I. Section Mating Disruption

SECONDARY PEST AND NATURAL ENEMY SAMPLING PROGRAM, 1997

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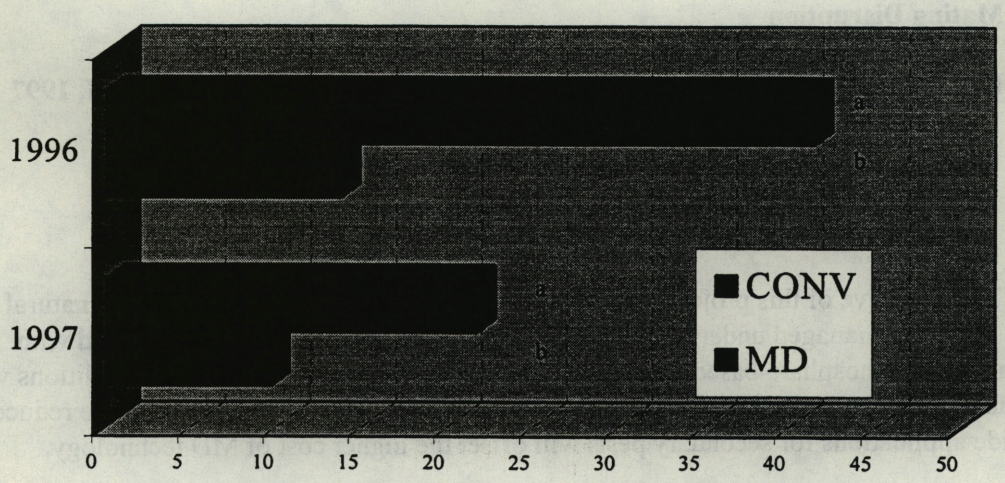
Objective: The objective of this project was to document changes in secondary pest and natural enemy populations in blocks managed under large-scale mating disruption (MD) when compared with conventional (organophosphate-based) management regimes. Our hypothesis is that conditions will be more favorable 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 1997 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.

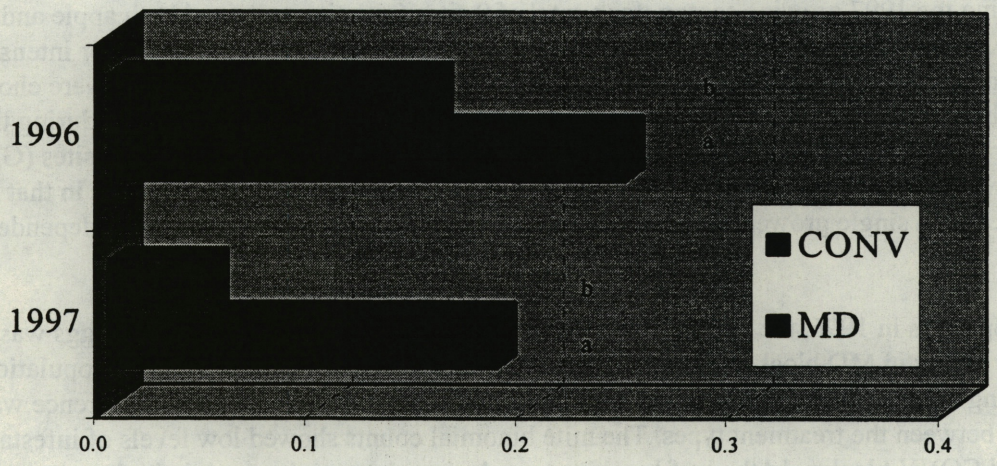
Results: Apple: As in 1996, the % parasitism of overwintering white apple leafhopper eggs was significantly higher in MD blocks. However, this difference was not reflected in lower populations of nymphs during the growing season. Aphid populations were low in all sites and no difference was documented between the treatment types. The mite binomial counts showed low levels of infestation in both MD and CONV blocks. In the leaf-brushing samples, predatory mites and their alternate prey species (apple rust mites) were found to be more abundant in the MD blocks. Fruit damage by codling moth and leafroller was lower in MD blocks, whereas fruit damage by thrips and lygus was higher.

Pear: Psylla nymphs and adults were higher in conventional blocks than in blocks under MD, as demonstrated on both the leaf brushing and the limb tap counts. Mite populations did not differ between the 2 management regimes. Fruit damage by psylla was higher in conventional blocks, corresponding to the higher in-season populations. Fruit damage by codling moth and leafroller was the same in the 2 management regimes.

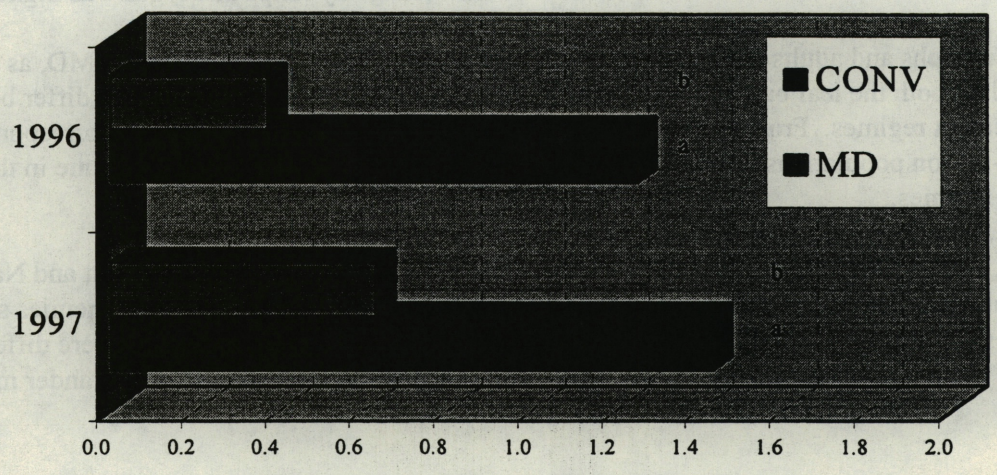
Conclusion: Data gathered during the 1997 growing season as part of the Secondary Pest and Natural Enemy Sampling program indicates that for the majority of the pest insects and natural enemies sampled, no differences occurred between the 2 management regimes. However, in most cases where differences occurred, the trend was for lower pest and/or higher natural enemy populations in blocks under mating disruption.



Apple: % Leafhopper egg parasitism (dormant)



Apple: % Fruit damage by leafroller



Pear: Psylla adults/tap (seasonal)