

HAZELNUT (*Corylus avellana* 'Ennis')
Eastern Filbert Blight; *Anisogramma anomala*

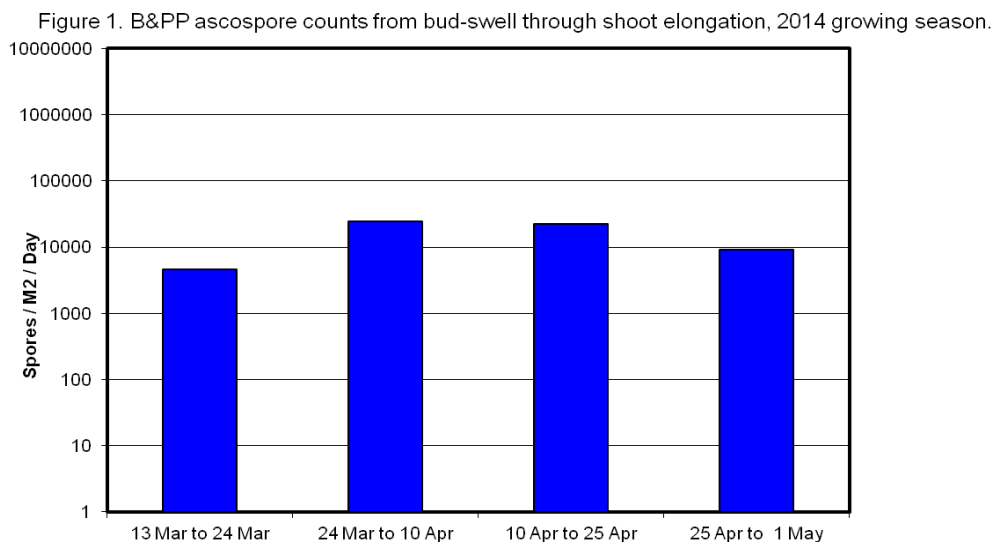
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Evaluation of fungicides for management of eastern filbert blight, 2014 - 2015.

Healthy appearing two-year-old 'Ennis' hazelnut trees were planted on 19 Feb 14 at the Botany and Plant Pathology Field Laboratory, Corvallis, OR. Limbs with EFB cankers were cut on 22 to 27 Jan 14 from heavily diseased 'Ennis' trees. A total of 275 cankered limbs were placed above test trees on chicken wire, supported by a 6 wire horizontal trellis, on 3 Mar 14. Treatments were arranged in a randomized complete block design. Each treatment consisted of 8 single tree replicates. Fungicides were applied to trees from two directions, until runoff, using a Solo-Pump-Style backpack sprayer. Approximately 0.25 gal of a spray suspension was used per 8 trees within each treatment. Most fungicide treatments were applied on 13 Mar 14 (bud break), 24 Mar 14, 10 Apr 14, and 25 Apr 14 for a total of 4 applications. One treatment of Ph-D WDG was applied weekly with additional applications that occurred on 20 Mar 14, 31 Mar 14, 16 Apr 14 and 2 May 14 for a total of 8 applications. Rely (25 oz/10gal) was applied as a spot treatment on 22 May 14, 26 Jun 14, 18 Jul 14 and 22 Aug 14 for management of weeds. Trees were fertilized with 46-0-0 at a rate of 0.5 lb/6 trees on 16 Apr 14. Supplemental irrigation was provided as needed during the 2014 growing season. Fungicide residue was evaluated on 15 Apr 14 where 0 = no residue, 1 = slight residue, 2 = moderate residue, 3 = obvious residue, 4 = intense residue affecting leaf growth and quality. Record cold temperatures were recorded on 8 Dec 2013 (during tree harvest and heal in) and on 6 Feb 2014 which resulted in poor tree growth or death. Tree survival was rated on 17 Apr 14. The number of EFB cankers on the main tree trunk and total length of these cankers/tree was determined on 3 Aug 15. Due to limited tree survival only treatments with at least 4 surviving trees were analyzed using a completely randomized design. Nontreated trees from adjacent blocks were also utilized in this analysis.

