

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

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### **Efficacy of powdered whey for control of grape powdery mildew on Pinot Noir, 2003.**

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 plant was trained between each set of treatment vines and a buffer rootstock row separated each varietal row. Pinot Noir vines were trained to a Guyot system with 6 buds per fruiting cane and 2 renewal spurs. Shoot adjustment occurred during early May. Each treatment was replicated on 5 sets of 5 vines. Treatments were applied using a hooded boom sprayer at 100 psi for the first 2 timings, and 75 psi for the last 7 applications. The rate of water used was 94 gal/A for the first 2 applications and 100 gal/A for the last 7 applications. Approximately 3 to 3.2 gal of spray suspension was used per 25 vines depending on time of year. Fungicides were applied on 2 Jun (EL 15), 9 Jun (EL 17), 18 Jun (EL 21), 27 Jun (EL 25), 6 Jul (EL 28), 16 Jul (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. No leaves were removed from the fruiting zone. 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. Goal 2XL (4.5 qt/A) was applied to control weeds in the vine row on 12 May. No fertilizer was applied this year. Canes were cut down to just above the top wire on 1 Jul and again on 1 Aug. Incidence of powdery mildew on leaves was evaluated on 23 Jun, 2 Jul, 18 Jul, 1 Aug and 13 Aug by randomly examining 100 leaves from the middle 3 vines of each replicate. Severity of powdery mildew on leaves was evaluated on 18 Jul, 1 Aug, and 13 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 18 Jul, 31 Jul and 14 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 (mid August or AUDPC) when compared to nontreated vines including vines just treated with water. Although whey treated vines had significantly less powdery mildew severity on the leaves than water treated vines by mid August, the AUDPC for leaves or the severity and AUDPC for clusters was not significantly different. Whey treated vines had significantly more powdery mildew leaf severity than either Thiolutax or JMS Stylet Oil treated vines. Whey treated vines had significantly more cluster severity (mid August or AUDPC) than Thiolutax treated vines but these measures were not significantly different than oil treated vines. No phytotoxicity was observed on any treated vines.

Treatment and Rate/A**	% Leaves with Powdery Mildew (13 Aug)*		AUDPC* (Leaves)	% Clusters with Powdery Mildew (14 Aug)*		AUDPC* (Clusters)
	Incidence	Severity		Incidence	Severity	
Nontreated.....	100 a	53.8 a	6.2 a	100	53.7 a	9.4 a
Thiolux at 5 lb then						
Thiolux at 2.5 lb after boom.	58.2 b	2.6 d	0.3 c	87.6	3.7 d	0.4 d
Whey Powder at 12.5 lb.....	99.8 a	14.1 c	2.0 b	93.2	24.7 bc	3.7 bc
Water alone.....	100 a	25.9 d	3.3 b	100	32.3 b	4.9 b
JMS Stylet Oil at 1.5 gal.....	54.2 b	2.3 d	0.3 c	84.0	11.0 cd	1.0 cd

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

\*\* Fungicides were applied on 2 Jun (EL 15), 9 Jun (EL 17), 18 Jun (EL 21), 27 Jun (EL 25), 6 Jul (EL 28), 16 Jul (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.

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