

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

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Whole orchard evaluation of fungicides for control of eastern filbert blight 2006.

The goal of this trial is to evaluate fungicides for EFB control and yield protection on mature, commercial sized hazelnut trees (rather than 2 to 3 year old transplants). A 1 acre block of Ennis hazelnuts with Butler pollenizers (every 3rd tree in every 3rd row) planted in 1986 was selected at the Botany and Plant Pathology Field Laboratory. Trees had been planted on a 10 X 20 foot spacing but every other tree was removed in Dec 99 for a final spacing of 20 X 20 feet. This block was selected since it had been sprayed 2 to 3 times each year with chlorothalonil since 2000 for EFB before any known infections had occurred. EFB cankers discovered during the 2004 growing season in a nearby block planted at the same time with identical stock indicate that these trees have been exposed to ascospores each year since 2001 or 2002. In the spring of 2004, a fungicide trial was established in this block. 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. Fungicide treatments consisted of nontreated trees, trees treated with 3 applications of Bravo Weather Stik at 32 fl oz/100 gal water, and trees treated with the Best Management Practice. For 2006, the best management practice consisted of an application of Bravo Weather Stik (32 fl oz/100 gal water) at bud break, then Flint 50 WG (2 oz/100 gal water) 2 weeks after bud break, then Orbit (8 fl oz/100 gal water) 4 weeks after bud break, and then Cabrio EG at (4.3 fl oz/100 gal water) plus the surfactant Break-Thru (at 4 oz/100 gal) 6 weeks after bud break. Past fungicide treatments can be found in Table 1. Fungicides were applied using a hydraulic handgun sprayer at 150 psi and at a rate of 150 gal water/A. Approximately 20 gal of a spray suspension were applied per set of 9 trees. Fungicide treatments were applied on 11 Mar (bud break), 23 Mar, 6 Apr, and 19 Apr. Weeds were controlled with Roundup UltraMax (1.5 qt/A) plus Oryzalin 4 AS (2 qt/A) on 1 Mar 06, Buccaneer Plus (1 qt/A) plus GoalTender (3qt/A) on 31 May 06, and Roundup Ultra Max (3 qt/A) on the 27 Jul 06. Rely (60 and 58 oz/A) was applied on 11 May and 17 Aug 06 for sucker control. Sulforix (3 gal/A) was applied on 28 Apr 06 for control of big bud mite. Asana XL (16 oz/A) was applied on 5 and 20 Jul for filbert worm control. Individual trees were scouted for EFB cankers with the aid of ladders and a Tree Squirrel from 15 Dec 05 to 5 Jan 06. Scouting for flagging branches or cankers was also accomplished during the 2006 summer growing season. Trees were pruned on 2 Feb to allow equipment movement down rows. Plots were harvested on 12 Oct 06 by raking or blowing 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.

Cankers of eastern filbert blight have not yet been observed in this block. Cankers were found in a nearby block of identical trees during the summer of 2004, again in 2005 and even more cankers in 2006. Average yield per tree was higher for 2006 and was not significantly different among the various treatments (Table 2). Also, average change in yield per tree from 2005 to 2006 was not significantly different among the various treatments. Nuts had 15.2% moisture and thus yield presented in this report have been adjusted to the clean dry weight.

Table 1. Best Management Practice used each year.

Year	Best Management Practice
2004	Bravo Weather Stik at 32 fl oz/100 gal then Flint 50 WG at 1 oz/100 gal then Orbit 4 fl oz/100 gal (1 application each)
2005	Bravo Weather Stik at 32 fl oz/100 gal then Flint 50 WG at 2 oz/100 gal then Orbit 4 fl oz/100 gal then Cabrio at 4.3 oz/100 gal (1 application each)
2006	Bravo Weather Stik at 32 fl oz/100 gal then Flint 50 WG at 4 oz/A then Orbit 8 fl oz/A then Cabrio at 9.5/A plus Break-Thru at 4 oz/100 gal (1 application each)

Table 2. Fungicide treatments and clean dry weight yield for 2005 and 2006.

Treatment	Ave Yield/Tree 2005* (lbs)	Ave Yield/Tree 2006* (lbs)	Ave. change from 05 to 06* (%)
Nontreated	28.5	38.9	+36.9
Bravo Weather Stik (3 applications).....	27.7	37.6	+36.7
Best Management Practice.....	28.9	38.0	+28.1

*Means without letters are not significantly different.

Hazelnut mean yield from 2004-2006

