

## Insecticide Resistance Action Group

Minutes of the 41<sup>st</sup> meeting held at Syngenta Jealott's Hill, Berkshire

Tuesday, 27 November 2018

Hosted by Max Newbert



Collins, Larissa (Fera)  
Cranwell, Steve (FMC)  
Foster, Steve (Rothamsted Research: *Chair*)  
Harris, Dilwyn (Dow AgroSciences)  
Horgan, Alan (Certis)  
Mattock, Sue (CRD)  
Newbert, Max (Syngenta)  
Nicholls, Caroline (AICC)  
Parsons, Chris (Bayer CropScience)  
Shaw, Bethan (EMR)  
Stevens, Mark (BBRO) via skype  
Wallwork, Chris (Agrii)  
White, Sacha (ADAS: *Secretary*)

### 1. Welcome

IRAG welcomes Chris Parsons as a representative of Bayer CropScience, joining in place of Andrew Flind. Brian Fenton also leaves the Group. The Group would like to thank Brian and Andrew for their contributions.

### 2. Apologies for absence

Bailey, Andrew (Adama)  
Bean, Chris (Zantra)  
Collier, Rosemary (Warwick Crop Centre)  
Cowgill, Sue (AHDB)  
Denholm, Ian (University of Hertfordshire)  
Morris, Reuben (Frontier)  
Mortlock, Philip (BASF)  
Pickup, Jon (SASA)  
Pope, Tom (HAU)  
Slater, Russell (Syngenta and IRAC representative)

### 3. Minutes of last meeting

Minutes agreed.

*Action: RC to send round draft agenda for the APPG session. IRAG members to suggest speakers.*

- Action: Session approx. 1.5-3 hours. 3-4 speakers. Cross IRAG, FRAG and WRAG. In previous meeting suggested subjects were a general introduction to resistant issues (across pest groups), work of RAGs, challenges for crop protection industry, future scenarios and opportunities, and a farmer perspective. AH suggested Viv Powell as a speaker.
- *Action: Members to email speaker suggestions for the APPG session to Rosemary Collier.*

*Action: SW, RC, SF and SC to edit IRM guidance documents and AHDB to upload.*

- *Action: Members to check and send any comments on the IRAG IRM guidance documents to Sacha White by end of January 2019. These are available at: <https://www.ahdb.org.uk/knowledge-library/irag>.*

### 4. Feedback from IRAC

RS provided the following update in advance of the meeting.

- Non-chemical and biological insecticides will be incorporated into the IRAC mode of action classification scheme. Will be available as a new poster and booklet soon. The link will be circulated to the group when available.
- Formation of Nematicide Working Group and publication of document outlining resistance management guidelines for nematodes (Q2, 2018).
- Formation of IRAC Europe regional group to address cross-regional aspects of insecticide resistance management (Q1, 2019).
- Formation of IRAC Group 30 Task Team, to develop cross-industry guidelines for the use of the new mode of action Group 30 insecticides (Q3, 2018).
- Insecticide mode of action technical presentation being developed and will be accessible on IRAC web-site (Q1, 2019).
- Insecticide Resistance Management for Lepidoptera Pests: Guidelines to be published (Q4, 2018).

### 5. Regulatory Issues

SM gave the following update:

- A new update is available for the various Brexit options in relation to chemical regulation: [http://www.hse.gov.uk/brexit/brexit-chemical-regulation.htm?utm\\_source=govdelivery&utm\\_medium=email&utm\\_campaign=EU-Exit&utm\\_content=19/11](http://www.hse.gov.uk/brexit/brexit-chemical-regulation.htm?utm_source=govdelivery&utm_medium=email&utm_campaign=EU-Exit&utm_content=19/11).
- Reminder that the new neonicotinoid restrictions are coming.

- Sulfoxaflor is a new active registered in some protected crops for use against sucking pests.
- Paper being drafted reviewing the impacts of regulatory changes in last decade, losses of actives and classes, and impacts of these (especially for insecticides). Will circulate once finished.
- CRD working with AHDB to plan emergency authorisations so that these can be approved quickly.
- Ongoing engagement for biopesticides and low risk actives to expedite approval process.
- Training given on 'Efficacy Biopesticide Workshop: Requirements and Assessment under EC 1107/2009' this winter.
- EPPO have published a standard on co-formulated mixtures. EPPO also have a resistance panel which meets annually. At last meeting it was decided to create a database of insecticide and fungicide resistance. This will not be public. SM has based UK data on IRAG outputs. This resource will hopefully allow SM to report back early warnings of continental resistance to Group.

