

Early season fungicide use for management of hazelnut kernel mold, 2021.

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 Stihl SR 450 backpack mist blower. Treatments were applied on 23 Mar (all bud break), 6 Apr, 20 Apr and 4 May. Suckers were cut by hand and trees were lightly pruned to remove dead and overlapping branches on 16 Jul. The orchard floor under trees was raked and prepared for nut drop (“floated”) on 19 Jul and 11 Aug to remove old nuts, blanks, dead weeds and twigs. Weeds were sprayed with Makaze (32 fl oz/A) on 23 Mar and Makaze (24 fl oz/A) plus Rely 280 (32 fl oz/A) on 1 Jul. Asana XL (16 fl oz/A) was applied on 9 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 6 to 7 Sept for both selections. A set of 200 nuts from each tree of each selection was cracked open and evaluated for kernel defects from 6 to 14 Sep. Another set of 200 nuts from each tree of each selection was rinsed with tap water, rinsed with 10% bleach (Clorox), rinsed again with tap water then incubated on wet orchard soil within moist chambers where nuts were always in contact with wet soil. Orchard soil was collected dry from the field and allowed to sit open in a greenhouse exposed to ambient temperature (68-74°F) and low humidity. This air-dried soil was placed into moist chambers and saturated by adding water until visibly saturated. After 2 weeks incubation in the greenhouse, nuts were rinsed and allowed to air dry for several hours, then cracked open with a hammer and evaluated for kernel defects. Scoreable “mold” included any kernel with visible mycelial growth.

Spring rainfall was well below average and an unusual climate change related heat dome (heat wave) occurred for 3 days in late June with temperatures at or above 100°F. This resulted in the second driest (first was in 1924) and second hottest (first was in 2015) growing season ever recorded. 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 (6 Sep)	After 2 weeks on wet soil - greenhouse
Breeding Selection		
379.050.....	4.5 a	8.4
391.001.....	2.9 b	10.0
Fungicide Treatment & Rate/100 gal		
Non-treated.....	3.3	9.7
Luna Privilege at 7 fl oz/100 gal.....	4.5	8.9
Scala SC at 18 fl oz/100 gal.....	3.4	9.0

* 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.