Executive Summary

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Title: PHOMOPSIS RACHIS AND FRUIT ROT: FUNGICIDE TIMING AND EFFECTS ON YIELD (Year 1)

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Two trials were conducted in Niagara vineyards in Hartford and Lawton (MI) to determine the effects of different fungicide programs on severity of Phomopsis rachis and fruit infection. A second objective was to determine the relationship between disease severity and number of berries on the ground. The third objective was to study the patterns of spore release from infected canes in the field and in the laboratory.

Fungicide applications were started later than normal because of the frost damage. In Hartford, early applications were made according to the growth stage of the secondary buds, because so many primary buds had been killed. The Lawton vineyard had better survival of primary buds. In general, rachis infection and berry drop were more severe at the Lawton site, and berry infection was more severe at the Hartford site. There was a lot of variation in disease between plots, probably due to the spatial variability of the disease, which is typical for Phomopsis cane and leaf spot.

In Hartford, there was a significant effect of fungicide program on berry infection only. All programs with three or more sprays reduced disease significantly compared to the untreated control, including a single spray of Ziram at first post-bloom. Programs containing Abound (post bloom) or a very early spray (at 1" shoot on secondary buds), performed best numerically. A single spray any time during the season tended to reduce disease by about half.

In the Lawton trial, most fungicide programs had significantly less disease than the untreated control, with the program containing Abound (post bloom) performing best numerically. The data show that at least two sprays have to be applied to get a decent level of control and possibly more. The benefit of post-bloom sprays may be limited to the first post-bloom application. The incidence and severity of berry infection correlated closely with that of rachis infection, suggesting an increase in berry infections with increasing rachis lesion size.

Yield losses were mostly due to berry drop. However, cluster weight was slightly negatively correlated, and the number of berries on the ground was positively correlated with percentage of the rachis area infected. Also, the more berries were found on the ground, the lower the percentage of those berries that was actually infected. Based on these data, maximum losses of 0.62 tons/acre were estimated for the Hartford plot (~30% of total yield in 2002), and 1.2 tons/acre for the Lawton plot (~40% of total yield in 2002). It must be taken into account that overall yields were much lower than in normal years.

Spore release was monitored in the Hartford plot, and two peaks in spore release were observed in the early season: one at about 1" growth of secondary shoots (week of May 13-20) and one close to bloom (week of June 10-17). After a long dry spell, several smaller peaks occurred in late July/early August. The significance of these spore release events for infection is unclear. Laboratory studies showed that infected canes can release spores over a long period. Daily wetting of the canes resulted in an earlier drop in spores released (after about 6 weeks) than less frequent wetting (every 2, 3, or 7 days). The amount of water used to wet the canes as well as wetness duration per wetting event may be important and need to be further investigated.