

研究报告

## 降水量变化对蒙古栎落叶分解过程的间接影响

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**摘要** 分析了在4种不同降水量条件下蒙古栎叶凋落物基质质量的变化, 并应用分解袋法研究其凋落物在蒙古栎次生林内的分解过程. 结果表明: 与对照相比, 降水量减少条件下, 蒙古栎叶凋落物的初始N、P、K浓度显著升高, 初始木质素浓度显著降低, 凋落物分解速率大, N、P、K矿化率高, N和P固持时间缩短; 降水量增加情况下, 其凋落物初始N浓度显著降低、木质素浓度显著升高, N、P、K矿化率低, N和P固持时间延长. 4种类型叶片凋落物的质量损失过程均符合指数降解模型, 分解速率可以由凋落物木质素/N来预测. 相关性分析显示, 木质素浓度高、N浓度低的两种凋落物的分解速率与N浓度相关性最大; 而木质素浓度低、N浓度高的两种凋落物的分解速率与木质素浓度相关性最大. 说明降水量的变化显著地改变了蒙古栎叶凋落物的基质质量, 进而间接地改变了凋落物的分解过程.

**关键词** [凋落物分解](#) [降水量](#) [凋落物基质质量](#) [蒙古栎](#)

分类号

## Indirect effects of precipitation on litter decomposition of *Quercus mongolica*

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### Abstract

The effect of precipitation variation on chemistry of *Quercus mongolica* leaf litters was examined by analyzing litters of Mongolia oak saplings under 4 precipitation gradients, and the decomposing process of these leaf litters in *Q. mongolica* dominated forest was assessed using litter bag method. The results showed that under less precipitation, the litter had a higher decomposition rate, and its N, P and K mineralized quickly. The initial concentrations of N, P, and K increased, while that of lignin decreased significantly. With increasing precipitation, the mineralization rates of N, P and K in litter decreased. Its initial N concentration decreased, while the relative content of lignin increased. The mass loss patterns of four type litters fitted exponential model, and the decomposition rate could be well predicted by their lignin/N ratio. The decomposition rate of the litters with higher lignin and lower N was best related to their N concentration, while that of the litters with lower lignin and higher N was strongly correlated with their lignin concentration. It was proved that precipitation had a significant effect on the litter substrate quality of *Q. mongolica*, and thus, changed the decomposition process of the litter indirectly.

**Key words** [litter decomposition](#) [precipitation](#) [litter substrate quality](#) [Quercus mongolica](#)

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