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研究论文

青藏高原东部高寒草甸群落生物量和补偿能力对施肥与刈割的响应

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摘要 以青藏高原东部高寒草甸群落为研究对象，通过比较了不同施肥条件和不同刈割对群落地上生物量和多样性的影响。结果表明施肥可提高生物量且生物多样性降低，施肥和刈割处理后，施肥效应显著而刈割效应不显著，说明施肥是主效应。实验还发现施肥可提高群落的补偿能力；不同资源梯度的情况下植物群落对刈割处理后补偿作用也不相同，对刈割处理后植物群落补偿能力随资源的升高而增强。当未施肥和施肥30 g/m^{2}时相同强度的1次刈割的补偿能力较相同强度的2次刈割的补偿能力大；当施肥60g/m^{2}和120 g/m^{2}时相同强度的2次刈割的补偿能力较相同强度的1次刈割的补偿能力大。

关键词 施肥；生物量；刈割；补偿效应

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The effect of simulated mowing of the fertilizing level o n commuity production and compensatory responses on t he Qinghai-Tibetan

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Abstract Understanding the effects of mowing and fertilizer on pasture land is critical for effectiv e management. This study, at the Pasture Land Station of Maqu in southern Gansu, examined th e effects of 4 fertilizer addition levels and 6 mowing intensities on community structure and plant a boveground biomass. Our result showed that species richness decreased along fertilizing gradient s, and the soil fertility treatments significantly affected aboveground biomass, with 30g/m^2(NH_4) 2 HPO_4 resulting in the highest levels of aboveground biomass. The mowing treatment did not signifi cantly affect aboveground biomass. The soil fertility and mowing treatments significantly affected c ommunity compensation ability. These results indicated that community compensation ability wa s directly related to the soil fertility levels, so that fertilizer can enhanced community compensatio n. Different fertilizer levels and mowing treatments had different effects on compensatory response swith compensation ablity increasing along fertilizing gradients. The least fertile soil and 30g/m^2(N H_4)2HPO_4 with one mowing event had a compensation ability two times greater than other treat ment combinations. The 60g/m^2(NH_4)2HPO_4 soil fertility treatment and 120g/m^2(NH_4)2HPO $_4$ with two mowing events resulted in lower compensation ability.

Key words _ fertilizing；biomass；mowing；compensatory responses

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