

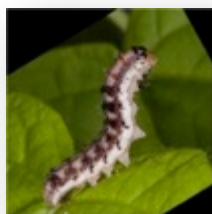


Insecticide Resistance Action Committee

Biotechnology Team 2015 Update

Clint Pilcher

4-20-15



General Team Goals

- Improve cross-industry cooperation towards common goals for resistance management of Biotech crops
- Promote practical approaches to resistance management for insect-protected biotech crop
- Assist country and regional industry associations in developing locally appropriate IRM programs
- Provide forum for exchange of information on putative and real resistance incidents
- Engage key stakeholders and deliver practical IRM outreach through workshops and conferences
- Promote IRM considerations as an integral component of Bt crop development by public and private sectors

IRAC-Biotech Intro

- Clint Pilcher (DuPont Pioneer) (Chair)
- Nick Storer (Dow AgroSciences)
- Tim Dennehy (Bayer)
- Graham Head (Monsanto)
- Isaac Oyediran (Syngenta)
- Elizabeth Owens (DuPont Pioneer)
- Chris Sansone (Bayer)
- Tony Burd (Syngenta)
- Cesar Santos (Dow AgroSciences)

2014 Goals

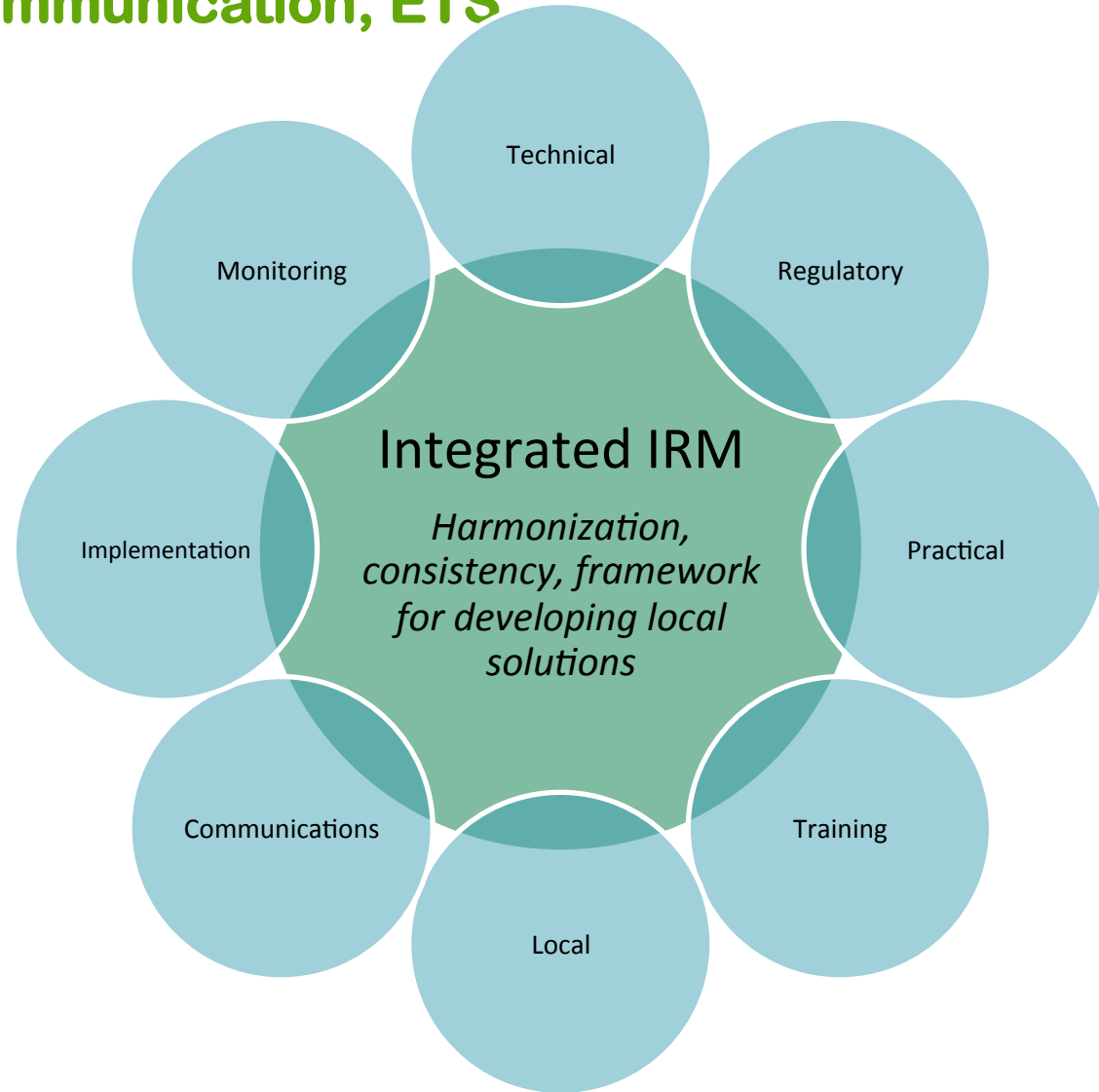
- Successfully launch CLI Integrated Biotech IRM Strategy
- Work with local teams in Brazil and Argentina to finalize IRM and pest management recommendations for Bt maize
- Support adoption of IRM program by tech providers and regulators in Vietnam and Indonesia
- Support IRM workshops in Central America
- IRM workshop in South Africa
- Work with Crop Protection team to finalize IRAC position on use of insecticides with traits

