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Mycobiota associated with insect galleries in walnut with thousand cankers disease reveals a potential natural enemy against *Geosmithia morbida*

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Abstract

Thousand Cankers Disease (TCD) affects walnut and butternut trees (*Juglans*) and several species of wingnut trees (*Pterocarya*). TCD has now been reported in 16 U.S. states and Italy, posing not only a major threat to the nut and timber industries but also to native stands of walnut trees and the ecosystem services that they provide. Galleries created in the phloem by the insect vector, *Pityophthorus juglandis*, are colonized by the fungus *Geosmithia morbida*, the causal agent of necrosis. These galleries represent a suitable substrate for the establishment of many other fungal species. It is unknown if other fungal colonizers might act antagonistically towards

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