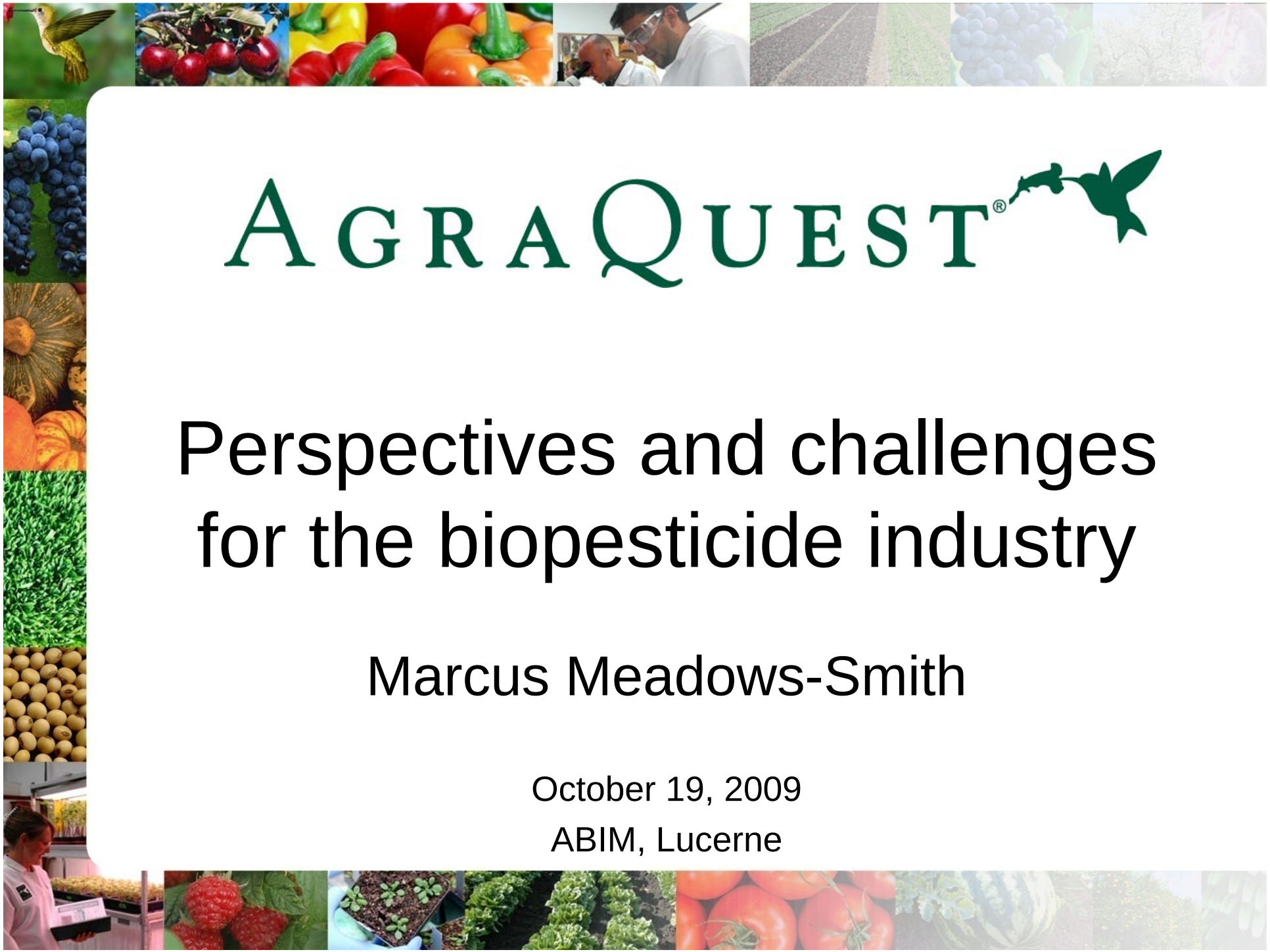

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Perspectives and challenges for the biopesticide industry

Marcus Meadows-Smith

October 19, 2009

ABIM, Lucerne

In 10 years there will be 1.2 billion more people to feed.

