

Tests on Chemical Control of Grape Diseases in California During
the 1980 Season

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Phomopsis Cane and Leaf Spot:

Two tests were conducted in the Lodi area on Tokay (Table 1). Again, chemicals when properly applied significantly reduced the incidence of infection. Sodite (sodium arsenite) appeared to be significantly more effective than other materials in reducing disease incidence. However, the yields for all treated vines were the same. From test 2, it appears that, although the oil added to premerger sprays may produce some increased control, it was not essential for significant disease reduction.

Rain, essential for spore release, fell on Mar. 6 (1.17 cm) just at the beginning of bud break, Mar. 14 (0.18 cm) after all buds opened, Mar. 25 (0.74 cm), Mar. 31 (0.18 cm), April 4 (1.88 cm), and April 22 (0.25 cm). The rainstorms on Mar. 6 and 14 occurred prior to the first application of captan. However, the largest levels of spore release (M.S. thesis, J. Cucuzza) occurred with the Mar. 25 storm, after captan application.

Powdery Mildew:

In addition to our experiments on sulfur timing, we examined various types of sulfur in one location (Table 2). The objectives of this test were 3-fold: to examine efficacy of the various formulations of sulfur against powdery mildew, to examine fruit and wine for residues of elemental sulfur and H_2S , and to produce various levels of powdery mildew for wine quality evaluations. The last 2 objectives have not been fulfilled and we await the enological analyses for the results.

Where we compared equal amounts of sulfur applied per acre, the mildew severity ranged from 1.85 to 6.99 for the various forms of sulfur. This range was not statistically different, but the trend does indicate that the formulations with smaller particle sizes are more effective for mildew control. The weight per cluster was not significantly different over all treatments. Note, however, that the untreated vines had the highest weight per cluster. This is not a trend we have observed generally!

Bunch Rot (Tables 3, 4, 5):

In three locations tests with the unregistered chemicals for bunch rot control were conducted (Tables 3, 4, 5). Significant reduction in severity (compared to untreated) was found with Ronilan, Rovral, and Benlate + Captan treatments. In some but not all tests Topsin, Bravo, Botran, Maneb, and Captan were also associated with reduction in rot severity. Generally Ronilan gave slightly better control than Rovral but the differences were not significant. No preharvest rain fell on any of the plots, so the 1980 results cannot be taken as an adequate test of fungicidal control of secondary spread.

Table 1. Efficacy of various chemicals for control of Phomopsis cane and leaf spot (*P. viticola*) evaluated in two vineyards (cv. Tokay) near Lodi, CA.

Material ^{1/}	Rate/ ^{2/} acre/application	Percent ^{3/} shoots infected	kg Fruit ^{4/} per vine
Test 1: Sodite	2 gal	25 c	16.5 a
Bravo 500	1.4 gal	39 bc	-
Premerge	2.75 gal	51 b	16.4 a
Captan 50W	4.0 lbs	56 b	15.6 ab
Check	-	91 a	14.4 b
Test 2: Premerge + Oil	2.75 gal + 2 gal	53 b	-
Bravo 500	1.4 gal	57 b	-
Captan 50W	4.0 lbs	64 b	-
Premerge	2.75 gal	65 b	-
Check	-	90 a	-

^{1/} Application dates, test 1: Premerge and Sodite, 2/29/80; captan, 3/21 (100% bud break) and 4/8/80; Bravo, 3/26 and 4/7/80. Test 2: Premerge and Premerge + oil, 3/2/80; captan, 3/21 and 4/8/80; Bravo, 3/26 and 4/7/80.

^{2/} All materials applied at 275 gal/acre with commercial air blast sprayer, except Bravo which was applied with a CO₂ backpack hand sprayer.

^{3/} Test 1: 8 shoots on each of 8 vines visually evaluated in each of 6 replications on 5/15/80 when canes about 80 cm. Test 2: 5 shoots on each of 5 vines evaluated in each of 4 replications on 5/15/80.

^{4/} All clusters on 10 vines/plot were harvested and weighed on 9/2/80.

Table 2. Efficacy of various sulfur formulations for control of grape powdery mildew (*Uncinula necator*) evaluated in a vineyard (cv. Cabernet Sauvignon) near Oakville, CA.

Material	Rate ^{1/} lb/acre/ application	Mildew ^{2/} severity	Percent clusters infected	kg/ cluster ^{3/}
S-dust	15	0.04 a	1.82 a	0.14
THAT	4	1.85 a	22.31 b	0.13
Super Micro	4	2.70 a	27.39 bc	0.14
Wettable S	4	4.59 a	35.03 cd	0.14
S-dust	4	6.99 a	44.82 d	0.13
Check	-	26.34 b	69.60 e	0.19
n.s.				

^{1/} Treatments made on 5/2 (12" shoot length), 5/15 (full bloom), 3/30, 6/12, 6/27, 7/11, and 7/30/80. The first 3 spray applications contained the surfactant WEX. Wettable and flowable sulfurs were applied at 3.5 mph ground speed with a F.E. Myers & Bros. Co. 400 gal PTO airblast vineyard sprayer with 8 Tee jet D3-45 nozzles. 40 gal of water per acre were applied at 140 psi. Dust applications were made using a Bush Hog Industco Sulfur Duster, Model 30-101. All applications were made in the early morning with little or no wind.

