

**OPTIMIZATION OF PROTOCOL FOR THE PRODUCTION OF  
PLANTS OF POMEGRANATE VARIETY OF 'MALEE PINK' BY  
USING MICRO-PROPAGATION TECHNIQUE**



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## ABSTRACT

Micropropagation is a highly efficient technique for the large-scale production of genetically uniform, disease-free plants. This study aimed to develop an optimized in vitro propagation protocol for the 'Malee Pink' pomegranate variety by evaluating surface sterilization, shoot multiplication, and root induction conditions. Effective surface sterilization is crucial for reducing microbial contamination while maintaining explant viability. The best sterilization treatment was identified as 2% Clorox for 2 minutes, significantly minimizing bacterial and fungal contamination without causing tissue damage. Pre-tests were conducted to assess phenolic exudation, bacterial contamination, and fungal infection, ensuring optimal conditions for culture initiation. Shoot multiplication was achieved using Murashige and Skoog (MS) medium supplemented with 3 mg/L of 6-Benzylaminopurine (BAP), which promoted vigorous shoot proliferation while preventing abnormal growth. For root induction, gibberellins supplementation was optimized to achieve a high rooting percentage and the development of a strong root system, essential for successful acclimatization. The effectiveness of different treatments was assessed based on survival rates, contamination levels, and shoot vigor. The optimized protocol significantly enhances the efficiency of in vitro propagation, providing a scalable and reliable method for commercial pomegranate production. Future research may explore antioxidant treatments to mitigate phenolic oxidation and improve plantlet health, further supporting mass propagation and ensuring the availability of high-yielding, disease-free 'Malee Pink' plants for commercial cultivation.

**Key Words:** Micro propagation, Multiplication, In-vitro culture, Surface sterilization, root induction, (6)-Benzylaminopurine.

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