

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

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### **Early season fungicide use for management of hazelnut kernel mold, 2018.**

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. Treatments were arranged in a randomized complete block design. Fungicide treatments were applied to 4 single-trees in each of 2 hazelnut breeding selections (379.050 and 391.001). The fungicides Luna Tranquility or Switch were tested on selection 379.050 while only Switch was tested on selection 391.001 but at different application times. Fungicide treatments were applied using a Stihl SR 450 backpack mist blower such that 0.5 to 1 gal (109 to 218 gal/A) of a spray suspension was applied per tree before and after bud break, respectively. Treatments were applied on 12 Jan (full bloom for 379 and early bloom for 391), 26 Jan (full bloom for 391), 9 Feb (end of bloom 379), 26 Feb (end of bloom 391), 12 Mar (bud break for 391), 26 Mar (all bud break), 9 Apr (first leaf out), 23 Apr (shoots starting to elongate) and 7 May. The orchard floor under trees was cleared and prepared for nut drop (“floated”) on 23 Aug to remove old nuts and plant debris. Weeds were sprayed with Rely 280 (56 fl oz/A) on 16 May. Trees were fertilized with 46-0-0-1 at a rate of 0.5 lb/ tree on 26 Apr. There were no applications of insecticides in this block during the trial. Trees were pruned on 21 to 24 May by selectively removing the tallest branch(es) to bring down the overall height of trees. Suckers were cut by hand on 19 Jul. Nuts were allowed to fall naturally onto bare soil. A total of 400 nuts were collected from under each tree on 10 Sep (391.001) and 20 Sep (379.050). A set of 200 nuts from each tree was cracked open and evaluated for kernel defects within a week after harvest. Another set of 200 nuts 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 (60°F) 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 during the dormant and bloom period was below normal with only spring weather conditions considered normal until early May when frequent rainfall tapered off quickly. There was also very little rainfall during nut drop and harvest (only an inch during 12-13 Sep period). At harvest of selection 397.050, there was no significant difference in kernel mold found on nuts from trees treated with Switch or Luna Tranquility or non-treated trees. Once nuts were incubated on wet soil for 2 weeks, however, nuts from trees treated with Luna Tranquility had significantly lower kernel mold than nuts from non-treated trees. At harvest of selection 391.001, nuts from trees treated with Switch during early spring growth had significantly lower kernel mold than nuts from non-treated trees. There was no difference in kernel mold when nuts from these trees were incubated on wet soil for 2 weeks. No phytotoxicity was observed in trees treated with any of the various materials used. Future trials should concentrate on using the fungicide Luna Tranquility.

(Analysis note: If analyzed as a factorial there are no significant interactions, Luna Tranquility is significant from nontreated and both timings of Switch are significant from nontreated.)

Hazelnut Selection and Treatment & Rate/100 gal	Time of Application*	Mold (% kernels)**	
		Harvest (20 Sep)	After 2 weeks on wet soil - lab
Hazelnut - Selection 379.050			
Non-treated.....	None.....	14.0 a	32.0 a
Switch at 14 oz/100 gal.....	All.....	12.5 a	26.4 ab
Luna Tranquility at 27 fl oz/100 gal..	All.....	9.3 a	22.5 b
Hazelnut - Selection 391.001		Harvest (10 Sep)	After 2 weeks on wet soil - lab
Non-treated.....	None.....	12.9 a	39.1 a
Switch at 14 oz/100 gal.....	A, B, C, D.....	10.1 ab	30.6 a
Switch at 14 oz/100 gal.....	E, F, G, H, I...	9.3 b	33.0 a

\* Treatments were applied on A = 12 Jan (full bloom for 379 and early bloom for 391), B = 26 Jan (full bloom for 391), C = 9 Feb (end of bloom 379), D = 26 Feb (end of bloom 391), E = 12 Mar (bud break for 391), F = 26 Mar (all bud break), G = 9 Apr (first leaf out), H = 23 Apr (shoots starting to elongate) and I = 7 May.

\*\* Means followed by the same letter do not differ significantly based on Fisher's protected LSD ( $P=0.05$ ).