

**EFFECTS OF SIX VINEYARD FUNGICIDES ON THE
JUVENILE PREDATORY MITE *TYPHLODROMUS PYRI***

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Fungicide programs in western Oregon vineyards are believed to contribute to secondary pest outbreaks of the rust mite *Calepitrimerus vitis* (Nalepa). Laboratory bioassays were conducted to assess the effects of six vineyard fungicides on *Typhlodromus pyri* Scheuten (Acari:Phytoseiidae), a key predator mite of *C. vitis*. Fungicides tested were micronized sulfur (92%), whey powder (milk bi-product), manganese ethylenebisdithiocarbamate (75%, mancozeb), boscalid (plus pyraclostrobin, 38%), myclobutanil (40%) and paraffinic oil (97.1%) at three different rates (recommended label rate, 1.0X increase and 2.0X increase), a water spray and check (no spray) were also included. Fungicide dilutions were directly sprayed onto juvenile (0-3d) *T. pyri* with a Potter Precision Spray Tower. The effects of each treatment were assessed at specified days after treatment (DAT) in order to assess direct mortality, fecundity and oviposition per female.

Results indicate that five of the six fungicides tested can be classified as non-toxic to juvenile *T. pyri* as levels of mortality were less than 50% for all rates at 7 DAT. Paraffinic oil was the single fungicide which showed direct mortality greater than 50% at 1 DAT for all three rates, and were significantly different from the check. Sub-lethal effects were more pronounced among the fungicides tested. Significant decreases were seen in the sulfur (1.0x rate) and mancozeb (1.0x, 2.0x rate) treatments compared to the check. The percent fecundity reduction relative to the check was highest in the sulfur (28%, 51.2%), myclobutanil (24.7%, 45.7%) and mancozeb (21.8%, 83.2%, 70%) treatments at label rate, 1.0x rate and 2.0x rate, respectively. Whey powder and boscalid showed no significant differences, at all three rates, from the check and a low percent reduction in fecundity relative to the check. Fecundity comparisons across fungicides of similar rates, did show treatment differences at the 1.0x rate ($P \leq 0.001$) and 2.0x rate ($P \leq 0.05$). These results can be utilized as guidelines in vineyard IPM practices to enhance predator mite populations for biological control.

DAT	Treatment Rate (g/l)	Mean % mortality (\pm SEM)			Check
		Sulfur	Whey	Boscalid	
3	5.40	7.20	9.50	13.3 \pm 3.1a	
	24.0 \pm 5.0a	26.7 \pm 5.6a	30.7 \pm 6.7a		
	Whey				
3	12.0	18.0	24.0	15.1 \pm 4.5a	
	21.3 \pm 7.7a	28.0 \pm 4.9a	16.0 \pm 5.4a		
	Boscalid				
3	0.94	1.42	1.89	8.0 \pm 3.3b	
	26.7 \pm 6.9a	9.3 \pm 3.4b	22.7 \pm 4.9a		
	Myclobutanil				
3	0.30	0.45	0.60	20.0 \pm 4.7a	
	12.0 \pm 4.4a	18.6 \pm 3.9a	20.0 \pm 2.1a		
	Manzate				
3	2.40	3.60	4.80	12.0 \pm 3.1a	
	29.3 \pm 11.6a	37.3 \pm 10.4a	32.0 \pm 16.5a		
	Paraffinic oil*				
3	15.0	22.5	30.0	9.3 \pm 4.9b	
	89.3 \pm 5.4a	94.7 \pm 5.3a	100 \pm 0a		

