

Original Research Paper

Survivorship and Growth Performance of *Shorea macrophylla* (de Vriese) after Enrichment Planting for Reforestation Purpose at Sarawak, Malaysia

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Abstract: Reforestation may offer one means of mitigating the processes of forest land degradation and is indispensable in an effort to conserve forest biological diversity in the tropics. Thus, a preliminary assessment was conducted in order to evaluate the survivorship and growth performance of *Shorea macrophylla* (de Vriese) after enrichment planting for reforestation purpose in Sarawak, Malaysia. This study was conducted at reforestation sites located at Sampadi Forest Reserve, Sarawak, Malaysia where indigenous Dipterocarp species, *S. macrophylla* (de Vriese) were planted by line planting system. Study sites were established at reforestation areas at different age stands; (planted in the year 1996; SM96, 1997; SM97, 1998; SM98 and 1999; SM99). The assessment on the growth performance of planted *S. macrophylla* was evaluated by measuring the trees total height, Diameter at Breast Height (DBH) and calculation of the percentage of survival. The findings indicated a positive tree growth in terms of growth performance and survival which clarified the efficacy of line planting technique adapted in the studied sites. Growth performance in terms of survivability; Mean Annual Increment of Height (MAIH) and Diameter (MAID) in SM96 revealed the highest growth rate as compared to SM97, SM98 and SM99. For the average tree height and diameter at breast height, the results showed that the tree height and diameter in SM96 were 11.8 m and 14.7 cm, respectively. Meanwhile, SM99 recorded the lowest average tree height and diameter reading with 8.8 m and 6.6 cm, respectively. Nonetheless, high survival percentage of *S. macrophylla* were depicted in this study with 89% of survival in SM96, followed by 80, 82 and 57% in SM97, SM98 and SM99, respectively. Substantial growth performance and high survival percentage of *S. macrophylla* implied that microclimate condition such as competition between planted and existing pioneer species of the study sites may have affected the tree growth performance of the planted *S. macrophylla*. Notwithstanding, further studies are essential in order to find out the plant-soil association of *S. macrophylla* where other environmental factors may affect the growth and survival of the planted species.

Keywords: Survival, Growth Performance, Enrichment Planting, Reforestation, *Shorea macrophylla*

Introduction

In the humid tropics of Malaysia, indigenous tree species from Dipterocarpaceae family are mainly chosen for reforestation and forest rehabilitation purpose.

Among them, *Shorea macrophylla* (de Vriese) is commonly known in Sarawak, Malaysia as a medium to a large timber-sized tree and valued for its oil-bearing fruits (illipe nuts) but also considered as one of the selected species for forest rehabilitation purposes