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

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EVALUATION OF FUNGICIDES FOR CONTROL OF EASTERN FILBERT BLIGHT, 2001 - 2002. Healthy two-year-old 'Royal' hazelnut trees were planted on 2 and 5 Feb 01 at the North Willamette Research and Extension Center, Aurora, OR. Limbs with EFB cankers were cut from a heavily diseased 'Bacellona' orchard near North Plains, OR on 21 Feb 01 and from an 'Ennis' orchard near Keiser, OR on 14 Mar 01. A total of 300 cankered limbs were placed on top of chicken wire supported by a 6 wire horizontal trellis above test trees on 21 Feb 01 and 14 Mar 01. Treatments were arranged in a randomized complete block design. Each treatment consisted of 9 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 1.5 gal of a spray suspension was used per 9 trees. Fungicide treatments were applied on 23 Mar 01 (bud break), 5 Apr 01, 19 Apr 01, and 2 May 01. Roundup at 2 gal/100 gal water was used between trees to control weeds on 25 Apr 01. Sawdust mulch was placed around the base of each tree on 18 May 01. Trees were also painted with at 50% solution of white latex paint on 25 Apr 01 on the southwest side of the trunk to prevent summer sunburn. Supplemental irrigation was provided as needed during the 2001 and 2002 growing seasons. The number and length of shoots on nontreated and Messenger treated trees was determined on 18 Dec 01. The number of EFB cankers and total length of all cankers/tree was determined on 10 July 02.

A PVC trough spore trap was placed in the site on 14 Mar 01. 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 23 Mar 01, 4 and 18 Apr 01, 2 and 18 May 01 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: 0.86 in from 14 Mar 01 to 23 Mar 01, 2.3 in from 23 Mar 01 to 4 Apr 01, 1.08 in from 4 Apr 01 to 18 Apr 01, 1.05 in from 18 Apr 01 to 2 May 01 and 0.96 in from 2 May 01 to 18 May 01.

Spore counts were as high or higher than in previous years when the trial was located next to heavily infected orchards (Fig 1). The number of cankers that developed on trees treated with Folicure, Lime Sulfur, Messenger or The Silver Bullet were not significantly different from the number of cankers that developed on nontreated trees (Table 1). Trees treated with the dry flowable form of Echo had the fewest cankers but the number of cankers on trees treated with Bravo, Echo 720, Elite, Flint, Ziram or Syllit were not significantly different. Trees treated with Bordeaux, Abound or any rate of Procure had significantly fewer cankers than nontreated trees but significantly more than trees treated with Echo 90 DF. As is typical, data on canker length reflects the canker number data. One minor difference, canker length on trees treated with the lower rate of Procure was not significantly different from trees treated with Echo 90 DF. None of the fungicide treated trees showed any phytotoxicity during the first growing season. The average shoot length on trees treated with Messenger was not significantly different from those on nontreated trees (Table 2).

Table 1. EFB cankers on fungicide treated trees.

Treatment and Rate/100 gal water	Ave Number of Cankers/Tree*		Total Canker Length/Tree* (cm)	
Nontreated ……...……...……...	6.1	a	106.7	a
Bravo Weather Stik at 32 fl oz……	0.6	de	8.9	ef
Echo 720 at 32 fl oz ……	0.7	de	9.5	def
Echo 90 DF 0.81lb……	0.2	e	2.1	f
Elite 45 DF at 2 oz…….……..	1.2	cde	14.0	de
Folicure 3.6 F at 2 oz…...…….	3.7	ab	50.0	ab
Procure 50 WS at 2 oz……..	1.6	cd	18.7	def
Procure 50 WS at 3 oz……..	1.8	cd	19.0	cde
Procure 50 WS at 4 oz…….	2.0	c	22.4	cd
Abound 2.08 F at 3 fl oz……..…….....	2.2	bc	43.1	bc
Flint 50 WG at 1 oz ……	0.6	de	8.3	def
Ziram 76 DF at 1.5 lb ……...	0.7	de	13.5	def
Syllit 65 WP 2 lb……...	0.4	de	5.0	def
Lime Sulfur (29%) at 32 oz ……	3.8	ab	71.8	ab
Bordeaux 6-6-100 (copper sulfate 6 lb + spray lime 6 lb)…..…	1.6	cd	23.7	cd
Messenger 8 oz ……	5.2	a	96.2	ab
Silver Bullet at 15.7 gal…….……..	4.3	a	72.7	ab

* 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).

Table 2. Shoot length on Messenger treated trees.

Treatment and Rate/100 gal water	Average Shoot Length after one growing season* (Inches)
Nontreated ……...……...……...	1.75
Messenger 8 oz ……	1.85

* Means were not significantly different based on a 2-tailed Student's T-test (P = 0.77).