



Insecticide Resistance Action Committee

# IRAC-US Update 2013



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## Activities

- **US E.P.A: Key Strategies of an IRM Plan**
- **Symposium at 2013 ESA Meetings: Mechanisms of Resistance, 9<sup>th</sup> in a Series.**
- **Project Updates ...**
  - Univ Nebraska: Online education modules
  - Univ Florida: Asian Citrus Psyllid control
  - Univ Florida: Chinch Bug control



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## Key Strategies of an IRM plan

- EPA has requested to have this information.
- Next steps – finalize the document and discuss with EPA
  - Also need to bring Mark Whalon up to speed on the document since he is now the ESA liaison to the EPA



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## Key Strategies of an IRM plan

- **Avoid repeated sequential use of insecticides based on a specific mode of action for season-long control of any target insect species which has more than one generation per crop per season.**
- **Rotate with an insecticide with a different mode of action. For insect species with multiple or overlapping generations, the insecticide resistance management plan should utilize a “treatment window” approach.**
- **Always avoid using less than labeled rates of any insecticide when used alone or in tank mixtures.**



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## Key Strategies of an IRM plan

- Applications should target against early insect developmental stages or newly-emerged adults whenever possible.
- When possible, encourage the availability of refugia (fallow lands, crop rotation, weeds or other alternate hosts) where susceptible populations can survive and interbreed with selected populations from crop areas.
- Integrate local IPM practices specific for the crop and use area, for preventing or delaying a pest's ability to develop resistance.



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## Key Strategies of an IRM plan

- **Tank mixtures which involve using two or more insecticides for the same target insect are not recommended. However, tank mixtures of pesticides which utilize two different modes of action against two different insects (or mites) are acceptable. Avoid using lower-than label rate tank mixtures.**
- **If field failures are common and resistance is a reasonable cause, immediately consult your local company representative or agricultural advisor for the best alternate method of control for your area and begin remedial measures.**



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## 2013 Proposed ESA Symposium

### ■ “Mechanisms of Resistance: From Mechanism to Management”, IRAC US Symposium Series: No.9

Toxicodynamic consequences of selected target site mutations and implications for resistance management.	Ralf Nauen - Bayer
H. zea	Patricia Pietrantonio – Texas A&M
Spinosad	Tom Sparks - Dow
Neonicotinoid resistance in aphids	Martin Williamson - Rothamsted
Bt resistance in cotton	Graham Head - Monsanto
Bedbugs	Dini Miller – Virginia Tech University
Colorado potato beetles – multiple mechanism	David Hawthorne - University of Maryland
Mosquitoes – resistance mechanism – behavioral	Jeff Scott - Cornell
How you manage resistance depending on mechanism	Rick Roush – University of Melbourne



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## Projects: University of Nebraska IRM Education Modules

This project started during the IRAC International meetings in Brussels, 2 years ago.

- U\_Neb proposed this work as an element of their Dr. of Plant Health program.
- The module was to be an interactive training module with supplemental inputs from IRAC. IRAC-US and IRAC International each pledged \$12,500 to support the costs of 2 modules:
  - Principles of Insecticide Resistance (Module 2) and
  - Mechanisms of Insecticide Resistance (Module 3).
- Considerable delays ...
  - Personnel to work on the project
  - Issues with schedules of principals (Professor Hein and colleagues).
  - Confusion over formats, content, objectives (e.g., audience), etc.
- Just received version 3 of Module 2 and version 1 of Module 3.
  - [Module 2](#) has some quirks with navigation, but is reasonably complete.
  - [Module 3](#) is in rough draft form, but its content is nearly complete.





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## Projects: University of Nebraska IRM Education Modules

- To be resolved ...
  - We have listed IRAC credit on the front page of each module. If IRAC wants this listed in any different manner this can be done to meet your wishes on how this is done.
  - These two modules are only meant to address two aspects of resistance and management.
  - We are interested in feedback on the materials that are presented so that it can be improved. If the major concerns are to incorporate more animations, etc. this is very expensive and not possible with the budget we had to work with.



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## Projects: Asian Citrus Psyllid, Dr. Moneen Jones – Univ. Florida

- Tolerance is 1 psyllid – farmers spray with sighting of only one insect.
- Citrus Health Management Area) test areas in FL
- Also doing work with oil sprays instead of insecticides. Oil controls psyllid and citrus leaf miner.
- Found also that certain tank mixes (she mentioned chlorantraniliprole + acetamiprid) yields antagonism.