-Evaluation of land suitability for main irrigated crops in the North Western Region of Libya

Salah Hassanien Abd El-Aziz

Abstract:

Land suitability analysis can help to achieve sustainable crop production with a proper use of the natural resources. The current study was carried out on the soils of north-western area of Libya to assess their morphological, physical and chemical properties and their suitability for growing irrigated crops. The studied area lies between latitudes 32° 30′ 00.9" and 32° 57′ 34.2" N and between longitudes 11° 35′ 08.4" and 11° 45′ 09.2" E. Two suitability methods (Sys & Verheye and Storie methods) were used to assess the land suitability of this area. According to Sys and Verheye method, the soils of the studied area varied in the suitability for irrigation between highly suitable (S1) to marginally suitable (S3). However, according to modified Storie index method the soils productivity, ranged from excellent (grade 1) for agriculture to non-agricultural (grade 6). The modified Storie index method was more effective in assessing the land suitability of this area. The drip irrigation system was also more suitable than surface irrigation method for most of the soils of the studied area. The indeces of soil suitability rating and percentage for growing alfalfa, sorghum, barley, maize, millets, wheat and safflower were higher compared to those for growing soybean, sunflower and sesame. Onion and green pepper crops were moderately suitable to be grown in 42% of the soils of the studied area while the other vegetables were not suitable to be grown in most of the soils of the studied area. The evaluated fruit trees could be arranged according to the soil suitability rating and percentage in the order of date palm > olives > guava > citrus > banana. The results also revealed that the studied area has a good potential to produce the selected crops under irrigation provided that the water requirements for these crops are met. The main limiting factors for land suitability for growing crops are soil texture, soil depth, calcium carbonate, alkaline pH and soil salinity.

Keywords:

Land evaluation, irrigation methods, suitability for crops

Published In:

Eurasian Journal of Soil Science, NULL, NULL