Innovative Strategy using Endophytes for Effective Biocontrol of Insect Pests in Cotton

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Cotton is produced in about 80 countries in the world. India has the largest area of 12 million hectares under cultivation of cotton which is 35% of the global area. Cotton is grown in 11 states in India with a maximum area of 4 million hectares. In Maharashtra cotton is grown dominantly under rainfed conditions. Though it occupies only 7% of India's agricultural area, the crop is sprayed with 30-55% of the insecticides used in agriculture. There are about 9 species of insects that cause severe economic damage of 15-85% of crop loss in cotton in India. The sap sucking insects such as aphids, aphis gosypii, leaf hoppers, thrips, whiteflies, mealybugs and bollworm species, American bollworm, pink bollworm, helicoverpa armigera. Insecticides are used repeatedly at 6-28 sprays in India to control these insect pests. The use of chemical insecticides leads to ecological disruption and environmental pollution. Thus arises the need for an eco friendly alternative. Novel methods were developed using biochar and cowdung to enhance the efficacy of endophyte colonization in cotton plants. Aphids were used as test insects for this experiment. Aphids recovered from the endophyte treated plants were found to be affected by the muscardine disease. Cotton seedlings from seeds coated with beauveria bassiana in a slurry of biochar plus cowdung and seedlings inoculated with endophyte Beauveria bassiana using biochar plus cowdung were the most effective in causing disease in aphids.

Awards Won:
Third Award of $1,000