

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

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Greenhouse evaluation of fungicides for protection and after infection activity against eastern filbert blight, 2006 - 2007.

Twelve week old hazelnut seedlings grown from open-pollinated seed of 'Ennis' were sprayed with various fungicides using a hand held pump sprayer 24 hours before, and 24, 48, 72 and 96 hours after inoculation. In the first set of experiments, Orbit 3.6 EC (2.5 fl oz/100 gal water), Procure 50 WP (4 oz/100 gal water), Cabrio 20 EG (0.3 lb/100 gal water) and Flint 50 WG (1 oz/100 gal water) were compared with nontreated plants for after infection activity. Seedlings were inoculated with ascospores of *Anisogramma anomala* (5.0×10^6 spores per ml) using a pump sprayer. Each treatment consisted of 12 seedling trees. Two sets of these seedlings were inoculated on 22 Mar 06 and another two sets were inoculated on 27 Mar 06 for a total of 4 sets or replicates. In a second set of experiments, Orbit was tested at 0, 0.5, 1.0, 2.0, 4.0 and 8.0 fl oz/100 gal water for after infection activity. The second experiment also had nontreated control plants as well as water treated (0.0 oz Orbit) control plants. These seedlings were also inoculated with ascospores of *Anisogramma anomala* (5.0×10^6 spores per ml) using a pump sprayer. Each treatment consisted of 4 sets of 12 seedling trees. Seedlings were inoculated on 11 or 17 Apr 06. For each experiment, all seedlings were placed in a mist chamber with intermittent misting for 10 sec out of every 30 min during daylight hours after inoculation. All seedlings were removed from the mist chamber after 3 days incubation and placed on greenhouse benches (70°F days and 62°F nights). Seedlings were transplanted from small "6-paks" to 1 gal pots on 5 May 06. Plants from experiment #2 were fertilized with Osmocote Slo-Release fertilizer 14-14-14 (1 teaspoon/pot) on 10 May 06. All seedlings were moved to an outside (colder), rain protected location during Oct 06. Disease incidence was determined by recording trees that had died or showed symptoms of EFB or cambium staining below the point of inoculation on 28 and 29 Jun 07 (experiment 1) or 30 May 07 (experiment 2).

Experiment #1

Most trees inoculated with EFB but not sprayed with fungicide became infected for an overall average of 85% incidence (Figures 1 and 2). ANOVA indicated significant regressions for trees treated with Orbit, Procure, Cabrio and Flint. All groups of trees treated with fungicide 24 hours before inoculation had a significantly lower disease incidence than nontreated trees. Trees treated with Orbit or Procure 24 hours before inoculation had higher disease incidence than trees treated with these same chemicals 24 hours after inoculation (Fig 1). Trees treated with Orbit or Procure had lower disease incidence than nontreated trees even when treated 96 hours after inoculation. Trees treated with Cabrio or Flint had lower disease incidence than nontreated trees until 72 hours after inoculation when disease incidence was not significantly different or higher (Fig 2). In general, these data indicate that after infection activity of these chemicals declines as the time between infection and chemical application increases. Most useful activity appears to be prior to 72 hours after an infection period.

Experiment #2

Most trees inoculated with EFB but not sprayed with fungicide became infected for an overall average of 90% incidence. All groups of trees treated with any rate of Orbit from 24 hours before to 96 hours after inoculation had significantly lower disease incidence than nontreated trees (Figures 3 and 4). In general, the higher the rate of orbit used the lower the disease incidence. The trend in the data is consistent with past experiments, however, lower rates in this experiment were more effective. Taken together, these data indicate that the after infection activity of Orbit is dependent on the rate.

Figure 1. Effect of Orbit or Procure against EFB before and after inoculation.

