HAZELNUT (*Corylus avellana* 'Jefferson') J. W. Pscheidt[1], V. Stockwell[2], D. Kroese[1],
   Bacterial Blight; *Xanthomonas arboricola* pv. *corylina* and N. DiManno[1]
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Evaluation of copper-based products for control of bacterial blight on mature Jefferson hazelnut, 2021 - 2022.

Fungicide treatments were arranged in a randomized complete block design in a double density block of Jefferson hazelnuts planted in 2015 on 10 x 20 ft spacing. This block had Theta pollenizers grafted onto every 6th Jefferson tree in every 3rd row. Each treatment consisted of 6 single tree replicates. Bactericide treatments were applied using a hydraulic handgun sprayer at approximately 100 psi such that 6 gal of a spray suspension was applied per 6 trees (218 gal/A). Treatments were applied on 21 Oct 2021 (25% leaf fall). Trees were then inoculated on 8 Nov 2021 (50-75% leaf fall) 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 misty morning with temperatures in the 40s and with 0.67 inches of rain 24 hours after application. Only five similar branches, each with 3 years growth, were randomly selected on each tree for inoculation. A set of trees was also not inoculated. For the management of weeds, the following herbicides were applied as a general and/or spot treatment; Makaze (3%) was tank mixed with Rely (1.7 oz/gal) and applied on 1 Jul 2021, Makaze (3%) was tank mixed with Weedar 64 (1 pt/A) and applied on 11 Mar 2022, Forfeit (1.7 oz/gal) was applied alone on 13 May 2022, and Roundup Pro (3%) was applied alone on 16 May 2022. Suckers were cut by hand on 13 Apr, 15 Jun, 14 Jul, and 5 Aug 2022.Trees were monitored for symptoms of bacterial blight during the spring of 2022. The number of dead buds/shoots per 5 branches was determined on 25 May 2022.

There were 4.53 inches of rain from bactericide application to inoculation in the fall of 2021. 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. Symptoms of bacterial blight started to develop on 2 May 2022 in other trials as random dieback of buds and a few shoots. Although a few dead shoots were found 11 May 2022, symptoms in this block did not develop as convincingly as in other blocks. There was no difference among the various treatments including between inoculated and non-inoculated trees. Vigorously growing 7 year old Jefferson trees do not appear to be as susceptible to bacterial blight as stressed trees in other trials.

Treatment and Rate/100 gal water	Dead shoots per 5 branches [Y]
	2022
Non-treated and non-inoculated …….....................	1.7
Non-treated but Inoculated…….............................	1.5
Previsto at 4 qt then Inoculated ……………………………………	0.6
Badge X2 at 10.5 lb plus Stylet Oil at 1 pt then Inoculated ……………………………………	0.6
Badge SC at 10.5 pt plus Stylet Oil at 1 pt then Inoculated ……………………………………	1.1
Kocide 3000 at 10.5 lb plus Stylet Oil at 1 pt then Inoculated ……………………………………	2.0

[Y] Analysis of variance is based on log (x+1) transformation. Means followed by the same letter do not differ significantly based on Fisher's protected LSD (*P=0.05*). Means without letters were not significantly different.