Nantucket Pine Tip Moth

Rhyacionia frustrana (Comstock)
Lepidoptera: Tortricidae

Asaro, C.; Cameron, R. S.; Nowak, J. T.; Grosman, D. M.; Seckinger, J. O.; Berisford, C. W. 2004. Efficacy of wing versus delta traps for predicting infestation levels of four generations of the Nantucket pine tip moth in the southern United States. Environmental Entomology 33: 397-404.

Objective: To compare two different types of pheromone traps for efficient capture of *R. frustrana* and validate earlier models (Asaro and Berisford 2001) for predicting damage levels.

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.

Two trap types (wing and delta traps) were evaluated in loblolly pine plantations in four southern states for efficacy in catching male *R. frustrana*. Wing traps were more useful at predicting tip moth density and tree damage than delta traps, especially for the first three tip moth generations (r^2 = 0.46 to 0.65). Average top whorl damage was related positively to average cumulative wing trap catch of the first (y = 10.026 + 0.030x; r^2 = 0.53), second (y = 12.784 + 0.062x; r^2 = 0.44) and third (y = 11.747 + 0.217x; r^2 = 0.62) generations. This trapping strategy validates the findings of Asaro and Berisford (2001) (see our review in this volume), who found that *R. frustrana* population density and percentage infested shoots was highly correlated with subsequent trap catch in the Georgia Piedmont. As such, the trapping strategy presented here should be useful for timing insecticide treatments when needed.

Sampling Procedure: Hang a Pherocon 1C wing trap (Trécé, Salinas, CA) 1–1.5 m high in the top whorl of four loblolly trees, or at the same height on steel conduit posts if trees are too short. Traps should be hung throughout the plantation, at least 30 m inside of the edge of the plantation and 60 m apart. Bait traps with rubber septa loaded with the two-component *R. frustrana* pheromone (Hill et al. 1981; Asaro et al. 2001). Replace baits monthly from January to mid-March/early April, the flight period of the first generation. Baits do not require replacement in subsequent flight periods, which begin in May, June-July, and August. Traps should remain in place until the predicted spray date of the following generation. Refer to Fig. 3 to relate the average cumulative trap catch before the spray date for the first adult generation to the average percentage of shoots in the top whorl infested by the first brood generation.

Notes: The thresholds presented in Fig. 3 for low, moderate, and heavy damage levels are hypothetical and based on the experience and judgment of the authors. No damage categories have been established for *R. frustrana*, therefore use the levels presented here with caution.

References:

Asaro, C.; Berisford, C. W. 2001. Predicting infestation levels of the Nantucket pine tip moth (Lepidoptera: Tortricidae) using pheromone traps. Environmental Entomology 30: 776-784.

Asaro, C.; Dalusky, M. J.; Berisford, C. W. 2001. Quantity and ratio of pheromone components among multiple generations of the Nantucket pine tip moth (Lepidoptera: Tortricidae) in Georgia and Virginia. Environmental Entomology 30: 1006-1011.

Hill, A. S.; Berisford, C. W.; Brady, U. E.; Roelofs, W. L. 1981. Nantucket pine tip moth, *Rhyacionia frustrana*: identification of two sex pheromone components. Journal of Chemical Ecology 7: 517-528.

Figure

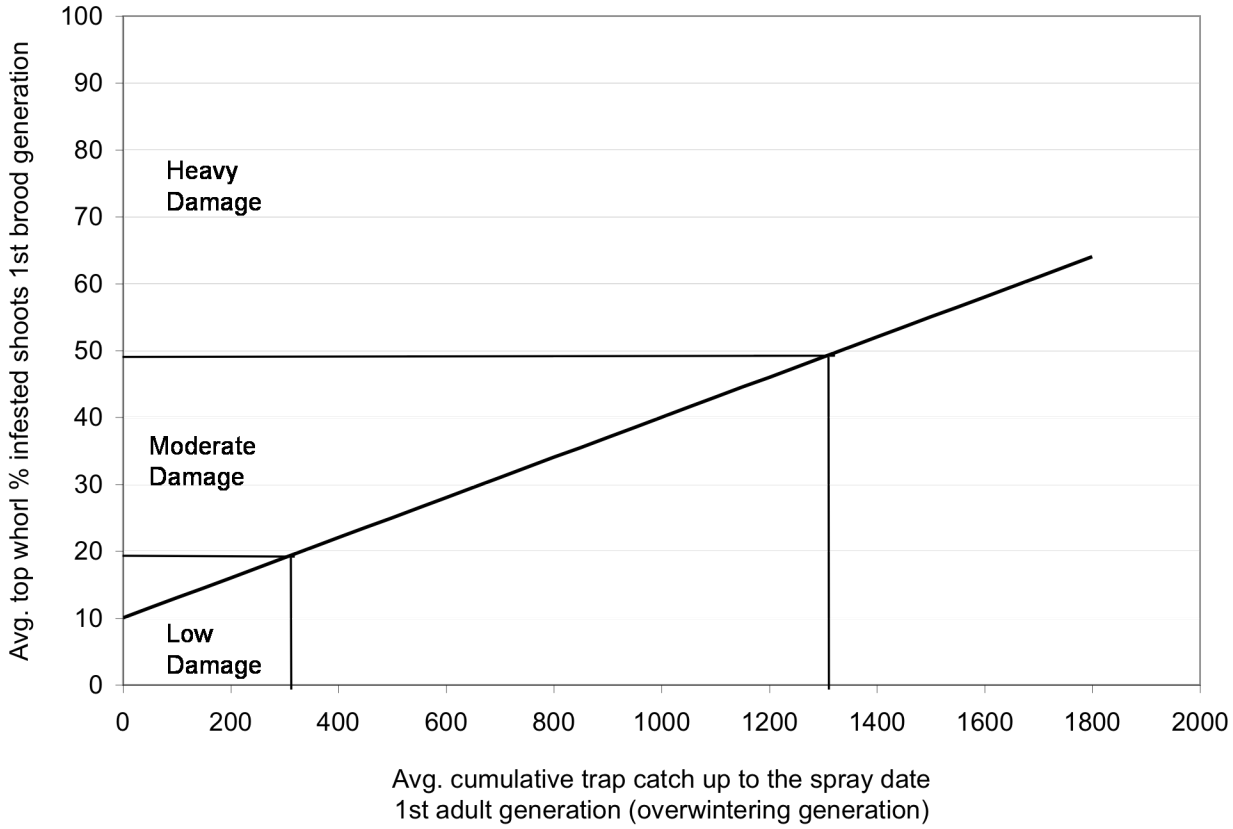

Fig. 3. Diagrammatic illustration of how to use the wing trap regression model A to forecast subsequent damage levels (first generation brood) and make a decision regarding insecticide application. The cut-off values delineating low, moderate, and heavy damage are hypothetical and are based on the experience and judgment of the authors.

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