



COTTON SEED DISTRIBUTORS RESEARCHER OF THE YEAR AWARD

FINALIST

DR SHARON DOWNES, CSIRO ECOSYSTEM SCIENCES, NARRABRI, NSW



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DR SHARON DOWNES IS A SENIOR RESEARCH SCIENTIST WITH THE CSIRO, BASED AT THE AUSTRALIAN COTTON RESEARCH INSTITUTE IN NARRABRI NSW. SINCE JOINING THE TEAM IN 2004, SHE HAS MADE AN OUTSTANDING CONTRIBUTION IN A RELATIVELY SHORT PERIOD TO THE MONITORING OF RESISTANCE TO THE CRY PROTEINS IN BOLLGARD II.

Under Sharon's careful and committed leadership, the number of samples collected for testing has drastically increased, providing better and more robust data on which to base the industry's Resistance Management Plan (RMP). Outcomes of Sharon's research have shaped the discussion that the industry has had, via REFCOM, on the current RMP and its effectiveness.

The high grower uptake of Bollgard II speaks volumes for the value of this technology to industry. This has included better control of *Helicoverpa* spp. and some other minor Lepidopteran pests, reduced insecticide use, a dramatically improved public perception of the cotton industry and better lifestyle. This is all at risk if *Helicoverpa* develop resistance to one or more of the cry proteins and Sharon's research has been absolutely critical in evaluating changes in resistance frequencies and alerting the industry ahead of time.

Sharon has also made important scientific contributions that have added significant extra value to this research. For instance, in association with colleague Rod Mahon, Sharon discovered two new tests (the F2 and more recently F1 tests) which are far more sensitive to changes in resistance frequencies than the traditional F0 tests. This allows the industry to make far more educated decisions about the effectiveness of the Bollgard II Resistance Management Plan and the need for any changes.

Sharon is outstanding in her ability to convey the complexities of the genetics, the F1 and F2 testing strategies and the results and their implications to all levels of industry and to scientific audiences. This has meant that industry has a far better appreciation of the results, what they mean and implications for the future of Bollgard II.

Her findings have also re-invigorated other areas of research, especially in re-examining migration from inland areas, re-evaluating the ecology and resistance risk in *H. punctigera* and re-examining the effectiveness of refuges. In any conversation with researchers from other countries that have access to the Bt-cotton technologies it is clear that our resistance monitoring program is a true standout in terms of rigour, consistency, logic and outcomes and much of this is due to Sharon's efforts.

Sharon plays a significant role as a group and project leader at the Australian Cotton Research Institute, providing support and mentoring for other entomologists and PhD students. She is a widely published and peer reviewed research scientist, a strong industry participant and community member and in 2006 won the Science and Innovation Award for Young People in Agriculture, Fisheries and Forestry.