

Comparison of Chemical and Biological Indicators of Soil Over Rangeland to Dry Land Farming in the Beginning and End of the Growing Season in Freidan, Isfahan

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Abstract

Evaluation of chemical and biological indicators of soil in different land uses could be helpful in sustainable range management, preventing degradation of soil quality trend. This study was conducted in Friedan in Isfahan province in 2010 to compare chemical and biological indicators in three land uses (rangeland, degraded dry land and dry land), during two growing seasons (May and September) in three slopes (0-10, 10-20, 20-30 %). Nitrogen, phosphorus, potassium, organic matter, cation exchange capacity and microbial soil respiration were measured. Results showed that all measured characteristics except potassium decreased over an increase in the slope. Maximum values of phosphorus, organic matters, cation exchange capacity and soil respiration were obtained in pasture (28.4 mg/kg, 0.62%, 20.38 cmol/kg, 33.2 mgC/day, respectively) but potassium maximum rate was seen in dry land form (406.8 mg/kg). The effect of season on all measured parameters was significant except for N, while the highest amounts of phosphorus, potassium, cation exchange capacity and soil respiration (28.7 mg/kg, 377.3 mg/kg, 19.6 cmol/kg and 25.9 mgC/day, respectively) were seen in May and the highest organic matter rate (0.68%) in September. The results of this study showed that an increase in the slope, poor range management, and the end of the growing season could be major factors degrading the soil quality indices and soil productivity.

Keyword: Land use, Rangeland, Dry land, Nitrogen, Phosphorus, Potassium, Cation Exchange Capacity, Soil respiration.

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