HAZELNUT (*Corylus avellana*)
Kernel Mold; *undetermined fungi*

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Early season fungicide use for management of hazelnut kernel mold, 2020.

The objective of this trial was to determine if early spring applications of fungicide could result in less kernel mold at harvest. A block of 4 hazelnut breeding selections (379.050, 380.057, 385.013, and 391.001) planted in 1994 on a 10 x 20 ft spacing at the Botany and Plant Pathology Field Laboratory, Corvallis, OR was selected for this trial due to a consistent high production of moldy kernels. Two of the selections (380.057 and 385.013) were cut back to the trunks in February so that other selections were not overcrowded. Treatments were arranged in a randomized factorial design. Fungicide treatments were applied to 4 single-trees in each of 2 hazelnut breeding selections (379.050 and 391.001). Fungicide treatments were applied using a hydraulic handgun sprayer at approximately 110 psi. Treatments were applied on 18 Mar (all bud break), 31 Mar (3 leaves out), 14 Apr (shoot elongation) and 28 Apr (shoot elongation). Trees were fertilized with 46-0-0 at a rate of 0.5 lb/ tree on 25 Mar. Suckers were cut by hand and trees were lightly pruned to remove dead and overlapping branches on 28 Jul. The orchard floor under trees was raked and prepared for nut drop ("floated") on 19 Aug to remove old nuts and flood debris. Weeds were sprayed with Makaze (32 fl oz/A) plus Venue (4 oz/A) on 17 Feb. Asana XL (16 fl oz/A) was applied on 1 Jul for filbert worm management. Nuts were allowed to fall naturally onto bare soil. A total of 400 nuts were collected from under each tree on 5 Oct for both selections. A set of 200 nuts from each tree of each selection was cracked open and evaluated for kernel defects within a week after harvest. (Note: 1 tree of selection 391.001 had too few nuts for this first analysis so an average was used but it did have enough for the incubation on wet soil.) Another set of 200 nuts from each tree of each selection was incubated on wet orchard soil within moist chambers where nuts were always in contact with wet soil. Orchard soil was collected from the field and dried by allowing it to sit open in a greenhouse exposed to ambient temperature (60ºF) and low humidity. This air-dried soil was placed into moist chambers and saturated by adding water until visibly saturated. Moist chambers were then carefully tipped onto their sides to pour off any excess water. After 2 weeks incubation at ambient room temperature, nuts were cracked open with a hammer and evaluated for kernel defects. Scoreable "mold" included any kernel with visible mycelial growth.

Rainfall for the growing season (Oct 2019 to Sep 2020) was 10.3 inches below the 115 yr average while spring and fall rainfall was close to normal. There was no interaction between the cultivar and fungicide factors which allowed pooling of the data to test for main effects. The selection 379.050 had significantly more kernel mold than selection 391.001 at harvest but not after incubation on wet soil for 2 weeks. There were no significant differences in kernel mold between fungicide treatments at harvest or after incubation on wet soil for 2 weeks. No phytotoxicity was observed in any of the treated trees.

Factor	Kernel Mold Incidence (%)*	
	Harvest (5 Oct)	After 2 weeks on wet soil - lab
Breeding Selection		
379.050……	10.6 a	31.5
391.001……	7.8 b	35.8
Fungicide Treatment & Rate/100 gal		
Non-treated……..	10.2	37.8
Ziram 76 DF at 8 lb/100 gal……	8.9	31.1
Aproach at 12 fl oz/100 gal…….	8.5	32.1

* Means followed by the same letter do not differ significantly based on Fisher's protected LSD (*P=0.05*). Means without letters are not different.