

**PROPAGATION OF *MORINGA OLEIFERA* IN  
VITRO AND EFFECT OF LASER RADIATION ON  
GROWTH IN VIVO**

**By**

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**M.Sc. Agric. Sci. (Ornamental Horticulture), Fac. Agric., Cairo Univ., 2013**

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### ABSTRACT

The present study was carried out at the Experimental Nursery of the Ornamental Horticulture Department, and Plant Tissue Culture Laboratory of Vegetable Crops Department, Faculty of Agriculture, Cairo University and , Cairo university, to study the micro propagation behavior and investigate the effect of helium neon laser radiation on stimulation of vegetative growth and anatomical structure of *Moringa oleifera* seeds by using different power levels (5, 10 and 15) with different time exposure (1, 3 and 5 min.). The results showed that the best survival rate of sterilized seeds was obtained when using 1.5% NaOCl with 30 min. soaking period. 1/2 MS-medium supplemented with 3 mM BA and 1 mM Kin treatment produced the highest number of shoots. The greatest rooting percentage was recorded on medium supplemented with 2.5NAA mM without adding IBA. The combination treatment between 0.5 mM IBA and 2.5 mM NAA achieved the largest number of roots. Treating the moringa seeds by He-Ne laser to 5min. time exposure led to the best results in number of branches and leaves for both seasons. 15mW at 3 min. gave the highest value of root length. Treatment that was not exposed to He Ne laser, produced the best shoot parameters (plant height, leaves fresh weight and stem diameter) which it might have benefit in dwarfing of moringa trees. Exposing *Moringa oleifera* seeds to He-Ne laser at 5 mW power in the first and second season resulted in significantly highest mean values in Chlorophyll a and total carbohydrates percentage. The maximum percentage of phosphorus and potassium were obtained when using 15 mW power of helium neon laser in two seasons. All He Ne laser treatments caused increment in leaf anatomical structure of moringa. The highest values of thickness of lamina, thickness of palisade tissue and thickness of spongy tissue were recorded by treated seeds with 15mw He-Ne laser power combined with 5 min. time exposure. Whereas Expose seeds to 5 mW laser power for 5 min. time exposure led to the highest value of thickness of midvein and midvein bundle (length width).

**Key words:** *Moringa oleifera*, In vitro, Laser radiation, Vegetative growth, Chemical composition, Anatomical structure.



## DEDICATION

*I dedicate this work to Whom my heart felt thanks, my dearest father and mother, my sisters, Noha and Nesma for their patience and help as well as to my friends Samah and Omnya for the support they lovely offered to me.*





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## LIST OF ABBREVIATIONS

<b>BA</b>	: Benzyl adenine
<b>IAA</b>	:Indole-3-acetic acid
<b>IBA</b>	: Indole butyric acid
<b>NAA</b>	:Naphthalene acetic acid
<b>Kin</b>	: Kinetin
<b>M</b>	: Molar
<b>μM</b>	:1/1000 mM
<b>μm</b>	:Micrometer
<b>min.</b>	:Minute
<b>mM</b>	:1/1000 M
<b>MS</b>	:Murashige and Skoog medium
<b>PEG</b>	:Polyethylene glycol
<b>TDZ</b>	:Thidiazuron
<b>Var.</b>	:Variety
<b>mW</b>	:Milliwatt
<b>He-Ne</b>	:Helium - Neon laser



# CONTENTS

	Page
<b>INTRODUCTION</b> .....	<b>1</b>
<b>REVIEW OF LITERATURE</b> .....	<b>4</b>
1. In vitro propagation of <i>Moringa oleifera</i> .....	<b>4</b>
a. Surface sterilization of explants .....	<b>4</b>
b. Multiplication stage.....	<b>5</b>
c. Root formation.....	<b>8</b>
2. The influence of He-Ne laser irradiation on.....	<b>9</b>
a. Vegetative growth.....	<b>9</b>
b. Chemical composition.....	<b>29</b>
c. Anatomical structure.....	<b>34</b>
<b>MATERIALS AND METHODS</b> .....	<b>36</b>
<b>RESULTS AND DISCUSSION</b> .....	<b>46</b>
<b>1. Propagation of <i>Moringa oleifera</i> in vitro</b> .....	<b>46</b>
a. Effect of different levels of NaOCl and different time of disinfectants.....	<b>46</b>
b. Effect of different levels of Mercuric chloride (HgCl <sub>2</sub> ) and different time of disinfectants .....	<b>47</b>
c. Effect of different concentration of Kin. and BA on.....	<b>50</b>
1. Shoot number.....	<b>50</b>
2. Shoot length (cm).....	<b>51</b>
d. Effect of different concentration of IBA and NAA on	
1. Rooting percentage.....	<b>53</b>
2. Root number.....	<b>55</b>
3. Root length .....	<b>56</b>
<b>2. Effect of different levels of He-Ne laser radiation and exposure time on vegetative growth characters of <i>Moringa oleifera</i> plants</b> .....	<b>57</b>
a. Plant height.....	<b>57</b>
b. Branch number .....	<b>60</b>
c. Leaf number.....	<b>63</b>
d. Stem diameter.....	<b>66</b>
e. Leaf fresh weight.....	<b>68</b>
f. Leaf dry weight.....	<b>71</b>
g. Stem fresh weight.....	<b>74</b>



h. Stem dry weight.....	79
i. Root length.....	78
j. Root fresh weight.....	85
k. Root dry weight.....	88
<b>3. Effect of different levels of He-Ne laser radiation and Exposure time on chemical composition characters of <i>Moringa oleifera</i> plants .....</b>	<b>91</b>
a. Photosynthetic pigments.....	91
1. Chlorophylla .....	91
2. Chlorophyll b.....	94
3. Total chlorophyll.....	97
4. Carotenoids.....	101
b. Total carbohydrates percentage.....	104
c. Nitrogen percentage.....	107
d. Phosphorus percentage.....	111
e. Potassium percentage.....	112
<b>4. Effect of different levels of He-Ne laser radiation and Exposure time on anatomical structure of <i>Moringa oleifera</i> leaves .....</b>	<b>116</b>
a. Thickness of lamina.....	117
b. Thickness of midvein.....	117
c. Thickness of palisade tissue.....	118
d. Thickness of spongy tissue.....	119
e. Dimensions of medvein bundle.....	120
f. Vessel diameter.....	120
<b>SUMMARY.....</b>	<b>124</b>
<b>REFERENCES.....</b>	<b>130</b>
<b>ARABIC SUMMARY.....</b>	