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水松自然种群和人工种群遗传多样性比较

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Genetic diversity of natural and planted *Glyptostrobus pensilis* populations: A comparative study.

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摘要

采用ISSR分子标记技术分析水松不同起源种群的遗传多样性.结果表明：10条引物共检测出95个扩增位点,多态位点数占39.0%.与其他濒危裸子植物相比,水松的遗传多样性较低,遗传分化系数G_{st}为0.3982,基因流N_m仅0.3778,种群间存在一定程度的遗传分化,但种群内变异占主导地位；遗传距离与地理距离呈正相关关系.自然种群的多态位点百分率(P)、Nei的条带多样度(H_e)和Shannon信息指数(I)平均值（39.3%、0.1499和0.2202）分别高于人工种群（30.7%、0.1265和0.1759）.自然种群的遗传分化系数（G_{st}=0.4513）和平均遗传距离(D=0.0301)也高于人工种群(G_{st}=0.3025,D=0.0192).

关键词： 水松 遗传多样性 遗传结构 自然种群 人工种群 ISSR

Abstract:

Glyptostrobus pensilis is a rare and endangered relict species in China. To make a comparative study on the genetic diversity and genetic structure of natural and planted *G. pensilis* populations would have significance in the conservation and proliferation of the species. Samples from the main distribution regions of *G. pensilis* were analyzed by ISSR (inter simple sequence repeats) molecular marker. A total of 95 discernible DNA fragments were detected with 10 ISSR primers, of which, polymorphic loci occupied 39.0%, suggesting that the genetic variation in the test *G. pensilis* populations was at a very low level,compared with other endangered gymnosperm. The genetic differential index (G_{st}=0.3982) and the gene flow (N_m=0.3778) indicated that there existed genetic differentiation among populations but the differentiation dominated within populations. There was a significant positive correlation between genetic distance and geographical distance. The mean values of polymorphic loci (P), Nei's gene index (H_e), and Shannon information index (I) of natural populations (P=39.9%, H_e=0.1499, I=0.2202) were much higher than those of planted *G. pensilis* populations (P=30.7%, H_e=0.1265, I=0.1759), and the coefficient of gene differentiation (G_{st}) and genetic distance (D) of natural populations (G_{st}=0.4513, D=0.0301) were also much higher than those of the planted populations (G_{st}=0.3025, D=0.0192).

Key words: *Glyptostrobus pensilis* genetic diversity genetic structure natural population planted population ISSR

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