

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

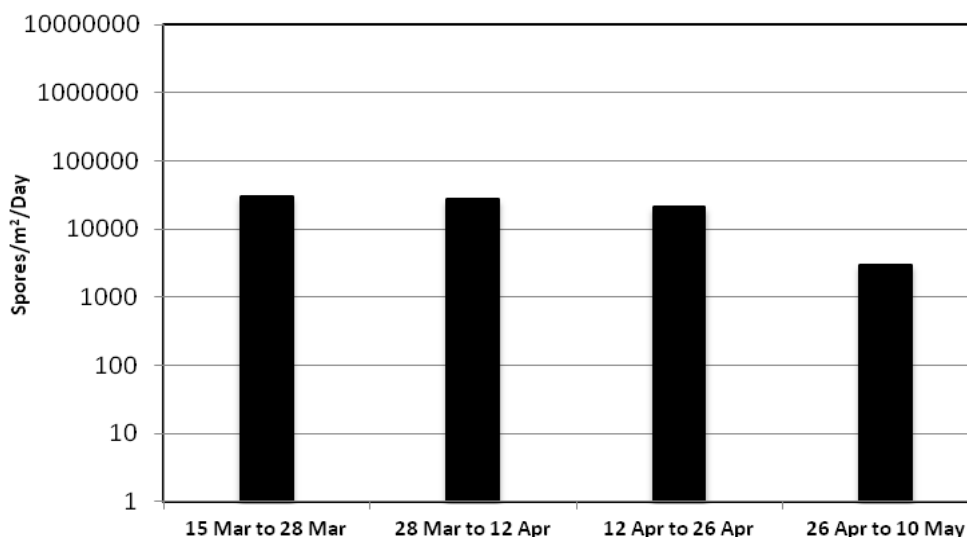
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**Evaluation of fungicides for management of eastern filbert blight, 2013 - 2014.**

Healthy appearing two-year-old 'Ennis' hazelnut trees were planted on 4 to 6 Feb 13 at the Botany and Plant Pathology Field Laboratory, Corvallis, OR. Limbs with EFB cankers were cut on 14 to 16 Jan 13 from heavily diseased 'Ennis' trees. A total of 300 cankered limbs were placed above test trees on chicken wire, supported by a 6 wire horizontal trellis, on 25 Feb 13. 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. Fungicide treatments were applied on 15 Mar 13 (bud break), 28 Mar 13, 12 Apr 13, and 26 Apr 13 for a total of 4 applications. Sucker shoots were physically removed on 21 Jun 13. Caseron 4G (100 lb/A) was applied on 26 Feb 13, Roundup (3 oz/gal) was applied on 11 Apr 13 and again 17 May 13, and Rely (1.8 oz/gal) was applied as a spot treatment on 17 Jun 13, 22 Jul 13 and 19 Aug 13 all for management of weeds. Trees were fertilized with 46-0-0 at a rate of 0.5 lb/4 trees on 19 Apr 13, 8 Jun 13 and 16 Jul 13. Supplemental irrigation was provided as needed during the 2013 growing season. Plant growth regulation effects on shoots and phytotoxicity were evaluated on 10 May 13 where 0 = no effect, 1 = slight effect that is not obvious, 2 = obvious darker green leaves and shortened internodes, 3 = Deep green leaves and shortened shoots but no necrosis, 4 = intense symptoms with marginal burning, leaf necrosis and/or possible dead shoots. The number of EFB cankers on the main tree trunk and total length of these cankers/tree was determined on 21 Jul 14.

Although spring growing conditions were unusually dry with 3 weeks of warm 80 F weather starting at the end of April, early hazelnut shoot growth was rainy and relatively warm. All treatments had significantly fewer cankers when compared to nontreated trees. Trees treated with the high rate of Priaxor did not develop cankers, however, the number of cankers found on most other fungicide treated trees were not significantly different with the exception of trees treated with Orius alone or Botector. The addition of the surfactant Silwet to Orius was beneficial resulting in fewer cankers. In general, plant growth regulation effects were only significant on trees treated with Statego but well below a level considered a problem for this crop. It was surprising that PGR effects were not higher on trees treated with QuiltXcel. Canker numbers were unexpected low for trees treated with Xemium, Thiolutax and Botector and thus should be repeated in future years.

Figure 1. B&PP ascospore counts from bud swell through shoot elongation, 2013 growing season.



Treatment and Rate/100 gal water <sup>x</sup>	Ave Number of Cankers/Tree <sup>y</sup>	Total Canker Length/Tree <sup>y</sup> (cm)	Growth Regulation Effect and/or Phytotoxicity <sup>z</sup> 10 May 13
Nontreated .....	5.4 a	113.5 a	0.0 b
Cabrio 20 EG at 4.75 oz plus			
Silwet L-77 at 6.4 fl oz.....	0.3 cd	4.6 cd	0.0 b
Xemium at 3 fl oz plus			
Silwet L-77 at 6.4 fl oz.....	0.3 cd	3.1 cd	0.3 b
Priaxor at 4 fl oz plus			
Silwet L-77 at 6.4 fl oz.....	0.1 cd	1.9 cd	0.0 b
Priaxor at 5.5 fl oz plus			
Silwet L-77 at 6.4 fl oz.....	0.0 d	0.0 d	0.1 b
Merivon at 4 fl oz plus			
Silwet L-77 at 6.4 fl oz.....	0.6 bcd	12.0 bc	0.0 b
QuiltXcel at 7 fl oz.....	0.6 bcd	10.5 bcd	0.3 b
QuiltXcel at 14 fl oz.....	0.6 bcd	14.9 bcd	0.2 b
QuiltXcel at 21 fl oz.....	0.6 bcd	11.1 bc	0.2 b
Quadris Top at 7 fl oz.....	0.4 cd	6.9 bcd	0.0 b
Quadris Top at 14 fl oz.....	0.4 cd	8.0 bcd	0.3 b
Stratego 250 EC at 7 fl oz plus			
Silwet L-77 at 6.4 fl oz.....	0.4 cd	5.6 cd	0.8 a
Orius 45 DF at 4 oz .....	1.4 b	24.4 b	0.0 b
Orius 45 DF at 4 oz plus			
Silwet L-77 at 6.4 fl oz.....	0.3 cd	3.6 cd	0.3 b
Thiolux at 2.6 lb.....	0.5 bcd	8.9 bc	0.0 b
Unicorn DF at 3 lb.....	0.6 bcd	9.0 bc	0.0 b
Botector at 10 oz.....	0.9 bc	14.5 bc	0.1 b

<sup>x</sup> Fungicide treatments were applied on 15 Mar 13 (bud break), 28 Mar 13, 12 Apr 13, and 26 Apr 13 for a total of 4 applications.

<sup>y</sup> Analysis of variance is based on log<sub>10</sub> (x+1) transformation. Means followed by the same letter do not differ significantly based on Fisher's protected LSD (*P*=0.05).

<sup>z</sup> Plant growth regulation effects of shoots where 0 = no effect, 1 = slight effect that is not obvious, 2 = obvious darker green leaves and shortened internodes, 3 = Deep green leaves and shortened shoots but no necrosis, 4 = intense symptoms with marginal burning, leaf necrosis and/or possible dead shoots.