

Optimal propagation conditions of *Mussaenda* in Barbados

By

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Mussaenda project team in front of the pink specimen at UWI

Introduction

Mussaenda is a popular ornamental plant that has great market potential in Barbados. There are four different cultivars currently found in Barbados, which are pink (*M. philippica* ‘Doña Luz’), white (*M. philippica* ‘Doña Aurora’), red (*M. erythrophylla* ‘Ashanti Blood’) and yellow (*Pseudomussaenda flava*). It is known as a difficult-to-root genus, and stem-cuttings are recommended for commercial propagation of *Mussaenda*.

Objectives

Our goal was to develop a system to commercially propagate different colors of *Mussaenda* so as to respond to the market demands in Barbados. To achieve this, we tried to determine the most efficient and effective stem-cutting propagation method for each cultivar. We evaluated whether rooting hormone and basal wounding treatments could affect rooting, compared two growth media (sand or a peat mixture), and determined which type of stem cutting was most effective (softwood, semi-hardwood, or hardwood).

Methods

160 cuttings were taken for each cultivar, including 40 softwood cuttings (each about 8 cm long), 60 semi-hardwood

cuttings (12 cm) and 60 hardwood cuttings (16 cm). Two growth media were tested: half of the cuttings were planted in the NCC’s sand medium, and the other half were planted in a peat mixture we made with 70% peat, 20% compost, and 10% perlite. Rooting powder with 0.3% IBA was used on one group of 10 cuttings for each wood type, and rooting powder plus basal wounding treatment was conducted on groups of 10 semi-hardwood and hardwood cuttings, both in sand and peat media.



Propagation bench at the NCC showing various stem cuttings

We observed and recorded the growth of these cuttings for 6 weeks after planting. Weekly measurements were based on the number of nodes, number of leaves, and leaf diameter. The rooting results were obtained on Week 6 after we carefully removed the cuttings from the propagation growth media, and measured the length of roots as well as the abundance of adventitious roots for the different groups.

Then we transplanted the rooted cuttings into potting bags and placed them in the hardening area. Once acclimatized, some of the successful cuttings will be given to the donors (the University of the West Indies, Flower Forest, and Andromeda Botanical Gardens) for the colors they do not have.

Results

M. philippica ‘Doña Luz’ cuttings turned out to perform better in the sand

medium. There was also a correlation between the type of wood and rooting success - softwood cuttings had the longest and most abundant roots, while hardwood cuttings did not root well in either medium. Rooting powder and basal wounding did not significantly positively affect cuttings. For pink *Mussaenda*, a total of 45/160 cuttings rooted.

M. erythrophylla cuttings had similar rooting results in peat and sand growth media. Softwood cuttings rooted much better than cuttings of the other two wood types. Rooting powder increased rooting success significantly in all three wood types, and basal wounding treatments on semi-hardwood and hardwood cuttings had positive effect on rooting. For red *Mussaenda*, a total of 20/160 cuttings rooted.



New shoots (left) and new roots (right) from *Mussaenda*

Pseudomussaenda flava had the most successful rooting in the peat medium with an impressive rooting rate of 50%, yet only 3.8% rooted in sand medium. Softwood cuttings with rooting powder in the peat had the most successful result (80% rooted, root length 8 cm). Hardwood cuttings with rooting powder and basal wounding had a 70% rooting rate and the longest root was 6.6 cm. Rooting powder and basal wounding helped the rooting process to a certain degree. For yellow *Mussaenda*, a total of 43/160 cuttings rooted.

M. philippica 'Doña Aurora' proved to be the hardest-to-root. None of the cuttings in sand rooted and only 4 cuttings in all rooted in peat. Although some new buds and leaves grew on the cuttings, most of them did not root. The 2 rooted softwood cuttings had much more and longer roots

than the 2 rooted hardwood cuttings but these small sample sizes are not definitive.

Conclusion

For future propagation of both red and pink *Mussaenda* at the NCC, we recommend that softwood cuttings be used and treated with 0.3% IBA rooting powder and planted in sand. For yellow *Mussaenda*, use softwood cuttings treated with rooting powder and plant into a peat-based mixture. As for the hardest-to-root white *Mussaenda*, we suggest mound layering as a possible alternative means of raising the survival rates and rooting of cuttings.

Acknowledgements

We express our sincere thanks to all those involved in the completion of this project. These results could not have been achieved without the help of BITS Program coordinators Dr. Danielle Donnelly and Prof. Jeff Chandler, who contributed exceptional efforts in guiding us through the steps, helping with the provision and the transportation of materials, and always remaining open to questions. We thank our mentor James Sealy, for his enthusiasm, trust, and encouragement. We also thank many other employees of NCC, especially Sean Phillips, who was supportive and helped us a lot in the nursery.

