

ABSTRACT

Shinta Mey Lina Parta Alfina Putri. 24020122140151. Physiological and Anatomical Responses of Phalaenopsis Amabilis L. Orchids Following Transplantation and Application of Aloe Vera Liquid Organik Fertilizer. Under the supervision of Nintya Setiari and Muhammad Luqman Hakim.

Phalaenopsis amabilis is an orchid species that, as part of ex situ conservation efforts, requires cultivation in a new growing medium and environment. The process of transplanting these orchids can cause physiological stress that inhibits growth. One way to support orchid growth is by applying liquid organic fertilizer (POC) made from aloe vera, which contains nutrients and hormones. This study aims to examine the effects of various concentrations of aloe vera POC on the physiological and anatomical responses of P. amabilis orchids and to analyze the optimal concentration. The study employed a Single-Factor Completely Randomized Design (CRD) with four concentrations of aloe vera POC: 0%, 0.25%, 0.5%, and 0.75%, each replicated three times. The plants were grown in a medium consisting of fern and sphagnum moss. The POC was applied by spraying the upper and lower surfaces of the leaves and the growing medium until wet, using a volume of approximately 13 mL per plant. Spraying was performed once a week for 12 weeks. The parameters observed included leaf and root growth, chlorophyll content, carotenoids, vitamin C, proline, as well as stomatal type and density. The data were analyzed using one-way ANOVA and Duncan's post-hoc test at the 5% level. The results of the study indicate that aloe vera POC influences several physiological responses in orchids following transplanting. The 0.5% concentration was the most effective treatment in accelerating the emergence of new leaves and roots and enhancing leaf growth, while the 0.25% concentration resulted in the longest root length, and the 0.75% concentration showed the highest chlorophyll content in new leaves. Additionally, the 0.5% concentration tended to result in lower proline and vitamin C content in new leaves, indicating a relatively lower stress response compared to the other treatments. The 0.5% aloe vera POC concentration was the optimal treatment for influencing the physiological responses and stomatal density of orchids after transplanting.

Keywords: Aloe vera, Phalaenopsis amabilis, liquid organic fertilizer, physiological response, transplanting