1	3	LOW	Underground, pressurized irrigation canals have limited exposure to pollution sources like cattle feed lots of known agricultural pollution. Delivery systems are inspected routinely by irrigation districts for any leaks or opportunity for contamination. Water is analyzed for E. coli during the growing season under approved method as per FDA FSMA Produce Safety Rule sec. 112.41-112.50 to determine Water Quality Profile to ensure compliance.	Elisa Stein	11/1/2018
C.1.2	5	3	HIGH	Irrigation canals need to be surveyed for ready access of pollution sources like cattle feed lots, wildlife, debris and trash, or known agricultural pollutions. More frequent testing must be done if these pollution sources are present along the canal system. Water is analyzed for E.coli during the growing season under approved method as per FDA FSMA Produce Safety Rule sec. 112.41-112.50 to determine Water Quality Profile to ensure compliance.	Elisa Stein	11/1/2018
C.1.3	3	2	LOW	Irrigation ponds need to be surveyed for ready access of pollution sources like cattle feed lots, wildlife, debris and trash, or known agricultural pollution. More frequent testing must be done if these pollution sources are present along the pond. Fencing keeps most wildlife and unauthorized people from entering ponds. Mixing and filling stations include chemicals spill kits and chemical storage sheds capable of containing accidently spills. Water is analyzed for E.coli during the growing season under approved method as per FDA FSMA Produce Safety Rule sec. 112.41-112.50 to determine Water Quality Profile to ensure compliance.	Elisa Stein	11/1/2018
HARVEST HYGIENE						
D.1.1	1	5	MEDIUM		Max Pint	7/30/2018

Explore Best Practice Topics

Translate

Videos

Other Educational Resources (Not included in these categories)

There are currently no posts in this category.

Water Testing Module

OVERVIEW

- Irrigation and other on-farm use of water is commonly identified as a point of contamination risk for agricultural products
- Increase in regulations and customer expectations surrounding food safety and irrigation water quality
- Successful efforts convincing FDA to move hops over to the “rarely consumed raw - growers are not yet 100% exempt from ensuring the water used for irrigating (and harvesting) meets FSMA microbial standard limits
- Majority of U.S. hops are grown using drip irrigation methods = limited risk of contamination
- Best practices have been developed to ensure compliance, and customer satisfaction

EXAMPLE

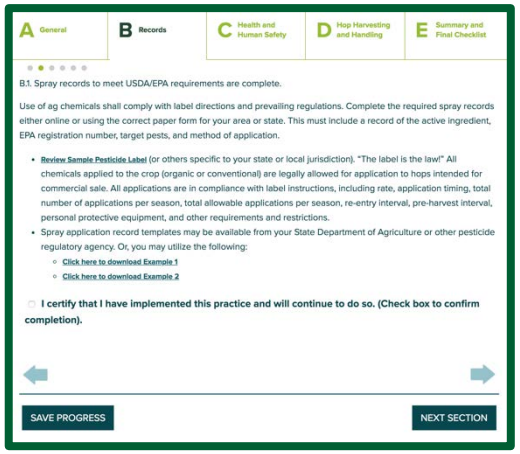
WATER & IRRIGATION

Water is key to the success of any thriving hop farm. New techniques and technology are continuously being introduced to help hop farms become more efficient with their water usage, conserving both natural resources and money.

CASE STUDY

Luptopia Farm Experiments with Pulse Irrigation

EDUCATIONAL RESOURCES



Microbial Irrigation Module

- *FSMA Product Safety Rule – Agriculture Water*
- *WSU Extension Irrigation Seminar*
- *Microbial Testing Tools*
- *Irrigation Weather Apps*

FSMA Produce Safety Rule

The Produce Safety Rule is a document put forth by the FDA to guide growers and regulatory agencies in the implementation of the Food Safety and Modernization Act (FSMA).

This HGA module focuses on the tools, methods and statistical analysis required to compare the microbiological criteria set forth by the Product Safety Rule with individual farm agricultural water results.

The Produce Safety Rule has implemented two microbial criteria for *E. coli*:

- Geometric Mean (GM) of **126** or less CFU generic *E. coli* per 100 mL water
- Statistical Threshold Value (STV) of **410** or less CFU generic *E. coli* per 100 mL water

References
1. "FSMA Final Rule on Produce Safety". https://www.fda.gov/food/guidanceregulation/fsma/ucm334114.htm. 2018
2. "E.coli". Centers for Disease Control and Prevention. https://www.cdc.gov/ecoli/ecoli-prevention.html. 2018

Microbial Testing Tool

For microbial testing of agricultural water for hops, HGA endorses the Microbial Water Quality Profile (MWQP) calculation tool developed by the Western Center for Food Safety at the University of California Davis.