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And yet, there are

finite supplies of arable land and water resources,

growing regulatory and consumer concerns

driving the need for **food with lower pesticide residues and cleaner, sustainable agriculture.**

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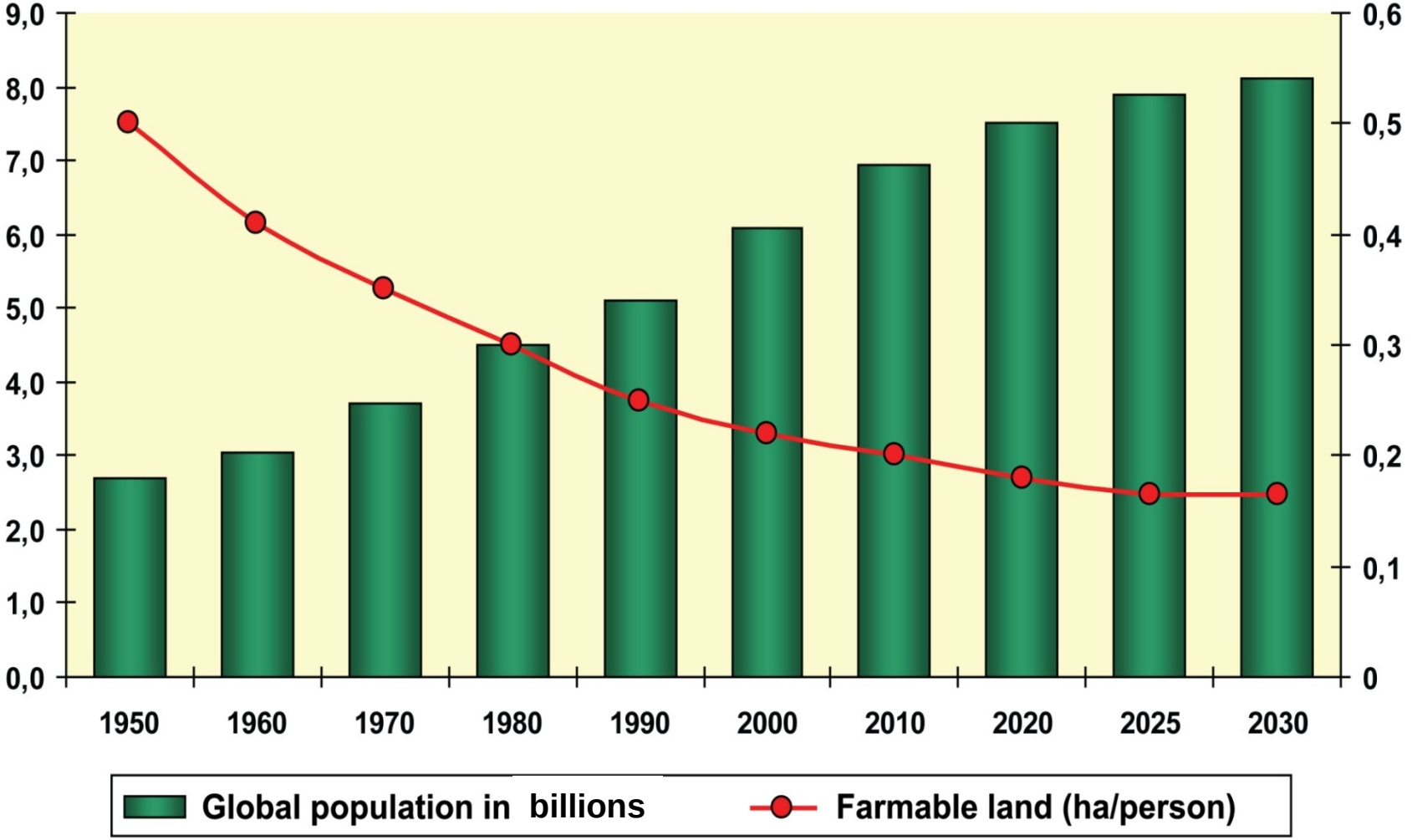
Productivity and Yield per Hectare must Increase



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The Challenge?

