

II. Pome Fruits

a. Biology, behavior

1. *Pandemis pyrusana* Kearfott dispersal of females/larvae: Apple

Jay F. Brunner
 Washington State University
 Tree Fruit Research and Extension Center
 1100 N. Western Avenue
 Wenatchee, WA 98801

Eight small plots consisting of 48 (6) or 42 (2) trees were established in a commercial orchard in the spring of 1993 (Figure 1). The perimeter trees (24 or 18) in each plot were unsprayed, allowing the natural density of PLR to develop. The interior trees (24) were treated with Lorsban 50WP (3 pounds formulated per acre) plus Asana (4 ounces formulated per acre) in mid-May, about one week after petal fall. Post-treatment larval counts were made on May 19 when larvae were easily observed feeding in the shoot tips. The entire tree was examined and number of larvae recorded. The average density (\pm SE) of PLR larvae per tree for the untreated perimeter trees, interior trees bordering perimeter trees (interior A) and interior trees not bordering perimeter trees (interior B) is shown in Figure 1. The perimeter trees had an average of 13.9 ± 1.4 larvae. A total of 8 live PLR larvae were found on 192 interior trees during sampling, but these were removed so that none remained alive.

Following the overwintering flight of moths the number of egg masses on each tree was recorded. The average number of egg masses per tree on perimeter trees was 4.35 ± 0.42 . There was no significant difference in the egg mass density of interior A or B trees, 0.26 ± 0.05 and 0.13 ± 0.06 egg masses per tree, respectively. There were 16.7 times more egg masses on perimeter trees compared to interior A trees and 33.5 times more than on interior B trees. Perimeter trees contained 95.2% of all egg masses found. Assuming that half of the larvae in spring samples were females, the average number of egg masses per female would be 0.62, much less than the potential of 3 to 4 per female.

In early August the number of larvae per tree was recorded. A few trees with heavy infestation of rosy apple aphid were skipped because the severely curled leaves made accurate estimates of PLR larval density difficult. However, a pattern similar to that of summer egg masses was noted. The average number of larvae on perimeter trees was 26.2, 94.0% of the total found. However, a higher percentage of interior trees, 52.1%, was infested with one or more larvae than had been with egg masses, 17.7%, indicating that some larvae dispersed following egg hatch.

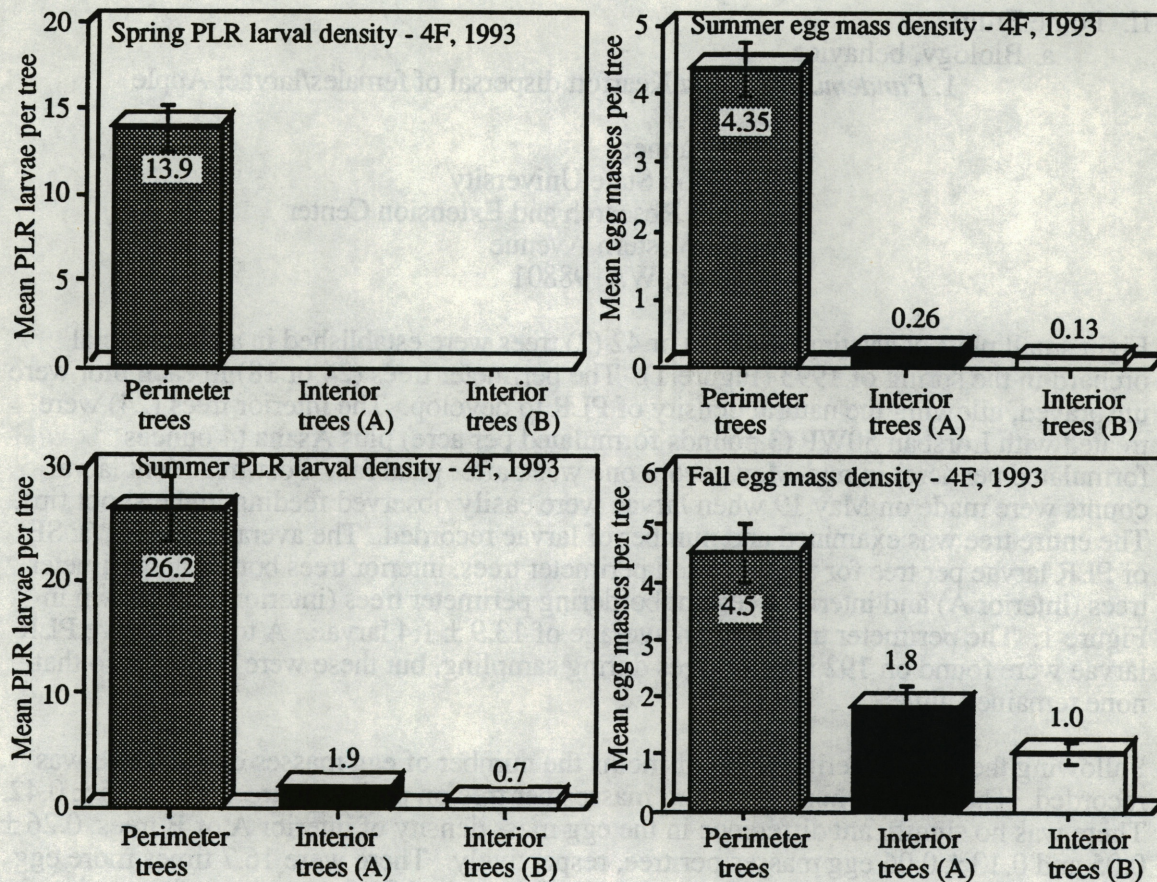


Figure 1. Average density of egg masses and larvae on untreated perimeter trees and interior trees that were not infested in spring.

In late September and early October trees were again sampled and the number of egg masses of the overwintering generation recorded. The average number of egg masses on perimeter trees was about the same as in the June sample (Figure 1), but more egg masses were found on interior trees. In June 95.2% of summer generation egg masses were found on perimeter trees, and in August 94.0% of summer generation larvae were found on perimeter trees while only 80.9% of the overwintering generation egg masses were found on perimeter trees. In addition, 64.6% of the interior trees had one or more egg masses in the fall compared with 17.7% in June. The average number of larvae per perimeter tree in early August was 26.2. Assuming half would produce females, the average number of egg masses per female larva would be 0.37, much less than the estimates of egg masses produced by females in spring. The activity of biological control agents, parasites, in this orchard was high and probably contributed to the low estimate of egg masses per female.