

Assessing the predatory capacity of *Nabis americanoferus*: a native biological control agent of greenhouse pests

Authors: Andrew LaFlair^{1,2}, Sherah Vanlaerhoven², Julia Mlynarek¹, Roselyne Labbe¹

¹Harrow Research and Development Centre, Harrow, ON; ²University of Windsor, Windsor, ON



Introduction

Tuta absoluta is a highly invasive leaf mining moth, responsible for devastating greenhouse and field tomato production in many parts of the world. Due to the potential for its invasion into North America, we have surveyed and discovered a native predator, *Nabis americanoferus* (Hemiptera: Nabidae) with a rapid population growth rate on tomato, a long lifespan and a voracious appetite for moth eggs, aphids and many other potential pest prey. Towards characterizing its predatory capacity, we used Holling's (1959) theory of functional response to assess how well predators at two life stages (N2 and adult), consume eggs of the European flour moth, *Ephestia kuehniella*. We showed that *N. americanoferus* exhibits a high rate of egg consumption and a type 2 response curve. Thus, this work represents an important step in the development of *N. americanoferus* as a new potential biological control agent of *T. absoluta* for greenhouse crop protection in Canada.

Methodology

24h starvation → 24h feeding → data analysis



Functional Response

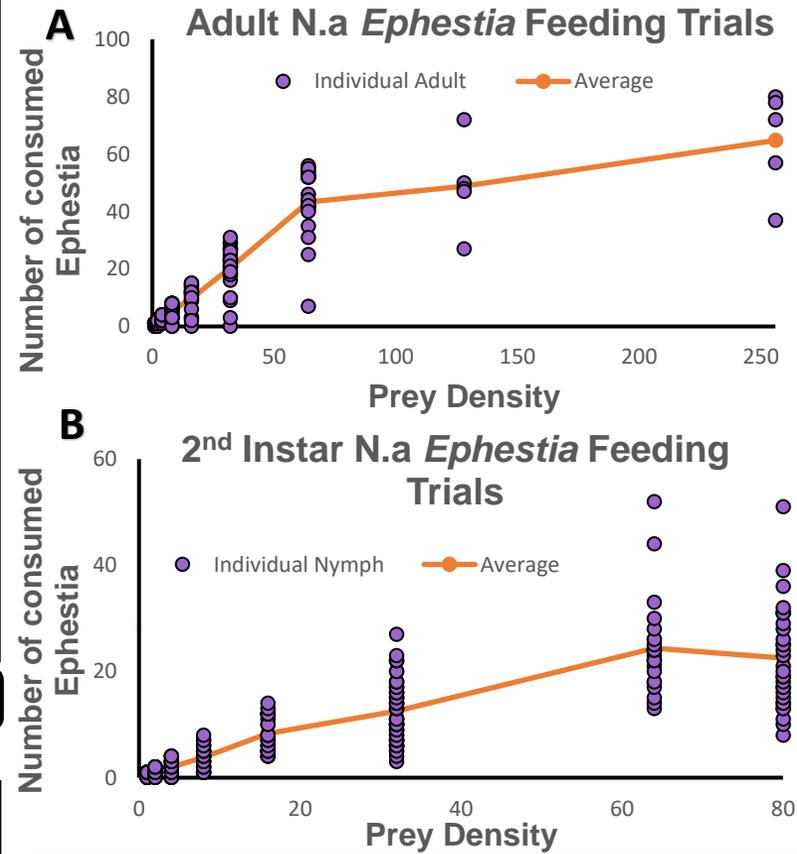


Figure 1: Functional response of *Nabis americanoferus* adults (A), and 2nd instar nymphs (B), as a function of *Ephestia kuehniella* egg number consumed over a 24-hour period – prey density doubling at 1 (maximum 256/80).

Conclusions

Nabis americanoferus is a highly voracious predator, whose adults consume upwards of 80 moth eggs within a 24-hour period, and whose 2nd instar nymphs can consume over 40 in the same period. Further work is currently underway which will also determine this predator's ability to consume other tomato crop pests including greenhouse whitefly, green peach aphids and other lepidoptera. Together, this research represents a key step in characterizing *N. americanoferus*, a promising new biocontrol agent for greenhouse crop protection in Canada.

References

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