Food Safety Modernization Act
Water Quality Scenario

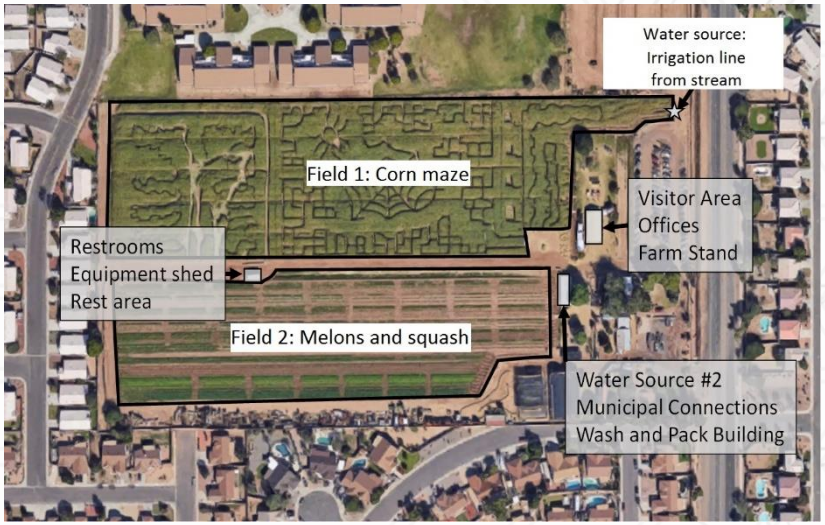
Agriculture and Environmental Law Conference / November 18, 2016

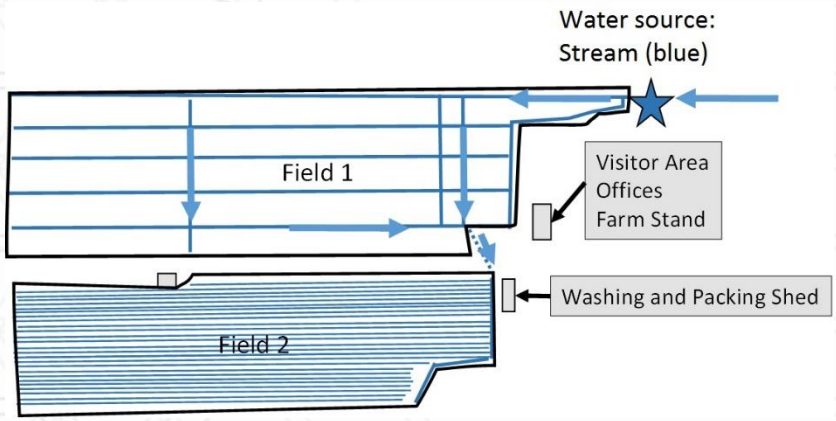
UNIVERSITY OF
MARYLAND

FSMA Water Activity Outline:

