WATER-STABLE AGGREGATES OF NIGER FLOODPLAIN SOILS AND THEIR ORGANIC CARBON, NITROGEN AND PHOSPHORUS DISTRIBUTION.

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ABSTRACT
Five soil profiles were studied along a soil sequence in the Niger river floodplain to determine their soil properties and water-stable egggregates (WSA) between 4.75-2.00 mm, 2.00-1.00 mm, 1.00-0.50mm, 0.50-0.25mm and <0.25mm. The relative distributions of soil organic carbon (SOC) total nitrogen and available phosphorus in water-stable aggregates (WSA) were evaluated. Proximity to the river affected the SOC distribution within the WSA while the highest mean values of SOC were obtained from WSA 4.75-2.00mm of profile nearest to the river. The SOC correlated significantly with mean-weight diameter (MWD) (r=0.61) and WSA class between 4.75-2.00 mm (r=0.60). Higher C/N ratio of whole soils over the WSA classes was an indication of active mineralization of soil organic matter in the aggregates. The available phosphorus content of both the whole soil and the WSA classes is low, reflecting the low phosphorus contents of the parent materials, fixation and the redistribution of this element by erosion and flooding.

Key words: Soil organic carbon, Water-stable aggregates, Floodplain, C/N ratio, Soil profile.