Public Abstract

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Title:The Ecology of Root Disease Fungi in Missouri Forests

Root disease fungi have important ecological and economic effects on tree species around the world. A better understanding of their basic ecological significance—how they modify the growth and development of the tree communities of which they are a part—will help us better understand how to manage them. This project looked at basic aspects of the Missouri distribution and infection prevalence of two important root disease fungal genera, Heterobasidion and Armillaria. Among other things, the study determined that the pine-infecting Heterobasidion is widely distributed in the Missouri Ozarks, which should factor into the planning process connected with shortleaf pine restoration efforts throughout the region. The study also looked at Armillaria gallica, which is very widespread in Missouri soils but tends to infect only hardwood trees that are already under stress. In plots in central Missouri, A. gallica was found more widely in younger, denser stands of trees than in more mature stands, which is likely connected to the existence of other stress factors in those dense stands, such as competition from other trees for light and water. Seven years after clearcutting in the Ozarks, all three species of Armillaria found in Missouri had infected the majority of stumps onsite, including those that were still living and producing new sprouts. However, some stumps were more vigorous than others, and just because a stump was infected did not mean that the infection was advancing to kill it. This study contributed to a better understanding of how root pathogens in changing Missouri landscapes are influenced by land management in terms of both their distribution and their potential for having an impact on the next generation of forests.