

Pratak Pakoktom 2013: Effects of Thinning on Soil Properties, Aboveground Biomass and Undergrowth Composition in Exotic Tree Plantations at Doi Angkhang, Chiang Mai Province. Master of Science (Silviculture Technology), Major Field: Silviculture Technology, Department of Silviculture. Thesis Advisor: Assistant Professor Roongreang Poolsiri, Dr.nat.techn. 127 pages.

Study on effects of thinning on soil properties, aboveground biomass and undergrowth composition in exotic tree plantations at Doi Angkhang, Chiang Mai province aimed to compare the effects of various thinning intensities on changes of soil properties and aboveground biomass in 4 exotic tree plantations as *Acacia confusa* Merr., *Fraxinus griffithii* C.B. Clarke, *Liquidambar formosana* Hance. and *Cunninghamia lanceolata* Hook. at various thinning intensities i.e. control, 20, 40 and 60%, respectively. Two 20 m x 20 m experimental plots were set up in each thinning intensity of each exotic tree plantation. Soil physical and chemical properties, aboveground biomass and undergrowth composition were investigated.

The results showed that physical soil properties, soil bulk density was the highest in *A. confusa*. Most soil texture was clay and soil bulk density was decreased with increasing thinning intensities in all 4 exotic tree plantations. Furthermore, soil bulk density and porosity in each thinning intensity of *A. confusa* were significant differences but those were non-significant differences in other exotic tree plantations. Meanwhile, chemical soil properties as pH, available phosphorus, exchangeable potassium, calcium and magnesium in 4 exotic tree plantations trended to increase with increasing thinning intensities that was contrast to trend of soil organic matter and total nitrogen. Values of pH, exchangeable calcium and magnesium and available phosphorus were the highest in *C. lanceolata* and exchangeable potassium were the highest in *L. formosana*. Soil organic matter and total nitrogen contents were the highest in *A. Confusa*. Aboveground biomass was the highest in *C. lanceolata* and was the lowest in *F. griffithii*. Aboveground biomass of *L. formosana* and *C. lanceolata* decreased with increasing thinning intensity. Thinning intensities of each exotic tree plantations did not significantly affect to the aboveground biomass. Undergrowth composition was consisted of 56 families, 104 genera and 116 species. Meanwhile, undergrowth in 4 exotic tree plantations trended to increase with increasing thinning intensities that was contrast to the trend of species diversities in *L. formosana* and *C. lanceolata* that were decreased with increasing thinning intensities.

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Thesis Advisor's signature