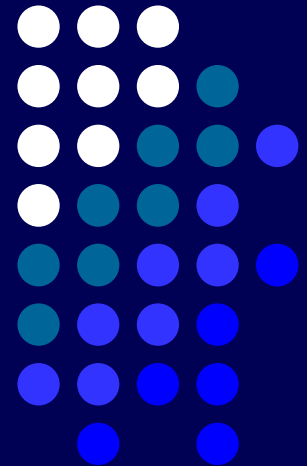
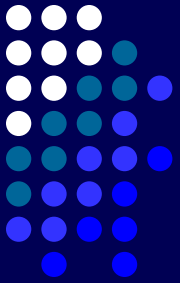


PRODUCE FOOD SAFETY: A GROWERS PERSPECTIVE

WILLETTE M. CRAWFORD, Ph.D., MPH
Growers Express LLC
Salinas, CA
March 18, 2008



Who We Are...



Group of 2nd & 3rd
generation farmers

Vertically integrated grower,
packer, & shipper

One of the largest suppliers
of fresh produce

Backbone of Green Giant
Fresh Brand



Who We Are...

Headquartered in Salinas Valley

Yuma, Huron, Santa Maria,
Oxnard, & Mexico

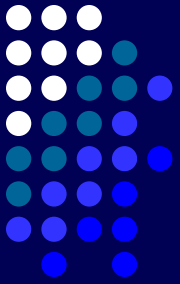
Ground base exceeds 40,000
acres

Offer over 40 items year round

Iceberg lettuce, broccoli,
cauliflower, green onions, celery,
& leaf lettuce



The Wake-Up Call



September 2006

>200 illnesses from CA spinach

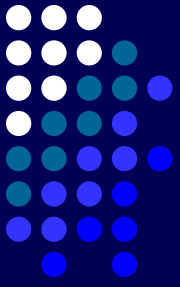
3 deaths from *E. coli* O157:H7

FDA advises consumers not to eat spinach

\$350 million in losses

Prompted industry re-evaluation





Food Safety at the Forefront

Heightened awareness
of consumers & media

Media Frenzy

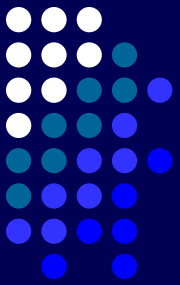
Criticism of government
agencies

Criticism of growers &
processors

Loss of consumer
confidence



The Mounting Public Health Issue



Produce associated outbreaks more than tripled since 1973

Increase in magnitude and frequency

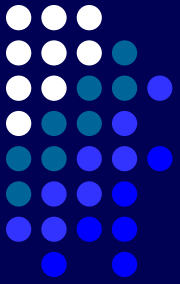
Between 1990 – 2005:

713 outbreaks and 34,049 individual cases linked to produce

Average of 48 illnesses per outbreak

Sources: CSPI Presentation July 2007

Produce Outbreaks



Pathogens responsible:

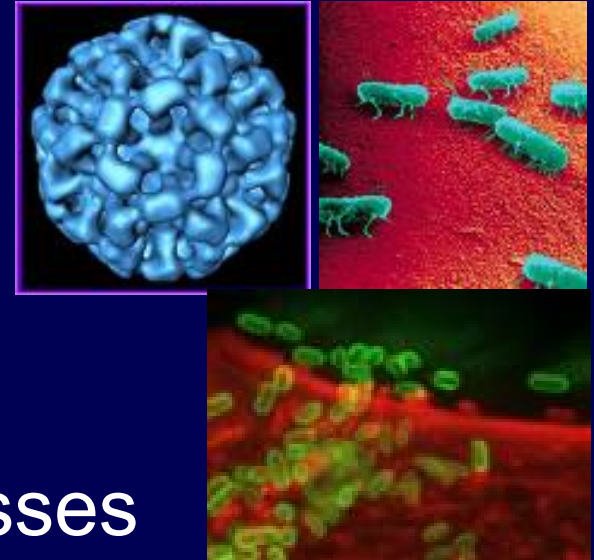
Norovirus -40% of outbreaks

Salmonella- 18% of outbreaks

E. coli- 8% of outbreaks

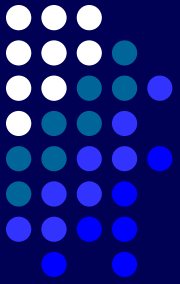
Most produce associated illnesses
due to:

