

GRAPE (*Vitis vinifera* 'Pinot Noir')
Powdery Mildew; *Uncinula necator*

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Efficacy of fungicides for control of grape powdery mildew on Pinot Noir, 2006.

Fungicide treatments were arranged in a randomized complete block design in a block of 'Pinot Noir' (on *V. rupestris* x *V. riparia* 101-14 rootstock) planted in 1998 on a 7x8 ft spacing. A single buffer rootstock vine was trained between each set of treatment vines and a buffer rootstock row separated each varietal row. Each treatment was replicated on 5 sets of 5 vines. Pinot Noir vines were trained to a Guyot system on 8 and 9 Feb. Rex-Lime Sulfur (10 gal/A) was applied to the entire block on 15 Mar using a Solo pump-style backpack sprayer. Shoot thinning and sucker removal by hand occurred 8 to 9 May. Treatments were applied approximately every 14 days using a hooded boom sprayer at 150 psi for the first 5 applications, and 200 psi for the remaining 3 applications. The rate of water used was 40 to 110 gal/A depending on amount of foliage present. Approximately 1.0 to 2.5 gal of spray suspension was used per 25 vines depending on time of year. Fungicides were applied on 12 May (6 inch shoots), 25 May, 9 Jun, 23 Jun (Bloom), 7 Jul, 21 Jul (Bunch Close), 4 Aug (tight bunch), and 18 Aug (50% Veraison). No leaves were removed from the fruiting zone. To control weeds in the vine row, Buccaneer (1qt/A) was applied on 20 Apr and Rely (3 qt/A) was applied on 18 May (for both weed and sucker control) and 14 Jul. No fertilizer was applied this year. Canes were cut above the top wire on 11 Jul and maintained at this height throughout the growing season. According to the Gubler-Thomas powdery mildew forecasting model, there were 8 rain events between budbreak and end of bloom that were favorable for ascospore release and infection: 5 severe infection periods (7, 21, 22, 27 and 31 May), 2 moderate infection periods (1 and 3 Jun), and 1 low infection period (19 May). The risk index climbed above 60 in mid July and remained high through mid Sep (Figure 1). During this period the index briefly dropped below 60 near the start of Sep. Incidence and severity of powdery mildew on leaves were evaluated on 22 Jun (incidence only), 19 Jul, 1 and 16 Aug. Incidence and severity of powdery mildew on clusters were evaluated on 19 Jul, 2 and 15 Aug. 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 ($\Sigma[Y_{i+1} + Y_i]/2][X_{i+1}-X_i]$ 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.

Symptoms of powdery mildew were first found in a nearby block of Pinot Noir as flag shoots on 8 May. Symptoms of powdery mildew were first found in this block of Pinot Noir on nontreated vines on 22 Jun. All treated vines had significantly less incidence and severity of powdery mildew on leaves or clusters when compared to nontreated vines. There were no significant differences among the various treatments with respect to any disease measure except for incidence on clusters. Vines treated with BAS 5600 alone had significantly higher incidence of powdery mildew on clusters than on vines treated with other combination of materials. An unusual number of berries remained green after veraison on vines treated with BAS 5600 alone. The number of clusters with green berries per middle 3 vines did not reveal any significant difference among the treated vines (counts could not be made of nontreated vines). Brix readings from these vines also did not reveal any significant difference among the treated vines (average 20 Brix for combined data).

Treatment and Rate/A**	% Leaves with Powdery Mildew (16 Aug)*		AUDPC* (Leaves)	% Clusters with Powdery Mildew (15 Aug)*		AUDPC* (Clusters)
	Incidence	Severity		Incidence	Severity	
Nontreated.....	100.0 a	75.0 a	7.711 a	100.0 a	97.7 a	24.33 a
BAS 5600 at 10.24 fl oz.....	1.2 b	0.02 b	0.006 b	8.0 b	0.14 b	0.02 b
BAS 5600 at 10.24 fl oz alternate Prinstine 38 EG at 8.42 oz plus Latron B-1956 at 7.7 fl oz/100 gal	0.8 b	0.01 b	0.003 b	1.0 c	0.02 b	0.01 b
BAS 5600 at 10.24 fl oz alternate Sovran at 4.8 oz.....	1.2 b	0.02 b	0.009 b	3.6 c	0.07 b	0.02 b
Prinstine 38 EG at 8.42 oz plus Latron B-1956 at 7.7 fl oz/100 gal	1.2 b	0.01 b	0.005 b	2.8 c	0.03 b	0.01 b

* Means followed by the same letter do not differ significantly based on Fisher's protected LSD (P=0.05).

** Fungicides were applied on 12 May (6 inch shoots), 25 May, 9 Jun, 23 Jun (Bloom), 7 Jul, 21 Jul (Bunch Close), 4 Aug (tight bunch), and 18 Aug (50% Veraison).

Figure 1. Grape powdery mildew risk index 2006

