

Extent and distribution of surface soil acidity in the rainfed areas of Ethiopia

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Abstract

The soil acidity level is a key soil characteristic that determines soil nutrient availability, soil microbial activities and crop growth. However, studies on distribution and extent of soil acidity in Ethiopia are not available. This study was carried out to predict the extent and severity of soil acidity. The study used 88,265 soil pH samples collected from soil laboratories and 21,439 samples compiled from studies. Rainfall, altitude, slope gradient, soil, and land cover were considered to generate spatial autocorrelation and integrated into geospatial analysis to predict the soil pH. The performance of the kriging model was found to be satisfactory with a standard error of 0.77, RMSE of 0.51, and R2 of 0.74. The model estimates showed that 47% and 30.2% of the country's total area and rainfed areas were acidic (pH<6.5), respectively. Out of the total area of the country, 3.7% is found to be extremely to strongly acidic (pH<5.5), 20.7% is moderately acidic (5.6

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