

THE EFFECT OF USING CONTROL BAGS ON LITTERBAG MEASUREMENTS OF LEAF LITTER DECOMPOSITION AND NUTRIENT DYNAMICS

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Abstract—In most litterbag decomposition studies, mass loss is calculated as simply the change in litter mass between successive time periods. However, studies have found that the influx of soil, foreign litter, and microbial biomass can add weight to litter in litterbags. This can lead to underestimates of true litter mass loss and incorrect calculations of nutrient mineralization and immobilization patterns. The purpose of this study was to assess the effect of using control bags on the mass loss and nutrient dynamics calculated from a traditional litterbag study of decomposing leaf litter. Litter and fermentation layers from four oak-hickory stands ranging in age from 5 to approximately 100 years since harvest were collected,

dried, and placed in nylon mesh litterbags. Control bags consisted of inert, undecomposable material approximately the shape and size of the litter. All bags were placed in the forest floor of the 90, or 120 days. Mass loss and nutrient content of the litter was determined and calculations of the decomposition and nutrient mineralization and immobilization patterns were assessed both with and without correcting for the control bags. Results suggest that control bag corrections had a dramatic effect on calculations of mass loss and nutrient dynamics. Thus, short-term decomposition and nutrient dynamics cannot adequately be assessed in these traditional studies without the use of control bags.

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