大兴安岭林区兴安落叶松人工林植被碳贮量

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Vegetation carbon storage in *Larix gmelinii* plantations in Great Xing'an Mountains.

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摘要

通过样地调查，研究了大兴安岭林区10、12、15、26和61年生兴安落叶松人工林中乔木、草本和植被总体碳储量，并以空间代替时间的方法，探讨落叶松人工林生长过程中植被碳库贮量变化.结果表明: 随林龄的增加，兴安落叶松人工林植被碳库贮量逐渐增加，61 a时达105.69 t·hm^{-2}，碳汇作用显著；15～26 a兴安落叶松人工林的碳汇能力最强.其中，树干碳库贮量占乔木碳库总贮量的54.3%～73.9%，且随林龄增加，其碳库比率和碳密度增加；其余器官碳库比率随林龄增加而减小，碳密度则逐渐增加，直至趋于平衡或末期略有减少.大兴安岭林区兴安落叶松人工林的轮伐期以≥60 a为宜.

关键词: 大兴安岭 兴安落叶松 CO_2 生物量 碳密度 植被碳汇 人工林经营

Abstract:

Through sampling site investigation, this paper studied the carbon storage of arbor, herb, and whole vegetation in 10-, 12-, 15-, 26-, and 61-year old *Larix gmelinii* plantations in Huzhong Forestry Bureau of Great Xing'an Mountains, Northeast China, and 'temporal for spatial' method was employed to approach the variations of the vegetation carbon storage during the growth of the plantations. The results revealed that the vegetation carbon storage in the plantations increased with stand age, and reached 105.69 t·hm^{-2} at age of 61 years, representing a marked role as a carbon sink. The *L. gmelinii* plantations at the ages from 15 to 26 years had the strongest capability in carbon sequestration, in which, the carbon storage in trunk occupied 54.3%-73.9% of the total carbon storage of arbor, and, with the increase of stand age, the trunk's carbon storage to the total carbon storage of arbor as well as the trunk's carbon density increased. As for the other organs, the rate of their carbon storage to the total carbon storage of arbor decreased with stand age, while their carbon density increased first but eventually leveled off or had a slight decrease till at age of 61 years. Based on these results, the rotation age for the *L. gmelinii* plantations in Great Xing'an Mountains would properly be lengthened to at least 60 years.

Key words: Great Xing'an Mountains *Larix gmelinii* carbon dioxide biomass carbon density vegetation carbon sink plantation management

引用本文:

. 大兴安岭林区兴安落叶松人工林植被碳贮量[J]. 应用生态学报, 2011, 22(02): 273-279.

. Vegetation carbon storage in *Larix gmelinii* plantations in Great Xing'an Mountains.[J]. Chinese Journal of Applied Ecology, 2011, 22(02): 273-279.

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