1. increase farmer productivity
2. provide clean, low residue food
3. improve the environment
4. provide new pest control tools for the grower

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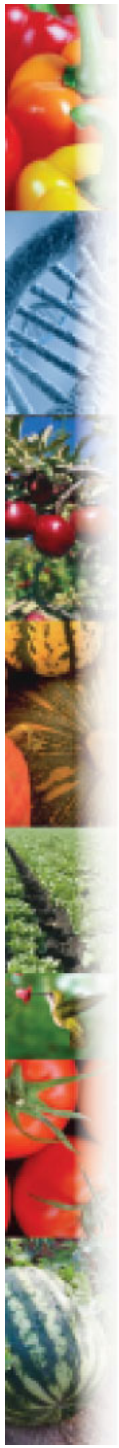

The Answer

The Challenge?

1. increase farmer productivity
2. provide clean, low residue food
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The Answer

Biopesticides, and

Low Chem or ICM spray programs

Becoming the mainstream option for growers and the agrochemical industry

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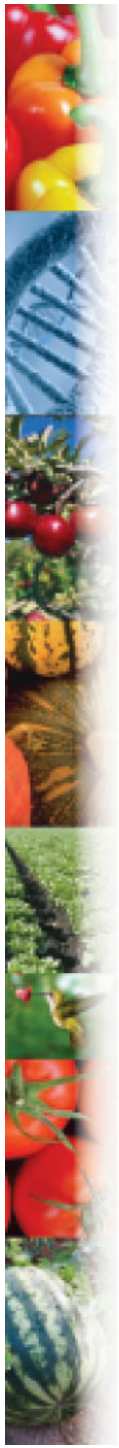

The Challenge?

1 - Increase farmer productivity

- New products and spray programs must have superior performance and deliver grower profit.
- All pesticides must fit an acceptable risk and environmental profile.
- Biopesticides must be (become) performance driven: efficacious and consistent.

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Biopesticides Efficacy
and additional benefits

Performance:

- Disease control
- Yield enhancement
- No residue (exempt from residue limits)
- Attractive and marketable fruit

Flexibility:

- Multiple modes of action
- Intervals: 0-day Pre-Harvest & 4-hour Re-Entry
- Tank-mix compatible

Environment:

- Environment & worker safety

Best in Class Efficacy for conventional (~95%) and organic (~5%) farming & food production

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Biopesticides Benefits

for conventional farmers & big ag companies

Performance:

- Disease control
- Yield enhancement
- No residue (exempt from residue limits)
- Attractive and marketable fruit

Yield

Comply with MRL

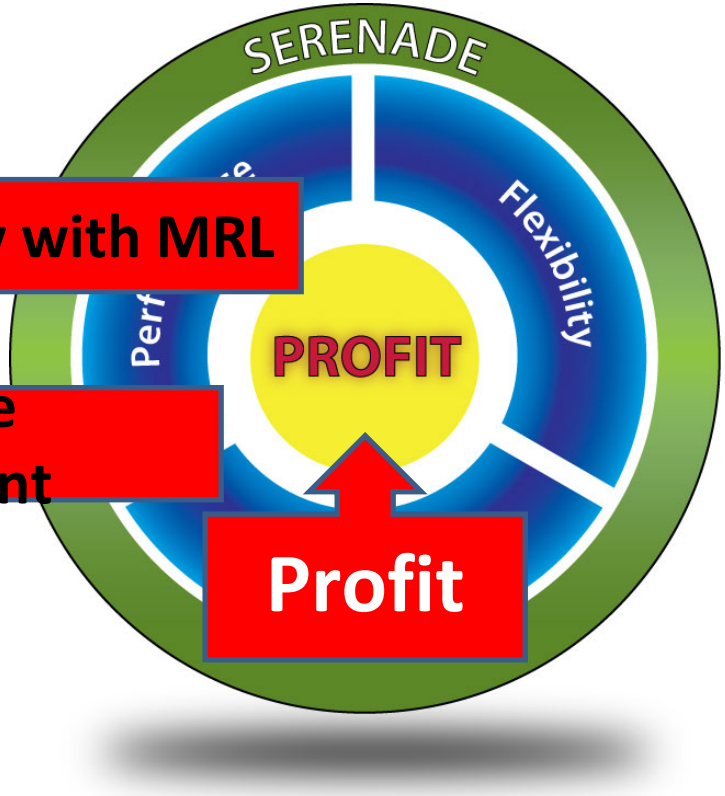
Flexibility:

