草业科学 2011, 28(10) 1801-1806 DOI: ISSN: 1001-0629 CN: 62-1069/S

前植物生产层

草地生态系统土壤酶活性研究进展

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摘要：

土壤酶在土壤生态系统的物质循环和能量流动方面扮演着重要角色，研究土壤酶活性对于探讨草地生态系统结构、功能及其可持续发展有着重要的意义。土壤酶的研究历经20世纪50年代以前的奠定时期，20世纪50-80年代的迅速发展时期和20世纪80年代以后与其他学科相互渗透的时期。土壤酶主要来源于土壤微生物，分为六大类，即氧化还原酶、水解酶、转移酶、裂合酶、连接酶和异构酶。本研究总结了不同退化程度、施肥、放牧、土壤微生物、季节变化等因素对草地生态系统土壤酶活性的影响，结果表明，随着退化程度的加重，土壤酶活性呈降低趋势；施肥在一定程度上能增强土壤酶活性；轻度放牧会使土壤酶活性增加，重度放牧会使土壤酶活性降低；土壤微生物与土壤酶活性呈显著正相关关系；土壤酶活性随季节变化有一定的规律性波动。最后，本研究对青藏高原高寒草甸生态系统的退化、恢复和治理与土壤酶活性关系的研究发展前景进行了展望。

关键词：草地生态系统；土壤；酶活性

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Advances on soil enzymatic activities in grassland ecosystem

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Abstract:

Soil enzymes play an important role in the soil ecosystem nutrient cycling and energy flow. Therefore, the study of soil enzymatic activities has important significance to investigate the structure, function and sustainable development of grassland ecosystem. The research of soil enzymes has experienced three different historical periods which were foundation period(Before 1950s), fast development period (1950-1980s) and mutual penetration with other disciplines period (1980s). Soil enzymes are mainly derived from soil microbe. They can be divided into six categories which were oxidoreductase, hydrolase, transferase, lyase, ligase and isomerase. This paper summarizes several factors affecting soil enzymatic activities of grassland ecosystem, such as degradation levels, fertilization, grazing, soil microbe, season and so on. Based on previous research, we concluded that: 1) soil enzymatic activities tend to decrease with the aggravation of degradation, 2) soil enzymatic activities could be increased to some extent by fertilization, 3) soil enzymatic activities increased by light grazing but reduced by heavy grazing, 4) soil enzymatic activities positively correlated with soil microbe, 5) soil enzymatic activities varied with season. Finally, a prospect to the research and development of

the relationship between degradation, restoration and improvement of Qinghai Tibet plateau alpine meadow ecosystem and soil enzymatic activities was made.

Keywords: grassland ecosystem soil enzymatic activities

收稿日期 修回日期 网络版发布日期

DOI:

基金项目:

通讯作者:

作者简介:

作者Email:

参考文献:

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