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

J.W. Pscheidt and S. A. Cluskey
Dept. of Botany and Plant Pathology
Oregon State University
Corvallis, OR 97331-2903

A Forecasting model (GrammaCast) for fungicide application for control of eastern filbert blight, 2006 - 2007.

A model called GrammaCast was developed to help decide when to deploy fungicides. Healthy appearing 2-year-old 'Ennis' hazelnut trees were planted on 6 Feb 06 near EFB diseased hazelnuts used in past fungicide trials at the North Willamette Research and Extension Center, Aurora, OR. Treatments were arranged in a randomized complete block design with each treatment replicated on 4 sets of 5 trees (total of 20 trees per treatment). Fungicides were applied to trees from two directions until runoff using a Solo-Pump-Style backpack sprayer. Approximately 1 gal of a spray suspension was applied per 20 trees. Bravo Weather Stik was applied at 32 fl oz/100 gal water on 18 Mar 06 (bud break), 30 Mar 06 and/or 13 Apr 06 depending on the treatment. Applications of Orbit 3.6 EC (2.5 fl oz/100 gal water) were based on GrammaCast models whereby fungicides were applied if branch wetness lasted more than 20 hours. Applications of Orbit were made on 28 Mar 06 and 18 Apr 06. Branch wetness due to rain was monitored using an Adcon A730 weather station equipped with standard leaf wetness sensors and customized hazelnut branch wetness sensors. The customized branch wetness sensors consisted of two wires in parallel coils wound around a 0.5 inch diameter hazelnut branch. The amount of current running from one coil to the other is directly related to the amount of moisture on the branch surface. Branch wetness due to dew periods was not considered. During early shoot growth there were 2 wet periods, initiated by rain, that were 20 hours or longer. These wet periods occurred on 23 Mar 06 and 13 Apr 06. Roundup ULTRAMAX (2% solution) was applied to control weeds between trees on 28 Mar 06 and 5 May 06. Trees were fertilized with Urea (46-0-0) at a rate of 1 lb/8 trees on 22 May 06. Supplemental irrigation was provided as needed during the 2006 growing season. The number of diseased trees, cankers per tree and total canker length was determined on 23 Jul 07.

Spore counts were low during the March and April but began to rise during May. It is unknown why canker numbers were low on most trees. Unlike adjacent plots, this trial did not have cankered limbs positioned directly above test trees. There were no significant differences among the various treatments including the non-treated control. Few if any conclusions can be drawn from this data set. This represents the last data set for the forecasting research. Ultimately the strategy did not improve the efficiency of deploying fungicides over a regular calendar based program.

Treatment and Rate /100 gal water	Application Timing	Number of Applications	Disease Incidence[1,2] (%)	Ave Number of Cankers/Tree[1,3]	Total Canker Length[1,3] (cm)
Nontreated..................………	None…………..	0	30	0.4	8.6
Bravo Weather Stik 32 fl oz	18 Mar (BB) only	1	30	0.5	12.7
Bravo Weather Stik 32 fl oz then	18 Mar…………	1			
Orbit EC 2.5 fl oz after a wetness period of >20 hours	28 Mar and 18 Apr ……...	2	15	0.2	5.6
Orbit EC 2.5 fl oz after a wetness period of >20 hours	28 Mar and 18 Apr ……...	2	30	0.4	9.9
Bravo Weather Stik 32 fl oz every 2 weeks …………….	18 and 30 Mar and 13 Apr..........	3	25	0.4	9.7
Bravo Weather Stik 32 fl oz every 2 weeks AND	18 and 30 Mar and 13 Apr..........	3			
Orbit EC 2.5 fl oz after a wetness period of >20 hours	28 Mar and 18 Apr ……...	2	30	0.4	6.6
Orbit EC 2.5 fl oz after a wetness period of >20 hours any time after bud break….....	28 Mar and 18 Apr ……...	2	10	0.1	1.8

[1] Means followed by the same letter do not differ significantly based on Fisher's protected LSD (P=0.05). Means without any letters did not differ significantly.

[2] Analysis of variance is based on arcsin (square root (x)) transformation. Values presented are detransformed means.

[3] Analysis of variance is based on log10 (x+1) transformation. Values presented are detransformed means.