

GRAPE (*Vitis vinifera* 'Cabernet Sauvignon')  
Powdery Mildew; *Ucinula necator*

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### **Efficacy of powdered whey for control of grape powdery mildew on Cabernet Sauvignon, 2003.**

Fungicide treatments were arranged in a randomized complete block design in a block of 'Cabernet Sauvignon' 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 40 buds/kg canes. Shoot thinning occurred 19 to 29 May. Each treatment was replicated on 4 sets of 5 vines. Fungicide applications were applied using a hooded boom sprayer. Rates of water used were 93 gal/A (3 Jun), 120 gal/A (9 and 18 Jun), 150 gal/A (27 Jun), and 163 gal/A on all subsequent applications. Pressure used was 100 psi for the first 3 applications, 150 psi for the next application and 200 psi thereafter. Approximately 3 to 5.4 gal of spray suspension was used per 20 vines depending on time of year and growth of vines. Fungicides were applied on 2-3 Jun (EL15), 9 Jun (EL17), 18 Jun (EL21), 27 Jun (EL 25), 6 Jul (EL 28), 16 Jul (Early Bunch Close), 25 Jul, 6 Aug, and 15 Aug. An application set started on Aug 5 was rained out, however, all treatments were reapplied or finished the next day. All vines (including the check) received an application of Lime Sulfur (10 gal/A) on 29 Mar prior to bud break. Leaves were removed from the fruiting zone on 2 Jul. According to the Gubler-Thomas powdery mildew forecasting model, there were 4 rain events between budbreak (22 Apr) and end of bloom that were favorable for ascospore release and infection: 2 severe infection periods (23 Apr and 11 May), 1 moderate infection period (4 May), and 1 low infection period (24 May). The risk index climbed above 60 on 29 May and remained high through early Sep. No fertilizer was applied this year. Canes were cut down to just above the top wire on 14 Jul and again on 30 Jul. Surflan AS (3 qt/A) plus Glyphos X-TRA (3 qt/A) was applied 16 Apr to manage weeds. Incidence and severity of powdery mildew on leaves was evaluated on 24 Jun, 11 Jul, 24 Jul, 8 Aug, and 25 Aug by randomly examining 100 leaves from the middle 3 vines of each replicate. Incidence and severity of powdery mildew on clusters was evaluated on 14 Jul, 29 Jul, 11 Aug and 22 Aug 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 ( $\sum [Y_{i+1} + Y_i]/2][X_{i+1}-X_i]$  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.

Symptoms of powdery mildew were first found widely scattered in a nearby block of nontreated Chardonnay vines on 3 Jun with confirmation of sporulation on 10 Jun. Powdery mildew incidence levels were quite high on both leaves and clusters by mid August. All treated vines had significantly less leaf and cluster severity (end of August or AUDPC) when compared to nontreated vines, except for cluster severity on 22 Aug on vines just treated with water. Whey treated vines had significantly less leaf and cluster severity (end of August or AUDPC) when compared to vines just treated with water. Whey treated vines had significantly more powdery mildew leaf or cluster severity than either Thiolux or JMS Stylet Oil treated vines in late Aug. Whey treated vines had significantly more powdery mildew AUDPC for leaves than JMS Stylet Oil treated vines but was not significantly different from Thiolux treated vines. Whey treated vines had significantly more powdery mildew AUDPC for clusters than either Thiolux or JMS Stylet Oil treated vines.

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Treatment and Rate/A**	% Leaves with Powdery Mildew (25 Aug)*		AUDPC* (Leaves)	% Clusters with Powdery Mildew (22 Aug)*		AUDPC* (Clusters)
	Incidence	Severity		Incidence	Severity	
Nontreated.....	100 a	80.6 a	18.7 a	100	99.3 a	0.8 a
Thiolux at 5 lb then						
Thiolux at 2.5 lb after boom.	79.8 b	4.0 d	2.0 cd	100	19.9 c	0.3 d
Whey Powder at 12.5 to 19 lb...	100 a	21.8 c	3.9 c	100	37.9 b	0.5 c
Water alone.....	100 a	61.0 b	11.4 b	100	98.5 a	0.7 b
JMS Stylet Oil at 1.5 to 2.3 gal..	60.8 b	1.8 d	0.4 d	100	10.1 c	0.2 e

\* 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.

\*\* Fungicides were applied on Fungicides were applied on 2-3 Jun (EL15), 9 Jun (EL17), 18 Jun (EL21), 27 Jun (EL 25), 6 Jul (EL 28), 16 Jul (Early Bunch Close), 25 Jul, 6 Aug, and 15 Aug. Thiolux was applied at 5 lb for the first 4 applications and reduced to 2.5 lb after bloom.