

Evaluation of Some Soils in Najd Plateau (Central Region, Saudi Arabia)

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ABSTRACT: Soils of a selected area (3210 Km²) within Najd plateau in the Central region of Saudi Arabia were studied in order to evaluate their suitability for agriculture. Interpretations of Landsat TM image indicated the presence of the following landform units: plateau, mountain, scarp, outwash plain, alluvial fans, plains and wadis. Soil profile descriptions and analytical data revealed that the soils are mostly deep, light or medium texture, massive, very low in organic matter (0.3-7.5 g Kg⁻¹), and highly calcareous (305.8 - 797.8 g Kg⁻¹ CaCO₃). Gypsum content was quite low, except for the outwash plain unit that contains from 0.1 - 14.5 g Kg⁻¹. Generally, the soils are nonsaline to slightly saline, except the soils of outwash plain and plateau (ECe ranges from 4.02 - 59.78 dS m⁻¹). Results showed marginal level for Fe, deficiency for Zn and Mn and sufficient or deficient for Cu. Soil profiles were classified into Entisols and Aridisols orders. The studied area was differentiated in view of type, number and degree of agricultural limitations. The main limitations are the effective root zone, depth to bedrock, amount of gravels, nutrient availability, relief, workability of land, available water, and calcium carbonate content. Therefore, soils of the studied area could be differentiated on the class level to the followings: moderately suitable (S_{2n,s2}), marginally suitable (S3), and not suitable (N). Soils within marginally suitable class were classified into two subclasses; i.e. S_{3s2} and S_{3s1, s2}. These subclasses have one or more of the following limitations; ability of drainage and aeration (S₁) and capacity of water retention (s₂).