- Multiple modes of action
- Intervals: 0-day Pre-Harvest & 4-hour Re-Entry
- Tank-mix compatible

Resistance management

Environment:

- Environment & worker safety



Best in Class Efficacy for conventional (~95%) and organic (~5%) farming & food production

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The Challenge?

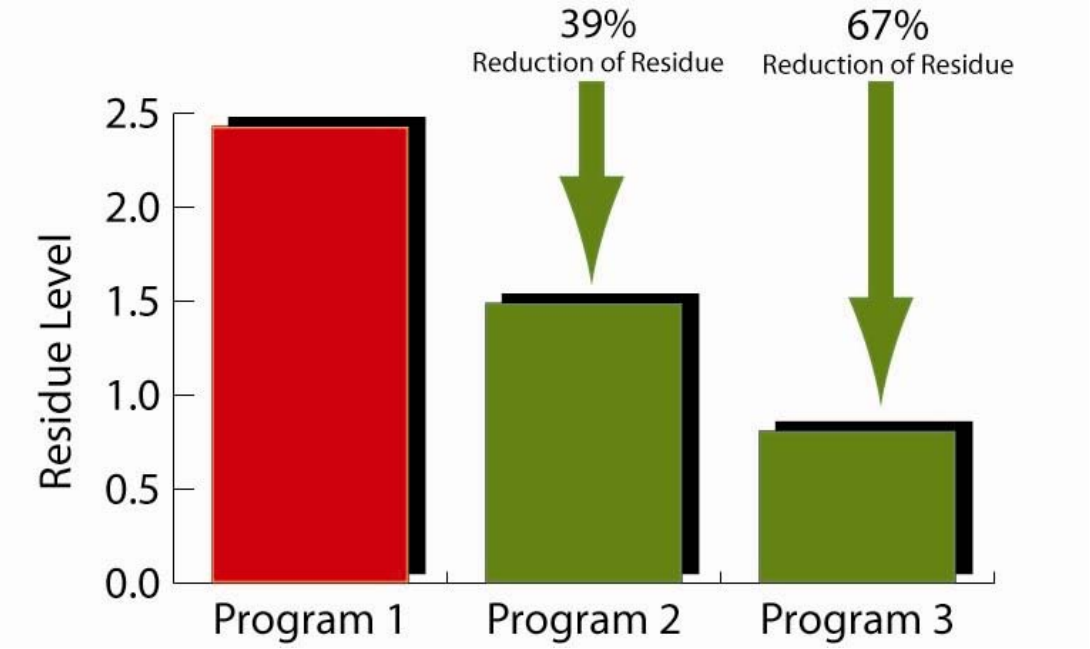
2 - Provide clean, low residue food

- **Increasing Consumer Concerns**
- **New rules on residues**
- **Lowering MRLs**

Low Chem Programs Reduce Residues

Replacing even 1 spray of a synthetic pesticide with a biopesticide will reduce residues

		Spray
Program 1:	Rovral	AB
	Maneb	CDE
Program 2:	Rovral	A
	SERENADE	B
	Maneb	CD
	SONATA, Phosphite	E
Program 3:	SERENADE	AB
	Maneb	C
	Aliette	D
	SONATA, Phosphite	E



S. West (80144)

Iceberg lettuce trail for sclerotinia leaf drop. All three programs had similar disease control

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The Challenge?

