Changes in soil chemistry associated with the establishment of forest gardens on eroded, acidified grassland soils in Sri Lanka

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Abstract Topsoil properties were determined in forest gardens established about 20 years ago on eroded grassland soils (abandoned tea lands) in the wet zone of the Sri Lankan highlands. They were compared with adjacent, eroded grasslands (abandoned tea lands) on strongly weathered soils vs soils at earlier stages of pedogenic development in a two-way analysis of variance. Soil pH in forest gardens was, on average, 6.1, nearly one unit higher than in the adjacent grasslands. In the garden soils, the cation exchange capacity (CEC measured at pH 4.8) was nearly double, exchangeable calcium concentrations five times and exchangeable magnesium three times as high as in the grasslands soils. Total soil N content was found to be nearly 40% higher in the gardens. Topsoil gravel contents in the gardens were less than half as high as in the grasslands. The increases in exchangeable bases and N in gardens, relative to grasslands, were attributed to increased nutrient retention