

GRAPE (*Vitis vinifera* 'Chardonnay')
Powdery Mildew; *Erysiphe necator*

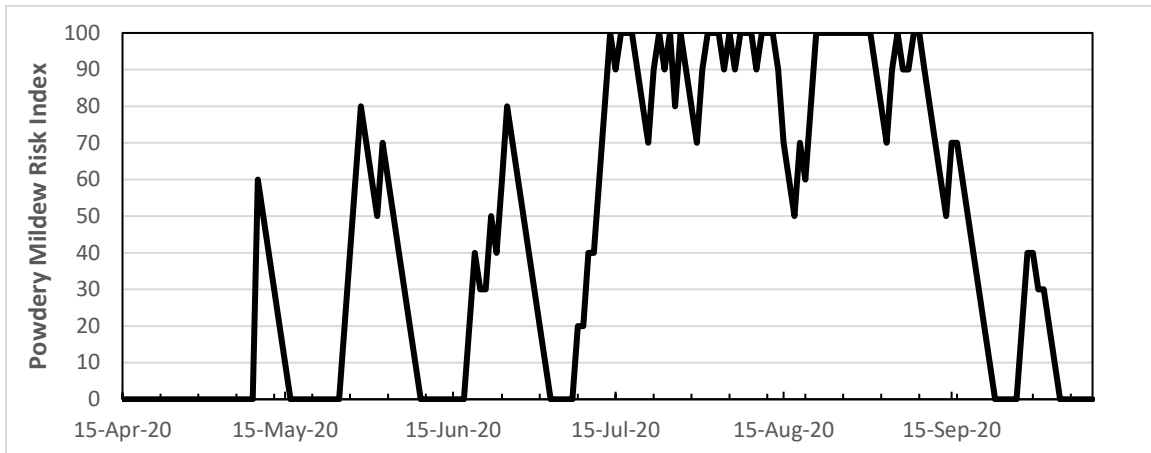
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Evaluation of fungicides for grape powdery mildew management, 2020.

Fungicide treatments were arranged in a randomized complete block design in a block of 'Chardonnay' planted in 1985 on a 8x10 ft spacing. Chardonnay vines were trained to a bilateral cordon with spur pruning and pruned from 12 to 20 Feb. Shoot thinning by hand occurred on 27 to 28 Apr and sucker removal occurred periodically during the growing season. Canes were cut above the top wire on 20 Jul and maintained at this height throughout the growing season. Each treatment was replicated on four sets of five vines. Treatments were applied using a hooded boom sprayer at 150 psi at a rate of 80 to 148 gal water/A depending on canopy growth such that 2.6 to 4.8 gal of spray suspension was used per 20 vines. Fungicide treatments were applied on 16 May (BBCH 56), 28 May, 2 Jun (BBCH 59), 10 Jun (start of bloom, BBCH 62), 24 Jun (BBCH 71), 8 Jul, 22 Jul and 5 Aug (just before veraison). Movento (6 fl oz/A) was applied on 23 May for erineum mite management. Makaze (64 fl oz/A) plus GoalTender (40 fl oz/A) plus Mission (2.5 fl oz/A) were tank mixed and applied on 21 Feb for management of weeds. No fertilizer was applied during the trial. According to the Gubler-Thomas powdery mildew forecasting model, there were 18 rain events between bud break and end of bloom that were favorable for ascospore release and infection: 6 severe infection periods (1, 13 (2x), and 16 May, 9 and 13 Jun), 6 moderate infection periods (18 and 22 Apr, 17 and 30 May, 6 and 14 Jun) and 6 low infection periods (24, 25 and 26 Apr, 8, 11 and 16 Jun). The powdery mildew risk index shot up briefly from 0 to past 60 for short periods on 10 May, 28 May and 24 Jun before remaining high (above 60) from 12 Jul until mid Sep. Incidence and severity of powdery mildew on fruit was evaluated on 11 Aug while incidence and severity of powdery mildew on leaves was evaluated on 13 Aug. Powdery mildew disease data were collected by arbitrarily examining 50 clusters or leaves from the middle three vines of each replicate.

After half the normal rainfall during the dormant season, spring weather conditions were considered normal to wet with high powdery mildew pressure. Symptoms of powdery mildew were first found on 4 May as a few individual colonies on scattered vines while flag shoots were confirmed on 8 May. Highest leaf incidence of powdery mildew was found on non-treated vines but the amount found on vines treated with Ph-D were not significantly different. Lowest incidence of powdery mildew on leaves was found on vines treated with Cevya. Highest leaf severity of powdery mildew was found on non-treated vines. Lowest severity of powdery mildew on leaves was found on vines treated with Cevya, however, the amount found on vines treated with Torino alternated with Gatten was not significantly different. Lowest incidence and severity of powdery mildew on clusters was found on vines treated with Cevya which was significantly lower than all other treatments. Torino and Gatten have managed powdery mildew well in the past and thus we suspect the fungus has developed resistance to one or both materials. Torino is suspected since it has a high risk for development of resistance and has been used extensively in previous trials in this block of grapes.

Figure 1. Gubler-Thomas grape powdery mildew risk index for the 2020 growing season.



Treatment & rate/A or /100 gal water as indicated	Time of application ^x	% Leaves with powdery mildew ^{**}		% Clusters with powdery mildew ^y	
		Incidence	Severity ^z	Incidence	Severity
Non-treated.....	None.....	100 a	92.1 a	100 a	100 a
Torino at 3.4 fl oz alternated Gatten at 6.4 fl oz.....	A, D, F, H B, E, G.....	56.0 b	3.2 c	100 a	79.3 b
Torino at 3.4 fl oz alternated Gatten at 6.4 fl oz.....	C, E, G D, F, H.....	64.5 b	3.5 c	100 a	84.3 ab
Ph-D WDG at 6.2 oz plus OVS 90 NIS at 16 fl oz/100 gal	All except C	95.0 a	14.4 b	100 a	98.1 a
Cevya at 4 fl oz plus OVS 90 NIS at 16 fl oz/100 gal	All except C	3.0 c	0.0+ c	14.0 b	0.4 c

^x Fungicides were applied on A = 16 May (BBCH 56), B = 28 May, C = 2 Jun (BBCH 59), D = 10 Jun (start of bloom, BBCH 62), E = 24 Jun (BBCH 71), F = 8 Jul, G = 22 Jul and H = 5 Aug (just before veraison).

^y Means followed by the same letter do not differ significantly based on Fisher's protected LSD ($P=0.05$).

^z 0.0+ indicates value was not zero but less than 0.1%.