

**Early season fungicide use for management of hazelnut kernel mold, 2022.**

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 13 x 17.5 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 removed during the dormant season 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 100 psi such that 4 gal of a spray suspension was applied per 4 trees (191 gal/A). Treatments were applied on 11 Mar (40 to 50% bud break, BBCH 9), 25 Mar (BBCH 13), 7 Apr (BBCH 14), 22 Apr (BBCH 15), 4 May (BBCH 16), 20 May (BBCH 17) and 7 June (clusters visible, BBCH 71) for a total of 7 applications. Suckers were cut by hand on 13 Apr, 15 Jun, 14 Jul, and 5 Aug and trees were lightly pruned to remove dead and overlapping branches on 18 Jan and 4 Aug. The orchard floor under trees was raked and prepared for nut drop (“floated”) on 10 and 15 Aug to remove old nuts, blanks, dead weeds and twigs. For the management of weeds, the following herbicides were applied as a general and/or spot treatment; Makaze (3%) was tank mixed with Weedar 64 (1 pt/acre) and applied on 11 Mar, Forfeit (1.7 oz/gal) was applied alone on 13 May, and Roundup Pro (3%) was applied alone on 16 May. Intrepid 2F (16 fl oz/A) was applied on 20 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 19 Sept for both selections. A set of 200 nuts from each tree of each selection was cracked open and evaluated for kernel defects from 20 to 27 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 (57-81°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.

Rainfall during the dormant season 2021-22 was 5.4 inches below normal but spring weather conditions were very wet with the second wettest spring on record. 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 and 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 (19 Sep)	After 2 weeks on wet soil - greenhouse
<b>Breeding Selection</b>		
379.050.....	21.5 a	27.2 a
391.001.....	9.0 b	18.8 b
<b>Fungicide Treatment &amp; Rate/100 gal</b>		
Non-treated.....	13.9	23.0
Luna Privilege at 7 fl oz/100 gal.....	16.0	21.8
Scala SC at 16 fl oz/100 gal.....	15.8	24.2

\* 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.