

Orangestriped Oakworm

Anisota senatoria (J. E. Smith)

Lepidoptera: Saturniidae

Coffelt, M. A.; Schultz, P. B. 1994. Within-tree distribution and a fixed-precision level sampling plan for the orangestriped oakworm (Lepidoptera: Saturniidae). *Journal of Economic Entomology* 87: 382-388

Objective: To determine the minimum number of samples required to estimate within-tree population density of eggs and early instar larvae of *A. senatoria* with known sampling error.

Abstract: The orangestriped oakworm is a native defoliator of various oaks, *Quercus* spp., in the eastern USA and Canada. Outbreaks have recently become severe in some urban areas of Virginia, leading to the development of integrated pest management strategies (Coffelt and Schultz 1990). The within-tree distribution of *A. senatoria* was studied to develop a fixed-precision-level sampling plan for eggs and early instar larvae that determines the minimum number of branchlet samples to estimate within-tree density on pin oak, *Quercus palustris* Muench. (Fig. 1).

Sampling Procedure: Sample 30 cm of a branch tips for eggs and first and second instar larvae during the last two weeks of July. Sampling should be conducted in all cardinal directions beginning at the drip line and working inward. Estimate the number of eggs per egg mass to the nearest 25 by determining the area covered by an average-sized pin oak leaf and establishing a visual comparison on an area basis.

The number of samples necessary to estimate the population mean with known sampling error can be determined using the model presented in Fig. 1. Error levels of 20, 25, and 30% are given. The number of within-tree samples needed for these levels of precision at various egg and early instar densities can be calculated using the following equation:

$$\log n = (\log a - 2 \log D_0) - (2 - b) \log x$$

where, a is the slope value, b is the intercept, n is the required number of samples, and D_0 is the fixed level of error in terms of the SE/mean.

Reference:

*Coffelt, M. A.; Schultz, P. B. 1990. Development of an aesthetic injury level to decrease pesticide use against orangestriped oakworm (Lepidoptera: Saturniidae) in an urban pest management project. *Journal of Economic Entomology* 83: 2044-2049.

Figure:

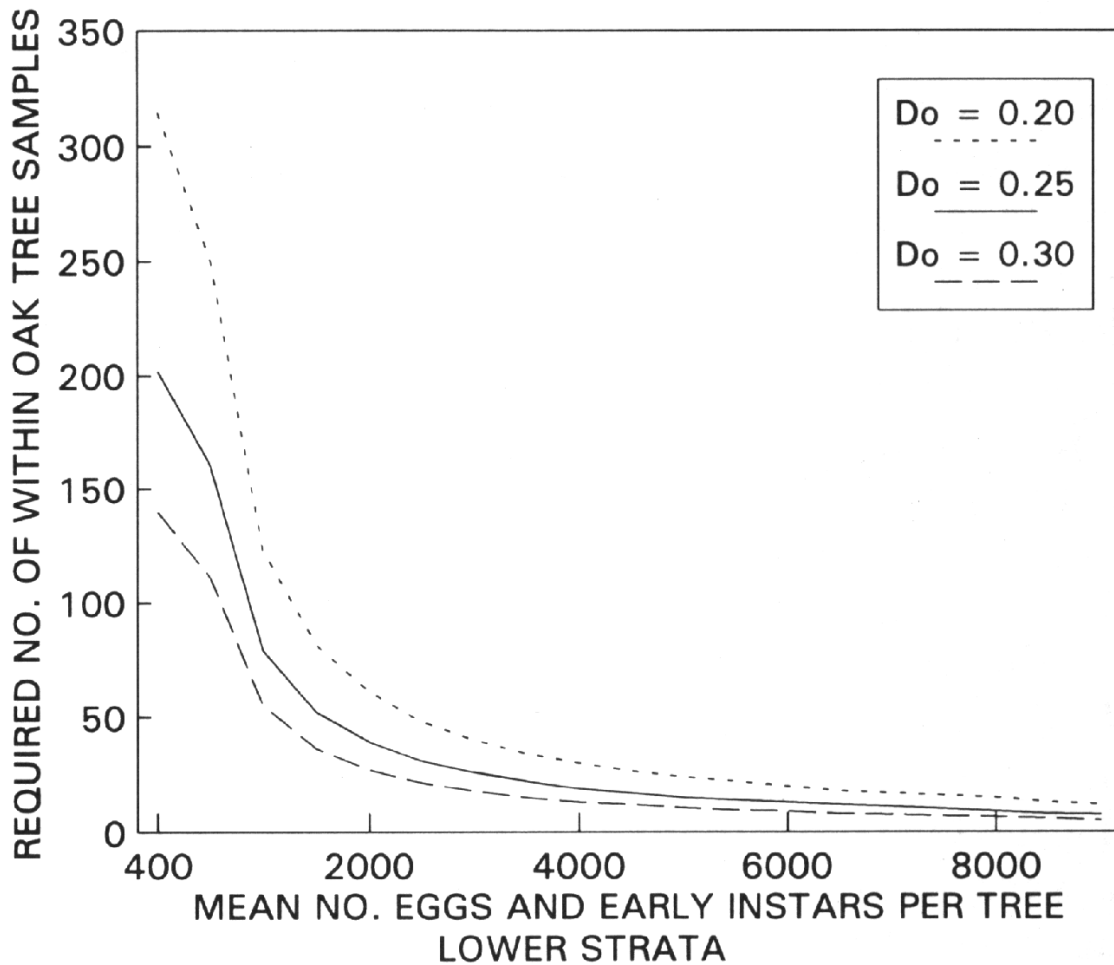


Fig. 1. Required number of within-oak-tree samples for *A. senatoria* eggs and early instars at the 0.20, 0.25, and 0.30 levels of precision (D_0).

Figure 1 reprinted with permission from the Journal of Economic Entomology, January 15, 2001.