

研究论文

生植物候与草甸草地多年生植物的消长

刘志民, 闫巧玲, 马君玲, 骆永明

中国科学院沈阳应用生态研究所, 沈阳 110016

收稿日期 2005-6-5 修回日期 2006-1-25 网络版发布日期: 2006-3-25

摘要 尽管草地管理研究较多, 但从物候学进行的研究很少。目前尚未见到关于开花期和结实期如何影响科尔沁草原植物地位的报道。报道了科尔沁草甸草原34种多年生植物的始花期和果实始成熟期与其在割草和放牧利用下的消长关系。结果表明: (1) 3种植物在4月、13种在5月、10种在6月、7种在7月、1种在8月开始开花。3种在5月、14种在6月、11种在7月、5种在8月、1种在9月开始出现成熟果实。(2) 与割草草地相比, 始花期晚的植物在自由放牧草地中频度和多度趋于减少, 果实始成熟期晚的植物也表现同样的趋势。(3) 当将具有营养繁殖能力的植物排除后, 与割草草地相比, 始花期和果实始成熟期晚的植物在自由放牧草地中频度和多度减少的趋势更强。(4) 为了使植物完成生活史, 割草应在秋季大多数植物结实期结束时实施。(5) 为保证大多数禾本科植物顺利完成生活史, 应在大多数植物开始分蘖时开始放牧, 进入花蕾期停止放牧, 至结实期晚期又开始放牧。

关键词 [始花期](#); [果实始成熟期](#); [多度](#); [频度](#); [营养繁殖](#)

分类号 [Q945](#)

Relationships between plant reproductive phenology and the frequency and abundance of perennial species in the meadow of Horqin Steppe, China

LIU Zhi-Min, YAN Qiao-Ling, MA Jun-Ling, LUO Yong-Ming

Institute of Applied Ecology, Chinese Academy of Sciences, Shenyang 110016, China

Abstract Although numerous studies concerning the vegetation management of Horqin Steppe have been conducted, there are few documented reports on the relationship between vegetation management and phenological aspects, especially flowering and fruiting phenology. This paper reports relationships between the flowering and fruiting phenology of perennial species and their frequency and abundance under two utilizations, mowing and grazing, in the Horqin Steppe of northern China. The objectives are to find out how the plant phenological aspects of perennials, such as flowering and fruit-maturing relate to their frequency and abundance in meadow and to make suggestions on vegetation management in the study area.

The study sites were located at the Wulanaodu region (119°39'~120°02'E, 42°29'~43°06' N, 480 m a.s.l.) The climate of the region is semiarid with a mean annual precipitation of around 340 mm and a mean annual temperature of 6.3 °C. The investigation was conducted along four transects, each 10m apart, on each kind of grassland. One hundred and sixty quadrats of 1 m×1 m, each at 10 m interval, were selected on the transects. Species composition and abundance were recorded in each quadrat.

Phenological investigation was conducted in the years 2003 and 2004. Quadrats of 2m×2 m were selected in the mowing meadow, and the date of flowering and fruiting of all species in the quadrats was recorded every three days in 2003 and every five days in 2004. Meanwhile, the date of flowering and fruiting of plants outside the quadrats was also recorded in 2004. The starting date of flowering and the fruit-maturing of 34 perennials were investigated. In analyzing the data, the species abundance, days of starting date to bloom from April 19, to have mature fruits from May 9 were logarithmically transformed. In the 34 perennials, 3 species started to bloom in April, 13 in May, 10 in June, 7 in July and only one in August. In the 34 perennials, 3 species started to have

扩展功能	
本文信息	
▶ Supporting info	
▶ [PDF全文](0KB)	
▶ [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	
▶ Email Alert	
▶ 文章反馈	
▶ 浏览反馈信息	
相关信息	
▶ 本刊中 包含“始花期; 果实始成熟期; 多度; 频度; 营养繁殖” 的相关文章	
▶ 本文作者相关文章	
· 刘志民	
· 闫巧玲	
· 马君玲	
· 骆永明	

e mature fruits in May, 14 in June, 11 in July, 5 in August and only one in September. Compared with the mowing, the frequency and the abundance of the species in the grazing declined more sharply, indicating that excessive grazing is more likely to eliminate the species with late flowering and fruit-maturing than is continuous mowing.

When the species with vegetative regeneration excluded, the frequency and the abundance of the species in the meadow grazing tended to decline more sharply compared with the meadow mowing, indicating that vegetative regeneration plays a critical rule in alleviating the extinction of species with late onset of flowering and fruit-maturing in the grazing grassland. Reproductive phenology of species should be taken into consideration in the vegetation management of grassland. Suggestions for the effective management of grassland ecosystem were given that mowing should be done at the end of seeding period, and that mowing should be conducted rotatively, to allow plant species to finish seeding. Grazing should be started at the tillering stage, ended at the bud period and started again at the late seeding period.

Key words flowering _ fruiting _ reproductive phenology, abundance _ frequency _ vegetative regeneration

DOI

通讯作者 刘志民 zmliu@iae.ac.cn