

Mathematical Modelling and Numeric Simulation
Applied To The Crop-Pest-Parasitoid Interaction

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The formation of agroecosystems has substituted areas of large animal and plant diversity for simplified environments (of a single crop), thus favouring the presence or increase of insect populations which compete with humans for the commercially explored resources.

In the particular case of brazilian cotton crops, the cotton boll weevil (*Anthonomus grandis* Boheman 1843; *Coleoptera: Curculionidae*) non existent until 1983 has become a major problem due to the damage done to the cotton plant. Feeding upon and reproducing within cotton squares and bolls, when population levels reach above acceptable thresholds, this pest causes enormous damage to plantations, to the point of discouraging plantation activities.

Available information in previous resources in applied ecology of the cotton boll weevil undertaken in this region have made this modelling effort possible.

Quantitative evaluations of levels of the cotton boll weevil infestation, from locally collected data both on the cotton boll weevil presence and of the parasitism levels of one of its natural enemies (*Bracon* sp.) have made possible the use of eleven-dimensional compartmental models in the quantitative evaluation of boll weevil infestations through the use of numerical simulations.

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