

Demand-driven land suitability assessment – a case study in Fayoum Depression, Egypt– using RS and GIS.

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Abstract

The present study aims at performing current and potential suitability assessment for land use types at Itsa District, Fayoum Depression, Egypt. The geopedological approach of Zinck was utilized to generate the physiographic soil map of the study area. Remote sensing techniques by means of satellite image of the study area, was visually interpreted, then with the aid of digital elevation model, geological map, and geographic information systems (GIS), the base soil map was generated. Where two landscapes, Hilland and Depression, including eleven landforms were identified in the study area. Field work was conducted to check and confirm the boundaries of soil map units. Twelve soil profiles, and auger hole observations were examined to represent each map unit. The United States Department of Agriculture soil classification system, Soil Taxonomy, was used to classify the soil up to family level. The land suitability was carried out for twelve crops representing field crops, vegetables, orchards, and aromatic plants. Where land use requirements were matched with the land characteristics for each map unit producing the suitability class of corresponding unit. The results showed variation in land suitability for different crops, varies from high suitability (S1) to not suitable (N). In general, wheat, barley, clover, sorghum, and chamomile showed high suitability in the different map units. The map unit (Hi211) has a low suitability with classes of marginal suitable (S3) and not suitable (N). In general, limiting factors varies from correctable and non-correctable factors, thus, applying the proper management can improve the suitability for most of the map units.