

HAZELNUT (*Corylus avellana* ‘Ennis’ and ‘Butler’)
Eastern Filbert Blight; *Anisogramma anomala*

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Whole orchard evaluation of pruning strategies for management of eastern filbert blight, 2016-17.

The goal of this trial is to evaluate pruning strategies for management of EFB on heavily infected, mature, commercial sized hazelnut trees. This is a redesign of a 12-year randomized complete block fungicide trial within a 1-acre orchard of Ennis hazelnuts with Butler pollenizers (every 3rd tree in every 3rd row) planted on a final 20 x 20 foot spacing in 1986 at the Botany and Plant Pathology Field Laboratory, Corvallis, OR. Growers wanted to know if cutting heavily infected trees to the ground and re-growing from sucker shoots would be an effective management strategy. There were also questions about the value of pruning heavily diseased trees. We hypothesize that the detailed pruned blocks will continue to decline in yield while non-pruned blocks could have a slight increase in yield for a period before declining rapidly. We also predict that severely cut and regenerated trees will take several years to bring back into production.

Treatments were arranged in a randomized complete block design. Each treatment consisted of 4 blocks (replicates) containing a group of 9 trees, (8 Ennis and 1 Butler). Each set of 9 trees was composed of 3 consecutive trees in a row and in 3 consecutive rows. The former non-treated trees were cut one foot above the ground on 15 Feb 16. The former Bravo (chlorothalonil) only blocks were left non-pruned to let the disease take its natural course. The former Best Management Program (BMP) blocks were detailed pruned from 3 to 13 Jan cutting all EFB cankers 1 to 3 feet below symptomatic tissue. The number and length of cankers removed was not determined. The entire 1 acre block of trees was treated with an application of Bravo Weather Stik (64 fl oz/A) on 14 Mar (bud break), then Gem 500 SC (2 fl oz/A) plus Equus DF (1.8 lb/A) on 28 Mar, then Tilt EC (8 fl oz/A) plus Equus DF (1.8 lb/A) on 11 Apr, then Cabrio EG (5 oz/A) plus Equus DF (1.8 lb/A) on 25 Apr. Fungicides were applied using a Rear’s air blast sprayer at a rate of 100 gal water/A. Suckers were cut by hand on 5 Jul and 28 Aug. Weeds were sprayed with Rely 280 (3.5 pt/A) on 15 May, spot sprayed with Rely 280 (1.8 fl oz/gal) on 6 Jul and Rely 280 (3.5 pt/A) plus Makaze (32 fl oz/A) on 11 Aug. Asana XL (16 fl oz/A) was applied on 10 Jul for filbert worm management. There was no supplemental irrigation applied this year. The orchard was fertilized with 46-0-0 at 120 lb/A on 19 Apr. The orchard floor was “floated” on 29 Aug to remove dead weeds and blanks. Plots were harvested on 10 Oct by raking nuts into windrows, then placed in wooden tote boxes using a Flory Hazelnut Harvester. The harvester was designed to allow soil and dirt to fall between conveyor belt chains and to blow or suck away leaves, husks and some blank nuts. Nuts were then conveyed into large wooden bins and weighed using a Vishay Celtron model Digital Summit 3000 scale.

Spring weather conditions for 2017 were considered cool and wet but with more normal plant growth relative to time of year. The severely cut trees produced many sucker shoots in 2016 where 4 to 6 were selected during the 2016-2017 dormant season for continued growth. Although a handful of nuts were produced in 2017 they were not harvested. Catkins were observed to form on these shoots in the fall of 2017. Field run nut weight was 0, 34.1 and 34.6 lb/tree for the severely pruned, detailed pruned and non-pruned treatments, respectively. Yield data, however, were normalized for moisture content to make year to year comparisons. Average dry weight yield per tree decreased for all but severely pruned trees (Table 1 and Figure 1) but was not significantly different between the non-pruned and detailed pruned treatments. The change in yield from 2016 to 2017 was also not significantly different between the non-pruned and detailed pruned treatments (excluding the severely pruned treatment).

Table 1. Pruning treatments and clean dry weight yield for 2016 and 2017.

Treatment	Ave Yield/Tree 2016* (lbs)	Ave Yield/Tree 2017* (lbs)	Ave. change from 16 to 17* (%)
Severely pruned.....	0.0	0.0	0.0
Detailed pruned.....	25.5 a	24.3 a	- 5.0 a
Non-pruned.....	27.8 a	24.7 a	- 12.3 a

* Means followed by the same letter do not differ significantly based on Fisher's protected LSD ($P=0.05$). Data for severely pruned trees was not analyzed.

Figure 1. Clean and dry weight yield per tree from 2012 to 2017. All trees were treated with the same fungicide program in 2016 and 2017. The former non-treated trees (square symbols) were severely cut one foot above the ground in Feb 2016. The former Bravo only blocks (diamond symbols before 2016, circle symbols after) were left non-pruned to let the disease take its natural course. The former Best Management Program blocks (diamond symbols before and after 2016) were detailed pruned Feb 2016 and Jan 2017 cutting all EFB cankers 1 to 3 feet below symptomatic tissue.

