

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

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Risk of using chipped, eastern filbert blight infected hazelnut trees as mulch around new trees, 2005 - 2006.

Growers are concerned about restrictive regulations for burning EFB infected branches. They would like to chip infected branches but leave the biomass spread throughout the orchard. We have found that canker pieces with intact stroma do survive the chipping process and produce spores when wetted. This study was initiated to determine the risk of using wood chips generated from EFB infected wood around new plantings.

Large 4 or 5 year old infected Royal and Ennis hazelnut trees with Eastern Filbert Blight were ground into small wood chips using a Vermeer Model 625 chipper on 23 Feb 05. Only branches with EFB cankers were ground into wood chips. Wood chips were placed in an empty, fallow field located at the North Willamette Research and Extension Center, Aurora, OR. Wood chips were examined for the presence of intact EFB cankers, stroma and ascospores. Nearest infected commercial hazelnut orchard was 0.5 miles to the southwest. Infected research trees were located 1,000 ft to the north of this field. Wood chips were spread out into a 20 x 20 ft area at a depth of 2 inches. Healthy 2 yr-old Ennis trees were planted into and outside of the mulched area on 3 and 7 Mar 05. From the center of the mulched area, pairs of trees were planted in straight lines to the north, east, south and west (Figure 1). The first 9 pairs of trees in a line were planted 3 ft apart while the next 5 pairs were planted 6 ft apart. No fungicides were applied to trees during the 2005 spring infection period. Trees were fertilized with Urea (46-0-0) at a rate of 2 lb/6 trees on 3 May 05. Supplemental irrigation was provided as needed during the 2005 growing season. Roundup ULTRAMAX (3% solution) was applied to control weeds between trees on 6 Jul 05. The number of EFB cankers on the main tree trunk and total length of these cankers/tree was determined on 26 Jul 06.

A PVC trough spore trap was used in the wood chip (mulched) area starting on 16 Mar 05 and another one was placed outside of the mulched area on the west side. Spore traps 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 26 Apr 05, 25 May 05 and 27 Jun 05 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 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 determined using a light microscope at 400X.

Although cankers were effectively broken up by the chipping machine, wood chips contained many intact EFB stroma along with ascospores of the fungus. The trap out side of the mulched area collected the most ascospores during the initial spring growth period (figure 2). Although spore traps were not replicated it appears that there are few differences in the number of spores within or outside of the mulched area. The incidence of infected trees within the mulched area averaged 21.9% while the incidence was 27.5% next to the mulched area (including trees up to 12 ft away). Non-mulched trees (those anywhere from 18 to 42 ft away) averaged 25% incidence. The incidence of infection did not significantly increase when trees were located within or next to the mulched area (Fig 3).

