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ECOLOGY OF *AMORPHOPHALLUS EBURNEUS* BOGN., ENDEMIC PLANT OF SARAWAK, MALAYSIA

I.B. Ipor, J.B. Garon, C.S. Tawan, Meekiong, K. and Muliati, M.

ABSTRACT

An ecological study of *Amorphophallus eburneus* Bogn. was carried out at Gunung Rimau, Padawan. The density of *A. eburneus* was resolved by establishing 5 plots of 20 m x 20 m, which was subdivided to 20 subplots (10m x 10 m). The total number of *A. eburneus* recorded was 239 plants, or 48 plants per plot. Field survey revealed that there were 36 tree species. The five most dominant species were *Diospyros hermaphrodita* (Zoll.) Bakh. Ex V. Steenis (IV = 45.56), followed by *Grewia acuminata* Juss. (IV = 27.59), *Madhuca motleyana* (De Vriese) Baehmi. (IV = 23-47), *Azadiracantha excelsa* (Jack) Jacobs (IV = 21.86), and *Scaphium macropodium* (Miq.) Beumee ex. Heyne (IV = 17.30). Strong relationship in vegetative part of *A. eburneus* was recorded between petiole height and petiole diameter with $R^2 = 0.9173$ ($y = 2.0333x + 21.997$). Study on the effects of shading (0%, 50% and 75% shading) on the development of *A. eburneus* was carried out at Faculty of Resource Science and Technology greenhouse. From the overall observation, *A. eburneus* grown under 75% shading regime showed the highest development on petiole height, petiole diameter, number of leaflets and length of leaflets. For biomass allocation analysis, *A. eburneus* grown under 75% shading regime also recorded the highest value of leaf area determination (LAD), while *A. eburneus* grown under 50% shading regime recorded the highest value of dried mass production (DMP) and *A. eburneus* grown under 0% shading regime recorded the highest value of net rate absorption (NAR).

Keywords: *Amorphophallus eburneus*, ecological study, dominant species, shading, biomass analysis.

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INTRODUCTION

Amorphophallus is a perennial herbaceous plant with an underground storage organ that is known as a tuber (Hetterscheid & Ittenbach, 1994). This genus belongs to the Araceae family and comprises of about 170 species (Hetterscheid, 1994). These species occur mainly in tropics from West Africa towards Polynesia. Most of these species were found at disturbed spots in both primary and secondary forest. Some were even found in forest margin, open forest, on steep slopes and sometimes in very exposed parts in limestone karst areas (Hetterscheid, 1994). He also reported that 13 species of *Amorphophallus* are found in Borneo (6 species in Sarawak, 4 species in Kalimantan and 3 species in Sabah). Recently Ipor *et al.* (2004) discovered and described new species known as *A. julaibii* from Gunung Mulu National Park, Miri, Sarawak. One of the *Amorphophallus* species that is found endemic in limestone area is *Amorphophallus eburneus* Bogn. (Plate VIII).

A. eburneus is very sensitive to water logged condition and therefore this plant need to be planted in a well drained soil (Hetterscheid & Ittenbach, 1994). The water logging can cause collar or root rot as a result of infection by soil borne fungus, *Sclerotium rolfsii* (Gosh *et al.*, 1988). Due to the infection, lesion appear at the stem collar region and in the advance stage, the stem will collapse due to rotting and a thick white mycelial mat can be seen.

Amorphophallus species has also been proven to possess a few dietary, medicinal and ornamental values (Gosh *et al.*, 1988). *A. campanulatus* which is widely distributed in the Philippines, India, Malaysia, Indonesia, Sri Lanka and Southeast Asia has been utilised as the native's food source (Gosh *et al.*, 1988). The tuber of this plant is starch rich and boiled or baked as food. Nevertheless, some *Amorphophallus* species such as *A. paoeniifolius* and *A. titanum* has been cultivated as an ornamental plant (Hetterscheid, 1994). In medicinal aspects, the tuber of *A. kojac* that has low calories was able to control cholestrolsemia and antherscloris (Wiart, 2000).