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## **ECOLOGICAL STUDY ON NITROGEN BIOGEOCHEMICAL CYCLE AFTER CONVERSION FROM GRASSLAND TO CROPLAND IN SOUTHEASTERN EUROPE (ROMANIA)**

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### **Abstract**

Conversion of natural ecological systems has been one of the greatest human impact on terrestrial ecosystems. The expansion of anthroposphere altered virtually all biogeochemical cycles of elements. Nitrogen holds a key place in sustaining life and presents unique traits such as broad chemical speciation and mobility within the environmental compartments. With historically adapted ecosystems to low bioavailable nitrogen, understanding the complexity of the nitrogen disruption is a continuous challenge. Therefore, the present study addresses the changes of nitrogen biogeochemical cycle from a converted grassland for crop production versus grassland ecosystem. One of the first alteration of grassland as it becomes transformed is the removal of plant cover, which directly affects the water cycle, oxygen regime, and the organic matter availability. Though our results show similar dynamics of soil moisture and organic matter content for both study areas, smaller values for these parameters are recorded for the modified ecosystem, of 3% for soil moisture and 10% of organic matter. Another subtle response can be noticed while analyzing soil pH levels, a slight acidification being visible in the cropland ecosystem. More significant responses occur at the microbial community levels when analyzing the mineralization rates, both site specific and potential. Potential mineralization rates of organic matter conversion in inorganic compounds halved in cropland system during the study period while keeping similar variations correlated with seasons, clearly demonstrating the great impact of land conversion on microbial communities which are responsible for nutrient turnover in soils.

*Key words:* grassland, land use change, nitrogen cycle

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