

## Insecticide Resistance Action Group

**Minutes of the 37<sup>th</sup> meeting held at Frontier Agriculture, Sandy  
Wednesday, 25 October 2016  
Hosted by Reuben Morris**

Buss, David (EMR)  
Collier, Rosemary (Warwick Crop Centre)  
Collins, Larissa (Fera)  
Denholm, Ian (University of Hertfordshire)  
Fenton, Brian (SRUC)  
Foster, Steve (Rothamsted Research: Chair)  
Horgan, Alan (Certis)  
Mattock, Sue (CRD)  
Morris, Reuben (Frontier)  
Mudar, Kully (Adama)  
Nicholls, Caroline (AHDB Cereals and Oilseeds)  
Pop, Dorin (Bayer CropScience)  
Pope, Tom (HAUC)  
Sisson, Adrian (DuPont)  
Slater, Russell (Syngenta)  
Smooker, Andrew (BASF)  
Wallwork, Chris (Agrii)  
White, Sacha (ADAS: *Secretary*)

### 1. Welcome

IRAG welcomes Dorin Pop, who is joining in place of Nigel Adam, and Kully Mudar, who has joined in place of Gemma Sparrow.

### 2. Apologies for absence

Adam, Nigel (Bayer CropScience)  
Cowgill, Sue (Potato Council)  
Harris, Dilwyn (Dow AgroSciences)  
Pickup, Jon (SASA)  
Powell, Vivian (AHDB horticulture)  
Stevens, Mark (BBRO)  
Tait, Michael (Syngenta)

### 3. Minutes of last meeting

*Action: SW to check with Bill Parker that we have the latest version of the MOA matrix.*

- BP emailed the most recent version in August.

*Action: LC to look into whether a database version of the MOA matrix can be developed that uses queries to access information.*

- LC says this would be possible via web link to a suitable database programme.

*Action: CW to pass on suggestions about where the MOA matrix can be expanded.*

- CW made a number of suggestions via an email to the group in September.

*Action: SW to correct and recirculate previous minutes.*

- SW emailed these to the group on 24 August.

*Action: SW to recirculate constitution.*

- SW emailed this to the group on 24 August.

*Action: SW to contact Russell Slater to find out which crop the R81T clone was detected on.*

- RS informed that the R81T clone was detected on protected aubergine and pepper in Spain.

*Action: VP/CN to investigate AHDB's ability to host the RAG sites.*

- The new IRAG page hosted by AHDB is up and available at <https://cereals.ahdb.org.uk/irag>

#### 4. Feedback from IRAC

RS gave a presentation titled 'IRAC overview & update on activities', the slides for which will be circulated with these minutes.

- Mission:
  - Facilitate communication and education on insecticide and traits resistance.
  - Promote the development and facilitate the implementation of insecticide resistance management strategies to maintain efficacy and support sustainable agriculture and improved public health.
- 14 companies represented on the executive committee.
- Supporting groups are the Steering group, Comm./Education, Resistance database, Methods, Mode of action, Public health, Biotechnology, Coleoptera, Sucking pests and Lepidoptera.
- 9 country groups.
- There is a small fee for each company to participate. This goes toward the running of the group and communications. Non-profit organisation.
- Only other country with an equivalent IRAG is Spain. Similar groups have occurred in the Nordic countries and the Netherlands. Working to resurrect these.

- Website is the main communications avenue. Most visits are for MoA classification or information on specific pests. Currently working to increase content on the latter, e.g. description, resistance status, test methods and links.
- A quarterly newsletter is published. This can be signed up for via the website.
- Workshops are arranged for insecticide resistance management (IRM) issues, e.g. in Brazil for IRM in corn, cotton and soybean.
- IRM statements are published, which all companies are committed to delivering.
- Leaflets targeted at growers outline basic IRM practice. Available at counters and with products.
- Videos are produced to raise awareness and address specific issues.
- Biggest challenge is communicating solutions and achieving implementation.
- Labelling products with MoA group is supported by IRAC where possible but is limited by regulations in different countries and the size of packaging.
- The resistance database is run by Michigan State University. RS would like for this to be more regionalised, e.g. North America, South America, etc.
- RS will update IRAG whenever new information is published.
- Videos, web pages, etc. can be used without modification and crediting IRAC. Feel free to contact RS if more content is needed.

## 5. Regulatory Issues

SM gave the following update:

- There have been general discussions to bridge gaps in IRM. Loss of actives has seen an increase in emergency authorisations (EAs) and EAMUs. These are designed to resolve practical, short-term emergencies, e.g. the 2016 migration of pyrethroid resistant diamond back moth (DBM) (*Plutella xylostella*).
- Article 4 Regulation 1107/2009 allows for companies to apply for a derogation where a product has failed registration/re-registration. The process is on a member state by member state basis. EFSA provides an opinion and the member state provides the rationale.
- There has been a request from ANSES (French equivalent to CRD) for advice on resistance monitoring methods.
- Re: Brexit. The position is business as usual. The department remains actively engaged in the process. There are no implications of BREXIT for membership of EPPO
- Paul Ashby is the CRD representative of the EPPO resistance panel. Minutes for this group are circulated internally.
- There is more that companies could do to help AHDB when they make applications for EAs in terms of IRM. For example, exposure to a mode of action is often much more than the on-label uses as the EAMU uses can be very extensive. CW offers Benevia as an example where IRM messages were included with the product by DuPont and supported by distributors.

