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The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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## Impact of grazing on vegetation of *Artemisia*—annuals rangelands in semi desert of Uzbekistan

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**Key words :** grazing, rangelands, semi desert, sagebrush, livestock.

**Introduction** Grazing pressure is the most important factor impinging plant community composition and biomass in natural grasslands. Excessive stocking is the main reason for rangeland degradation worldwide.

The semi desert foothills region of Uzbekistan covers about 4 million hectares (Gaevsкая et al. 1975). This region is the most densely populated area of the arid zone of Uzbekistan. Karakul sheep husbandry is the most important livestock production sector in this region. The objective of our study is to measure the impact of grazing on plant community composition and productivity of the dominating *Artemisia* communities. The research focuses on the effects of grazing on plant productivity, floristic composition and the determination of stages of rangeland degradation as a result of overgrazing around settlements and wells.

**Material and methods** Field studies were carried out on *Artemisia*-annual sites of the Karnabchul semi-desert. The Karnab study site represents the sagebrush-ephemeroid arid rangelands of the foothills of Central Asia and located about 150 km NWW of Samarkand. An annual average air temperature of 14.6 °C and precipitation of 169 mm characterize the macroclimate of the sagebrush-ephemeroid semi-desert at Karnab. The annual distribution of precipitation is characterized by a maximum of precipitation in winter and spring, followed by drought during June-October. The soil is classified as loamy serozem with an occasional gypsum horizon in the soil profile (Saliendra et al. 2004).

Two study sites are located near the settlement of Tim; the third study site is located around a well near the village Tutli, 50 km from other two sites. The dominant species at all sites is sagebrush (*Artemisia diffusa* H. Krasch. ex P. Pol.), while the herbaceous layer is dominated by *Poa bulbosa* and *Carex pachystylis*. *Peganum harmala* is dominant on degraded sites. Vegetation was sampled along a grazing gradient extending from settlements or wells. Biomass production, density, cover and plant composition were measured.

**Results and discussions** Significantly high grazing pressure was observed in the site around the well. *P. harmala* was found as an indicator plant of degraded rangelands as a result of high grazing pressure. Along the grazing gradient, distinct stages of succession could be identified. Plant population density of *P. harmala* with amount of 13000 per hectare had full dominance in plant composition in the area of 1 km from the well. The value of density with 233 per/ha was decreased in the distance areas as a result of moderate grazing. Plant productivity confirmed the density values and ranged from 892 kg/ha to 25 kg/ha during spring season. Biomass production of *A. diffusa* on the sites most distant to settlement was 132 kg/ha, whereas closer to villages, under high grazing pressure, plant productivity decreased to 95 kg/ha. Major and consistent changes in plant community composition were observed.

**Conclusions** Livestock grazing heavily impacts the natural rangelands of arid zones around settlements and wells. We conclude that grazing intensity is the most important factor shaping productivity and plant community composition on the Karnabchul *Artemisia*-annuals sites. There is no evidence for the presence of a non-equilibrium plant community dynamics in this system.

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