

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

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EFFICACY OF VARIOUS FUNGICIDES FOR CONTROL OF GRAPE POWDERY MILDEW ON CHARDONNAY, 2001: Treatments were arranged in a randomized complete block design in a block of 'Chardonnay' planted in 1985 and 1995 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 35 buds/kg canes. Shoot thinning occurred 9 May. Each treatment was replicated on 4 sets of 5 vines. Treatments were applied using a hooded boom sprayer. Rates of water used were 31 gal/A (10 May), 62 gal/A (25 May), 94 gal/A (7 Jun), 163 gal/A (21 Jun and 6 Jul), and 200 gal/A on all subsequent applications. Pressure used was 100 psi for the first 3 applications, and 200 psi thereafter. Approximately 1.0 to 7 gal of spray suspension was used per 20 vines depending on time of year and growth of vines. Fungicides were applied on 25-26 May (EL 10), 7 Jun (EL 17), 21 Jun (50% bloom), 6 Jul (EL 27), 21 Jul (Bunch Close), 4 Aug, 17 Aug and 5 Sep. One BAS 516 treatment had an extra application on 10 May (2-3 inch shoots, EL 8). Leaves were not removed from the east side of the fruiting zone. According to the Gubler-Thomas powdery mildew forecasting model, there were 7 rain events between budbreak (29 Apr) and end of bloom that were favorable for ascospore release and infection: 4 severe infection periods (14 May, 4, 11 and 26 Jun), 2 moderate infection periods (30 Apr and 24 Jun), and 1 low infection period (3 Jun). Urea fertilizer was spread within vine rows on 10 May at 127 lb/A. Cassaron 4G (150 lb/A) was initially applied to control weeds in the vine row on 22 Feb and finished on 9 Mar. Roundup Ultra (3 qt/A) was applied 7 Mar to manage weeds which had already emerged. Incidence of powdery mildew on leaves was evaluated on 5 Jul, 13 Jul, 25 Jul, 9 Aug, 24 Aug and 7 Sep by randomly examining 100 leaves from the middle 3 vines of each replicate. Severity of powdery mildew on leaves was evaluated on 25 Jul, 9 Aug, 24 Aug and 7 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 18 Jul, 3 Aug, 16 Aug and 31 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. On 7 Jun, one set of nontreated vines was accidentally sprayed with BAS 516. This seemed to temporarily lower the incidence counts in the first two ratings. It had a larger more sustained effect on severity measurements throughout the season. Severity data for the 2<sup>nd</sup> replicate of the nontreated control was removed and analyzed as missing data using Yates Missing Plot Estimate (Pesticide Research Manager 5.0 software).

Powdery mildew was first found early in the year on 31 May on nontreated vines presumably due to the infection period on 14 May. All fungicide treated vines had significantly less powdery mildew than nontreated vines except for the incidence on clusters treated with Microthiol Disperss. Although Microthiol Disperss is a good powdery mildew material we did not expect good powdery mildew control on 14-day intervals. Microthiol Disperss treated vines had significantly more powdery mildew than other fungicide treated vines except for the incidence on clusters treated with Sovran. The incidence of powdery mildew on leaves and clusters treated with Sovran were significantly higher than those on vines treated with BAS 516. The severity of powdery mildew on leaves and clusters treated with Sovran were not significantly different from that found on vines treated with BAS 516. The amount of powdery mildew found on vines treated with 8 or 9 applications of BAS 516 was not significantly different. No phytotoxicity was observed on any vines treated with any fungicide. Considering the late start date, excessively long sulfur intervals and 2X fungicide rates, one should be very careful making any conclusions about this poorly conducted trial.

Treatment and Rate/A**	% Leaves with Powdery Mildew (24 Aug)*		AUDPC* (Leaves)	% Clusters with Powdery Mildew (16 Aug)*		AUDPC* (Clusters)
	Incidence	Severity		Incidence	Severity	
Nontreated .....	97.3 a	75.2 a	23.8 a	100 a	98.7 a	43.7 a
Microthiol Disperss 80 WG at 2.5 to 16 lb.....	48.5 b	2.9 b	1.1 b	100 a	54.6 b	21.4 b
Sovran 50 WG at 1.2 to 8 oz.....	24.3 c	0.4 c	0.1 c	93 a	2.3 c	0.9 c
BAS 516 (38 WG) at 0.16 to 1.05 lb (8 applications).....	3.3 d	0.0 c	0.0 c	22 b	0.3 c	0.1 c
BAS 516 (38 WG) at 0.16 to 1.05 lb (9 applications).....	1.0 d	0.0 c	0.0 c	27 b	0.4 c	0.2 c

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

\*\* Unfortunately the rate per A was based on only 100 gal/A instead of 200 gal/A resulting in applications from 21 Jun through the rest of the season that were 50 to 100% over target rates. For example, rates of Microthiol Disperss were actually at 2.5 lb, 5 lb, 7.5 lb, 13 lb, and 16 lb/A depending on time of year.