بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار
في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

بعض الوثائق الاصلية تالفة

بالرسالة صفحات لم ترد
بالاصل

IN VITRO PROPAGATION AND SELECTION FOR STRESS TOLERANCE IN CITRUS ROOTSTOCKS SEEDLINGS

By

SALWA EL-HABASHY ABD EL-FATTAH
B.Sc. Agric., Horticulture, Ain Shams Univ. 1993
A thesis submitted in partial fulfillment

of

the requirement for the degree of
Master of Science

In
Agriculture
(Pomology)

Department of Horticulture
Faculty of Agriculture
Ain Shams University

1998

APPROVAL SHEET

IN VITRO PROPAGATION AND SELECTION FOR STRESS TOLERANCE IN CITRUS ROOTSTOCKS SEEDLINGS

By

SALWA EL-HABASHY ABD EL-FATTAH
B.Sc. Agric., Horticulture, Ain Shams Univ. 1993

This thesis for M.Sc.degree has been approved by :

Prof. Dr. M.A.M.El-Hammady .....
Prof. of Pomology, Fac. of Agric., Tanta Univ.
(Kafr El-Sheikh branch).

Prof. Dr. I.M.Dosouky .....
Prof. of Pomology, Fac. of Agric., Ain Shams Univ.

Dr. Wafaa H.N.Wanas .....
Associate Prof. of Pomology, Fac. of Agric., Ain Shams Univ.

Date of examination 15 / 4 / 1998

IN VITRO PROPAGATION AND SELECTION FOR STRESS TOLERANCE IN CITRUS ROOTSTOCKS SEEDLINGS

By

SALWA EL-HABASHY ABD EL-FATTAH
B.Sc. Agric., Horticulture, Ain Shams Univ. 1993

Under Supervision of :-

Prof. Dr. Abd-El-Azim M.El.Hammady.
Prof. of Pomology, Dept. of Hort. Fac., of Agric. Ain Shams Univ.

Dr. Wafaa Wanas
Associate Prof. of Pomology, Dept. of Hort., Fac. of Agric. Ain Shams Univ.

Prof. Dr. Mamdoh R.Tadrous
Prof. of Pomology, Dept. of Hort. Research Institute, Agric. Research Centre and Under Secretary of State for afforestration.

ABSTRACT

Salwa El-Habashy Abd El-Fattah. *In vitro* propagation and selection for stress tolerance in citrus rootstocks seedlings. Unpublished Master of Science, Ain Shams University Faculty of Agriculture, Horticulture Department 1998.

The main aim of this investigation was to propagate and select some citrus rootstocks; Volkmer lemon, Rangpur lime, Sour orange, Cleopatra mandarin, Swingle citrumelo and C_{35}, towards salt stress tolerance *in vitro*.

The results in the establishment stage showed that the removal of seed coats during sterilization enhanced germination percentages in all rootstocks and enhanced the development of seedlings. In case of micropropagation, the results showed that both the physical nature of the nutrient medium and container type played an important role in the rate of proliferation. Jars gave highest number of shoots, leaves and shoot lengths compared to test tubes. Also, the liquid nature of medium gave high significant number of leaves compared to the solidified one. Rangpur lime produced the highest significant number of leaves when cultured in jars, compared to Volkmer lemon and Sour orange rootstocks.

However, the solidified MS medium supplemented with $1mgl^{-1}$ NAA gave the best rooting compared with the liquid medium. Also, solid medium with $1mgl^{-1}$ IBA was necessary for root elongation in all tested rootstocks. Both RL and VO rootstocks proliferated the highest significant mean number of roots in the solid rooting medium with $1mgl^{-1}$ NAA compared to the SO rootstock in both types of medium.

Both systems of exposure to either constant or gradual increasing concentrations of salts incorporated in solid or liquid medium caused salt injury symptoms for citrus rootstock seedlings as it increased the average number of burned leaves and shoot die

back percentages espicially at high salt concentrations (6000-8000 ppm). The most affected rootstock after 4 or 8 and 12 weeks was SO followed with VO and RL, while the least affected were CM and SC with or without significant differences. However, stimulation of shoot proliferation and emergence of new roots were, also, significant in all salt concentrations under the two regimes of exposure. RL rootstock recorded the highest number of proliferated shoots and roots and, also, the highest length of shoots in most experiments under 2000, 3000 or 4000 ppm after 4, 8 or 12 weeks respectively, followed by the SO while the lower values accompanied CM, SC and espicially VO rootstocks. Similar results were obtained for both liquid or solid saline medium except for the lower values recorded on growth parameters in solid medium and, also, the poor response with VO rootstock. Stem node cultures grew considerably better under salt concentrations (4000-6000 ppm), without leaf burn or die back occurrence with the highest shoot length in C_{35} followed by SO and CM, respectively. Tolerant shoots were selected and acclimatized for 3 months besides the continuous salt treatment (4000 ppm) before being successfully transferred to glass-house conditions.

Key words :

Citrus, In-vitro propagation, salinity stress, sterilization, proliferation, rooting, In-vitro evaluation.

ACKNOWLEDGMENT

I`m deeply indebted to Dr. Abd El-Azim El-Hammady Prof. of Pomology, Department of Horticulture, Fac. of Agric., Ain Shams Univ. for his supervision, useful suggestions, kind help, continuous guidance and encouragement through the coarse of this investigation .

My sincere gratitude, also, to Dr. Wafaa Wanas Associate Prof. of pomology in the same department for her supervision, valuable guidance, kind remarks, following up the stages of laboratory work and the great efforts in writing and reviewing the manuscript .

Sincere appreciation is due to Dr. Mamdoh Riaad Prof. of pomology, Department of Horticulture Research Institute, Agric. Research Center for his supervision and sincere help .