ABSTRACT: The current work aims to study the geomorphological and pedological characteristics for soils in the area located at south west of EL-Sadat city. The integration of Remote Sensing (RS) and Geographic Information System (GIS) techniques was used to perform this work. Soil classification quantitative land capability evaluation, and suitability of these soils for growing certain main crops were achieved using ALES-Arid program. This work could be presented important information about the potentiality of land resources for proper sustainable agriculture of these soils.

The geomorphic map produced using RS and GIS technology indicated that, there are three identified and interpreted geomorphic units in this area. These units are Plain, High land, and Elevated area.

Fourteen soil profiles were selected representing these three geomorphic units. The land and site features are observed and registered. Soil profiles were dug deep down to 120 cm. Profiles were morphologically described, and then samples were collected representing the subsequent layers in each profile for integrated physical and chemical analyses. The important morphological properties were used for evaluating pedological development of these profiles.

The soils have almost flat topography to gently undulating landforms. The elevation of the studied profiles varies between 14 and 52 m. above sea level. Land surface and most of studied soils are slightly gravelly to gravelly. The soils are deep and mostly have well to excessive drainage system.

These soils have light texture mostly loamy sand with rapid hydraulic conductivity. The soils vary between weak to moderate subangular to granular structure and some layers have single grains.

The morphological rating scale of relative distinctness of horizons (RHD) and relative profile distinctness (RPD) values for the most of studied soils indicated a slight distinctness between horizons and weak profile development.

The analytical data of the studied soils revealed that, the soil reaction is slightly alkaline. All the studied soils are non-saline and not sodic. The soils differ from slightly to strongly calcareous according their CaCO3 content. Organic matter (OM), cation exchange capacity (CEC) and gypsum were low.

The studied soils were classified up to sub great group level according to Soil Survey Staff (2014) under Entisols order as Typic Torripsaments.

Land capability evaluation for these soils indicated that these soils could be categorized into grades between III to IV.

Key words: RS, GIS, geographic units, soil classification, land capability evaluation, land suitability.
عنوان الرسالة: تكامل المعلومات الجغرافية والاستشعار عن بعد في حصر وتقسيم الموارد الأرضية لمنطقة السادات، مصر

اسم الباحث: دعاء محمد أبو الفضل أحمد

الدرجة العلمية: دكتوراه الفصل في العلوم الزراعية

التاريخ موافقة مجلس الكلية: 20/11/2019

لجنة الإشراف:
1. أ.د. فوزي الشاذلي أبو عجوة أستاذ البيئولوجي - كمية الزراعة – جامعة المنوفية
2. أ.د. محمد سمير عراقي عميرة أستاذ البيئولوجي - كمية الزراعة – جامعة المنوفية
3. أ.د. محمد حسن بينس – أستاذ البيئولوجي رئيس قسم الأراضي والمياه – جامعة الإسكندرية

ملخص العربي

يفتح هذا البحث إلى دراسة الخصائص الجيومرفولوجية والبيولوجي للأراضي الواقعة جنوب غرب مدينة السادات وذلك باستخدام تكامل التقنيات الحديثة للاستشعار من البعد RS مع نظم المعمومات الجغرافية GIS، كذلك استنتاج الوضع التقسيمي لهذا الأرضي ALES-Arid، وواجد التمييز الكمي لهذا الفروق الم떻ية. RPD.

ولقد أوضح هذه الدراسة أن سطح الأراضي تتراوح بين سطح مستوي إلى بسيطة الانحدار، ذات مناسبات بين 11 إلى 22 متراً فوق مستوى سطح البحر، الأراضي عميقة، حالة الصرف جيدة جداً، ويواجد فيها قليل من القمح.

وأتمنى أن يتم متابعة هذابحث في المستقبل للإجابة على المصطلحات المختلفة والمسائل البيئية والمتعلقة بالأراضي.

ملخص الإنجليزي

Integration of GIS and RS technology in the identification, mapping and assessment of the land resources of the study area for the purpose of sustainable agriculture. The study area is located in the outskirts of Saida city, South of Cairo.

The results showed that the land resources are rich, the land is classified as Entisols Typic Torripsamments according to classification of Amer (2011) with a productivity level C3 to C4.

The work was conducted with the participation of the following members of experts in various sectors:

- Doaa Mohamed Abu El-Fadl Ahmed
- Foad E. Abou El-Khair
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