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Sequence 2: Physiology and Genetics

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Mycorrhizal-Mediated Growth and Resource Allocation Drive Plant Coexistence

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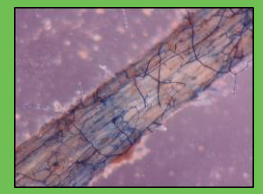

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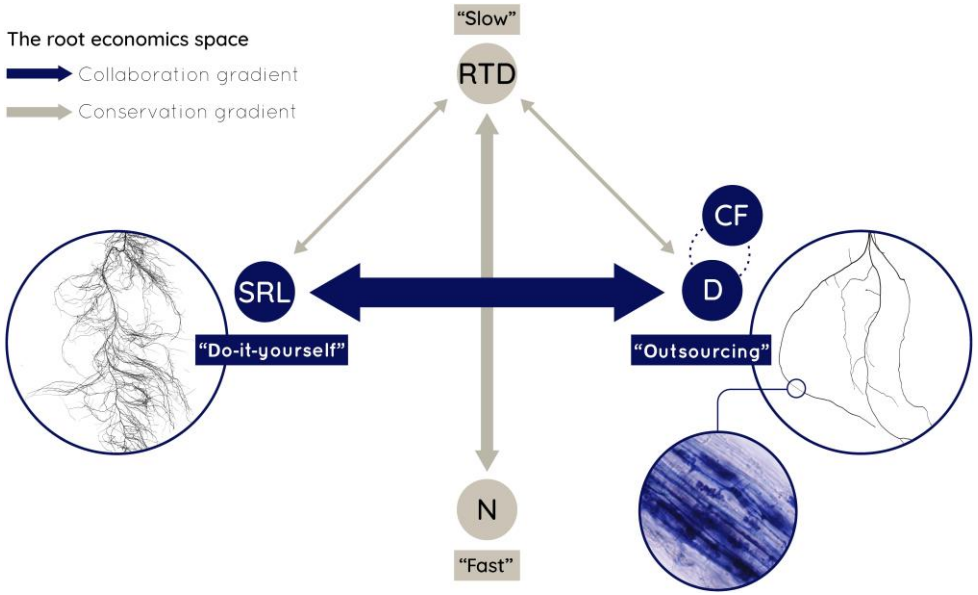
Mycorrhizal-Mediated Growth and Resource Allocation Drive Plant Coexistence

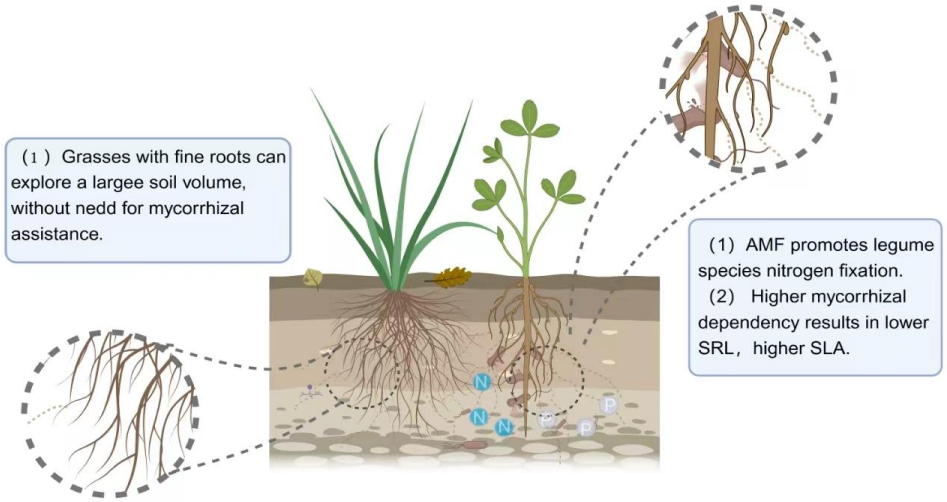
- Plant Nutrient Uptake Strategies: do-it-yourself OR outsourcing
- Different host plants exhibit significant variations in their mycorrhizal growth response (MGR) — influenced by plant functional traits (root morphology, root exudation) and the composition of AMF spores.



