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

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EFFICACY OF VARIOUS FUNGICIDES FOR CONTROL OF GRAPE POWDERY MILDEW ON PINOT NOIR, 2002: Fungicide treatments were arranged in a randomized complete block design in a block of 'Pinot Noir' planted in 1985 on a 7x10 ft spacing. Vines were trained to a bilateral cordon with spur pruning. The number of buds was adjusted based on pruning weights at the rate of 25 buds/kg canes. Shoot thinning occurred from 6 to 9 May. Each treatment was replicated on 4 sets of 5 vines. Treatments were applied using a hooded boom sprayer at 100 psi for the first 3 timings, 150 psi for next 2, and 200 psi for the last 3 applications. The rate of water used was 62 gal/A for the first application, 93 gal/A for the next 2, 114 gal/A for the next one, 149 gal/A for the one after that and 204 gal/A for the last 2 applications. Approximately 2 to 6.7 gal of spray suspension was used per 20 vines depending on time of year. Fungicides were applied on 1 Jun (EL 13), 14 Jun (EL 17), 25 Jun (50% bloom), 9 Jul (EL 27), 24 Jul, 8 and 21 Aug (early veraison). An additional, early application of Messenger was applied on 10 May (EL 8). All fungicide treated vines had an additional application of Thiloux 80 DF (4 lb/A) on 24 May. A nontreated control was not included since one was included on Chardonnay vines interspersed throughout this same block. No leaves were removed from the fruiting zone. According to the Gubler-Thomas powdery mildew model, there were 8 rain events between bud break (18 Apr) and end of bloom that were favorable for ascospore release and infection: 4 severe infection periods (19 and 27 May, 17 and 27 Jun), 2 moderate infection periods (26 Apr and 8 Jun), and 2 low infection periods (13 and 16 May). The risk index climbed above 60 on 24 Jun and remained high through mid Sep. Urea fertilizer was spread within vine rows on 11 Apr at 121 lb/A. Cassaron 4G (150 lb/A) was initially applied to control weeds in the vine row on 1 Feb and completed on 18 Feb. Glyphos xtra (4 qt/A) was applied 10 May to manage weeds which had already emerged. Incidence of powdery mildew on leaves was evaluated on 3 & 23 Jul, 1 & 14 Aug, 6 and 12 Sep by randomly examining 100 leaves from the middle 3 vines of each replicate. Severity of powdery mildew on leaves was evaluated on 1 & 14 Aug, 6 Sep and 12 Sep by randomly examining 100 leaves from the middle 3 vines of each replicate. Incidence and severity of powdery mildew on clusters was evaluated on 31 Jul, 6, and 23 Aug, respectively, by randomly examining 50 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.

Light frost conditions occurred on 4 and 8 May with light to moderate damage to grape blocks. Powdery mildew was first found widely scattered on adjacent, nontreated Chardonnay vines on 19 Jun. These nontreated Chardonnay vines had the following powdery mildew ratings: leaf incidence of 100% on 21 Aug, leaf severity of 46% on 21 Aug, cluster incidence of 100 % on 26 Aug and cluster severity of 100% on 26 Aug. Based on prior year's results, nontreated Pinot Noir vines would have had similar levels. Vines treated with Messenger only had similar levels to those found on nontreated Chardonnay vines. All other treatments had significantly less powdery mildew except for cluster incidence (which was the same for all treatments by 23 Aug). There were no significant differences in powdery mildew among these other treatments. Tank mixing Messenger with Rally or Abound did not improve powdery mildew control. No phytotoxicity was observed on any vines treated with any fungicide. Powdery mildew levels were extremely high especially for clusters which all had some level of disease. These high levels of powdery mildew were most likely due to interplot interference and thus it is recommended not to use these vines for powdery mildew work when both the Chardonnay and Cabernet Sauvignon vines are also being used.

	% Leaves with Powdery Mildew (14 Aug)*		AUDPC*	% Clusters with Powdery Mildew (23 Aug)*		AUDPC*
Treatment and Rate/A**	Incidence	Severity	(Leaves)	Incidence	Severity	(Clusters)
Messenger 3 WDG 4.5 oz…….	100 a	37.6 a	15.2 a	100	90.5 a	16.5 a
Rally 40 W 5 oz ……	18.5 c	0.3 b	0.3 b	100	29.2 b	3.6 b
Rally 40 W 5 oz plus Messenger 3 WDG 4.5 oz….	14.0 c	0.2 b	0.1 b	100	31.5 b	4.5 b
Abound 12.8 fl oz…….	36.8 bc	0.8 b	0.7 b	100	20.3 b	2.4 b
Abound 12.8 fl oz plus Messenger 3 WDG 4.5 oz….	62.3 c	1.7 b	0.9 b	100	40.0 b	5.5 b

* Means followed by the same letter do not differ significantly based on Fisher's protected LSD (P=0.05). Means without any letters did not differ significantly.

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