Abstracts

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Abstracts of Oral Presentations

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4. Application of remote sensing in mapping potential for rangelands in the desert of India

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The Thar desert of India lies in the north-western part of the country and is a hot desert. It covers an area of 210,016 sq km, which is about 64.1 per cent of the area of the Rajasthan State. Thar Desert comprises of twelve districts of Rajasthan namely, Barmer, Bikaner, Churu, Ganganagar, Hanumangarh, Jaisalmer, Jalore, Jhunjhunu, Jodhpur, Nagaur, Pali and Sikar. The desert supports 17,509,490 persons. Typical characteristics of the Thar are large diurnal variation of temperature and high maximum temperature during summer season causing great evapotranspiration; scanty and xerophytic vegetation and practically no agriculture making it necessary for inhabitants to depend upon the animal resources resulting in sparse and nomadic population; and long and frequently occurring droughts and famines.

Extensive efforts have been made towards desertification control, ecological rejuvenation and restoration of the Thar desert in order to reclaim the productivity. Natural rates of desert regeneration have been very slow due to severe biotic pressure (overgrazing, and extraction of fodder and fuel wood). Introduction of fast growing exotic species of trees and grasses have proved highly successful. The wastelands in Thar desert have a big potential for development into a rangeland by growing nutritive fodder species well adapted to the arid desert environment. Remote sensing technology is a reliable tool in the wastelands identification, mapping, monitoring and management to develop it as rangeland. Integration of GIS has provided remote sensing a significant powerful platform in the mapping and management of rangelands. In the present study an attempt was made to map wasteland of Jhunjhunu district of the Rajasthan State using remote sensing and GIS and find a potential for the prospective development of rangeland. About 264.16 ha area was been observed. Necessary measures should be taken to utilize the rangeland for drought proofing and supporting livestock.

5. Landscape function analysis(LFA) : A new method for rangeland eosystem function assessment

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Land degradation and desertification are two most important problems in of the current century that decrease the soil quality and productivity. Ecosystem function has mainly related to soil surface condition. LFA (Land Function Analysis) is a new method developed by Australian scientists for analysis of the landscape function. This method is based on three main soil attributes: stability, nutrient cycle and infiltration. In this method, we score the soil qualitative characters and compare them to maximum scores. In a case study, we selected two rangeland sites in northern part of Iran (Golestan province) to test LFA method. Chahar Bagh

Gorgan plain. The results showed that the landscape function was higher in score at mountainous than lowland site. It may be because of higher precipitation, more dense vegetation and lower soil salinity in Chahar Bagh site. This method is a quick and easy way for rangelands ecosystem function analysis and is recommended for arid and semi-arid rangelands.

6. A number of ecological propositions and their implications for rangeland management in drylands

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Rangeland ecosystems shift across dynamic thresholds between different ecological states in response to natural or human-induced factors. The different ecological states are the result of interactions among climate, soils, grazing history, and management practices. The notion of a single 'pristine' final state is only conceptual in nature, and because of this, dynamic thresholds and the effects of various processes on ecosystem structure and function must be incorporated into decision-making. Rangeland managers should have a working knowledge of the key ecological processes in each state, and the processes that drive a system across a dynamic threshold from one state to another. To do this they need indicators for critical decision-making points. It is essential to identify the thresholds of an ecological transition state and ecological indicators of these states. The criteria of these ecological indicators are that they should be measurable, sensitive to stress on the system, have a known response to disturbance and easy to measure. The state and transition approach may offer an appropriate framework as an aid for decision making and can be used to highlight 'management windows' where opportunities can be seized and hazards avoided. Five propositions are set out and their implications for the management of semi-arid and arid rangelands are discussed.

7. Investigation of range condition and range condition trend at protected and unprotected rangeland in semiarid region: A case study: from Buein Zahra, Qazvin province, Iran

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In this study, range condition trends at two similar sites (protected and unprotected) were investigated. Protected area for 38 years (from 1964 .o 2002) was a park, without livestock grazing and planted with two range species (*Haloxylon aphyllum* and *Calligonum comosum*) was managed to stabilize soil and sand hills. Unprotected area beside the first area for the same this time was grazed mainly by two local livestock (sheep & camel). Range condition at