

研究论文

# 亚热带草地中植物优势种与从属种对AM真菌的差异性生长反应

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**摘要** AM真菌能够影响植物生态系统的群落结构。以亚热带草地生态系统为研究对象, 调查了两块草地中优势种和从属种的菌根, 并在盆栽试验中比较了优势种和从属种对AM真菌的土著菌种和外源菌种*Glomus mosseae*的生长反应、养分吸收。结果表明, 两块草地各自的优势种藿香蓟和两耳草对土著菌种的菌根依赖性分别是41.5%和77.4%, 远远高于从属种莎草和毛茛(16.0%和7.9%); 但是它们对*Glomus mosseae*的菌根依赖性有所变化, 分别是79.6%、44.2%、74.1%和24.9%。这表明, 土著菌种是优势种和从属种的形成机制之一, 而外源菌种可能改变基于土著菌种而形成的植物群落结构。植株磷营养的分析结果表明, AM真菌对优势种和从属种生长的促进与对磷吸收的促进高度相关, 表明AM真菌促进养分吸收是其影响植物群落结构的机制之一。

**关键词** [亚热带草地](#); [优势种](#); [从属种](#); [AM真菌](#); [差异性生长反应](#)

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## Differential growth response of dominant and subordinate plant species to AM fungi in subtropical grasslands

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**Abstract** AM (arbuscular mycorrhizal) fungi are ubiquitous in soils of almost all ecosystems, and normally form symbiotic relationship with root systems of over 80% territorial plant species. Mainly based on their positive effect on host plant mineral nutrients, AM fungi can influence the community structure of the plant ecosystem. An increased diversity index of grass community in a microplot experiment has been reported. We hypothesize that AM fungi may affect the formation of dominant and subordinate species in a given plant community due to the differences in mycorrhizal dependence. In present research, the growth response and nutrient uptake of dominant and subordinate plant species which were growing in two subtropical grassland ecosystems to indigenous AM fungi or to inoculation of exogenous fungus, *Glomus mosseae*, were investigated. Results showed that the mycorrhizal dependencies of the dominant species in two grasslands, *Ageratum conyzoides* and *Paspalum conjugatum*, on the indigenous AM fungi were 41.5% and 77.4%, respectively, much higher than those of the subordinate species, *Cyperus difformis* and *Polygonum barbatum* (16.0% and 7.9%). Their mycorrhizal dependencies (MD) on *Glomus mosseae* changed. The MDs of *A. conyzoides*, *P. conjugatum*, *C. difformis* and *P. barbatum* were 79.6%, 44.2%, 74.1% and 24.9%, respectively. This indicated that indigenous fungal species were one of the mechanisms responsible for the formation of dominant and subordinate species, and that inoculation of exogenous fungal species could change the community structure formed in symbiosis with the indigenous fungal species. Analysis of plant P nutrition showed that the growth promotion of dominant and subordinate species by AM fungi were highly related to the increase of P uptake by AM fungi, suggesting that increased nutrient uptake by AM fungi was one of mechanisms affecting plant community structure.

**Key words** [subtropical grassland](#) [dominant species](#) [subordinate species](#) [AM](#)

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