

Evaluation of Ziram tank mixed with Cabrio for management of eastern filbert blight, 2017 - 2018.

Healthy appearing two-year-old ‘Ennis’ hazelnut trees were planted from 10 to 11 Feb 2017 at the Botany and Plant Pathology Field Laboratory, Corvallis, OR. Limbs with EFB cankers were cut from heavily diseased trees during Jan and Feb 2017. A total of 350 cankered limbs were placed above test trees on chicken wire frames supported by a wooden trellis, on 28 Feb 2017. 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 0.26 gal of a spray suspension was used per 8 trees within each treatment. Fungicide treatments were applied on 22 Mar 2017 (bud break), 3 Apr 2017, 18 Apr 2017, and 30 Apr 2017 for a total of 4 applications. Makaze (3%) was applied as a general and/or spot treatment on 16 Mar, 3 May, 2 Jun, 6 Jul, 11 Aug and 18 Sep 2017 for management of weeds. Trees were fertilized with 46-0-0 at a rate of 0.5 lb/6 trees on 6 Apr 2017, 17 Jul 2017 and 26 Apr 2018. Sucker were managed by hand cutting on 17 Jul 2017 and 1 to 2 Aug 2018. Supplemental irrigation was provided as needed during the 2017 growing season. The number of EFB cankers on the main tree trunk and total length of these cankers/tree was determined on 15 to 17 Aug 2018.

Spring weather conditions for 2017 were considered cool and wet but with more normal plant growth relative to time of year. Symptoms were first noticed on 11 Jun 2018 but overall canker development was later than observed in the past. Overall disease pressure was light as indicated by low spore counts (Figure 1) and the few cankers found on both treated and 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. Trees treated with the low rate of Cabrio or the low rate of Ziram had so few cankers as to not be significantly different from zero. No phytotoxicity was observed in trees treated with any of the various materials used, however, the high rate of Ziram left a heavy white residue on leaves. Data suggest that the low rate of Ziram can be an effective mixing partner for other fungicides used to manage EFB.

Treatment and Rate/100 gal water	Ave Number of Cankers/Tree*	Total Canker Length/Tree* (cm)
Non-treated	1.4 a	16.5 a
Cabrio 20 EG at 4.8 oz	0.0 b	0.0 b
Cabrio 20 EG at 2.4 oz	0.1 b	2.8 b
Cabrio 20 EG at 2.4 oz plus Ziram 76 DF at 3 lb.....	0.0 b	0.0 b
Ziram 76 DF at 3 lb	0.3 b	4.4 b
Ziram 76 DF at 6 lb	0.0 b	0.0 b

* 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 ($P=0.05$).