

## 吉林中部蒙古栎林心材与边材的生长特征

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**摘要:**【目的】探讨边材宽度、心材半径、心、边材面积与胸径树高的变化规律, 分析建立蒙古栎林心材边材生长发育模型, 以期为该地区科学经营与利用森林提供基础数据。【方法】本文以吉林省三湖自然保护区桃山林场的天然蒙古栎林为对象, 利用 Haglof 树木生长锥钻取样木树芯 46 个, 测定东、西、南、北四个方向的边材宽度、树皮厚度、去皮半径、心材半径, 拟合边材宽度、心材半径、边材面积、心材面积与胸径树高的回归方程, 研究蒙古栎心材与边材生长特征。【结果】南北边材宽度、心材半径、心材面积、边材面积与胸径树高存在极显著差异 ( $P < 0.01$ ); 东北边材宽度与胸径树高存在显著差异 ( $P < 0.05$ )。心材半径、心材面积、边材面积与胸径生长的拟合均表现为二次方程关系较好, 回归方程分别为  $y = 1.88 + 0.12x + 4.98E-3x^2, R^2 = 0.926$ ;  $y = 6.19E-3 + 9.25E-4x + 6.31E-5x^2, R^2 = 0.972$ ;  $y = -1.85E-3 + 7.25E-4x + 7.48E-5x^2, R^2 = 0.914$ 。【结论】通过对最优生长模型的筛选分析, 本研究所建立的回归模型可以较好的预估该研究区域蒙古栎林的边材、心材的生长过程, 可为进一步研究该地区其他生态因子对边材、心材生长特征的影响提供科学参考。

**关键词:** 蒙古栎林 心材 边材 生长模型

## Growth Characteristics of Heartwood and Sapwood in *Quercus Mongolica* Forest in Central Jilin Province

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**Abstract:** 【Objective】 To explore the changes in sapwood width, heartwood radius, heart, sapwood area, and tree height at breast height, and to establish a growth and development model for the heartwood and sapwood of Mongolian oak forest, in order to provide basic data for the scientific management and utilization of forests in the region. 【Method】 This article takes the natural Mongolian oak forest in Taoshan Forest Farm of Sanhu Nature Reserve in Jilin Province as the object, and uses a Haglof tree growth cone drill to sample 46 tree cores. The sapwood width, bark thickness, peeling radius, and heartwood radius in four directions of east, west, south, and north are measured. The regression equations of sapwood width, heartwood radius, sapwood area, heartwood area, and breast height are fitted to study the growth characteristics of Mongolian oak heartwood and sapwood. 【Result】 There were extremely significant differences ( $P < 0.01$ ) in the width, radius, area, and height of the sapwood between the north and south ( $P < 0.01$ ); There is a significant difference in the width and height of sapwood at breast height in Northeast China ( $P < 0.05$ ). The fitting of heartwood radius, heartwood area, and sapwood area with DBH growth showed a good quadratic equation relationship, with regression equations of  $y = 1.88 + 0.12 * x + 4.98E-3x^2, R^2 = 0.926$ , respectively;  $Y = 6.19E-3 + 9.25E-4x + 6.31E-5x^2, R^2 = 0.972$ ;  $Y = -1.85E-3 + 7.25E-4x + 7.48E-5x^2, R^2 = 0.914$ . 【Conclusion】 Through screening and analysis of the optimal growth model, the regression model established in this study can better predict the growth process of sapwood and heartwood in the Mongolian oak forest in the study

area, providing scientific reference for further research on the impact of other ecological factors in the region on the growth characteristics of sapwood and heartwood.

**Keywords:** *Quercus Mongolica* forest heartwood sapwood growth model

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