

## BED BUGS OF THE GENUS *ZELUS* AND ITS IMPORTANCE IN THE BIOLOGICAL CONTROL OF PESTS IN TROPICAL CROPS

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### Abstract

Predators are a group of natural enemies that are characterized by consuming more than one prey to complete their life cycle; among these, in the agricultural ecosystems of the Ecuadorian coast are the bed bugs of the genus *Zelus*.

**Key Words:** Biological Control, beneficial insects, prey, unwanted effect

### INTRODUCTION

There is a diversity of phytophagous insects that attack economically important crops in Ecuador, some of them reach high populations that cause losses in yields when the natural balance is broken due to bad agricultural practices.

Those responsible for maintaining this balance are the natural enemies (predators, parasitoids), which are arthropods which feed on the pest or microorganisms capable of causing altered in them.

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Figure 1 Adult of *Zelus* spp.

These bed bugs are members of the family Reduviidae and are found in short cycle crops such as (corn, soy, rice, among others) and perennials (coffee, cocoa).

In the country there are at least 16 species within the genus *Zelus*. These insects have an incomplete metamorphosis with the states of egg, nymph (five instar) and adult. The adults and nymphs of *Zelus* are thin, with long legs and a narrow head,

brown and the nymphs have varied colors with blackish, reddish or brown stripes. First instar nymphs have an average length of 5 mm, and adults can measure up to 20 mm. The eggs are placed in groups of 15 or more, dark brown and each has an operculum in the upper part (Figures 1 and 2)



Figure 2 Eggs and nymph of *Zelus* spp.

The diet of these generalist predators includes of soft-bodied insects such as aphids, lepidopteran, flies as well as small Coleoptera such as Chrysomelidae (Figure 3)

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and Coccinellidae; for this reason they can contribute to regulating pest insect populations, but they could also disrupt natural biological control by feeding on other natural enemies such as wasps (Figure 3), parasitoid flies and other predators (unwanted effect).

With this background the Department of Plant Protection of the EET Pichilingüe is determinate activities to know the role of *Zelus* bugs in the crops of interest through the execution of studies of taxonomic identification, biological cycle, predatory capacity, preference and functional response to different types of prey.

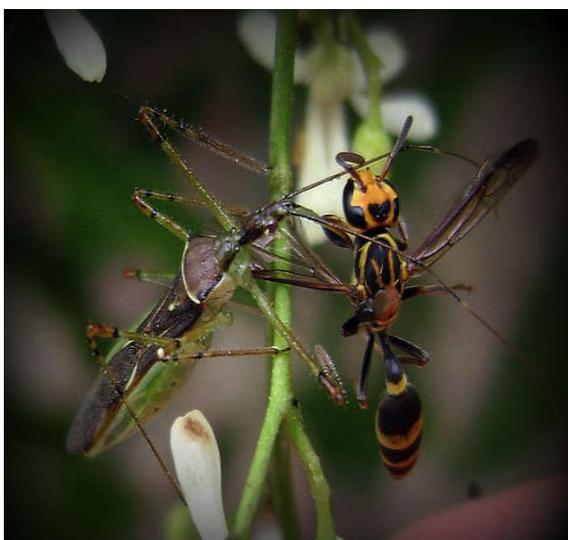


Figure 3 *Zelus* spp. predating Chrysomelid and Apocrita

Functional response studies serve to understand how predators are exposed to changes in search density by prey and estimate parameters such as search efficiency, manipulation time (occupation in pursuit, domination and feeding on prey).

These experiments they were carried out in different densities of prey with a predator and the mortality was registered after 24 h, then a logistic regression was performed between the proportion of predated insects and the density of prey, the coefficients of this equation determine the type of prey with functional response that was Type I, II, or III.

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