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## Investigation of LFA model application for determination rangeland's function in exclude and open range in Hamadan province , Iran

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**Key words :** landscape function analysis , soil surface characteristics , exclusion , grazing , functional attributes .

**Introduction** Soil indicators are the main index to recognize the function of natural ecosystems , and to evaluate their potentials . Landscape function analysis (LFA) method was used to evaluate management effects on soil surface characteristics and rangeland functional attributes (Tongway , D J . , Hindley , N . , 2004) .

**Material and methods** In this method for determination of three functional attributes of stability , infiltration and nutrient cycling 11 soil surface indicators were considered (Tongway , Dat al 1989) . They are soil surface cover (soil protection from erosion) , perennial canopy/basal cover , litter (cover , origin , degree of decomposition) , cryptogam cover , crust brokenness , type and severity of erosion , deposited material , soil surface roughness , soil surface resistance to distribution , slake test (soil stability test) and texture were used . Based on results land cultivation reduced functional attributes .

**Results** By increasing grazing intensity in open rangelands leave out palatable species and dominate annual in heavy grazing area . Vegetation and soil surface layer degradation increased soil erosion , created gully and reduced functional attributes . In relict excludes area because of reestablishing homogenous annuals , soil indicators and functional attribute were improved . by increasing grazing intensity , perennial vegetation cover and soil surface resistance reduced . Also in open rangeland breaking soil crust created bare soil .

**Table 1** Comparison among stability Index in exclude and open grazing treat .

index	P value
Litter Cover ( simple)	0 .076 <sup>ns</sup>
Cryptogam cover	0 .001 *
Crust broken-ness	0 *
Erosion type & severity	0 .046 *
Deposited materials	0 .004 *
Surface resist . to disturb .	0 .014 *
Slake test	0 .011 *
Litter Cover ( simple)	0 .008 *

<sup>ns</sup> : insignificant    \* : significant( 0 .05)

\*\* : significant (0 .01)

**Table 2** Comparison stability index in exclude and open grazing treat .

index	P value
Per . basal / canopy cover	0 .011 *
Litter cover , orig & incorp .	0 .892 <sup>ns</sup>
Soil surface roughness	0 .046 *
Slake test	0 .011 *
Texture	0 *
Surface resist . to disturb .	0 .107 <sup>ns</sup>

**Table 3** Comparison am stability in exclude and open grazing treat .

index	P value
Per . basal / canopy cover	0 .011 *
Litter cover , orig & incorp .	0 .684 <sup>ns</sup>
Cryptogam cover	0 *
Soil surface roughness	0 .019 *

**Conclusion** Finally rill , terraces and pedestal erosions increased we found that LFA method able to show changes of management effect at last consumption a few money and time shows the capability of this method .

### References

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