

Mana Hnukaew 2014: Soil Properties, Yield and Nutrient Content of Various 5-Year-Old Eucalypt Clones in the Upper Northeast. Master of Science (Silviculture Technology), Major Field: Silviculture Technology, Department of Silviculture. Thesis Advisor: Assistant Professor Roongreang Poolsiri, Dr.nat.techn. 129 pages.

The soil properties, yield and nutrient content of various 5-year-old eucalypt clones in the upper northeast were carried out in three areas namely Wang Sam Mo (WM), Udon Thani province, Ban Phaeng (BP), Nakhon Phanom province and Seka (SK), Bueng Kan province. Five eucalypt clones included SF1 (*Eucalyptus camaldulensis* x *E. deglupta*), SF2 (*E. camaldulensis* x *E. camaldulensis*), SF3 (*E. camaldulensis* x *E. urophylla*), SF4 (*E. camaldulensis* x *E. camaldulensis*) and SF5 (*E. camaldulensis* x *E. urophylla*) which were planted in the three areas. Randomized complete block design (RCBD) with three blocks was applied. There were five eucalypt clones in each block. Each eucalypt clone consisted of 16 trees with spacing of 3x3 m.

The results were found that soil texture in the three areas were sandy loam, clay loam and clay which were according to different soil depth. The average soil depth was 50 cm with gravel mixed. The soil bulk densities was medium to moderately high. (WM 1.21-1.77, BP 1.04-1.81, SK 1.01-1.78 g/cm³). Soil chemical properties, pH of the areas was acidic. (WM 4.79-5.58, BP 4.76-5.48, SK 4.34-4.95). The amounts of organic matter were at low to medium levels. (WM 0.76-1.92%, BP 1.39-3.69%, SK 0.93-2.41%). Nitrogen and phosphorus were moderately low level in all areas except phosphorus was medium level at WM. Potassium, calcium and magnesium were at medium level in all areas.

Yield of eucalypt revealed that the highest aboveground biomass were found in SF5 clone at WM (144.59 t/ha), SF1 clone at BP (129.73 t/ha) and SF4 clone at SK (158.26 t/ha). The differences of eucalypt clones affected significantly on the differences of aboveground biomass yield.

Nutrient contents in 5 eucalypt clones showed the same trend in all areas. Calcium had the highest accumulation followed by nitrogen, phosphorus, potassium and magnesium, respectively. The concentrations of nutrient in the stem and branch parts were less than in the leaf part. The nutrient content was mostly accumulation in stem due to it had the highest biomass production. The accumulation of nutrients would vary according to the clones and areas.

Student's signature

Thesis Advisor's signature