## 6. Update on research

### Work at Rothamsted Research

SF provided an update on PS2720 project – ‘Combating Resistance to Aphicides in UK Aphid Pests’.

*Myzus persicae* (peach-potato aphid):

- Frequency of MACE and super-kdr resistance dropped in 2016. Kdr levels tbc. Susceptible genotypes increasing. May be a pattern or stochastic variation.
- Loss of pirimicarb may have implications for MACE resistance levels.
- No neonicotinoid resistant clones (Nic-R<sup>+</sup> or Nic-R<sup>++</sup>) detected in UK.
- Nic-R<sup>++</sup> detected on protected crops in Spain.
- Mean January and February 2016 temperatures were consistent with the average. Prediction of migration start was fairly accurate.
- Rare genotypes more common in protected crops. AH mentioned that Italy considered to be the pathway at greatest risk of importing rare genotypes as they import plants from Asia that are then exported on to the UK.
- BF updates on Scottish situation: new genotypes appearing. MACE/super-kdr frequency dropping.

*Macrosiphum euphorbiae* (potato aphid):

- No evidence of resistance to pirimicarb, pyrethroids or spirotetramat. Possible lower performance with pymetrozine but needs to be confirmed. Likely that any suspicions of field resistance are due to spray issues.

*Nasonovia ribisnigri* (currant-lettuce aphid):

- Possible lower performance with pyrethroids.

*Sitobion avenae* (grain aphid):

- Still only sus/kdr clones have been found. Decreased response of these clones to pyrethroids.

*Metopolophium dirhodum* (rose-grain aphid):

- No evidence of resistance.

*Rhopalosiphum padi* (bird cherry-oat aphid):

- More samples needed, especially where control failures are suspected.

*Psylliodes chrysocephalus* (cabbage stem flea beetle):

- Glass vial method used. Beetles placed inside for 24 hours and then allowed 24 hours to recover.
- LC<sub>50</sub> and resistance ration are increasing. Considers metabolic resistance to be the main mechanism.

Following tested for sensitivity to pyrethroids.

- *Bruchus rufimanus* (bruchid beetle): no resistance.
- *Phyllotreta striolata* (striped flea beetle): some mobile samples found.
- *Ceutorhynchus assimilis* (cabbage seed weevil): no resistance.
- Flax flea beetle: no resistance.

*P. xylostella* (DBM):

- Largest immigration for 20 years. Samples showed evidence of pyrethroid resistance (kdr and super-kdr) but were susceptible to cyantraniliprole, spinosad, indoxacarb and thiacloprid, though latter two were not particularly effective.

Work at Warwick Crop Centre

RC updated the group on research underway at the Warwick Crop Centre.

*P. xylostella* (DBM):

- Was quite well reported by amateurs. As was silver Y moth (*Autographa gamma*). Small second and third generations of DBM recorded. RM found eggs on OSR but very few caterpillars.
- AHDB project in coordination with Rothamsted meteorologists underway to track influence of weather on immigrating moths.
- DBM trapped with pheromone traps. 64 moths and 26 parasitoids trapped, indicating an important effect of natural enemies. Findings similar to those at Kirton in 1996. Would be interesting to know what alternative species are parasitised when DBM not present. Also a further case for using selective insecticides.
- Tracer, cyazypyr, Lepinox Plus and a coded product were very effective against a laboratory population. None are registered for DBM. This efficacy work will be repeated using DBM from the 2016 immigrating population.
- Grower questionnaire asking when they saw DBM, what they applied, how many times and how effective it was.

*A. gamma* (Silver Y moth)

- Investigating monitoring methods and control. Includes the use of a pheromone trap with an inbuilt camera that automatically takes a picture daily. The picture is transmitted direct to growers. Will meet with growers in the winter to determine its usefulness.

Mirid bugs on celery

- Investigating effective insecticides and IPM.
- Dave Chandler has three PhD students, including one investigating biocontrol with entomopathogenic fungi and another looking DBM control.
- RS asks whether IRAG will release DBM advice. SM suggests an annual newsletter is produced.

*Action: SW to draft a newsletter.*

## 7. IRAG outputs

Website update:

- Discussion over content. FRAG have an annual statement and resistance management guidelines in various crops.
- CW advises that guidance should be accurate and not out of date.

*Action: SM to check whether actives on guidance are in date.*

*Action: Authors to amend guidance documents if necessary. Current guidance documents can be found at*

<http://webarchive.nationalarchives.gov.uk/20151023155227/http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/Resistance-Action-Groups/iraq>.

- AHDB will 'launch' sites when relevant material is in place.

Resistance matrix

- Purpose is as a source of information collected within the group, a point of discussion and means of focussing research effort.
- Consensus is that it should remain a document for internal use only.
- Non-UK MOAs should be greyed out.
- Resistance outside of UK but in EPPO in yellow.

*Action: A group to form to focus on updating and maintaining the matrix. Currently SW, ID and CW. If any others would like join please let SW know.*

## 9. AOB

- SF informed the group that project PS2720 ends in March 2017. A Defra funding shortfall means that there is a real risk that this project will not continue. This would mean that resistance monitoring as it currently stands would end.

*Action: The group note their concern noted regarding the future of project PS2720.*

## 10. Date and venue of next meeting

A date and venue for the 38<sup>th</sup> meeting of IRAG-UK is tbc.