DEDICATION

To the spirit of my father,
to my mother,
my brothers
and sisters,
my friends.

ACKNOWLEDGEMENTS

At the completion of this thesis, first of all I would like to give thanks to God who provided me this academic opportunity for higher degree.

I would like also to express my gratitude to Dr. Abbas Doka Mohammed Ali for supervision, guidance and many constructive ideas. His continuous support through my work is gratefully appreciated . Words cannot pay what he has offered me.

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Abstract

Study was carried out in farm located at north-western Omdurman within Khartoum state in the eastern side of the road of Omdurman - Dongola at kilometer 43. The total area of the farm about 100 feddans. The objectives of the study is to characterize the soil of the farm and to determine its suitability for irrigated farming for the production of field crops, fodder, vegetables, date palm, fruits and mangos by applying modern irrigation methods. The soils of the farm were described and sampled in the field at auger and profile site. Routine chemical and physical analyses were carried at the laboratory of the College of agricultural Studies (CAS), Sudan University of Science and Technology (SUST). The results indicated that most of the topsoil has sandy loam to sandy clay loam textures and the subsoil has clay loam textures and are slightly gravelly. The color of the soils are yellowish red to red and the depth is moderately deep and shallow. The soils are non-saline and non-sodic. The fertility status of the soils is poor due to their adverse chemical and physical characteristics. Soil texture, depth, low nutrients availability, wind blowing are the main constraints limiting the use of these soils. The study recommended that the soils of this farm require a good soil conservation practices such as adding organic matter and growing adequate plant cover to avoid the damaging effects of soil erosion.

A good farming systems such as bush fallow coupled with proper irrigation methods should be practiced to allow for soil nutrients replenishment.

الخلاصة

أجريت هذه الدراسة فى مزرعة تقع بولاية الخرطوم في الريف الشمالي الغربى لمدنية أم درمان على الجانب الشرقى من طريق شريان الشمال أم درمان- دنقلا عند الكيلو 43. تبلغ المساحة الكلية للمزرعة حوالى 100 فدان وذلك لتقييم أراضى المزرعة وتحديد صلاحيتها للإستخدام الزراعى المروى لإنتاج محاصيل مختلفة مثل المحاصيل الحقلية ،الأعلاف،الخضروات, نخيل البلح، الفواكه، المانجو وغيرها وذلك بتطبيق نظم الرى الحديث.تم وصف التربة مجمع عينات من الحفر والبريمة,تم التحليل الفيزيائى والكيميائى الروتينى لعينات التربة فى معامل كلية الدراسات الزراعية – جامعة السودان. تم التعرف على ثلاثة انواع من الترب هى: التربة اللومية الناعمة و التربة اللومية الهيكلية (الحصوية)والتربة الصخرية . التربة اللومية الناعمة ناتجة من ترسبات مائية وهوائية و هى تربة عميقة، يغطى سطحها طبقة رقيقة من الرمال و تكثر بها التجمعات الرملية حول الشجيرات. أما التربة اللومية الهيكلية فهى ضحلة إلى متوسطة العمق. ، أما التربة اللومية الهيكلية فهى مغطاه بنسبة قليلة من الحصى على السطح,التربة الحصوية هى تربة ضحلة بها نسبة عالية من الحصى والحجارة على السطح وتمتد الى داخل التربة. الترب التى تم التعرف عليها فى منطقة الدراسة توصف جميعها بأنها غير ملحيه و غير صوديدة، و غير جيرية كما أنها فقيرة من ناحية خصوبة التربة الكيميائية. شملت توصيات الدراسة تخطيط استخدام الأراضى على مستوى المزرعة بناءا على اختلافات وحدات التربة داخل المزرعة ,اضافة كميات كافية (حسب حاجة النبات) من السماد العضوى و السماد الأخضر لضمان إنتاجية عالية، كما يمكن تحضير حفر بغرض تخمير السماد البلدي روث الأغنام و مخلفات المزرعة لإستخدامه كسماد عضوي والذى يعمل كمحسن لخواص التربة الفيزيائية وخاصة بناء التربة.استخدام الدورة الزراعية للحد من اجهاد التربة.

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