Investigation of LFA Model Application for Determination Rangeland's Function in Exclude and Open Range in Hamadan Province, Iran

M. R. Sadeghimanesh
Agriculture and Natural Resources Research Center, Iran

Hossein Arzani
University of Tehran, Iran

A. Mokhtariasl
University of Tehran, Iran

E. Alizada
University of Tehran, Iran

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

M .R . Sadeghimanesh[1] *, H . Arzani*[2] *, A . Mokhtari asl*[3] *and E . Alizada*[3]
1 *member of scientific board Agriculture and Natural Resources Research Center of Hamadan-Iran-Post Box :* 65199 -91169
Tel .: + 980811 -4373587 -97 *Fax :* + 980811 -4373606 . *E-mail : msadeghimanesh@ yahoo .com .* 2 *Professor Faculty of Natural Resources University of Tehran , E-mail : harzani@ ut .ac .ir* 3 *.PhD student of range Management in Tehran University*

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^{ns}
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*

^{ns} : 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^{ns}
Soil surface roughness	0 .046*
Slake test	0 .011*
Texture	0*
Surface resist . to disturb .	0 .107^{ns}

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^{ns}
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
Tongway , D J ., Ludwig , J ., Whitford , W .G ., 1989 . Mulga log mounds : fertile patches in the semi-arid woodlands of Eastern Australia . *Australian Journal of Ecology* 14 , 263-268 .
Tongway , D J ., Hindley , N ., 2004 . Landscape Function Analysis : Procedures for Monitoring and Assessing Landscapes . CSRIO , Brisbane , Australia .