The MWQP tool is based on the accepted U.S. Environmental Protection Agency Method 1603 for testing *E.coli*. Other *E.coli* testing methods are acceptable if they can be proved scientifically valid and equivalent to EPA Method 1603. **See Other Methods**

Growers can access the MWQP excel tool through this link: **LINK**

The following slides discuss the statistical analysis behind the MWQP tool as well as proper sampling techniques.

Microbial Testing Tool : Sampling

TESTING FREQUENCY: The required sample size outlined in FSMA differs between surface water supplies and ground water supplies, given the variable level of contamination risk.

- **Untreated Surface Water:** This water source is considered at a higher risk of contamination and includes any irrigation water from sources such as a river, lake or reservoir[1]. To conduct an initial survey, a farm must collect a minimum of 20 samples, over a period of no less than 2 years and no more than 4 years. Samples should be taken as close to harvest season as possible. After initial sampling, at least 1 new sample annually should be collected to confirm microbial criteria is still met[2].

- **Untreated Ground Water:** This water source is considered at a lower risk for E. coli contamination and includes water stored underground that supplies springs and wells, both the water table and water stored in underground rock crevices and pores of geologic material[1]. To conduct an initial survey, a farm must collect a minimum of 4 samples collected as close to harvest as possible, over a period of 1 year. After initial sampling, at least 1 sample per year is require to confirm microbial criteria is still met[2].

***NOTE:** The MWQP tool's model is built assuming surface water testing for a minimum of 20 samples. For a farm to meet the criteria using only 4 initial samples, all agricultural water used by the farm must come **exclusively** from verified ground water supplies.

BACK

1. "Water Science Glossary". United Sates Geological Survey. 2018
2. "FSMA Final Rule on Produce Safety". https://www.fda.gov/food/guidanceregulation/fsma/ucm334114.htm. 2018

NEXT

Water Testing Module

Determining Your Microbiological Water Quality Profile (MWQP) for Untreated

Ground Water Used in the Production of Fresh Produce

Western Center for Food Safety, Version 5.0, October 02, 2017

http://wcfs.ucdavis.edu/

Table 1. Microbial water quality profile (MWQP) for a single untreated ground water source. CAUTION: Using fewer than 4 samples for GM and STV calculations does not satisfy the requirements of the rule.

A	B	C	D	E	F	G
Survey stage (Initial or Annual)	Sample date	Sample location or ID	Sample number	Generic *E. coli* CFU or MPN/100 ml	Generic *E. coli* log CFU or MPN/100ml	Notes
Annual	5/10/18	WSS01 (RHD23)		246	2.39	First fill of season. No harvestable crop present.
Annual	5/10/18	WSS03 (GHD07)		82	1.91	
Annual	5/10/18	WSS23 Meachum Pond		0.9	-0.05	
Annual	5/10/18	WSS25 Palmer Pond		11	1.04	
Annual	6/4/18	WSS02 (DHD11)		13.5	1.13	
Annual	8/1/18	WSS01 (RHD23)		123.6	2.09	

Determining Your Microbiological Water Quality Profile (MWQP) for Untreated

Ground Water Used in the Production of Fresh Produce

Western Center for Food Safety, Version 5.0, October 02, 2017

http://wcfs.ucdavis.edu/

Table 2. Your MWQP results based on 4 water samples. CAUTION: Using fewer than 4 samples for GM and STV calculations does not satisfy the requirements of the rule.

	GM (Generic *E. coli* CFU or MPN/100 ml)	GM (Generic *E. coli* log CFU or MPN/100 ml)	STV (Generic *E. coli* CFU or MPN/100 ml)	STV (Generic *E. coli* log CFU or MPN/100 ml)
Produce Safety Rule Criteria	126	2.10	410	2.61
Your MWQP Results	11	1.05	148	2.17
Deviation from Criteria	-115	-1.05	-262	-0.44
Does your Water meet PSR criteria?	Yes		Yes	
Are corrective measures necessary?	No		No	
How many days are necessary if using microbial die-off between last irrigation and harvest? Apply the greater number of days based on GM or based on STV.	0		0	

Water Testing Module

Microbial Testing Tool : Log Transformations

E	F
Generic *E . coli* CFU /100 ml	Generic *E . coli* log CFU/100 ml
1	0.00

COLUMN E: Input sample values will be in terms of CFU/100 mL. "CFU" stands for Colony Forming Units, indicating the number of potentially viable *E.coli* cells per 100 mL sample.