Bergmann, Weigelt et al. 2020; Science Advances

Arbuscular Mycorrhizal Fungi

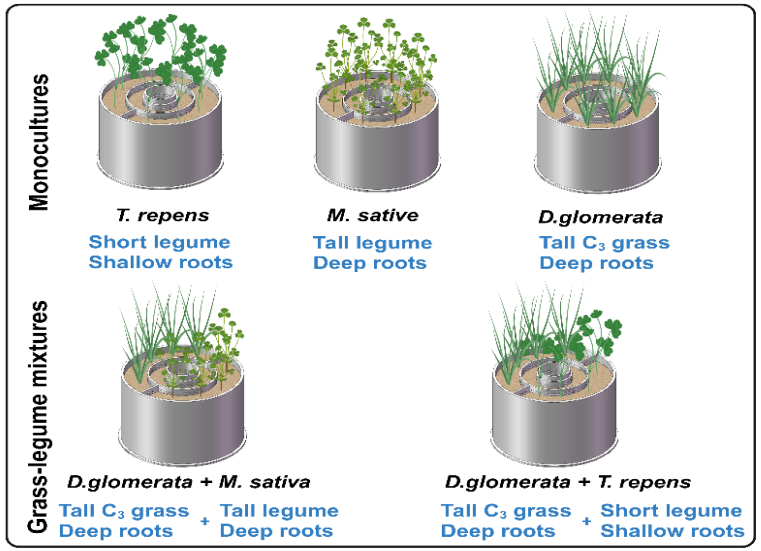
- Most plant partner with AM fungi
- Hyphae increase root surface area
- Plants receive nutrients and fungi receive carbon

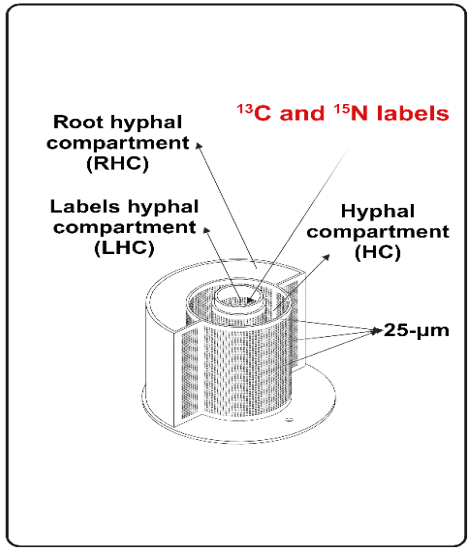


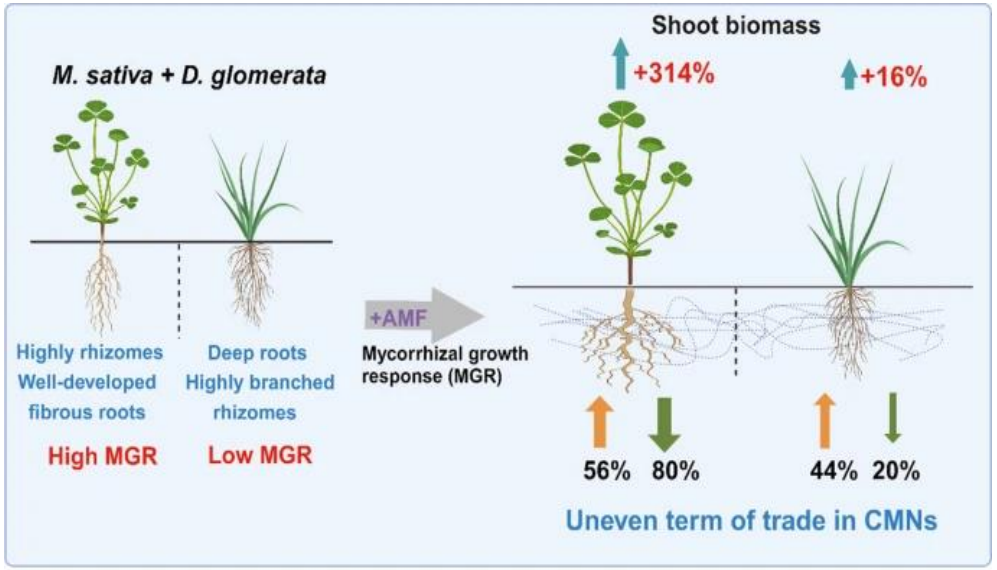
Wipf et al.2019; New Phytologist
Romero et al. 2023 Functional Ecology

