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Protecting organic cotton: Biopesticides tested against the American bollworm

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One of the most widely used fiber crops in the world, cotton is utilised in manufacturing clothing and other goods. Its production is highly affected by the American bollworm pest, *Helicoverpa armigera*. To fight off the attacks of *H. armigera*, GMO Bt-cotton was designed, which now dominates India's cotton production. In India, around 90 % of the total cotton production is sourced from Bt Cotton. However, as GMO crops are not allowed in organic farming the attacks of the American bollworm remain a major threat to organic cotton production. At our study site in Madhya Pradesh in central India, we tested different biopesticides on the American bollworm in organic cotton field trials. Three commercially available biopesticides containing the a) Nuclear polyhedrosis virus, b) *Bacillus thuringiensis*, and c) *Metarhizium rileyi* were evaluated and compared with the control, which was not treated against pest attacks. The experiment included four replications in 2021 and 2022. We monitored the pest occurrence and started applying the treatments when the economic threshold level was reached. We counted the number of larvae and eggs of the American bollworm on the cotton plants in regular scouting. In both years, the number of *H. armigera* on the cotton plants was significantly reduced compared to the control. All treated plots had significantly fewer damaged balls when compared to the controls. However, no significant effect on yield could be found. Further research is needed to evaluate the effectiveness of commercially available biopesticide products in laboratory tests. Furthermore, we envisage insect ecology studies to better understand the pest dynamics affecting organic cotton production.

Keywords: Biopesticides on American bollworms

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