GRAPE (*Vitis vinifera* 'Pinot Gris')

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Powdery Mildew; *Erysiphe necator*

Efficacy of GWN-10087 for management of grape powdery mildew, 2012.

Fungicide treatments were arranged in a randomized complete block design in a block of 'Pinot Gris' (on *V. rupestris* x *V. riparia* 101-14 rootstock) planted in 1998 on a 7x8 ft spacing. A single buffer rootstock plant was trained between each set of treatment vines and a buffer rootstock row separated each varietal row. Pinot Gris vines were trained to a Guyot system on 28 to 29 Mar. Shoot thinning and sucker removal by hand occurred on 12 Jun. Canes were cut above the top wire on 5 Jul and maintained at this height throughout the growing season. Each treatment was replicated on 4 sets of 5 vines. Treatments were applied approximately every 7 days using a hooded boom sprayer at 150 psi. The rate of water used was 48 to 103 gal/A depending on amount of foliage present. Approximately 1.4 to 2.6 gal of spray suspension was used per 20 vines depending on time of year. Thiolux (80% sulfur at 5lb/A) was applied to all treated vines on 31 May (BBCH 15), 10 Jun (BBCH 17), and 19 Jun (BBCH 55) at 48 gal water/A. GWN-10087 was applied on 27 Jun (BBCH 61), 7 Jul (BBCH 65), 13 Jul (BBCH 72), 20 Jul (BBCH 77), 27 Jul (BBCH 79), 7 Aug (BBCH 80), and 16 Aug (BBCH 81, start of Veraison). No fertilizer or miteicide was applied this year. No leaves were removed from the fruiting zone. AIM (2 fl oz/A) plus BreakThru (1 qt/100 gal water) was applied on 2 May and AIM (2 fl oz/A) plus BreakThru (1 qt/100 gal water) plus Rely (48 fl oz/A) was applied on 15 May for weed control. Fungal infection periods were monitored using an Adcon A730 weather station equipped with standard sensors. According to the Gubler-Thomas powdery mildew forecasting model, there were 10 rain events between budbreak and end of bloom that were favorable for ascospore release and infection: 1 severe infection period (21 May), 6 moderate infection periods (29 Apr, 2, and 25 May, 8, 22 and 25 Jun), and 3 low infection periods (1, 3 and 24 Jun). The risk index varied from 0 to 60 during Jun but shot up past 60 in early Jul and remained high throughout the rest of Jul and Aug until dropping back down in early Sep (Figure 1). Incidence and severity of powdery mildew on leaves were evaluated on 23 Jul, 6, 15 and 27 Aug. Incidence and severity of powdery mildew on clusters were evaluated on 6, 15 and 28 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.

Spring weather conditions in Western Oregon were considered normal to wet. Symptoms of powdery mildew were first found on 30 May as flag shoots and individual colonies in nearby blocks. All fungicide treated vines had significantly less powdery mildew on leaves or clusters when compared to nontreated vines with the one exception of the lowest rate of GWN-10087 for incidence on clusters. Fungicide treated vines were not significantly different from each other with the exception of the highest rate of GWN-10087 which had significantly lower cluster incidence of powdery mildew. No phytotoxicity was observed on any treated vines.

Acknowledgements

Treatment and Rate/A**	% Leaves with Powdery Mildew (27 Aug)*		AUDPC* (Leaves)	% Clusters with Powdery Mildew (28 Aug)*		AUDPC* (Clusters)
	Incidence	Severity		Incidence	Severity	
Nontreated……………….	98.5 a	17.2 a	6.3 a	100 a	93.6 a	21.1 a
GWN 10087 at 16 fl oz......	6.5 b	0.1 b	0.3 b	89.0 ab	4.9 b	0.9 b
GWN 10087 at 22 fl oz......	2.5 b	0.1 b	0.0+ b	83.0 b	4.3 b	0.8 b
GWN 10087 at 28 fl oz......	7.5 b	0.1 b	0.0+ b	81.5 b	3.6 b	0.7 b
GWN 10087 at 32 fl oz......	5.0 b	0.1 b	0.0+ b	64.5 c	2.5 b	0.5 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.
** Thiolux (80% sulfur at 5lb/A) was applied to all treated vines on 31 May (BBCH 15), 10 Jun (BBCH 17), and 19
   Jun (BBCH 55) at 48 gal water/A. GWN-10087 was applied on 27 Jun (BBCH 61), 7 Jul (BBCH 65), 13 Jul
   (BBCH 72), 20 Jul (BBCH 77), 27 Jul (BBCH 79), 7 Aug (BBCH 80), and 16 Aug (BBCH 81, start of
   Veraison).

Figure 1. Grape powdery mildew risk index 2012.