

Evaluation of Ziram and Thiram 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 17 and 1-2 Aug 18. 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 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 a single application of Thiram at bud break had significantly more cankers than trees without cankers. Although no phytotoxicity was observed in trees treated with any of the various materials used, the high rate of Ziram left a heavy white residue on the trees. The addition of Induce with Ziram appeared to result in more uniform droplet size and better coverage. Data suggest that the low rate of Ziram might be too low, that the addition of Induce was beneficial and that Thiram has activity against EFB.

Treatment and Rate/100 gal water	Number of Applications *	Ave Number of Cankers/Tree**	Total Canker Length/Tree** (cm)
Non-treated	0	1.4 a	18.4 a
Ziram 76 DF at 3 lb	4	0.1 bc	2.5 bc
Ziram 76 DF at 4 lb	4	0.0 c	0.0 c
Ziram 76 DF at 3 lb plus Induce at 12 fl oz.....	4	0.0 c	0.0 c
Ziram 76 DF at 4 lb plus Induce at 12 fl oz then Ziram 76 DF at 4 lb plus Tilt at 16 fl oz	1	0.0 c	0.0 c
Bravo Weather Stik at 32 fl oz.....	4	0.0 c	0.0 c
Thiram 24/7 at 3.1 qt.....	4	0.1 bc	2.4 bc
Thiram 24/7 at 12.5 gal.....	1	0.4 b	5.9 b

* 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. The single application of a high rate of Thiram occurred on 22 Mar 2017 (bud break).

** 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 ($P=0.05$).