

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

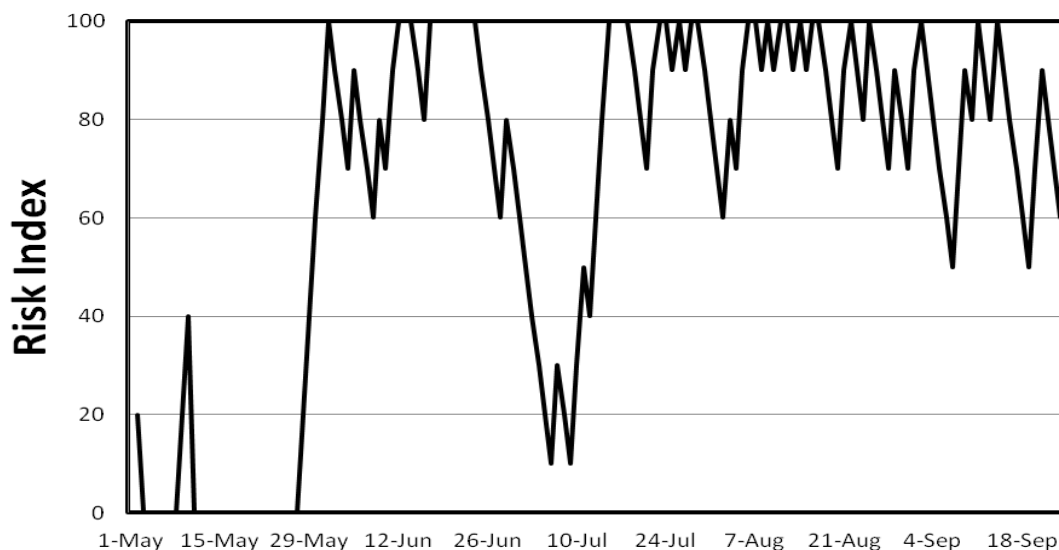
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Efficacy of biological fungicides for management of grape powdery mildew on Pinot Gris, 2015.

Fungicide treatments were arranged in a randomized complete block design in a block of 'Pinot Gris' (on *V. rupestris* x *V. riparia* 101-14 rootstock) planted in 1998 on a 7x8 ft spacing. A single buffer rootstock plant was trained between each set of treatment vines and a buffer rootstock row separated each varietal row. Pinot Gris vines were trained to a Guyot system on 9 to 10 Feb. Shoot thinning and sucker removal by hand occurred on 11 to 12 May. Canes were cut above the top wire on 16 Jun and maintained at this height throughout the growing season. Each treatment was replicated on 4 sets of 5 vines. Treatments were applied using a hooded boom sprayer at 150 psi. The rate of water used was 48 or 103 gal/A depending on time of year. Approximately 2 or 3 gal of spray suspension was used per 20 vines depending on time of year. Fungicides were applied on approximately a weekly basis on 10, 21, and 28 May (BBCH 55), 4 (BBCH 60), 11 (BBCH 65), 18 and 25 Jun (BBCH 71), 2, 9 to 10 (BBCH 78), 16, 22 and 29 Jul. No fertilizer was applied this year. No leaves were removed from the fruiting zone. Reckon 280 (1 gal/A) was applied on 8 Apr and AIM (3.5 fl oz/A) plus Forefit 280 (3 qt/A) was applied on 4 Jun for management of weeds. Forefit 280 (3 qt/A) was applied on 18 May for management of suckers. According to the Gubler-Thomas powdery mildew forecasting model, there were 3 rain events between bud break and end of bloom that were favorable for ascospore release and infection: 1 severe infection period (11 May), 1 moderate infection period (31 May) and 1 low infection period (20 May). The risk index shot up from 0 to past 60 during the last week in May, remained high until Jul 2 when it dropped below 60 for 11 days during a hot period, then back above 60 through to the end of Sep (Figure 1). Incidence and severity of powdery mildew on leaves and fruit were evaluated on 3 Aug by randomly examining 50 leaves or clusters from the middle 3 vines of each replicate.

Spring and summer growing conditions were considered warm and dry resulting in accelerated vine development. Symptoms of powdery mildew were first found on 4 May as flag shoots and a few individual colonies in nearby blocks. Powdery mildew incidence or severity on leaves or clusters on any fungicide treated vines was not significantly different from nontreated vines despite weekly biological fungicide applications. Powdery mildew fruit severity taken on 15 Jul yielded similar results (data not shown). The rate of the surfactant Nu-Film-P was dropped from 32 fl oz to 15 fl oz for all treatments when minor fruit spotting of the waxy cutin layer (non-necrotic) was observed on Jul 14. Beyond that, no phytotoxicity was observed on any treated vines.

Figure 1. Gubler-Thomas grape powdery mildew risk index for the 2015 growing season.



Treatment & Rate/A or /100 gal as indicated below	% Leaves with Powdery Mildew (3 Aug)*		% Clusters with Powdery Mildew (3 Aug)*	
	Incidence	Severity	Incidence	Severity
Nontreated.....	100	26.1	100	98.5
GWN-10320 at 24 fl oz plus				
Nu-Film-P at 15 to 32 fl oz/100 gal ...	99.5	24.1	100	98.9
GWN-10320 at 32 fl oz plus				
Nu-Film-P at 15 to 32 fl oz/100 gal	100	30.2	100	99.7
Serenade Opti at 20 oz plus				
Nu-Film-P at 15 to 32 fl oz/100 gal ...	99.5	40.1	100	98.3
Double Nickel LC at 32 fl oz plus				
Nu-Film-P at 15 to 32 fl oz/100 gal ...	100	50.7	100	95.9

* Means without letters do not differ significantly ($P=0.05$).

** Fungicides were applied on 10, 21, and 28 May (BBCH 55), 4, 11 (BBCH 65), 18 and 25 Jun (BBCH 71), 2, 9 to 10 (BBCH 78), 16, 22 and 29 Jul. The last two treatment dates did not include GWN-10320 due to lack of material availability.