EFFECT OF SALINITY AND LIGHT INTENSITY ON GROWTH AND CHEMICAL COMPOSITION OF SOME LAWNS

By

MOHAMED ABDULLAH MOHAMED SALEM
B.Sc. Agric. Sci. (Agronomy Plants), Fac. Agric., ZAWIA Univ. LIBYA, 2008.

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APPROVAL SHEET

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ABSTRACT

This study was conducted at the experimental Nursery of the Ornamental Horticulture Department, Fac., of Agric., Cairo Univ., during the warm season of 2015-2016 and 2016-2017, to evaluate the response of bermuda grass grown in different types of soil [clay, sand or clay + sand (1:1, v/v)], to salinized irrigation water, containing NaCl and $CaCl_2$ (l:1, w/w)at 0, 2000, 4000, 6000 , 8000 and 10000 ppm. The results showed that, growing bermuda in clay soil, gave the tallest grass and markedly increased the formation of shoots, regardless salinity treatments. The mixture of sand and clay medium gave the highest value of shoot formation, in the third cut. Also, clay or sand alone gave the heaviest FW of clippings in the first and second cuts (harvests), respectively. Growing bermuda in sand or sand + clay resulted the highest turf density, which increases turf quality. There was no significant difference in root length between media, but sand followed by sand + clay (in some cases) produced the longest roots. The color of bermuda grass markedly increased in clay or its mixture with sand. The contents of total carbohydrates, Na, Ca as well as Cl increased in plants grown in the mixture of sand + clay. On the other hand, irrigating plants, regardless media, with 2000 and 4000 ppm salinized water increased the formation of shoots. In the second season, saline water up to 6000 ppm in comparison had no significant effect on dry weight to the control. In most cases, irrigating bermuda grass grown in sand or clay with 2000, 4000 or 6000 ppm had no detrimental effect on DW. Turf density of plant irrigated with saline water reached 50 % (in most cases) of the control turf density at 8000 and 10000 ppm, as density and texture became unacceptable. Saline water up to 6000 ppm, in the first season at the second and third cuts insignificantly increased the root length as compared with the control. The chlorophyll-a content, markedly increased at 4000 ppm and 6000 ppm in both seasons, respectively. All levels of saline water decreased the content of chlorophyll-b. The content of total carbohydrates in clippings was increased with the saline irrigation up to 6000 ppm. Increasing salinity levels gradually increased the content of Na and Cl, but , there was a marked reduction in Ca-content with saline water at 2000 and 4000 ppm., then it increased with increasing the level of salinity. Effect of different shade levels on growth and quality of some grasses blends. This experiment was conducted to evaluate the response of four mixtures (Blends) of turf grasses obtained from Germany, to different shade conditions, this mixture were: Mix.1: 50 % *Festucarupra* + 35 % *Loliumperenne* + 15 % *Poapratensis*, Mix.2: 20 % *Loliumperenne* + 60 % *Festuca rupra* + 20 % *Poa pratensis*, Mix.3: 65 % *Loliumperenne* + 30 % *Festuca rupra* + 5 % Poapratensis and Mix.4*:* 80 % *Loliumperenne* + 20 % *Poapratensis.* It was found that growing blends under 35 % off ull sun light, give the tallest grasses, and increased the shoot formation as well as the content of pigments. Mix.2 and Mix.3 were the best during the two seasons in the terms of tyrf quality and coverage. There were significant increases in total carbohydrates content in sward of the grasses grown under 35 % shade. Mix.2 and Mix.3 accumulated more carbohydrates than the two other blends. The N, Mg and P-contents were higher in grasses grown under full sun condition.

Key words: *Cynodon dactylon* L, salinity, soil type, turf grass shade levels.

DEDICATION

*I will be honored to dedicate this work to my beloved family whom had never failed in giving me the moral support, be accomplished if it is done one step at a time with love. I Love Mom (**Souad**) and Dad (**Abdullah**),I love my Wife (**Sara**) and my children (**Aseel, Aya, Marya** and **Abdullah**) and beloved my Brothers (**Ahmed** and **Mahmoud**) and sisters (**Marwa, Safa, Hager** and **Hala**) and my friends, God bless you all My deepest gratitude.*

Mohamed

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CONTENTS

LIST OF TABLES