

AN IMPROVEMENT OF THE HOLLING TYPE III FUNCTIONAL RESPONSE IN ENTOMOPHAGOUS SPECIES MODEL

T. CABELLO* and M. GÁMEZ^{†,‡}

**Department of Applied Biology*

*†Department of Statistic and Applied Mathematics
La Cañadade San Urbano sn, University of Almeria
04120-Almeria, Spain*

‡mgamez@ual.es

Z. VARGA

*Institute of Mathematics and Informatics
Szent István University, Godollo, Hungary*

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In this study, we analyze the functional response for a parasitoid-host and a predator-prey system, as a tool of biological control of pests to evaluate the potential of bio-control agents. A possible biological interpretation was given to the adjustment coefficients of type I and II functional response by Hassell.¹ Based on this, we propose new expressions for type III in terms of a new parameter that we call entomophagous potential (parasitoid or predator), providing examples using actual data from trials carried out previously for parasitoid species *Chelonus blackburni* Cameron (Hym.: Braconidae) and predator species *Joppeicus paradoxus* Puton (Het.: Joppeicidae). The novelty of the paper consists in the fact that these new expressions for Holling type III functional response have a biological interpretation, and result in a better fit to data than Hassell's model.

Keywords: Functional Response; Parasitoid; Predator; Biological Simulation.

1. Introduction

The concept of functional response was defined by Solomon² as the relation between the density of prey and the number of prey consumed by a predator individual. The functional response numerically expresses the change of the rate of attacks by the predator, as a function of the change of prey density.³ Recently, some authors prefer to call it “behavior response,” because it actually describes the predator's searching behavior in space, in a given time interval, corresponding to different prey densities.⁴

[‡]Corresponding author.