



DR JAMIE HOPKINSON

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Jamie Hopkinson has been making a significant contribution to the Australian cotton industry through his research into entomological issues for over 15 years. He completed his PhD in 2011, focusing on the integrated pest management (IPM) of cotton aphids, particularly the use of biological control. Jamie explained, 'I've always been interested in biology since I was young. I grew up on a mixed cropping property on the Darling Downs, so I have had a lifelong association with agriculture. I started in entomology in a casual position over summer at the end of my university studies and it just seemed like a good fit.'

At the same time that Jamie was finishing his degree, resistance in *Helicoverpa* was becoming a major concern in the cotton industry. Researchers from the Queensland Department of Agriculture and Fisheries (QDAF) and the NSW Department of Primary Industries (NSWDPI) including Bernie Franzmann, Dave Murray and Richard Lloyd, were investigating biological controls and other elements of integrated pest management. Their work caught Jamie's attention immediately. 'It felt like what they were doing was important and could make a difference. I liked that,' he explained. Since then, Jamie has worked with QDAF in a number of areas, including most recently on the management of Silverleaf whitefly (SLW), with a specific focus on the insecticide resistance of this pest.

Motivated to make a broad and positive difference through his work, Jamie explained what it is about the cotton industry that inspires him. 'I like that the cotton industry is always looking for ways to improve the way it does things, it's innovative. The industry also very clearly values research and I have been shown a lot of support and encouragement over the years, both by businesses within the industry and individuals (growers, agronomists, researchers) which has made my job a lot easier and very enjoyable.'



Jamie said completing his PhD studies as a major achievement. 'I studied the biology of a parasitoid wasp of cotton aphid as part of a Cotton Research and Development Corporation (CRDC) scholarship. While the study itself didn't deliver many major breakthroughs, it did a lot to prepare me for a future in research.'

Since 2009, Jamie has been the principal researcher of a CRDC funded project at QDAF focusing on the monitoring of SLW insecticide resistance.



Here, he leads a dedicated team to determine the insecticide resistance status of SLW populations, collected from the major cotton growing regions across eastern Australia.

At a granular level, this important research is looking at five key areas relating to resistance, including:

- SLW insecticide resistance, toxicological and genetic studies
- Toxicity of insecticides on whitefly parasitoids
- Developmental biology and prey consumption studies of natural enemies
- Field entomology/ecological research of grains pests and their natural enemies
- Taxonomic identification of insects

Understanding insecticide resistance in SLW and providing guidance on how best to manage the resistance is critical.

'Pyriproxyfen is a cornerstone product that the industry is reliant on for SLW control and our resistance program has a major focus on this chemistry,' Jamie explained.

Another aspect of Jamie's role is to provide advice on IPM and what can be done to minimise the risk of whitefly outbreaks, using selective insecticides and the value of natural enemies.

'The area of research I'm most proud of is that through my attendance at Crop Consultants Australia and CottonInfo events, growers and agronomists are much more aware of the value of the whitefly parasitoid, *Eretmocerus*, and factor it into their decision making,' said Jamie.

Jamie's research outcomes have been significant within the cotton industry. He has established important collaborative links to his current project, including with the University of Queensland (UQ), University of Canberra (UC), CSIRO and Bayer. The linkages with UQ, UC and CSIRO focus on the molecular identification of SLW and insecticide resistance markers.

The collaboration with Ralf Nauen at Bayer is focused on local detection of SLW resistance to spirotetramat, with efforts to date focused on characterising the mechanism involved, as well as the stability and inheritance of resistance.

Jamie's research over the past year has also focused on the stability and mode of inheritance components of the study, while Bayer has conducted the molecular studies. This research was presented by Bayer at the IUPAC Congress on Crop Protection Chemistry in Gent, Belgium.

Jamie has made an outstanding contribution to the national cotton effort to improve knowledge and understanding of SLW insecticide resistance which is vital to the long-term management of SLW and the success of the cotton industry.

