

Drench application of flutrifol (TopGuard) for protection against eastern filbert blight, 2023 - 2024.

Healthy appearing two-year-old ‘Ennis’ hazelnut trees were planted from 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. All treatments were initiated on 12 Apr 2023 (bud break) with additional applications on 25 Apr 2023, 9 May 2023, and 23 May 2023 for trees on a 2 week schedule for a total of 4 applications. Drench or simulated dripped applications consisted of 500 ml solution of TopGuard (14 fl oz/100 gal or 28 fl oz/100 gal). Foliar sprays were at 14 fl oz/100 gal while ground sprays consisted of 320 ml solution (also 14 fl oz/100 gal). Foliar applications were applied to trees from two directions, until runoff, using a Stihl SG20-Pump-Style backpack sprayer equipped with a brass hollow cone nozzle where 0.25 gal of a spray suspension was used per 8 trees. Due to dry weather, unlike previous years, supplemental irrigation was required during the 8 week fungicide application window. 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. No rainfall or irrigation occurred within 24 hours of drench or spray applications. Symptom development was early and first noticed late May 2024 as slightly sunken cankers with emergence of white stroma. The most EFB cankers were found on non-treated trees which was significantly higher than all other treatments. Cankers did not develop on any of the trees treated with 4 foliar sprays, 4 drenches, 4 simulated drips or a single drench at the higher TopGuard rate. Some cankers did develop on trees where applications were sprayed onto the ground but cankers were significantly less than on non-treated trees. No phytotoxicity was observed on any of the treated trees during or after application.

Table 1. Cankers found on trees during the 2024 growing season.

Treatment and Rate/100 gal water	Application Method ^Y	Volume used per tree per application (ml)	Ave Number of Cankers/Tree ^Z	Total Canker Length/Tree ^Z (cm)
Non-treated	None	0	4.6 a	47.1 a
TopGuard SC at 14 fl oz...	4 foliar sprays	118	0.0 c	0.0 c
TopGuard SC at 14 fl oz...	4 ground sprays	320	1.1 b	5.8 b
TopGuard SC at 14 fl oz	4 drenches	500	0.0 c	0.0 c
TopGuard SC at 14 fl oz...	4 simulated drip	500	0.0 c	0.0 c
TopGuard SC at 14 fl oz...	1 drench	500	0.1 c	0.2 c
TopGuard SC at 28 fl oz...	1 drench	500	0.0 c	0.0 c

^Y Fungicide treatments were applied on 12 Apr 2023 (bud break), 25 Apr 2023, 9 May 2023, and 23 May 2023 for a total of 4 drench, drip or spray applications. The application to trees drenched once occurred on 12 Apr 2023.

^Z 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.