Microbial Testing Tool : Geometric Mean

GEOMETRIC MEAN: The first question one might ask is how does the "geometric mean" differ from the "arithmetic mean" (AKA an "average")? Geometric mean is often used for datasets that exhibit exponential growth. This calculation is commonly used in financial analysis as well as microbiology.

Microbial Testing Tool : Statistical Threshold Value

STANDARD THRESHOLD VALUE: The second criteria is the Standard Threshold Value (STV), which is a calculation to find what is essentially the 90th percentile of the dataset.

Fertility Module

- Under development
- Launch Spring 2019
- More focused on education

- Training tool for farming operations
- Certificate of Completion issued

Best Practices Directory

- Public facing
- Growers decide whether to list their farm
- Self-certify the programs they have implemented

- Funded with a grant from the Brewers Association

USA HOPS
HOP GROWERS OF AMERICA

HOP ENTHUSIAST

HOP FINDER

NEWS & MEDIA

GROWER TOOLS

RESEARCH & TECHNICAL

Best Practices Directory Listing

Search...

To add your directory listing to our website, select at least 1 category and check the box indicating you will keep your listing updated. If you would like your contact information to appear differently than your primary account profile, please use the fields below to update your listing.

**Indicates a required field*

Manage Directory

Company Name:

First Name:

Last Name:

Email Address (visible in directory):

Phone Number:

Alternate Phone:

Address:

Address 2:

City:

* I certify that I have filled this out accurately. I'm representing my company honestly, and I will keep my listing up to date.: ☑

Directory Categories*

Good Bines

- ☐ Food Safety Level I
- ☐ Risk Assessment

3rd Party

- ☐ USDA Organic
- ☐ GLOBALG.A.P.
- ☐ Salmon Safe

UPDATE ENTRY

Translate

Videos

Liberty Building, 32 N 3rd St - Suite 408 \ Yakima, WA 98901 Mail to: P.O. Box 2885 \ Yakima, WA 98907 **1.509.453.4749**

USA HOPS
HOP GROWERS OF AMERICA

ctory

actices Directory, growers can easily share their on-farm improvement efforts with customers and other
he Directory includes third-party certifications and self-assessment education modules with a focus on
safety and quality, aquatic biodiversity, and environmental conservation.

ations: Official certifications achieved through an auditing system conducted by third-party
rectly affiliated with or influenced by HGA.

Participation in voluntary education modules provided through the HGA Good Bines Program. The listed
s are self-assessments and require no formal verification or auditing process.

vided purely as a service to our members and is of a commercial and marketing nature. The
the directory have not been vetted by Hop Growers of America and Hop Growers of America does not
ents of the companies or representations as to their qualifications. Hop Growers of America strongly
ers conduct their own independent research of the companies listed.

ices Directory

ty:

SALMON SAFE

USDA ORGANIC

org/hop-finder/best-practices/

Best Practices Directory

Filter by 3rd Party:

GLOBALG.A.P. SALMON SAFE USDA ORGANIC

Filter by Good Bines:

GOOD BINES Food Safety GOOD BINES Risk Assessment

Select a State

HOPSTER HOPS FARM

Greg Hopper
9500 CR 74-82
Peyton, CO 80831
Phone: 3038805570
Email: greg@hopsterhops.com

ROY FARMS, INC.

Carman McKinney
401 Walters Road
Moxee, WA 98936
Phone: 509-452-3494
Email: carman@royfarms.com
Website: www.royfarms.com

HOPSTER HOPS FARM

Greg Hopper
9500 CR 74-82
Peyton, CO 80831
Phone: 3038805570
Email: greg@hopsterhops.com

MICHIGAN HOP ALLIANCE

Brian Tennis
11985 E Camp Haven
Northport, MI 49670
Phone: 6164036880
Email: Brian@michiganhopalliance.com
Website: https://www.michiganhopalliance.com/

ROY FARMS, INC.

Carman McKinney
401 Walters Road
Moxee, WA 98936
Phone: 509-452-3494
Email: carman@royfarms.com
Website: www.royfarms.com

SPRINGHILL HOPS FARM

Greg Tressler
5862 North County Road 400 East
greensburg, IN 47240
Phone: 8125607406
Email: springhillhops@outlook.com
Website: springhillhops.com

Translate

Videos

Future Focus

- Modules
- Webinars
- Field Days and other outreach mechanisms

- Topics evaluated and prioritized by Best Practices Committee

Questions?

- Visit www.usahops.org

- For temporary member password to set up account, email invoices@wahops.org