## 6. Update on research

### Work at Rothamsted Research

SF provided an update on PS2720 project – 'Monitoring and managing insecticide resistance in UK Pests'. Project funding ends this year so further funding needed.

#### *Myzus persicae* (peach-potato aphid):

- Screening of live samples: SF noted that *M. persicae* are still be caught in suction traps. Majority of sample from field crops rather than protected crops. More from the latter needed. Found no neonic resistance (Nic-R, Nic-R<sup>+</sup> or Nic-R<sup>++</sup>). No reduced susceptibility to pymetrozine detected. Sales of this active are not permitted beyond April 2019 due to groundwater contamination issues. Shame to lose as has a narrow spectrum of activity so better for non-target organisms. Approx. 85% of samples had MACE resistance, approx. 30% had kdr resistance and approx. 65% had super-kdr resistance. No field samples found with high esterase resistance (R<sub>3</sub>) but 40% from protected crops had R<sub>3</sub>. This may be due to arrival of *M. persicae* from sexual populations abroad (via plant trade).
- `First flight forecast: Mean January/ February temperatures slightly below long term trend. Forecast was fairly accurate although peaks were slightly later than expected, possibly due to the 'Beast from the East' in late February/ early March.
- Scotland: clones carrying MACE and super kdr resistance predominate. Study in 2017 found no association between resistance or microsat and presence of TuYV. TuYV found in 50-70% of *M. persicae* in Scotland (c.f. 80% in York). MS adds that the BBRO trap network (Humber to Essex) found 70% carried the virus, and that virus control will be a major challenge for beet growers in Europe without neonic seed treatments.

- Super clones: widespread in UK but not in Europe. W type becoming increasingly common. Carries MACE, kdr and super kdr. P type remains common. O type on the wane. O carries MACE and super kdr so must be other selection pressures at work. In Scotland P type predominates and W type is relatively rare.

*Sitobion avenae*:

- Four *S. avenae* samples sent in following control concerns. Bioassays conducted on two samples. Both found to have kdr (SR). Resistance factor (RF) = 35. A field rate of lambda-cyhalothrin killed approx. 50% of population.
- *S. avenae* homozygous for kdr (RR) have never been found. SAV3 is the UK super clone. Suggests sexual reproduction does not occur. No males found.
- Rothamsted have ability to test for aphids carrying BYDV (PAV and MAV) using rt-PCR.
- MN adds that the loss of neonic seed treatments will result in increased foliar insecticide use in high risk crops (early drilled and coastal crops).

Cabbage stem flea beetle:

- In 2017 no populations susceptible to lambda-cyhalothrin were found. In 2018, more populations were sampled. Testing found populations with the highest frequency of resistance yet found in the west. The only susceptible populations were found in the east Midlands.
- Resistance mechanism thought to be metabolic in UK as adding a synergist overcomes resistance.
- RF = 40-110 in 2018. Lower than in 2017 (up to 340).
- SF not testing larvae. May be happening elsewhere.

Other pests:

- Pollen beetle: Two samples in 2018. Both resistant to lambda-cyhalothrin. Resistance is metabolic. No evidence in lab of better control with tau-fluvalinate.
- Striped flea beetle: Samples from 2014 and 2018 exhibited reduced susceptibility to lambda-cyhalothrin however have no susceptible baseline available.
- Turnip beetle: reduced susceptibility to lambda-cyhalothrin. No baseline exists.
- Bruchid beetle: Three samples in 2018. All exhibited reduced susceptibility to lambda-cyhalothrin however have no susceptible baseline available.
- Diamond back moth (DBM): Five samples in 2018. All resistant to lambda-cyhalothrin. Lambda-cyhalothrin at field rate provided approx. 50% control. Benevia (cyantraniliprole) effective. MN adds that a Syngenta product will be available next year containing cyantraniliprole so exposure will increase. CW adds that resistance to this active has been found in Asia. Spinosad also effective. Resistance to spinosad has been found in other pests elsewhere.
- Onion thrips: Resistance to pyrethroids has already been detected in UK. 2018 sample was susceptible. Spinosad effective.
- Willow carrot aphid: Three sample in 2018. All resistant to lambda-cyhalothrin. Exposure to pyrethroids is largely incidental via sprays for other pests. CW notes that early protection from virus infection was via neonic seed treatments. With

their loss only Teppeki remains. LC adds that carrot growers cannot currently cover season. Added issue is that mild winters result in earlier aphid migrations.

