Impact of U.S. Good Agricultural Practices on the Mexican Fruit and Vegetable Industry

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Presentation at "New Food Safety Incentives and Regulatory, Technological, and Organizational Innovations"
AAEA Pre-conference Workshop
Long Beach, California, July 22, 2006

Microbial Contamination and Good Agricultural Practices (GAPs)

- 1998

  The U.S. Food and Drug Administration (FDA) published its GAPs —guidelines to help farmers minimize microbial risk for fresh fruit and vegetables at the farm level-

- Prevention

  It is difficult to test for microbial contamination so FDA relies on the prevention principle

- "GAPs are voluntary"

Use of Good Agricultural Practices

Growers evaluate costs and benefits

Costs

- Can be large and immediate. There is no compensating increase in price for products with GAPs

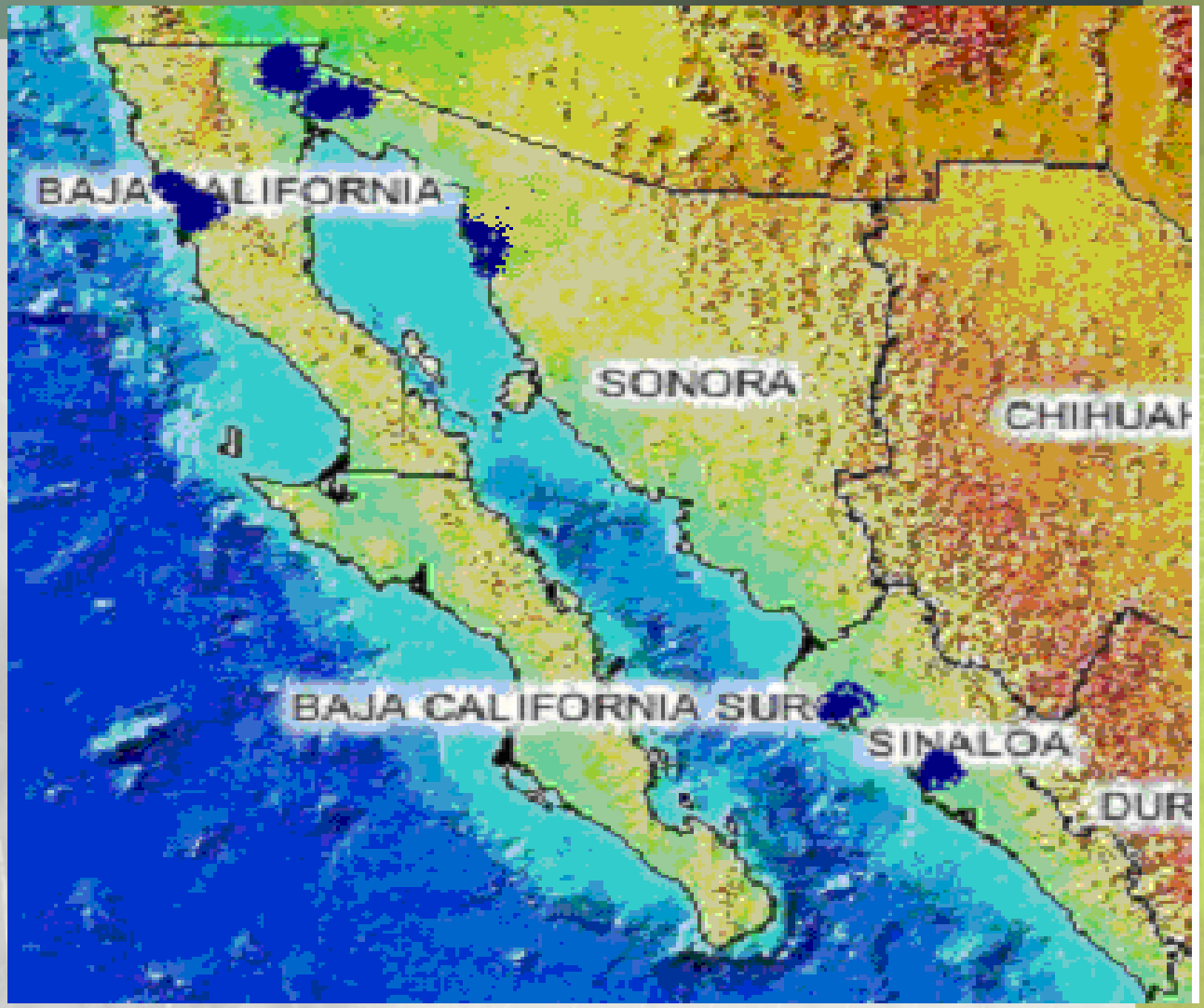
Benefits

- Reduce losses in the case of an outbreak
- Many buyers require GAPs

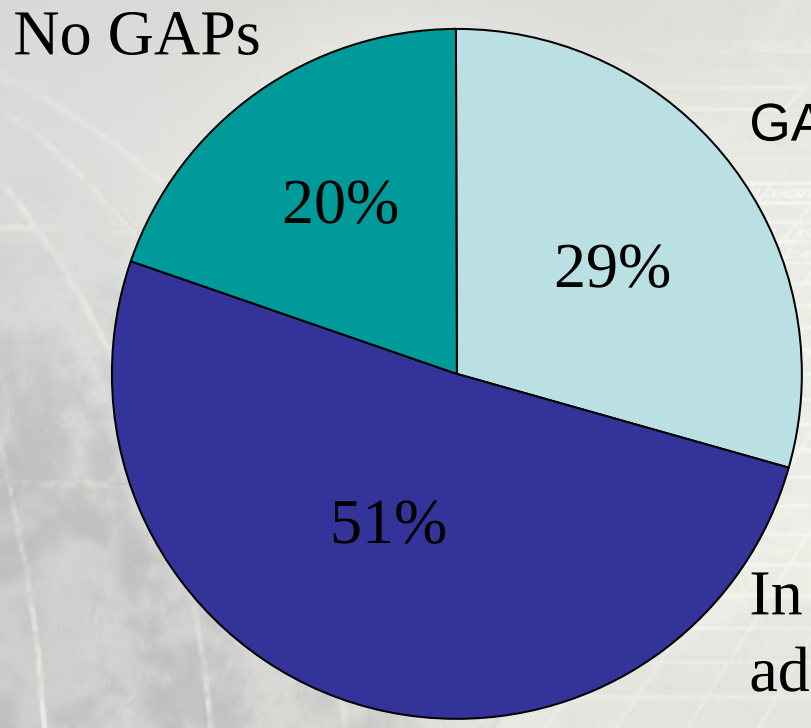
2002 Survey of Mexican Growers

- Exporters
- Variety of fresh fruit and vegetable products
- Three northwest Mexican states

