HAZELNUT (*Corylus avellana* 'Jefferson')   J. W. Pscheidt[1], V. Stockwell[2], and S. Heckert[1]
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Evaluation of copper-based products for control of bacterial blight on hazelnut, 2020 - 2021.

Bactericide treatments were arranged in a randomized complete block design in hedge rows of Jefferson hazelnut formerly used for propagation. Trees were pruned to individual root systems with multiple shoots such that trees were at least 1 foot apart. 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 2 gal of a spray suspension was used per 8 trees within each treatment. Bactericide treatments were applied on 22 Oct 2020. Trees were then inoculated on 16 Nov 2020 with two isolates of *Xanthomonas arboricola* pv. *corylina*. Inoculum was prepared using 0.5 g of freeze-dried cells of JL2005 (phylogroup of type strain) and 0.5 g of JL2600 (phylogroup 2) suspended and rehydrated in 1 liter of water for 60 minutes. This suspension and water was then added to a Stihl SG20-Pump-Style backpack sprayer to 10 liters for a final concentration of about 1×10^8 cfu/ml. The cell suspension was applied to treatment trees until bark was visibly damp or wet on a morning with temperatures in the 40s and with 0.09 inches of rain 24 hours after application. Several trees were not inoculated. All trees had already lost leaves. Makaze (3%) was tank mixed with Forfeit 280 (1.7 oz/gal) and applied as a general and/or spot treatment on 15 Jul 2020 and Makaze (3%) alone was applied 6 Mar 2021 for management of weeds. Trees were monitored for symptoms of bacterial blight during the spring of 2021. The number of dead buds/shoots per tree was determined on 17 May 2021. Only 6 replicates were used in the analysis due to interactions with previous applications the prior year.

There were 4.5 inches of rain from bactericide application to inoculation. Rainfall during the dormant season 2020-21 was close to normal but followed by spring weather conditions that were abnormally warm and the second driest on record. Symptoms of bacterial blight started to develop on 7 May 2021 as random dieback of buds and a few shoots. Lowest bacterial blight was found on non-inoculated trees which was significantly lower than all other treatments. None of the copper based bactericides developed significantly less bacterial blight than the inoculated control.

Treatment and Rate/100 gal water	Dead shoots per tree [Y]	
Non-inoculated and non-treated …….....................	0.2	c
Inoculated but non-treated ……............................	3.3	ab
Inoculated and treated with Privisto at 4 qt……………………………....	4.5	a
Inoculated and treated with Badge X2 at 10.5 lb plus Stylet Oil at 1 pt.......	3.0	ab
Inoculated and treated with Badge SC at 10.5 pt plus Stylet Oil at 1 pt.......	2.7	b
Inoculated and treated with Kocide 3000 at 10.5 lb plus Stylet Oil at 1 pt...	1.7	b

[Y] Analysis of variance is based on log (x+1) transformation of only 6 replicates. Means followed by the same letter do not differ significantly based on Fisher's protected LSD (*P=0.05*).