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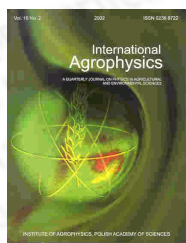
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Fractal scaling of soil particles in agricultural landscapes of Nigerian savannas

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F.K. Salako

Department of Soil Science and Land Management, College of Plant Science and Crop Production, University of Agriculture, PMB 2240, Abeokuta, Ogun State, Nigeria
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abstract Fractal dimensions, D , for soil profiles in the derived and southern Guinea savanna zones of Nigeria were calculated using particle size distribution data. The D values increased with soil depth because of increasing silt and clay with the depths. Thus, D values were significantly correlated with soil particles; negative correlation with coarse particles and positive correlation with fine particles. In the derived savanna, D values ranged from 2.650 to 3.196 whereas in the southern Guinea savanna they ranged from 2.971 to 3.498. Thus, the soils in the derived savanna conformed more with expected fractal scaling of $D < 3$ than the soils in the southern Guinea savanna. Nonetheless, the results showed that fractal scaling distinguished the differences in particle size distributions between the two agroecological zones and was, therefore, a sensitive approach for characterization of particle size distribution in the savanna. Fractal scaling also showed the differences between particle size distributions along toposequences.

keywords soil profile, particle size distribution, fractal scaling, savanna