

Attendance of the XI European Congress of Entomology, 2-6th July 2018,
Naples
Bethan Shaw

Conference headlines:

- Review of insecticide resistance in both the UK and Europe including Cholorantraniliprole resistance has been detected in *Tuta absoluta* in Italy and Greece
- The use of genetic mapping is being used to detect when *D. suzukii* evolved the ability to oviposit into ripening fruits
- Automatic counting traps are being developed for glasshouse and field use to reduce labour costs
- European parasitoids are being surveyed for their ability to suppress *D. suzukii* which will make the UK registration process much quicker



Background

The ECE began in 1972, created by two European entomologists. ECE events were to be held at four-year intervals with 'less ambitious registration fees [which would] make it possible for many younger colleagues to present their work' to an international audience

The 2018 conference in Naples was attended by over 1000 people from 65 countries across the world including delegates from not only Europe but also India, Pakistan Africa, USA and New Zealand. This was the largest gathering at an ECE event. Many of the delegates were research leaders but it was noted during the conference that there was a high number of early careers researchers, postgraduate and PhD students. This conference was the largest European entomological event, inviting keynote speakers from around the world to present their findings.

There were 560 posters, 460 oral presentations and 6 plenary sessions. The 5 days were divided into 6 morning and 6 afternoon sections with parallel oral and poster session occurring simultaneously. The topics covered a large range including:

- Behaviour
- Biological Control and Integrated Pest Management
- Chemical Ecology and Multitrophic Interactions
- Ecology and Toxicology of Insecticides
- Ecology, Biodiversity and Conservation
- Genetics and Evolutionary Biology
- Insect Control Biotechnology
- Insects and Global Food Production

Travel Findings

Although the conference covered many entomological topics I attended many of the sessions that focused on control options. The conference had an extremely 'integrated pest management' focused approach and so topics included a great range of chemical, cultural and biological methods. Steve Foster from Rothamsted, gave an overview of known and suspected pesticide resistance in the UK. Species of Aphid, pollen beetle, species of weevil, amongst others, were discussed. As we have lost Neonicotinoids, this was a large part of the discussion on how to reduce resistance to the remaining products available. By alternating spray products from different chemical classes, growers are able to reduce repeat exposure and therefore reduce resistance build up. He stated that the rarer genotypes, that can be associated with resistance, are rarer in protected cropping, due to the reduced immigration. Christopher Zimmer from Syngenta, discussed resistance in *Tuta absoluta*, the invasive leaf miner which affected 60% of global tomato production in 2016. Although resistance to Diamides is already known, Christopher Zimmer and colleagues used leaf dipping assays to see if resistance to Chlorantraniliprole has developed in three populations across Europe. They found resistance in both the Italian and Greek strains but less resistance in the Spanish strains.

It was clear from the range of talks and posters presented on *D. suzukii* that research has greatly expanded in the last half a decade. Two talks were presented on the genetics and evolution of the species by investigating its sister species'. By looking at the differences between these species they have begun to understand at which point the switch from over-ripe to under-ripe fruit as an egg laying source occurred in the phylogenetic tree. Both presenters showed the variation in gene expression in *D. suzukii* and *D. subpulchrella*, which is also able to lay eggs in ripening fruit and *D. biarmipes*, the closest relative on the phylogenetic tree that oviposits in decomposition fruit. From this research, they have been able to identify genes that have driven the morphological differences that has resulted in *D. suzukii* being the problem it is today.

A large number of talks focused on the development of remote technologies to aid growers in regard to pest management. Automatic counting traps are being trialled in both glasshouses and within the field. So far, none have managed to create a program that can self-identify species within the trap, however many work on sending images of the trap catch to a computer where the user can then identify the species without having to visit the trap in the field. Most of the work that surrounded this area was theoretical and it is clear that there are many practical issues, such as powering the camera, memory storage and having a high enough resolution image to ensure identification. James Bell discussed using wing beat frequencies to identify

insects that pass through an infra-red beam into a monitoring trap. These frequencies and harmonics of wing beat are species specific and they have been able to use them to count the number of various insects entering a trap.

Several groups presented both posters and oral presentations on their research towards parasitoids or natural enemies that could be used to target *D. suzukii*. As predators and parasitoids are already commonly used to target key glasshouse pests, they would complement an IPM program that was more biological than chemical focused. None of the European parasitoids that are able to target *D. suzukii* are yet to be identified in the UK. However, research into how these native parasitoids interacted with this invasive pest and other native species, will provide evidence for the registration process, which is vital when a new commercial biological control is approved. An area that was of particular interest to me was the talks and posters surrounding egg laying behaviour in *D. suzukii*. As I focus on behavioural rhythms of this species, of which egg laying has played a large role in my PhD, it has been invaluable to discuss other researchers approaches to overcome issues in methodology. Female *D. suzukii* differ from other *Drosophila* species in that they lay eggs in ripening fruit. Gabriella Tut, presented a series of videos that display the oviposition process of the female. She was able to identify the step by step process the female performs when selecting an egg laying site. It takes a female roughly 7 minutes from landing on the fruit to egg laying. This provides an opportunity to disrupt oviposition as the female will start the whole process again if she is disturbed.

