Pharmaceuticals from cotton wastes

The use of lignocellulosic biomass for the sustainable production of fuels and chemicals is of vital importance in response to depleting fossil resources and growing environmental concerns. The cotton industry is challenged to maintain economic viability as a result of increasing input costs, volatility of cotton prices, and increasing competition by man-made fibres. The Australian cotton industry is constantly looking for avenues for growers to value add to their products and by-products such as cotton seed oil and gin trash. The project aims to produce valuable renewable-sourced chemicals and pharmaceuticals from cotton gin trash.

Benefits for agriculture: The long-sought goal of transforming the cotton industry by-products to profitable end-products will be realised by using the unique strategy of targeting high-value, fine chemical products. The project will establish that there are other opportunities for cotton than the textile market. This is because there will be multiple market opportunities with the manufacture of new products.

Benefits for producers: Risks associated with the viability of cotton farming due to volatility in cotton production, climate change, and harvesting costs will be reduced through the development of opportunities for other sources of revenue through value adding to cotton wastes. The project will provide opportunity to income and profitability of cotton farmers.
More information about this project

The global share of the textile market by the cotton industry has fallen from 50% to 31% in the past few decades. In view of this, the industry needs to develop transformational technologies of its by-products to profitable high value products. Chemicals for producing pharmaceuticals are traded globally at considerably higher prices than commodity chemicals.

The project seeks to advance an existing technology to convert cotton gin trash to fine chemicals, and develop a new, economic process to produce pharmaceuticals. The processes being developed will use relatively simple reagents and aim to reduce the number of reaction steps in order to reduce cost.

Outcomes for industry

- Development of technologies to add value to cotton gin trash
- Development of processes and procedures to produce high value fine chemicals
- Development of technology to increase the value of cotton seed through the use of lint to produce high value chemical products
- Development of intellectual property leading to royalties for the industry from the developed technologies

Principal partners

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Program partners

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