

Section VIII.
Mites & Sap-Sucking Insects

WILLAMETTE MITE: EMERGING PEST PROBLEM IN OREGON WINE GRAPES

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The Willamette mite, Eotetranychus willamettei Ewing, was observed at high densities in one Oregon vineyard near Dundee in 2000 and 2001. In September, 2002, about 200 acres in this area had high densities of Willamette mite and visible leaf injury. One vineyard sampled throughout 2002, averaged 11 Willamette mite/leaf in August, and some samples exceeded 100/leaf by October. Phytoseiid predators of spider mite were very scarce (0.3/100 leaves) throughout the 2002 season. Heavy use of sulfur (6-10 applications/season) for suppression of powdery mildew may have contributed to the scarcity of predators.

For 2003, growers adopted several practices to combat Willamette mite. All vineyards reduced the use of sulfur sprays for powdery mildew to minimize mortality of Phytoseiid predators. JMS Stylet oil was substituted for sulfur in May. Sulfur applications ranged from two to six treatments per season, mostly in June and July. Twelve vineyards released Galandromus occidentalis (purchased from Biotactics, Inc) for biocontrol of Willamette mite. Releases were made in May and June at rates of 1000-3000/acre. One vineyard also released Typhlodromus pyri (collected from commercial blackberries) at a rate of 1000/acre in April. Fourteen of these vineyards were surveyed, though no untreated check plots were established. Grape blocks of 5-10 acres (cv. Pinot Noir) were sampled for Willamette mite and Phytoseiid predators from May to October. Six to eight samples of 10 leaves were collected from each block every two weeks. Willamette mite and Phytoseiid predators were counted in the field with a 10x hand lens. Phytoseiids were classified in the field as either G. occidentalis or T. pyri and a few were submitted to the OSU Insect ID lab for verification.

Mite population trends were similar in all vineyards. Willamette mite was found in all but one vineyard in May, but densities averaged less than four mites/leaf. Densities declined in late May and June and mites were undetectable in most vineyards during June and early July. Willamette mite increased from late July through early October. Most vineyards had peak densities less than four mites/leaf in September, but two had densities of 20-40/leaf. These heavily infested vineyards had visible leaf injury in September.

Phytoseiid predators were detected in all vineyards and were found on all but one date from early May to October. The largest numbers were found in May with a decline from late June through August and increased numbers in September. The density of Phytoseiids was 10X greater than the previous season, with an average of 3.2 Phytoseiids/100 leaves. More than 90% of Phytoseiids were classified as T. pyri in the field and all specimens taken to OSU were identified as T. pyri. The vineyard in which T. pyri were released did not have higher numbers of this predator.

G. occidentalis released in grapes did not survive and multiply to detectable numbers. T. pyri apparently colonized vineyards from refuges in surrounding vegetation. Reduced use of sulfur probably favored reestablishment of this predator. Although T. pyri was widespread, numbers were low and Willamette mite still reached damaging densities in some vineyards. If sulfur spray reductions continue, T. pyri may increase and provide consistent biocontrol of Willamette mite.