



Second Decade of Crop Biotechnology

Opportunities and Challenges for the Food System

Wrap-up Presentation
January 17, 2008

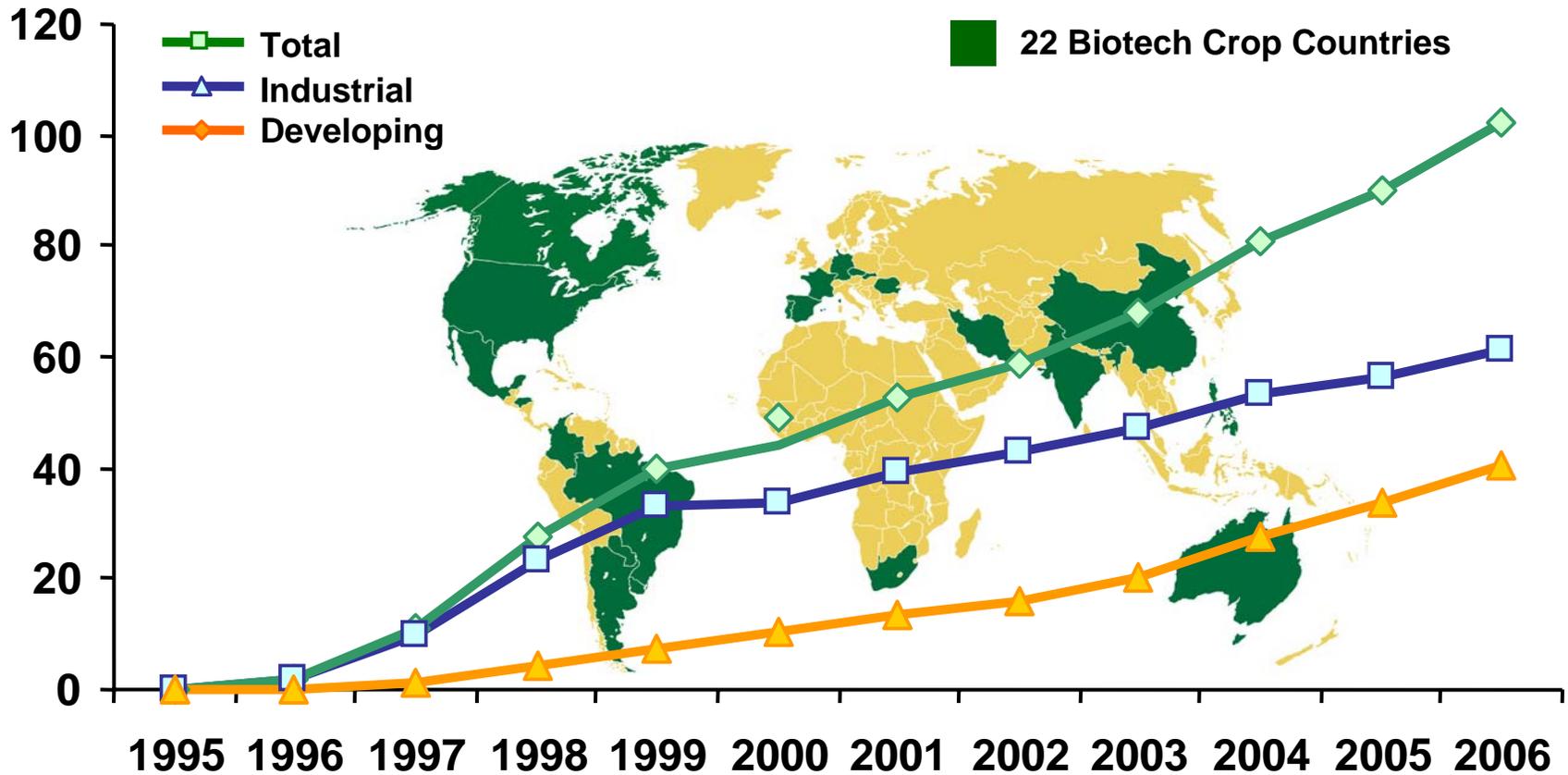
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and

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GLOBAL AREA OF BIOTECH CROPS

Million Hectares (1996 to 2006)

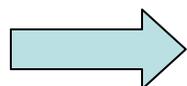


Increase of 13%, 12 million hectares or 30 million acres, between 2005 and 2006.

Source: Clive James, 2006.

