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To Find Out the Nutrient's Quantity in Soil Block Shahzadpur Dist: Ambala (Haryana) INDIA

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ABSTRACT:- In this paper, the soil samples collected from agriculture area are studied for The Physico-Chemical study of soil is based on various parameter like PH, Electrical Conductivity(EC),Total Organic Carbon, Available Nitrogen (N), Available Phosphorus (P_2O_5) ,Zn,Fe,Mn,K andCu.. The analysis of nutrient is done in order to measure the nutrient that is present in the soil and it provides all the necessary information that is required in order to set the target of nutrient application. It also allows the detection and monitoring of the changes in the parameters of soil. The result depends on quality of soil samples.

I. INTRODUCTION

Nitrogen (N) , potassium(K) and Phosphorus (P) are very essential for plant growth and also for the strengthening of reproductive parts , activation of enzymes and carbohydrate metabolism[1]. Nitrogen and Phosphorous are not available to the plants directly. They are incorporated in the organic material. Potassium (K) is present in elemental form, exchangeable form or as a part of mineral lattices. Calcium (Ca) and Magnesium (Mg) interfere in soil activity as well as activate a number of plant enzyme systems. The deficiency of any of these elements has retarding effect on the growth of plant [1, 2]. Soil test based nutrient management has emerged as a key issue in efforts to increase agricultural productivity and production since optimal use of nutrients, based on soil analysis can improve crop productivity and minimize wastage of these nutrients, thus minimizing impact on environmental leading to bias through optimal production. Deficiencies of primary, secondary and micronutrients have been observed in intensive cultivated areas [3]. Soil is important everyone either directly or indirectly. It is natural body on which agricultural product grows and it has fragile ecosystem [4, 5]. Soil is medium in which crop grows to food and cloth the world. Soil fertility vital to a productive soil. Certain external factors control plant growth, air, temperature, light mechanical support, nutrients and water [6].

There is no intent with this system to make any interpretation as to the potential environment impact of sensitive nutrients, such as phosphorus. This interpretation system is meant strictly for the determination of current soil suitability for agronomic or horticulture crop production. While nutrient availability can be important in gauging the potential for adverse environment effects, it is only one factor in the overall picture. Slope, ground cover, incorporation of nutrient sources, timing of application and other considerations all affect the potential movement of nutrients off-site and their potential for adverse environment impact on surface and ground water [7,8]. In cold climate, rapid root development early in the season is important. To encourage this, a small amount of starter fertilizer may be recommended for some crops even though the available level in the soil may be rated optimum or even excessive. This applies primarily to phosphate (P_2O_5) recommendations, since on adequate available P level is critical in promoting early root growth. Starter fertilizer nutrient quantity is typically less than normal crop removal. Soil fertility testing is really the combination of three discrete but interrelated processes : analysis, interpretation, and recommendation [09]. Stefanic's definition [10] approaches the most the fundamental biologic feature of soil fertility. Fertility isthe fundamental feature of the soil that results from the vital activity of micro- population of plant roots of accumulated enzymes and chemical processes, generators of biomass, humus, mineral salts and active biologic substance. The fertility level is related with the potential level of bioaccumulation and mineralization processes, these depending on the programme and conditions of the ecological subsystem evolution and on anthropic influences". This definition has the quality to be analytical. Understanding the definition in detail, the analyses of soil samples can be used for quantifying the level of soil fertility. Phosphate (P_2O_5) Requirement for different crops is calculated by the equation [11]. P_2O_5 requirement= crop removal + (50- no.PX's) x multiplier = pounds per acre. The number of PX's is taken form the phosphorus bar graph, which is derived from the pounds per acre P test level. Phosphate requirement are also rounded to the nearest 10 pounds per acre. Minimum and maximum limits are also imposed, as with potash requirement. Crop removal values are different for each crop. The multiplier is derived from two factors :

(1) The conversion from elemental phosphorus (P) to fertilizer phosphate (P_2O_5)

(2). The average efficiency or effectiveness of added phosphate for each crop. Efficiency is the percentage of fertilizer applied which is actually taken up or which remains plants available in the soil. Phosphate efficiency is a function of several factors including soil pH, soil organic matter level, whether the fertilizer is banded or broadcast, and how thoroughly the crop rooting system exploits the plow layer. See individual crop sections for assumed efficiency and crop removal factors.

Present study is an attempt To Find Out The Nutrient's Quantity In Soil Block Shahzadpur Dist: Ambala (Haryana) INDIA. This information will help farmers to decide the amount of fertilizer to be added to soil to make the production economic. The objective of this paper was to analyze the trend in pH, EC,OC, N,P, K,S,Zn.Fe.Mn and Cu status of soils of block Shahzadpur (Ambala)of Haryana State.

II. EXPERIMENTAL

The quality test survey of the soil was conducted in 2018-19. Ten villages from Block Shahzadpur covering North, South, East and West were selected for this study. A representative soil sample collected from each village which represent soils of 5 to 10 farm's depending upon area of village. Representative soil samples were collected following standard quadric procedure and taken in polythene bags. In laboratory these samples were analyzed for different chemical parameters following standard methods [13]. AR grade reagents and distilled water were used for soil analysis. Results were compared with standard values [14] to find out low, medium or high nutrient's content essential for STR.

