

European Pine Sawfly

Neodiprion sertifer (Geoffroy)

Hymenoptera: Diprionidae

Lyytikäinen-Saarenmaa, P.; Anderbrant, O.; Löfqvist, J.; Hedenström, E.; Högberg, H.-E. 1999. Monitoring European pine sawfly population densities with pheromone traps in young pine plantations. *Forest Ecology and Management* 124: 113-121.

Objective: To monitor the density of *N. sertifer* in pine plantations using pheromone traps.

Abstract: European pine sawfly, *Neodiprion sertifer* (Geoffroy), was introduced into North America in 1925 and now occurs throughout the north-central and northeastern USA and Canada. This pest attacks two- and three-needle pines (*Pinus* spp.). Larval *N. sertifer* feed in gregarious colonies and prefer to consume older foliage. Severe defoliation results in reduced tree growth and damaged aesthetic value, but trees usually survive because the current-year foliage is rarely attacked. Pheromone trapping could be used to track population densities over years and provide a means of predicting outbreaks.

A study was conducted in Sweden to evaluate the use of pheromone traps in monitoring populations of *N. sertifer*. The pheromone diprionyl acetate, (2S,3S,7S)-3,7-dimethyl-2-pentadecyl acetate, was used in sticky traps at volumes of 1, 10 and 100 µg per trap. Traps loaded with 100 µg of diprionyl acetate caught the most males and this volume appeared optimal for monitoring *N. sertifer*. The best correlations between trap catches of male *N. sertifer* and larval density within the same or later generations were observed when the population was increasing, but not when declining to endemic levels. Because of the lack of strong correlations between male capture and larval density, annual pheromone trapping should be conducted in conjunction with other population surveys to monitor population trends. However, pheromone trapping still represents a method of predicting incipient outbreak densities with time to make management decisions for *N. sertifer*.

Sampling Procedure: Randomly select three host trees in the center of each trapping site. Selected trees should form a triangle, with 30-50 m between trees. Install 1 Lund-I sticky trap 2 m above ground in each selected tree (Anderbrandt et al. 1989). Bait each trap with 100 µg of diprionyl acetate loaded on a dental cotton roll. The pheromone should have a release rate of 2.5 µg per day over a 30 day period. Leave traps in place during the male flight period, generally from early August to early October in Sweden. Reload the bait and replace the sticky bottom of each trap in September to ensure adequate coverage of the flight period. Trapping over successive years should provide trends in population levels allowing for the detection of outbreaks. Total trap catches that increase over multiple, consecutive years likely indicate an incipient outbreak of *N. sertifer*, but should be corroborated with data from surveys of eggs, larvae, or pupae.

Notes: This study was conducted in Sweden and the results may not be applicable in North America. Please use this trapping procedure with caution. A lure with a constant release rate would be preferable to dental cotton rolls, which dispense the pheromone at a decreasing rate with time.

Reference:

Anderbrant, O.; Löfqvist, J.; Jönsson, J.; Marling, E. 1989. Effect of pheromone trap type, position, and colour on the catch of the pine sawfly *Neodiprion sertifer* (Geoffr.) (Hym. Diprionidae). *Journal of Applied Entomology* 107: 365-369.