

Leaf litter decomposition dynamics of *Pinus taiwanensis* and *Quercus variabilis* associated with various elevations

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ABSTRACT:

Leaf litter decomposition is an important process of carbon cycle in forest ecosystems. In this study, the decomposition dynamics of oak (*Quercus variabilis* Blume) and pine (*Pinus taiwanensis*) leaves in Northern Taiwan was investigated using the litterbag method, the effects of elevation and buried type on leaf decomposition were determined. In the laboratory, the impacts of incubation temperature, soil moisture and type on leaf decomposition were simultaneously tested. Results showed that soil basic physicochemical properties differed from the selected three sites with different elevations High temperature and low soil moisture could result in a high decomposition rate of oak and pine leaves. In field, oak and pine leaves decomposed 60-80% after one year and had a half decomposition life from two to seven months. Results also indicated that oak leaf decomposed faster than pine leaf and both leaves decomposed quickly buried in the soil and at the low elevation sites. Nutrients released from the leaves during the decomposition varied with time and tree species. Overall, both environmental condition and species control the plant litter decomposition process that influences further the carbon storage and nutrient cycling of forest ecosystems.

Keywords:

Leaf litter, Decomposition, Elevation, Oak, Pine.