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The Relationship between Radial Variation of Wood Fiber Length, Vessel Lumen Diameter and the Stage of Diameter Growth in *Castanea crenata*

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Abstract: In order to clarify the relations among the radial variation of wood fiber length, earlywood vessel lumen diameter and the process of diameter growth, the authors studied wood fiber length, earlywood vessel lumen diameter, and cumulative annual ring width for each ring number from the pith, using a total of 16 disks obtained from 4 parts at different stem heights from 4 individuals of *Castanea crenata*. The process of diameter growth was classified into the three stages : young stage, middle stage, and old stage, by applying the Gompertz growth function to the radial variation in cumulative annual ring width. The maturation ages of wood fiber length and earlywood vessel lumen diameter were estimated with the segmented nonlinear regression analysis method. As a result, it was found that the maturation age of wood fiber length is younger than that of earlywood vessel lumen diameter, and is near the age at the boundary between the young and middle stages of diameter growth in most cases. The maturation age of earlywood vessel lumen diameter is near the age at the boundary between the middle and old stage in many cases. These results indicate that there is some relation between the radial variation in wood fiber length and earlywood vessel lumen diameter and the process of diameter growth.

Keywords: diameter growth, radial variation, fiber length, vessel diameter, maturation age

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