

Tree growth response to soil nutrients and neighborhood crowding varies between mycorrhizal types

December 28 2021, by Zhang Nannan



Credit: CC0 Public Domain

Tree growth is an important part of forest dynamics, the symbiosis between trees and mycorrhizal fungi (e.g., arbuscular mycorrhizal (AM),

ectomycorrhizal (EM) and dual-mycorrhizal (AEM)) can improve species ability to absorb nutrients and adapt to the local environment, which ultimately results in the difference of species response to biotic and abiotic factors. However, it remains unclear how species with different mycorrhizal associations exhibit growth responses to local abiotic and biotic gradients.

In view of this, Prof. Hao Zhanqing and Dr. Ren Jing from the Institute of Applied Ecology of the Chinese Academy of Sciences (CAS), in cooperation with Prof. Claire Fortunel from the Institute de Recherche pour le Développement, used a continuous 10-year [tree growth](#) data recording by the dendrometer band of 25 [tree species](#) in Changbaishan Forest Dynamics Plot to explore differences in tree growth response to soil nutrients and neighborhood crowding between tree species associating with AM, EM, and AEM fungi.

They found that soil nutrients decreased AM tree growth, while competition reduced both AM and EM tree growth, and neither soil nor competition impacted AEM tree growth.

Although individual-level traits (e.g., leaf area) were stronger predictors of tree growth than species-level traits across mycorrhizal types, most traits can hardly capture differences in tree growth response to soil nutrients and competition.

These findings highlight the importance of integrating information on tree mycorrhizal associations and individual-level traits to improve our understanding of the drivers of tree growth and forest dynamics.

The research was published in *Oecologia*.

More information: Jing Ren et al, Tree growth response to soil nutrients and neighborhood crowding varies between mycorrhizal types

in an old-growth temperate forest, *Oecologia* (2021). [DOI: 10.1007/s00442-021-05034-2](https://doi.org/10.1007/s00442-021-05034-2)

Provided by Chinese Academy of Sciences

Citation: Tree growth response to soil nutrients and neighborhood crowding varies between mycorrhizal types (2021, December 28) retrieved 5 August 2024 from <https://phys.org/news/2021-12-tree-growth-response-soil-nutrients.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.