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## The Evaluation of Modulus of Elasticity at an Early Stage of Growth in Sugi (*Cryptomeria japonica*) Wood Using S2 Microfibril Angle of Latewood Tracheids as a Wood Quality Indicator

Megumi Ishidoh<sup>1)</sup>, Futoshi Ishiguri<sup>1)</sup>, Kazuya Iizuka<sup>1)</sup>, Shinso Yokota<sup>1)</sup>, Hidekatsu Ohno<sup>2)</sup> and Nobuo Yoshizawa<sup>1)</sup>

1) Faculty of Agriculture, Utsunomiya University

2) Tochigi Prefectural Forestry Research Center

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**Abstract:** The objective of this study was to examine the evaluation of modulus of elasticity (*MOE*) in mature wood using microfibril angle at an early stage of growth. Several wood qualities, such as latewood tracheid length, microfibril angle of S2 layer in latewood tracheid (*MFA*), and static bending property were examined in 45-year-old sugi (*Cryptomeria japonica*) trees originated from seedlings. From the results of the radial variation of the *MFA* and latewood tracheid length, the boundary between juvenile wood and mature wood was determined to be around 21st to 24th annual rings from the pith. *MFA* showed a significant negative correlation with *MOE* and specific *MOE*,  $r=-0.747$  and  $r=-0.889$ , respectively. In addition, the *MFA* value at the 3rd annual ring showed a significant negative correlation with *MOE* and specific *MOE*,  $r=-0.556$  and  $r=-0.623$ , respectively. These results indicate that *MOE* value in mature wood can be evaluated using *MFA* values at an early stage of growth in sugi wood originated from seedlings.

**Keywords:** *Cryptomeria japonica*, S2 microfibril angle, modulus of elasticity

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