

Biomass Expansion Factors of Natural Japanese Red Pine (*Pinus densiflora*) Forests in Korea¹

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ABSTRACT

Biomass expansion factors, which convert the timber volume (or dry weight) to biomass, are used to estimate the forest biomass and account for the carbon budget at the national or regional level. This study estimated the biomass conversion and expansion factors (BCEF), root to shoot ratio (R), biomass expansion factors (BEF) of natural Japanese Red Pine (*Pinus densiflora* Sieb. et Zucc.) forests based on direct field measurements and publications in Korea. This study attempted to fit the nonlinear relationships between the biomass expansion factors (BCEF and BEF) and main stand factors [stand age, tree height, and diameter at breast height (DBH)]. The relationship between BEF and each main stand factor was expressed as a simple logarithmical equation. The BCEF was also expressed as a logarithmical equation of the tree height, DBH, and stand volume, whereas there was no significant relationship between BCEF and stand age. The mean value for BCEF, BEF, and R was 0.5821 Mg m⁻³ (n=22, SD=0.1196), 1.4465 (n=22, SD=0.2905), and 0.2220 (n=17, SD=0.0687), respectively. The values of the biomass expansion factors in this study may indicate much representativeness to estimate forest biomass in natural Japanese Red Pine forests of Korea than the default values given by the IPCC (2003, 2006).

Keywords : Biomass expansion factor, *Pinus densiflora*, Korea, Root/shoot ratio, Default value

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