

**Evaluation of fungicides for control of downy mildew in grapes, 2021.**

The experiment was conducted in a mature 'Niagara' vineyard at the Trevor Nichols Research Center in Fennville, MI. Vines were spaced at 6 x 10 ft and were cordon trained and hand pruned. Treatments were applied to 3-vine plots and were replicated four times in a randomized complete block design. Sprays were applied using a 15-gal skid sprayer equipped with a 12V 3.8 gal/min diaphragm pump set at 45 psi using a XR T Jet 800 VS nozzle on a 5 ft spray boom. Spray volume was 50 gpa. Spray dates and approximate phenological stages were as follows: 6 Jun (6 - 12 in. shoots), 15 Jun (16 - 20 in. shoots), 22 Jun (bloom), 29 Jun, 7 Jul, 14 Jul, 20 Jul, and 27 Jul, 3 Aug, and 17 Aug. Rainfall between spray dates was 0.10, 2.21, 7.12, 0.03, 0.02, 0.01, 0.47, 0.28, and 2.02 in., respectively. On 4 Oct, downy mildew was rated on 25 randomly selected leaves from the center vine in each plot. Incidence was calculated as % leaves or clusters with disease, and severity was calculated as % area symptomatic on diseased plant parts only. Overall severity was calculated as (incidence x severity)/100. Bracketed values denote percent control relative to the untreated check. Plots were monitored throughout the season for signs of phytotoxicity, but none was observed.

Treatment, rate/A	Application timing <sup>z</sup>	Downy mildew on the leaf (rated 4 Oct)			
		Incidence (%)	Severity (%) <sup>x</sup>	Overall severity (%)	Control [%] <sup>y</sup>
Untreated		34 a	26.4 a	8.9 a	
Manzate Max 0.56 gal Abound 12 floz Rally 5 oz	1, 2, 3, 5, 7,	22 b	12.6 ab	2.9 b	[67]
Manzate Max 0.56 gal Abound 12 floz Orondis Ultra 8 floz Rally 5 oz	1, 2, 3, 4, 6, 8 5, 7,	15 bc	14.3 ab	2.6 bc	[71]
Manzate Max 0.56 gal Abound 12 floz Presidio 4 floz Rally 5 oz	1, 2, 3, 4, 6, 8 5, 7,	13 bcd	24.1 a	1.6 bc	[82]
Manzate Max 0.56 gal Abound 12 floz Revus 8 floz Rally 5 oz	1, 2, 3, 4, 6, 8 5, 7,	11 bcde	7.7 ab	1.1 bc	[87]
Manzate Max 0.56 gal Abound 12 floz Ranman 2.75 floz Rally 5 oz	1, 2, 3, 4, 6, 8 5, 7,	9 cde	25.3 a	2.1 bc	[76]
Manzate Max 0.56 gal Abound 12 floz Zampro 14 floz Rally 5 oz	1, 2, 3, 4, 6, 8 5, 7,	5 cde	8.0 ab	0.7 bc	[92]
Manzate Max 0.56 gal Abound 12 floz Tanos 8 oz Rally 5 oz	1, 2, 3, 4, 6, 8 5, 7,	5 cde	20.3 ab	1.5 bc	[83]
Manzate Max 0.56 gal Abound 12 floz Ridomil Gold Copper 2lb Rally 5 oz	1, 2, 3, 4, 6, 8 5, 7,	2 de	7.5 ab	0.3 bc	[96]
Manzate Max 0.56 gal Abound 12 floz Reason 2.7 floz Rally 5 oz	1, 2, 3, 4, 6, 8 5, 7,	0 e	0 b	0 c	[100]

<sup>z</sup>Spray dates: 1 = 6 Jun (6 - 12 in. shoots), 2 = 15 Jun (16 - 20 in. shoots), 3 = 22 Jun (bloom), 4 = 29 Jun, 5 = 7 Jul, 6 = 14 Jul, 7 = 20 Jul, and 8 = 27 Jul.

<sup>x</sup> Column means followed by the same letter are not significantly different according to Fisher's Protected LSD test ( $P \leq 0.05$ ).