

الآية

بسم الله الرحمن الرحيم

قال تعالى:

(وَفِي الْأَرْضِ قِطْعٌ مُتَجَاوِرَاتٌ وَجَنَّاتٌ مِنْ أَعْنَابٍ وَزُرْعٌ وَنَخِيلٌ صُنُوفٌ وَغَيْرُ صُنُوفٍ
يُسْقَى بِمَاءٍ وَاحِدٍ وَنُفَّصَلُ بَعْضَهَا عَلَى بَعْضٍ فِي الْأُكُلِ إِنَّ فِي ذَلِكَ لَآيَاتٍ لِقَوْمٍ
يَعْقِلُونَ (4))

صدق الله العظيم

سورة الرعد الآية (4)

DEDICATION

This study is dedicated to the soul of

Rah Elfouad

My Mather

Soaad Abd Alrhman

And my Brother EL Sadig

To my dear father

To my brotherand sisters

To my daughters Moram

To my husband

And my friends

With my love

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ABSTRACT

Experiments were carried out during two successive winter seasons (October -March 2011-2012 and 2012-2013).The objective of these experiments was to study the effect of salinity (S) and NPK fertilization (F) on growth and productivity of tomato(*lycoperisicon esculentum* L) Strain B . The treatments were seven levels of salinity 0,2,4,6,8,10,12ds/m (S₀, S₁, S₂, S₃,S₄, S₅ and S₆ receptivity) and different rates of NPK, control,F₀-75kg/ hectare, F₁-150kg/hectare, F₂ and F₃-225kg/hectare .Pot –experiments using completely randomized block design with three replicates was set up at the green house of Dongola ,Ministry of Agriculture in Northern Sudan. Tomatoes were grown in a clay –loam soil after the soil was analyzed to find out its original salt concentration, then NaCl was added to each treatment to reach the designated salt concentration levels used in this study. For each treatment level the fertilizer and salt were thoroughly mixed with 20 kg soil before potting.

Measurements were recorded on plant height (cm), number of branches/plant, number of leaves/plant, fresh and dry weight of plant (g). Measurements of yield

and yield components which include diameter and length of tomato fruit (cm), total soluble solids (TSS), number and weight (g) of each of culls fruits, marketable yield and total yield of tomato. Soil and plant samples were collected from each treatment to determine the amounts of nitrogen, phosphorus and potassium in each of the soil and plant after the termination of the experiments.

The result showed that increasing the salt concentration resulted in a significant decrease in each of plant height, number of branches/plant, number of leaves/plant, fresh and dry weight of plant, whereas, those vegetative growth parameters were significantly increased with increasing rate of NPK application. The interaction between salt concentration and fertilizer doses was also significant in all these parameters.

When the yield components were considered, the results clearly indicated that each of diameter and length of tomato fruit, total soluble solids (TSS), were significantly reduced with increasing salt concentration, whereas, they were significantly increased with increasing rate of NPK application. The interaction between salt concentration and fertilizer doses was also significant in the parameters of yield components.

The result of the present study also showed that number and weight of each of culls fruits, marketable yield and total yield of tomato were significantly reduced as the salt concentration increased, while the application of NPK at increasing rate resulted in a significant increase in these parameters. The interaction between salt concentration and fertilizer doses was also significant.

Generally, the pots without fertilizer application coupled with the highest salinity level (S_6) had the least values in all measured parameters of vegetative growth,

yield components and yield of tomato. However as the rate of NPK application increased and the salinity decreased all measured parameters increased.

The results revealed that the application of NPK at a rate of 150kg/ha or 225kg/ha at salt concentration up to 6 ds/m gave marketable yield of tomato that were not significantly different. This observation may suggest that when tomato crop was grown in soils having salt concentration more than 6 ds/m, soil reclamation and/or adequate management practices may be essential to improve the productivity of the crop.

