

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

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Evaluation of organic fungicides for management of eastern filbert blight, 2023 - 2024.

Healthy appearing two-year-old 'Ennis' hazelnut trees were planted 8 to 17 Feb 2023 at the Botany and Plant Pathology Field Laboratory, Corvallis, OR. Trees were planted in 3 rows in an area 12 x 172 ft and 3 ft apart from each other. Limbs with EFB cankers were cut from heavily diseased trees during Jan and Feb 2023 and placed above test trees on chicken wire frames supported by a wooden trellis. An additional source of spores included 5 brush piles of EFB cankered branches placed approximately 1 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 14 Apr 2023 (bud break), 28 Apr 2023, 10 May 2023, and 24 May 2023 for a total of 4 applications. Additional applications for weekly treatments were applied on 21 Apr 2023, 3 May 2023, 16 May 2023, and 2 Jun 2023 for a total of 8 applications. Weeds were managed in 2023 with Mad Dog (3%) applied as a general treatment on 25 Jan 2023, Casuron 4G applied as a general pre-emergent on 22 Mar 2023, GlyStar Plus (3%) applied on 7 Jul and 22 Sep 2023, and Rely 280 (1.7 fl oz/gal) was applied on 17 Jul 2023 as general and/or spot treatment. In 2024, GlyStar Plus (3%) was applied on 23 Feb, Casuron 4G was applied as a general pre-emergent on 8 Mar, Ranger Pro (4 fl oz/gal) was applied on 24 Apr and 18 Jun, and Reckon 280L (1.7 fl oz/gal) was applied on 31 Jul 2024. Trees were fertilized with 46-0-0 at a rate of 0.5 lb/6 trees on 29 Mar 2023, 1 May 2023, 21 Mar 2024, and 19 Apr 2024. Suckers were managed by hand cutting on 23 Apr and 24 Jun 2024. The number of EFB cankers on the main tree trunk and total length of these cankers/tree was determined during the late summer and fall of 2024.

Spring 2023 weather conditions were normal to dry in April and first week of May but then became very dry with little rainfall for the remainder of the season. Rainfall from bud break to mid-June was 1.22 inches with an additional 7.38 inches supplemental irrigation. Spore counts were naturally high in the two weeks after bud break and again with irrigation. Symptom development was early and first noticed late May 2024 as slightly sunken cankers with emergence of white stroma. Lowest number of cankers were found on trees treated with Nordox, however, the number of cankers on trees treated with Botector 8 times (weekly) were not significantly different. All other treatments had several cankers per tree that were not significantly different from non-treated trees. 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.

Note: Botector is compatible with several different copper-based pesticides including Nordox.

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	5.4 a	73.8 a
Botector at 8 oz	8	2.1 bc	23.6 bc
Botector at 8 oz	4	4.9 a	62.7 a
Aviv at 30 fl oz	8	5.6 a	73.6 a
Aviv at 30 fl oz	4	6.1 a	80.2 a
Stargus at 2 qt.....	8	3.9 ab	49.8 ab
Stargus at 2 qt.....	4	6.0 a	82.1 a
Serenade Opti at 14 oz	8	4.9 a	61.9 ab
Serenade Opti at 14 oz	4	3.6 ab	45.4 ab
Theia at 3 lb.....	8	6.0 a	78.3 a
Theia at 3 lb.....	4	5.8 a	68.9 a
EcoSwing at 2 pt.....	8	5.6 a	61.5 a
EcoSwing at 2 pt.....	4	4.6 ab	60.3 ab
Nordox at 10 lb.....	4	0.8 c	10.4 c

^X Fungicide treatments were applied every two weeks from bud break on 14 Apr 2023 (bud break), 28 Apr 2023, 10 May 2023, and 24 May 2023 for a total of 4 applications. Additional applications for weekly treatments were applied on 21 Apr 2023, 3 May 2023, 16 May 2023, and 2 Jun 2023 for a total of 8 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 ($P=0.05$).