Northwest of Mexico

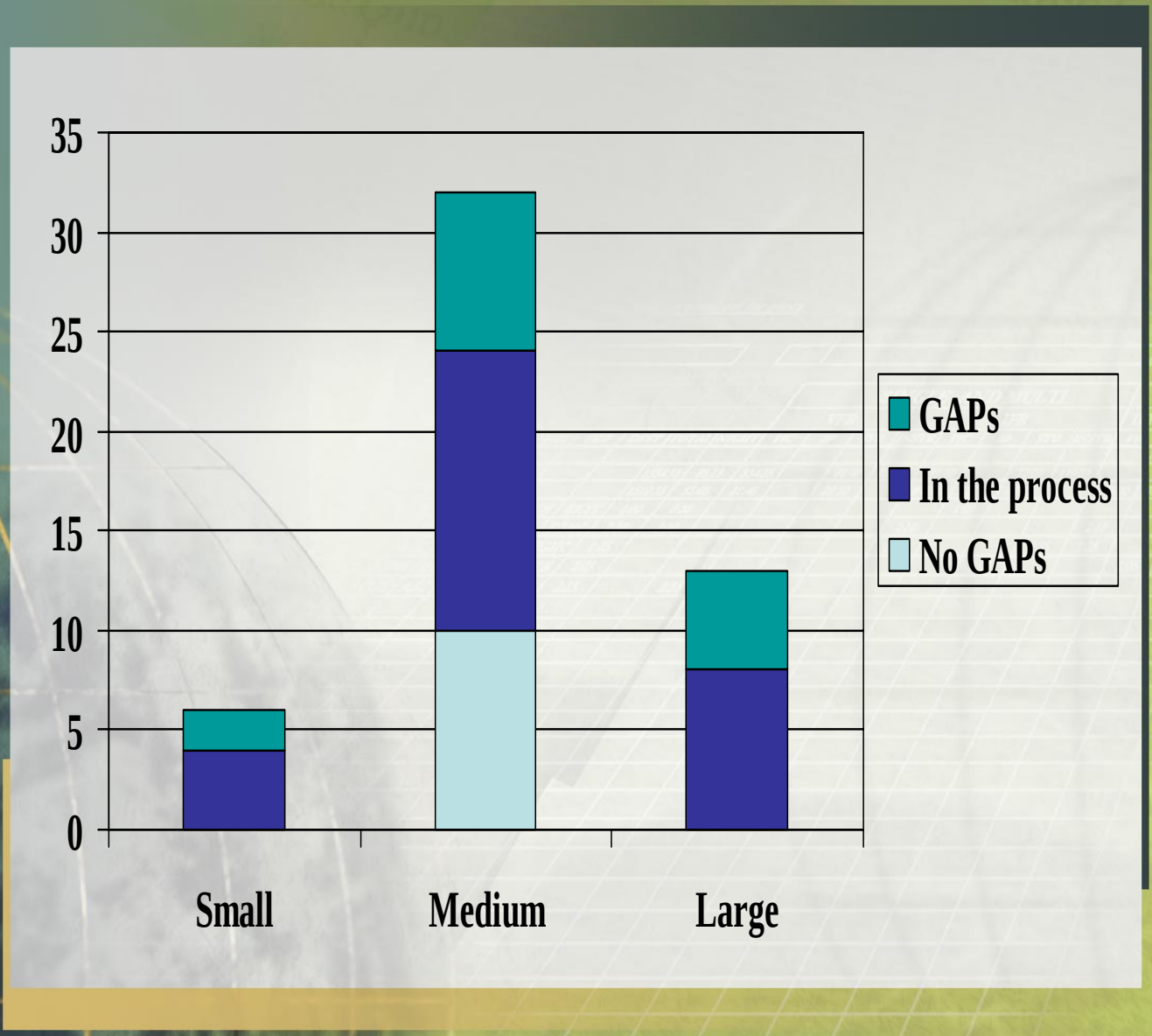


GAP Status in 2002 of Surveyed Farmers



Source: Avendaño

Adoption of GAPs by Farm Size



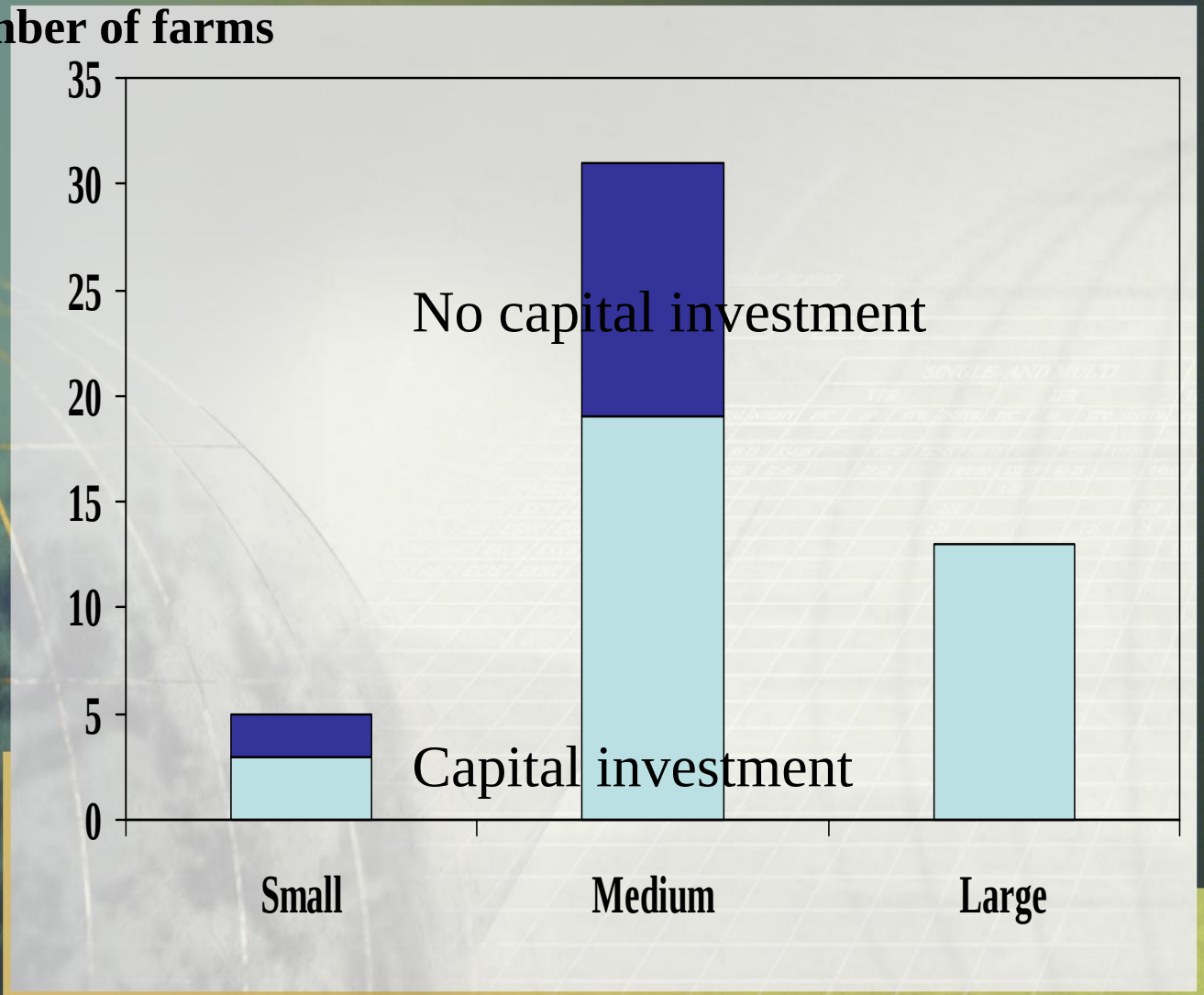
Source: Avendaño

Capital Improvements for Food Safety

Type	%	Cost (U.S. $)
Sewage/water	73	15,000-30,000
Process installations	58	150,000
Storage for chemicals	51	5,000
Water treatment plant	42	45,000-50,000
Break areas for workers	36	22,000
Ice plant	13	400,000-800,000

Source: Avendaño

Capital Investment by Size



Source: Avendaño

Increase in production costs

Region	Increase in cost per box (U.S. $)
Mexicali Valley and San Luis Rio Colorado	0.15-0.20
Coastal Zone, Baja California	0.03-0.04
Culiacan	0.09
Los Mochis	0.07

