

EVALUATION OF MOSS GEL AS A LOW COST SOLIDIFYING AGENT TO SUBSTITUTE AGAR IN PLANT TISSUE CULTURE

L.I.A. Amarawansa¹, S.M. Nagahawaththa², P.A. Weerasinghe¹ and D.L.D. Lakmali²

¹*Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka*

²*Tissue Culture Division, Plant Virus Indexing Center, Gabadawaththa, Homagama, Sri Lanka.*

High cost of production is one of the major constraints in plant tissue culture which is mainly due to high chemical cost. Agar is the most commonly used solidifying agent which cost 60-70% (1 kg = LKR 8000 Brand Maron-India) of the total cost of tissue culture media components. Preliminary study was conducted to identify the suitability of moss gel (1 kg = LKR 3800) as a low cost substitute for Agar in shoot induction and multiplication of banana, shoot multiplication and rooting of orchids and anthurium. Suitability and best concentration of the moss gel were assessed using survival percentage, multiplication rate and number of shoots and roots per culture. Moss gel concentrations of 6.5 gL⁻¹, 7 gL⁻¹, 7.5 gL⁻¹ were selected as treatments and those were compared with the control (Agar 7 gL⁻¹). In banana, high shoot survival percentage (94.4%) was recorded in 6.5 gL⁻¹ moss gel treatment and the lowest (55.5%) was in the control treatment. There were no significant differences among four treatments ($p > 0.05$) for multiplication rate, number of shoots per culture in banana and number of roots per culture in orchid and anthurium. According to the results, moss gel 7 gL⁻¹ was suitable for Banana multiplication (1.48 ± 0.39) and anthurium multiplication (9.27 ± 2.58), whereas, moss gel 6.5 gL⁻¹ was suitable for orchid multiplication (3.57 ± 0.52). Compared to the control, the highest average number of shoots (2.23 ± 1.48) per culture in banana and the highest average number of roots (2.02 ± 0.61) per culture in anthurium were recorded in moss gel 7.5 gL⁻¹ and the highest average number of roots (3.88 ± 0.72) per culture in orchid was recorded in moss gel 6.5 gL⁻¹. In conclusion, moss gel can be used as a low cost substitute for Agar in tested plants.

Keywords: Low cost tissue culture, Moss gel, Solidification agent