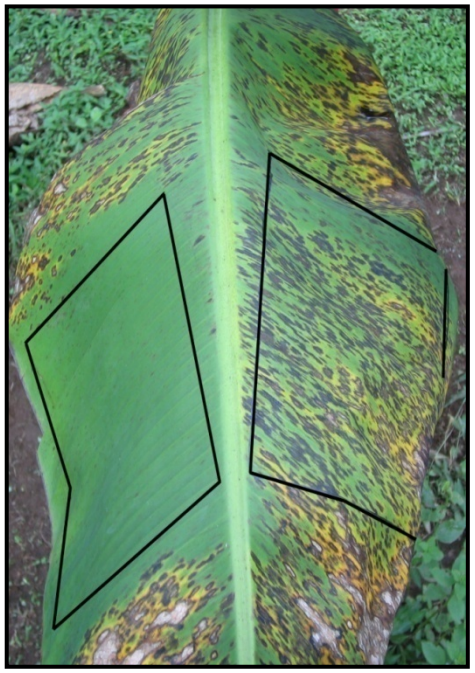
3 - Improve the environment

1. Consumers & regulators demanding environmentally responsible products and sustainable farming
2. Biopesticides generally are low environmental impact and sustainable

Low Chem

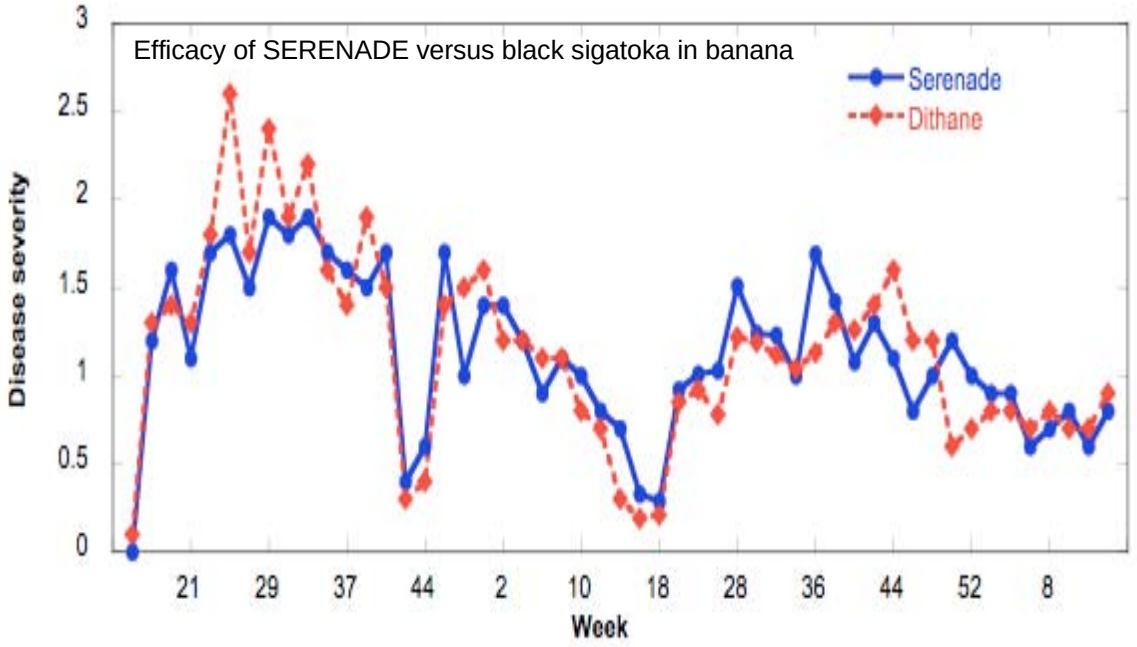
Proven Replacement for Mancozeb

Banana single-leaf test versus black sigatoka



SERENADE treatment **Untreated**

Banana Large Plot Trial:
Serenade in conventional spray program



SERENADE has the efficacy and reliability of the leading synthetic contact fungicide.

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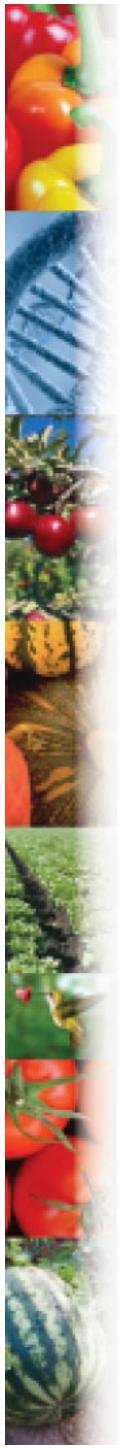

The Challenge?

