

Abstract:

Data on litter production and decomposition in an arid rangeland in Kenya was collected over a two-year period. Litter sampling was carried out at monthly intervals using a rectangular 0.25m² quadrat frame. Litter within the quadrats was handpicked and washed with running water to get rid of soil particles, dried, and weighed. Weights were expressed on organic matter basis. Monthly litter production ranged from 31.4g m⁻² to 130.0g m⁻². Mean monthly yield was 92.5 ± 26 g m⁻², with a 28% coefficient of variation. There was no significant difference ($p > 0.01$) in litter yield between 1992 and 1993. Rate of decomposition for aboveground material ranged from 0.005g g⁻¹ day⁻¹ to 0.084g g⁻¹ day⁻¹. The mean annual rate of decomposition was 0.026g g⁻¹ day⁻¹. Belowground plant material rates of decomposition spread from 0.009g g⁻¹ day⁻¹ to 0.062g g⁻¹ day⁻¹. with a mean annual rate of 0.041g g⁻¹ day⁻¹. Belowground material consistently decomposed faster than aboveground material. Peaks in both aboveground and belowground material decomposition rates coincided with rainfall peaks. Overall, in this arid environment, litter production and decomposition is pulsed in nature, and trends are closely related to rainfall occurrence. Moisture is thus a limiting factor both to the production and decomposition of litter. Belowground litter plays a significant role in nutrient cycling.