

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

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### **Evaluation of fungicide programs for control of eastern filbert blight, 2003 - 2004.**

(Note: This is an identical report submitted last year but now with the additional shoot length information that became available after publication.)

Healthy appearing two-year-old 'Ennis' hazelnut trees were planted on 17 and 21 Jan 03 at the North Willamette Research and Extension Center, Aurora, OR. Limbs with EFB cankers were cut from a heavily diseased 'Ennis' orchard near Keiser, OR on 20 Nov 02. A total of 500 cankered limbs were placed on top of chicken wire supported by a 6 wire horizontal trellis above test trees on 27 Feb 03. Treatments were arranged in a randomized complete block design. Each treatment consisted of 6 single tree replicates. Fungicide suspensions were applied on two sides of the tree to runoff with a backpack sprayer equipped with a hand wand. Approximately 0.6 gal of a spray suspension was used per 6 trees. Fungicide treatments were applied on 17 Mar 03 (bud break), 31 Mar 03 and 14 Apr 03 for a total of 3 applications. Roundup at 3 gal/100 gal water was used between trees to control weeds on 13 Feb 03 and 20 May 03. Trees were fertilized with a 16-16-16 at a rate of 2 lb/6 trees on 20 May 03. Supplemental irrigation was provided as needed during the 2003 growing season. The number of EFB cankers and total length of all cankers/tree was determined on 20 to 22 July 04. Shoot length was determined on 18 Nov 04 by measuring only the growth that occurred during the 2003 growing season (from bud scar to bud scar).

Statistical analysis indicated a high variation among the various treatments. A comparison of Orbit treated trees in this trial with Orbit treated trees in another trial in the same, adjacent location indicated that an additional (4<sup>th</sup>) application of fungicide may have been needed in this trial. This may account for the unusually high variation seen in this data set. The number of cankers on trees treated with Orbit alone, Bravo/Flint/Procure, Bravo/Orbit/Orbit, Bravo/Procure/Procure, or Flint/Procure/Procure was not significantly different than the number of cankers on nontreated trees. Although the combination of Bravo at bud break followed by Procure 2 weeks later and Flint 4 weeks after bud break resulted in trees with the fewest cankers, the number of cankers on trees treated with many other fungicide combinations was not significantly different. Most trends in the data are off set by various treatments. For example, trees treated with programs containing Procure tended to have more cankers than programs without Procure, except the treatment program with the fewest cankers used Procure. Shoot length information is also inconclusive. The only trees with significantly shorter shoots than nontreated trees were those with first with Bravo, then Flint and finally Procure. The other treatment combinations indicate that this may be an aberration due to high tree to tree variability. Additional testing is needed to come to any firm conclusions. Programs that contain 4 applications are recommended.

Treatment and Rate/100 gal water	Application Timing**	Ave Number of Cankers/Tree*	Total Canker Length/Tree* (cm)	Shoot Length (cm)
Nontreated .....	None	4.5 a	83.3 a	28.2 abcd
Bravo Weather Stik at 32 fl oz.....	All	0.6 de	7.9 bc	22.1 cde
Orbit 2.5 fl oz .....	All	2.4 abc	30.7 ab	33.0 ab
Bravo Weather Stik at 32 fl oz then Flint 50 WG at 1 oz then Orbit 2.5 fl oz .....	Bud Break 2 wks later 4 wks later..	1.2 bcde	13.6 bc	33.0 ab
Bravo Weather Stik at 32 fl oz then Flint 50 WG at 1 oz then Procure 50 WS at 3 oz .....	BB 2 wks 4 wks.....	2.2 abcd	28.9 ab	17.5 e
Bravo Weather Stik at 32 fl oz then Orbit 2.5 fl oz .....	BB & 2 wks 4 wks.....	0.9 bcde	13.1 bc	28.4 abcd
Bravo Weather Stik at 32 fl oz then Orbit 2.5 fl oz .....	BB 2 & 4 wks...	1.7 abcde	20.8 abc	29.5 abcd
Bravo Weather Stik at 32 fl oz then Procure 50 WS at 3 oz .....	BB 2 & 4 wks...	2.7 ab	23.3 abc	35.8 a
Bravo Weather Stik at 32 fl oz then Flint 50 WG at 1 oz .....	BB 2 & 4 wks...	1.4 bcde	10.7 bc	30.7 abc
Bravo Weather Stik at 32 fl oz then Procure 50 WS at 4 oz then Flint 50 WG at 1 oz .....	BB 2 wks 4 wks.....	0.4 e	4.9 c	26.7 abcde
Flint 50 WG at 1 oz then Orbit 2.5 fl oz .....	BB 2 & 4 wks...	0.7 cde	6.0 bc	27.4 abcde
Flint 50 WG at 1 oz then Procure 50 WS at 4 oz .....	BB 2 & 4 wks...	2.2 abcd	17.2 bc	20.6 de
Flint 50 WG at 1 oz then Orbit 2.5 fl oz .....	BB & 2 wks 4 wks.....	0.9 bcde	6.7 bc	32.0 abc
Orbit 2.5 fl oz then Bravo Weather Stik at 32 fl oz...	BB & 2 wks 4 wks.....	1.6 bcde	14.1 bc	24.6 bcde
Orbit 2.5 fl oz then Bravo Weather Stik at 32 fl oz...	BB 2 & 4 wks...	0.6 de	7.5 bc	24.6 bcde

\* Analysis of variance is based on log<sub>10</sub> (x+1) transformation. Values presented are detransformed means. Means followed by the same letter do not differ significantly based on Fisher's protected LSD (P=0.05).

\*\* Fungicide treatments were applied on BB = Bud Break (17 Mar 03), 2 wks = 2 weeks after bud break (31 Mar 03), and 4 wks = 4 weeks after bud break (14 Apr 03).