Insect Resistance Management: Science, Scope, and Solutions

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For

IRAC U.S.

Facilitating IRM Communication & Education

IRAC formed in 1984 to provide a coordinated industry response to the development of resistance in insect and mite pests.

A technical working group (task-force) of CropLife, the trade association of crop protection manufactures, formulators and distributors.

Promote the development and implementation of resistance management strategies in crop protection and vector control to maintain efficacy and support sustainable agriculture and improved public health.

- Facilitate communication and education on insect and mite IRM.
Roles of IRAC International

- Actively promote and support work of IRAC Country groups
- Interact effectively with and support IRAG groups
- Cooperate with CropLife International
- Interact with regulatory authorities responsible for insecticide registration

**Liaison and coordination activities**

**IRAC International**
A comprehensive approach to tackling resistance

**Technical outputs**
- Help to identify the scope and nature of resistance problems
- Provide methods for detecting and monitoring resistance
- Provide key resources to aid in developing effective IRM e.g. Mode of action scheme

**Communication and education**
- Develop IRAC website to provide communication and education on resistance to all stakeholders
- Develop educational resources to improve understanding of IRM
- Act as key global communicator on topical resistance issues
Role of Country Groups

- Deal with key resistance issues at local level – supported by IRAC Intl. (liaison officer affiliated to each country group)
- Develop projects to support local problems –
  e.g. IRAC-India developing project to tackle resistance in BPH
  e.g. IRAC-Brazil developed local Mode of Action based IRM schemes
- Often include additional companies not involved in IRAC International
- May involve others from academia, research institutes & regulatory bodies
- Country groups can help with translation of IRAC materials & resources

Current IRAC Country groups:
- IRAC Australia (AIRMG)
- IRAC Brazil
- IRAC India
- IRAC South Africa
- IRAC Spain
- IRAC US
One of the original roles of IRAC was to track the status of resistance situations and provide recommendations.

In the late 80’s and early 90’s this was done with an internal survey of experts but was phased out when we began supporting the MSU Database.

The MSU Database played a valuable role by collecting all of the published reports of resistance cases.

However, as resistance is dynamic it is not a good indicator of the current situations.

To augment the MSU Database, IRAC has reestablished an expert survey of the recent status of resistance situations and is making it available on the MSU website.
The IRAC survey represents the current working knowledge of a wide range of experts from academia, government and industry, with IRAC making the final decision on status. IRAC makes no claims as to completeness or accuracy as situations can change quickly.

Insect resistance is a local phenomenon therefore the data should not be used to project what is happening in other areas or in the future.

IRAC makes no suggestions as to which products should or should not be used where resistance is present. Furthermore the report of resistance to a product should not be taken as an indicator of that product's performance on that pest and resistance to one pest does not predict resistance to another pest.

The data reported represents the working knowledge of that year but may represent resistance that was developed earlier and continues to persist.
**Resistance Status**
- None = none known, default no need to list
- Low = a few (<10) isolated areas
- Medium = consistent issues in more than 10 areas/counties but product still useful
- High = most areas with some issues and product only used occasionally
- Severe = widespread and little remaining usefulness

**Resistance Impact**
- None
- Low = occasional reduction in use, increase in rate, or rotation to similar priced chemistry or control tactic
- Medium = common reduction in performance with crop loss or significant increase in rate or rotation to alternates that are 2X more expensive
- High = Significant economic consequence to growers
- Severe = crop goes or is going out of production due to loss
Value of the Survey

- Should give us better near real time data which will be highly useful in setting research and management priorities
- Over time it should illustrate the history of resistance development which will be highly useful in evaluation the loss of products and hopefully the successful impact of IRM programs
Invitation to Improve the Quality

- You can email IRAC or the MSU database if you know of additional situations or disagree with the current ranking
- You can agree to becoming one of the annual experts for your geography
- www.irac-online.org
- www.pesticideresistance.org