

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

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### **Evaluation of organic fungicides for management of eastern filbert blight, 2022 - 2023.**

Healthy appearing two-year-old 'Ennis' hazelnut trees were planted early Jan 2022 at the Botany and Plant Pathology Field Laboratory, Corvallis, OR. Trees were planted in 3 rows in an area 10 x 172 ft and 3 ft apart from each other. Limbs with EFB cankers were cut from heavily diseased trees during Jan and Feb 2022 and placed above test trees on chicken wire frames supported by a wooden trellis. An additional source of spores included 3 brush piles of EFB cankered branches placed approximately 4 m west of the trellis area. 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 Stihl SG20-Pump-Style backpack sprayer equipped with a brass hollow cone nozzle. Approximately 0.25 gal of a spray suspension was used per 8 trees within each treatment. Fungicide treatments were applied every two weeks on 22 Mar 2022 (bud break), 7 Apr 2022, 22 Apr 2022, and 3 May 2022 for a total of 4 applications. Additional applications for every week treatments were applied on 29 Mar 2022, 15 Apr 2022, 27 Apr 2022, and 10 May 2022 for a total of 8 applications. Weeds were managed in 2022 with Roundup ProMax (3%) applied alone as a general and/or spot treatment on 27 Apr, Mad Dog (3%) tank mixed with Forfeit (1.7 oz/gal) applied as a general and/or spot treatment on 8 Jun, Forfeit (1.7 oz/gal) applied on 22 Jul and 1 Sep. Herbicides applied in 2023 included Mad Dog (3%) applied as a general and/or spot treatment on 24 Jan, Casuron 4G applied as a general pre-emergent on 8 Mar, GlyStar Plus (3%) applied on 7 Jul, and Rely 280 (1.7 fl oz/gal) applied on 17 Jul as general and/or spot treatment. Trees were fertilized with 46-0-0 at a rate of 0.5 lb/6 trees on 8 Apr 2022, 26 Jul 2022, 29 Mar 2023, and 1 May 2023. Suckers were managed by hand cutting on 15 May 2023 and 3 Aug 2023. Supplemental irrigation was provided as needed during the 2022 and 2023 growing season. The number of EFB cankers on the main tree trunk and total length of these cankers/tree was determined on 9 to 10 Aug 2023.

Spring 2022 weather conditions were very wet with the second wettest spring on record. Despite a susceptible cultivar (Ennis), adequate ascospore counts (Figure 1) and wet weather, few cankers developed on non-treated trees. Cankered branches were obtained from many different sources due to lack of symptom development the prior year. Symptom development was first noticed on 20 June 2023 as slightly sunken cankers with emergence of white stroma. There was no difference in canker number or total length among the various treatments including non-treated trees or trees treated with Nordox. No phytotoxicity was observed on any of the treated trees during or after application, however, there was a heavy red residue on trees treated with Nordox.

Treatment and Rate/100 gal water	Number of Applications <sup>X</sup>	Ave Number of Cankers/Tree <sup>Y</sup>	Total Canker Length/Tree <sup>Y</sup> (cm)
Non-treated .....	0	0.9	8.4
Botector at 8 oz .....	8	0.8	7.8
Botector at 8 oz .....	4	0.8	9.3
Aviv at 30 fl oz .....	8	0.9	7.4
Aviv at 30 fl oz .....	4	1.0	9.9
Stargus at 2 qt.....	8	0.1	0.8
Stargus at 2 qt.....	4	0.6	7.1
Serenade Opti at 14 oz .....	8	1.0	11.8
Serenade Opti at 14 oz .....	4	1.8	24.3
Howler at 5 lb.....	8	1.0	10.7
Howler at 5 lb.....	4	1.0	9.0
EcoSwing at 2 pt.....	8	0.5	5.4
EcoSwing at 2 pt.....	4	0.3	1.9
Nordox at 10 lb.....	4	0.1	4.1

<sup>X</sup> Fungicide treatments were applied every two weeks from bud break on 22 Mar 2022 (bud break), 7 Apr 2022, 22 Apr 2022, and 3 May 2022 for a total of 4 applications. Additional applications for every week treatments were applied on 29 Mar 2022, 15 Apr 2022, 27 Apr 2022, and 10 May 2022 for a total of 8 applications.

<sup>Y</sup> 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 ( $P=0.05$ ). Means without letters do not differ.