

不同宽度带状采伐后毛竹林分恢复特征及质量

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摘要:【目的】通过研究毛竹林带状采伐对竹林恢复的影响,阐明不同采伐宽度下生物量分配差异,揭示林分生物量分配格局及年恢复动态变化,以为带状采伐模式进一步推广提供理论基础。【方法】3m、5m、8m、12m、15m 为研究对象,以传统经营毛竹林(CK)为对照,调查采伐后每一个生长大年不同采伐宽度样地毛竹新竹生长及生产力变化规律,采用相关性分析方法研究不同采伐宽度样地毛竹新竹总生物量及各组分生产力与土壤养分含量关系。【结果】1) 带状采伐初期新竹株数较对照样地显著增加,并随宽度增加在 15m 采伐带达到最大,12m 带宽新竹平均胸径显著低于其他采伐带,所有宽度带状采伐样地新竹平均枝下高均显著低于对照;在恢复初期,新竹整齐度和均匀度低于对照但不显著,在恢复中后期,各采伐带新竹整齐度上升,对照逐渐下降,均匀度整体呈下降趋势。2) 不同带宽采伐样地在伐后各时期新竹总生物量和组分生物量均高于对照样地,并具有显著性 ($p<0.05$);采伐带新竹总生物量来看,在恢复初期, $8m>15m>12m>5m>3m>CK$,在恢复第 3 年, $8m>3m>12m>5m>15m>CK$,在恢复第 5 年, $12m>15m>8m>3m>5m>CK$,而新竹单株生物量在恢复初期和中期都以 3m 采伐带最高。3) 相关性分析发现,在恢复中期,新竹总生物量及各组分生物量与总氮、碱解氮、有效磷和速效钾含量显著负相关,与 pH 呈显著正相关。【结论】带状采伐对新竹生长有显著影响,并随着竹林恢复,新竹质量逐渐提高。与对照样地相比,带状采伐提高了新竹总生物量和各组分生物量,其中,8m 带宽在总生物量上优于其他采伐宽度。
关键词: 带状采伐; 竹林恢复; 生物量; 相关性分析

Characteristics and quality of moso bamboo (*Phyllostachys edulis*) forest stand and recovery after strip clearcutting of different widths

Abstract: 【Objective】To study the effect of strip harvesting on bamboo forest recovery, to elucidate the differences in biomass allocation under different harvesting widths, and to reveal the pattern of biomass allocation in the stand and the dynamic changes in annual recovery, with a view to providing a theoretical basis for the further popularization of the strip harvesting pattern. 【Method】We selected 3m、5m、8m、12m、15m as the research object, with the traditional management of moso bamboo forest (CK) as the control. We investigated the growth and productivity change pattern of moso bamboo in different harvesting widths of sample plots in each big year after harvesting, and study the relationship between the productivity of each component of moso bamboo in different harvesting widths of sample plots and the nutrient content of the soil with the use of correlation analysis. 【Result】1) In the early stage of strip harvesting, the number of new bamboo plants increased significantly compared with the control, and reached the maximum with the increase of width in the 15m cutting belt, the average diameter at breast height of new bamboo in the 12m belt was significantly lower than that of other cutting belts, and the average height of the new bamboo under the branches in all the widths of strip cutting plots was significantly lower than that of the control; in the early stage of restoration, the neatness and uniformity of new bamboo were lower than that of the control, but it was insignificant; in the middle and later stages of restoration, the neatness of new bamboo in all cutting belts rose, the control gradually declined, and the uniformity was lower than the control. In the middle and late stages of recovery, the neatness of new bamboo in each harvesting zone increased, the control gradually

decreased, and the overall uniformity showed a decreasing trend. 2) The total biomass and component biomass of new bamboo in different bandwidth harvesting samples were higher than that of the control in each period of post-harvesting, which was significant ($p < 0.05$); in terms of the total biomass of new bamboo in the cutting zone, in the early stage of recovery, $8m > 15m > 12m > 5m > 3m > CK$, in the 3rd year of recovery, $8m > 3m > 12m > 5m > 15m > CK$, in the 5th year of recovery, $12m > 15m > 8m > 3m > 5m > CK$, while the biomass of individual plants of new bamboo was highest in the 3m cutting belt in both the early and middle stages of recovery. 3) Correlation analysis found that in the middle stage of recovery, the total biomass of new bamboo and biomass of each component was significantly negatively correlated with the contents of total nitrogen, alkali-dissolved nitrogen, effective phosphorus and quick-acting potassium, and significantly positively correlated with the pH. 【Conclusion】 Strip cutting had a significant effect on the growth of new bamboo, and gradually improved the quality of new bamboo with the recovery of bamboo forest. Compared with the control plot, strip harvesting increased the total biomass and biomass of each component of new bamboo, among which, the 8m strip width was better than other harvesting widths in terms of total biomass.

Key words: Moso bamboo forest; Strip clearcutting; Natural restoration; Productivity; Correlation analysis