

Acclimatization of micropropagated *Kappaphycus alvarezii* (Doty) Doty ex Silva (Rhodophyta, Solieriaceae) in outdoor nursery system

Abstract

Seaweed farming has been identified as one of the entry point projects (EPPs) in Malaysia since the government introduced the Economic Transformation Programme, which aims to increase seaweed production to 150,000 t annually by 2020. To achieve this goal, micropropagation and subsequent acclimatization of the micropropagated seaweeds to the open sea is one of the available options to solve the seedling shortage problem. Acclimatization is an important process in which micropropagated seaweeds adjust to gradual changes in environments such as temperature, humidity, photoperiod, and pH. Success acclimatization is an important key for the seaweed tissue culture industry to move forward, and therefore, the protocol of acclimatization of micropropagated *Kappaphycus alvarezii* has been extensively optimized in this study. Direct planting out of the micropropagated seaweeds to the open sea without going through the nursery acclimatization phase may cause shock to the seaweeds due to sudden changes in environmental conditions. In a 2-week acclimatization study, seedlings were found to achieve optimum growth when cultivated in seawater enriched with mixed-algae fertilizer, natural seaweed extract (NSE), under a regimen of daily medium change and culture density of 0.40 g L⁻¹. The acclimatized *K. alvarezii* has achieved 83.33 ± 5.77 % of survival in the seaweed farm with normal physiology and no epiphyte coverage. This study has provided useful information for seaweed cultivators to enhance the survival rate of micropropagated *K. alvarezii* through nursery acclimatization prior to serve as seedlings for commercial seaweed cultivation.