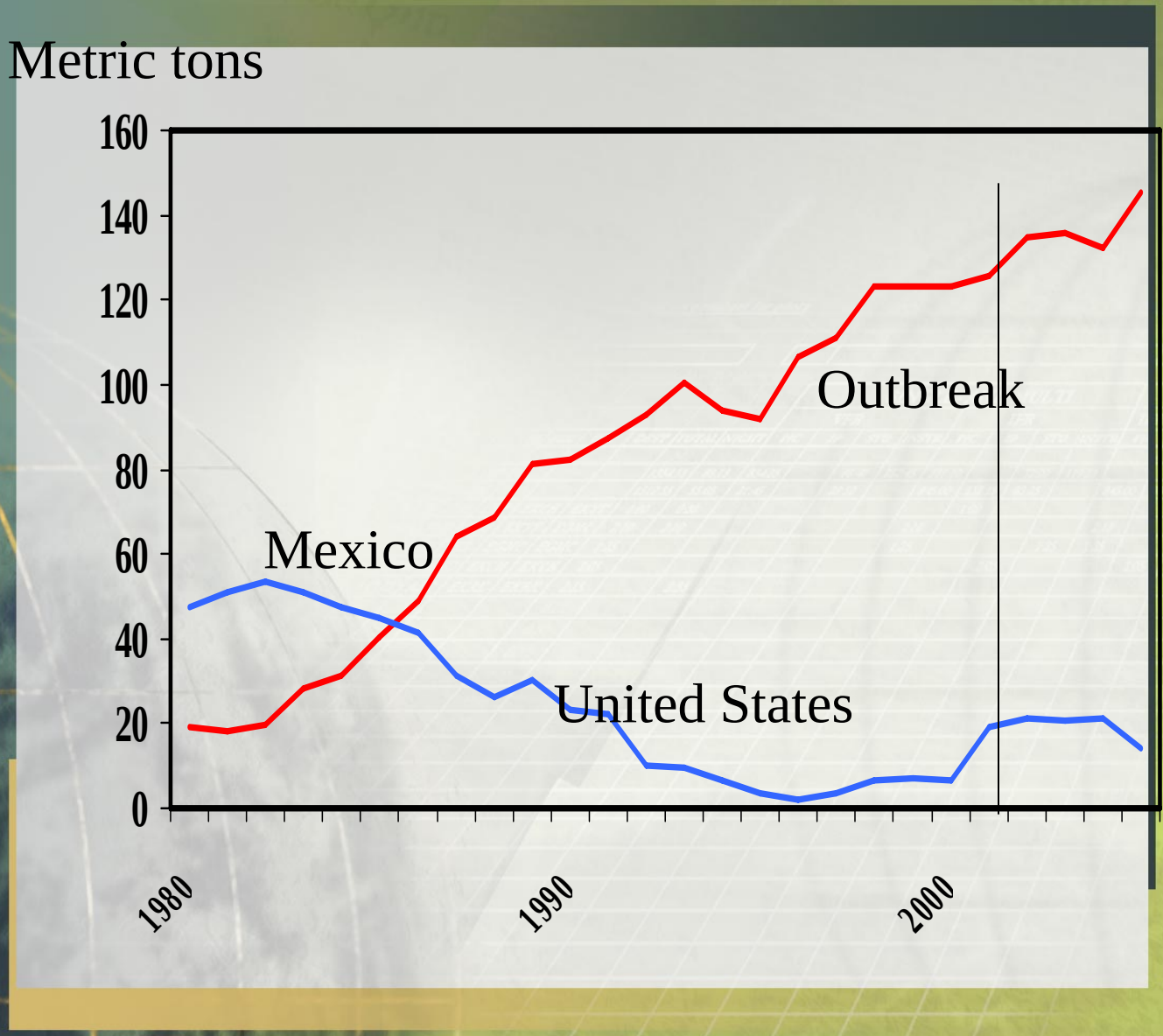
Source: Avendaño

GAPs, Foodborne Illness Outbreaks, and Trade

- Best case scenario—green onions

- Worst case scenario–cantaloupe

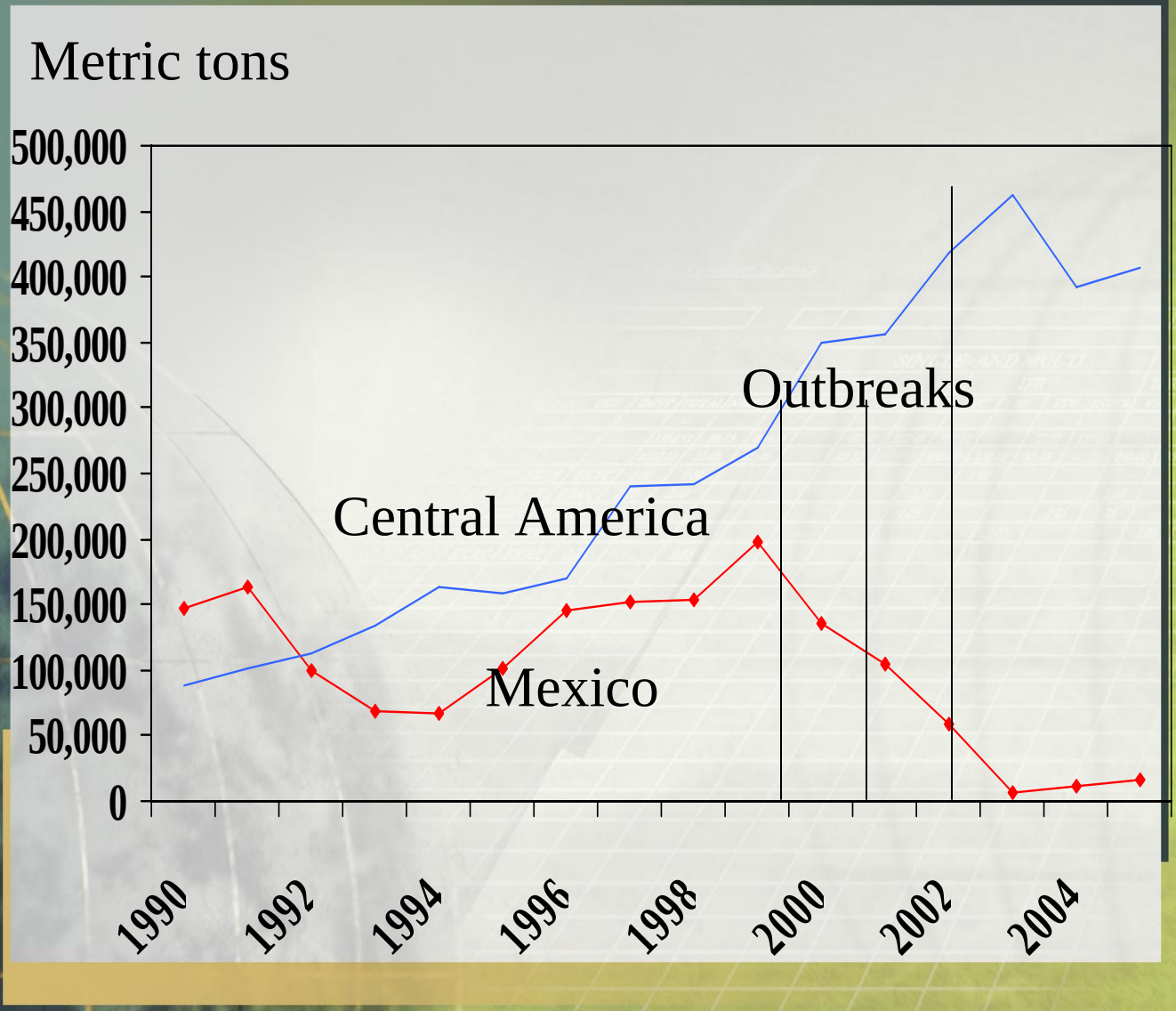
U.S. Green Onion Supply from United States and Mexico



Comparison of green onions and cantaloupe industries in Mexico

Characteristics	Green onions	Cantaloupe
Location	Concentrated	Dispersed
Organization	Strong	Weak
Firm size	Large	Small
Length of season	Year round	Short
Share of U.S. supply	86 %	13%

U.S. Imports of Cantaloupe from Mexico and Central America



Conclusions

- Adopting GAPs is expensive but now is just one of the requirements for operating in the U.S. and other international markets.
- Larger farmers have been more successful in adopting GAPs than medium farmers, in part because of the large capital costs.
- GAPs have structural impacts.

Conclusions

- Organized industries have been able to use GAPs to their advantage as in the green onion case.
- The way GAPs have been used has evolved over time and Mexico has been involved in that change
  - Industry requirements for GAPs
  - Commodity-specific GAPs

- **BELEM DOLORES AVENDAÑO RUIZ:** Economist from the University of Baja California, obtained her Doctor degree in Economic Agro-industrial problems in the CIESTAAM of the University Chapingo, in 2004.
  - Experience in research, oriented to the Agricultural Economy, with special focus in Food Safety on Fruits and Vegetables. At the moment is responsible for the project Competitiveness and standards of the Baja Californian produce industry.
  - Her experience in the industry dated since 1995, collaborating for more than eleven years with the Union Agricola Regional de Productores de Hortalizas del Valle de Mexicali, in Mexico, as Director of the association and now as adviser. Was in charge of the Program of Qualification in Food Safety: fruits and vegetables for the State of Baja California financed by the Foundation Produce.
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- **Linda Calvin** is an agricultural economist for USDA's Economic Research Service. She specializes in analysis of fruit and vegetable markets with an emphasis on food safety and technical barriers to trade.
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"New Food Safety Incentives & Regulatory, Technological & Organizational Innovations" - 7/22/2006, Long Beach, CA
AAEA section cosponsors: FSN, AEM, FAMPS, INT

