Oak Leaftier
Croesia semipurpurana (Kearfott)
Lepidoptera: Tortricidae

Ciesla, W. M. 1969. Forecasting population trends of an oak leaf tier, *Croesia semipurpurana*. Journal of Economic Entomology 62: 1054-1056.

Objective: To describe a fixed sampling method for predicting defoliation by *C. semipurpurana* based on egg density.

Abstract: Oak leaftier, *Croesia semipurpurana* (Kearfott), is a native defoliator of oaks (*Quercus* spp.,) in the eastern USA. Larvae favor oaks in the red oak group. Young larvae mine oak buds as they open in the spring and can remove much of the new growth. Older larvae tie remaining leaves together with silk to form feeding refuges. Repeated defoliation over several consecutive years may result in twig and branch dieback, growth loss, and susceptibility to attack by secondary insects and fungi.

Eggs are present from midsummer through the following spring, therefore egg density can be sampled in winter and used to forecast population trends. The distribution of *C. semipurpurana* eggs on branches of scarlet oak, *Quercus coccinea* Muenchh., was studied to develop a fixed sampling method to predict subsequent defoliation by this pest. Mean *C. semipurpurana* egg density on a 0.38 m terminal branch sample is positively related (r = 0.79) to the percentage of defoliation. This relationship can be expressed by the following equation:

$$y = 2.18 + 2.56x$$

where x = the mean number of eggs per 0.38 m terminal branch sample and y = percentage of expected defoliation. Land managers can use this formula to decide if *C. semipurpurana* populations warrant control measures.

Sampling Procedure: In each designated plot, randomly select 4 scarlet oaks or other members of the red oak group in late winter. Using pole pruners, randomly cut two 0.38 m terminal branches from the lower or mid-crown of each tree. Discard any lateral branches or previous years' growth from the samples. Bag samples and transport to a laboratory. Using a stereomicroscope, examine each sample for *C. semipurpurana* eggs, paying close attention to the upper surface of the branch, and areas of rough bark or leaf scars. A larger percentage of eggs will be found on the basal section of the branch sample. Use the formula y = 2.18 + 2.56x, where x = the mean number of eggs per 0.38 m terminal branch sample and y = percentage of defoliation, to predict the level of expected defoliation. Alternatively, consult Table 2 to predict the level of expected defoliation.

Note: The sampling plan was developed on scarlet oaks in the mid-Atlantic. Results may vary on different host trees in other regions.

Table

Table 2. Mean number *C. semipurpurana* eggs per 15-in. branch sample and predicted defoliation, James River District, George Washington National Forest, Va. 1967.

Mean no. eggs/ 15-in. sample	Predicted % defoliation	
0–8.0	Negligible-light	0–25
8.1–28.2	Moderate	26–75
>28.2	Heavy	≥76

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