

# STEC: It's here, we found it, now what do we do?

An industry perspective:  
STEC CAP Governor's Conference  
Lincoln, Nebraska  
May 29, 2014



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The WhiteWave Foods Company



# Earthbound Farm Testing Programs

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- Input testing in the field
  - O157:H7, EHEC, Salmonella
  - Water, fertilizer, transplants, seed?
- Environmental testing in our facility
  - Listeria, Air, Water
- Field tissue testing
  - O157:H7, EHEC, Salmonella
  - Mostly for fields with dual purpose
- Raw and Finished Goods Tissue Testing
  - O157:H7, EHEC, Salmonella, Shigella
  - All pallets, all lines, all day, every day



## Development of the Tissue Testing

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- Looked outside of produce
  - Beef industry trim sample program
  - ICMSF case 15
- Designed to catch a gross contamination event.
  - Only 500 pounds used from the contaminated ranch that processed 200,000 pounds in a production day
  - We challenged our scientists to devise a plan that would catch this level of contamination and let us remove it from the stream of commerce.
- This sampling plan was developed with a confidence interval of 99.9% assuming uniform contamination.
  - Over time we have learned this is usually not the case



# The Field Sampling Plan

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- Field is broken down into 1 acre sample lots in fields used for commodity field pack and processing
- 60 grabs are taken from each acre, for a total sample of 150 grams. Grabs taken in z pattern.
- Other methods tried with no apparent improvement in detection
- Head lettuce vs baby greens
- Sampling has changed on head lettuce with greater efficacy
- PCR analysis: O157:H7, EHEC, Salmonella



# The Raw Product Sampling Plan

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- 1 truckload = approx 24 pallets of greens, all harvested from the same part of the same field
- Truckload segregated into 6 production units, comprising 4 pallets each (approx 1500 pounds)
- 60 grabs are taken from each 4-pallet production unit, for a total sample of 150 grams. Grabs taken from all over.
- Will move to n=300 when in high risk situation
- PCR: O157:H7, EHEC, Salmonella, Shigella



# The Finished Goods Sampling Plan

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- Production day broken down into 2 hour manufacturing units
  - Each pack line is sampled from (15 lines)
  - 60 grabs, 150 g sample
  - Auto-sampling
  - PCR, O157:H7, EHEC, Salmonella, Shigella
- In the event of a positive:
  - Librared water samples tested
  - Matrix developed
    - Like materials, test history
    - Like wash lines
    - Other testing results during day
- Flanking units remain on hold

# Beyond Leafy Greens: Other Items in Test & Hold





Food to live by.

