

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

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Evaluation of fungicide tank mixes for control of eastern filbert blight, 2010 - 2011.

Healthy appearing two-year-old 'Ennis' hazelnut trees were planted on 21 Jan 10 to 3 Feb 10 at the Botany and Plant Pathology Field Laboratory, Corvallis, OR. Limbs with EFB cankers were cut from a heavily diseased 'Ennis' orchard near Keizer, OR from 30 Nov 09 to 4 Dec 09. A total of 400 cankered limbs were placed above test trees on chicken wire, supported by a 6 wire horizontal trellis, on 23 Feb 10 and 2 Mar 10. Treatments were arranged in a randomized complete block design. Each treatment consisted of 6 single tree replicates. Fungicides were applied to trees from two directions until runoff using a Solo-Pump-Style backpack sprayer. Approximately 0.2 gal of a spray suspension was used per 6 trees within each treatment. Fungicide treatments were applied on 14 Mar 10 (bud break), 26 Mar 10, 7 Apr 10, and 21 Apr 10 for a total of 4 applications. Sucker shoots were sprayed using Rely (60 oz/A) on 14 May 10 and 9 Jul 10. Rely (60 oz/A) and Roundup (120 oz/A) plus surfactant was applied to control weeds between trees on 23 Apr 10 and 31 Aug 10. Rely (60 oz/A) and Maddog plus surfactant was applied to control weeds between trees on 6 May 10 and 26 Jul 10. Preen (6 lb/1,000 sq ft, with fertilizer 9-17-9) was used on 30 Apr 10. Trees were fertilized with 29-5-5 at a rate of 1 lb/8 trees on 19 Jul 10. Supplemental irrigation was provided as needed during the 2010 growing season. Plant growth regulation effects on shoots and phytotoxicity were evaluated on 23 Apr 10 and 24 May 10 where 0 = no effect, 1 = slight effect that is not obvious, 2 = obvious darker green leaves and shortened internodes, 3 = Deep green leaves and shortened shoots but no necrosis, 4 = intense symptoms with marginal burning, leaf necrosis and/or possible dead shoots. The number of EFB cankers on the main tree trunk and total length of these cankers/tree was determined on 19 Aug 11.

Nontreated trees had significantly more cankers than any of the various fungicide treated trees. There were no significant differences among any of the various fungicide tank mix treatments. Orbit treated trees had elevated plant growth regulation (PGR) effects. After 4 years of similar data, tank mixes of Orbit plus Bravo or Strobilurins (such as Flint or Carbrio) plus Bravo are as effective at half rates as full rates. For tank mixes we recommend that DMI's (group 3) such as Orbit remain at full rates while tank mixing with a half rate of Bravo. We recommend that strobilurins (group 11) such as Flint or Cabrio could be used at half rates while tank mixing with half rates of Bravo.

Treatment and Rate/100 gal water	Ave Number of Cankers/Tree*	Total Canker Length/Tree* (cm)	Growth Regulation Effect and/or phytotoxicity**	
			23 April	24 May
Nontreated	3.3 a	155.7	0.3 c	0.0
Bravo Weather Stik at 32 fl oz plus Orbit 3.6 EC at 4 fl oz	0.7 b	13.5	1.8 ab	0.0
Bravo Weather Stik at 32 fl oz plus Orbit 3.6 EC at 2 fl oz	1.0 b	18.7	2.2 a	0.0
Bravo Weather Stik at 16 fl oz plus Orbit 3.6 EC at 4 fl oz	0.5 b	10.3	2.0 ab	0.2
Bravo Weather Stik at 16 fl oz plus Orbit 3.6 EC at 2 fl oz	1.5 b	28.2	1.3 b	0.2
Bravo Weather Stik at 32 fl oz plus Cabrio 20 EG at 4.75 oz	0.8 b	13.0	0.0 c	0.0
Bravo Weather Stik at 16 fl oz plus Cabrio 20 EG at 4.75 oz	1.2 b	35.7	0.2 c	0.0
Bravo Weather Stik at 32 fl oz plus Cabrio 20 EG at 2.4 oz	1.2 b	27.5	0.0 c	0.0
Bravo Weather Stik at 16 fl oz plus Cabrio 20 EG at 2.4 oz	1.5 b	33.5	0.0 c	0.0

* Analysis of variance is based on log₁₀ (x+1) transformation. Means followed by the same letter do not differ significantly based on Fisher's protected LSD (P=0.05). Means without letter do not differ significantly.

** Plant growth regulation effects of shoots where 0 = no effect, 1 = slight effect that is not obvious, 2 = obvious darker green leaves and shortened internodes, 3 = Deep green leaves and shortened shoots but no necrosis, 4 = intense symptoms with marginal burning, leaf necrosis and/or possible dead shoots.