BOTANICHESKII ZURNAL, 2022, Vol. 107, N 4, pp. 360–384

COMMUNICATIONS

ANNUAL INCREMENT OF EARLYWOOD AND LATEWOOD IN LOCAL PORTIONS OF CAMBIAL ZONE AS INDICATOR OF THE STAGES OF TREE GROWTH AND DEVELOPMENT OF *QUERCUS ROBUR* (FAGACEAE) TRUNK

A. V. Tikhomirov

e-mail: dendrodoctor@yandex.ru

DOI: 10.31857/S000681362204007X

The latewood/earlywood ratio in the annual ring of the *Quercus robur* L. trunk reduces towards zero through the lifetime of a local portion of the cambial zone. The latewood/earlywood radial annual increments ratio is used to characterize such phenomena within the local cambium portion. With its value 0.4, the greatest probability of the tree drying is observed. Accordingly, the term “control age” was introduced, i. e. the age of the annual ring with latewood / earlywood ratio 0.4. Furthermore, the term “annual ring normalized age” was introduced, defined as the relationship between the specific annual ring and the control age. The cambium portion lifespan may vary from several dozens to several hundreds of years. The normalized age allows to analyze cambium zones in similar periods of their development. Meanwhile, the latewood/earlywood ratio of different cambium zones may vary several-fold. In order to analyze them, five types of proportion between the increment ratio and the normalized age, which may be defined in a scoring system, were distinguished. A comparative analysis of the earlywood annual increment formation in terms of radius and area was conducted. Following the initial periods of the earlywood regular annual increment increase in terms of radius and area, their trend behavior may be different. During this period, the earlywood radial increment decreases but the area increment, depending on this decrease intensity, may increase, remain constant or decrease. The analysis of the control age in the local cambium portions at the various trunk height shows that cambium zones through the tree life can be at different stages of their development, but generally they are controlled by the overall ontogenesis rate. The indicators of cambium zones control/normalized age allow to evaluate characteristics of the tree condition it different times of its life.

Keywords: trunk, cambial zone, earlywood, latewood, ontogeny, forecast, English oak, *Quercus robur* L.

ACKNOWLEDGEMENTS

The author expresses deep gratitude to the staff of the Laboratory of Ecology of Broad-Leaved Forests of the Institute of Forestry of the Russian Academy of Sciences: A.F. Ilyushenko for valuable consultations, I.A. Utkina and V.V. Rubtsov for a critical review of the manuscript and valuable comments, D.A. Alekseev for his active assistance in preparation of this work.

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