# Test and Hold Data

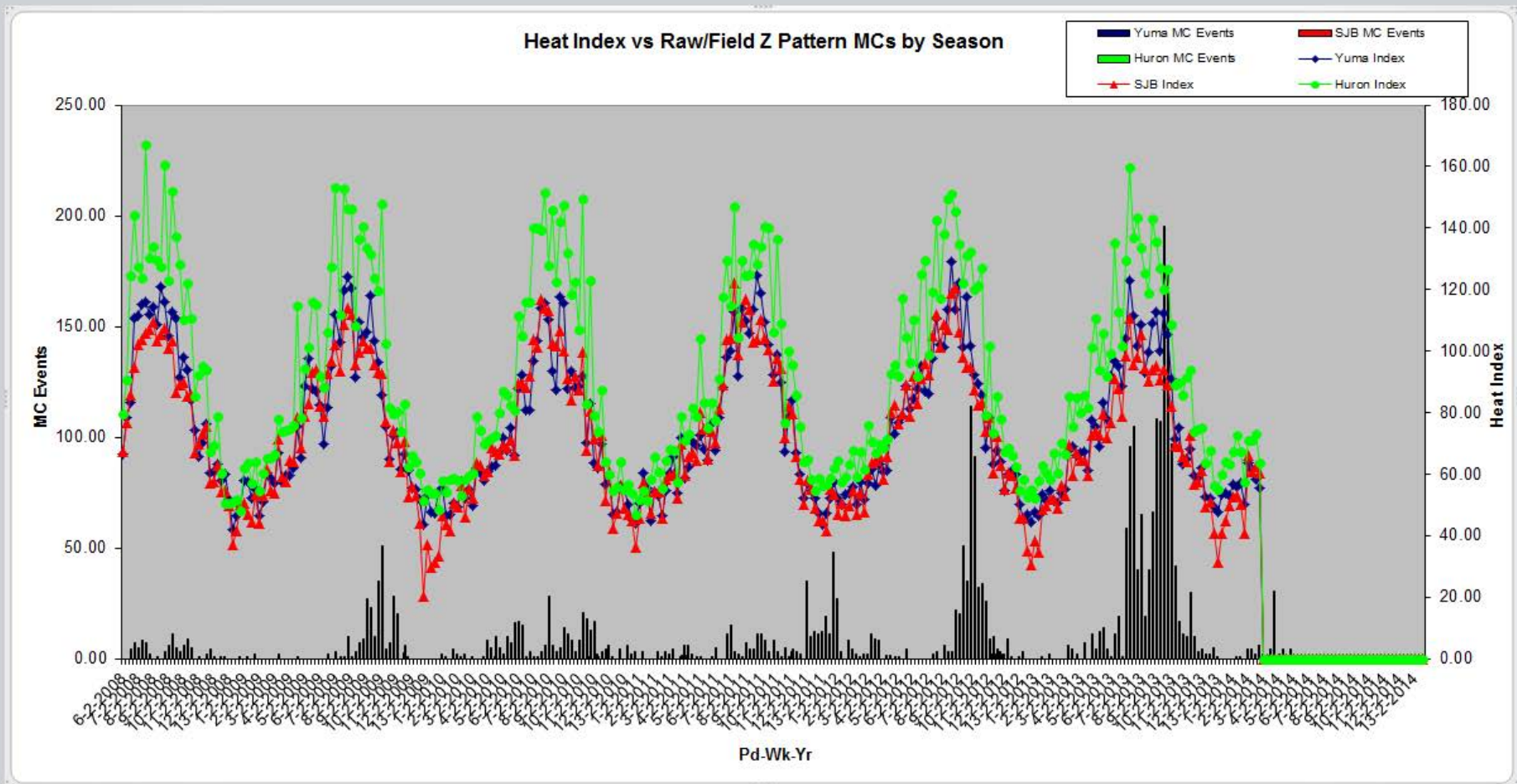
Field MC	SJB 07	Yuma 07/08	SJB 08	Yuma 08/09	SJB 09	Yuma 09/10	SJB 10	Yuma 10/11	SJB 11	Total
# of MC's	1	0	8	0	11	2	5	8	2	37
Samples	1473	500	2458	1074	2017	904	2351	2191	n/a	12968
% Fld MC's	0.07%	0.00%	0.33%	0.00%	0.55%	0.22%	0.21%	0.36%		~
Raw MC	SJB 07	Yuma 07/08	SJB 08	Yuma 08/09	SJB 09	Yuma 09/10	SJB 10	Yuma 10/11	SJB 11	Total
# of MC's	32	13	86	8	242	12	280	56	94	597
Samples	41325	29148	48297	26684	49862	29337	42050	31104	31190	328997
% Raw MC's	0.08%	0.04%	0.18%	0.03%	0.48%	0.04%	0.66%	0.18%	0.30%	~
FGS MC	SJB 07	Yuma 07/08	SJB 08	Yuma 08/09	SJB 09	Yuma 09/10	SJB 10	Yuma 10/11	SJB 11	Total
# of MC's	1	2	7	0	10	2	9	1	7	39
Samples	22549	14232	24408	10951	23204	14480	38934	22868	36223	207849
% FG MC's	0.004%	0.014%	0.029%	0.00%	0.043%	0.014%	0.023%	0.004%	0.019%	~





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# Positives vs Heat Index





# The Nature of Contamination Events

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- Likely to be sporadic and localized, not widespread in a particular field
- Anything likely to cause widespread contamination would likely be identified and cause to disc an entire block – such as a flood
- Since it's mostly sporadic and localized, we must have a rigorous program to detect and eliminate the contamination



## So now what? What can we do about it?

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- Why are EHEC/STEC the predominant pathogen in our leafy green production system?
- Is there a good correlation between heat index and proliferation?
- What is the most likely vector for EHEC contamination in leafy green produce?
  - Water, compost, rodents, air, insect, birds, deer, pigs, wildlife, cattle?
- If we control the primary vector, will we make an impact?
- Can we improve speed, accuracy or cost of testing?
- Are there interventions that we have not thought of?

# Thank you!

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