Nantucket Pine Tip Moth
Rhyacionia frustrana (Comstock)
Lepidoptera: Tortricidae

Fettig, C. J.; Berisford, C. W. 1999. A comparison of three common indices for estimating Nantucket pine tip moth damage in the field. *Journal of Entomological Science* 34: 203-209.

Objectives: To determine if terminal damage was correlated positively to top whorl and whole tree damage; and if top whorl damage was correlated positively to whole tree damage.

Abstract: The Nantucket pine tip moth, *Rhyacionia frustrana* (Comstock), is a common pest of young loblolly, *Pinus taeda* L., shortleaf, *P. echinata* Mill., and Virginia, *P. virginiana* Mill., pine plantations in the eastern USA. Larval feeding can cause shoot mortality and tree deformity, reductions in height and volume growth, increases in compression wood formation, and occasional tree mortality. Four loblolly pine plantations were sampled in the Georgia Piedmont and four in the Georgia and South Carolina Coastal Plain. Sampling was conducted three times annually in the Piedmont and four times annually in the Coastal Plain, and coincided with the pupal stage of each generation.

Terminal damage (*Y*) was correlated positively with top whorl (*Y* = 0.04 + 1.29*X*, *R* = 0.87, *P* < 0.0001), and with whole tree damage (*Y* = 0.17 + 1.23*X*, *R* = 0.71, *P* < 0.0001). Top whorl damage (*Y*) was correlated positively with whole tree damage (*Y* = 0.09 + 0.99*X*, *R* = 0.86, *P* < 0.0001). Top whorl damage indices were the most sensitive indicator of damage levels in all tree strata examined.

Sampling Procedure: Select sample trees randomly, and count the number of damaged and undamaged shoots in the terminal and first cluster of lateral shoots (usually 3-6) beneath the terminal (e.g., top whorl). A shoot is defined as greater than 10 cm of apical stem containing foliage. The terminal is the new leader occurring at the top of the main stem. If the leader is damaged severely or aborted by causes other than *R. frustrana*, consider the tallest lateral shoot of the top whorl growing in a vertical orientation to be the terminal. Calculate the proportion of infested shoots, (# infested/total number) x 100, in the top whorl.

Top whorl damage indices may be the best compromise for estimating *R. frustrana* damage when considering the time constraints of obtaining more detailed estimates versus allocating that time toward another sample.

Note: The associations between top whorl damage and terminal and whole-tree damage may be limited to trees less than 3-years-old.