

D-20: Geochemistry of soils in the Sabaragamuwa Province of Sri Lanka - effect of climate

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Geochemical maps produced for the soils of Sabaragamuwa Province of Sri Lanka show that the available levels of K, Mg, Ca and Mn exhibit a marked correlation with rainfall. Soil samples collected for the preparation of maps were grouped according to the annual rainfall data as A (<2,500 mm), B(2,500-3,000 mm), C(3,000-4,000 mm), D(>4,000 mm). The average contents of the above elements follow the order $A > B > C > D$. The highest levels of the elements were reported from the southern part of the province which receives an annual rainfall of less than 2,500 mm. The low elevation of the area (<500m) prevents the heavy erosion of surface soil. The high cation exchange capacity and the presence of expandable clays of reddish brown earth soils encourage the exchange and adsorption processes of the elements.

The lowest levels of the elements were reported from the central part of the province which receives a rainfall greater than 4,000 mm annually. This can be attributed to the heavy leaching caused by the high rainfall and flooding. The soil type (red yellow podzolic soils) which has a low CEC and 1:1 type and single sheet type clays is not conducive to the exchange and adsorption processes of these elements as in the case of reddish brown earth soils.

The northern part of the province receives 2,500 - 3,000 mm annual rainfall and shows moderate levels of the elements. It is likely that moderate rainfall and the occurrence of immature brown loams having considerable CEC may lead to the observed concentrations.

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