PHYSICO - CHEMICAL ANALYSIS :-

The collected samples were analyzed for major Physical and Chemical soil quality parameter like pH, Electrical Conductivity (EC), Organic Carbon (OC), Nitrogen (N),etc [15,16]. Organic matter is oxidized with chromic acid (Potassium Di-chromate, $+H_2So_4$). This method is widely used in Laboratories. The K and P analysis by standard method. pH was measured using pH meter, EC was measured using a conductivity meter ,OC was measured using colourimeter ,Potassium was measured using Flame photometer ,Phosphorus was measured using Spectrophotometer, All apparatus are Systolic make. Examination of soil done by Govt P.G.College pkl Lab.

Total 10 villages soil samples of Block Shahzadpur, Dist : Ambala were collected in clean polythene bags and brought to the Laboratory. Air dry the soil samples in shade, crush the soil clods lightly and grind with the help of pestle and mortar, pass the entire quantity through 2mm stainless steal sieve, if the gravel content is substantial record as percent of the sample (w/w) as to pass it through 0.2 to 0.5 mm sieves, processing of the samples for analysis.

DETERMINATION OF SOIL

(1) **Soil Temperature :-** Soil temperature is one of the most important soil properties that effect crop growth. The major source of heat is sun and heat generated by the chemical and biological activity of the soil is negligible.

(2) **pH :-** The soil reaction or pH is meant to express the acidity or alkalinity of the soil. The pH is very important property of the soil is it determines the capacity. The PH values fluctuated less than 8.5(table-1) .The limit of pH value for soil Acidic. < 6.5, Normal 6.5-7.8, Alkaline 7.8- 8.5, Alkali > 8.5.

(3) **EC :-** Total soluble salts are estimated from electrical conductivity (EC) of aqueous soil extracts. Standard value of EC in soil- Normal < 0.8 dsm-1, critical for salt sensitive crops, critical for salt tolerant crops 1.6 -2.5 dsm-1, Injurious to most crops > 2.5 dsm-1. The EC value 04 to 1.8 (table no.1)

(4) **OC and Nitrogen (N):-**Soil organic carbon is the seat of nitrogen in soil and its determination is often carried out as an index of nitrogen availability. In the colorimeter method (Datta et al, 1962), Organic matter is oxidized with chromic acid. OC in block shahzadpur 0.23 to 0.85 (table no.1) .Standard value of OC low < 0.50, medium 0.50- 0.75 and high > 0.75.

(5) **Phosphorus:** - Phosphorus was found in the range of low, medium, high (table no.1). Inorganic phosphorus as orthophosphate plays a dynamic role in aquatic ecosystem. Phosphorus, the most important micro nutrient, is utilized by plant in the form of H_2PO_4- & HPO_4 2- species.

(6) **Potassium :-** Standard value of K as K2O in soil low < 140 kg K2O ha-1, medium 140-280 kg K2O ha-1high > 280 kg K2O ha-1 . Potassium was found in the range of low, medium , high (table no.1). K though present in small amount in soil sample, plays a vital role in the metabolism of fresh water and considered to be an important micronutrient. The K is relatively abundant in the earth's crust, most of it is not accessible to plant. Experimental value of quality characteristic especially PH, EC, OC, N, P, K, of soil of block shahzadpur are present in the table no. 1. Result is in tune with farming practices followed by farmers of this region. Most of the farmer's are using chemical Fertilizer, Urea and Nitrogen fertilizer only since last 25 to 30 years which contains concentrated amount of Nitrogen, OC & Phosphorus. On the basis of these results farmers are advised to use

integrated nutrient management practice to maintain optimum concentration of all the essential nutrients for plants. Farmers are also advised to add bio-fertilizers containing organic carbon and nitrogen solubilising bacteria.

Table 1:- Study of Presence of EC (DS/M), PH, OC, N (Kg/hecare), P(Kg/hectare),, K(Kg/hectare) ,Zn,Fe,Mn,and Cu all are in ppm units. in the soil of Block Shahzadpur Dist: Ambala (Haryana) INDIA.

Sr.No.	Name of village	pH	E.C.	OC	N	P	K	S	ZN	Fe	Mn	Cu
1	Tapri Sahid Burj	8.30	0.18	0.36	91.80	26.01	283.14	114	12.01	182.00	19.25	7.24
2	Dhanana	8.20	0.29	0.37	94.35	22.98	274.40	114.7	9.11	108.30	14.87	6.26
3	Tasrola	8.50	0.18	0.39	99.45	26.66	327.33	135.70	12.47	125.6	23.1	7.90
4	Tasroli	8.52	0.18	0.39	98.89	25.9	321	123	12.07	123	25	7.87
5	Khanpur	7.70	0.28	0.19	48.45	26.05	319	114	12.54	173.60	23.93	7.09
6	Govindpur	8.60	0.15	0.40	102	23.47	270.59	104	10.01	163.10	18.21	6.53
7	Berpura	8.40	0.17	0.33	91.84	26.05	283.01	118	12.01	187.00	19.26	7.28
8	Patvi	8.20	0.29	0.47	97.35	26.98	277.40	119.7	11.11	109.30	14.87	6.66
9	Mukandpur	8.10	0.30	0.23	90.34	21.47	279.59	124	9.01	103.10	13.21	6.03
10	Nasroli	8.50	0.17	0.33	100.45	29.66	307.33	125.70	11.47	135.6	21.1	6.90

III. CONCLUSION

The nutrient analysis of soil will provide the necessary information to set the target of nutrient application. This can be concluded from this study that the available EC, PH, OC N, P, K, deficient soil is recommended rich fertilizer. .To identify the type and degree of soil related problems like salinity, alkalinity and acidity etc It is then used to set up the target of nutrient application which is then used to calculate the rate of manure and fertilizer application. It is must for the soil analysis results to be interpreted within the context of the expected yield response for the crop which is to be grown under the specific management and environmental condition.

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