生态学报 2007 27 (2007-07): 2896～2903 ISSN: 1004-616x CN: 44-1063/R

研究论文

五指山常见热带树种的丛枝菌根真菌多样性

石兆勇[1],王发园[1],陈应龙[2]

1．河南科技大学农学院资源环境科学系，河南洛阳471003

2．School of Earth and Geographic Sciences (M087),Faculty Natural Agricultural Sciences, The University Western Australia, Perth, WA 6009, Australia

收稿日期 2006-12-8 修回日期 2007-5-29 网络版发布日期: 2007-7-25

摘要 采用野外调查的方法，分析了五指山不同海拔高度7个科10种常见热带树种形成丛枝菌根（*Arbuscular Mycorrhizal, AM*）的状况及其根际土壤中AM真菌的多样性。结果表明，所调查的10种热带常见树种都能形成AM共生体，其菌根侵染率随寄主植物的不同，从21.8 %～90.5 %变化不等，同时，在10种常见植物的根系中也都观察到了AM真菌的典型结构——丛枝和泡囊。从10种植物的根际土壤中共分离到36种AM真菌，隶属于*Acaulospora, Glomus, Gigaspora*和*Scutellospora* 4个属，其中，*Glomus*属的真菌是该地区的优势类群，其出现频度和相对多度分别为84 %和56 %。在所调查的10种热带常见树种中，*Swietenia macrophylla*根际AM真菌的孢子最丰富，密度高达7.32；*Machilus namu*根际的AM真菌种类则最为丰富，多样性指数达到1.6548。通过对不同海拔高度*Swietenia macrophylla*根际AM真菌分布的分析表明，海拔高度显著影响着AM真菌的分布，*Gigaspora*属的真菌随海拔高度的增加显著升高，*Scutellospora*属的真菌则显著降低。

关键词 丛枝菌根真菌；多样性；热带雨林；五指山；海拔高度

分类号 Q938

Diversity of AM fungi associated with the common tropical tree species in Wuzhi Mountain of Hainan Island, China

SHI Zhao-Yong[1], WANG Fa-Yuan[1], CHEN Ying-Long[2]

1 *Department of Resources and Environmental Science, College of Agriculture, Henan University of Science and Technology, Luoyang, Henan* 471003, *China*

2 *School of Earth and Geographic Sciences (M087), Faculty of Natural and Agricultural Sciences, The University of Western Australia, Perth, WA* 6009, *Australia*

Abstract Arbuscular mycorrhizal (AM) status and diversity of AM fungi were investigated on 10 indigenous tropical tree species at Wuzhi Mountain, central Hainan Island, China. All 10 plant taxa investigated were colonized by AM fungi, while the infective rates varied from 21.8 % to 90.5 % with a mean of 51.5 %. Arbuscules and vesicles were observed in all collected tree samples. A total of thirty-six AM fungi belonging to 4 genera, Acaulospora, Glomus, Gigaspora and Scutellospora were isolated from the rhizosphere of trees. Glomus was the most popular and dominant genus, closely followed by Acaulospora, and then Scutellospora. The highest spore density (7.32) was found in the soils of Swietenia macrophylla, while soils from the rhizosphere of Machilus namu were highest in species richness (5.37) and diversity index (1.6548) of AM fungi. A relationship between the frequency of occurrence and diversity of AM fungi and the elevation of the sampling sites for Swietenia macrophylla was observed. The elevation significantly affected the frequency of occurrence and diversity of Gigaspora and Scutellospora, but showed no significant influence to Glomus and Acaulospora.

Key words arbuscular mycorrhiza fungi _ diversity _ tropical rainforest _ Wuzhi

Mountain _ elevation

DOI

通讯作者 石兆勇 shizy1116@126.com