

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

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EFFICACY OF VARIOUS FUNGICIDES FOR CONTROL OF GRAPE POWDERY MILDEW ON CABERNET SAUVIGNON, 2001: 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 30 buds/kg canes. Shoot thinning occurred 18-25 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 62 gal/A (30 May), 94 gal/A (13 Jun), 163 gal/A (22 Jun and 30 Jun), and 200 gal/A on all subsequent applications. Pressure used was 100 psi for the first 2 applications, and 200 psi thereafter. Approximately 2 to 7 gal of spray suspension was used per 20 vines depending on time of year and growth of vines. Fungicides were applied on 30 May (EL growth stage 12), 13 Jun (EL 18), 22 Jun (full bloom), 30 Jun (EL 25), 13 Jul (EL 29), 3 Aug (bunch close), 10 Aug, 24 Aug and 4 Sep (veraison). 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 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 6 Jul, 12 Jul, 26 Jul, 7 Aug, 23 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 26 Jul, 23 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 20 Jul, 2, 16, and 30 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 ($\sum [Y_{i+1} + Y_i]/2][X_{i+1} - X_i]$ 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.

Powdery mildew was first found early in the year on 31 May on adjacent, nontreated Chardonnay vines presumably due to the infection period on 14 May. These nontreated Chardonnay vines had the following powdery mildew ratings: leaf incidence of 97% on 24 Aug, leaf severity of 75% on 24 Aug, cluster incidence of 100 % on 16 Aug and cluster severity of 99% on 16 Aug. Based on past year's results, nontreated Cabernet Sauvignon vines would have had similar levels. There were no significant differences in powdery mildew ratings among the various treatments except for the incidence of powdery mildew on leaves. Vines treated with the lower rate of QRD 131 or with QRD 137 had significantly higher incidence of powdery mildew on leaves than other treatments. All of the QRD materials foamed to some extent when mixed with water. The QRD 132 and QRD 137 materials were excessively foamy, to the point that significant material would have been suspended in the foam, and not go into solution without extensive rinsing of spray solution through the foam. No phytotoxicity was observed on any vines treated with any fungicide. Considering the late start date and 2X fungicide rates, one should be very careful making any conclusions about this poorly conducted trial.

| Treatment and Rate/A ² | % Leaves with Powdery Mildew (23 Aug) ¹ | | AUDPC ¹ (Leaves) | % Clusters with Powdery Mildew (16 Aug) ¹ | | AUDPC ¹ (Clusters) |
|---|---|----------|--------------------------------|---|----------|----------------------------------|
| | Incidence | Severity | | Incidence | Severity | |
| Rally 40 W at 2.5 to 8 oz..... | 6.0 b | 0.1 | 0.03 | 94 | 4.0 | 1.0 |
| ³ Rally 40 W 2.5 and 3.8 oz then QRD 131 AS at 1.6 gal then Sovran 50 WG 6.5 and 8 oz then QRD 131 AS at 2 gal then Sovran 50 WG 8 oz then | | | | | | |
| QRD 131 AS at 2 gal | 30.8 a | 0.7 | 0.18 | 79 | 2.4 | 0.5 |
| ³ Rally 40 W 2.5 and 3.8 oz then QRD 131 AS at 3.3 gal then Sovran 50 WG 6.5 and 8 oz then QRD 131 AS at 4 gal then Sovran 50 WG 8 oz then | | | | | | |
| QRD 131 AS at 4 gal | 13.5 b | 0.2 | 0.05 | 49 | 0.7 | 0.1 |
| ³ Rally 40 W 2.5 and 3.8 oz then QRD 132 WP at 9.7 lb then Sovran 50 WG 6.5 and 8 oz then QRD 132 WP at 12 lb then Sovran 50 WG 8 oz then | | | | | | |
| QRD 132 WP at 12 lb..... | 34.0 a | 0.9 | 0.21 | 82 | 2.4 | 0.6 |
| ³ Rally 40 W 2.5 and 3.8 oz then QRD 137 WP at 9.7 lb then Sovran 50 WG 6.5 and 8 oz then QRD 137 WP at 12 lb then Sovran 50 WG 8 oz then | | | | | | |
| QRD 137 WP at 12 lb..... | 13.5 b | 0.2 | 0.05 | 65 | 1.2 | 0.3 |

¹ 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.

² Unfortunately the rate per A was based on only 100 gal/A instead of 200 gal/A resulting in applications from 22 Jun through the rest of the season that were 50 to 100% over target rates. For example, rates of Rally were actually at 2.5 oz, 3.8 oz, 6.5 oz and 8 oz/A depending on time of year.

³ Rally was applied on 30 May (EL growth stage 12) and 13 Jun (EL 18). QRD materials were applied on 22 Jun (full bloom), 3 Aug (bunch close) and 4 Sep (veraison). Sovran was applied on 30 Jun (EL 25), 13 Jul (EL 29), 10 Aug, and 24 Aug.