

Accuracy Test of Coring for Measuring Annual Increment in *Quercus mongolica*, *Kalopanax septemlobus*, and *Pinus densiflora*¹

Byung-Bae Park^{2*} · Jong-Hwan Lim^{2,3} · Pil-Sun Park⁴ · Kyeong-Hak Lee⁵

ABSTRACT

Coring has been widely used to measure annual increment in temperate forest ecosystems. This method is attractive because cores can be taken in just one visit. However, the accuracy of this method has not been tested. We expected coring to be less accurate than band dendrometers because of the eccentricity of tree growth. We studied 41 trees at the Long Term Experimental Forest in Mt. Gyebang, which has been monitored with band dendrometers since 1996. We collected two tree cores from the south and north face of each tree, 10 cm below the growth band. Increment cores were measured to 0.01 mm under stereomicroscopy. Annual growth from 1997 to 2006 was 3.2 mm yr⁻¹ for *Quercus mongolica*, 3.5 mm yr⁻¹ for *Kalopanax septemlobus*, and 5.7 mm yr⁻¹ for *Pinus densiflora*. The difference between the two methods was 10% for *Q. mongolica*, 14% for *K. septemlobus*, and 4% for *P. densiflora*. Compaction in the corer and shrinkage during drying decreased diameter increment by 5.6% and 1.0% on *P. densiflora*, respectively. This study suggests that the two methods for annual increment measurement are very similar, but species specificity should be concerned for direct comparison.

Keywords : *Band dendrometers*, *Mt. Gyebang*, *Forest production*, *Temperate forest ecosystem*

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² Division of Forest Ecology, Korea Forest Research Institute, Seoul 130-712, Korea

³ Division of International Cooperation, Korea Forest Service, Taejon 302-712, Korea

⁴ Department of Forest Sciences, Seoul National University, Seoul 151-712, Korea

⁵ Department of Forest Management, Korea Forest Research Institute, Seoul 130-712, Korea

* Corresponding author E-mail : bbpark@forest.go.kr