

Effect of grazing intensity on plant–soil C:N:P stoichiometry within a desert grassland under long-term grazing

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Abstract

Background and aims High-intensity grazing in Mongolian grasslands has led to the general deterioration of biodiversity and ecosystem functioning. Abundant evidence shows that grazing affects the structure and function of grassland ecosystems, especially under overgrazing. **Methods** We examined the effects of three grazing intensities (0, 1.92, and 3.08 sheep ha⁻¹ a⁻¹) on plant communities, plant and soil C, N and P contents, and plant and soil C:N:P stoichiometry in a desert grassland in different years. **Results** Grazing did not affect plant coverage, richness, or N:P, and the plant community biomass, litter bio-mass and C:N and C:P were highest under a zero grazing intensity. Soil C:N changed with the year and grazing intensity. However, soil C:P and N:P were higher in 2018 than in 2016 and 2017. **Conclusions** Our study suggested that grazing promoted the flow of N between plants and the soil, especially at 3.08 sheep ha⁻¹ a⁻¹. Under grazing stress, plants maintained the potential for compensatory growth. Further-more, N was shown to be the limiting fertilizer component for plants growing in this area among the three grazing intensities.

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