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Research Proposal for Funding

Project Title

Exploiting Host Plant Resistance for *Helicoverpa* Management to Increase Production and Productivity of Chickpea and Pigeonpea Under Rainfed Conditions in India

PART I: GENERAL INFORMATION

1. Specific Project Area: Pulse Development: Crops - Chickpea and pigeonpea

2. Participating Institutions

- International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru 502 324, Andhra Pradesh.
- ANGR Agricultural University, RRS, Tandur, Andhra Pradesh.
- University of Agricultural Sciences, RRS, Gulburga, Karnataka.

3. Name and Designation of the Executive Authority of the Institute

ICRISAT Dr William D. Dar
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4. Project Duration: Five years

5. Total Cost of the Project: Rs. 253.65

6. Name and Address of Project Coordinators and Investigators

Project Coordinator

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Principal Investigator

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7. Project Summary

Chickpea (*Cicer arietinum* L.) and pigeonpea [*Cajanus cajan* (L.) Millsp.] are the two most important pulse crops in India. Though India produces about 64% of the chickpea and 90% of the pigeonpea globally, the production still is not adequate to meet the domestic demand. As a result, India has to spend over Rs. 1,000 crores every year on pulse imports. Pulse production has remained static over the past two decades. Several biotic constraints limit the productivity of pulses, of which, the cotton bollworm/legume pod borer, *Helicoverpa armigera* (Hubner), is the most important. There are immense opportunities for enhancing the production and productivity of chickpea and pigeonpea through a rational deployment of crop varieties with resistance/tolerance to this pest. The losses due to *Helicoverpa* are also aggravated by frequent occurrence of drought, which not only reduces the overall productivity of these pulses, but also makes the crops more vulnerable to damage by *Helicoverpa*.

The impact of program for accelerated development and deployment of high-yielding cultivars of chickpea and pigeonpea for increasing the production of these crops under rainfed conditions will be limited unless due emphasis is placed on identifying varieties with less susceptibility to *Helicoverpa* so that the farmers do not have to resort to frequent application of toxic pesticides, which not only kill the non-target natural enemies, but also leave harmful residues on the produce. Therefore, this project aims to identify *Helicoverpa*-resistant varieties in the germplasm collection maintained at ICRISAT Genebank (Over 15,000 accessions) and the lines developed under the ISOPM project to provide information on their susceptibility to this serious pest, and undertake multilocational testing of *Helicoverpa*-resistant varieties of chickpea and pigeonpea that have earlier been identified/developed at ICRISAT, and in the national programs to identify

