

NATURAL ENEMIES OF GRAPE LEAFHOPPER IN CONVENTIONAL, LOW AND NO INPUT SITES

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Leafhoppers (Homoptera: Cicadellidae) are significant mid-late season pests of wine grapes, but have the potential to be controlled by parasitoid wasps in the genus *Anagrus* (Hymenoptera: Mymaridae) and other natural enemies, primarily generalist predators. To study the abundance, distribution, phenology, and effect of these biocontrol agents in south central Washington, 48 sites were surveyed monthly during June-September 2001 in five of Washington's grape growing regions including: the upper and lower Yakima Valley, Mattawa region, Walla Walla Valley and Columbia Valley. To determine the influence of pest control practices on predators and parasitoids, sites were classified as conventional, low-input or no-input according to pesticide use. Leafhopper-damaged leaves and D-vac canopy suction samples were taken from each site to provide data on leafhopper, predator and *Anagrus* spp. abundance. *Anagrus* spp. were reared from leafhopper eggs and identified; egg mortality was also determined. Four *Anagrus* species were identified, including: *A. erythroneuræ*, *A. daanei*, *A. tretiakovæ* and *A. atomus*. Early season leafhopper egg mortality was generally low (<20%), but high (80-100%) by late season. Late season parasitism at unsprayed sites ranged from 80-100% and between 10-20% in conventionally managed vineyards. Egg mortality from an unidentified cause (disease?) ranged from 20-30% early season and from 50-80% late season regardless of pesticide use. Leafhopper predators were more abundant in no-input sites. Seasonal differences in occurrence and abundance of the four species suggest that a complex of *Anagrus* spp. may be more important in regulating leafhoppers than a single species. Natural enemies and an unidentified egg mortality appear to be important in suppressing leafhopper populations in Washington state wine grapes.