

La-ongdao Thaopimai 2013: Losses of Biomass, Soil and Nutrient from Balled Tree Plantation at Chaom Subdistrict, Kaeng Khoi District, Saraburi Province. Master of Science (Silviculture Technology), Major Field: Silviculture Technology, Department of Silviculture. Thesis Advisor: Assistant Professor Ladawan Puangchit, D.Sc. 82 pages.

The study of losses of biomass and nutrients in balled trees were carried out at Chaom subdistrict, Kaeng Khoi district, Saraburi province where is the biggest plantation and market for burlap tree production in Thailand. The objectives of this study were to estimate biomass and nutrients in plantation for burlap tree production. For this study, biomass and nutrients in soil and tree were investigated in: *Lagerstroemia speciosa* (L.) Pers., *Pterocarpus indicus* Willd., *Swietenia macrophylla* King, *Cassia fistula* L., *Michelia alba* DC. and *Mimusops elengi* Linn. plantations. Three 10x10 m sample plots were randomly selected for each species. For estimating the aboveground and belowground biomass, the stem diameters (at 30 centimeters aboveground and at breast height) and total height were measured. Five sample trees of each species were felled down for biomass and nutrient analyses. Soil samples were also taken from three subplots at 2 depths (0-15 and 15-30 centimeters).

The results showed that total biomass of *P. indicus*, *L. speciosa*, *S. macrophylla*, *M. alba*, *C. fistula* and *M. elengi* were 1.58, 1.60, 2.21, 3.29, 3.74 and 22.56 tonnes rai^{-1} , respectively. The amounts of nitrogen, phosphorus and potassium in those trees were 27.34, 8.65, 10.83, 19.68, 23.48 and 125.46 kg rai^{-1} ; 1.92, 1.29, 1.68, 1.53, 5.25 and 12.77 kg rai^{-1} ; 11.93, 8.05, 11.56, 15.81, 14.54 and 81.62 kg rai^{-1} , respectively. Soil in balled roots varied with tree sizes which could be estimated from diameter at 30 centimeters aboveground level of those balled trees. It was found that *L. speciosa*, *M. alba*, *C. fistula*, *P. indicus*, *S. macrophylla* and *M. elengi* had soil in balled roots of 4.66, 5.50, 5.57, 5.67, 9.52 and 18.7 tonnes rai^{-1} , respectively. The amounts of nitrogen, phosphorus and potassium to be moved were 13.06, 11.45, 10.67, 12.94, 10.16 and 51.73 kg rai^{-1} ; 0.01, 0.03, 0.01, 0.01, 0.01 and 0.03 kg rai^{-1} ; 0.33, 0.42, 0.51, 0.49, 0.43 and 0.96 kg rai^{-1} , respectively. Such amounts of nutrients would be moved from planting sites as a result of balled-tree harvesting. For the sustainable management of nutrients in burlap tree production, therefore, fertilizer application is recommended.

Student's signature

Thesis Advisor's signature