

Drenching roots with flutrifol (TopGuard) for protection against eastern filbert blight, 2021 - 2022.

Healthy appearing two-year-old ‘Ennis’ hazelnut trees were planted into individual 1 gal pots containing potting media on 4 Feb 2021 at the Botany and Plant Pathology Field Laboratory, Corvallis, OR. Pots were placed in the field under cankered limbs placed on chicken wire frames supported by a wooden trellis. Additional trees were planted in the ground in 3 rows in an area 10 x 172 ft and 3 ft apart from each other. Trees in pots or in the ground were drench with either 500 ml water or 500 ml solution of TopGuard (14 fl oz/100 gal or 28 fl oz/100 gal) on 26 Mar 2021, 9 Apr 2021, 23 Apr 2021 and 6 May 2021. Some trees planted in the ground were treated on the same dates with foliar applications of the same fungicide. Trees in pots were moved into a greenhouse on the OSU campus on 19 May 2021 and fertilized with 2 Tablespoons Osmocote. Trees were placed outdoors next to a greenhouse in the fall of 2021 then back into the greenhouse in the spring of 2022 and fertilized again with Osmocote on 11 Mar 2022. Supplemental irrigation was provided as needed while growing in green or hoop houses. Plant growth regulation (PGR) effects on shoots and phytotoxicity were evaluated on 16 May 2022 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 PGR data for trees in pots was analyzed separately from trees in the field. 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 2022.

Rainfall for the growing season (Oct 2020 to Sep 2021) was well below average with spring rainfall the lowest ever recorded. An unusual climate change related heat dome (heat wave) occurred for 3 days in late June with temperatures at or above 100°F. Subtle plant growth regulation effects were observed late spring 2022 for trees in the field and more strongly for trees in pots in the greenhouse. There was no significant difference in PGR ratings among trees in the field, however, a higher PGR rating was found for trees in pots that had been treated with 4 drenches. Symptoms of EFB had not developed by the end of the summer 2022 season likely due to the low spring rainfall and low spore counts in the prior spring. No phytotoxicity was observed on any of the treated trees.

Treatment and Rate/100 gal water	Trees planted in pots or field soil	Application Method ^X	Growth Regulation Effect ^{Y Z}	Ave Number of Cankers/Tree ^Y	Total Canker Length/Tree ^Y (cm)
Water-treated	Pots	4 drenches	2.5 b	0	0
Water-treated	Field Soil	4 drenches	0.8 A	0	0
TopGuard SC at 14 fl oz...	Pots	1 drench	2.8 b	0	0
TopGuard SC at 14 fl oz	Pots	4 drenches	3.8 a	0	0
TopGuard SC at 14 fl oz...	Field Soil	1 drench	1.0 A	0	0
TopGuard SC at 14 fl oz	Field Soil	4 drenches	1.6 A	0	0
TopGuard SC at 14 fl oz...	Field Soil	4 foliar sprays	1.0 A	0	0
TopGuard SC at 28 fl oz...	Pots	1 drench	2.6 b	0	0

^X Fungicide drench treatments were applied on 26 Mar 2021, 9 Apr 2021, 23 Apr 2021 and 6 May 2021 for a total of 4 drench or spray applications. The application to trees drenched once occurred on 26 Mar 2021.

^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 ($P=0.05$). Means without letters do not differ.

^Z 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. Trees in pots (lower case letters) analyzed separately from trees in field soil (upper case letters).