

## **BIOLOGICAL OPTIONS FOR CROP PEST AND DISEASE MANAGEMENT AND BIOPRODUCTS RESEARCH CONSORTIUM – SANGUINE TO SUSTAINABLE AGRICULTURE**

Gopalakrishnan S, Rupela O P, Ranga Rao G V, Humayun P, Rameshwar Rao V,  
Kranthi M, and Kiran K B

GT Crop Improvement, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT),  
Patancheru, Andhra Pradesh, 502 324, India

E-mail s.gopalakrishnan@cgiar.org

Money spent on chemical pesticides can be 50% of the total input cost of producing some crops, especially for pests that attack crops like cotton and pigeonpea where majority of the world's poor live in countries of the semi-arid tropics. Most of these farmers are resource poor and cannot afford expensive inputs. Biological options such as entomopathogens, endophytes, animal wastes, natural plant products and crop residues can serve as an alternative to chemical pesticides and fertilizers. More importantly, most of these inputs can be produced on-farm at relatively lower costs.

ICRISAT is working on low cost and biological options of crop protection and production. Agriculturally beneficial microorganisms of six different traits (nitrogen fixation, phosphate solubilization, cellulose degradation, plant growth promotion, antagonism to disease causing fungi and management of insect pests) have been accessed from several different sources [composts, rhizosphere and rhizoplane soil samples]. The microbial collection at ICRISAT has over 2000 accessions that includes promising entomopathogens (*Bacillus subtilis* BCB19, *B. thuringiensis* HiB67, in addition to 37 potential isolates) and antagonists of phytopathogens (*B. subtilis* BCB19, *Pseudomonas* sp CDB35, in addition to 154 isolates).

ICRISAT initiated a consortium called 'Bioproducts Research Consortium (BRC)' in January 2005. BRC is a public and private sector partnership initiative, focused on delivering research outputs and technologies leading to mass-scale production of quality bioproducts at low-cost. BRC is open to all in the public and private sector. Products of this collaborative research (microbial strains, formulations and methods/processes) will be available to the consortium members along with relevant data, through a material transfer agreement. Where required, ICRISAT will provide training to technical staff of member companies, based on an agreed work plan and time frame.

Experience at ICRISAT on biological options of crop production and protection and BRC will be discussed in presentation.