Pattama Nitthaisong 2011: Effects of Frequency and Height of Cutting on Yields and Chemical Composition of Leucaena (*Leucaena leucocephala* (Lam.) de Wit) for Biomass Energy. Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Professor Sayan Tudsri, Ph.D. 114 pages.

Two experiment were conducted to determine the effect of frequencies and height of cutting on growth and biomass yield and chemical composition of Leucaena at the National Corn and Sorghum Research Center, Pakchong district, Nakhonratchasima province between February 2007 to January 2010. The first experiment was arranged in Systematic Design with 4 replications; while the second one was arranged in RCBD with 4 replications.

In the first experiment, plant height, stem diameter and total biomass yield increased with the increasing of intervals between each cutting. The increase in total biomass yield was due to an increase in woody stem and branch components. Less frequencies of cutting reduced the concentration of phosphorus and potassium while increased the concentration of calcium, magnesium, ADF, NDF, hemicelluloses and celluloses in the leaves. There was no effect of cutting frequencies on nitrogen, sulfur and lignin concentration in the leaves. Wood density increased with the increasing of cutting intervals, whereas the heating value was similar among the cutting frequencies. In the second experiment, an increase in cutting height (from 5 to 200 cm. above ground levels) had no effect on plant height, stem diameter and total biomass yield. Nitrogen, phosphorus, calcium, sulfur, NDF, lignin, hemicelluloses and cellulose levels were also not effected by cutting height. However, Leucaena which was cut at 200 cm. height showed higher potassium and ADF than the one cut at 50 and 100 cm., but the reverse was true for the magnesium. It concluded that the optimum cutting height for growing leucaena as bioenergy was 5 cm. above ground level, with at least 12-month cutting interval.

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