Diverse Microbial Mutualists Benefit Plant Growth

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Abstract

- Mutualists provide critical resources or services to host species in exchange for host resources.
- Mutualistic microbes vary in the benefits they confer to their hosts. Most hosts associate with many strains of microbes simultaneously.

Methods

Identify relevant papers
- Web of Science, Google Scholar, and MycoDB¹

Rhizobium

Mycorrhizae

Synthesis more “worth it” when nutrients are low, negating synergy


Conclusions

- Consistent with their designation as mutualists, inoculation with mycorrhizae or rhizobia results in a positive fitness effect for the host plant.
- Generally, inoculation with multiple microbe strains provides a greater benefit to host fitness than the strains singly. This suggests one or both of the following:
  1. Host discrimination mechanisms are effective (e.g. screening, preferential allocation of host resources, sanctioning of uncooperative strains)
  2. Symbiont strains provide complementary services to the host
- The benefit of both inoculation and strain diversity appears greater within the legume-rhizobium mutualism than the plant-mycorrhizal symbiosis.
- Results suggest that symbiont diversity has positive impacts on plant fitness.

References