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Effects of Initial Spacing on Growth and Wood Properties of Sugi (*Cryptomeria japonica*) Cutting Cultivars

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Abstract: To determine the effect of initial spacing on growth and wood properties of sugi (*Cryptomeria japonica* D. Don) cutting cultivars, six cultivars (Iwao, Hinode, Yamaguchi, Yaichi, Shakain, Yabukuguri) were examined. They were identified based on MuPS (Multiplex PCR of SCAR) markers type and had been planted at 1500, 3000, 5000 trees/ha.

Effects of initial spacing on growth and wood properties studied were significantly less than differences between cultivars. Diameter and volume growth for dense initial spacing was less than that for wide initial spacing. Wood density of mature wood, L^* of heartwood, dynamic Young's modulus of logs, compressive strength and modulus of elasticity for dense initial spacing were slightly higher, but green moisture content of heartwood and sapwood, and a^* of heartwood were lower than for wide initial spacing. Initial spacing had an effect on mechanical properties which was different for Yabukuguri than for the other 5 cultivars. Thus, wood properties of sugi were slightly influenced by initial spacing, although it was mainly influenced by inheritance factors such as cultivar.

Keywords: *Cryptomeria japonica*, cutting cultivar, growth, wood property, initial spacing

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