

邻体竞争对川中丘陵区柏木人工林空间结构的影响

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摘要: 分析在不同密度下邻体竞争对川中丘陵区柏木人工林空间结构的影响, 以期为柏木人工林的结构优化调整提供参考。通过四川省第九次清查数据, 筛选出 156 个样地, 划分为三个密度组。根据数据记录, 还原样地中单木的空间位置, 计算竞争指数及林分空间结构参数, 得出林分空间结构指数用以综合评价。结果表明: 中密度等级、竞争等级对 4 种指标均有显著影响; 密度与竞争的交互作用对混交度、开敞度、角尺度有显著影响, 而对大小比数无显著影响。(1) 林分密度越高, 林分混交度越低。随着竞争强度的增加, 林分树种隔离程度下降, 三种密度林分的混交度主要处于(0,0.5]区间, 属于弱度到中度混交。(2) 不同密度下随着竞争强度的增加平均角尺度指数逐渐减小, 但各林分均处于均匀分布状态。(3) 不同密度下的林分大小比数平均值都接近值 0.5。但随着竞争强度的增加, 不同密度林分的平均大小比数值逐渐增大。(4) 随着竞争强度的增加, 不同密度的林分处于透光条件严重不足和不足的林木个体占比逐渐上升, 透光条件很充足的林木个体占比逐渐下降。(5) 各密度下, 林分空间结构综合评价指数随竞争强度的增加而减小, 且差异均为显著, 其中林分空间结构评价指数皆在 1 级竞争强度时最高。

The impact of neighbor competition on the spatial structure of cypress plantations in the hilly area of central Sichuan

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Abstract: Analyze the impact of neighbor competition on the spatial structure of cypress plantations in the hilly area of central Sichuan at different densities, in order to provide reference for the structural optimization and adjustment of cypress plantations. Through the ninth inventory data of Sichuan Province, 156 plots were selected and divided into three density groups. Based on data records, restore the spatial position of individual trees in the sample plot, calculate the competition index and stand spatial structure parameters, and obtain the stand spatial structure index for comprehensive evaluation. The results indicate that both medium density level and competition level have a significant impact on the four indicators; The interaction between density and competition has a significant impact on the degree of mixing, openness, and angular scale, but has no significant effect on the size ratio. (1) The higher the forest density, the lower the degree of forest mixing. With the increase of competition intensity, the degree of tree species isolation in the forest decreases, and the mixing degree of the three density forest stands is mainly in the range of (0,0.5], belonging to weak to moderate mixing. (2) Under different densities, the average angular scale index gradually decreases with the increase of competition intensity, but all forest stands are in a uniform distribution state. (3) The average size ratio of forest stands at different densities is close to the value of 0.5. But with the increase of competition intensity, the average size ratio of different density forest stands gradually increases. (4) With the increase of competition intensity, the proportion of individuals with severe and insufficient light transmission conditions in forest stands of different densities gradually increases, while the proportion of individuals with sufficient light transmission conditions gradually decreases. (5) At

different densities, the comprehensive evaluation index of forest spatial structure decreases with increasing competition intensity, and the differences are significant. Among them, the evaluation index of forest spatial structure is highest at level 1 competition intensity