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## Does Plantation Teak Produce Comparable Quality as Naturally Grown Teak?

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### Abstract

Due to its durability and dimensional stability, teak has been one of the most sought-after hardwoods in the international market. As its demand outstrips natural supplies, it is planted in most parts of the world, even outside its natural range.

Myanmar, the home of teak, has established teak plantations extensively since 1980s, which were managed under a rotation of 60–80 years. Since 1998, special teak plantations have been established with a harvesting rotation of 40 years. At the end of 2006, teak plantation amounted to 373,407 ha (44.5 % of plantation areas). Mean annual increment of plantation teak decreases with ages while soil deterioration accelerates, but short rotation produces more juvenile wood than long rotation. In Myanmar, no research has been done on technological properties of plantation teak. To promote systematic utilisation, mechanical properties of plantation teak of ages 15, 20, 25 and 30 years were investigated at green and air-dry conditions. Ten trees were collected from each age class and intra-stem variations were also analyzed.

Tested properties increased significantly with distances from pith towards bark and increased with height in heartwood. Properties also vary significantly with ages, but the oldest plantation teak did not have the highest properties. Lewe teak of age 25 was found best, followed by Oktwin teak of age 20, Thandwe teak of age 30 and Yetashe teak of age 15. Lewe, Oktwin and Yetashe are where teak thrives best naturally in Myanmar. Thus, it can be said there exists the effect of locality on wood properties of plantation teak, and investigation of properties of plantation teak at different ages within each locality is recommended to fix harvesting rotations. All plantation teaks were lower than naturally grown teak by 11–24 % and 12–26 % in modulus of elasticity and maximum crushing strength, respectively, which brings them down to lower strength classes. Modulus of rupture of plantation teak can be compared to that of naturally grown teak. Fiber stresses in side and axial compression are significantly higher in plantation teak than naturally grown teak by 11–44 %. These variations should be taken into consideration in the utilisation of plantation teak.

**Keywords:** Mechanical properties, plantation, rotation, teak