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THE EFFECTS OF OOMYCETES ON PLANT-SOIL FEEDBACK INTERACTIONS

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The negative effects of soil microbes on plant communities have long been documented. However, plants' soil pathogens are often treated as a monolithic group instead of a complex network of specific interactions. Negative plant-soil feedback (NPSF) is one important type of interaction that promotes stable interspecies coexistence, and it hinges on plants' specialist soil pathogens. One category of microorganisms that contributes significantly to plant-soil pathogen interactions is Oomycota, a fungus-like class whose members cause several devastating plant diseases. However, one oomycete, *Pythium oligandrum*, is unique among its class because of its positive effects on plants: It promotes plant growth, in part because it parasitizes plant pathogens, including other oomycetes. The goals of my project were to first determine the effects of both oomycetes as a group and *P. oligandrum* in particular on the growth of several temperate forest tree species; and second, to determine how each of these treatments influences the strength of the focal tree species' NPSF. Although the experiments are still in progress, my preliminary results show that using a targeted biocide to exclude oomycetes from the soil community has no effect on temperate tree seedling growth, neither directly nor through impacting NPSF. The experiment treating plants with *P. oligandrum* has no preliminary data to report yet, but I hypothesize that adding *P. oligandrum* to the soil community will have a positive effect on plant growth and will weaken NPSF. This effect, in addition to attacking plant pathogens, could potentially destabilize plant species' coexistence mechanisms.