### Work at Warwick Crop Centre

SF gave an update provided by RC on research underway at Warwick Crop Centre.

#### SceptrePlus:

- Looking at new pesticides or biopesticides for control of pests and weeds in ornamental crops.
- *M. persicae*: good control provided by several conventional pesticides and biopesticides in lab tests. Field testing results pending.
- Long list of other targets, including several with resistance issues. Targets include *T. absoluta* on tomato, thrips on leeks, *Brevicoryne brassicae*, *Nasonovia ribisnigri*, *Cavariella aegopodii*.
- Further work includes additional replication of *M. persicae* bioassays and bioassays on other aphid species.
- If anyone would like more information on SCEPTREplus there are various recent presentations we can disseminate.

#### Silver Y moth:

- Silver y moth: Large migration in July 2018. Concern over pyrethroid resistance although three samples tested this year were not resistant (although a very limited initial source of insects so may not be a representative sample). MS offered to send silver Y samples if needed. No resistance to spinosad, cyazypyr or indoxacarb. Control problems may be a targeting issue as larvae tend to be on underside of leaves or enclosed in cabbage head. AH suggests that high temperatures this summer may have affected the performance of some insecticides.

#### Fly IPM:

- European ERANET project on developing IPM strategy for root-feeding flies – cabbage root fly, carrot fly etc. Looking at biological, physical and behavioural (trap crops/repellents) approaches.

#### Virus control in carrots:

- New project on virus in carrot (AHDB) led by Adrian Fox (Fera) – implications for aphid management.

#### New European initiative – ‘Towards pesticide-free agriculture’:

- Announced recently. Can be downloaded from ‘ENDURE’ web site.

### Work at ADAS

SW gave an update on cabbage stem flea beetle (CSFB) research at ADAS.

- Two of three years complete of AHDB-funded CSFB IPM project.

- Modelling work has identified several risk factors for CSFB adult damage in the autumn, larval numbers in the autumn and larval numbers in the spring. These include temperature, rainfall and sowing date.
- Trials investigating the effect of variety and seed rate on CSFB damage (adult and larval) found very few differences between varieties and seed rates. At higher seed rates there were greater larvae per m<sup>2</sup>.
- Delaying control of volunteer OSR until late September reduced CSFB pressure in nearby OSR crop during establishment, with significant reductions in adult numbers and damage and significant increases in plant population.
- Defoliating OSR overwinter significantly reduced larval populations.

### Work at Fera

LC gave an update on research at Fera.

CSFB:

- The addition of a novel synergist to cypermethrin (at 20% field rate) gave 100% mortality of CSFB after 24 hours (cf cypermethrin at field rate which gave 22% mortality) with topical application.
- In a leaf-dip assay, the novel synergist and cypermethrin gave 53% mortality of 10% mortality with cypermethrin alone.

*M. persicae*:

- Catches in yellow water traps continued a month later than normal for most of UK.

## 7. IRAG outputs

IRAG constitution

- Members to send comments on constitution to SW.

*Action: Members to provide final comments on draft constitution by end of January 2019.*

## 9. AOB

IRAG membership:

- AH is stepping down from the Group and proposed Laurence Power as his replacement Certis representative. When Laurence cannot attend AH may step in.
- DH is stepping down from the Group and proposed Rebecca Hilton as his replacement Corteva representative.
- The members thank AH and DH for their contribution to the Group and agree to Laurence Power and Rebecca Hilton joining.
- With Brian Fenton leaving the group we only have Jon Pickup to represent resistance issues in Scotland. A replacement for Brian is needed. Andy Evans (SRUC) and Eric Anderson (Scottish Agronomy Ltd) mentioned as candidates.

*Action: SW to invite Andy Evans to join Group to replace Brian Fenton.*

IRAG Chair and Secretary:

- This is SF's last meeting as Chair. He will remain in position until the next meeting when a new Chair will be needed. He nominates RC as the next Chair and asked for any other nominations. The Group thanked SF for his work as Chair and those present supported the nomination of RC.

*Action: SF to email group asking for nominations for the role of Chair and feedback on RC's nomination.*

- SW's tenure as Secretary finishes in October 2019.

#### 10. Date and venue of next meeting

ADAS Boxworth, Cambridgeshire on 24 April 2019.