

Asdaporn Kanchanakuha 2009: Growth and Biomass Production of Five Varieties/Lines of *Leucaena leucocephala* after First Year of Establishment for Sustainable Energy.
Master of Science (Agronomy), Major Field: Agronomy, Department of Agronomy.
Thesis Advisor: Professor Sayan Tudsri, Ph.D. 108 pages.

Oil crisis is the most important issue now. It is recognized that the production of petroleum oil has been reduced significantly and will not be enough to use in the near future. According to this problem, the alternative energy has been more widely used in Thailand. The aims of this study were to compare the growth, yield and heat value in five varieties/lines of *Leucaena leucocephala* (Tarramba, Peru, Cunningham, 5/7 and 5/8). A randomized complete block design was used in 4 replications with spacing 1x0.5 meter. The experiment was conducted at National Corn and Sorghum Research Center, Nakhon Ratchasima.

The results showed that within one year the average height of all five varieties/lines were 600-700 centimeter. Tarramba gave the highest average diameter (3.8 centimeters), while Peru gave the lowest average diameter (2.5 centimeters). For the wood production, Tarramba gave the highest fresh wood (6,210 kilogram/rai) followed by 5/8 (5,390 kilogram /rai). Peru showed the lowest fresh wood production (2,390 kilogram /rai). In wood density, Tarramba was the lowest (0.50 gram/cubic centimeter) and since there were no relation between wood density and heat value all of five varieties/lines have no significant difference in heat value. The chemical composition of leucaena each varieties/lines were different in phosphorus, potassium and magnesium. Tarramba, 5/7 and 5/8 had significantly lower levels of phosphorus and potassium but higher magnesium in the leaves when compared to those of Peru and Cunningham. There were no difference in protein calcium and sulphur content in the leaves.

Student's signature

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