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J. M. Cheng

Chinese Academy of Sciences, China

L. P. Qiu

Chinese Academy of Sciences, China

Q. Wang

Chinese Academy of Sciences, China

J. Cheng

Chinese Academy of Sciences, China

X. N. Jia

Chinese Academy of Sciences, China

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Experimental study on *stipa bungeana* grassland of enclosed , cutting and grazing succession for 26 years semi-arid region of northwest

J.M. Cheng , L.P. Qiu , Q. Wang , J. Cheng , X.N. Jia

Institute of Soil and Water Conservation , Chinese Academy of Sciences and Ministry of Water Resources , Northwestern Sci-Tech University of Agriculture and Forestry , Shaanxi Yangling 712100 . E-mail : gyzcjm@ms.iswc.ac.cn

Key words : semi-arid area of northwest , *Stipa bungeana* , use type , succession process

Introduction The study of management of grassland vegetation , successive process of utilization , rules of degraded pasture ecosystem or vanished vegetations , will help to reconstruct the original vegetations and diversity . That is of important guided meaning for cultivated and reconstruction stable community types (Cheng *et al.* , 2002) .

Materials and methods (A) a completely protected area (forbidden grazing) , the time sequence evolution of grass vegetation were observed ; (B) cutting area (cutting twice per year in mid-June and mid-September respectively) , after cutting , changes of community structure were studied ; (C) a reasonable grazing area (rational grazing in middle June , middle August , middle October , 1.5-2 sheep/hm²) , influence of grazing on community structure were studied ; (D) uncontrolled grazing area (over-grazing area) . Time sequence evolution of grass vegetation and community structure were studied during the experiments . Each treatment contains 3 fixed plots (1×1 m²) with 10 replications . Investigations of the vegetation were carried out on 10th April , 10th July and 5th October , respectively .

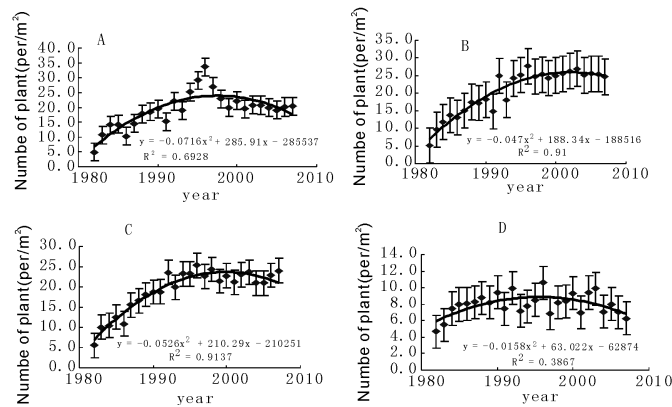


Figure 1 Grassland population quantity variation .

Results In district A , plant community density has reached the highest value (33 species/m²) during the first 15 years . In district B and C , change of population species diversity increased stably , and formed sub-climax community which is mainly composed of *Stipa bungeana* population in the 23rd year . In district D , grassland is usually in serious degradation states . The community biomass has the same change trend as the composition of plant density (Figure 1 and Figure 2) .

Conclusions With time lapsing , great change of evolution process occurred in rational cutting and grazing grassland . It eventually reached sub-climax community by four stages evolution . In 24th year of appropriate utilization , great changes have occurred and individual number of *Stipa grandis* increased sharply , having a tendency of replacing *Stipa bungeana* .

Reference

Cheng , J . M . , Wan , H . E . (2002) . Vegetation construction and water and soil conservation of Chinese Loess Plateau . Chinese Forestry Press . (in Chinese)

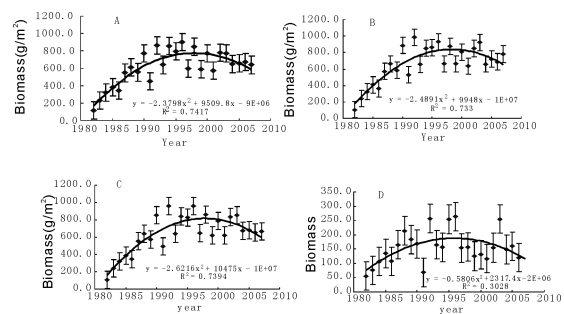


Figure 2 Inter-annual variability of grassland biomass(A enclosed area B cutting area C reasonable grazing area D unenclosed area) .