GRAPE (*Vitis labrusca* 'Concord')
Black rot; *Guignardia bidwellii*
Powdery mildew; *Uncinula necator*

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Evaluation of organic fungicides for control of black rot and powdery mildew of Concord grapes, 2008.

This trial was conducted in a mature vineyard at the Lake Erie Regional Grape Research and Extension Center in North East, PA. Vines were trained to a single-curtain, high-wire cordon system. Treatments were applied to 7 to 10-vine plots in a randomized complete block design with four replications. Neptune's Harvest was applied at a rate of 20 gal/A for applications 1-5 and 40 gal/A for applications 6-9 using a back pack sprayer at 30 psi. All other treatments were applied at 50 gal/A for applications 1-5 and at 100 gal/A for applications 6-10 using a Friend covered-boom plot sprayer at 100 psi. In the downwind half of each plot, black rot fruit mummies were hung from the trellis wire at five locations (5 mummies per location) to increase inoculum pressure. The most severe black rot fruit disease occurred on clusters within a 2-ft wide zone centered beneath mummies hung in the trellis. Black rot incidence (percent clusters with infected fruit) and severity (percent area fruit infected) were determined on 18-19 Aug from 50 clusters selected randomly from within these zones. Powdery mildew incidence (percent leaves infected) and severity (percent area of leaf infected) were determined on 8-11Sep from 50 randomly selected leaves per plot.

Early pre-bloom black rot shoot and rachis infection can contribute to later fruit infection. In 2008, below average pre-bloom rainfall left shoot and rachis tissue nearly free of black rot, and most control of black rot fruit infection was likely derived from applications 5-10. Rainfall for May, Jun, Jul, Aug, and Sep was 4.09, 5.35, 8.46, 4.21, and 4.8 in., respectively. Post-bloom black rot pressure was moderately high. Only 1% Cueva (copper octanoate) applied 5-10, significantly reduced the incidence and severity of black rot fruit rot when compared to the water-treated check. Powdery mildew leaf disease development was late in 2008 and disease pressure was light. None of the treatments significantly reduced leaf infection levels. Milstop rotated with Cueva and Cueva 5-10 had significantly more severe powdery mildew on leaves than the water-treated check.

		Black rot on fruit			Powdery mildew (leaf)	
Treatment and rate/A	Timing[z]	% Infected[x]	% Area infected[y]	% Control[w]	% Infected[x]	% Area infected[y]
Cueva 1%.....	5, 6, 7, 8, 9, 10...	89.5 a[v]	28.5 a[v]	39	98.5 d[v]	22.5 c[v]
Serenade AS 1% + NuFilm P 0.12%	1, 2, 3, 4, 7, 9					
Cueva 1%.....	5, 6, 8, 10...	97.5 bc	37.6 ab	20	95.0 bcd	17.9 bc
Milstop 2.5 lb	1, 2, 3, 4,					
Cueva 1%	5, 6, 8, 10					
Milstop 5 lb…….	7, 9…….	97.0 bc	38.2 abc	18.5	97.0 cd	22.2 c
Cueva 1%.....	5, 6, 8…….	98.5 bcd	42.5 bcd	9	95.0 abc	17.3 bc
Yucca AgAide 50 0.5%.....	1, 2, 3, 4, 5, 6, 7, 8, 9, 10...	98.5 cd	49.2 cdef	0	90.5 ab	11.5 ab
Neptune's Harvest 5%.....	1, 2, 3, 4, 5, 6, 7, 8, 9…….	100.0 d	51.4 def	0	94.0 abc	13.8 ab
Serenade 1% + NuFilm P 0.12%.....	1, 2, 3, 4, 5, 6, 7, 8, 9, 10...	99.0 cd	53.8 ef	0	90.0 a	8.8 a
Serenade AS 1% + NuFilm P 0.12%	1, 2, 3, 4, 5, 6, 7, 8, 9, 10					
Neptune's Harvest 5%.....	1, 2, 3, 4, 5, 6, 7, 8, 9…….	99.5 cd	56.9 ef	0	92.0 abc	12.1 ab
Milstop 2.5 lb	1, 2, 3, 4, 5					
Milstop 5 lb……	6, 7, 8, 9, 10...	99.0 cd	58.4 f	0	91.0 abc	13.1 ab
Water-treated check……..	1, 2, 3, 4, 5, 6, 7, 8, 9, 10...	98.5 bcd	46.9 bcde		91.0 abc	13.0 ab

[z]Timing: 1 = 8 May; 2 = 15 May; 3 = 28 May; 4 = 4 Jun; 5 = 11 Jun (immediate pre bloom); 6 = 19 Jun (1st post bloom); 7 = 25 Jun; 8 = 2 Jul; 9 = 10 Jul; 10 = 18 Jul.
[y]Severity was rated using the Barratt-Horsfall scale and was converted to % area infected using Elanco conversion tables.
[x]Actual data are shown. Data were subjected to arcsin square root transformation before statistical analysis.
[w]Percent control = control of disease severity on berries over that of the water-treated check.
[v]Means followed by the same letter within columns are not significantly different according to Fisher's Protected LSD ($P \leq 0.05$).