



CRDC 2016

Reducing Cotton Discolouration Risk:
Stage 1- IP and Technology

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EXECUTIVE SUMMARY

Australian growers produce the highest quality upland cotton in the world. Cotton colour is an important aspect of determining cotton quality and ultimately the price paid to the cotton growers. While the colour of cotton fibres may be affected by plant genetics, growing conditions, environmental factors, and harvest and processing conditions, the colour is primarily affected by field conditions after boll opening and prior to harvest, as well as by conditions during storage and ginning. The negative impact of field weathering on cotton fibres is well recognized.

Heavy rainfall at the time of harvest poses a significant risk to Australian growers achieving market prices for high quality cotton. For example, as the opportunity cost to the Australian cotton industry of colour grade loss due to field weathering has been estimated on average at \$33.5 million, correlating to \$13.75 per bale or approx. \$137 per hectare, over the last 10 years. The worst industry impact in a single year (2014) was \$119 million, correlating to \$24.00 per bale or approx. \$240 per hectare.

Invention Development Fund (IDF), in partnership with Australia's Cotton Research and Development Corporation (CRDC), is exploring opportunities for new technologies and breakthrough inventions to improve the production and management of cotton colour, and to reduce or eliminate the risk of cotton discolouration around harvest time. Successful commercialization of a solution would reduce the risk of significant economic losses due to colour grade penalties and would increase the reliability of supply of premium quality Australian cotton. By potentially solving an otherwise "intractable" problem that reduces the economic viability of cotton production, the Australian cotton industry will become more sustainable and competitive.

As stage 1 of this project, IDF has undertaken a technology and IP review, including a review of IDF's existing patent assets, in search of innovative solutions to the problem of cotton discolouration due to three major contributors: honeydew deposits, microbial action, and moisture damage.

Several technologies have been identified in this review as having some potential for CRDC to consider for investment for commercial and technical relevance to the cotton industry. However, some identified technologies are at least a decade old and/or at early stages in their commercial path. This may imply that they have been abandoned as commercially or technically flawed technologies. Should any of the identified technologies be of interest to CRDC, IDF can contact the researchers or IP holders to assess these further.

Technology gaps have also been revealed from this review. Identified gaps include:

- Technologies for early detection and mitigation of honeydew in-field;
- Technologies to protect open bolls from moisture and microbial damage; and
- Technologies to recover from colour grade loss due to excessive rainfall.

These gaps may be bridged by the invention of new approaches and solutions. Such inventions may provide Australian cotton growers with a technical advantage over their competitors to reduce the risk of discolouration and subsequent income losses from colour grade loss. CRDC is encouraged to consider funding the invention of solutions to bridge the identified technology gaps. Such funding would involve defining the technical problems associated with discolouration and engaging IDF's inventor network to solve the defined problems. There would then be the possibility to invest in the development of any promising solutions which emerge from this review and from the invention phase.

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