

Saowaphak Sukprasert 2011: Effects of Planting Systems on Yield and Chemical Composition of *Leucaena* (*Leucaena leucocephala* (Lam.) de Wit) for Alternative Energy. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Professor Sayan Tudsri, Ph.D. 86 pages.

Effects of planting systems on yield and chemical composition of *Leucaena* (*Leucaena leucocephala* (Lam.) de Wit) for alternative energy were carried out at the National Corn and Sorghum Research Center, Pak Chong district, Nakhon Ratchasima province from February 2007 to February 2009. The experimental was arranged in RCBD with four replications. Plant height, stem diameter, chemical composition, heat value and wood density were measured from six treatments i.e. single row (1.0×0.50, 2.0×0.50 and 1.5 × 0.50 m) and double row (double row 0.50, 0.75 and 0.75 m apart at 1.0, 1.5 and 2.0 m).

The result revealed that planting height was not affected by planting systems ( $p > 0.05$ ) for both years. However, stem diameter was significantly higher at single row (2.0×0.50 m) spacing than double row for both years. Dry matter yield of leaf, branch and stem responded to single row spacing (1.0×0.50 m). The total biomass was significantly highest at 1.0×0.50 m of single row for both years (5.0 and 8.0 t/rai) whereas wood density, heat value and chemical compositions (nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, ADF, NDF, ADL, hemicelluloses and cellulose in the leaves) were not affected by planting systems. It concluded that the optimum plant spacing for growing leucaena as bioenergy was 1.0×0.50 m with single row system.

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