EFFECT OF BIO AND CHEMICAL FERTILIZATION ON GROWTH AND CHEMICAL COMPOSITION ON SOME WOODY TREES UNDER DIFFERENT GROWING MEDIA

By

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B.Sc. Agric. Sci. (Ornamental Horticulture), Fac. Agric., Cairo Univ., 2002
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APPROVAL SHEET

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Date: 27 / 11 / 2016

SUPERVISION SHEET

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Title of Thesis: Effect of Bio and Chemical Fertilization on Growth and Chemical Composition on Some Woody Trees Under Different Growing Media

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Department: Ornamental Horticulture **Approval:** 27 / 11 / 2016

ABSTRACT

This study was carried out at the Experimental Area of the National Research Center, Dokki, Giza,Egypt during the two successive seasons 2013 – 2014 to the effect of growing media, NPK and bio fertilization on growth and chemical composition of *Swietenia mahagoni* seedlings.

The results showed that growing the plants in the mixing clay with sand gave the highest values of stem and root diameter, leaf area, fresh and dry weight of the stems and roots, chlorophyll a, b and carotenoids, total carbohydrates in leaves, stems and roots,P % in the stems in both seasons. The same media increased number of leaves / plant and K % in the leaves in the first season and N % in leaves and K % in stems in the second season. Clay soil increased plant height, fresh and dry weight of leaves, N % in the stems and roots, phosphorus in the leaves and roots and potassium in the roots in both seasons and number of leaves / plant in the second season. Also, Clay soil gave the highest values of N % in the leaves and K % in the stems in the first season . Whereas, the lowest values of all previous parameters were found with sand soil alone, except root length.

Effect of fertilization treatments on the vegetative growth and chemical constituents, Using 10 ml of microbien plus 6 g of NPK treatment gave the best results of number of leaves, fresh and dry weight of the stems, , total carbohydrates in leaves, phosphorus in the roots, and potassium in the leaves, stem and roots in both seasons, and stem diameter, leaf area, total carbohydrates in the roots, N % in the roots, P % in the leaves and stems in the first season .while, Application 20 ml of microbien and 6 gm of NPK / plant treatment recorded the highest values of root diameter, fresh and dry weight of the roots, chlorophyll a, carotenoids, total carbohydrates in the stems and N % in the leaves in two seasons,and stem diameter, leaf area, chlorophyll b, total carbohydrates in the roots, N % in the roots, P % in the leaves and stems in the second season .

The interaction between growing media and fertilization treatments on vegetative growth and chemical constituents. Using 10 ml of microbien plus 6 g of NPK with mixing soil clay and sand (1:1 v/v) gave the best results of stem diameter, leaf area, total carbohydrates in the roots, P % in the stems and K% in the leaves in the first season and fresh and dry weight of stems and total carbohydrates in leaves in both seasons. Application 20 ml of microbien and 6 gm of NPK / plant with mixture of clay : soil (1:1 v/v) resulted the highest values of stem diameter, leaf area, chlorophyll b, total carbohydrate in roots, nitrogen in leaves and phosphorus in the leaves in the second season. Also, showed the highest values of root diameter, fresh and dry weight of roots, chlorophyll a, carotenoids, total carbohydrate in the stems in the two seasons. Microbien at 20 ml and NPK at 4 gm with mixture clay : sand treatments was the best for increasing chlorophyll b content in the first season and P % in the stem in the second season. The plants grown in clay soil and treated with 10 ml microbien plus 6 g NPK recorded the highest values of number of leaves, N % in stems, P % in roots, K % in stems and roots in both seasons. Likewise, N % in roots, P % in leaves in the first season and K % in leaves in the second season. The plants grown in clay soil and treated with 6 g of NPK produced the highest values of plant height in both seasons. Treating the plants with 20 ml of microbien with sandy media gave the maximum root length in both seasons.

Key words: *swietenia mahagoni* seedlings, growing media, NPK fertilizer, bio fertilizer, vegetative growth, chemical composition.

DEDICATION

I would like to dedicate this work to my parents, sisters and brother for their encouragement and support through out this work.

As well as to my husband ***Ashraf*** *and my kids* ***Mohammad and Youssef*** *for missing me some times during the course of my study.*

WITH MY GRATITUDE AND LOVE

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