Greens-based salads, berries,
tomatoes, lettuce



Source: CSPI presentation July 2007

Foodborne Pathogen Transmission



People – 70 % outbreaks attributed to foodservice workers

25-30% people are Staph carriers

40% outbreaks from poor handwashing and cross-contamination

Fecal-oral route:

95-96% U.S. population claims to wash hands after using the bathroom

Only 75% men & 90% women actually wash their hands

Animals – 20 %

Manure

Direct animal contact

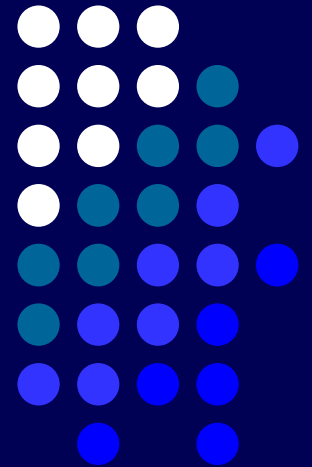
Water – 10 %

Non-potable (manure/waste)

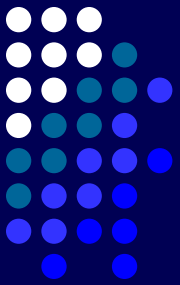
Improper water treatment



Why the increase?



Contributing Factors- Consumer Behavior & Health



Increased per capita consumption

Up 23% from 1970 to 1996

Changes in consumption patterns

Dining out

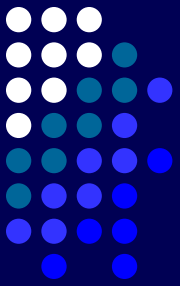
Convenience foods

Increase in susceptible populations

~25% U.S. population

Sources: USDA/ERS October 1999
Smith, 1997

Contributing Factors- Public Health System



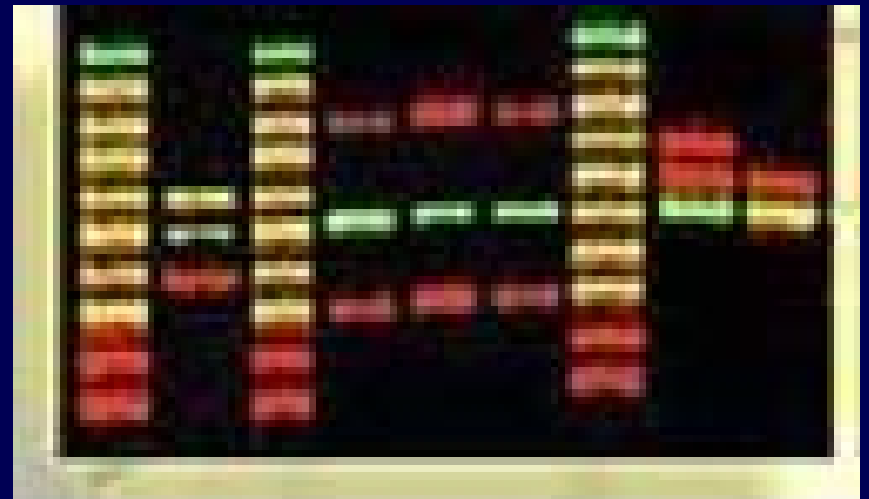
Better detection &
diagnostic methods

Rapid

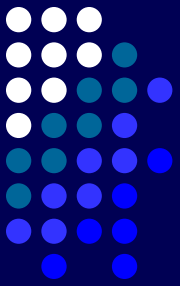
Sophisticated

Recognition of more
pathogens

Increased public health
surveillance



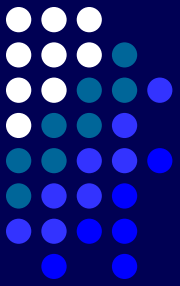
Contributing Factors- Changes in Production



Large scale production
Change in distribution -
Increased global
sourcing
Longer post-harvest
storage & shipment
times



