RESPONSE OF SWEET SORGHUM TO SOME AGRONOMIC TREATMENTS UNDER SIWA OASIS CONDITIONS

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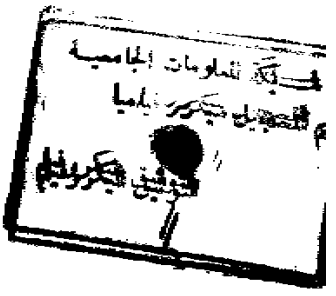
B.Sc. Agric. (Agric. Production)



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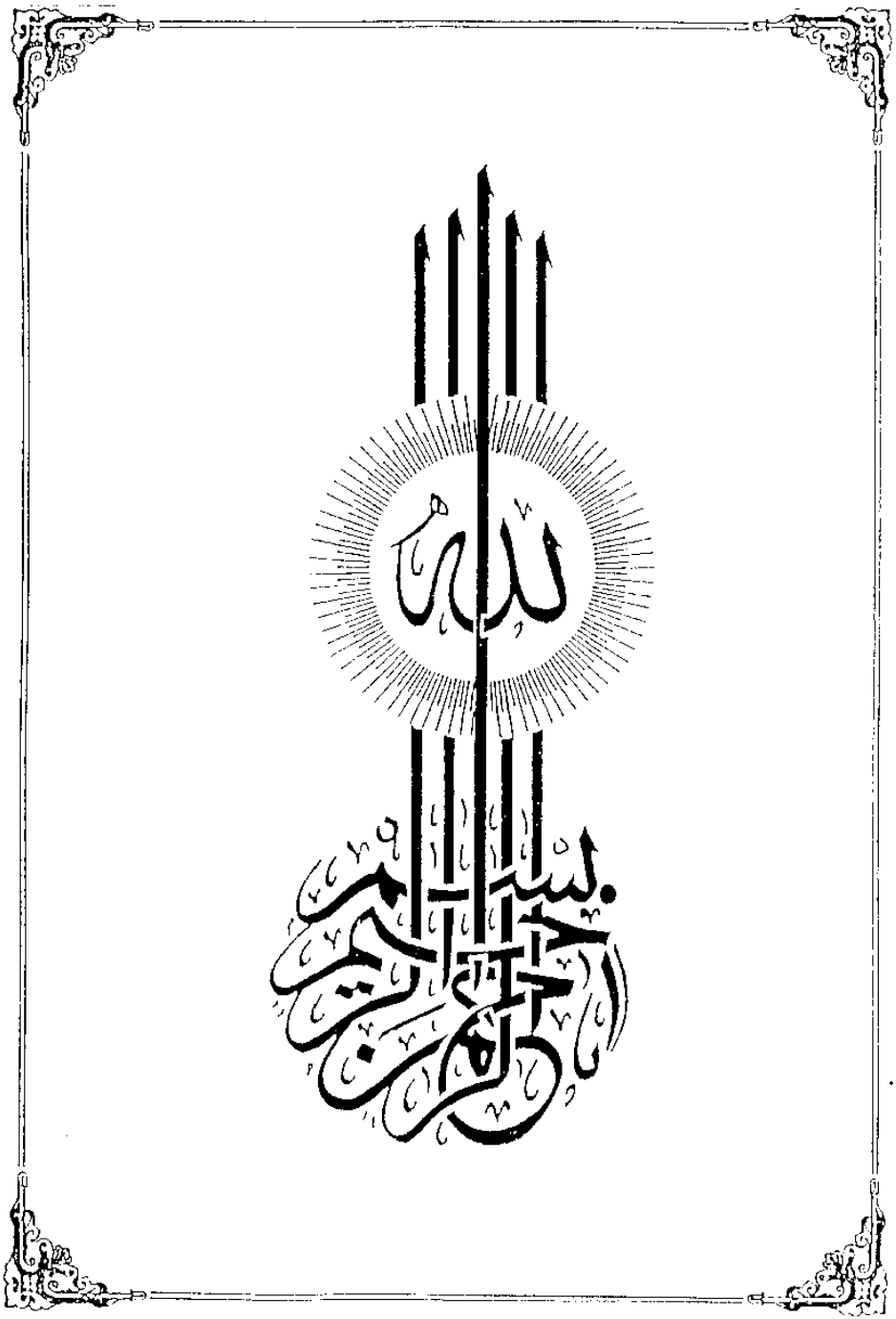

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ABSTRACT

Growth, yield and chemical content of Sorghum plants (*Sorghum bicolor (L.)* Moench) growing under Siwa Oasis conditions were investigated during 1991 and 1992 seasons under the effect of nitrogen fertilizer rates (0, 40, 60 and 80 Kg . N / fed) and organic manure rates (20,

30 and 40 m^3 / Fed) in an experiment ; and planting distance of (5, 10, 15 and 20 cm between hills) and foliar rates of (1, 2, 3 and 4 Kg / fed. Foliar - x). The main results obtained were as follow :

1- Increasing nitrogen fertilization rates increased plant elongation, tillering, blades number, leaf area index, fresh and dry matter production of whole plant, blades and stems, higher percentage and amounts of crude protein, total carbohydrates, crude fiber and total ash.

2- Increasing organic manure rates increased plant elongation, tillering, number of blades with more area, leaf area index , stem diameter, fresh and dry matter production in whole plant, blades and stems, percentage and amounts of crude protein, total carbohydrates, crude fiber, total ash and ether extract.

3- Increasing planting distance to 20 cm between hills induced more sorghum plant elongation and less tillering, blades formation, stem extension and leaf area index, decreasing fresh and dry yield of whole plant, blades and stems, crude protein content in the plant and its parts, more total carbohydrates and total ash content.

4- Increasing foliar - X application rates to 4 Kg / Fed. induced an increase in plant elongation, tillering, blades number with more area , leaf area index, stem extension, blades / stem ratio, fresh and dry matter production in the whole plant, blades and stems percentage and amounts of crude protein, total carbohydrates, crude fiber and total ash in the plant and its parts.

Key words :-

Sorghum, Nitrogen fertilization, Planting distance, Organic manure, Foliar application, Biological Drainage, yield quantity and quality.

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INTRODUCTION

INTRODUCTION

Siwa Oasis, which covers an area of about 1000 km^2, and located in the Western Desert of Egypt, has enormous amounts of ground water flows from fractured limestone aquifer as natural springs.

In spite of its presence of abundant water resources in the oasis, yet it is characterized by its high salinity. Poor management of the oasis local water resources have led to the deterioration of agriculture production elements, due to the rise in water table and presence of salinity and alkalinity problems in arable lands.

For this reason, the biological drainage system was used as an effective technique for controlling the uprise of water-table level and the subsequent desertification processes. Such technique, which mainly intends to increase water evaporation through plant and soil, is practised in Egypt for the first time in Siwa Oasis. The biological drainage system means the transpiration of excessive soil water through trees, shrubs, grasses and cultivations by aforestation of irrigation canals, drainages, roads, ways, yards, villages and cultivating forage crops which has 2-3 cuts in one year in order to cover the surface of soil against evaporation to use the excessive soil water in the irrigated soils (Kovda, 1958), as well as supporting animals by its forage needs.

In this concern, the aim of this investigation was designed to study the response of sweet sorghum (*Sorghum bicolor* (L.) Moench)to nitrogen and organic manure fertilization, foliar application with foliar-X and planting density, hoping to increase the transpiration area and the production level of this important forage crop per unit area under Siwa Oasis conditions.