

ENHANCING GERMINATION AND EARLY GROWTH OF *Passiflora foetida* THROUGH SEED TREATMENT AND MEDIA OPTIMIZATION

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Abstract

Passiflora foetida is an underutilized medicinal plant species in Sri Lanka rich in important phytochemicals. Their limited propagation techniques, the importance and use of underutilized crop species have significantly decreased and led to a critical genetic loss of their gene pools, making this crop "lost" or "neglected". Therefore, to establish a rapid propagation technique and identify the most effective germination-inducing agent and medium for seed propagation of *Passiflora foetida*, an experiment was carried out in a two-factor factorial manner at the University of Colombo Institute for Agro-Technology and Rural Sciences, Hambantota, Sri Lanka. Different types of seed treatments: Gibberellic Acid, hot water, and no any treatment (control) were tested in different potting media of sand, topsoil, sand and topsoil at the ratio of 1:1. There were nine treatment combinations and four replications each containing 10 seeds and those were arranged in a Factorial Complete Randomized Design. Germination percentage, days taken for germination, survival percentage, and number of leaves were recorded and statistical analysis was done using SAS 9.1.3 software. A significant interaction ($P < 0.05$) of seed germinating agents and media types was observed in the survival of *P. foetida* seeds. However, there is no significant interaction ($P > 0.05$) between the tested factors in germination percentage, days taken for germination, and number of leaves. The results revealed a significant effect of germination-inducing agents and media types on germination percentage, while Gibberellic acid showing the highest percentage of 79% at 8th day. Days required for 50% germination showed a notable reduction with Gibberellic acid treatment (8 days) compared to the control (10 days), highlighting its efficiency in accelerating germination. The number of leaves during the second week varied significantly, with Gibberellic acid treatment leading to a higher leaf count of four, and topsoil and sand + topsoil media promoting superior leaf development. Survival percentage affected by a significant interaction between seed germinating agents and media types, with hot water treatment combined with topsoil media resulting in the highest survival rate of 92%. This study shows that seeds treated with gibberellic acid and hot water along with the top soil media seem to be suitable for enhancing the *Passiflora foetida* L. seed germination and survival.

Keywords: Germination, Gibberellic acid, Hot water, Sand, Topsoil

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