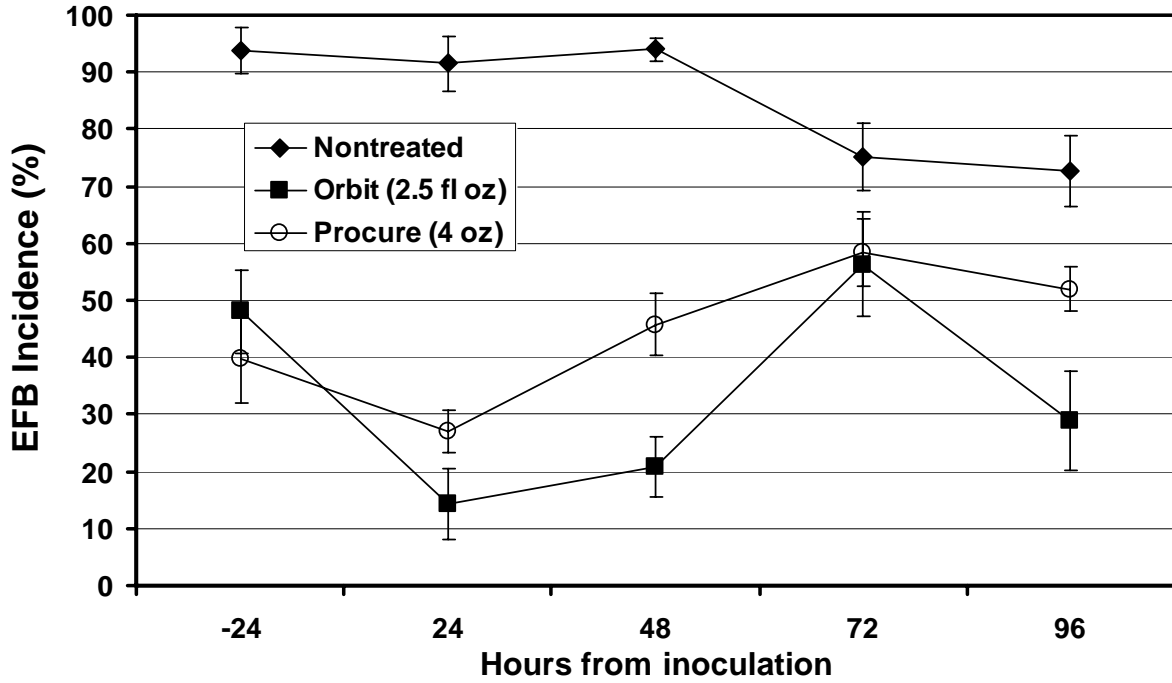


Figure 2. Effect of Cabrio or Flint against EFB before and after inoculation.

