Ecosystem Catalysis: Soil Urease Activity and Grazing in the Serengeti Ecosystem

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Abstract

The activity of soil ureases was evaluated in the laboratory in soils from three locations in the Serengeti National Park, Tanzania, differing in the grazing intensities that the grasslands there support. Urease activity was assayed by the instantaneous release of NH_4as soon as soils drained to field capacity after application of an aqueous urea solution approximating N concentrations in ungulate urine. The appearance of NO_3 and SO_4 in extracts was used as an index of biological activity and pH changes; neither responded to urea addition. Ammonium appearance in extracts of soils to which water but not urea was applied was low and identical; appearance in extracts where urea had been added was high and differed between sites, increasing with the level of grazer activity at a site. The data document ecologically meaningful levels of soil urease in Serengeti soils and a positive association of those levels with grazing intensity.