ملخص الدراسة

أجريت التجربة خلال موسمين شتويين متعاقبين في موسم الشتاء خلال الفترة من أكتوبر إلي مارس 2011-2012 و 2013م في مشتل وزارة الزراعة - دنقلا - الولاية الشمالية - السودان. بهدف دراسة تأثير تركيز الأملاح ومستويات مختلفة من سماد NPK علي نمو وإنتاجية الطماطم. وكانت معاملات التجربة سبعة مستويات من تركيز الأملاح (S_0, S_1, S_2, S_3, S_4) (0,2,4,6,8,10 and 12) ds/m S_5 and S_6 علي التوالي وأربعة جرعات من سماد 150,75,0 225 and NPK F_0, F_1, F_2 and F_3 علي التوالي. صممت التجربة باستخدام القطاعات الكاملة العشوائية بثلاث مكررات في أصص بمشتل وزارة الزراعة دنقلا -الولاية الشمالية. أجريت الدراسة علي تربة الجروف بعد تحليلها لمعرفة تركيز الأملاح ومن ثم تم إضافة تراكيز الملح وجرعات السماد المستخدمة في الدراسة في كل الاصص بعد خلطها بـ 20 كجم من تربة الجروف (طين لومي).

مقاييس النمو الخضري التي تمت دراستها شملت: طول النبات (سم) عدد الأوراق وعدد الأفرع في النبات، والوزن الجاف والوزن الرطب للنبات (جم) بعد نهاية عملية الحصاد.

مكونات الإنتاجية التي تم دراستها شملت طول وعرض الثمرة (سم) ونسبة المواد الصلبة الذائبة في الثمرة، عدد ووزن (جم) الثمار المصابة والسليمة والإنتاجية الكلية . تم تحليل النبات والتربة بعد نهاية عملية الحصاد لمعرفة نسبة النيتروجين والفسفور والبوتاسيوم في النبات والتربة.

أوضحت النتائج أن الزيادة في تركيز الأملاح أدت إلى انخفاض معنوي في كل من طول النبات، عدد الأوراق والأفرع، والوزن الجاف والرطب للنبات بينما الزيادة في جرعات السماد المضافة أدت لزيادة معنوية في جميع معايير النمو الخضري التي درست التداخل بين المعاملات كان له أثر معنوي في كل معايير النمو الخضري.

مكونات الإنتاجية التي تم دراستها والتي شملت كل من طول وعرض الثمرة ونسبة المواد الصلبة في الثمرة، أوضحت النتائج أن زيادة تركيز الأملاح أدت إلى اثر معنوي في انخفاض مكونات الإنتاجية بينما الزيادة في جرعات السماد المضافة أدت لزيادة معنوية في معايير مكونات الإنتاجية والإنتاجية.التداخل بين المعاملات كان له أثر معنوي في كل معايير مكونات الإنتاجية والإنتاجية.

أوضحت نتائج الدراسة الأثر المعنوي للمعاملات المستخدمة على عدد ووزن الثمار المصابة والسليمة والإنتاجية الكلية وجميعها انخفضت بزيادة تركيز الأملاح بينما الزيادة في جرعات السماد المضافة أدت إلى زيادة معنوية في معايير الإنتاجية. والتداخل بين تركيز الأملاح وجرعات NPK المضافة كان لها اثر معنوي في عدد ووزن الثمار المصابة والسليمة والإنتاجية الكلية

عموما الأصص التي لم يتم تسميدها وبها تركيز عالي من الأملاح (S_6) سجلت أدنى قيم في جميع معايير النمو الخضري والإنتاجية. هذا وقد أدت زيادة جرعات السماد المضافة مع انخفاض تركيز الأملاح إلى زيادة معنوية في كل من معايير النمو الخضري، مكونات الإنتاجية والإنتاجية التي تمت دراستها.

اشارت نتائج تحليل دنكن الى ان اضافة السماد موضوع البحث بمعدل 150 كجم للهكتار عند تركيز الاملاح حتى 6ds/m لم يحدث اختلاف معنوي فى الانتاجية .هذه الملاحظة ربما تشير إلى أن محصول الطماطم عندما تتم زراعته في تربة بها تركيز

أملاح أكثر من 6 ds/m تحتاج إلى عملية استصلاح للتربة أو عمليات إدارة مناسبة لرفع إنتاجية المحصول.