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The impact of overgrazing on needlegrass-peashrub-forbs community

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Key words : vegetation structure, type, overgrazing, disturbance, rangeland assessment

Introduction Grasslands serve as part of the daily chain of domestic animals and wildlife for food and survival. There is a need to create an ecologically-based system to optimize management of livestock production and biodiversity conservation. The results show to information on the vegetation structure and coverage of the soil surface with needlegrass-peashrub-forbs type the transition due to overgrazing. The high grazing pressure was significantly reduced productivity and changed vegetation structure and soil properties. The heavier grazing areas had increased densities of *Artemisia Adamsii*, *A. frigida*, *Carex duriuscula* and *Salsola collina* and reduced plant diversity.

Methods We considered the following principles such as changes in composition of species, weedy plant invasion, and productivity of economically useful plant groups and changes in their ratios as indicators of degradation. The line point intercept method for species richness and soil surface cover was used. 17 indicators were used for the rating of degradation level.

Results The research shows that stocking density above the carrying capacity caused variation in the vegetation structure and soil properties and is distinguished by relative differences between plant community pathways in steppe area (Figure 1, 2).

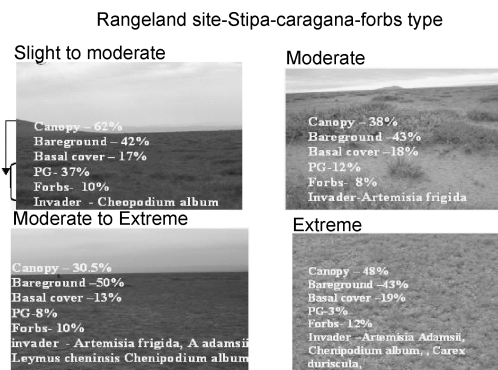


Figure 1 Vegetation characteristic and degradation level of a plant community.

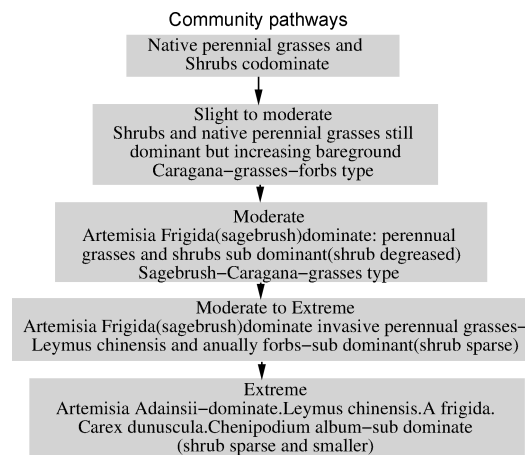


Figure 2 Transition pathway's of a plant community.

The normal needlegrass-peashrub-forbs community is canopy cover-60-65% of the soil surface, bare ground-35-40%, and perennial grasses cover is more than 35-40%. As compared to the normal community were the bare ground increased by 12-15% between community pathways and canopy cover decreased by 3-34.5% and perennial grasses decreased by 3-12.3%. The surface layer and nutrient were lost in the overgrazed areas and invasive weeds were increased. The percentage of unpalatable and lower value herbs such as *Artemisia adamsii*, *A. frigida*, *Carex duriuscula* and *Salsola collina* predominated. Over grazing reduced the permanent grasses and their capability to recover (see Figure 1). Grasses were replaced by shallow-rooted, annual plants of inferior grazing value.

Conclusions The grazing pressure changed the primary characteristics in plant community structure. A proper balance between the number of the livestock and available forage must be maintained by continuous and careful observation of the vigour of grasses on the pasture.

Reference

Jeffrey E. Herrick, Justin W. Van Zee, Kris M. Havstad, Laura M. Burkett and Walter G. Whitford, (2005). Monitoring Manual for Grassland, Shrubland and Savanna Ecosystems 9-15p.