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

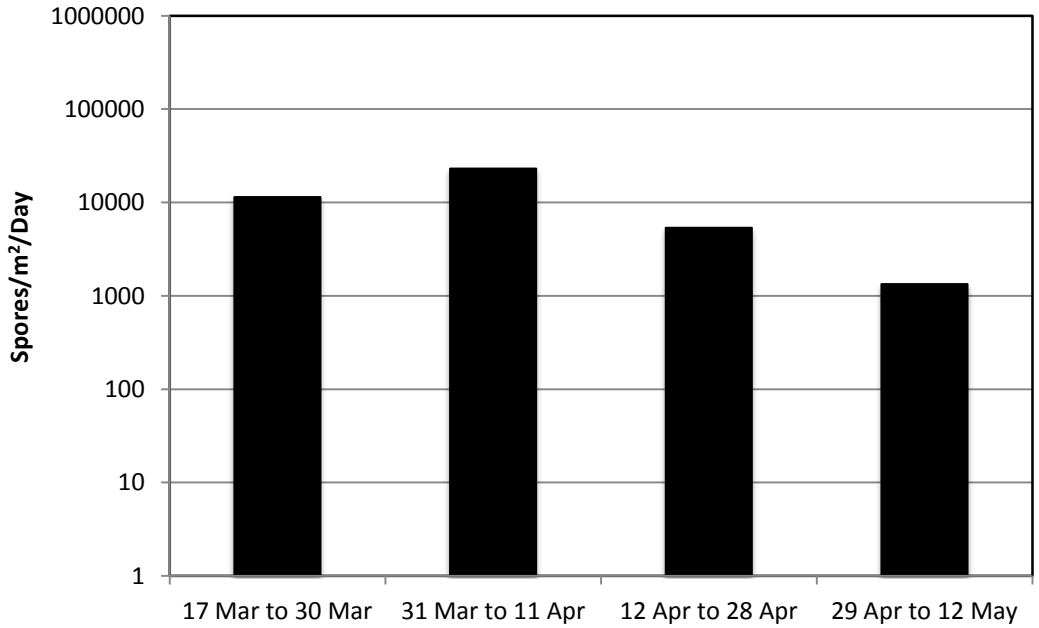
J.W. Pscheidt and S. Heckert
Dept. of Botany and Plant Pathology
Oregon State University
Corvallis, OR 97331-2903

Evaluation of fungicides for management of eastern filbert blight, 2016 - 2017.

Healthy appearing two-year-old 'Ennis' hazelnut trees were planted from 16 to 18 Feb 16 at the Botany and Plant Pathology Field Laboratory, Corvallis, OR. Limbs with EFB cankers were cut from heavily diseased trees during Jan 2016. A total of 500 cankered limbs were placed above test trees on chicken wire frames supported by a wooden trellis, on 1 Mar 16. 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 17 Mar 16 (bud break), 31 Mar 16, 12 Apr 16, and 26 Apr 16 for a total of 4 applications. Botector was applied in a separate backpack sprayer only used for biological materials. Casoron 4G (100 lb/A) was applied throughout the block on 20 Mar 16 and Makaze (at 3%) was applied as a general and/or spot treatment on 5 May 16, 9 Jun 16, 8 Aug 16 and 2 Jun 17 for management of weeds. Trees were fertilized with 46-0-0 at a rate of 0.5 lb/6 trees on 4 Apr 16 and 15 Jul 16. Supplemental irrigation was provided as needed during the 2016 growing season. The number of EFB cankers on the main tree trunk and total length of these cankers/tree was determined on 7 to 8 Aug 17.

Spring 2016 growing conditions were considered warmer and dryer than normal with several heat spikes including 83°F on 7 Apr, 85°F on 18 Apr, 87°F on 2 May, and 95°F on 4 Jun 16. Conditions resulted in accelerated tree growth 2 to 3 weeks ahead of average, however, late planting of these small trees resulted in average bud break and early growth period. Symptoms were first noticed on 12 Jun 17. Overall disease pressure was light as indicated by how few cankers developed throughout the trial and on non-treated trees. Non-treated trees had the most cankers per tree and all fungicide treated trees had significantly fewer cankers than non-treated trees. Many fungicide treated trees did not develop cankers at all or had so few as to not be significantly different from zero. Trees treated with Torino or Botector had significantly more cankers than trees without cankers. No phytotoxicity was observed in trees treated with any of the various materials used.

Figure 1. Ascospore counts from bud swell through shoot elongation, 2016 growing season.



Treatment and Rate/100 gal water	Number of Applications [X]	Ave Number of Cankers/Tree [Y]	Total Canker Length/Tree [Y] (cm)
Non-treated ……...……	0	1.6 a	32.9 a
Aproach 2.08 SC at 6 fl oz plus Induce at 12 fl oz……..	4	0.0 d	0.0 c
Aproach 2.08 SC at 8 fl oz plus Induce at 12 fl oz……..	4	0.0 d	0.0 c
Aproach 2.08 SC at 12 fl oz plus Induce at 12 fl oz……..	4	0.0 d	0.0 c
Aproach 2.08 SC at 6 fl oz plus Fontelis SC at 14 fl oz plus Induce at 12 fl oz……..	4	0.0 d	0.0 c
Aproach 2.08 SC at 8 fl oz plus Fontelis SC at 16 fl oz plus Induce at 12 fl oz……..	4	0.0 d	0.0 c
Quadris Top at 12 fl oz plus Induce at 12 fl oz……..	4	0.0 d	0.0 c
A20259 at 11 fl oz plus Induce at 12 fl oz……..	4	0.3 bcd	5.5 bc
A20259 at 13.7 fl oz plus Induce at 12 fl oz……..	4	0.0 d	0.0 c
A19649 at 5.13 fl oz plus Induce at 12 fl oz……..	4	0.4 bcd	7.6 bc
Merivon at 5 fl oz plus Induce at 12 fl oz……..	4	0.0 d	0.0 c
Cabrio 20 EG at 6.52 oz plus Induce at 12 fl oz……..	4	0.1 cd	3.9 bc
Sercadis at 4.17 fl oz plus Induce at 12 fl oz……..	4	0.0 d	0.0 c
Torino at 6 fl oz ……..……..	4	0.6 bc	14.0 bc
Vivando at 15 fl oz ……	4	0.0 d	0.0 c
Kocide 3000 at 10.5 lb plus Superior-Type Oil at 1 pt……..	4	0.3 bcd	7.0 bc
Kocide 3000 at 7 lb plus Superior-Type Oil at 1 pt……..	4	0.1 cd	0.9 c
Botector at 10 oz ……..	4	0.8 b	12.9 b

[X] Fungicide treatments were applied on 17 Mar 16 (bud break), 31 Mar 16, 12 Apr 16, and 26 Apr 16 for a total of 4 applications.

[Y] Analysis of variance is based on log (x+1) transformation. Means followed by the same letter do not differ significantly based on Fisher's protected LSD (*P=0.05*).