



# Methods Working Group Update

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# Team Members

- Frank Wessels, Dow AgroSciences (Team Leader)
- Harald Kohler, Bayer CropScience (Deputy Leader)
- Magali Gravouil, DuPont
- Lixin Mao, BASF
- Tatjana Sikuljak, BASF
- Russell Slater, Syngenta (Interim Member)



# Team Goals

- Establish a single contact point for researchers to gain information on how to conduct insecticide resistance bioassays
- To provide IRAC approved methods, so that data generated by independent researchers can be directly compared



# Meeting Team Goals

- Constantly updating searchable database for IRAC approved methods and published methods that have not been validated by IRAC
- Increasing diversity & rate of validation of IRAC approved methods, including public health pests
- Aid in better understanding of confirmed methods by providing additional visual tools (e.g. methods eVideos)
- Improving communication to our target audience



# Insecticide & Acaricide Resistance Monitoring

## Harmonisation and Coordination of Susceptibility Bioassay Methods

Insecticide Resistance Action Committee

[www.irac-online.org](http://www.irac-online.org)

### Methods Team Overview

The availability of standard, validated and easy-to-run methods for resistance detection in the world's major insect pests is crucial for successful monitoring of resistance problems. The IRAC Methods Team has worked to develop, validate and collate approved methods and make these available via the IRAC website and the online tool, eMethods. The work of the Methods Team involves interaction with other IRAC Teams and Working Groups as well as cooperation with external experts in academia and institutes. The Methods Team also provides resources on biochemical and molecular methodologies as well as references to other methods in peer reviewed journals which have not been validated by IRAC.

### IRAC Approved Methods

IRAC Approved Methods are:

- › IRAC recommendations for resistance monitoring or baseline determination are intended to help standardize methodologies for the purpose of global comparison
- › Reliable and reproducible
- › Simple and easy to perform
- › Consistent in distinguishing between susceptible and resistant phenotypes
- › Relevant to field performance of products

Most tests are specific to particular life-history stages and can only be used with confidence for toxicants which have been validated in the development of the methodology.



Credit: Keith Weller

### Team Objectives

- › Establish a single contact point for researchers to gain information on how to conduct insecticide resistance bioassays
- › To provide IRAC approved methods, so that data generated by independent researchers can be directly compared

### eVideo Collection

View the eVideo collection:

[www.irac-online.org](http://www.irac-online.org)



- › Instructional videos for IRAC approved methods
  - › Three videos published to date
  - › *Myzus persicae*, *Tuta absoluta*, and *Nilaparvata lugens*/*Nephotettix cincticeps*
- › Currently in production: *Meligethes aeneus*



Credit: Scott Bauer



Credit: DuPont



Credit: Bayer CropScience

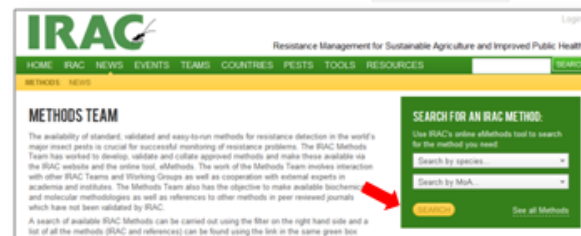
### Resources Available



### eMethods Database

Search eMethods, or view the whole database:

[www.irac-online.org](http://www.irac-online.org)



- › Contains IRAC approved methods
  - › 29 approved methods to date
  - › Covers many of the world's major insect pests
- › Collection of published methods not evaluated by IRAC
  - › ~160 references available
  - › Covers both crop and public health pests
  - › Most references are hyperlinked to PubMed
- › Searchable by species and MoA



# eMethods Status

- 29 approved methods
  - 158 References posted
- Current methods activities
  - Diamides
    - Whitefly drafted and reviewed. Finalized soon
    - Colorado potato beetle – drafted and under review
    - Rice stemborer, rice leafroller – drafted and under review
    - *Liriomyza* Leafminers – drafted
  - Bedbug method – drafted, to be confirmed by Syngenta

- 4<sup>th</sup> eVideo: pollen beetle method released in Q1
- Available on YouTube and on Methods WG webpage



eVideo	Views
<i>Tuta absoluta</i>	1206
Aphids	874
Rice Planthoppers	283
Pollen Beetles	35

- Currently considering future Methods video topics
  - Stink bug, Asian citrus psyllid?



# 2014 Goals

- Clear need to improve communication to target audience (researchers)
  - 8 citations for IRAC Methods over past 16 years
- Proposed ideas for improving communication
  - Presentations at professional meetings (e.g. new Methods WG poster)
  - White paper outlining team objectives/ resources
    - JEE forums section, etc.
  - Publish eVideos in Journal of Visualized Experiments - JoVE



- Peer-reviewed online Video Methods Journal
  - Indexed in PubMed, SciFinder, and Scopus
- Publications include video and brief manuscript
- Publication cost for author produced videos:  
\$1200 (std. access) \$3000 (open access)
  - Propose to publish all four eVideos in JoVE
  - Prefer open access > std. access
    - Std. access available to ~550 institutions in >35 countries



# Goals & Smart Objectives

Goals	Objectives	Timeline
Establish single contact point for insecticide and acaricide monitoring methods (core activities)	<ul style="list-style-type: none"><li>• Populate eMethods tool with a range of methods used to measure insecticide susceptibility against key agricultural, horticultural, and public health pests.<ul style="list-style-type: none"><li>• Methods sourced from literatures, companies, and external contacts.</li></ul></li><li>• Continue to maintain and improve confirmed methods. Review older methods for suitability.</li><li>• Populate eMethods with additional references.</li></ul>	Q1-Q4, 2014
To provide IRAC approved methods, so that data generated by independent researchers can be directly compared	<ul style="list-style-type: none"><li>• Deliver 3 new IRAC approved methods.</li><li>• Improve access to methods on IRAC website (e.g. links on pest pages)</li><li>• Initiate 1 new eVideo (TBD: stink bugs or Asian citrus psyllid)</li></ul>	Q4, 2014 Q2, 2014 Q4, 2014
Improve communication to our target audience (promotional activities)	<ul style="list-style-type: none"><li>• Promote Methods WG resources through posters and presentations at professional meetings.</li><li>• Begin preparing eVideos for JoVE publication (if proposal/ funding is approved by Executive Committee)</li></ul>	Q4, 2014 Q2, 2014