What We Have Learned: Adoption of Biotech Crops

- Farmer adoption faster than anticipated
 - In 12 years, herbicide tolerant soybeans constitute 90% of US soybean acreage
 - Over 250 million acres worldwide
- Farmer benefits: increased yields, increased net returns, management time saved (allowing more opportunity for off-farm income), other benefits
- There are unintended consequences - “Biology happens”



Biotech crops: “A contribution, not a solution”

Bottlenecks to Biotech Crops – Developed World

- Cost and complexity of obtaining simultaneous regulatory approvals
 - Regulatory requirements moving with scientific knowledge
 - Scientific-based regulations crashing against consumer demands and politics
 - Impacts on trade
- Market opportunities for which consumers see benefits
- Technology development
 - Understanding the genetic basis of traits
 - Costs of R&D
- Obtaining and enforcing intellectual property rights

Bottlenecks to Biotech Crops – Developing World

- Ability for farmers to see the technology and gain access to the technology
- Internal science and technology capacity
- Internal product development capacity
- Development of regulatory system
- Development of intellectual property rights protection systems: “Protect what you have; not what you don’t have”
- Trade consequences

What is Changing?

- Globalization of biocrops
 - Predicted significant growth in acreage in Asia and Brazil
 - Slow to moderate growth in Africa and EU
- At the same time, market-specific product development, especially outside of US, rather than leveraging of US products (e.g., Bt eggplant)
- Opportunities in biofuels
- Greater concern for environmental consequences and sustainability

What is changing?

- Better understanding of the benefits and risks of the technology
- “Academic Capitalism”
 - Driven by budget cuts and economic development goals
 - Supporting industry in the area/state
- Innovations in IPR may provide greater access

Looking Forward: New Biotech Crop “Products”

- Further stacking of traits
- Quality traits of interest to processors and consumers
- Environmental stress tolerance
- Disease resistance
- Nutrient utilization efficiency
- Biofuel applications
- Pharmaceutical and industrial proteins

What do we still need to know?



- How do we balance different needs for agricultural production?
 - How can we have productive input and dialog with stakeholders in order to balance complex stakeholder interests?
 - What will happen with regulatory procedures?
 - Conditional/unconditional approvals
 - Tiered approaches
 - Moving away from event-by-event approvals in certain cases
 - Managing adventitious presence
 - Harmonization of regulation
 - Keeping costs in line with risks
- 

What do we still need to know?

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- How do we provide access to farmers to appropriate technologies and to markets?
 - How do we provide greater income and better quality of life to farmers while protecting consumers?
 - How do we develop scientists and agricultural production expertise, especially in the developing world?
 - How do we protect intellectual property rights (an important driver for innovation) while still providing access to knowledge and resources that can move science forward?"
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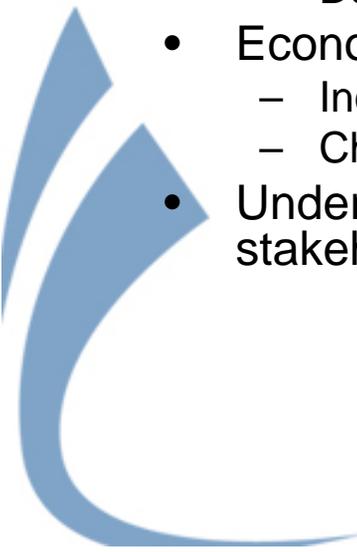
What do we still need to know?



- How do we measure and communicate non-obvious impacts?
 - Impacts on trade
 - Pest resistance management
 - Liability
 - Public confidence “Knowing where your children are after 10pm”
 - Realistic assessments of costs and risks
 - Better measurement tools
 - Better communication methods
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Opportunities and Challenges

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- Increase agricultural production
 - Deliver twice as much food by 2050
 - Meet demands for feed and fiber
 - Balance demands for biofuels
 - Coexistence of agricultural systems
 - Environmental
 - Think greater productivity per unit of input
 - Protect soils and fragile ecosystems
 - Adapt to climate change
 - Enhance yield stability
 - Don't exchange one problem for another
 - Economic success
 - Incentives and access for farmers
 - Choice of affordable, nutritious food for consumers
 - Understand and communicate realistic benefits and costs for stakeholders
- 
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After the Conference

- Most presentations will be available on the Farm Foundation website:
www.farmfoundation.org
- An Executive Summary will be available on the website in about a month
- If you have further questions, please contact me at annbublitz@earthlink.net

Thank You to

- Speakers and Moderators
- Participants
- Walt Armbruster, President, and Mary Thompson, Farm Foundation Communications Director and Program Manager
- Laurie Marsh and Vicki Liszewski, Farm Foundation staff
- Dina Biscotti, University of California



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Thank you!

