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*Abstract*

# Host Plant Resistance to *Helicoverpa armigera* Has Been Observed in Australian Wild *Cajanus* (*Pigeonpea*) Species †

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**Abstract:** Pigeonpea (*Cajanus cajan* (L) Millspaugh) is extensively grown in tropical subtropical and warmer equatorial regions of the world and ranks 6th in the global legume production (6.8MT; 2017). It is consumed by billions of people as a major source of protein in developing countries. Despite the increasing demand the crop is facing severe yield losses (2.4 billion US$/Annum) due to the insect pest Helicoverpa.armigera (68% globally). As this pest is polyphagous was exposed to several pesticides and gained strong resistance, it necessities a strong need for identifying host plant resistance towards this pest. Australia is the second hub with 15 out of 32 *Cajanus* species next to Asia. This is the pilot study exploring the potential of Australian *Cajanus* species as wild were proven sources for potential trait information in many other crops. My study firstly characterized the Australasian wild species and their derivatives for phenotypic variation and secondly tested for their resistance to *Helicoverpa armigera.* My research also demonstrated a very high levels of resistance to *Helicoverpa armigera* in some of the Australian wild species and their derivatives, compared to cultivated species. This research also revealed a high levels of total phenolic compounds in the wild species and a significant negative correlation of total phenols with the pest survival. We were successful in identifying the major phenolic compound in resistant species. Exploring the role of that specific compound related to host plant resistance and identifying the genetic markers associated with phytochemicals triggering the pest resistance is underway.

**Keywords:** crop wild relatives; *Pigeonpea*; *Cajanus*; *Helicoverpa.armigera*; resistance; Australian species Pod borer