

## Expression of Interest EOI 2019-20

### Part 1 - General Details

		<b>EOI ID</b>	<b>EOI - 0202</b>
<b>EOI Title:</b> (max 80 char)	<b>Sustainable management of Helicoverpa species through pre-emptive Bt resistance monitoring</b>		
<b>Type of Research</b>	Applied		
<b>Proposed Start Date:</b>	01 July 2019	<b>Proposed Cease Date:</b>	30 June 2022
<i>Please refer to CRDC's Strategic R&amp;D Plan 2013-2018 for the following.</i>			
<b>CRDC Goal</b>	1. Increase productivity and profitability on cotton farms		
<b>CRDC Key Focus Area</b>	1.3 Protection from biotic threats and environmental stresses		
<b>CRDC Activities</b>	1.3.2 Improved identification, surveillance and management systems for pests, diseases and weeds, and environmental stresses		
<i>Please identify the relevant Measure of Success as outlined in the CRDC Strategic R&amp;D Plan.</i>			
<b>CRDC Measure of Success:</b>	New management practices and systems are available for growers, consultants and industry		
<b>Rural and R&amp;D Priorities</b>	Biosecurity		
<b>Strategic Research Priorities</b>	3a. Optimise food and fibre production using our land and marine resources		
<b>CRDC NSRP</b>	1.3.3 - Food - Enhanced production through enhanced biosecurity.		
<b>R&amp;D Manager:</b>	Susan Maas	<b>EOI Due Date:</b>	12 October 2018

### Part 2 –Expression of Interest Requirements

<p><b>Issue:</b></p> <p>Insecticidal cotton expressing Bt toxins is highly valued by growers. However, resistance in the target <i>Helicoverpa</i> spp. is a great threat to the continued availability and efficacy of Bollgard 3 cotton. The industry relies on a pre-emptive strategy to slow the development of Bt resistance in <i>Helicoverpa</i>. This plan is underpinned by pre-emptive knowledge of resistance frequencies. Historically, CSIRO, with funding support from CRDC, has implemented a monitoring program every other year; Monsanto Australia also invests in an annual program that monitors field populations of moths for resistance for all the proteins contained in Bollgard 3 cotton (Cry1Ac, Cry2Ab and Vip3A). The data provides an early warning on the onset of resistance to the proteins in Bollgard 3 and inform decisions about the need to modify the RMP. Two sorts of tests have been conducted.</p> <ul style="list-style-type: none"> <li>- F2 screens involve testing the grandchildren of pairs of moths raised from eggs collected from field populations, and therefore take about 10 weeks to run. While time intensive, this test is important as it will detect new forms of recessive resistance and a recent review indicated 4 year interval as adequate.</li> <li>- F1 screens involve testing the offspring of single-pair matings between moths from resistant strains maintained in the laboratory and moths raised from eggs collected from field populations. They take around 5 weeks. Once a molecular test is established it will begin to replace this type of testing as biannual.</li> </ul>
<p><b>Outcomes:</b></p> <p>Industry is able to proactively manage Bt resistance through an RMP that is based on science.</p>
<p><b>Project description:</b></p> <p>This project will continue monitoring and research that informs the RMP including:</p> <p>2019/20 - F1 (and equivalent molecular) screening incorporating emerging regions (e.g. Northern Australia) with increased number of alleles tested enabling regional and temporal comparisons.</p> <p>2021/21 - F2 screening supported by molecular screening incorporating emerging regions (e.g. Northern Australia)</p> <p>This project will also provide an assessment of Bt resistance risk for Northern pests, explore boundaries of how the molecular tool could be used to inform resistance management beyond monitoring, understanding characteristics of different types of molecular Vip and Cry1Ac resistance, and further testing risks of multi-resistance with a focus on biosecurity preparedness.</p>
<p><b>Expected Project and Communication Outputs:</b></p> <p>Annual update to Bt tech panel to inform Bollgard 3 RMP.</p>

<b>Project Investment:</b>				
<b>Year</b>	<b>2019-20</b>	<b>2020-21</b>	<b>2021-22</b>	<b>TOTAL</b>
Indicative budget (up to)	\$450,000	\$250,000	\$550,000	\$1,250,000

### **Part 3 – Selection Criteria**

The following selection criteria will be used by the CRDC to assess the full research proposals (FRPs) received for each Expression of Interest.

**1. A sound understanding of the nature and importance of the outcome to the Australian cotton industry:**

The research applicant must address the Issue, Outcome and Project Description in terms of the CRDC Strategic Plan and demonstrate understanding of the impact on the Australian cotton industry.

**2. Soundness and clarity of the proposed R&D methods to address project deliverable outcomes:**

The research applicant must describe how the research methodology employed will enable the project outcomes to be delivered.

**3. Demonstrated capacity of the nominated researcher/s to provide project coordination, management, monitoring and evaluation for the timely delivery of high quality outputs:**

The research applicant must describe the research team's project management skills and experience and may include a recent example of a completed project. They must detail the monitoring and evaluation strategy which should include any steering committees to co-ordinate collaborative research, links with CottonInfo, CGAs, Cotton Australia, etc and any additional reporting outside the 6 monthly Progress Reports.

**4. Demonstrated track record, technical knowledge and experience of all key personnel in the research area:**

The research applicant must describe the project research team's technical skill and experience relevant to the project and methodologies proposed.

**5. A demonstrated capacity to effectively communicate project outcomes to diverse stakeholders within the Australian cotton industry:**

The research applicant must describe the communication skills and existing communication channels that the research team use to communicate project outcomes to the Australian cotton industry. The new applicants to the cotton industry should provide an example of industry communication from a recent project.

**6. Demonstrated ability of the project team to form productive networks and links to build on national and international research already undertaken in related areas:**

The research applicant must describe existing networks that the research team use for collaboration with other researchers and an ability to develop new networks as research knowledge increases.

**7. The cost effectiveness of this project including cash and in-kind commitments from the applicants and leverage through domestic or international linkages that are useful if not essential to progress the project:**

The research applicant should demonstrate market value and market fairness for the proposed budget and comment on the leverage achieved through collaboration and in-kind support.

**8. Project demonstrates collaboration between organisations or research groups:**

The research applicant must describe the existing or proposed collaboration with other researchers, research groups or committees and the Australian cotton industry.

For information on how to apply, please refer to: [www.crdc.com.au/for-researchers](http://www.crdc.com.au/for-researchers)

*Please note that while the Cotton Research and Development Corporation (CRDC) has released these expressions of interest, due to ongoing drought conditions and the potential impact on CRDCs forward budget, the Corporation may not be in a position to fully support all of the proposals advertised. CRDC has released the full range of EOIs in an endeavour to remain as flexible and opportunistic as possible. Where CRDC may not be in a position to fully support proposals received, we will work with our valued research partners to identify alternative investment options.*