

HAZELNUT (*Corylus avellana* 'Ennis' and 'Barcelona')  
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

FALL INJECTION OF FUNGICIDES FOR POSSIBLE THERAPEUTIC MANAGEMENT OF EASTERN FILBERT BLIGHT, 1999 - 2000: Our objective was to determine if fall injection of fungicides into hazelnut trees could limit or reduce EFB canker extension. All trees were injected using the Sidewinder Tree Injector (Backpack Unit, P.O. Box 1111, 2/8 Project Ave., Noosaville, Queensland, 4566, Australia). A commercial block of moderately diseased 'Ennis' trees planted in 1991 on a 15 x 17 ft spacing near Keizer, OR was selected for injection. Treatments were arranged in a randomized complete block design with 6 single tree replications. Trees were assigned to blocks based on similarity in overall size, trunk diameter, trunk health and number of EFB cankers found in the canopy. Each tree was injected with 5 ml water or 5 ml of undiluted Orbit EC or a 1% dilution of Folicure 3.6 F per injection site on 23-28 Sep 99. A total of 5-6 injections were made around the base of each tree approximately 2-3 inches from each other with special focus on root flare areas. A pressure of approximately 90 psi was maintained until the entire 5 ml volume was delivered (which ranged from 10 to 15 minutes per injection site). Each injection hole was then filled with a threaded plastic plug. Trees were observed for phytotoxicity until 100% leaf fall and during the following growing season. A total of 10 EFB cankers per tree were marked and examined for length of EFB cankers prior to the 2000 growing season. Distal and basipetal current season elongation was determined on 20-21 Jul 00.

A similar trial using the same treatments was conducted in a commercial block of moderately diseased 'Barcelona' trees planted in 1984 on a 20 x 20 ft spacing near Banks, OR. Treatments were arranged in a randomized complete block design with 4 single tree replications. Each tree was injected with 5 ml water or 5 ml of a 10% dilution of Orbit EC or a 10% dilution of Folicure 3.6 F per injection site on 23-28 Sep 99. A pressure of approximately 90 psi was maintained until the entire 5 ml volume was delivered (which ranged from 20 to 25 minutes per injection site). A total of 10 EFB cankers per tree were marked with red paint on 16 Dec 98 for examination later during the following summer. A total of 10 EFB cankers per tree were marked and examined for length of EFB cankers prior to the 2000 growing season. Distal and basipetal current season elongation was determined on 24 Jul 00.

Water injections were fairly quick while the fungicides took about 10-25 min/injection site. Injection times for Orbit solutions were generally faster. No phytotoxicity was observed on the leaves or at the injection holes of any injected tree at either site during the fall or dormant season. However, both Ennis and Barcelona trees injected with Orbit showed oozing around the injection site during the 2000 growing season. This oozing is characteristic of substantial cambial damage or death near the injection site. No significant difference in original canker length was detected in either set of trees indicating a uniform group of cankers used for comparison. Cankers on Ennis trees expanded from 212 to 237% while cankers on Barcelona trees expanded from 152 to 199%. Canker expansion on fungicide injected trees was not significantly different from cankers on water treated trees in either trial location. Due to lack of EFB control it does not appear that late fall injections of fungicides will be of any benefit for the management of EFB.

Acknowledgements: We would like to thank Ron Chapin and Bob Josey for use of their orchards.

Table 1. Canker development on Ennis trees injected with fungicides.

Injection Treatment	Original Average Canker Length* (inches)	Final Average Canker Length* (inches)	Average Length of distal expansion		Average Length of basipetal expansion		Total Average Canker Expansion* (%)
			Inches*	%*	Inches*	%*	
Water Control.....	8.1	22.5	7.1	101	7.3	109	212
Undiluted Orbit EC.	7.3	20.0	6.4	107	6.4	107	213
1% Folicure 3.6 F...	6.8	19.9	6.4	119	6.7	118	237

\*Means were not significantly different based on Fisher's protected LSD (P=0.05).

Table 2. Canker development on Barcelona trees injected with fungicides.

Injection Treatment	Original Average Canker Length* (inches)	Final Average Canker Length* (inches)	Average Length of distal expansion		Average Length of basipetal expansion		Total Average Canker Expansion* (%)
			Inches*	%*	Inches*	%*	
Water Control.....	8.4	21.1	6.4	100	6.4	99	199
10% Orbit EC.....	8.5	18.5	4.7	67	5.4	84	152
10% Folicure 3.6 F..	9.3	20.1	5.1	82	5.7	99	182

\*Means were not significantly different based on Fisher's protected LSD (P=0.05).