

HAZELNUT (*Corylus avellana* ‘Jefferson’)

Bacterial Blight; *Xanthomonas arboricola* pv. *corylina*

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Preliminary field inoculation trial with *Xanthomonas* on hazelnut, 2019 - 2021.

In the fall of 2019, a few rows of water stressed young hazelnuts (Jefferson and Ennis) were inoculated 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 45 minutes. This suspension and water was then added to a solo backpack sprayer to 10 liters for a final concentration of about 1×10^8 cfu/ml. The cell suspension was applied to trees on 16 Nov 2019 during a foggy morning. Two 80 ft hedge rows of Jefferson hazelnuts used for propagating trees were sprayed with 12 liters inoculum until bark was visibly damp or wet. The western row had already lost leaves while the eastern row had many young suckers with leaves still attached. Two other hedge rows of Jefferson were left non-inoculated. Another 3 rows of Ennis used for EFB trials were sprayed with 8 to 9 liters of inoculum on the same morning in the same way. The north half of all inoculated rows were sprayed with Badge X2 (1.6 oz/gal) on 25 Nov 2019 using a Stihl SR 450 backpack mist blower. Rows were monitored for symptoms of bacterial blight during the spring of 2020 and spring 2021. The number of dead buds/shoots per row was determined for Jefferson trees on 11 May 2020 and 18 May 2021. Statistical analysis was not implemented due to lack of replication.

After half the normal rainfall during the 2019-20 dormant season, spring weather conditions were considered normal to wet. Symptoms of bacterial blight started to develop on 4 May 2020 on Jefferson trees as random dieback of buds and a few shoots. Symptoms were primarily in the middle of last year’s shoot growth where 1 to 3 developing shoots would wilt, turn necrotic and die. Very few of last year’s shoot growth was girdled and died back completely. Non-inoculated trees had few if any symptoms. Inoculated trees treated with Badge X2 tended to have fewer symptoms of bacterial blight than non-treated trees. Symptoms on Ennis trees were indistinguishable and/or complicated by expansion of EFB cankers from previous experiments. The use of these Jefferson hedge rows is recommended for further bacterial blight testing but not a similar set of Ennis trees. Also, inoculation should occur prior to leaf fall.

Rainfall during the dormant season 2020-21 was close to normal but spring weather conditions were abnormally dry. Symptoms of bacterial blight started to develop on 7 May 2021 on Jefferson trees as random dieback of buds and a few shoots. Although trees were not inoculated again in 2020, bacterial blight developed on previously inoculated trees during the spring of 2021. There seemed to be a lingering effect from the 2019 Badge X2 application with less shoot dieback in 2021.

Treatment and Rate/100 gal water	Dead shoots per section of west Jefferson row.		Dead shoots per section of east Jefferson row.	
	2019-2020	2020-2021	2019-2020	2020-2021
Non-inoculated and non-treated	0	19	3	0
Inoculated but non-treated	85	138	461	141
Inoculated and treated with Badge X2...	78	55	280	14