

研究报告

不同林地清理方式对杉木林土壤肥力的影响

薛立^{1, 2, 3} 向文静³ 何跃君³ 李燕³ 吴敏³

徐燕³ 屈明³

¹中国科学院沈阳应用生态研究所, 沈阳 110016; ²中国科学院会同森林生态试验站, 会同 418307; ³华南农业大学林学院, 广州 510642

收稿日期 2004-5-10 修回日期 2004-7-2 网络版发布日期 接受日期

摘要

研究了杉木林采伐迹地及采伐后的炼山迹地的土壤物理性质、养分含量、微生物数量和酶活性.结果表明,采伐迹地的非毛管孔隙比杉木林地增加23%,自然含水量和毛管持水量则下降25%;炼山迹地土壤容重比杉木林地增加10%,非毛管孔隙、自然含水量和毛管持水量分别下降61%、48%和26%.采伐迹地有机质、全N、全P和全K含量分别比杉木林地下降14%、14%、35%和22%,炼山迹地分别下降37%、37%、47%和7%.采伐迹地碱解N和有效K含量分别比杉木林地增加24%和31%,有效P含量比杉木林地下降15%;炼山迹地的碱解N、有效P和有效K含量分别比杉木林地下降25%、43%和40%.采伐迹地的细菌、真菌和放线菌数量比杉木林地增加1.4、11.3和0.8倍;炼山迹地细菌数量比杉木林地减少24%,真菌和放线菌数量增加了5.0和0.5倍.采伐迹地脲酶、过氧化氢酶和纤维素分解酶活性分别为杉木林地1.9、1.6和2.1倍,而炼山迹地分别为后者的35.4%、90%和106%.湿润土壤有机质、全N和全P含量高,疏松多孔的土壤有利于碱解N、速效P、速效K积累和脲酶活性的增加.真菌数量随毛管孔隙的增加而减少.通气良好有利于提高土壤过氧化氢酶活性.

关键词 [杉木林,采伐迹地,炼山迹地,土壤肥力](#)

分类号

Effects of different ground clearance on soil fertility of Chinese fir stands

XUE Li ^{1,2,3}, XIANG Wenjing ², HE Yuejun ², LI Yan ², WU Min ², XU Yan ², QU Ming ²

¹Institute of Applied Ecology, Chinese Academy of Sciences, Shenyang 110016, China; ²Huitong Experimental Station of Forest Ecology, Chinese Academy of Sciences, Huitong 418307, China; ³College of Forestry, South China Agricultural University, Guangzhou 510642, China

Abstract

The study on the soil physical properties, nutrient contents, microbial amounts and enzyme activities of clear cutting and controlled burning Chinese fir stands showed that in comparing with the control, soil non-capillary porosity of clear cutting stand increased by 23%, whereas soil natural water capacity and capillary moisture capacity decreased by 25%. In controlled burning stand, soil bulk density increased by 10%, while soil non-capillary porosity, natural water capacity and capillary moisture capacity decreased by 61%, 48% and 26%, respectively. The contents of soil organic matter, total N, total P and total K in clear cutting stand decreased by 14%, 14%, 35% and 22%, and in controlled burning stand, they decreased by 37%, 37%, 47% and 7%, respectively. Soil alkalized N and available K in clear cutting stand increased by 24% and 31%, respectively, but soil available P decreased by 15%. The contents of soil alkalized N, available P and available K in controlled burning stand decreased by 25%, 43% and 40%, respectively. In clear cutting stand, the amounts of soil bacteria, fungi and

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actinomyces increased by 1.4, 11.3 and 0.8 times, respectively, but in controlled burning stand, the amounts of soil bacteria decreased by 24%, while those of soil fungi and actinomyces increased by 5.0 and 0.5 times, respectively. The activities of soil urease, catalase and cellulase in clear cutting stand increased by 1.9, 1.6 and 2.1 times, and in controlled burning land, they were 35%, 90% and 106% of the control, respectively. Damp soil had higher contents of organic matter, total N and total P, whereas porous soil was favorable for the accumulation of alkalized N, available P and available K and for the increase of soil urease activity. The amount of soil fungi decreased with increasing soil capillary porosity. Aerated soil was favorable for the increase of soil catalase activity.

Key words [Chinese fir stand](#) [Clear cutting land](#) [Control burning land](#) [Soil fertility](#)

DOI:

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