ONLINE ISSN : 1880-7577
PRINT ISSN : 0021-4795

Mokuzai Gakkaishi
Vol. 52 (2006) , No. 1 p.8-18

[PDF (924K)] [References]

Application of the Wire Dendrometer for Monitoring the Radial Growth of Trees

A comparison with the conventional band dendrometer and the pinning method

Kana Yamashita[1)], Naoki Okada[2)] and Koichi Kamo[3)]

1) Forestry and Forest Products Research Institute
2) Graduate School of Agriculture, Kyoto University
3) Forestry and Forest Products Research Institute

(Received January 21, 2005)
(Accepted June 23, 2005)

Abstract: Radial growth of a sugi(Cryptomeira japonica)and a hinoki(Chamaecyparis obtusa)tree was measured with the newly developed wire dendrometer to compare its performance with those of the conventional band dendrometer and the pinning method. Employing flexible stainless wire and constant tension into the wire dendrometer reduced the problems of the band dendrometer : the first year slack, the friction of the bands, and the increase of the band tension caused by radial stem growth. The wire dendrometer detected the start of xylem growth, a rapid growth period(earlywood formation period)and a slow growth period (latewood formation period), which coincided with the results by the pinning method. However, the wire dendrometer could not detect the end of xylem growth. Since the wire dendrometer detected not only the xylem formation but also the shrinkage and expansion of the trunk caused by water transpiration, it was difficult to detect small amounts of xylem formation or the cessation of cell division. One point measurements such as the dial gauge or the pinning methods could not measure the average radial growth because of the periodical growth variation among the different radii, whereas the wire dendrometer could monitor the average periodical growth of tree trunks.

Keywords: wire dendrometer, band dendrometer, pinning method, periodical growth

[PDF (924K)] [References]

To cite this article:
Kana Yamashita, Naoki Okada and Koichi Kamo: Mokuzai Gakkaishi Vol. 52, No. 1, 8-18 (2006) .

doi:10.2488/jwrs.52.8
JOI JST.JSTAGE/jwrs/52.8