IRAC - United States
Our Role in Insect Resistance Management

Philip W. Robinson
United Phosphorus, Inc.
IRAC - US

- Created in 1984
- Specialized Technical Group
- Industry Association
- Crop Life

- Sponsor of Numerous ESA Symposia
IRAC - US Committee

- Chairman
  - Graham Head, Monsanto

- Secretary/Treasurer
  - Caydee Savinelli, Syngenta
IRAC - US
Member Companies

- AMVAC Chemical Corp.
- Arysta LifeScience NA LLC
- BASF Ag Products
- Bayer CropScience
- Cheminova, Inc.
- Chemtura Corp.
- Dow AgroSciences LLC
- DuPont Crop Protection
- FMC Corp.

- Mitsui / Landis International
- Monsanto Company
- Nichino America, Inc.
- Nisso America, Inc.
- Syngenta Crop Protection, Inc.
- United Phosphorus, Inc.
- Valent USA Corp.

Interested in Joining IRAC?
- Crop Protection
- Plant Biotech
- Public Health
Insect Resistance
Why an industry Concern

- Reduces product value/utility
- Reduces crop quality & quantity
- Impact on insecticides/acaricides
  - Increases amount used
  - Increases use frequency
Knowledgeable experts estimate
- More than 500 resistant species of insects
- Resistance impacts
  - all major agricultural and ornamental crops

Resistance exists
- Host Plant
- Crop Rotations
- Insecticidal soaps
- Biologicals
- Pheromones
- Synthetic chemical
Synthetic chemical Resistance

- Although present
  - Product stewardship allows
    - viable use to continue
Insect Resistance
Why an industry Concern

- New products
  - Not easily done
    - Discovery & registration
      - ~$50-200 million
      - ~8-15 years development
  - Need long product life cycle

- Resistance management
  - Important product stewardship component
The Role of Industry

Product Expertise

- Development
- Registration
- Formulation
- Product Stewardship
- Marketing
Coordinate industry response to insecticide resistance

- Prevent or delay
  - insect and mite resistance

- Coordinate Resources
  - Monitoring
  - Methodologies
Facilitate communication & education about resistance

- Within industry
- Consultants
- Universities
- Government agencies
- Growers
- Promote development of resistance management strategies within IPM
- Maintain efficacy
  - To support sustainable agricultural practices
  - Public health
Mode of Action (MoA) Documents

IRAC International classification scheme lists the MoA, Name & Registrant

- Currently 28 classification groups
  - Separate group for unknown MoA
  - Most recently added groups
    - Neonicotinoid (Group 4A)
    - Diamide (Group 28)

All insecticides & acaricides

- Allocated a specific group or sub-group
Examples of other MoA Documents
Available at: www.irac-online.org
Mode of Action for Specific Groups or Subgroups, for example...

- Neonicotinoid Subcommittee
  - IRM Guidelines for neonicotinoids
    - General Crop Management Practices
    - Specific practices, for example...
      - Colorado Potato Beetle
      - Whitefly
Mode of Action Specific labeling

- Appears on many product labels
  - Example:
    - Neonicotinoid Insecticide (4A)

GROUP 4A INSECTICIDE

- Active ingredient(s)
- Inert ingredients
- Mode of Action Labeling also...
  - Specific Use Instructions
    - Pests controlled
      - Life stage, generation
    - Product use rates
    - Application frequency
    - Product rotation recommendations
      - Different mode of action
Online

- Insect Resistance Management
  - Course & Book
    - D. Onstad
      - University of Illinois

- Additional resources available on the IRAC website.
- Arthropod Pesticide Resistance Database
  - Michigan State University
    - www.pesticideresistance.org

- University Extension and Researchers

- Center for Integrated Pest Management

- Regional Integrated Pest Management Centers

- National Association of Independent Crop Consultants
  - (NAICC)
IRAC-US provides financial resources for resistance management projects, for example...

2008 Projects

- Pyrethroid Resistance Management
  - Urgent need for Bollworm, *H. zea*
    - B. Hopkins & P. Pietrantonio, Texas A&M

- North American Mapping and Management
  - Zea Resistance
    - B. Hutchison, University of Minnesota
    - S. Fleisher, Penn State University
    - G. Payne, University of West Georgia
Resistance Management
Integral part of IPM

Acceptable Pest Levels

Chemical Control

Biological Control

Mechanical Control

Monitoring Scouting

Cultural Practices

Resistance Management
Follow Local Recommendations

Products

- Use **LABELED** rates!
  - **DO NOT**
  - Rely on a single MOA
    - Especially for season long control
    - Multiple generation pests / crop season

- Use block rotations
  - Multiple or overlapping generations
 Resistance Management
Barriers to implementation

- No simple solutions, but keep it simple
  - Complexity reduces implementation

- Pests don’t honor property lines!

- Let the neighbors do it!


Rube Goldberg (rŭb góld′berg) n. a comically involved, complicated invention, laboriously contrived to perform a simple operation — Webster’s New World Dictionary
Industry motivated
- product stewardship
  - protect product life cycle

IRAC
- Task force
  - Create RM guidelines
  - Educate & promote
    - Value of resistance management
      - Crop, non-crop uses & public health.

For success
- Cooperation from all stakeholders!
Thank you for attending the symposium