4 - New pest management solutions

- Growers need a complete, effective toolkit
- Older, toxic pesticides being de-listed. In EU 600 out of 1000 actives de-list and 300 more still under review.
- Synthetic Pesticide Industry spends 4 bn$ /year … and yet:
  - Last new mode of action in herbicides was found in the 80's
  - Fungicides: only 2 MOA discovered in 20 years, and 1 lost efficacy to resistance within 3 years
  - Insecticides: 80% of the insecticide market belong to only 4 MOA's
  - One new active costs $240million to launch after screening 140,000 molecules

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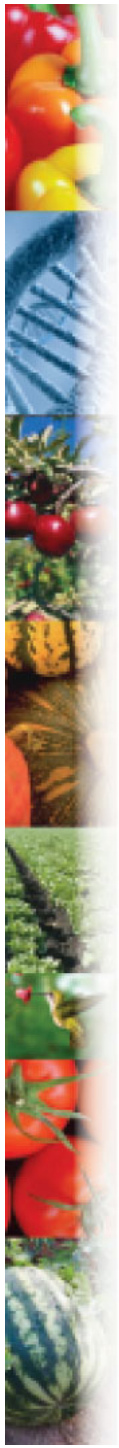


New Active Ingredients

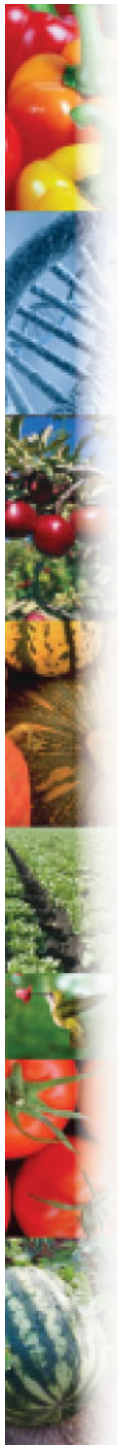
Biopesticides: the faster and more cost effective source for new, protected, efficacious active ingredients for agriculture and related fields:

Biological products frequently used as pharmaceuticals… but not yet in Ag

- Natural products as drugs (1981-2002):
  - 70% new antibiotics
  - 60% new anti-cancer drugs
  - 50% new immunosuppressants
- Naturally inspired agrochemicals: abamectin, strobilurin, spinosad

Biological products are much cheaper and faster to bring to market

- Synthetics cost $150-240 million vs. $10-25 million for biologicals
- Synthetics take 5 – 7 years vs. 2 – 3 years (in USA) for biologicals



Defining Low Chem

Low Chem sector is a major growth opportunity

Low Chem

- integrating biopesticides with conventional chemistry
- high yielding and clean crop management programs

- Incremental sector to Organic and IPM

Programs

1) **Reduced Chemical Load:**

   Replace a synthetic spray by a biopesticide without reducing the efficacy or yield

2) **Increased Productivity Without Increasing Chemical Load:**

   Increase the efficacy and yield of a spray program by adding a biopesticide spray to the current conventional program