State of the Industry- Retail Demands



Improved FS practices

GAPs & HACCP

Testing programs

Pathogens & pesticides

3rd party audits &
certifications

Adoption of global
standards

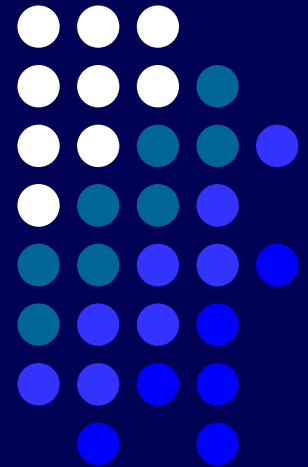
SQF, GlobalGAP

Indemnification from liability

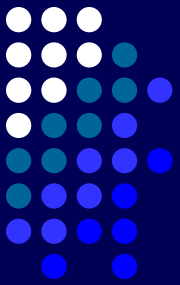


Industry's Response

California's Approach



Leafy Green Marketing Agreement



Commitment to FS

Enforces mandatory FS standards (“Metrics”)

Audited for compliance by government inspectors

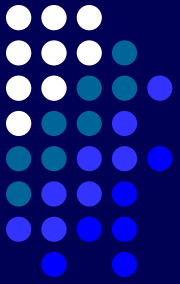
California Dept. of Food & Agriculture

Audits conducted quarterly

Managed by Industry Advisory Board



CA LGMA GAPs (Metrics)



3 main categories:

Water & inputs

Wildlife

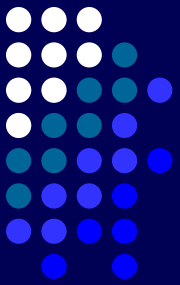
Worker hygiene

Written compliance plan

Pre-planting and pre-harvest assessments



LGMA Status Report for 2007



Before Sep 2006:

One dedicated staff member

Total average food safety investment of \$210,000

Conducted approximately 10 water tests per month

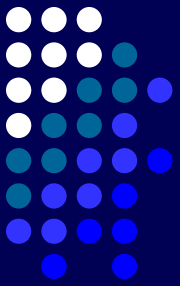
After September 2006:

More than doubled the number of dedicated food safety staff members

Over \$604,000 invested towards food safety

Water tests increased five-fold to 52.23 times per month

Third Party Audits & Certifications



Consist of:

Tour of sites (e.g., ranch, farm, vineyard)

Traceability

Historical & adjacent land use

Soil amendments

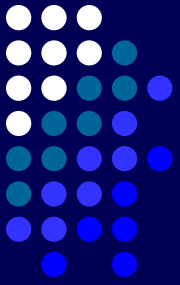
Irrigation water

Worker hygiene & sanitation

Review FS documentation

Food Security/Defense Observations

Microbiological Testing Programs



Water testing

Generic *E. coli* vs. Pathogens

Product testing

Pre-harvest

Post harvest

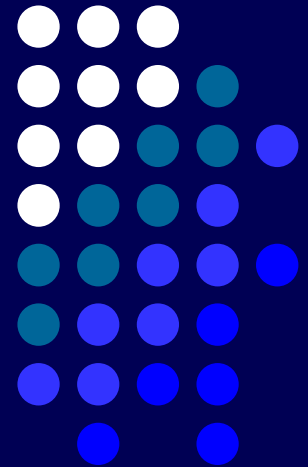
Finished product

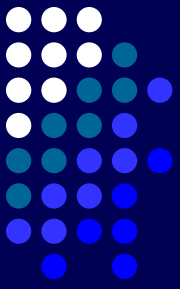
Equipment, environmental
monitoring

Surveillance, verification, or safety
assurance?



