

研究报告

黄土高原北部紫花苜蓿草地退化过程与植物多样性研究

李裕元^{1,2}; 邵明安^{1,2}

¹中国科学院地理科学与资源研究所 陆地水循环及地表过程重点实验室, 北京 100101; ²中国科学院 水利部水土保持研究所 黄土高原土壤侵蚀与旱地农业国家重点实验室, 杨凌 712100

收稿日期 2004-10-8 修回日期 2005-8-20 网络版发布日期 接受日期

摘要

以陕西省神木县六道沟小流域为研究区域, 探讨了黄土高原北部紫花苜蓿人工草地退化过程中植物多样性的变化. 结果表明, 在黄土高原北部森林草原气候区, 紫花苜蓿人工草地的退化演替过程可以划分为3个阶段: 紫花苜蓿草地阶段(1~6年)、人工草地向天然草地演替的过渡阶段(6~10年)与长芒草次生天然草地阶段(10年以上). 在1~30年的演替过程中, 调查样方内共出现高等植物32种, 分属于13科28属, 其中90%以上出现在前6年. 植被演替过程中累积出现的植物科属种数的动态变化可以用对数函数进行较好地描述. 在群落演替过程中, 物种丰富度指数、多样性指数和Pielou均匀度指数的变化趋势基本一致, 在演替前期(第1个阶段)增加较快, 在第2个阶段(过渡阶段)达到最高, 然后有所降低并渐趋稳定. 种植紫花苜蓿可显著地加快植被的自然演替进程, 这与人工草地水分消耗强烈加速了土壤的旱化过程密切相关. 发展人工草地是黄土高原北部加速天然植被恢复与发展畜牧业、增加农民收入的有机结合点, 是西部生态环境建设中生态效益与经济效益兼顾的良好范式.

关键词

黄土高原北部; 紫花苜蓿; 人工草地; 群落演替; 植物多样性; 森林草原带

分类号

Degradation process and plant diversity of alfalfa grassland in North Loess Plateau of China

LI Yuyuan^{1, 2}, SHAO Ming'an^{1,2}

¹Key Laboratory of Water Cycle and Related Land Surface Processes, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing 100101, China; ²State Key Laboratory of Soil Erosion and Dryland Farming on the Loess Plateau, Institute of Soil and Water Conservation, Chinese Academy of Sciences and Ministry of Water Resoueces, Yangling 712100, China

Abstract

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(729KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含 “](#)

[黄土高原北部; 紫花苜蓿; 人工草地; 群落演替; 植物多样性; 森林草原带](#)

” 的 相关文章

- ▶ 本文作者相关文章

- [李裕元](#)
-
- [邵明安](#)
-

Vegetation recovery and reconstruction is the key of ecosystem restoration in the North Loess Plateau. With the Liudaogou catchment of Shenmu County, Shaanxi Province as test area, this paper studied the dynamics of the plant diversity of artificial alfalfa (*Medicago sativa*) grassland during its degradation process. The results showed that the degradation process of the grassland could be divided into three stages, *i.e.*, artificial alfalfa grassland stage (1~6 yrs), transitional stage from artificial to natural grassland (6~10 yrs), and secondary natural grassland stage dominated by *Stipa bungeana* (>10 yrs). In the whole degradation process from 1 to 30 yrs, 32 species belonging to 13 families and 28 genera were found, of which, 90% appeared in the initial 6 yrs. The dynamics of accumulatively appeared family, genus, and species in the vegetation succession process were well described by logarithmic function. During the process of community succession, the species richness (Gleason index and Margalef index), plant diversity (Shannon-Wiener index), and Pielou evenness index were changed with a similar tendency, *i.e.*, increased more rapidly at the first stage, and the climax phase appeared in the second stage. The plant diversity and evenness decreased slightly, and gradually became stable later. Planting alfalfa could markedly accelerate the natural vegetation succession process in the forest-steppe ecotone of Loess Plateau, mainly due to the intensive soil water consumption of artificial grassland, which accelerated the process of soil aridification. To develop artificial grasslands in the Loess Plateau is an optimal joint between accelerating natural vegetation recovery and increasing farmers' income by stockbreeding, and is also a favorable paradigm both for the ecological and for the economic benefits in the eco-environmental construction in West China.

Key words

[North Loess Plateau](#) [Alfalfa \(*Medicago sativa*\)](#) [Artificial grassland](#) [Community succession](#) [Plant diversity](#)
[Forest-steppe ecotone](#)

DOI:

通讯作者