European Pine Sawfly

Neodiprion sertifer (Geoffroy)
Hymenoptera: Diprionidae

Wilson, L. F.; Gerrard, G. J. 1971. A new procedure for rapidly estimating European pine sawfly (Hymenoptera: Diprionidae) population levels in young pine plantations. *Canadian Entomologist* 103: 1315-1322.

Objective: To estimate the population density of *Neodiprion sertifer* (Geoffroy) based on the proportion of infested trees in a random sample.

Abstract: The European pine sawfly was introduced into North America in 1925, and now occurs throughout the north-central and northeastern USA and Canada. The pest feeds on two- and three-needle pines, but often causes little damage as feeding occurs almost exclusively on old foliage. A method was proposed for rapidly estimating the population levels of *N. sertifer* in young red, P*inus resinosa* Aiton, and Scots pine, *P. sylvestris* L., plantations.

Sampling Procedure: An estimate of the mean number of *N. sertifer* larvae per tree (*Y*) may be predicted from the proportion (*p*) of trees infested by the equation:

$$Y = k\,[(1/1\text{-}p)^{1/k} - 1]$$

where *k* is an estimate of a distribution parameter, and is derived beforehand by Maximum Likelihood from a series of insect populations representative of those where predictions are contemplated. Data from sampled sites derived a *k*-value of 1.37, yielding a curve that accounted for 91% of the variation among the means. To prevent loss of growth and vigor, control should be considered on trees 1.5-2.5 m tall when the mean number of colonies (*Y*) is ≥5 colonies per tree (Wilson 1966).

Notes: While the population means may vary from plantation to plantation, the aggregation index (*k*) is constant. The proportion of samples greater than 0.9 does not make adequate estimates and needs additional points for improvement. Due to the detailed nature of this particular study, we refer you to the origin publication for more information concerning the sampling procedures and associated statistical equations.

Reference:

Wilson, L. F. 1966. Effects of different population levels of the European pine sawfly on young Scots pine trees. *Journal of Economic Entomology* 59: 1043-1049.