15a18SETEMBRO2013
Bonito Mato Grosso do Sul Brasil
13º Siconbiol
Faça Bonito. Use Controle Biológico.
PROMOÇÃO
SOCIEDADE ENTOMOLÓGICA DO BRASIL · 1972 ·
REALIZAÇÃO
Embrapa Agropecuária Oeste
UFGD Universidade Federal da Grande Dourados

A mathematical approach to model the control of *Diabrotica speciosa*

Adriano G. Garcia[1]; Fernando Consoli[2]; Wesley A. C. Godoy[2]; Claudia P. Ferreira[1]

[1]Departamento de Bioestatística, Instituto de Biociências, Unesp, 18618-000, Botucatu, SP, Brasil. Email: adrianogomesgarcia@gmail.com. [2]Departamento de Entomologia e Acarologia, ESALQ, USP, 13418-900 Piracicaba, SP, Brasil.

The growing concern about the impact of chemicals on environment and also on insect resistance has been motivating the search for alternative control methods including landscape management. In this sense, habitat management characterized by the crop spatial rearrangement may be viewed as an alternative tool to enhance biological control. This kind of control is possible because of some pest present different death and birth rates in different host plants. For instance, *Diabrotica speciosa* is a polyphagous beetle associated with a wide range of host plants including common bean, soybean and corn. Its immature and adult stages probably exploit different host plants to achieve its best fitness. As an example, larva mortality rate is nearly 4 times higher on soybean than on corn for larva, but adult mortality rate is 1,3 times higher on corn than on soybean. In this study we aimed to use a cellular automata in order to investigate habitat management to control *D.speciosa* by alternating theoretically the mosaic arrangements of agricultural landscapes assuming the existence of four different types of crops (bean, soybean, potato and corn), and simulating different spatial combinations of strip cropping between two crops. In each automata site, landscape remains unaltered over time. Our results showed that frequency of oscillations in population density per row when crops are combined gets higher the more distinct are the host plants effects on the insect fitness. In relation to dispersion, corn and soybean presented the slowest population dispersion as opposed to the combination of bean and potato combination that presented the fastest population dispersion. Initial analysis of our data allow us to suggest that combination of corn with other may aid in the control of D*.speciosa* population growth since that corn slows down the dispersion speed in all combinations.

Palavras-chave: biological control, cellular automata, *Diabrotica speciosa*.

Apoio: Bolsa Capes