Industry Challenges





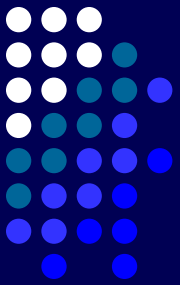
Gaps in Current Knowledge

Existing data not actionable

Difficult to make inferences

Apprehension to participate in research





Limitations of Testing

Not a substitute for a sound process

Negative results \neq safe product

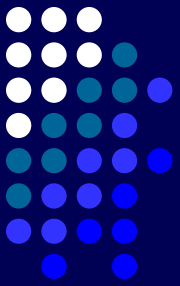
No standards or guidance

- Test method

- Which microorganisms to test for

- Number of samples

- Sample size



Current Industry Efforts

Traceability Initiatives

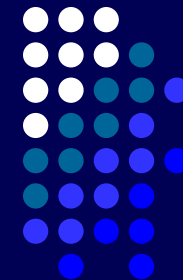
Development of new technologies


New applications for existing technologies

Research Collaboration



Reaching the Consumer....






Food Data Report

TrueTrac ID: 717712 100431 [\(View Report\)](#)

Product grown by: 

[TrueTrac Learning Center](#)
[How We Grow](#)
[About our Crops](#)
[Meet Your Growers](#)
[Food Safety Facts](#)

Product Overview

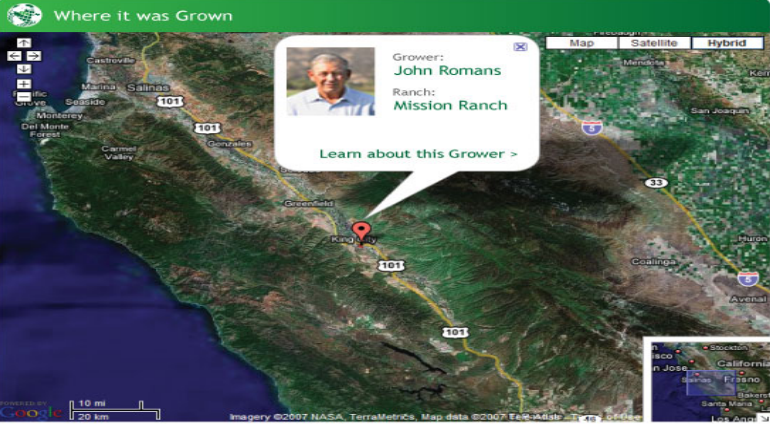


Brand: Green Giant Fresh
Product: Hearts of Romaine
Package: 1lb. 3-pack

Ingredients: (click to view details for each)
Romaine Lettuce

[Learn More About this Product >](#)

Where it was Grown



Quality Scorecard

Your food was tested for Quality prior to final shipping to the store. We test several criteria to ensure that we ship only the best.

[Learn about our Growing Process >](#)

| | |
|------------------|----|
| Color/Tone: | A |
| Appearance: | A |
| Texture: | A- |
| Packing Quality: | A- |

[What do these mean?](#)

Food Safety Facts [View details](#)

Your food has undergone numerous steps during growing, harvesting and packaging to make it as safe as possible.

[Learn about Food Safety >](#)

Lot Testing

Worker Hygiene

Water & Inputs

Wildlife & Environment

Nutrition Facts [View details](#)

These are the nutritional highlights for this product. Click below for more details including preparation and safe handling tips.

[More Nutrition and Preparation Tips >](#)

Nutrition Facts

| | |
|------------------------------|---------------------|
| Serving Size 6 g | |
| Amount Per Serving | |
| Calories 1 | Calories from Fat 0 |
| % Daily Value* | |
| Total Fat 0g | 0% |
| Saturated Fat 0g | 0% |
| Trans Fat | |
| Cholesterol 0mg | 0% |
| Sodium 0mg | 0% |
| Total Carbohydrate 0g | 0% |
| Dietary Fiber 0g | 1% |
| Sugars 0g | |
| Protein 0g | |
| Vitamin A | 7% |
| Vitamin C | 2% |
| Calcium | 0% |
| Iron | 0% |

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

NutritionData.com

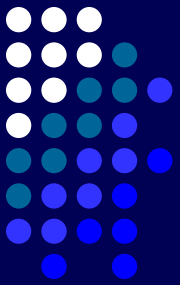
Grower Notes

Communication graphic

Notes:
Quality harvest, none to report.

[We Care! Send Us Your Comments >](#)

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For More Information

Growers Express LLC

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wcrawford@thegiant.com

<http://www.thegiant.com>

CA Leafy Green Marketing Agreement

<http://www.caleafygreens.ca.gov/>

Thank you for your time and attention!

Any questions?

