

ABSTRACT

The aim of this research is to study the types and utilization of local tree species for village woodlot plantation in the area of Royal Project in Chiang Mai Province. In 2018, three research topics were performed, including 1) Study of growth of tree species planted in 3 elevation level areas, low, medium and high. In the low elevation area (at Mae Tha Nua Royal Project Development Center), *Xylia xylocarpa*, *Magnolia garrettii*, *Zanthozylum limonella*, *Phyllanthus emblica* and *Sterculia monosperma* were tested. In the medium elevation area (at Thung Luang Royal Project Development Center), *Magnolia garrettii*, *Betula alnoides*, *Phyllanthus emblica*, *Duabanga grandiflora* and *Sterculia monosperma* were tested. In the high elevation area (at Mae Hae Royal Project Development Center), *Magnolia garrettii*, *Castanopsis acuminatissima*, *Phyllanthus emblica*, *Betula alnoides* and *Sterculia monosperma* were tested. 2) Study of tree seed and seedling production for viallager's woodlot extention were conducted on 2 species; Seed testing: *D. grandiflora* and *Manglietia garrettii* Cralb, While Planting media: *D. grandiflora* and *Schima wallichii*. Seed testing were conducted at seed laboratory, Faculty of Forestry and planting media were conducted under nursery in Mae Hia Bamboo Collection Plot, Royal Project Foundation. 3) Study of mechanical and energy properties of household-use wood and firewood were conducted on 2 species; *D. grandiflora* and *C. acuminatissima* with age approximately 10 years old. Sampling trees were studied at the laboratory of Faculty of Forestry.

The results of growth of 2 year old trees showed that tree species with high of the survival rate in the low elevation area were *X. xylocarpa* and *P. emblica*. That in the medium elevation area was *P. emblica* and *D. grandiflora* and that in high elevation area was *P. emblica* and *C. acuminatissima*. However, *Z. limonella* planted in low elevation levels died. And *S. monosperma* planted in medium elevation levels died. For growth in diameter at the ground and total height, tree species that grew well in the low elevation area were *M. garrettii*, *X. xylocarpa* and *P. emblica*. That in medium elevation area was *P. emblica*, *B. alnoides* and *M. garrettii*. While, that in high elevation area was *B. alnoides*, *X. xylocarpa* and *M. garrettii*.

For seed testing, the results showed that moisture content of *D. grandiflora* and *M. garrettii* were found in 8.734 and 9.563 percent, respectively. On seed characteristics of two species, seeds wide were 0.21 and 5.47 mm., seed length were 1.03 and 9.88 mm., seed width were 0.23 and 3.37 mm, respectively. Seed weight per 1,000 seeds were 0.04050 and 105.29500 g, respectively. Germination percentage of both species were 66.00 and 5.00 percent, respectively. The most suitable for established high quality seedling planting media was forest soil (*D. grandiflora*) and soil mix coconut shell's hair (*S. wallichii*).

For wood properties study, *C. acuminatissima* was medium strength wood with low natural durability. It is suitable for use as construction such as floor, beam, and column in

household and wooden bridge. They can be used as wooden construction after chemical treatment to improve their properties. *D. grandiflora* were low strength woods with low natural durability. They are not suitable for use as wooden construction but they can be made as furniture and souvenir after chemical treatment to improve their properties. As firewood, the heating values of *C. acuminatissima* and *D. grandiflora* were 4,513.53 and 4,279.93 cal/g, respectively.

Keyword: village woodlot, local tree species, wood properties, Highland

