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Seasonal dynamics of the rangeland's vegetations of arid zone of Uzbekistan

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Introduction About 65% of the territory of Uzbekistan is desert. The most important agricultural activity in this region is livestock production. The vegetation of desert and semi-desert rangelands is the most important source of feedstuffs for the livestock industry. The intensity of utilization of natural rangeland grazing resources mandates a program of monitoring of range vegetation condition and trend. The objective of this study is the analysis of intra- and inter-annual variation in biomass, cover, and species composition for the development of grazing plans that protect the forage resource.

Material and methods Comprehensive rangeland inventories were conducted 2-3 times per year for 6 six years on 4 rangeland sites typical of the South Kyzylkum desert: (1) *Artemisia*-annual rangelands; (2) Semi shrub-annual rangelands on foothills; (3) Shrub-semi shrub rangelands in mountainous regions; (4) Shrub-semi shrub rangelands on sandy desert. Measurements included cover, above- and below-ground biomass, frequency and density. Ordination analysis was conducted based on percent relative cover for all years.

Results and discussions The highest values of annual biomass were observed in the semi shrub-annual rangelands, foothills and shrub-semi shrub rangelands, and sandy deserts with 700–1100 kg/ha. Relatively low annual biomass was observed on *Artemisia*-annual rangelands and shrub semi shrub rangelands varying from 200 to 300 kg/ha. In general, our studies show that on properly managed rangelands annual biomass increases from spring to summer between 10 and 30%.

The results of line intercept measurements of cover confirmed the annual biomass analysis. Relatively high values were measured for intercept at all sites in autumn. Where intercept decreased in autumn, grazing pressure during summer was high. This is most likely to occur close to settlements and water sources.

Conclusions Long-term, intensive grazing by livestock has created characteristic plant community patterns along grazing intensity gradients radiating away from villages and water sources. In the fragile semi-arid and arid range sites of Uzbekistan, overused areas close to settlements and water sources can develop into desertification foci. The development of resource-protecting grazing schemes using long-range rest and rotation schemes is important to maintain the integrity of this important agro-ecosystem.

Reference

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