Dhaka University Studies, Part E, 2(1): 61-63, 1987 (January)

Short Communication

SOME PROPERTIES OF A FEW SUB-SURFACE SOILS FROM HAOR AREAS OF SYLHET

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It has been suggested that the sub-soil is an important source of plant nutrients as the root system of many agronomically important crops penetrates deep down to the sub-soil at considerable depths and remove appreciable amount of nutrients therefrom (Sharma *et al.* 1982, Dostal *et al.* 1981, Miclaus and Markievici 1981, Mitchell and Blue 1981, Woodruff and Parks 1980). Information concerning the nutrient uptake from sub-surface soil has a practical importance as it contributes a great deal to the fertilizer recommendations made on the basis of the soil test-crop response correlation studies.

A scanty information exists concerning the physico-chemical properties of sub-surface soils of Bangladesh albeit much effort has been consecrated on the evaluation of nutrient status of the surface soil (Anam *et al.* 1978, 1981, 1982). Taking this into view, twelve composite samples, representing three sites (four from each site) were collected at a depth of 45-150 cm (USDA 1951). The sites are Nayakhara, Ratla-1, and Ratla-2 of Haor areas of Sylhet.

Different physico-chemical properties of sub-surface soil and the total and available nutrient status are presented in Tables 1 and 2 respectively.

Table 1. Some physico-chemical properties of the sub-surface soils (90-150 cm) of Nayakhara, Ratla-1 and Ratla-2 areas.

	Nayakhar	Ratla-1	Ratla-2
pH	4.5	6.5	6.5
% sand	10	7	8
% silt	85	90	80
% clay	5	3	4
% moist.	34.43	33.54	34.40
% org. C.	0.15	0.10	0.14
% O.M.	0.26	0.17	0.24
% Tot. N.	0.046	0.051	0.058
C:N ratio	3.24	1.95	2.38
CEC meq 100 g^{-1}	5.46	6.07	3.78

The different physico-chemical properties of the three soils indicate that the substrate have a good potentiality to support plant growth. The close C:N ratio obviously indicates a leaching of soluble form of N to the lower depth. Such a close C:N ratio at a lower depth suggests that deep-rooted plants can fulfill some of their nutritional requirements specially nitrogen thereby maintaining its growth. As it concerns the other nutrients like P, K, Ca, Mg etc., it is apparent that the values (Table 2) lie closly to those found in the rhizosphere of many arable soils. This would suggest that nutrient status of the sub-surface soil is no less important in the evaluation of soil fertility status and ultimate predictions on the crop yield pattern of an area.

Table 2. Some of the chemical properties showing the nutrient status of the sub-surface soils (90-150 cm) of the three locations.

	Nayakhara	Ratla-1	Ratla-2
% NH_4-N	0.0178	0.0185	0.0172
% NO_3—N	0.0023	0.0040	0.0023
% Tot. P	0.175	0.250	0.300
% Avail. P	0.019	0.053	0.020
% Tot. K	0.60	0.66	0.92
% Avail. K	0.0032	0.0064	0.0074
% Tot. Ca	2.3	2.7	2.6
% Avail, Ca	0.192	0.190	0.220
% Tot. Mg	0.42	0.44	0.42
% Avail. Mg	0.023	0.110	0.020
% Soluble SO_4	0.081	0.100	0.065
% Soluble Cl—	0.334	0.499	0.261

It is therefore, opined that study of sub-surface strata of arable soils must be taken into consideration while evaluating their nutrient status.

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(*Manuscript received on 31 August 1986*)