J. King Saud Univ.. YoL 17. *Agric. Sci.* (I), pp. ~7-62. Riyadh (1-!25H.l2004)

Pedological Characteristics of the Soils of Wadi Bishah in Southwestern Region, Saudi Arabia

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(Received 18/411424H.; accepted for publication IO/911424H.)

Abstract. Wadis in the Western region of Saudi Arabia are the important geomorphologic features which receive relatively high quantities of runoff water from the surrounding hills. Wadi soils are the most important source of available land resources for sustainable agriculture development in the region. This research was carried out to study the pedological characteristics of wadi Bishah soils and its tributaries in order to classify these soils and to identify their limitations for agriculture sustainability. Results indicated that soils of the flood plains and wadi channels are recent and reflect the characteristics of the alluvium material from which the soils were derived. Residual soils at the mountains show observable soil profile development such as, formation and development of mollic epipedon and argillic subsurface horizon. There were noticeable differences in the properties of the flood plain soils particularly in the contents of organic matter, texture and salinity. Available Fe, Mn and Cu in flood plain soils range from low in subsurface layers to high or medium in surface layer while Zn and P was generaly low. Soils were classified into nine great soil groups, ten sub-great groups and 15 soil families. The criteria used for differentiation was the classes of particle size distribution. mineralogy, and soil temperature regime. The main soil limitations were the dominance of coarse textured soils in wadi bottom and some flood plain soils, low organic matter content and inherent fertility particularly in the coarse textured soils.