

"TERI-DBT Bollcure should be commercially released by 2008"

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-Dr Nutan Kaushik, Fellow and Area Convenor, Plant Biotechnology Division, TERI

Scientists at The Energy and Resources Institute (TERI), have developed a biopesticide against cotton bollworm in a breakthrough research after a period of almost 10 years. The product is expected to hit the market by next year.

In conversation with Dr Nutan Kaushik, Fellow and Area Convenor, Plant Biotechnology (Environmental and Industrial Biotechnology Division) at TERI who led the efforts, BioSpectrum finds out more.

How did you come up with the idea of developing a biopesticide against cotton?

Cotton bollworm (*Helicoverpa armigera*) being polyphagous in nature is the major insect pest of many crop species. It attacks many economically important crops such as cotton, pigeonpea, chickpea, tomato and sunflower. It has a host range of more than 181 plant species. Currently, it is the most difficult species to control because it has developed resistance to most of the commercially available insecticides. Taking up the challenge for developing a biopesticide to tackle the problem of *H. armigera* infestation, TERI scientists began research in this area during the late 1990s with support from the DBT.

Do you think biopesticides are more effective as compared to chemical pesticides? If yes, why?

I would not say that the biopesticides are more effective as compared to chemical pesticides. With the problem of resistance, residue and resurgence with the injudicious use of chemical pesticides, we are now looking forward to the pest management strategies, which are less dependent on chemical insecticides and/or less conducive to the development of resistance to present chemical control measures. Biopesticides are an integral part of such pest management strategies.

How does the pesticide work at destroying bollworm? How different is it from other chemical pesticides in the market against bollworm?

It affects the growth of the bollworm larva resulting in reduction of larval weight up to 88 percent, hence restricting the larvae population, resulting in ultimate death of the larva itself, apart from its mild anti-feedancy thereby, preventing the crop damage. Since it is a plant extract of Eucalyptus, it is 100 percent environment friendly, suitable for conventional, organic, Bt cotton and integrated pest management crop practices. The product controls the bollworm complex of cotton. It is also effective against jassids, white fly, and spodoptera.

How did you zero upon eucalyptus plant extract?

After screening numerous plant species we found eucalyptus extract more effective than the other plant extracts tested for their effectiveness against cotton bollworm.

What are the standards on which the pesticide has proved itself? What was the increase in crop yield in field trials after using the biopesticide?

Chickpea results

Drastic decrease in the population of H.armigera Mean number of larvae of Helicoverpa armigera decreased by 85.68 percent, 6 days after Bollcure application and 93.82 percent after 10 days as compared to the untreated chickpea crop.

Tremendous decrease in the percent pod damage Bollcure treatment in the organic mode decreased the percent pod damage at maturity by 69.91 percent in comparison to the untreated chickpea crop.

Tremendous increase in the crop yield Application of Bollcure increased the crop yield by 205.81 percent as compared to the untreated chickpea crop.

Cotton results

Drastic decrease in the percent incidence of Bollworm Bollcure application in the IPM mode decreased 40.13 percent incidence of bollworm in shed reproductives, 70.33 percent incidence in green bolls and 55.70 percent in open balls in the cotton crop.

Tremendous increase in the total yield of the seed cotton Bollcure application in the IPM mode resulted in 132.72 percent increase in the yield of the cotton crop as compared to the untreated control crop.

When is it set to be commercially released in the market?

We have filed process and the product patent and have initiated the process for its registration. We are quite optimistic that TERI-DBT-Bollcure should be commercially released in the market by 2008.

Shalini Gupta