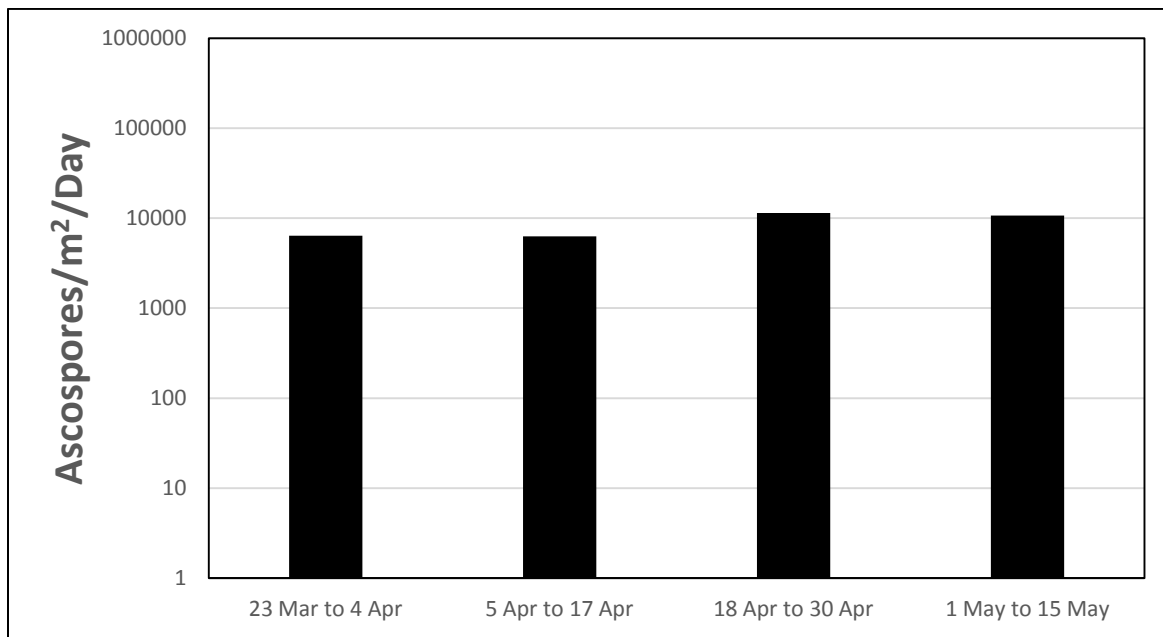


**Evaluation of fungicides for management of eastern filbert blight, 2017 - 2018.**

Healthy appearing two-year-old ‘Ennis’ hazelnut trees were planted from 10 to 11 Feb 2017 at the Botany and Plant Pathology Field Laboratory, Corvallis, OR. Limbs with EFB cankers were cut from heavily diseased trees during Jan and Feb 2017. A total of 350 cankered limbs were placed above test trees on chicken wire frames supported by a wooden trellis, on 28 Feb 2017. Treatments were arranged in a randomized complete block design. Each treatment consisted of 8 single tree replicates. Fungicides were applied to trees from two directions, until runoff, using a Stihl SG20-Pump-Style backpack sprayer equipped with a brass hollow cone nozzle. Approximately 0.26 gal of a spray suspension was used per 8 trees within each treatment. Fungicide treatments were applied on 23 Mar 2017 (bud break), 4 Apr 2017, 17 Apr 2017, and 1 May 2017 for a total of 4 applications. Botector was applied in a separate backpack sprayer only used for biological materials. Makaze (3%) was applied as a general and/or spot treatment on 16 Mar, 3 May, 2 Jun, 6 Jul, 11 Aug and 18 Sep 2017 for management of weeds. Trees were fertilized with 46-0-0 at a rate of 0.5 lb/6 trees on 6 Apr 2017, 17 Jul 2017 and 26 Apr 2018. Sucker were managed by hand cutting on 17 Jul 2017 and 1-2 Aug 2018. Supplemental irrigation was provided as needed during the 2017 growing season. The number of EFB cankers on the main tree trunk and total length of these cankers/tree was determined on 15 to 17 Aug 2018.

Spring weather conditions for 2017 were considered cool and wet but with more normal plant growth relative to time of year. Symptoms were first noticed on 11 Jun 2018 but overall canker development was later than observed in the past. Overall disease pressure was light as indicated by low spore counts (Figure 1) and the few cankers found on both treated and non-treated trees. Non-treated trees had the most cankers per tree and all fungicide treated trees had significantly fewer cankers than non-treated trees. Many fungicide treated trees did not develop cankers at all. Trees treated with Vivando or Botector had significantly more cankers than trees without cankers. Trees treated with products that contained propiconazole developed deeper green and smaller leaves than trees treated with other products. No other phytotoxicity was observed in treated trees.

Figure 1. Ascospore counts from bud swell through shoot elongation, 2017 growing season.



Treatment and Rate/100 gal water	Number of Applications <sup>X</sup>	Ave Number of Cankers/Tree <sup>Y</sup>	Total Canker Length/Tree <sup>Y</sup> (cm)
Non-treated .....	0	1.1 a	13.0 a
Quadris Top at 12 fl oz plus Induce at 12 fl oz.....	4	0.0 d	0.0 d
Approach 2.08 SC at 8 fl oz plus Induce at 12 fl oz.....	4	0.0 d	0.0 d
Approach 2.08 SC at 12 fl oz plus Induce at 12 fl oz.....	4	0.0 d	0.0 d
Approach 2.08 SC at 12 fl oz plus Tilt at 5 fl oz plus Induce at 12 fl oz.....	4	0.0 d	0.0 d
Abound at 12 fl oz plus Tilt at 5 fl oz plus Induce at 12 fl oz.....	4	0.0 d	0.0 d
Merivon at 5 fl oz plus Induce at 12 fl oz.....	4	0.0 d	0.0 d
Cabrio 20 EG at 6.52 oz plus Induce at 12 fl oz.....	4	0.0 d	0.0 d
Sercadis at 4.17 fl oz plus Induce at 12 fl oz.....	4	0.0 d	0.0 d
Pyraziflumid 20 SC at 2.48 fl oz plus Induce at 16 fl oz.....	4	0.0 d	0.0 d
Pyraziflumid 20 SC at 3.1 fl oz plus Induce at 16 fl oz.....	4	0.0 d	0.0 d
A19649 at 5.13 fl oz plus Induce at 12 fl oz.....	4	0.0 d	0.0 d
A20259 at 13.7 fl oz plus Induce at 12 fl oz.....	4	0.0 d	0.0 d
Torino at 6 fl oz .....	4	0.0 d	0.0 d
Vivando at 15 fl oz .....	4	0.8 b	14.5 b
Timorex Gold at 24 oz .....	4	0.0 d	0.0 d
Timorex Gold at 24 oz alternate Stratego 250 EC at 8 fl oz.....	2	0.0 d	0.0 d
Botector at 10 oz .....	4	0.3 c	2.6 c

<sup>X</sup> Fungicide treatments were applied on 23 Mar 2017 (bud break), 4 Apr 2017, 17 Apr 2017, and 1 May 2017 for a total of 4 applications.

<sup>Y</sup> Analysis of variance is based on log (x+1) transformation. Means followed by the same letter do not differ significantly based on Fisher's protected LSD ( $P=0.05$ ).