

Insecticide Resistance Action Group

Minutes of the 38th meeting held at Warwick Crop Centre, Warwick

Wednesday, 5 April 2017

Hosted by Rosemary Collier

Collier, Rosemary (Warwick Crop Centre)
Foster, Steve (Rothamsted Research: *Chair*)
Horgan, Alan (Certis)
Mattock, Sue (CRD)
Morris, Reuben (Frontier)
Mortlock, Philip (BASF)
Newbert, Max (Syngenta)
Nicholls, Caroline (AHDB Cereals and Oilseeds)
Nicholls, William (Adama)
Pop, Dorin (Bayer CropScience)
Pope, Tom (HAUC)
Power, Laurence (DuPont)
Slater, Russell (Syngenta)
Wallwork, Chris (Agrii)
White, Sacha (ADAS: *Secretary*)

1. Welcome

IRAG welcomes the following new members; Max Newbert, Philip Mortlock, Bethan Shaw, Laurence Power and William Nicholls who are joining in place of Pete Saunders, Andrew Smooker, David Buss, Adrian Sisson and Kully Mudhar respectively.

2. Apologies for absence

Bean, Chris (Zantra)
Collins, Larissa (Fera)
Denholm, Ian (University of Hertfordshire)
Fenton, Brian (SRUC)
Harris, Dilwyn (Dow AgroSciences)
Pickup, Jon (SASA)
Powell, Vivian (AHDB horticulture)
Shaw, Bethan (EMR)
Stevens, Mark (BBRO)

3. Minutes of last meeting

Action: SW to draft a newsletter.

- Proposed to draft a 2017 version for the 39th meeting. SF voiced preference for an annual statement on resistance.

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

- SM emailed a list of guidance in need of updating on 23 October 2017.

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>.

- SW content to draft updates if sent originals.

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.

- CW recirculated the matrix on 9 April 2017 and asked for suggestions to improve.

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

- PS2720 renewed for a one year although future beyond this is uncertain.

4. Feedback from IRAC

RS reported on the annual IRAC meeting (w/c 27/3/17 in Philadelphia). Points relevant to UK/EU are:

- Classification scheme for biological and non-chemical pest control agents, e.g. viruses, macro biological agents being developed by IRAC. Will pass on the suggestion to the IRAC MoA WG to consult the International Biocontrol Manufacturers Association (IBMA) regarding the development of the scheme. Scheme will not include nematode control agents as they are not an arthropod nor is the necessary nematode expertise available.
- Engaging with EPPO and regulators on data requirements for registration and re-registration process on improving data quality and reducing costs. Resistance Action Committees will prepare a proposal outlining recommendations for submission to EPPO.
- Working to improve website usability and pest-specific resistance information sections.
- Pollen beetle resistance monitoring data now summarised in a poster (available from website at <http://www.iraq-online.org/pests/meligethes-aeneus/>). Shift in neonicotinoid (MoA gp 4A) susceptibility evident in Europe. Should have no impact on control presently but may affect efficacy in the future. Emphasis of resistance monitoring now shifting to cabbage stem flea beetle and oilseed rape weevils.
- Bayer reported that an individual *Myzus persicae* clone heterozygous for the R81T mutation (conferring target-site resistance to neonicotinoids) was found in the Netherlands. Only an isolated case but reinforces view that this resistance is spreading (albeit slowly) from original source (peach orchards in Southern France, Spain and Italy).

- Keen to improve communications pathways with growers. Would like to put together a database of journals with a grower focus. Any assistance in this regard from IRAG would be gratefully appreciated.

Action: SF to send a list of farming press in which he's contributed to RS.

5. Regulatory Issues

SM gave the following update:

- Meeting of the EPPO panel on efficacy testing for low risk insecticides planned. Will emphasise possibilities for extrapolation of guidance between low risk insecticides. Interest in means of classifying an insecticide as low risk. Post meeting note: EPPO PP 1/296(1) 'Principles of efficacy evaluation for low-risk plant protection products' is now available from this link, and should be published on the EPPO website soon.
<http://onlinelibrary.wiley.com/doi/10.1111/epp.12396/full>.
- Looking to develop a more integrated approach to guidance, which would mirror the development in biopesticides. Biopesticide registrations have increased from 5 in 2005 to 40 in 2016.
- There has been some debate on how to improve resistance risk management guidance. Need to work toward lowering risk.
- EPPO Workshop on integrated management of insect pests in oilseed rape meeting in Berlin 20-22/9/17. Includes discussion on resistance in OSR pests. Details and presentations can be found at http://archives.eppo.int/MEETINGS/2017_conferences/IPM_oilseed_rape.htm.
- Neonicotinoids:
 - EFSA draft report on further EU neonicotinoid restrictions has not yet been discussed but will be at the next meeting. Uses approaches outlined in the non-agreed, draft bee guidance.
 - Thiacloprid and acetamiprid are not planned to be included in any further restrictions.
 - CRD will continue to brief Defra re: implications of further restrictions.
- Restrictions on pyrethroid use for resistance management purposes have so far not been introduced in the UK. The resistance management restrictions on neonicotinoid use (brought in when neonicotinoids were introduced) are a good model for insecticide use restrictions aimed at reducing resistance risk. CRD could apply restrictions on pyrethroid use for resistance management purposes. SM asked the group whether such an action would be supported. The group offered unanimous support. The proposals are in the best interest of IRM. SM will discuss potential approaches for pyrethroid restrictions with the group at a future meeting.
- RS enquired as to the requirements for including MoA information on product labels in the UK. SM explained that inclusion of this information is currently voluntary. Most products have a general resistance management statement but this is not compulsory. Previously this requirement has not been considered

necessary. RS emphasised that grower knowledge of MoA information is crucial for IRM.