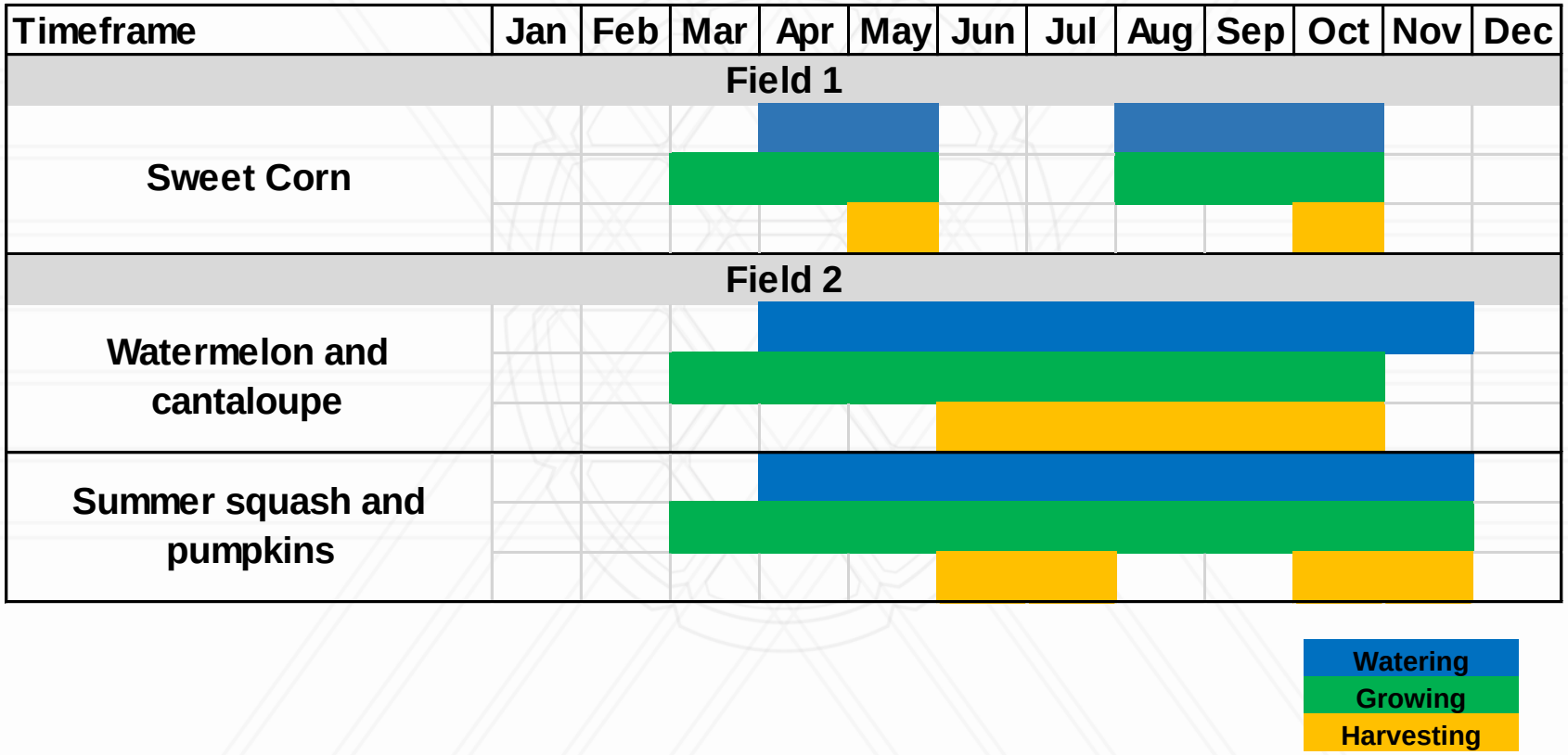
1. Farm layout description
2. Farm operation timeline
3. Does the water meet the FSMA definition of “agricultural water”?
4. Going over the Microbial Water Quality Profile (MWQP)
5. Comparing the geometric mean and statistical threshold value against numerical criteria
6. Strategizing

1. Farm Description





2. Farm Operation Timeline



3. Does the water meet the FSMA definition of “agricultural water”?

Product	Yes/No?	Explanation
Sweet Corn		
Watermelon		
Cantaloupe		
Pumpkins		
Summer Squash		

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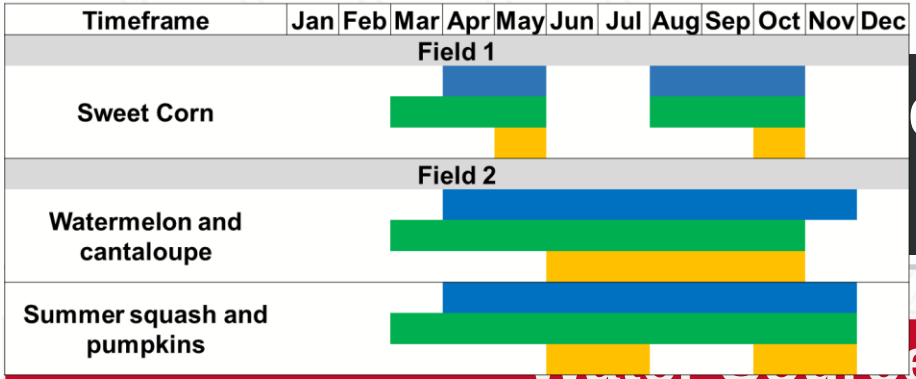
What if, instead of drip irrigation, we were using overhead irrigation?
How would this scenario change?



ential issues with sampled?