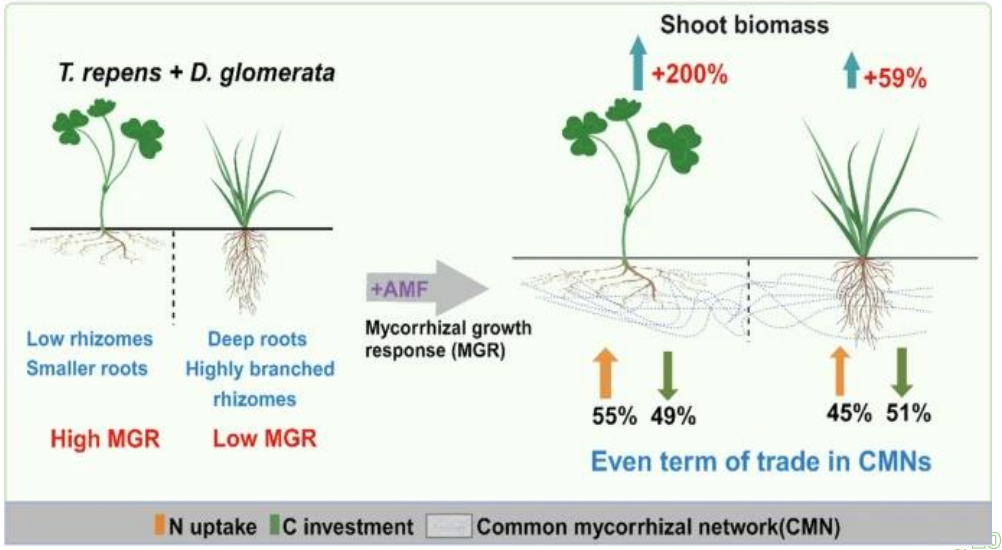
Mycorrhizal-Mediated Growth and Resource Allocation Drive Plant Coexistence

- Differential MGR and resources exchange through CMNs drive plant coexistence.
- MGR correlated strongly with plant functional traits. The MGR of *M. sativa* and *T. repens* were greater than *D. glomerata* in bi-mixtures, likely due to their coarser roots and smaller root surface area.
- Carbon investment and nutritional benefits through CMNs depended on the host plants.





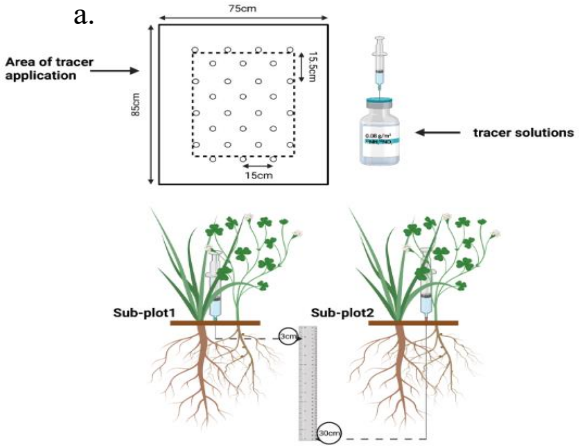


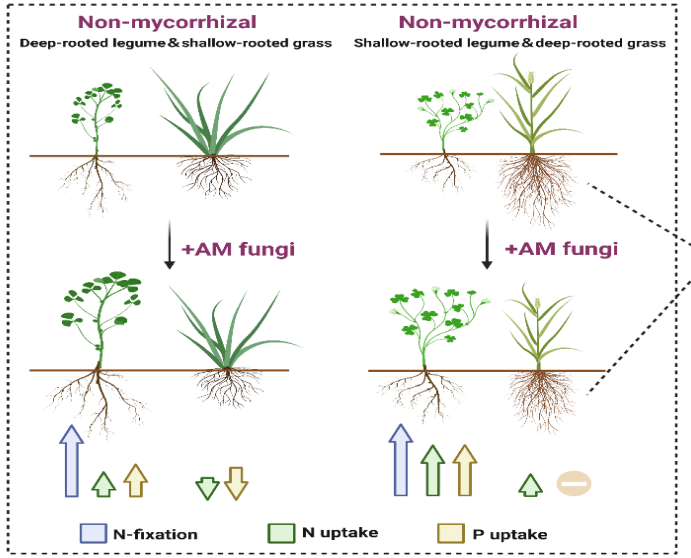


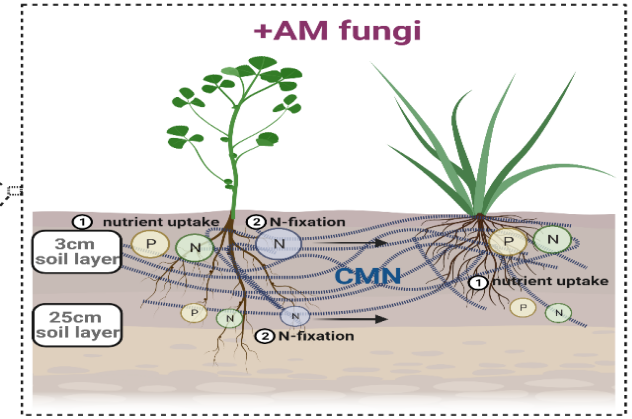
(Zhou et al. 2024, Plant soil)

Mycorrhizal-Mediated Growth and Resource Allocation Drive Plant Coexistence

- AMF promoted competition-cooperation between grasses and legumes, increasing Both deep and shallow-rooted species primarily relied on the shallow soil layer for N acquisition
- AMF generally increased N_2 fixation in legumes and equalizing the distribution of soil nutrients between legumes and grasses in mixtures.







(Zhou et al. 2023, Plant soil)

Thank you! Any questions?