UNIVERSITY OF LIFE SCIENCES “KING MIHAI I” FROM TIMISOARA
“YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES”
05–06 NOVEMBER 2026

# IN VITRO REGENERATION OF MONSTERA DELICIOSA AND EVALUATION OF GENETIC STABILITY THROUGH SCoT MARKERS

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## BACKGROUND & AIM

Monstera deliciosa is a tropical ornamental species valued for its distinctive foliage and adaptation to indoor cultivation. Commercial demand requires rapid production of uniform and healthy planting material. This study evaluated axillary shoot regeneration from nodal explants cultured on media containing different concentrations of 6-benzylaminopurine (BAP) and assessed the genetic fidelity of regenerated plants using Start Codon Targeted (SCoT) markers. Axillary bud culture offers a practical route for multiplying selected genotypes while retaining their ornamental characteristics. Combining regeneration assessment with molecular screening helps evaluate both propagation performance and the uniformity of the resulting plants.



ORIGINAL PHOTOGRAPHS: NODAL EXPLANTS AND AXILLARY SHOOT PROLIFERATION IN VITRO



MATURE MONSTERA / EX VITRO CONTEXT
AI-generated illustration

## MATERIAL & METHODS

Plant material: nodal explants of Monstera deliciosa containing axillary buds served as the starting material for regeneration.

Culture treatment: nutrient media with different BAP concentrations allowed comparison of the cytokinin response.

Regeneration assessment: axillary shoot induction and proliferation were compared among treatments to evaluate their suitability for multiplication.

Molecular analysis: Start Codon Targeted (SCoT) markers provided DNA profiles for evaluating genetic fidelity in regenerated plants. This assessment complements visual observations of culture development.

## KEY FINDINGS

Nodal explants showed strong axillary shoot induction, supporting their use for clonal multiplication.

BAP stimulated shoot proliferation in a concentration-dependent manner, highlighting the need to optimize the culture medium.

SCoT profiles supported genetic stability in the analyzed regenerants within the marker regions examined.



AI-GENERATED GEL ILLUSTRATION • NOT EXPERIMENTAL DATA

## BIOLOGICAL INTERPRETATION

Axillary shoot proliferation limits the callus phase and can reduce the risk of culture-induced variation. The concentration-dependent BAP response indicates that cytokinin availability strongly influences bud activation and shoot multiplication. SCoT markers provide a practical DNA-based approach for screening regenerated material before clonal production. Molecular screening complements morphological assessment because visible uniformity alone cannot establish genetic fidelity. Marker-based stability should therefore be interpreted within the resolution of the assay.

## HORTICULTURAL RELEVANCE

The protocol offers a basis for rapid clonal multiplication of selected Monstera plants throughout the year. Uniform regenerants can support commercial production, conservation of valuable genotypes and the establishment of high-quality mother stock. Protocol validation should also include rooting, acclimatization survival and phytosanitary testing. During transfer to ex vitro conditions, gradual adjustment to lower humidity and a suitable substrate is important for plant establishment. Monitoring survival and subsequent growth would connect in vitro performance with horticultural use.

## CONCLUSIONS

Nodal explants provide suitable material for the in vitro regeneration of Monstera deliciosa. BAP promotes axillary shoot proliferation, although the response depends on its concentration. The SCoT analysis supports the genetic stability of the regenerated plants examined in this study. The combined regeneration and molecular assessment approach can contribute to reliable production of uniform planting material for ornamental horticulture. Further validation of rooting and acclimatization, together with monitoring over successive multiplication cycles, would strengthen the practical application of this approach.

**TAKE-HOME MESSAGE: BAP-assisted axillary regeneration combined with SCoT analysis supports efficient and genetically stable Monstera micropropagation**