ORGANIC PHOSPHORUS IN RELATION TO THE ORGANIC CARBON AND NITROGEN CONTENTS OF SOME KERALA SOIL TYPES

It is well known that phosphorus exists in the soil in different forms, of which the organic form is a major fraction. Brito-Mutunayagam and Koshy (1951) found that about 26% of the total phosphorus in the acid and neutral soils of Kerala was in the organic form. As organic phosphorus is present in the soil in such forms as phytin, lecithin and nucleic acid it would appear that this fraction will be related to the amounts of organic carbon and nitrogen in the soil. Hence in the present study an attempt has been made to find out the inter-relationships between the organic carbon, nitrogen and organic phosphorus in the surface layers of some Kerala soil types. Organic carbon was determined by the Walkley and Black's (1934) rapid titration method, nitrogen by the Kjeldahl method as given by : Piper (1950) and organic phosphorus by the procedure suggested by Brito-Mutunayagam and Koshy (1951). The results are given in Table 1.

Table 1

Carbon-nitrogen-phosphorus inter-relationships in some Kerala soil types

Sl. No.	Locality	Soil type	PH	Org. C %	Nitrogen %	Org. P %	C/N	C/P	N/P
1.	Mundar	Peaty	4.0	4.16	0.35	0,0098	11.9	424.3	35.5
2.	Vazhapally	Alluvial	4.4	2.02	0.20	0.0022	10.1	918.2	90.9
3.	Kayamkulam	Sandy	5.5	0.28	0.03	0.0039	7.7	71.0	9.2
4.	Karaikal	Alluvial	5.5	0.85	0.12	0.0075	7.1	112.9	16.0
5.	Amalloor	Lateritic	6.4	1.32	0.14	0 0048	9.4	275.6	29.4
6.	Vallamkulam	Alluvial	6.8	2.22	0.25	0.0378	9.1	58.7	6.5

The soils studied show wide variations in their contents of organic carbon, nitrogen and organic phosphorus. Organic carbon varies from 0.28% in the sandy soil from Kayamkulam to as high as 4.16% in the peaty soil from Mundar. The variation in the nitrogen content is some what similar

to that of carbon, so much so, the C/N ratio remains remarkably constant and ranges only from 7.1 in the soil from Karaikal to 11.9 in the Muhdar soil. The organic phosphorus content shows a wide variation in these soils and ranges from 0.0022% in the Vazhapally soil to 0.0378% in the soil from Vallamkulam. This wide variation is also reflected in the C/P and N/P ratios which range from 58.7 to 918.2 and from 6.5 to 90.9 respectively. These results show that the Org. C/Org. P and N/Org. P ratios do not tend to be constants similar to the C/N ratios of soils.

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