

不同间伐强度对辽东栎林群落稳定性的影响

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- 摘要
- 参考文献
- 相关文章

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摘要

对黄土高原地区近自然经营间伐强度为13.4%(弱度间伐)和30.0%(强度间伐)的辽东栎林进行样地调查,并以未间伐林为对照,研究间伐后第5年建群种的更新潜力、林地生产力、土壤肥力和物种多样性;应用模糊数学中的隶属函数方法对辽东栎林群落稳定性进行评价。结果表明:与对照相比,弱度和强度间伐使辽东栎林地的更新潜力分别提高了14.2%和20.2%;立木蓄积量分别减少了9.0%和23.8%,但灌木生物量分别增加7.3%和12.2%,草本生物量分别增加10.5%和31.6%。间伐样地的土壤肥力和物种多样性指数均高于未间伐样地。辽东栎林群落稳定性表现为:强度间伐>弱度间伐>未间伐。近自然经营采伐强度30.0%更适合黄土高原地区辽东栎次生林的抚育管理。

关键词: 辽东栎 近自然经营 种群更新 土壤肥力 林地生产力 物种多样性

Abstract:

A sampling plot investigation was conducted on the *Quercus liaotungensis* forests on Loess Plateau, China under close-to-natural management thinning 13.4% (light thinning) and 30.0% (heavy thinning). Taking the un-thinned forest as the control, the population regeneration, woodland productivity, soil fertility, and species diversity of the forests after 5 years of thinning were studied, with the community stability evaluated by calculating the subordinate function values based on fuzzy comprehensive evaluation. Comparing with the control, the regeneration potential of the forests after light and heavy thinning promoted by 14.2% and 20.2%, arbor volume reduced by 9.0% and 23.8%, shrub biomass increased by 7.3% and 12.2%, and herb biomass increased by 10.5% and 31.6%, respectively. In addition, the soil fertility and species diversity indices were higher in thinning forests than in the control. The community stability showed the order of heavy thinning forest > light thinning forest > un-thinned forest, suggesting that the close-to-natural management thinning 30.0% was more suitable to the management of secondary *Q. liaotungensis* forest on Loess Plateau.

Key words: *Quercus liaotungensis* close-to-natural forest management population regeneration soil fertility woodland productivity species diversity

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