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

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Evaluation of fungicides for control of eastern filbert blight, 2003 - 2004.

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 8 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 0.8 gal of a spray suspension was used per 8 trees. Fungicide treatments were applied on 17 Mar 03 (bud break), 31 Mar 03, 14 Apr 03, and 28 Apr 03 for a total of 4 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 and 2004 growing seasons. The number of EFB cankers and total length of all cankers/tree was determined on 20-22 July 04.

A PVC trough spore trap was placed in the site on 27 Feb 03. The spore trap consisted of a 2.3 meter long 1/2 inch PVC pipe split in half lengthwise, supported by 2 metal posts, and angled at 20 degrees to drain into a covered 16 liter collection bucket. Each bucket contained 200 ml of 50% copper sulfate v/v as a spore preservative and germination inhibitor. Rainwater from the traps was collected on 17 and 31 Mar 03, 14 and 28 Apr 03, 12 May 03 by swirling the contents and pouring into a volumetric cylinder to measure the total volume of rainwater collected. Approximately 500 ml of the rainwater was collected for laboratory analysis and the copper sulfate solution was replenished after each collection. The rainwater was filtered first through a 20 um sieve then through a cellulose nitrate filter with 0.8 um pore size. This filter paper was placed on a microscope slide, stained with 0.05% (v/v) trypan blue in lactoglycerine. The number of ascospores on filters was then determined using a light microscope at 400X and used to calculate the number of ascospores collected per M^2 of trap surface. Rainfall during the spore trapping periods were as follows: 4.67 in from 27 Feb 03 to 17 Mar 03, 2.6 in from 17 Mar 03 to 31 Mar 03, 3.29 in from 31 Mar 03 to 14 Apr 03, 2.31 in from 14 Apr 03 to 28 Apr 03 and 1.52 in from 28 Apr 03 to 20 May 03.

Spore counts seemed consistent through the spring shoot growth period and began declining during May (Fig 1). The number of cankers on trees treated with Rovral, Elevate, or Endura was not significantly different than the number of cankers found on nontreated trees. No cankers were found on trees treated with Stratego, however, the number of cankers found on trees treated with Bravo, Captan, Procure (3 oz/100 rate), Orbit, Cabrio, or Pristine was not significantly different. In general, the *Botyrtis* control materials such as Rovral, Elevate, Switch and Endura did not control EFB as well as current grower standards such as Bravo. There was no significant difference in the number of cankers found among trees treated with different rates of the same fungicide such as for Procure, Orbit or Flint. Flint did not seem to control EFB as well this year as it had in preceding years. The pre-mix combination of Stratego (which included propiconazole (Orbit-like) and trifloxystrobin (Flint)) indicates that tank mixes should be investigated in future trials. It appears that only the strobilurin material in Pristine (pyraclostrobin known as Cabrio) is effective against EFB rather than the other chemistry in the mix (boscalid known as Endura). Based on this result, it is recommended only to use Cabrio rather than Pristine for control of EFB.

Treatment and Rate/100 gal water	Ave Number of Cankers/Tree*		Total Canker Length/Tree* (cm)	
Nontreated ……...……...…	5.9	a	133.2	a
Bravo Weather Stik at 32 fl oz……	0.1	fg	3.2	fg
Captan 50 WP at 4 lb……	0.5	efg	16.2	efg
Rovral 50 WP at 1 lb…….	5.5	a	140.8	a
Elevate 50 WDG at 0.75 lb……	5.3	a	126.8	a
Switch at 10 oz……...	3.1	bc	61.0	bc
Elite 45 DF at 2 oz…….……	2.5	cd	51.4	cd
Procure 50 WS at 2 oz……...……	1.5	cde	26.8	cde
Procure 50 WS at 3 oz……..……	0.5	efg	9.8	efg
Procure 50 WS at 4 oz……...……	1.0	def	16.8	def
Orbit at 1 fl oz ……..	0.9	efg	12.5	efg
Orbit at 2.5 fl oz …….……..	0.3	fg	2.5	fg
Flint 50 WG at 0.5 oz ……	1.0	def	21.9	def
Flint 50 WG at 1 oz ……...……	1.4	de	24.1	cde
Stratego 250 EC at 5 fl oz…….	0.0	g	0.0	g
Cabrio (BAS 500) at 0.3 lb……	0.8	efg	14.3	def
Endura (BAS 510) at 0.175 lb ai……	4.9	ab	111.9	ab
Pristine 38 WG (BAS 516) 0.46 lb …..….	0.1	fg	2.9	fg

* Analysis of variance is based on log10 (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).