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## Investigation the improvement operations affections on ecological indexes of rangeland health in rangelands of Golestan province ,Iran

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**Introduction** Changes in rangeland vegetation ,soil and water resources create by some natural distributions or management (Miller 2004) .Changes are determining variety of plant community (Bestelmeyer 2006) .Potential vegetation classifications such as ecological sites ,ecological types (USDA ,NRCS 1997) and range sites are commonly used by land management agencies as a framework for organizing natural resource information ,and also as a tool for communicating " natural" baseline conditions for ecosystem health assessments ,predictions of vegetation response to management ,and resource value potentials .Now rangeland health is base on the concepts of succession espoused by Clements (1916) .Rangeland mangers must have knowledge about ecological factors that determine the rangeland health .

**Material and methods** In this study used Landscape Function Analysis method for inventory's rangeland health in six landscapes . Landscape Function Analysis (LFA) is a monitoring procedure that uses quickly determined field indicators to assess the functional status of rangelands (Tongway and Hindley 2004) .The 11 soil parameters were measured on the three transects of 50 meters length and compared three functional properties stability infiltration and nutrient cycle

**Result** Resulted shows numbers of patches in closed area landscapes were very more than beside of them .The index of landscape stability was higher on the closed area than the next to for patches ,and the index of nutrient cycling was higher in closed area than at the side of for patches and the index of landscape infiltration was higher on the closed area than the beside for patches . These indexes were higher in patches than inter patches .

**Table 1** Value of Stability ,Infiltration and Nutrition recycle for closed area landscapes and the near of closed area landscapes in patches and inter patches .

| Landscapes         | Patch       | Stability | Standard error | Infiltration | Standard error | Nutrition recycle | Standard error |
|--------------------|-------------|-----------|----------------|--------------|----------------|-------------------|----------------|
| Closed area        | Patch       | 86/4      | 0/5            | 58/8         | 0/8            | 66/4              | 0/7            |
| landscapes         | Inter Patch | 47/4      | 0/3            | 48/9         | 0/7            | 45/7              | 0/88           |
| The near of closed | Patch       | 63/0      | 0/3            | 58/5         | 0/9            | 49/7              | 0/5            |
| area landscapes    | Inter Patch | 13/7      | 0/9            | 26/7         | 0/5            | 34/4              | 0/5            |

**Conclusion** According above results we can analysis the management of rangelands by LFA model .Improvement operations changed indicators of rangeland health in this area .Closed area landscapes because of light grazing had best condition than the near of closed area landscapes and for any three index variations is significant

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