

研究论文

黄土高原柠条锦鸡儿AM真菌多样性及空间分布

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摘要 通过对陕西安塞、绥德、横山和榆林等4个不同生态条件下柠条锦鸡儿 (*Caragana korshinskii*) AM真菌多样性和生态分布研究, 共分离出4属11种AM真菌, 其中球囊霉属 (*Glomus*) 5种, 无梗囊霉属 (*Acaulospora*) 3种, 巨孢囊霉属 (*Gigaspora*) 1种和盾巨孢囊霉属 (*Scutellospora*) 2种。结果表明, 缩球囊霉 (*G.constrictum*) 和摩西球囊霉 (*G.mosseae*) 是柠条锦鸡儿的优势种; 不同AM真菌种类出现的生境不同, 如刺无梗囊霉 (*A.spinosa*) 和美丽盾巨孢囊霉 (*S.calospora*) 只出现在绥德, 浅窝无梗囊霉 (*A.lacunosa*) 仅出现在横山, 而易误巨孢囊霉 (*Gi.decipiens*) 和红色盾巨孢囊霉 (*S.erythropha*) 仅发生在延安样地。AM真菌定殖率及孢子密度与样地生态条件密切相关, 泡囊定殖率和孢子密度在绥德最高, 丛枝定殖率在榆林最高。采样深度对AM真菌定殖率和孢子密度有显著影响, 最大孢子密度发生在10~20cm土层; 而AM真菌定殖率在0~10cm或20~30cm土层有最大值。孢子密度与泡囊定殖率呈正相关, 与丛枝定殖率呈负相关。孢子密度与土壤有机质、速效P、速效K和Cl-含量呈负相关; 泡囊定殖率与土壤pH呈正相关, 而与土壤湿度、速效K和Cl-含量呈负相关。

关键词 AM真菌; 多样性; 空间分布; 柠条锦鸡儿

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Diversity and spatial distribution of arbuscular mycorrhizal fungi of *Caragana korshinskii* in the Loess Plateau

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Abstract The diversity and spatial distributions of arbuscular mycorrhizal fungi of *Caragana korshinskii* were investigated in four natural environments of the Loess Plateau, such as Ansai, Suid e, Hengshan and Yulin of Shaanxi province. There are 4 genera and 11 species of AM fungi were isolated from the soil samples under the *Caragana korshinskii*, 3 species of them belong to *Acaulospora*, 1 species belong to *Gigaspora*, 5 species belong to *Glomus* and 2 species belong to *Scutellospora*. The result showed that the *G.constrictum* and *G.mosseae* are dominant species; the different species of AM fungi appeared in the different ecological environments, such as *A.spinosa* and *S.calospora* only occur in Suide site, *A.lacunosa* only occurs in Hengshan site, *Gi.decipiens* and *S.erythropha* only occur in Ansai site. Different sample sites had significantly affected on spore density and the percentage of colonization of vesicle and arbuscular of AM fungi. The highest value of spore density and vesicular colonization was in Suide, and the highest arbuscular colonization was in Yulin. Soil depth had a significant effect on spore density in four sites, the highest spore density existed in the 10~20cm soil layer; the highest percentage of colonization of AM fungi occurred at the 0~10cm or 20~30cm soil layer. Spore density was positively correlated with vesicular colonization and negatively correlated with arbuscular colonization. Spore density was also negatively correlated with soil organic matter, available P, available K and Cl- content. Vesicular colonization had a positive correlation with soil pH and a negative correlation with soil moisture, available K and Cl- content.

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