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RESEARCH ARTICLE

SOIL ANALYSIS IN AND AROUND BHOPAL CITY M.P. (INDIA)

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ABSTRACT:

The aim of soil analysis is to develop scientific interest in researchers towards worthy soil science. The present paper receives laboratory studies in order to learn the role of component regarding the functional contribution of soil to all ecological cycles and chasing the needs and developmental demands of an ecosystem. The objective of present study were to find out the concentration of components present in soil and to estimate striking point of similarity among them_ Results reveal that the high concentration of acidity (between 3-5pH) in the samples taken, PO₄⁴⁻, NO₃⁻ are measured in Kg/hectare, ppm respectively. In addition to that a remarkable accumulation of diffusive Ca, Cl, Na, K, and other trace element in the subsoil resulting from different soil horizons.

Keywords: Soil science, Ca, Cl, Na, K, ecosystem.

Introduction:

Soil or pedosphere, are composed of air water and mineral orpnic materials. The food air Water, vegetables needed to survive life, all depends on soil and its life sustaining property This rich ecosystem is composed of both living and non-living matter and the multitude of interaction between them. Soil provides the key link in the ecological C, N, P &. S cycle etc. Soil is a store house of mineral, a reservoir of water, conserver of soil fertility or producer of crops, a home of wildlife, microorganism livestock. Soil system is indeed very complex & thus gathered our interest in studying and experimenting on this mysterious resource.

Many investigations have been conducted by a user on its physical and chemical properties. It includes parameter like pH, conductivity, lod, measurement of acidity and alkalinity, Concentration of nitrate ,ammonia,phosphorus, acidic-basic radical, Mg, Ca++ using basic laboratory instrument and methods.

The main aim of the study is to examine the soil content of various and various locations and comparative study. Although we know ideal soil have 50 % for spec (including air field pores and water field pores both) 45 % mineral material and 5 % living and dead organic matter which help us to carry out an healthy comparative study. The study was carried at Motilal Vigyan Mahavidhayala Bhopal laboratory under supervision of expert supervisor.

1. MATERIAL AND METHOD: -

Study sites/Sample location:

Three undisturbed top soil from the depth were taken from three prominent location namely BHEL, Kolar, Mira hills area. Usually: there are six types of soils are classified on the basis of major particles (sand, clay, silt) - Sandy, Clayey, Loamy, Sandy Loam, Clayey Loam, Silt Loam soil which mainly differ m %composition of these panicles whereas INDIAN soil are divided in 5 broad types-Alluvial, kepi, Red. Desert, Literate soil.

Soil Analysis –

Testing of the soil samples are carried out m laboratory's pre-empted by the isolation of these important contents in particular layer of sod_ on the basis of study we are trying to establish relationship to each other aeration and drainage. Physical parameters like texture, specific gravity weigh of soil, pore space soil porosity packing of soil particles ,size of soil

pore ,surface area etc have been judged by sensing Houching, however chemical test ,were tedious and as it includes various parameters-

(A) S011 PII (Acidity & Alkalinity)

The reaction of aqueous solution represent the degree of acidity & basicity depending upon H^+ ion & OH^- ion concentration over each other .Acidity is due to excess of H^+ ion over OH^- ion and alkalinity is reverse of it. Also soil reaction influence crop growth both directly and indirectly, so it has great importance pl 1 is determined by both colonmemc & potent kunerry method using centrifuge technique for better results.

(B) Conduivity, Nitrate, Chloride Ion

Conduivity, Nitrate, Chloride Ion Measured by colorimeter provides indirect measurement of soil moisture from the field capacity to the wilting point

(C) Ca,IC,Na Detection:

Ca,IC,Na Detected by flame photometry by standard solution of K, Na (1000, 100,60,20pprn) & Ca start from 300 ppm because of its high concentration in soil due to sediment. Calcium is determined by EDTA titrated method using Mureoxide indicator.

Calculation:

Calcium hardness (ng/1)= EDTA in ml • u*1000/volume of sample(ml)

Where, D= mg of $CaCO_3$ TO I ml of EDTA titrate

(D) Nitrate:

Nitrate Measured by again by colorimetric method.

(E) Ammonia:

Ammonia either by fitrimetrically or colorimetrically using NESSLER'S reagent ($HgCl_2 + KI$), $ZnSO_4$, $NaOH$, EDTA reagent and standard ammonium solution.

(F) Phosphate content:

Phosphate content Phosphorus bound in rock insoluble in WALT but in soil it is appear in significant amount which is determined by customucd curve method using soil extract & reagent like ammonium molybdate ,cone. H_2SO_4 conc. $H_2N_0_3$, $SnCl_2$ solution and standard

sodium 0.1 N Na₂ HPO₄. Also inorganic phosphate is determined both by using same reagent or by comparing transmittance with standard curve to express results in (mg phosphate ppm / litre) or kg/hectare.

(G) TOTAL ORGANIC CARBON (TOC):

Total organic carbon (TOC) was measured by titration method. The amount of carbon found in an organic compound and is often used as a non-specific indicator of water quality or cleanliness of pharmaceutical manufacturing equipment.

RESULTS:-

The soil we tested was top soil with a high degree of decomposition of sediments. This layer was usually compact and densely populated. Its physic-chemical properties are-

Table: 1 Physiochemical Parameter of Soil

Parameter	Sample 1	Sample 2	Sample 3
pH	5.2	9.03	4.4
Nature	Acidic	Slightly Alkaline	Acidic
Conductivity	74.2 uS	161 uS	114 uS
Acidity	20ppm	--	100ppm
Alkalinity	--	704ppm	--
Nitrate	18ppm	1.5ppm	2.75ppm
Phosphate	400400kg/hector	21,38,400kg/hector	9,33,600 kg/Jectare
Chloride	1.9 mg/L	2.0 mg/L	1.8 mg/L
Ca, Na, K	92.57, 14.48, 4.92ppm	118.24, 21.46, 9.90ppm	99.40, 16.67, 15.04ppm

DISCUSSION AND CONCLUSION:

A healthy soil improves soil aggregate structure, quality and yield of crops in agriculture application also provides healthy roots which produce healthy plants. All these parameters are always used to predict the ideality of soil for various purposes. This study reveals the

Fact that these soil are not appropriate for crop yield rather they are more acidic which may suit some xerophytes but not as expected.

REFERENCE:

1. Abdalla, D. and Childers NA. Calcium nutrition of peach and prune relative to growth, fruiting and fruit quality. *Journal of American society of horticultural science*. 1973; 98(51): 517-522.
2. Adams F and Martin J. In Hauck, It Dn (Ed.). *Nitrogen in crop*. 1984.
3. Osman KT. *Soils: principles, properties and management*. Springer Science and Business media. The Netherlands. 2013; 271.
4. Foth HD and BG Ellis. *Soil Fertility*, 2 Ed. Lewis CRC Press LLC. USA. 1997;290.
5. Gupta PK. *Methods in Environmental Analysis: Water, Soil and Air*. Published by Agrobios (India), Jodhpur. 2005;1-127.
6. Tandon HLS. *Methods of analysis of soil, plants, water and fertilizers*. Publ. FDCO. 1993; 144.