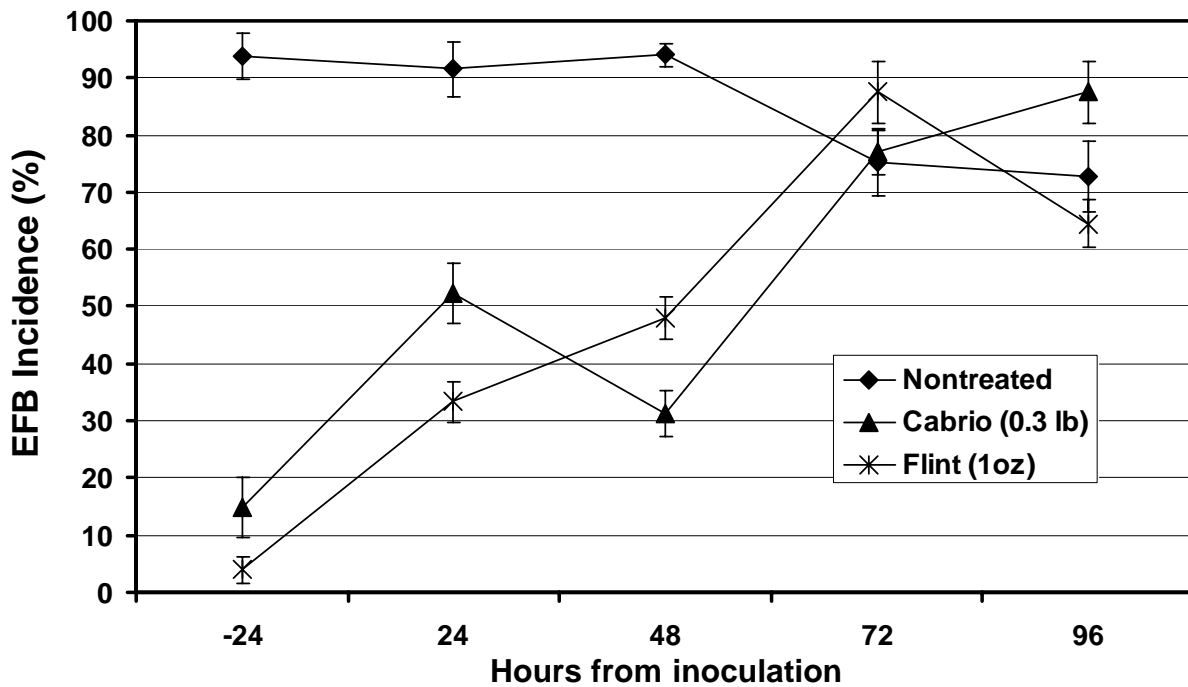


Figure 3. Effect of Orbit rate against EFB before and after inoculation (all data).

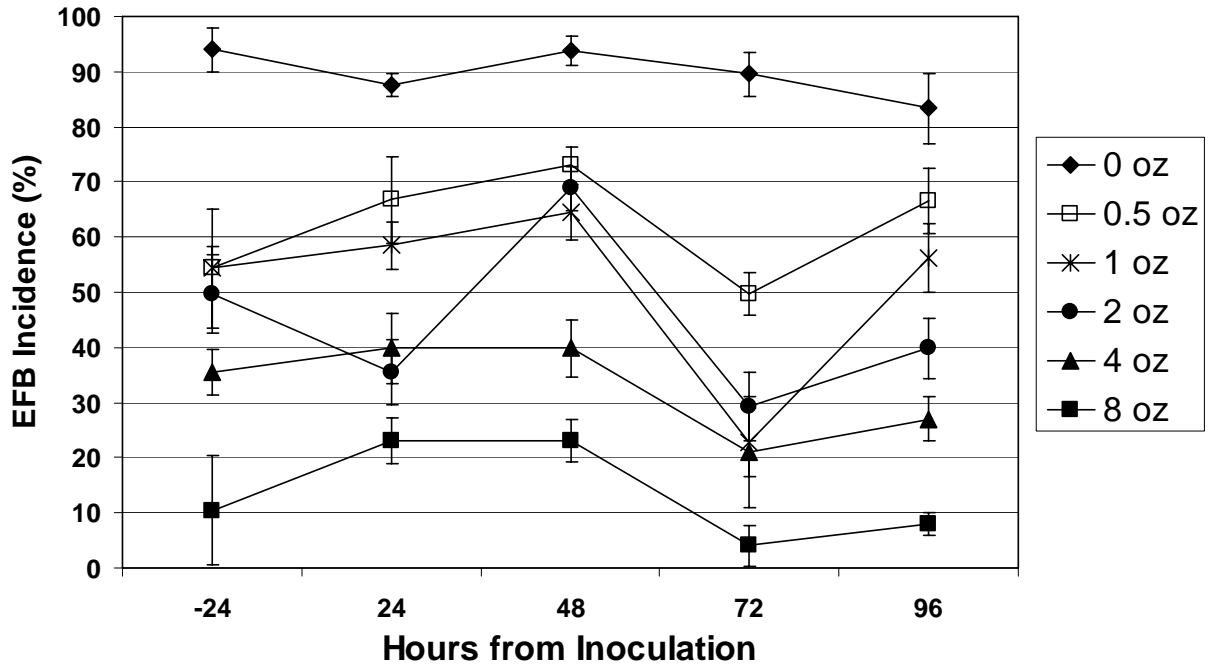


Figure 4. Effect of Orbit rate against EFB before and after inoculation (less data).