Although the dormant season was considered unusually dry with record cold temperatures, spring growing conditions had normal precipitation and warmer temperatures overall. Cold injury to young trees resulted in only 63% tree survival overall. Nontreated trees or trees treated with 10% Vitiseal had the lowest survival while trees treated with Badge X2 had the best survival. The number of cankers found on trees treated with Vitiseal, Tavano, GWN-10073, Badge X2 or Delcup L were not significantly different from the number of cankers found on nontreated trees. The fewest number of cankers were found on trees treat with Merivon, however, the number of cankers found on trees treated with Priaxor, Badge SC, or Ph-D plus Tilt were not significantly different. Heavy gray residue and lack of disease control rules out the continued evaluation of Vitiseal. The blueish residue found on trees treated with various copper-based compounds would not be considered a problem in the hazelnut industry.

Figure 1. Ascospore counts from bud swell through shoot elongation, 2014 growing season.



Treatment and Rate/100 gal water ^x	Tree Survival # alive/total planted	Ave Number of Cankers/Tree ^y	Total Canker Length/Tree ^y (cm)	Fungicide Residue ^z	
				15 Apr 14	
Nontreated	2/8	3.0 a	60.7 a	0.0	d
Echo 720 at 32 fl oz.....	3/8			0.0	d
VitiSeal at 0.34 fl oz.....	5/8	2.3 ab	44.5 a	1.9	b
VitiSeal at 3.4 fl oz.....	2/8			3.0	a
Tavano SC at 6.5 fl oz.....	5/8	2.8 a	70.5 a	0.0	d
Tavano SC at 13 fl oz.....	6/8	3.3 a	74.5 a	0.0	d
Ph-D WDG at 6.2 oz plus Nu-Film-P at 6 fl oz.....	3/8			0.0	d
Ph-D WDG at 6.2 oz plus Nu-Film-P at 6 fl oz... weekly ^x .	3/8			0.0	d
Ph-D WDG at 6.2 oz plus Tilt at 4 fl oz plus Nu-Film-P at 6 fl oz.....	4/8	0.8 cd	15.3 bcd	0.0	d
GWN-10073 at 4 gal.....	4/8	1.8 ab	32.0 ab	1.1	c
Badge SC at 20 pt.....	4/8	0.8 cd	14.5 cd	2.1	b
Badge X2 at 10.5 lb.....	7/8	2.0 ab	41.5 a	2.0	b
Nu-Cop 50 DF at 8 lb plus Nu-Film-P at 6 fl oz.....	6/8	1.3 bc	26.5 abc	2.0	b
Delcup L at 7.5 pt.....	4/8	2.3 ab	47.5 a	0.0	d
Merivon at 4 fl oz plus Nu-Film-P at 6 fl oz.....	6/8	0.3 d	5.0 d	0.0	d
Priaxor at 5.5 fl oz plus Nu-Film-P at 6 fl oz.....	4/8	0.5 d	10.8 cd	0.0	d

x Most fungicide treatments were applied on 13 Mar 14 (bud break), 24 Mar 14, 10 Apr 14, and 25 Apr 14 for a total of 4 applications. One treatment of Ph-D WDG was applied “weekly” with additional applications that occurred on 20 Mar 14, 31 Mar 14, 16 Apr 14 and 2 May 14 for a total of 8 applications.

y Analysis of variance is based on log₁₀ (x+1) transformation. Means followed by the same letter do not differ significantly based on Fisher’s protected LSD ($P=0.05$).

z Fungicide residue was evaluated on 15 Apr 14 where 0 = no residue, 1 = slight residue, 2 = moderate residue, 3 = obvious residue, 4 = intense residue affecting leaf growth and quality.