

Lodgepole Needle Miner

Coleotechnites milleri (Busck)

Lepidoptera: Gelechiidae

Stevens, R. E.; Stark, R. W. 1962. Sequential sampling for the lodgepole needle miner, *Evagora milleri*. *Journal of Economic Entomology* 55: 491-494.

Objective: To develop a sequential sampling plan for classifying population densities of *C. milleri*.

Abstract: The lodgepole needle miner is an important defoliator of lodgepole pine, *Pinus contorta* Dougl., in the western USA. Infestations cause severe growth loss and extensive tree mortality as is evidenced in the Ghost Forest of Yosemite National Park. A sequential sampling program is presented, which is based on Stark (1952). This modified plan is designed primarily for use in extensive surveys and control operations. It was developed for the sampling of late instar larvae, but may also be used for earlier ones. Population were classified as either light (<8), medium (12-22), heavy (26-36) or very heavy (>40 larvae per branch tip).

Sampling Procedure: The sampling unit is a branch tip cut back to include only 2-year-old needles. Sample 12-15 trees (approximately 0.1 ha) randomly and a minimum of 20 branch tips per plot in the area of concern. Remove samples with pole pruners from the mid-crown. Once branches are felled, trim the latest two years' infested growth. Count all insects in the field, recording all newly-hatched larvae as alive. As larvae develop, differentiating between live and dead larvae is possible by simply tapping the needle. When the total number of live larvae falls into one of the decision classes, discontinue sampling (Table 1).

Notes: All pupae are considered alive due to the difficulty in differentiating between live and dead pupae. Sampling the last two whorls of foliage gave meaningful estimates of the population in this study, but may not hold true elsewhere. The authors suggest preliminary sampling to determine if the population is distributed uniformly along the branch. If it appears that the average annual needle production per tip deviates heavily from 60, another sequential graph should be made to reflect those differences.

Reference:

*Stark, R. W. 1952. Sequential sampling of the lodgepole needle miner. *Forest Chronicle* 28 :57-60.

Table:

Table 1. Abbreviated sequential table for field use in sampling lodgepole needle miner larval populations.

No. of samples	Cumulative number of larvae											
	Light		Medium		Medium		Heavy		Heavy		Very heavy	
11		1		—		—		—		—		528
15		40	Continue sampling	—		—		—		—		680
20	Light	90		310	Medium	370	Continue sampling	590	Heavy	650	Continue sampling	870
25		140		360		490		710		840		1060
30		190		410		210		830		1030		1250
35		240		460		730		950		1220		1440

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