VQP)

Water Source: Stream

Sample Timeframe	Sample Location	Year of Sampling *Water test results in CFU/100 mL E. coli*			
		Year 1	Year 2	Year 3	Year 4
Week 1 October	Canal, near access	30	40	140	63
Week 1 October	Canal, near access	27	45	66	38
Week 2 October	Canal, near access	57	93	27	74
Week 2 October	Canal, near access	260	7400	93	170
Week 3 October	Canal, near access	33	190	59	35

5. Calculation of GM and STV

For the surface water data set, a calculator can be used to easily generate the GM and STV

Western Center for Food Safety
Version 4.0, June 10, 2016 http://wcfs.ucdavis.edu/

Survey stage (Initial or Annual)	Sample date	Sample location or ID	Sample number	Generic *E. coli* CFU /100 ml	Generic *E. coli* log CFU/100 ml
Initial	Week 1 Oct 2013	Stream, near access	1	30	1.48
Initial	Week 1 Oct 2013	Stream, near access	2	27	1.43
Initial	Week 2 Oct 2013	Stream, near access	3	57	1.76
Initial	Week 2 Oct 2013	Stream, near access	4	260	2.41
Initial	Week 3 Oct 2013	Stream, near access	5	33	1.52
Initial	Week 1 Oct 2014	Stream, near access	6	40	1.60
Initial	Week 1 Oct 2014	Stream, near access	7	45	1.65
Initial	Week 2 Oct 2014	Stream, near access	8	93	1.97
Initial	Week 2 Oct 2014	Stream, near access	9	7400	3.87
Initial	Week 3 Oct 2014	Stream, near access	10	190	2.28
Initial	Week 1 Oct 2015	Stream, near access	11	140	2.15
Initial	Week 1 Oct 2015	Stream, near access	12	66	1.82
Initial	Week 2 Oct 2015	Stream, near access	13	27	1.43
Initial	Week 2 Oct 2015	Stream, near access	14	93	1.97
Initial	Week 3 Oct 2015	Stream, near access	15	59	1.77
Initial	Week 1 Oct 2016	Stream, near access	16	63	1.80
Initial	Week 1 Oct 2016	Stream, near access	17	38	1.58
Initial	Week 2 Oct 2016	Stream, near access	18	74	1.87
Initial	Week 2 Oct 2016	Stream, near access	19	170	2.23
Initial	Week 3 Oct 2016	Stream, near access	20	35	1.54

	GM (Generic *E. coli* CFU/100 ml)	GM (Generic *E. coli* log CFU/100 ml)	STV (Generic E. coli CFU/100 ml)	STV (Generic *E. coli* log CFU/100 ml)
Produce Safety Rule Criteria	126	2.10	410	2.61
Your MWQP results	81	1.91	404	2.61
Deviation from criteria		-0.19		0.00
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

Don’t forget the qualitative criteria that water should be “*safe and of adequate sanitary quality for its intended use*”

Upon seeing the high result in Year 2, it would be smart to find out if there was a cause of the high result that would make the water not “*safe and of adequate sanitary quality for its intended use*”

What are some examples of things that might’ve caused a high result?

(Initial and/or Update samples)

Sample	Year 1	Year 2	Year 3	Year 4
1	30	40	140	63
2	27	45	66	38
3	57	93	27	74
4	260	7400	93	170
5	33	190	59	35

6. Strategizing

What if your GM and STV *had* been too high?

Switch your source

Take advantage of the die-off rate

Treat your water

Microbial die-off rate?

	GM (Generic *E. coli* CFU/100 ml)	GM (Generic *E. coli* log CFU/100 ml)	STV (Generic E. coli CFU/100 ml)	STV (Generic *E. coli* log CFU/100 ml)
Produce Safety Rule Criteria	**126**	**2.10**	**410**	**2.61**
Your MWQP results	**81**	**1.91**	**404**	**2.61**
Deviation from criteria		**-0.19**		**0.00**
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**

Subpart E Agricultural Water

§ 112.41 What requirements apply to the quality of agricultural water?

All agricultural water must be safe and of adequate sanitary quality for its intended use.

Really, it's about safety.

Questions?

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