

Biological Control

Obliquebanded Leafroller Natural Mortality in Milton-Freewater, OR

Lyla J. Lampson¹, Robert Pfannenstiel² and A. Dwight Smith¹

¹Lampson Research and Consulting, Milton-Freewater, OR

²Washington State University Tree Fruit Research and Extension Center, Wenatchee, WA

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An obliquebanded leafroller (OBLR) population was artificially created on July 22, 1997, in a young unsprayed Red Delicious orchard in Milton-Freewater. Five OBLR larvae (second to fifth instars) obtained from a commercial orchard in Milton-Freewater were released on single branches of 27 adjacent trees. Infested trees were randomly assigned to one of 3 treatments: uncaged, coarse mesh cage (to exclude larger predators and parasitoids) and fine mesh cage (to exclude all predators and parasitoids). After 24 hours now-established OBLR were counted and appropriate sleeve cages applied to infested branches. Uncaged infested trees were checked weekly and record taken of OBLR present as well as evidence of parasitism and predators. Sleeve cages were removed on August 20, after adult OBLRs had emerged. The results are summarized in Table 1.

A similar experiment was conducted in the same orchard on spring and summer generations of OBLR in 1998. In 1998 10 lab-reared larvae in three size classes (instars 1-2, instars 3-4, and instars 5-6) were obtained from WSU-TFREC and released on individual branches of 21 trees for each size class and appropriate sleeve cages applied immediately (7 trees/treatment). Sleeve cages were removed after two weeks, larvae collected for rearing out, and any predators observed recorded. Results of this experiment are illustrated in Figure 1. Only one leafroller was parasitized in the spring generation and no parasitism was found in the summer.

In the exclusion cage experiments the fine net sleeve cages were apparently successful in excluding parasitoids since no evidence of parasitism was found in the fine net cages. Earwigs and small spiders were not uncommonly found in both fine and coarse net cages. Jumping spiders and small wasps were also present in coarse net cages. Predators noted on uncaged trees included yellowjackets, vespid wasps, predaceous beetles and opilionids. Birds were also plentiful in the orchard (including starlings, magpies, quail, sparrows, robins and mourning doves).

In a final experiment 20 first and second instar WSU-TFREC lab-reared OBLR larvae were released on each of 56 trees in the spring and on 40 trees in the summer 1998 (trees uncaged). Randomly selected trees were searched and larvae collected for lab rearing at weekly intervals until larvae reached pupation. Figure 2 shows the results from the spring counts from this experiment. Only one parasitoid was found (which died as a cocoon) in the 32 larvae recovered from the 1120 larvae released in the spring. Of 800 larvae released in the summer, two leafrollers were recovered, one of which died, while the other emerged as an adult.

Table 1. Effect of exclusion cages on survival of established OBLR, summer 1997.

Treatment	No. cages	Fate of established leafroller larvae after four weeks							
		Died		Parasitized		Disappeared		Emerged adult	
		No.	%	No.	%	No.	%	No.	%
Uncaged	10	2a	2	3a	6	42b	88	1a	2
Coarse net	10	2a	5	5a	13	11a	28	21b	54
Fine net	7	2a	8	0a	0	4a	17	18b	75

Numbers in the same column followed by the same letter are not significantly different ($p=0.05$, Chi-square analysis goodness of fit test).

Figure 1. Effect of Exclusion Cages on Different Larval Stages of OBLR, 1998

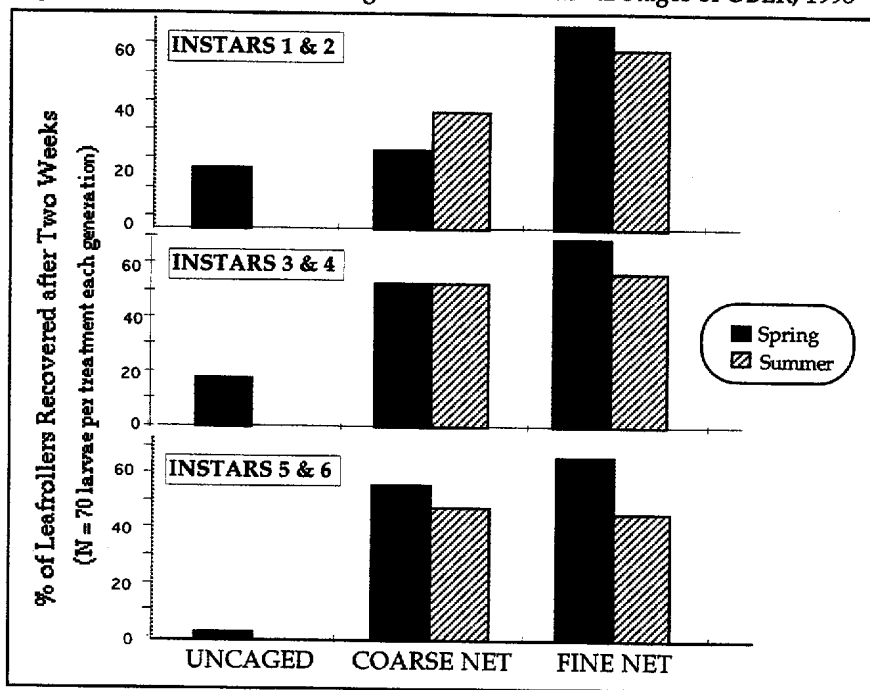


Figure 2. Weekly counts made over seven week period of OBLR released on 28-29 April, 1998 on uncaged trees.