2014 Highlights

- Finalized positions on:
 - Use of insecticides with traits
- Integrated IRM Strategy
 - Working with CLI Stewardship, Communications, Regulatory, & ETS
- ETS IRM module development
 - Brazil and Argentina rollouts
- Met with ABRASEM – Brazil
 - Set technical IRM standards for Brazil
- IRAC Task Team Meeting
 - BMP focus
- Argentina Seed Association – Regulator meeting
- S. Africa workshop a success

Integrated IRM Approach

IRAC Biotech, Biotech Stewardship,
Regulatory, Communication, ETS



ETS Work Products

- IRAC roadmap
- Resources: CLI Consultant, Brazil meeting of Stakeholders, ETS material development
- Multi-stakeholder (industry, regulator, academic) workshops in Argentina and Brazil
 - Need clear objectives that change company and grower practices
- Finalize and detail guiding principles document

- Insect Resistance Management (IRM) is fundamental to technology stewardship
- IRM practices are embraced throughout R&D, regulatory, and commercial operations and organizations
- Marketplace does not undermine technology sustainability



Central Themes

- Industry alignment on local IRM strategies
- Adequate refuge seed supply available
- Refuge seed distribution
- Appropriate refuge seed planting and management
- Monitoring and mitigation
- Auditing and transparency



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Advancing Best Practices in Agricultural Biotechnology

Regulatory Systems and IRM

- *Towards a consensus on bounds of regulatory involvement in IRM*

Properties of Effective Regulatory Solutions

- Reinforce commitment to IRM principles and practices across different products
- Encourage broad stakeholder engagement
- Set independent and authoritative rules for growers
- Require/encourage tech providers and growers to adhere to best IRM practices
- Allow for flexibility and innovation
- Practical for all participants
- Recognize diversity of growers and agricultural systems

Brazil IRAC Task Team

- Members from each of the different IRAC teams to address a direct regional need
 - Example: Green-bridge cropping in Brazil
 - Pull members from:
 - IRAC Brazil
 - IRAC Biotechnology
 - IRAC Lepidoptera
 - IRAC Sucking pests
 - ABRASEM
 - Academics (Omoto)
 - EMBRAPA
- Scope: How to use insecticides in Bt crop systems and IRM for chemistry is incorporated
- Goal: Proposal ready for IRAC International meeting in Brazil in February

2015 Goals

IRAC - Biotechnology Team

- Thanks to the team for a tremendous 2014 year and successful beginning to 2015
- 2015 Goals:
 - Brazil follow-thru
 - Argentina implementation
 - Global collaborative work with Integrated Strategy
 - Continued infrastructure development for global utility

IRAC Crop Biotechnology WG Objectives 2015-16

Goals	Objectives	Date
Continue implementation of CLI Integrated Biotech IRM Strategy	<ol style="list-style-type: none"> 1) Clarify roles of CropLife & IRAC committees (stewardship, communication, regulatory, biotech, and ETS) in developing a work plan toward a harmonized, consistent framework for developing local integrated IRM solutions around the globe. 2) Initiate ETS framework and harmonization in North America and other key countries around the world 	<p>2015</p> <p>Ongoing</p>
Follow-through on LATAM IRM implementation initiatives	<ol style="list-style-type: none"> 1) Continue to work collaboratively with IRAC International, Brazil, and other WGs to finalize Brazil BMP (IRM & IPM-based considerations) alignment across crops in tropical environments 2) Guide Argentine Seed Association (ASA) to 1) develop country technical alignment; 2) build IRM infrastructure; and 3) implement IRM best practices and guiding principles 3) Enable CropLife individual resource to manage regional IRM initiatives and monitor and quantify implementation progress 	<p>2015</p> <p>Q3 2015</p> <p>Q4 2015</p>
Work with IRAC Crop Protection colleagues on trait & chemistry interactions	<ol style="list-style-type: none"> 1) Continue to characterize the interaction between traits & chemistry as it relates to durability of IC products and further define the coordination of related initiatives and activities 	2015
Publish white papers on IRM related topics	<ol style="list-style-type: none"> 1) Work with regulatory committee and propose minimum global regulation standards 2) Potential white paper from IRAC-Biotech on global IRM principles and implementation 	<p>Q3 2015</p> <p>Q4 2015</p>
IRM industry discussions and infrastructure in India	<ol style="list-style-type: none"> 1) Establish industry organization in India to enable IRM discussions and work towards building infrastructure through ETS and technical alignment 	Q4 2015