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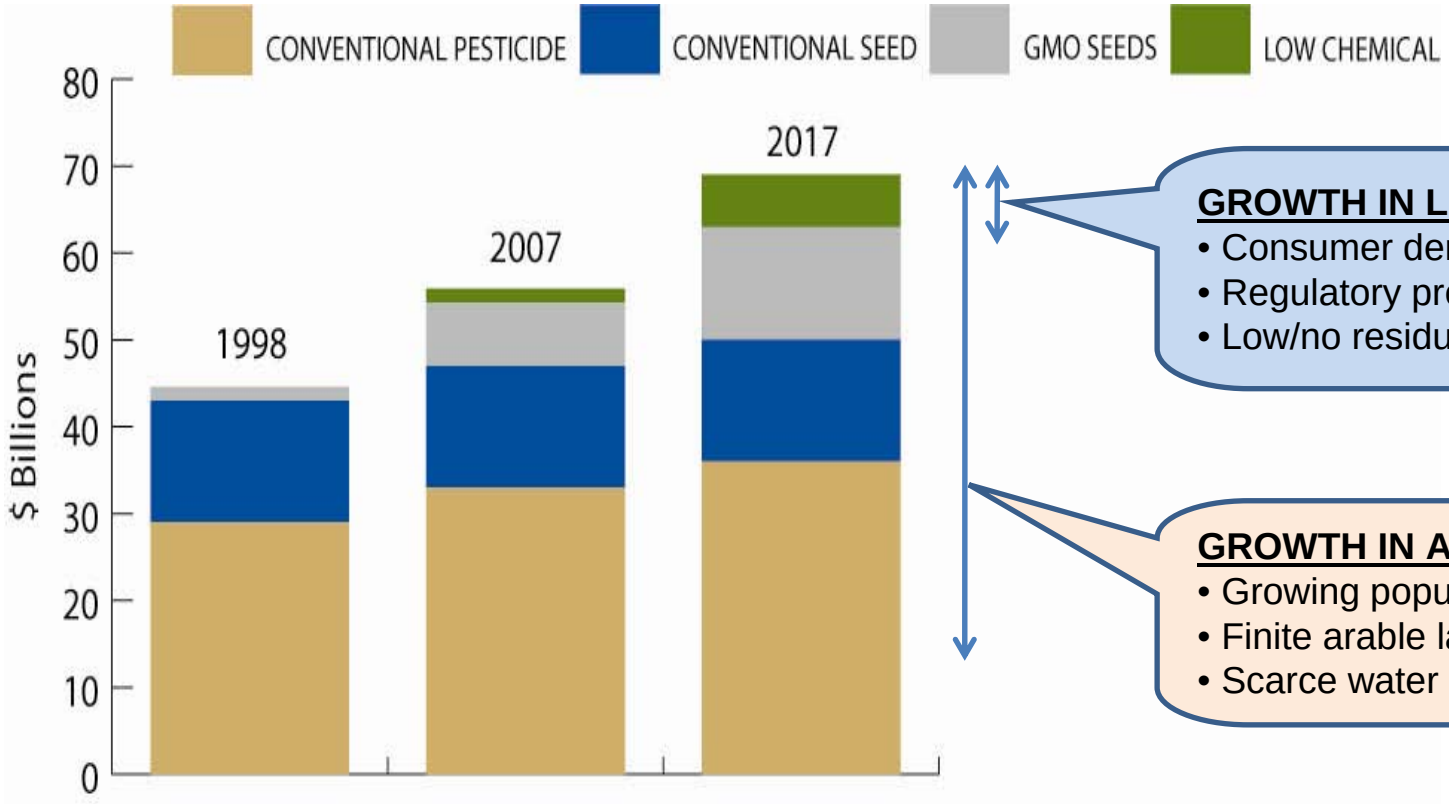
Evolution of Inputs: 2007-2017

Growth of $5-10 Billion Low Chem Sector



GROWTH IN LOW CHEM
- Consumer demand
- Regulatory pressure
- Low/no residue food

GROWTH IN AG INPUTS
- Growing population
- Finite arable land
- Scarce water resources

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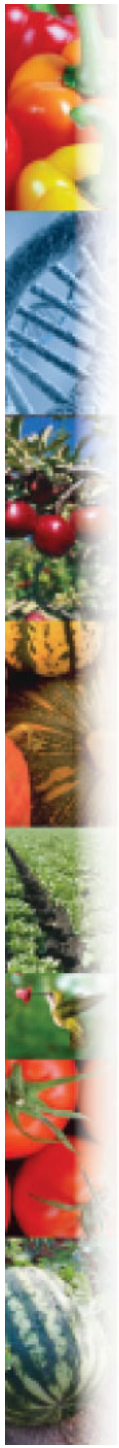

