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ONLINE ISSN : 1880-7577

PRINT ISSN : 0021-4795

Mokuzai Gakkaishi

Vol. 53 (2007) , No. 4 p.180-186



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Radial Variation Patterns of the Sizes and the Frequencies of Vessels and Rays within a Single Trunk of *Acanthopanax sciadophylloides*

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(Received October 25, 2006)

(Accepted March 5, 2007)

Abstract: Using a single trunk of *Acanthopanax sciadophylloides* whose height was 13 m and age was 35 years, the variation patterns of average vessel element length (VEL), average earlywood vessel diameter (VDe), average vessel diameter at the center of the annual ring (VD), the number of vessels in a transverse section of 1 mm² (VNb), the average ray area (RA), the average ray height (RH), the average ray width (RW), and the number of rays at a tangential section of 1 mm² (RNb) were studied for each annual ring and for each tree height section, based on 7 discs. The maturity age of xylem material was estimated in addition to the study of the horizontal variation patterns. Furthermore, the distance from the top of the tree trunk for each time of annual ring development was estimated based on the tree height growth function estimated from the Gompertz function, and the relation between the distance from the tree top and each element is discussed. As a result, VEL and VD showed similar values as long as the distance from the tree top was almost the same, while RA, RH, and RW showed similar values provided the ring number from the pith was almost the same for a certain annual ring number. These results indicate that VEL and VD are influenced by the distance from the tree top and RA, RH, and RW are strongly influenced by the cambium age.

Keywords: vessel, ray, horizontal variation, mature wood, *Acanthopanax sciadophylloides*



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To cite this article:

Ryouta Tsuchiya and Ikuo Furukawa: Mokuzai Gakkaishi Vol. 53, No. 4, 180-186 (2007) .

doi:10.2488/jwrs.53.180

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