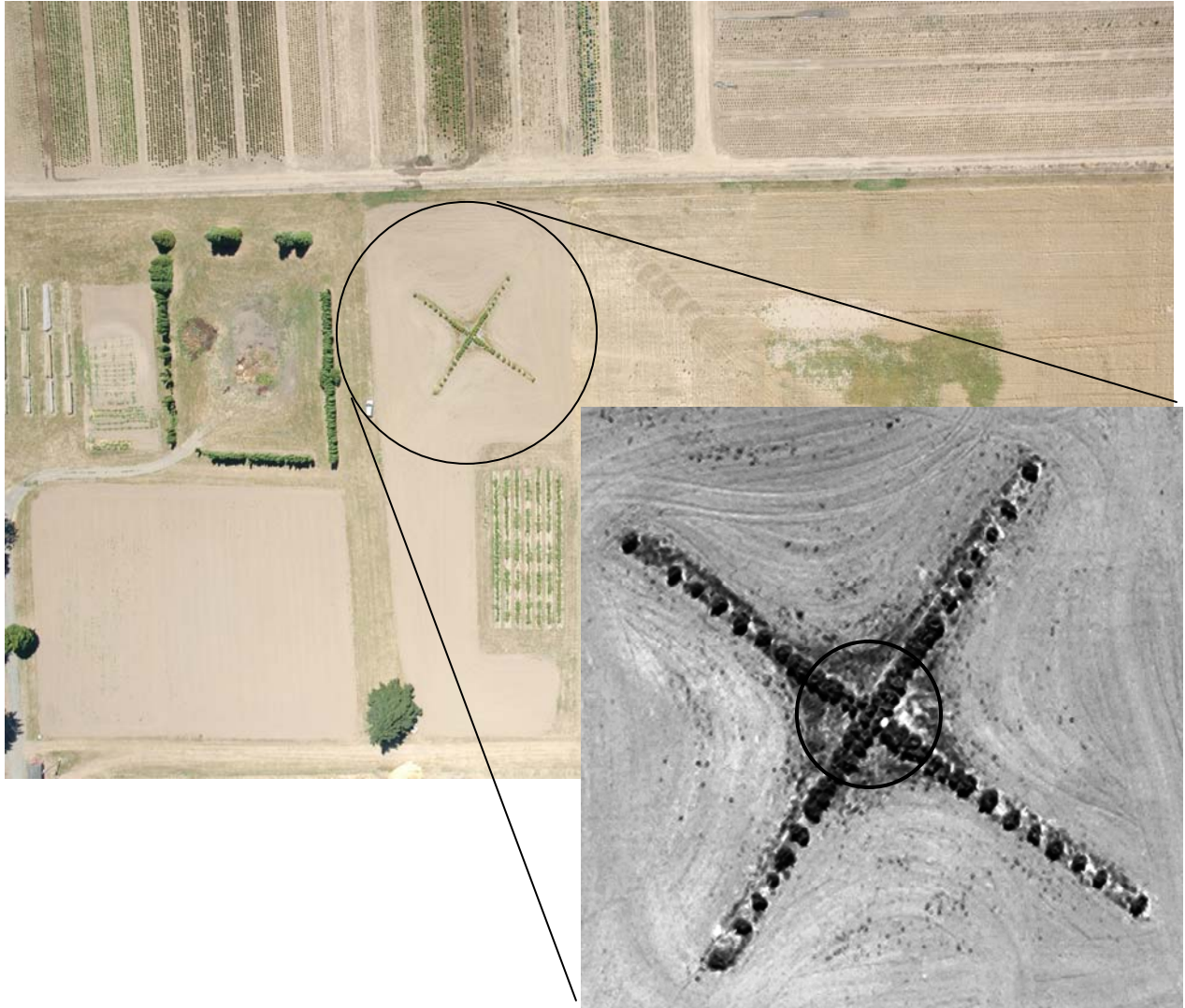


Figure 1. Aerial photo of plots. Mulch consisting of EFB infected branches was placed only in the center circle of inset picture.

Figure 2. Ascospore counts during the spring of 2005 in the wood chip trial.

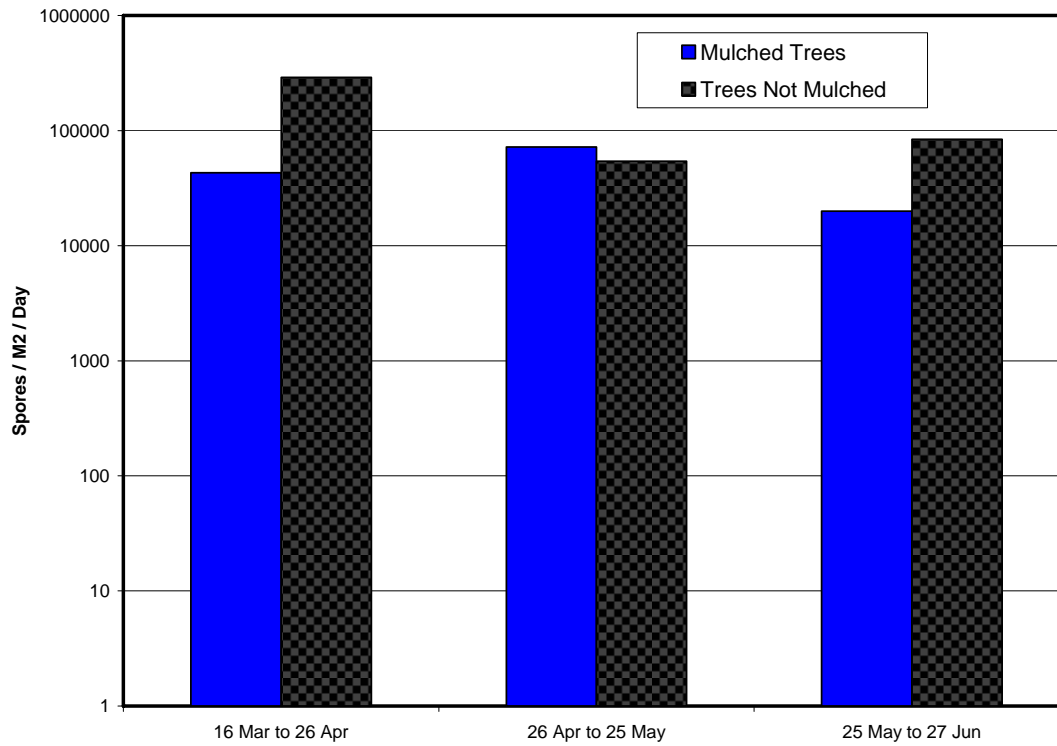


Fig 3. Chip Trial - NWREC - 2005-2006

