USE OF TISSUE CULTURE TECHNIQUE FOR PROPAGATING SOME RARE ORNAMENTAL SHRUBS (*Rondeletia odorata* and *Vangueria edulis*)

By

MAI MAHMOUD MOHAMED IBRAHIM
B.Sc. Agric. Sci. (Ornamental Horticulture), Fac. Agric., Cairo Univ., 2005

THESIS

Submitted in Partial Fulfillment of the Requirements for the Degree of

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APPROVAL SHEET

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APPROVAL COMMITTEE

Dr. NAGY MOHAMED HASSAN ARAFA ……..……..
Head Researcher of Ornamental Plants, Hort. Res. Inst., A.R.C., Giza

Dr. MONA AHMED DARWISH.....
Professor of Ornamental Horticulture, Fac. Agric., Cairo University

Dr. ATEF MOHAMED ZAKARIA SARHAN……
Professor of Ornamental Horticulture, Fac. Agric., Cairo University

Dr. HAMDY MOHAMED ALI EL-BAGOURY……
Professor of Ornamental Horticulture, Fac. Agric., Cairo University

Data: 30 / 10 /2018

SUPERVISION SHEET

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Professor of Ornamental Horticulture, Fac. Agric., Cairo University

Dr. ATEF MOHAMED ZAKARIASARHAN
Professor of Ornamental Horticulture, Fac. Agric., Cairo University

Dr. FAISAL MOHAMED ABD EL-ALEAM SAADAWY
Head Researcher of Ornamental Plants, Hort. Res. Inst., A.R.C., Giza

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DEDICATION

I dedicate this work to whom my heart felt thanks, my father, mother, sisters, brother , husband and my son ***Hamza*** *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.*

Name of Candidate: Mai Mahmoud Mohamed Ibrahim **Degree:** M.Sc.

Title of Thesis: Use of Tissue Culture Technique for Propagating Some Rare Ornamental Shrubs(*Rondeletia odorata and Vangueria edulis)*

Supervisors: Dr. Hamdy Mohamed Ali EL-Bagoury
Dr. Atef Mohamed Zakaria Sarhan
Dr. Faisal Mohamed Abd El-Aleam Saadawy
Department: Ornamental Horticulture

Approval: 30 / 10 /2018

ABSTRACT

This work was carried out at Ornamental Horticulture Department Fac. of Agriculture, Cairo University, and the experimental work in the Tissue Culture Laboratory, Horticulture Research Institute, Agricultural Research Center, Giza, Egypt during the period from 2015 to 2017, to investigate some factors affecting the propagation of the two rare ornamental plants, *Rondeletia odorata* and *Vangueria edulis* by tissue culture. Results could be briefed in the following:

Establishment stage of *Rondeletia odorata*, sterilization the highest survival% was achieved by using Clorox at 15%. In Multiplication stage, Experiment 1: combinations of ¼ MS+2 ppm BAP; ½ MS+0, 1 or 2 ppm BAP; ¾ MS+1, 2 or 3 ppm BAP and full MS+3 ppm BAP achieved the first rank concerning shooting%. Experiment 2: the first category was achieved by BAP at 1 ppm for survival%, BAP at 2 ppm for shoot number, BAP at 3 ppm for shoot number and shooting%, in addition to 2-iP at 1 ppm for survival%, shoot number, leaf number and shoot length. In Rooting stage: with no AC applied, the first position was scored by the control treatment, IBA 0.5 ppm or NAA 0.5 ppm in the survival%; in addition to NAA 0.5 ppm with or without AC and NAA 1.0 ppm+with AC concerning shoot number and shoot length; in addition to the control treatment+with AC for shoot length and NAA 1.0 ppm+with AC for leaf number. In Acclimatization stage: the only potting medium that succeeded in harbouring the *in vitro*-produced *Rondeletia odorata* plantlets was the peat moss. In Establishment stage of *Vangueria edulis*: sterilization higher survival percentages were achieved by using clorox at either 20 or 25%, compared to using the same sterilant at 10 or 15%. In Multiplication stage, Experiment 1:, all effects of the interaction between MS strength and BAP concentration were insignificant. Despite this findings, it could be said that the highest position was a result of using full MS + BAP at 2 ppm for shooting%. Experiment 2: The highest position was occupied by the combinations BAP 1 ppm+MS for surv%, shoot number, shoot length and, shooting%; BAP 2ppm+MS for shoot number; BAP 3 ppm+B5 for shoot number and leaf number; 2-iP 1 ppm+MS for shooting%; 2-iP 2 ppm+MS for shoot number; Kinetin 1 or 3 ppm+MS for shoot length and Kinetin 2 ppm+MS for surv% and shoot length.

In order to propagate the two rare ornamental plants, *Rondeletia odorata* and *Vangueria edulis* by tissue culture, it is recommended to do the following: For the first plant *Rondeletia odorata*, explants should be sterilized using clorox 15% for 20 minutes, for multiplication, 2-iP at 1 ppm, for survival%, shoot number, leaf number and shoot length, and to use ¼ MS medium+2 ppm BAP, in addition to NAA at 0.5 ppm for rooting. For the second plant *Vangueria edulis*, explants should be sterilized using clorox 20% for 20 minutes, for multiplication, full MS + BAP at 2 ppm and to use BAP 1 ppm+MS medium.

Key Words: *Rondeletia odorata*, *Vangueria edulis*, colorox, MS, B5, BAP, kinetin, 2-iP, IBA, NAA, activated charcoal.

LIST OF ABBREVIATIONS

AC	Activated charcoal
MS	Murashige & Skoog medium
B5	Gamborg *etal.* medium
BA(BAP)	Benzyladenine or 6-benzylamino purine
IBA	Indol butyric acid
NAA	Naphthalene acetic acid
IAA	Indol acetic acid
Colorix	5.25% sodium hypochlorite(commercial bleach)
2ip	2-isopentenylamino purine
Kin	Kinetine(6-furfurylaminopurine)
2,4-D	2,4-dichlorophenoxy acetic acid
NaOCl	sodium hypochlorite
µM	Micro mol
ppm	Part per million
TDZ	thidiiazuron
Tween 20	Polyoxyethlene sorbitan monolaurate
LUX	Luxmeter
NO3-	Nitrate
NH4+	Ammonium
HMF	5-Hydroxy methyl furfural
dm-3	decimetre
MC	Mercuric chlorid

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