

Abstract

Plant litter is an important factor in improving soil quality and plant biomass production in rangeland ecosystem. The aim of this study was to measure and compare the litter quality in three range plant species i.e. *Artemisia aucheri*, *Centaurea virgata* and *Scariola orientalis* and its relationship with soil physical and chemical properties in Haj Beygi rangeland, Torbat-e Heydarieh. Systematic-randomized sampling method was used with three transects and one square meter quadrat. In each quadrat, litter was sampled for each species separately and soil was also sampled in 0-15 and 15-30 cm depths exactly under individual plant canopy. Litter quality was determined by measuring nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), phenol and lignin using standard methods. Soil properties including texture, lime percent, electrical conductivity (EC), bulk density, pH, nitrogen (N), phosphorus (P), potassium (K) and organic carbon (OC) were also measured by standard methods. One way ANOVA was used to compare the species in terms of litter quality and Duncan test was used to separate the means with significant difference. The relationship between litter quality and soil properties was finally determined with Pearson correlation. The highest amount of P and N were found in *Centaurea virgata* and the highest amount of K was observed in *Artemisia aucheri*. In addition, the highest amount of lignin was observed in *Scariola orientalis*. The highest amount of P, lime, silt, clay, pH, organic carbon and bulk density was in the soils (0-15cm) of *Artemisia aucheri* habitat. Furthermore, the highest nitrogen value was found in the soils of *Centaurea virgata* habitat. The highest amount of potassium and sand was in *Scariola orientalis* habitat. At 15-30 soil depths, the highest amounts of potassium, phosphorus, clay, silt, silt clay, and pH were in *Artemisia aucheri* habitat's soils. The highest carbon content, bulk density, EC were in *Centaurea virgata* and the highest amount of lime, gravel, and nitrogen were in the *Scariola orientalis* habitat's soils. The results showed *Centaurea virgata* was a species with the best litter quality, and *Artemisia aucheri* had the most positive impact on soil and litter quality characteristics of the studied species had good correlation with soil chemical properties

Key Words: Litter Quality, Soil Chemical Properties, Soil Physical Properties, Torbat-e-Heydarieh



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**A Comparison of the Litter Quality of *Artemisia aucheri*, *Centaurea virgata*
and *Scariola orientalis* and its Relationship with Soil Characteristics in Haj
Beygi Rang land**

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