



Effect of management and soil moisture regimes on wetland soils total carbon and nitrogen in Tanzania

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Wetland soils play an important role as storage compartments for water, carbon and nutrients. These soils implies various conditions, depending on the water regimes that affect several important microbial and physical-chemical processes which in turn influence the transformation of organic and inorganic components of nitrogen, carbon, soil acidity and other nutrients. Particularly, soil carbon and nitrogen play an important role in determining the productivity of a soil whereas management practices could determine the rate and magnitude of nutrient turnover. A study was carried out in a floodplain wetland planted with rice in North-west Tanzania- East Africa to determine the effects of different management practices and soil water regimes on paddy soil organic carbon and nitrogen. Four management treatments were compared: (i) control (non weeded plots); (ii) weeded plots; (iii) N fertilized plots, and (iv) non-cropped (non weeded plots). Two soil moisture regimes included soil under field capacity (rainfed conditions) and continuous water logging compared side-by-side. Soil were sampled at the start and end of the rice cropping seasons from the two fields differentiated by moisture regimes during the wet season 2012. The soils differed in the total organic carbon and nitrogen between the treatments. Soil management including weeding and fertilization is seen to affect soil carbon and nitrogen regardless of the soil moisture conditions. Particularly, the paddy soils were higher in the total organic carbon under continuous water logged field. These findings are preliminary and a more complete understanding of the relationships between management and soil moisture on the temporal changes of soil properties is required before making informed decisions on future wetland soil carbon and nitrogen dynamics.

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