

Mating Disruption/SIR

Secondary Pest and Natural Enemy Sampling Program, 1998

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Objective

The objective of this project was to document changes in secondary pest and natural enemy populations in blocks managed under large-scale mating disruption (MD) when compared with conventional (organophosphate-based) management regimes. Our hypothesis is that conditions will be more favorable in blocks under MD for integrated control of secondary pests and that the reduced need for insecticide applications for secondary pests will offset the higher cost of MD technology.

Materials and Methods

Standardized sampling protocols were developed for the principal secondary pests of apple and pear and their associated natural enemies. Seven apple sites and 3 pear sites were sampled during the 1998 growing season, for a total of 9 sites (one site contained both apple and pear orchards). A subsample of the blocks within the boundary of the MD area was chosen for intensive sampling. Orchard blocks under conventional management representative of the region were chosen as comparison blocks. Five of the sites were the primary MD projects (CAMP) established during the 1995 growing season (with the exception of Randall Island, begun in 1993). The remaining 4 sites (GRABs subproject) were apple acreage in central Washington and differed from the CAMP sites in that they were managed by a single grower or corporation as opposed to a group of cooperating independent fruit growers.

Results

Apple. As in 1996 and 1997, the percent parasitism of overwintering white apple leafhopper eggs was significantly higher in MD blocks. However, again this difference was not reflected in lower populations of nymphs during the growing season. Aphid populations were low in all sites and no difference was documented between the treatment types. Total motile predators were slightly more numerous in CONV blocks, a difference almost totally due to higher numbers of lacewings in these sites. Leafminer parasitism tended to be higher, and mine density lower, in MD blocks. Predatory mites were more abundant in MD blocks. Pest mite populations were higher in CONV blocks using both binomial and leaf brushing sampling techniques. However, in all block types phytophagous mite populations were generally subeconomic. Leafroller larvae were more numerous in CONV blocks at both first and second generation. Fruit damage by codling moth and leafroller was lower in MD blocks. Stinkbug and cutworm damage, tabulated for the first time in 1998, was significant in many sites, though no difference was seen between management types.

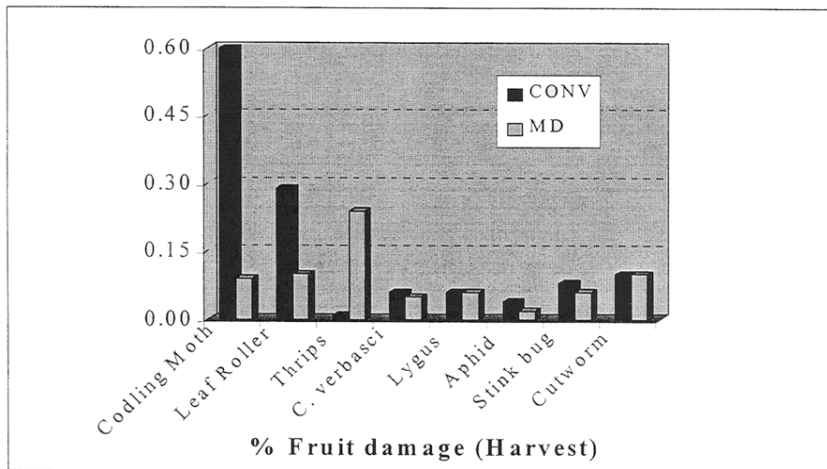
Pear. In pear sites, a consistent and season-long trend toward higher psylla populations

was observed in CONV blocks. Fruit damage caused by psylla continued to be higher and economically significant in CONV blocks. While more predatory mites were found in MD blocks, no difference in pest mite populations was seen regardless of management type. Fruit damage by codling moth and leafroller was the same in the two management regimes.

Conclusion

Data gathered during the 1998 growing season as part of the Secondary Pest and Natural Enemy Sampling program indicate that, for many of the pest insects and natural enemies sampled, no differences occurred between the two management regimes. However, in most cases where differences occurred, the trend was for lower pest and/or higher natural enemy populations in blocks under mating disruption.

'98 Fruit Damage (Apple)



'98 Fruit Damage (Pear)

