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楸树无性系苗期氮素分配和氮素效率差异

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Nitrogen distribution and efficiency difference of Catalpa bungei C. A. Mey. clones at nursery stage

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摘要 为开展氮素高效型楸树(Catalpa bungei)无性系的选育，选取10个楸树无性系进行了高氮 （+N）和低氮 （-N）条件下植株体内氮素的分配和氮素效率差异研究。结果表明，-N下，大部分氮的分配为根＞叶＞茎；而+N下则相反，氮素的分配为叶＞茎＞根，且无性系间差异较小。+N下无性系的氮素效率极显著高于-N，且-N下无性系间的变异程度较高；氮素吸收效率和氮素利用效率都是-N下的变异程度较高，增加氮素用量可显著提高氮素吸收效率，但氮素利用效率显著降低。相关性分析可知，氮素吸收效率对氮素效率的贡献大于氮素利用效率。在两种氮条件下，无性系2-7和015-1的氮素效率较高。

关键词： 楸树 无性系 氮素分配 氮素效率

Abstract： In order to develop the high nitrogen efficiency Catalpa bungei C.A.Mey clones, an experiment was carried out to observe nitrogen distribution characteristics and nitrogen efficiency of ten Catalpa bungei C.A.Mey clones treated with the high(＋N) and low(-N) nitrogen. The results showed that more nitrogen distributed to the underground part (root＞leaf ＞stem) under the low nitrogen treatment, while situations under the high nitrogen treatment was contrary (leaf＞stem＞ root). There was no significant difference on nitrogen distribution between clones. Nitrogen efficiency of clones significantly higher under +N than －N, but variation degree among clones under -N was higher than that under +N. Variation degree of both of nitrogen absorption efficiency and nitrogen utilization efficiency was much higher under －N. Increasing nitrogen application rate could improve nitrogen absorption efficiency significantly, but declined nitrogen utilization efficiency. Based on the results of correlation analysis, nitrogen absorption efficiency contributed more to the nitrogen efficiency than nitrogen utilization efficiency. Nitrogen efficiency of 2-7 and 015-1 clones were higher than others under both high and low nitrogen treatments.

Keywords： Catalpa bungei C.A.Mey clones nitrogen distribution nitrogen efficiency

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