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The role of omnivory in the conservation of predators: *Orius majusculus* (Heteroptera: Anthocoridae) on sweet alyssum

Lorena Pumariño *, Oscar Alomar

IRTA, Entomology, Carretera de Cabrils, km 2, E-08348 Cabrils, Barcelona, Spain

HIGHLIGHTS

- The survival and fitness of *Orius majusculus* on alyssum and green bean with or without prey was studied.
- The longest survival was obtained on alyssum with prey.
- On alyssum without prey a long survival was obtained, not different from green bean with prey.
- The addition of prey to the plants increased the number of eggs laid, mainly on alyssum.
- Results suggest alyssum as a good choice for the conservation of *O. majusculus*.

GRAPHICAL ABSTRACT

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ABSTRACT

In conservation biological control programs, provision of the required resources (shelter, food, oviposition sites) can be achieved by means of the use of insectary plants. This is especially important in the case of omnivorous predators that feed on prey and plant materials, and where the availability of plant resources plays a significant role in their conservation. An important predator of thrips and other pests in the Mediterranean is the omnivorous bug *Orius majusculus* (Reuter) (Hemiptera: Anthocoridae). The objective of this study was to evaluate the fertility, fecundity and longevity of *O. majusculus* on alyssum, (*Lobularia maritima* L.) with and without prey (*Ephestia kuehniella* eggs), and compare it with green bean pods. Additionally, the effects of the breeding colony of the individuals on the fertility of *O. majusculus* were studied. Fecundity on both plants without prey was low; however the addition of prey significantly increased the number of eggs laid, especially on alyssum. The longevity differed significantly among diets, being longer for alyssum with prey eggs. Survival on alyssum without prey was not statistically different from green bean with prey, which shows the potential of alyssum to conserve *O. majusculus* during times of prey scarcity. The fertility of *O. majusculus* females was significantly higher on the diets of both plant materials when prey was included. Our results showed that alyssum can provide resource subsidies for *O. majusculus* during times of prey scarcity in the field.

1. Introduction

Conservation biological control of pests, part of the ecological engineering concept (Gurr et al., 2004), involves manipulating the habitat of natural enemies to enhance their survival and fitness, thereby enhancing their effectiveness in crops (Barbosa, 1998). This is especially important in intensive agricultural systems such as those found in Mediterranean agriculture. The greenhouses or field crops of this area are characterized by annual production practices, and the discontinuity that characterizes these systems makes it difficult for natural enemy communities to persist (Gerling et al., 2001; Alomar and Albajes, 2003). Not withstanding, recent agronomic efforts to increase biodiversity

* Corresponding author. Fax: +34 937533954.
E-mail address: lopumarino@hotmail.com (L. Pumariño).

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