



## Change in a ferralsol physico-chemical properties under pineapple cropping system in southern of Benin

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### ABSTRACT

*Objectives:* The study examines the evolution of soil properties under the main pineapple cropping system, in order to evaluate the effectiveness of this system towards maintaining sustainable productivity.

*Methodology and Results:* The plots of different cropping durations (1.5, 3, 6, 7, 10, 15 and 16 years) were selected from the predominant pineapple cropping system. A fallow plot was identified in a neighbourhood of each selected pineapple plot. Soil profiles were installed in the selected fields and their adjacent fallows to characterize morphological and physico-chemical soil dynamics. The results showed that the values of the morphological and physical characteristics of the soil began to decrease after 10 years of pineapple cropping. The values of chemical characteristics started to decline after 7 years of pineapple cropping.

*Conclusions and application of findings:* The main pineapple cropping system in the study region improves and maintains the morphological and physical characteristics of the soil up to 10 years of cultivation after which lower values were recorded. In general, the values of the chemical characteristics begin to decline after 7 years of pineapple cropping. It is important to study crop residue management practices that will better manager soil fertility and conservation. For a sustainable use of ferrallitic soils under pineapple, the fertilization system on the plateau of Allada should be strengthened by the addition of organic fertilizers with appropriate crop rotation. This will keep these lateritic soils under pineapple production over a longer period.

**Keywords:** Cropping systems, soil properties, pineapple, Benin.