

Plant Pathology Seminar Series

“Understanding the fungal biology and fungicide control of *Neofabraea* species causing bull’s-eye rot of apples grown in the US Pacific Northwest”

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Neofabraea perennans and *Neofabraea kienholzii* are two of four fungal organisms causing the postharvest disease, bull’s-eye rot of pome fruit. This disease affects apples grown throughout the world, but is of specific economic importance for growers of the US Pacific Northwest. While *N. perennans* has long been known to cause perennial canker of apple trees, little is known regarding the biology of *N. kienholzii* due to its relatively recent identification as a pathogen participating in the bull’s-eye rot disease complex.

Artificial wound inoculations conducted on ‘Fuji’ and ‘Red Delicious’ apple twigs using the aforementioned species resulted in tree cankers that were both similar in appearance and shared similar seasonal expansion patterns. In general, cankers were largest following inoculations held in October compared to all other inoculation events evaluated. Inoculations held in April and February also led to rapid canker expansion, however to a lesser degree than those conducted in the autumn. Additionally, artificial inoculations of ‘Fuji’ and ‘Red Delicious’ apples throughout the fruit growing season revealed that fruit infections were more likely to be established during the final weeks approaching commercial harvest (August through October). Together, these studies demonstrate that *N. kienholzii* is capable of surviving in the orchard as mycelium in tree cankers throughout the year, that under favorable conditions both *N. perennans* and *N. kienholzii* can cause fruit infections throughout the fruit-growing season, and that canker expansion throughout the autumn months coincides with increased fruit infection.

Trials were also conducted to evaluate the efficacy of various pre-harvest and postharvest applied fungicides for the control of bull’s-eye rot in ‘Fuji’ apples. Findings from these studies demonstrated that among the materials tested, thiophanate-methyl, thiabendazole and pyrimethanil were the most effective fungicides in suppressing incidence of bull’s-eye rot and were capable of mitigating early, mid and late season fruit infections following a single application near the end of the apple-growing season. Although effective in controlling this important postharvest disease of apple, incorporation of these fungicides into spray programs should proceed with caution so as to minimize the risk of fungicide resistance in populations of *Neofabraea* spp. as well as other major pathogens in the Pacific Northwest.

9:10 am | Tuesday, July 18, 2017 | Johnson Hall 343

PhD Exit Seminar



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