

Thresholds, Monitoring and Sampling

The Active Space of Leafroller Pheromone Traps Baited with Lures of Different Strength

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In Washington State, there are two primary pestiferous leafrollers in tree fruits—pandemis leafroller (PLR), *Pandemis pyrusana* Kearfott, and obliquebanded leafroller (OBLR), *Choristoneura rosaceana* (Harris). These leafrollers are among the most difficult pests to effectively monitor. The primary methods used to monitor leafroller densities are visual counts of larvae in orchards. This is a time consuming procedure. Pheromone leafroller traps have not been considered an effective tool in monitoring leafroller populations because traps baited with standard lures are extremely attractive to male leafrollers. We hypothesize that traps attract male moths over long distances from neighboring orchards and surrounding habitats which gives a false picture of the actual population within a single orchard.

The primary goals of our project were to determine the actual sampling distance of leafroller traps baited with two different lure strengths and ultimately to develop a more effective leafroller trapping system. We hypothesized that by using a lower load pheromone lure we could reduce the sampling range of the trap and thus better identify leafroller "hot spots" within the orchard. We tested the activity of standard and low loaded OBLR lures by conducting a marked-release and recapture study. We used wild and laboratory reared OBLR to ensure that moths used in our study would exhibit the same dispersal behavior as wild. We tested this by comparing recapture percentages of both laboratory reared and wild OBLR.

Male moth releases were made at the Grady and Lillie Auvil Teaching and Demonstration Orchard of Wenatchee Valley College Tree Fruit Production Program's orchard located in East Wenatchee, WA. From 13 June through 30 August, 928 wild and 10,272 laboratory reared OBLR were marked and released. Our recapture results show that laboratory reared moths perform well and can be used in further marked-release and recapture experiments. For both wild and laboratory reared moths, recapture percentages are higher in the traps baited with the standard lure than in traps baited with the lower loaded lure. As moths are released at further distances from the trap, both recapture percentages of the high and low load lures decrease. In all cases, however, the high load lure recapture percentages remain higher than that of the traps baited with the low load lure. These preliminary results suggest that traps can be used as a effective leafroller monitoring tool. By using the lower strength lure, we can reduce the sampling range of the leafroller trap and thus monitor OBLR population levels within a single orchard.