Action: IRAG recommend that inclusion of MoA information on product labels be compulsory.

CW noted that a system will be needed to accommodate changes in MoA. RS responded that changes ought to be rare as the classification system is based solely on biochemistry.

- Control of pest populations with metabolic resistance using synergists is discussed. SM states that CRD have received enquiries regarding their registration/regulation. If applied at the same time as an insecticide it would need to pass the efficacy test to show the formulation did control resistant individuals. CRD open to discussion, but noted concerns that the formulation would may not improve control in individuals carrying target site mechanisms, and would this result in selection pressures for the latter. CW mentioned that consideration of non-target impacts important, e.g. bee safety of pyrethroids is reduced when applied with synergists. SM confirmed that they would need to pass ecotoxicology tests.

6. Update on research

Work at Rothamsted Research

SF provided an update on PS2720 project – ‘Monitoring and managing insecticide resistance in UK Pests’.

Myzus persicae (peach-potato aphid):

- Field populations were 86% MACE/Super-kdr, 2% Sus/Super-kdr, 10% Sus/Sus, 0.6% MACE/Sus and 1.7% other. No sexual forms were found, likely due to lack of primary host.
- MACE resistance frequency has increased since 2000. This could be a response to reductions in carbamates usage.
- Super-kdr frequency has dropped slightly since 2013 but still predominates. MACE/Super-kdr genotypes comprise P and O types. O type appeared 2005 and most common 2007-2013. P type appeared 2008 and now most common.
- Screening of field populations indicate approx. 15% carry Nic-R resistance, which confers low resistance to neonicotinoids. This has not changed significantly since 2004. No Nic-R⁺ or Nic-R⁺⁺ (conferring moderate and strong resistance to neonicotinoids respectively) detected in the UK. Resistance factors to foliar neonicotinoids are far greater than to systemic neonicotinoids.
- No reduced sensitivity found to pymetrozine, flonicamid or spirotetramat.
- Some suggestion of reduced susceptibility to cyantraniliprole in 2016. Does not have a label registration for this pest (primarily for cabbage root fly control) but will still be exposed.
- Difference in sensitivities between esfenvalerate and lambda-cyhalothrin found, with all resistant to former and some susceptible to latter. Both type II

- pyrethroids. Suggests another mechanism at work, possibly metabolic or another point mutation.
- Spring temperatures were fairly average. Flight predictions in 2017 were slightly earlier than normal.
 - In Scotland high frequency of MACE/Super-kdr present (O type in decline and P type most common). None found without some form of resistance.

Other aphids:

- *Macrosiphum euphorbiae* sensitive to pyrethroids.
- *Nasonovia ribisnigri* showing reduced sensitivity to lambda-cyhalothrin.
- *Sitobion avenae* with kdr resistance in heterozygous form found across UK. Confers moderate resistance to pyrethroids. Pyrethroids at full label rate should still provide control. Investigation of a control failure found that the crop did not have BYDV and the pyrethroid was applied at 60% of label rate, which is likely reason for lack of control. No homozygous resistant *S. avenae* found. *S. avenae* asexual in UK. Experiments using short-day length and low temperature could not encourage *S. avenae* to become sexual, which explains why homozygous resistant form not seen.

Work at Warwick Crop Centre

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

P. xylostella (DBM)

- Efficacy testing of DBM cultured from 2016 field population. Found to be resistant to pyrethroids.
- Work with meteorological scientist used wind records to conclude that DBM in 2016 migrated from Scandinavia.

Integrated control of root-feeding fly larvae infesting vegetable crops

- Three year project investigating IPM of root feeding fly larvae. Involves several EU countries inc. Denmark, France and Norway. Starts 1 May 2017.

Sceptre +

- Objective is to identify pesticides and biopesticides on vegetable, fruit and protected edible crops. Starting shortly.

AHDB pest bulletin

- AHDB and Syngenta funded web and email bulletin updating on horticultural pest news.

BBSRC collaborative research partnerships (CTPs)

- Led by Waitrose and Berry Gardens. University of Warwick is advertising for PhDs for Waitrose CTP. One will look at phylogeography of *N. ribisnigri*, host resistance breeding and pyrethroid resistance.

7. IRAG outputs

Concern voiced over loss of actives and availability of MoAs for effective IRM. Rothamsted planning to release a statement regarding the issue. Discussion over IRAG releasing a statement. Has impacts on ability to sustainably produce affordable food and on health (through reduced availability of affordable fruit and vegetable). RM mentioned that AICC have a committee to drive this issue.

Action: SF to contact RAGs regarding issuing a joint statement.

CN suggests that any IRAG statement should go through a communications team experienced in preparing press releases. SF suggested Rothamsted's.

Action: RC contact the All-Party Parliamentary Group on Agriculture to enquire about their holding a session on resistance issues.

9. AOB

BF asked prior to the meeting whether IRAG should meet annually rather than biannually. Group considered that as resistance status can change quickly biannual meetings remain the preferred option.

10. Date and venue of next meeting

SRUC in Edinburgh on 15 November 2017.