

SAMPLING FOR EUROPEAN CORN BORER IN BELL PEPPER

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The European corn borer, *Ostrinia nubilalis* Hubner (Lepidoptera: Crambidae), is one of the most economically important pests of agricultural crops in much of the eastern and central United States. *O. nubilalis* is particularly damaging to sweet peppers (*Capsicum annuum* L.) because it causes direct injury to the fruit, premature fruit ripening, and fruit rot, a result of pathogens such as *Erwinia carotovora* entering the feeding wound.

Effective control of *O. nubilalis* in peppers is only achieved by multiple preventative insecticide applications, often with little or no knowledge of the pest density in the field. Sampling for *O. nubilalis* could reduce the number of insecticide applications as part of an overall Integrated Pest Management (IPM) program. However, quantifying *O. nubilalis* larvae in the plant canopy can be difficult due to their small size and propensity to quickly bore into plant tissue (Fig. 1), often the fruit, where they are protected from chemical sprays.

The monitoring of egg masses may be a better way to quantify *O. nubilalis* for developing an IPM scouting program. As a result, we attempted to identify likely areas of *O. nubilalis* egg masses within the plant canopy allowing more accurate estimation of *O. nubilalis* population numbers in the field. We collected a total of 362 *O. nubilalis* egg masses on pepper plants during our study. The results were that only three egg masses (0.8%) were found on plant structures other than a leaf, including one on a stem and two on fruit. Over 93% of egg masses were found on the lower surface of the leaf compared with the upper surface indicating a significant egg laying preference for the undersides of leaves (Fig. 2). This may be a strategy to reduce egg mortality from fluctuating environmental conditions as well as predation by natural enemies. No differences were found in the observed distribution of egg vertically throughout the plant (Fig. 3). This suggests that *O. nubilalis* does not have a vertical preference for oviposition in the canopy of a bell pepper plant which is similar to findings in sweet corn that showed a uniform vertical distribution of *O. nubilalis* egg masses on plants. Possibly the uniform egg mass deposition within the plant canopy is a strategy to minimize intraspecific competition by *O. nubilalis* for food resources.

In summary, we conclude that *O. nubilalis* females primarily (>93% of the time) oviposit on the undersides of leaves on pepper plants, but with no apparent preference for vertical region on the plant. An egg sampling strategy for *O. nubilalis* in peppers should concentrate on the underside of leaves on all regions of the plant.



Fig. 1. ECB larvae tunneling in plant stem.

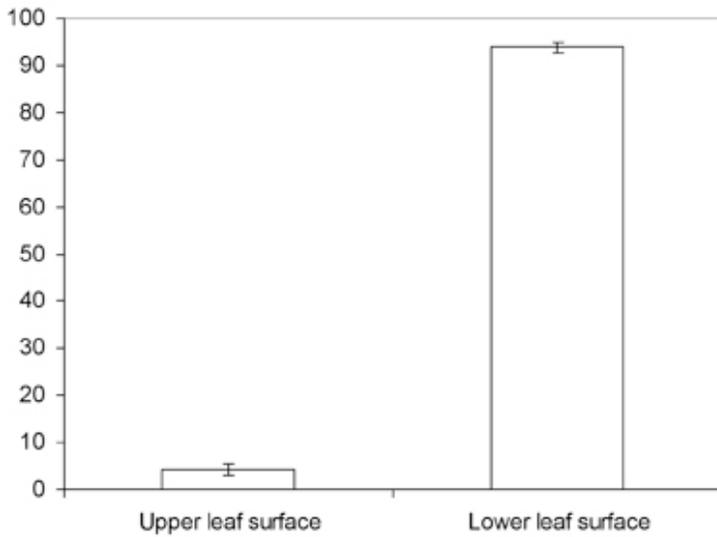


Fig 2. Mean percentage (\pm SEM) of *Ostrinia nubilalis* egg masses found on the upper and lower leaf surface of pepper plants

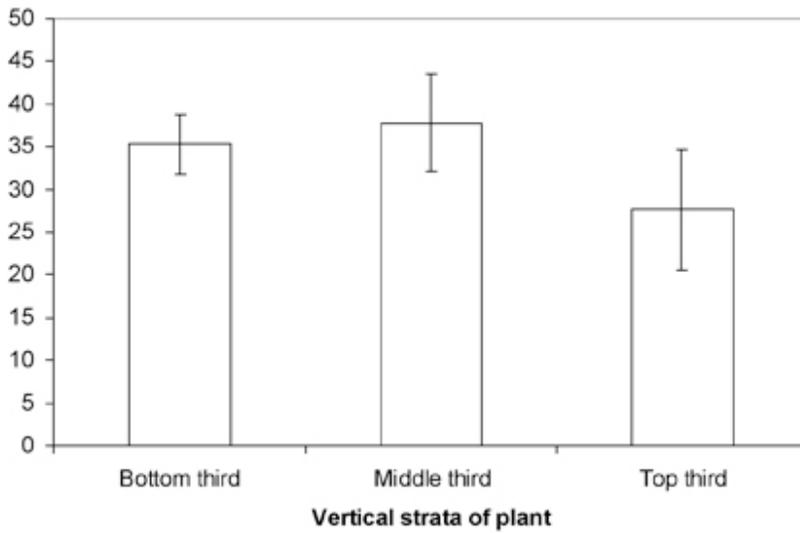


Fig. 3. Mean percentage (\pm SEM) of *Ostrinia nubilalis* egg masses distributed vertically within the pepper canopy

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