

西北地区赤霞珠葡萄根际土壤中AM真菌的多样性

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The screening, identification of arbuscular mycorrhizal fungi in Northwestern vineyards

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摘要 对西北地区5个酿酒葡萄赤霞珠 (*Vitis vinifera* L. cv. Cabernet Sauvignon) 葡萄园根际土壤0—60 cm土层的AM真菌空间分布进行了研究。结果表明, 葡萄根系可形成丛枝菌根, 且侵染率较高, 最高达79%; 在西北地区的5个样地中共分离出AM真菌4属22种, 其中球囊霉属 (*Glomus*) 15种, 无梗囊霉属 (*Acaulospora*) 4种, 盾巨孢囊霉属 (*Scutellospora*) 2种, 巨孢囊霉属 (*Gigaspora*) 1种。5个样地孢子密度大小顺序为: 陕西泾阳 (JY) > 山西永济 (YJ) > 陕西杨凌 (YL) > 宁夏银川 (YC) > 甘肃莫高 (MG)。各样地葡萄根际土壤中AM真菌种的丰富度不同, 陕西泾阳地区最高; 分布于葡萄根际的AM真菌按种类多少排序的属依次是: 球囊霉属 > 无梗囊霉属 > 盾巨孢囊霉属 > 巨孢囊霉属, 球囊霉属占据的比例保持着绝对优势; 根内球囊霉、摩西球囊霉、地表球囊霉在不同样地中均为优势菌株, 副冠球囊霉, 集球囊霉, 细凹无梗囊霉是多数样地中的稀有种类。研究表明, 葡萄与AM真菌具有良好的共生关系, 二者协同进化产生了具有生态环境特异性的菌根真菌多样性; 葡萄根际存在较为丰富的丛枝菌根真菌资源, 可供进一步开发利用。

关键词: 西北地区 葡萄 根际土壤 AM真菌 多样性

Abstract: The distributions of arbuscular mycorrhizal (AM) Fungi at 0—60 cm soil layers of 5 vineyards in Northwestern area were studied in this paper. The results showed that grape has colonization with AM fungi, and the highest colonization is about 79%. 22 species of 4 genera of AM fungi are isolated from the soil samples in the 5 vineyards, and 15 species of them belong to *Glomus*, 4 belong to *Acaulospora*, 2 belong to *Scutellospora* and 1 belongs to *Gigaspora*. The diversities of AM fungi in the different sampling sites are different. The spore density in the Jingyang, Shaanxi (JY) sampling site is the highest, the second is Yongji, Shanxi (YJ), and followed by Yangling, Shaanxi (YL) and Yinchuan, Ningxia (YC) sampling sites. The sampling site with the lowest spore density is Mogao, Gansu (MG), which is less than 110 spore in per 100 grams sample. The AM fungi species richness is also varied in different sampling sites, Jingyang (JY) sampling site is the highest. The relative abundance of AMF genus is *Glomus* > *Acaulospora* > *Scutellospora* > *Gigaspora*. *Glomus* is the dominant genus at all times. The dominant stains are *G. intraradices*, *G. mosseae*, *G. versiforme* in different sample sites, while the *G. coronatum*, *G. fasciculatum*, *A. scrobiculata* are rare stains in most sample sites.

Keywords: northwest area grapevine rhizosphere soil arbuscular mycorrhizal fungi diversity

Received 2010-01-28;

Fund:

现代农业产业技术体系建设专项资金; 陕西省“13115”计划项目; 西北农林科技大学青年学术骨干支持计划资助。

引用本文:

房玉林, 屈雁朋, 张稼涵, 孟江飞, 刘金串, 程宝森, 栾丽英. 西北地区赤霞珠葡萄根际土壤中AM真菌的多样性[J] 植物营养与肥料学报, 2011, V17(1): 124-130

FANG Yu-Lin, Qu-Yan-Peng, Zhang-Jia-Han, Meng-Jiang-Fei, Liu-Jin-Chuan, Cheng-Bao-Sen, Luan-Li-Ying. The screening, identification of arbuscular mycorrhizal fungi in Northwestern vineyards[J] Acta Metallurgica Sinica, 2011, V17(1): 124-130

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