Low Chem
Entrance of Ag Majors

New Acquisitions & Partnerships

- Afla-Guard acquired by Syngenta
- Bioneem acquired by Bayer
- Serenade distribution in many countries by BASF

Rationale for big ag

- $5 to 10 billion sector
- Regulatory: comply with MRL, resistance management
- Higher yielding spray programs
- Profit

Benefit to Established Biopesticide Players

- Faster growth for the whole biopesticide industry

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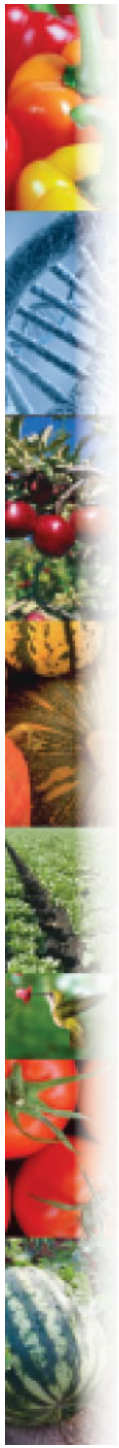

Keys to Success -

for biopesticide companies & sector becoming $10billion

- **Products**
  - Efficacy – same or better as stand alone or spray program
  - Consistency
  - Don't over promise
  - Improved regulation would help biopesticides (1) specific regulations for EU, and (2) higher efficacy requirements by EPA in US
- **Marketing**
  - To growers…and to regulators, food retailers and consumers
  - Low chem or ICM – to conventional growers
  - Organic is a good life-style choice, but cannot feed 9 billion people
- **R&D**
  - Good science
  - Innovative, new products and solutions
  - IP
- **Scale & speed**
  - Large biopesticide companies – via financing, partnerships or consolidation?
  - Partnerships with major manufacturers and distributors

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AgraQuest Summary

Delivering innovative, clean solutions for better food and a safer world

A Growing Market

- $5-10BN emerging low chem market
- Effective hybrid solutions biopesticides
- Consumer / regulatory demand for lower residues and environmental responsibility
- Area of investment for “Big-Ag”
- Complementary with traditional Ag-inputs

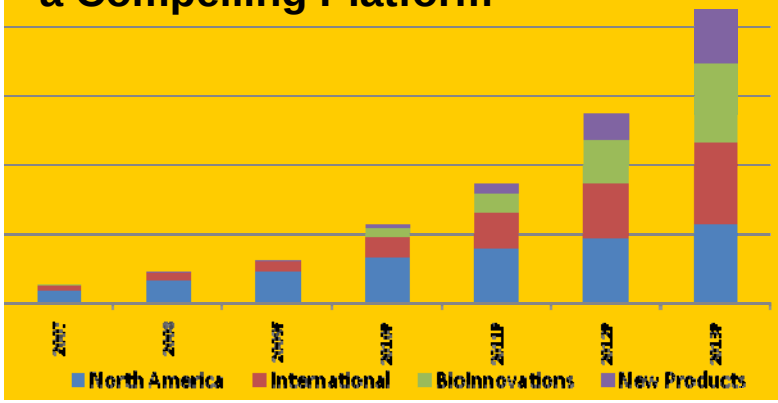
AgraQuest by numbers

- >$130million invested in R&D, pipeline and commercialization engine since 1995
- $200million revenue target for 2014 (today in $’tens millions)
- 220 employees
- 40 scientists & professionals in R&D
- 25 countries where products sold
- 8 registered brands from 4 actives
- 7 new actives in US field trials in 2010
- 4 major partnerships inc. BASF & Alpharma
- the only microbial biofungicide with an annex 1 listing and FRAC listing

AgraQuest Organization

- Leader in emerging $10billion low chem space
- Vertically integrated: discovery to distribution
- HQ in California. Manufacturing in Mexico.
- R&D focus; data driven
- Direct sales in NAFTA; via partners ex-NAFTA
- The go-to-partner for biopesticides
- 2 divisions: Agrochemical & BioInnovations
- Superior products: efficacious, proven
- Products and spray programs that provide consistency and profit for growers

AgraQuest: High Growth from a Compelling Platform



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Thank you