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Research

Survivorship and Field Growth Characteristics of Four Selected Bamboo Species for The Development of Bamboo Industry in Sarawak, Malaysian Borneo

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ABSTRACT

The Sarawak State Government has assigned the Sarawak Timber Industry Development Corporation (STIDC) to lead the development of the bamboo industry in Sarawak. Since bamboo research in Sarawak has received meagre attention, baseline information on the early survival rate and field growth characteristics of bamboo are essential for the development of the bamboo industry. A study to evaluate the survivorship and field growth characteristics of a three-year-old bamboo was conducted at the Sarawak Bamboo Pilot Project site in Sabal, Malaysia. Study plots were established at bamboo plantation areas with four different potential bamboo species grown in Sarawak, namely *Bambusa vulgaris* (Buluh minyak), *Gigantochloa levis* (Buluh beting), *Gigantochloa hasskarliana* (Buluh beti), and *Dendrocalamus asper* (Buluh betong). Survival rate and field growth characteristics in terms of the number of culms per clump, the number of new shoots, culm diameter, culm height, mean annual increments of diameter (MAID), and height (MAIH) were measured and quantified quarterly in the year of 2021. The findings revealed that the highest mean survival rate (88%) was found in *G. levis,* and the lowest survival rate (70%) was found in *G. hasskarliana*. However, the lowest mean culm diameter was observed in *G. levis* at 2.66 cm, and the highest was in *B. vulgaris* at 4.51 cm. Notwithstanding, *B. vulgaris* remained with the greatest mean culm height of 12.61 m. Nonetheless, *G. hasskarliana* depicted the highest number of culms per clump and shoots with 91 culms and 3 shoots, respectively. The MAID and MAIH of *B. vulgaris* were significantly higher than the other species with 1.69 cm year^{-1} and 4.72 m year^{-1}, respectively. The scientific information and findings from this study would be useful as guidelines for bamboo industry players, managers, nursery practitioners, and policymakers to begin and carry out the development of the bamboo industry, mainly in Sarawak.

Key words: Bamboo, bamboo industry, growth attributes, Sarawak, survival rate

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INTRODUCTION

Bamboo is a perennial plant belonging to the Poaceae family (Wang, 2006). It is widely distributed, mainly in the world's tropical, subtropical, and mild temperate zones, with the tropical belt having the largest number of species (Fernandez *et al*. 2003). Bamboo is renowned for being a fast-growing, highly renewable, and economical raw material. The inhabitants used it for agriculture, construction, arts and crafts, and furniture in addition to making rafts, which are an essential mode of transportation. A variety of habitats in Malaysia support the growth of bamboo, including hillslopes, riverbanks, logged-over areas, and flat land. In forested areas, bamboo can exist as either pure stands or mixed with other tree species. According to Ng and Md. Noor (1980), most Malaysian bamboo species grow gregariously in localized patches. Peninsular Malaysia is home to around