^{2/} Mildew severity (a weighted average percent surface area of clusters infected) on 100 clusters per subplot with 5 replications was visually evaluated on 8/20/80 (at ~10 Brix).

^{3/} ~100 clusters per subplot with 5 replications were harvested and weighed on 10/3/80 (at 22.9 Brix).

Table 3. Efficacy of various chemicals for control of Botrytis bunch rot (B. cinerea) evaluated in a vineyard (cv. White Riesling) near Greenfield, CA.

Material	Rate/acre/ ^{1/} application	Timing ^{2/}	Percent ^{3/} clusters infected	Severity ^{4/} index	Weight of ^{5/} clusters > 1/2 rotten kg/vine
Ronilan 50W	1.5 lb	S, BC, V, BH	35.2 c	6.18 c	0.08 c
Rovral 50W	2.0 lb	S, BC, V, BH	41.8 bc	11.10 bc	0.33 abc
Ronilan 50W	1.5 lb	V, BH	42.1 bc	9.37 bc	0.22 bc
Topsin M 70W	1.5 lb	B, S	42.3 bc	9.71 bc	0.27 abc
Bravo 500	2.5 pts	B, S	43.4 bc	12.20 ab	0.42 ab
Rovral 50W	2.0 lb	V, BH	45.4 bc	10.39 bc	0.19 bc
Topsin M 70W	.75 lb	B, S	47.8 bc	10.62 bc	0.19 bc
Bravo 500	2.0 pts	B, S	49.8 abc	13.49 ab	0.35 abc
Captan 50W	4.0 lb	B, S	54.1 abc	13.26 ab	0.30 abc
Benlate 50W & Captan 50W	1.5/4.0 lb	B, S	55.2 ab	10.79 bc	0.15 bc
Check	—	—	67.5 a	17.27 a	0.52 a

^{1/}All materials applied in 40 gal water/acre at 30 psi using a CO₂ backpack sprayer with 4 Tee jet 8002 nozzles on a single boom.

^{2/}B = early bloom, 5/29/80; S = full bloom-shatter, 6/4/80; BC = before bunch closing, 7/16/80; V = véraison, 8/27/80; BH = 3 weeks before harvest, 10/1/80.

^{3/}Visually evaluated all clusters on 2 vines in each of 5 replications on 10/21/80.

^{4/}Average percentage of rot per cluster.

^{5/}Harvested and weighed on 10/21/80.

Table 4. Efficacy of various fungicides for control of Botrytis bunch rot (B. cinerea) evaluated in a vineyard (cv. Chenin blanc) near Lodi, CA.

Material	Rate/acre/ ^{1/} application	Timing ^{2/}	Percent ^{3/} clusters infected	Severity ^{4/} index	Weight of ^{5/} clusters > 1/2 rotten kg/vine
Ronilan 50W	1.5 lbs	FB, BC, V, BH	6.5 a	5.6 a	0.06 a
Rovral 50W	2.0 lbs	FB, BC, V, BH	6.6 a	6.7 a	0.11 a
Benlate 50W + Captan 50W	1.5/4.0 lbs	EB, S	14.4 b	11.4 b	0.35 a
Bravo 500	2 pts	EB, S	29.0 c	19.0 c	1.12 b
Topsin M 70W	1.5 lb	EB, FB	30.9 c	20.2 c	1.35 b
Check	—	—	32.5 c	19.6 c	1.25 b

^{1/} Materials applied in 150 gal water/acre with Triton B 1956 spreader using a commercial air blast sprayer.

^{2/} EB = 5% bloom, 5/19/80; FB = full bloom, 5/28/80, S = shatter, 6/4/80; BC = before bunch closing, 6/11/80; V = véraison, 8/6/80; BH = 3 weeks before harvest, 8/20/80.

^{3/} Visually evaluated all clusters on 3 vines in each of 4 replications on 9/19/80 (19.3 Brix).

^{4/} Average percentage of rot per cluster.

^{5/} Harvested and weighed on 9/9/80.

Table 5. Efficacy of various fungicides for control of Botrytis bunch rot (B. cinerea) evaluated in a vineyard (cv. Chenin blanc) near Parlier, CA.

Material	Rate/Acre/ ^{1/} application	Timing ^{2/}	Percent ^{3/} clusters infected	Severity ^{4/} index
Captan 50W	4 lb.	EB, FB, S, BC	13.12 c	1.58 c
Ronilan 50W	2 lb.	EB, FB, S	13.68 c	3.08 c
Rovral 50W	2 lb.	FB, BC	18.33 bc	4.77 bc
Topsin M 70W	1 lb.	EB, FB, S	18.34 bc	5.22 bc
Maneb 80W	4 lb.	EB, FB, S	20.33 bc	5.41 bc
Botran 75W	2.67 lb.	EB, FB, S	20.63 bc	5.34 bc
Check	—	—	24.55 ab	9.13 ab
Bravo 500	5 pts.	EB, FB, S	29.30 a	12.11 a

^{1/}Materials applied in 150 gal water/acre with a Chapin compressed air single-wand, hand sprayer with a cone nozzle.

^{2/}EB = 1% bloom, 5/12/80; FB = full bloom, 5/16/80; S = shatter, 5/26/80; BC = before bunch closing, 6/16/80.

^{3/}Visually evaluated all clusters on 4 vines in each of 7 replications on 9/3/80 (18.5 Brix).

^{4/}Average percentage of rot per cluster.