Powdery Mildew Trial 3----Demonstration of effectiveness of Sonata, Bacillus subtilis strain 2802, in a wine grape IPM program to control powdery mildew. Herzog Ranch, Courtland, CA.

<table>
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<th>Trial name ..........</th>
<th>Grape powdery mildew fungicide trial 3  2005</th>
<th>Update: 31 May 05</th>
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<td>Location ..........</td>
<td>Courtland, Sacramento Co. (Herzog Ranch)</td>
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<tr>
<td>Investigators....</td>
<td>Doug Gubler, 530.752.0304</td>
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<tr>
<td>Cooperators.....</td>
<td>John, Cathy, Randy Baranek, Tom Herzog, Herzog Ranch</td>
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<td>Crop................</td>
<td>Grape ‘Chardonnay’</td>
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<td>Disease ..............</td>
<td>Powdery mildew, <em>Erysiphe necator</em></td>
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**Method**

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<th>Objective ..............</th>
<th>Efficacy of fungicides for control of powdery mildew</th>
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<tr>
<td>Experimental design</td>
<td>Treatments are field applications to 3 vine plots, in a randomized complete block design, with 5 replications.</td>
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<tr>
<td>Application method.....</td>
<td>high pressure hand gun sprayer</td>
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<tr>
<td>Vine spacing...........</td>
<td>7’</td>
</tr>
<tr>
<td>Row spacing ..........</td>
<td>12’</td>
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<tr>
<td>Treatment unit........</td>
<td>3 vines</td>
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<td>Treatment unit area...</td>
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<td>Vol. water/trt, gal ...</td>
<td>4-5.25 (6.25-7.5 gal tank)</td>
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<td>Apps timing...........</td>
<td>A=budbreak; B = pre-bloom; C=bloom, D=berry set, E=pre-close, F=close, G=veraison</td>
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Evaluation stage ...... 1 week after final app.

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<td>C Prebloom</td>
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<td>14 day</td>
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<td>D Bloom</td>
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<td>10.5 oz</td>
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<td>E Berry Set</td>
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<td>21 day</td>
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<td>F Pea Sized</td>
<td>Flint 50DF</td>
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<td>5/20</td>
<td>Treated all “C” treatments.</td>
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<td>Disease pressure was high from May through this date and leaf removal had not yet been done so the decision was made to eradicate using JMS Stylet Oil.</td>
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<td>NuFilm was replaced by latron before this date, pristine was over dosed in trial 3.</td>
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<td>6/16</td>
<td>Sprayed JMS Stylet Oil on all treatments, including guard rows and end vines of each row.</td>
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<td>Last spray</td>
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<td>Disease rating. Severity of 35 clusters in each plot (replication) was evaluated.</td>
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2% Stylet oil

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## Detailed fungicide applications

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**Herzog Ranch Powdery Mildew Trial 3 Plot Map**  
**Rows oriented E-W**

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Result

Thirty five clusters from each plot (3 vines) were evaluated for powdery mildew on August 8, 2005. Disease severity on each cluster was rated as percentage of berries with symptoms over the total number of berries in the cluster. Incidence was calculated as percentage of number of clusters with powdery mildew over the total number of cluster in the plot (35 clusters in this observation). The data was analyzed by using SAS program. Analysis of variance was performed by GLM procedure and treatment effects were examined with multiple comparison statement by Duncan’s test at P=0.05.

Disease pressure this year was the highest that I have seen in 23 years of working with this pathogen. There was a treatment effect and all treatments significantly reduced disease severity and incidence (Table 1). Disease severity is the more important of the two columns of data and the incidence data is shown for informational purpose only. Treatment 4 was one of the IPM treatment options with only one Sonata application and was not significantly different that the non-IPM treatment regime # 3. Treatment #2 was also an IPM option but with two Sonata applications and the disease severity was more severe and was not significantly different that treatment #7 with one application of Sonata. In treatment # 5, Sonata was applied 3 times with one application being made early, mid and late in the season, respectively. This was an organic treatment and disease levels were significantly higher. Sonata used by itself full season reduced disease severity by 50%, but was not economical control.

Table 1. Powdery mildew rating in trial 3

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<th>Trt#</th>
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<th>Severity (%)</th>
<th>Incidence (%)</th>
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Values in a column followed by the same letter are not significantly different according to Duncan’s test at P=0.05.