

Efficacy of fungicides for control of grape powdery mildew, 2010.

Fungicide treatments were arranged in a randomized complete block design in a block of 'White Riesling' planted in 1995 on a 7x10 ft spacing. Vines were trained to a bilateral cordon with spur pruning. Vines were pruned from 9 to 11 Feb. Sucker removal and shoot thinning by hand, occurred from 14 to 20 May. Vines were pruned to approximately 60 spurs/vine and thinned to approximately 40 shoots/vine. Each treatment was replicated on 4 sets of 5 vines. Treatments were applied approximately every 14 days using a hooded boom sprayer at 150 psi. The rate of water used was 80 to 147 gal/A such that approximately 2.6 to 4.9 gal of spray suspension was used per 20 vines depending on amount of foliage present. Fungicides were applied on 5 Jun (BBCH 15), 18 Jun (BBCH 53), 1 Jul (BBCH 57), 15 Jul (BBCH 71), 29 Jul (BBCH 75), 10 Aug (BBCH 78) and 24 Aug (BBCH 79). Veraison started the last week of Aug and was at 50% by 6 Sep. A Rex Lime Sulfur application (9 gal/A) was applied to all dormant vines on 23 Mar using a Solo pump-style backpack sprayer to suppress overwintering chasmothecia. Canes were cut above the top wire on 19 Jul and maintained at this height throughout the growing season. A tank mix of Goal 2XL (1.25 qt/A) plus Round-up (1.25 qt/A) was applied on 1 Mar for weed control. No fertilizer was applied this year. No leaves were removed from the fruiting zone. According to the Gubler-Thomas powdery mildew forecasting model, there were 14 rain events between budbreak and end of bloom that were favorable for ascospore release and infection: 5 severe infection periods (27 Apr, 3 and 25 May, 1 and 3 Jun), 5 moderate infection periods (26 Apr, 19, 21 and 30 May, and 8 Jun), and 4 low infection periods (16 and 17 May, 6 and 10 Jun). The risk index briefly climbed above 60 from 25 Jun to 3 Jul, declined, climbed above 60 again on 12 Jul and remained high throughout the summer (Figure 1). Incidence and severity of powdery mildew on leaves and clusters were evaluated on 20-21 Jul, 3 and 18 Aug and 2-3 Sep. Powdery mildew disease data was collected by arbitrarily examining 50 leaves or clusters from the middle 3 vines of each replicate. Comparisons among treatments for severity of powdery mildew on leaves and clusters were evaluated by calculating the area under disease progress curves (AUDPC). AUDPC was calculated by multiplying the mean severity from two observation dates by the number of days between observations ($\sum [Y_{i+1} + Y_i]/2 [X_{i+1} - X_i]$ where Y_i is severity of mildew at i th observation and X_i is the day of the i th observations). Values calculated between each pair of observations are added together to obtain a total AUDPC.

Spring weather conditions were cold and wet delaying grape growth by several weeks relative to past years. Symptoms of powdery mildew were first found in a nearby block of Pinot Noir on 27 May and in this block on 14 Jun. Although colonies were widely scattered, we suspect powdery mildew had been active in this block for about a week. All fungicide treated vines had significantly less powdery mildew on leaves when compared to nontreated vines. Although Sil-Matrix treated vines had significantly less powdery mildew on leaves than nontreated vines, it was significantly more than on all other fungicide treated vines. There was no significant difference in powdery mildew for leaves among the other various fungicide treatments. All clusters on nontreated or Sil-Matrix treated vines had some powdery mildew however it was not significantly different from the incidence on clusters from vines treated with the low rate of Torino or Mettle alone. The severity of powdery mildew on clusters from nontreated vines was 100% and the amount found on Sil-Matrix treated vines was not significantly different. All fungicide treated vines had significantly less AUDPC for clusters when compared to nontreated vines. Although Sil-Matrix treated vines had significantly lower cluster AUDPC than nontreated vines, it was significantly more than on all other fungicide treated vines. No phytotoxicity was observed on any vines treated with any fungicide.

Treatment and Rate/A**	% Leaves with Powdery Mildew (2 Sep)*		AUDPC* (Leaves)	% Clusters with Powdery Mildew (3 Sep)*		AUDPC* (Clusters)
	Incidence	Severity		Incidence	Severity	
Nontreated.....	99.5 a	16.5 a	3.03 a	100 a	100 a	38.2 a
Luna Expreince at 6 fl oz.....	1.0 c	0.0+ c	0.01 c	46.5 c	1.4 c	0.4 c
Luna Expreince at 6 fl oz alternate						
Flint 50 WDG at 2 oz.....	3.0 c	0.0+ c	0.01 c	34.5 c	1.4 c	0.3 c
Torino at 2.75 fl oz plus						
Break-Thru at 4 fl oz/100gal	2.0 c	0.0+ c	0.01 c	75.5 ab	12.0 bc	2.3 c
Torino at 3.4 fl oz plus						
Break-Thru at 4 fl oz/100gal	2.0 c	0.0+ c	0.01 c	35.0 c	1.2 c	0.3 c
Torino at 4.25 fl oz plus						
Break-Thru at 4 fl oz/100gal	1.5 c	0.0+ c	0.01 c	30.0 c	1.0 c	0.2 c
Elite 45 DF at 4 oz plus						
Thiolux at 6 lb alternate						
Pristine 38 WDG at 10.5 oz plus						
Silwet L-77 at 4 fl oz/100 gal	1.0 c	0.0+ c	0.01 c	46.5 c	7.4 bc	1.1 c
Mettle 125 ME at 5 fl oz.....	1.0 c	0.0+ c	0.01 c	90.0 a	14.0 b	2.0 c
Mettle 125 ME at 5 fl oz alternate						
Pristine 38 WDG at 10.5 oz plus						
Silwet L-77 at 4 fl oz/100 gal	1.5 c	0.0+ c	0.00+ c	53.5 bc	3.3 bc	0.7 c
Sil-Matrix at 1 gal/100 gal water...	84.5 b	4.6 b	1.25 b	100 a	94.0 a	29.0 b

* Means followed by the same letter do not differ significantly based on Fisher's protected LSD (P=0.05). The data points with 0.0+ indicate the value was very low but not equal to zero.

** Fungicides were applied on 5 Jun (BBCH 15), 18 Jun (BBCH 53), 1 Jul (BBCH 57), 15 Jul (BBCH 71), 29 Jul (BBCH 75), 10 Aug (BBCH 78) and 24 Aug (BBCH 79). Veraison was at 50% by 6 Sep.

Figure 1. Grape powdery mildew risk index 2010.

