Influence of management and environmental factors on species composition and species richness in semi-arid rangeland in western Iran

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Introduction
A large proportion of rangeland in western Iran is in either fair or poor condition. Aim of this study was to disentangle the importance of environmental and management factors for species composition and species richness of a rangeland area in western Iran.

Material and Methods
Study area: 43 sites in four grazing areas (GA) in the south-east of Kermanshah, western Iran (Fig. 1)

Measurements: species richness; expansion of species, bare soil, stones, litter; topographic variables: altitude, slope aspect; soil parameters: P content, K content, organic carbon, pH, texture

Management data obtained through census databases and interviewing farmers

Results
Only north-facing aspect, stones and the amount of K were significantly related with the distribution of plant species (Fig. 1).

Of the measured soil and topographic variables, only altitude showed a significant linear correlation with species richness.

There are indications that grazing intensity was very important for vegetation composition and species richness. Thus, the ANOVA analysis indicated that the grazing intensity as a management variable was negatively associated with species richness (Table 1).

Conclusions
Our results suggest that of the measured environmental variables, only few showed a significant correlation with species richness or species composition. Grazing intensity may have had an important influence on plant diversity. Here, the occurrence of plant species indicating overgrazing in areas with presently low grazing pressure suggest that it is important to include past grazing management into analyses of plant diversity in semi-arid rangelands of Iran.