Faculty of African
Postgraduate Studies
Natural Resources Department

Cairo University

INFLUENCE OF DIFFERENT GROWTH SUBSTANCES TREATMENTS ON SOME TREES PROPAGATION BY CUTTINGS IN EGYPT AND SUDAN

By

Said Abd El-Zaher Mohamed Goda

B.Sc. Agric. Sci. (Horticulture), Fac. Agric., Ain Shams Univ., Egypt, 1987

THESIS

Submitted in Partial Fulfillment of the Requirements for the Degree of
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EGYPT
2019

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APPROVAL SHEET

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Committee in Charge *Date: / /2019*

DEDICATION

I dedicate this work to whom my heartfelt thanks, my wife, sons and daughters for their patience and help, as well as to all my friends for the support they lovely offered along the period of my post-graduation.

ACKNOWLEDGMENT

I 'm very grateful to "ALLAH" for carrying out this work.

I would like to express my sincerest thanks and gratitude to **Prof. Dr. Amira Shawky Soliman**, Prof. of Plant Resources, Natural Resources Dept., Inst. of African Res. and Studies, Cairo University, for her supervision, sacrifice guidance, providing facilities during this investigation, valuable advice, kind encouragement, constructive criticism and expert guidance.

Sincere thanks are also due to late **Prof. Dr. Mohamed H.A. El-Shakhs**, Emeritus Prof. of Floriculture, Botanical Gardens Res Dept., Hort. Res. Inst., Agricultural Res. Center for his supervision, kind help, and continuous encouragement during the preparation of this work.

Also, I wish to express my sincere thanks, deepest gratitude to **Prof. Dr. Sayed Mohamed Shahin**, Emeritus Prof. of Floriculture, Botanical Gardens Res Dept., Hort. Res. Inst., Agricultural Res. Center for his assistance during preparing the manuscript.

Name of Candidate: Said Abd El-Zaher Mohamed Goda **Degree:** M.Sc.
Title of Thesis: Influence of different growth substances treatments on some trees propagation by cuttings in Egypt and Sudan.
Supervisors: Prof. Dr. Mohamed H.A. El-Shakhs
Prof. Dr. Amira Shawky Soliman
Department: Natural Resources
Approval: / / 2019

ABSTRACT

The present study was carried out under plastic house conditions at the nursery of Zohria garden, Hort. Res. Inst., ARC, Cairo, Egypt throughout the two successive seasons of 2015 and 2016 to reveal the effect of planting date (winter, spring, summer and autumn), some rooting promoters at different concentrations i.e. IBA, NAA, 2,4-D, catechol, cinnamic acid and tryptophan (alone or in combination) and their interactions on rooting and the following growth on cuttings of some hard-to-root ornamental trees.

For *Magnolia grandiflora* planting in winter in addition to treating with IBA at 4000 ppm + NAA at 4000 ppm formulation resulted in the highest values in terms of number of leaves/cutting, shoot fresh weight (g), rooting percentage (%) and total chlorophylls (mg/100 g f.w.). Although there was no clear trend could be observed from the obtained results, planting *Phytolacca dioica* cuttings in either spring or autumn in addition to treating with IBA at 4000 ppm + NAA at 4000 ppm formulation increased rooting percentage (%) to the highest values. While, for *Tectona grandis* planting in spring in addition to treating with one of these four combined treatments; IBA at 4000 ppm + NAA at 4000 ppm, cinnamic acid at 2000 ppm + IBA at 2000 ppm, IBA at 2000 ppm+ catechol at 2000 ppm or NAA at 2000 ppm+ catechol at 2000 ppm formulations recorded the highest values regarding rooting percentage (%) and other studied traits. Concerning *Vangueria edulis* the highest rooting percentage (%) was recorded by planting in autumn in addition to treating with either catechol at 2000 ppm or NAA at 4000 ppm + IBA at 2000 ppm + cinnamic acid at 1000 ppm formulations.

In conclusion, to achieve a successful vegetative propagation of these hard-to-root trees and to induce rooting on cuttings it is recommended to plant the cuttings in winter in addition to treating with IBA at 4000 ppm + NAA at 4000 ppm formulation in case of *Magnolia grandiflora*, planting in either spring or autumn in addition to treating with IBA at 4000 ppm + NAA at 4000 ppm formulation in case of *Phytolacca dioica*, planting in spring in addition to treating with one of these four combined treatments; IBA at 4000 ppm + NAA at 4000 ppm, cinnamic acid at 2000 ppm + IBA at 2000 ppm, IBA at 2000 ppm+ catechol at 2000 ppm or NAA at 2000 ppm+ catechol at 2000 ppm formulations for *Tectona grandis* and planting in autumn in addition to treating with either catechol at 2000 ppm or NAA at 4000 ppm + IBA at 2000 ppm + cinnamic acid at 1000 ppm formulations in case of *Vangueria edulis*.

Finally, and according to this study there is no possibility to propagate these four plant species without using rooting promoters (auxins, non-auxins agents or their combinations), planting date is very effective and in this regard there is a specific planting date and specific rooting promoter for a specific plant species.

Key words: *Magnolia grandiflora, Phytolacca dioica, Tectona grandis, Vangueria edulis,* cuttings, planting date, rooting promoters.

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