Industry perspectives on incentives for food safety innovation

Continuous food safety innovation as a management strategy
Dave Theno, Jack in the Box, US

Economic incentives for food safety in their supply chain
Susan Ajeska, Fresh Express, US

Innovative food safety training systems
Gary Fread, Guelph Food Technology Centre, Canada

Organizational and technological food safety innovations

Is co-regulation more efficient and effective in supplying safer food?
Marian Garcia, Agricultural Sciences, Imperial College London
Andrew Fearne, Centre for Supply Chain Research, Kent, UK

Chain level dairy innovation and changes in expected recall costs
Annet Velthuis, Cyriel van Erve, Miranda Meuwissen, & Ruud Huirne Business Economics & Institute for Risk Management in Agriculture, Wageningen University, the Netherlands

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Regulatory food safety innovations

Prioritization of foodborne pathogens
Marie-Josée Mangen, J. Kemmeren, Y. van Duynhoven, A.H. Havelaar, National Institute for Public Health & Environment (RIVM), the Netherlands

Risk-based inspection: US Hazard Coefficients for meat and poultry
Don Anderson, Food Safety and Inspection Service, USDA

UK HAS scores and impact on economic incentives
Wenjing Shang and Neal H. Hooker, Department of Agricultural, Environmental & Development Economics, Ohio State University

Private market mechanisms and food safety insurance

Sweden's decade of success with private insurance for *Salmonella* control in broilers
Tanya Roberts, ERS, USDA and Hans Andersson, SLU, Sweden

Are product recalls insurable in the Netherlands dairy supply chain?
Miranda Meuwissen, Natasha Valeeva, Annet Velthuis & Ruud Huirne, Institute for Risk Management in Agriculture; Business Economics & Animal Sciences Group, Wageningen University, the Netherlands

Recapturing value from food safety certification: incentives and firm strategy
Suzanne Thornsbury, Mollie Woods and Kellie Raper
Department of Agricultural Economics, Michigan State University

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Applications evaluating innovations & incentives for food safety

Impact of new US food safety standards on produce exporters in northern Mexico
Belem Avendaño, Department of Economics, Universidad Autónoma de Baja California, Mexico and Linda Calvin, ERS/USDA

EU food safety standards and impact on Kenyan exports of green beans and fish
Julius Okello, University of Nairobi, Kenya

Danish *Salmonella* control: benefits, costs, and distributional impacts
Lill Andersen, Food and Resource Economics Institute, and Tove Christensen, Royal Danish Veterinary and Agricultural University, Denmark

Wrap up panel discussion of conference

FSN section rep. – Tanya Roberts, ERS, USDA
AEM section rep. – Randy Westgren, University of Illinois
INT section rep. – Julie Caswell, University of Massachusetts
FAMPS section rep. – Jean Kinsey, University of Minnesota
Discussion of everyone attending conference
Note: speaker is either the 1st person named or the person underlined.

Thanks to RTI International for co-sponsoring the workshop.

"New Food Safety Incentives & Regulatory, Technological & Organizational Innovations" - 7/22/2006, Long Beach, CA (con't)

Workshop objectives

- Analyze how new public policies and private strategies are changing economic incentives for food safety,
- Showcase frontier research and the array of new analytical tools and methods that economists are applying to food safety research questions,
- Evaluate the economic impact of new food safety public policies and private strategies on the national and international marketplace,
- Demonstrate how new public polices and private strategies in one country can force technological change and influence markets and regulations in other countries, &
- Encourage cross-fertilization of ideas between the four sponsoring sections.

Workshop organizing committee

Tanya Roberts, ERS/USDA, Washington, DC - Chair
Julie Caswell, University of Massachusetts, MA
Helen Jensen, Iowa State University, IA
Drew Starbird, Santa Clara University, CA
Ruud Huirne, Wageningen University, the Netherlands
Andrew Fearne, University of Kent, UK
Mogens Lund, FOI, Denmark
Mary Muth, Research Triangle Institute Foundation, NC
Jayson Lusk, Oklahoma State University, OK
Randy Westgren, University of Illinois, IL
Darren Hudson, Mississippi State University, MI