

Land Suitability Scaling and Modeling for Assessing Crop Suitability in Some New Reclaimed Areas, Egypt

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Abstract : Adequate land use selection is an essential step towards achieving sustainable development. The main object of this study is to develop a new scale for land suitability system, which can be compatible with the local conditions. Furthermore, it aims to adapt the conventional land suitability systems to match the actual environmental status in term of soil types, climate and other conditions to evaluate land suitability for newly reclaimed areas. The new system suggests calculation of land suitability considering 20 factors affecting crop selection grouping into five categories; crop-agronomic, land management, development, environmental conditions and socio - economic status. Each factor is summed by each other to calculate the total points. The highest rating for each factor indicates the highest preference for the evaluated crop. The highest rated crops for each group are those with the highest points for the actual suitability. This study was conducted to assess the application efficiency of the new land suitability scale in recently reclaimed sites in Egypt. Moreover, 35 representative soil profiles were examined, and soil samples were subjected to some physical and chemical analysis. Actual and potential suitabilities were calculated by using the new land suitability scale. Finally, the obtained results confirmed the applicability of a new land suitability system to recommend the most promising crop rotation that can be applied in the study areas. The outputs of this research revealed that the integration of different aspects for modeling and adapting a proposed model provides an effective and flexible technique, which contribute to improve land suitability assessment for several crops to be more accurate and reliable.

Keywords : analytic hierarchy process, land suitability, multi-criteria analysis, new reclaimed areas, soil parameters

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