

Songyos Chotchutima 2010: Effects of Spacings on Growth and Biomass Yield of Leucaena (*Leucaena leucocephala* (Lam.) de Wit) for Renewable Energy. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Professor Sayan Tudsri, Ph.D. 107 pages.

The effects of spacings on growth and biomass yield of leucaena were carried out at the National Corn and Sorghum Research Center, Pakchong district, Nakhon Ratchasima province between December 2006 and December 2008. The experiment was arranged in RCBD with 4 replications. The treatments included 6 spacings, viz., 1x0.25 1x0.5 1x1 1x1.5 2x0.5 and 2x1 meter (m)

The results showed that the 1x1.5 m spacing gave the tallest plant height at 7.32 m and the shortest plant height (6.25 m) resulted from 1x0.25 m spacing. The widest spacing (2x1 m) gave the highest stem diameter for both years and higher coppice of stump than the other spacings. Moreover, the 1x0.25 m spacing gave a highest biomass yield for both years (8,516 and 10,643 kg/rai) and highest stem yield of 6,759 and 8,493 kg/rai, respectively, followed by 1x0.5 m spacing. Besides, the narrowest spacing 1x0.25 m gave the highest leaf yield for both years. For wood quality, the spacings had no effect on heat value and wood density in the first year. However, in the second year the 2x1 and 1x1.5 m spacing gave highest wood density. Regarding the content of nitrogen, phosphorus, potassium, calcium, ADF, NDF, hemicelluloses and cellulose in the leaves, it was found that spacings had no effect on those values. The 1x0.25 m spacing gave the highest magnesium and sulfur content whereas the 1x1 m spacing gave highest percentage of ADL.

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Student's signature

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Thesis Advisor's signature