



4-2019

## **Soil microbiomes from contrasting levels of management intensity differ in their capacity to protect black walnut from an above-ground pathogen**

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### **Recommended Citation**

Williams, Geoff and Ginzel, Matthew, "Soil microbiomes from contrasting levels of management intensity differ in their capacity to protect black walnut from an above-ground pathogen" (2019). *Middle Atlantic States Mycological Conference 2019*.  
<https://trace.tennessee.edu/masmc/1>

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Mid-Atlantic States Mycological Conference (MASMC)  
University of Tennessee – Knoxville  
12-14 April 2019

ABSTRACTS – Posters

**Soil microbiomes from contrasting levels of management intensity differ in their capacity to protect black walnut from an above-ground pathogen**

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The capacity of the microbiome to protect agricultural crops from disease depends on management practices, but whether this applies to forest trees is unknown. We investigated the extent to which microbiomes from forest and plantation soil modify the susceptibility of Eastern black walnut (*Juglans nigra*) to *Geosmithia morbida*, the phytopathogen responsible for Thousand Cankers Disease. This fungal pathogen causes necrotic lesions in the phloem of *J. nigra* when introduced by colonizing walnut twig beetles. Seedlings were grown in potting mix amended with bulk soil from a forest, walnut plantation, or sterilized soil. Stems were inoculated with *G. morbida*, and necrotic area and callus formation were measured and compared among treatments. Additionally, fungal endophytes were isolated from roots and community composition was compared among treatments. There was a 15% reduction in necrotic area and significant increase in callus formation in seedlings that received the forest soil amendment compared to the control group. Plantation soil had an intermediate effect on necrosis. *Fusarium* spp. were isolated more frequently from roots of seedlings that received control soil, suggesting plantation and forest microbiomes suppress secondary pathogens. Our results support the hypothesis that the microbiome of forest soil has a greater capacity to enhance defense against *G. morbida* compared to plantation soil.