It seems that as the global population grow a push to prevent food shortages has occurred. Several talks were given about using insects as a food sources as they are much more ethically and economical than beef, pork and poultry production. Insects are high in protein and could replace meat in many reconstituted products such as burgers or sausages.

Personal statement

For *Drosophila suzukii*, the species I focus on, there were 7 oral presentations and 10 posters. I spoke to several of these presenters and have made connections I know will aid me in future research in this area. I have been invited to visit researchers to discuss future collaborations which would not have arisen if I had not attended the conference.

There were also talks that, while not directly relevant to my topic, were extremely interesting and gave me ideas of how I could analyse data or how to design experiments. There were also talks that I just enjoyed as they were completely detached from my work but extremely interesting. I especially enjoyed a talk that was given about monitoring mosquitos on cows, and consisted of attaching sticky traps to the backs of cows to estimate how frequently they were bitten within a day.

Contact details

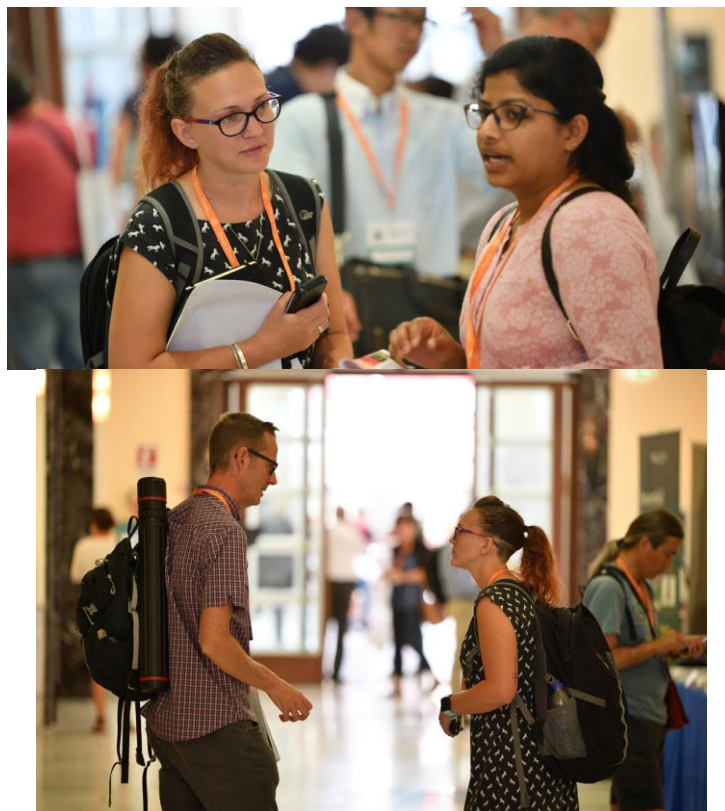
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Acknowledgements

Without the kind contribution from the GCRI I would have been unable to attend this conference and would like to thank you for financial support you have provided. Not only have I been able to discuss my research but I have had the opportunity to network and learn. I was also able to attend the conference dinner, which was a lovely evening. While was not selected for an oral presentation at this meeting, I did speak to several students directly and discussed the GCRI Trust. I encouraged others, who work on glasshouse pests, to apply to the GCRI Trust for future travel funding. I hope that other students and researchers follow my advice and approach the GCRI Trust for travel funding.

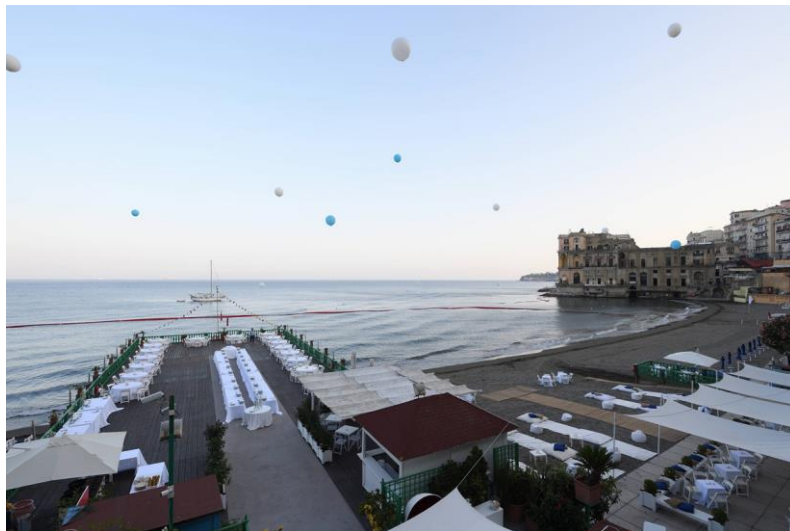
Thank you
Bethan Shaw



Meeting fellow a researcher at the conference.



Delegates at the closing ceremony the conference



The closing ceremony banquet

** All photographs taken by the official event photographer.