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INVESTIGATION OF NUTRIENTS AND SOME PARAMETER FROM SOIL IN WARUD TALUKA, DIST. AMRAVATI

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ABSTRACT

Soil testing plays an important role in crop production and nutrient management. The problem of Soil pollution in vidharbha is serious and due to the presence of excess of nitrate and other pollutant in soil. On farms that use commercial fertilizer as the main nutrient source, it is the best way to plan for profitable fertilizer applications. On livestock farms, knowing how much nutrient is present in the soil to start with is critical. Only then can a nutrient management plan be developed to properly manage both the nutrients that have been generated on-farm and any nutrients that are being imported to the property as bio solids or commercial fertilizer. The physicochemical analyses of soil sample of different villages of warud region were collected and analyze for different parameters and some nutrients. Soil sample collected from bottom of 6 trees region of Warud taluka were studied in Dec. 2009 to may 2010. In case of underground soil, it was found that there was a marked variation in nutrients and parameters of various sample point in different trees.

Keywords: Soil testing, Parameters, Soil quality, Nutrients.

INTRODUCTION

Soil as the loose material in which plant grow. Soil as a general term usually denotes the unconsolidated, thin, variable layer of mineral and organic material usually biologically active that covers rest of the earth`s land surface. Soil is ultimate resource like water and air. Soil science is changing and we wanted a text that would make a current concept easy to understand. We therefore have excluded unnecessary things and have defined necessary terms. Understanding soil and managing it well is essential to human welfare. Soil analysis data is used in many fields like construction of roads and buildings, survey and mapping etc. On the other hand soil testing is considered a useful tool for making fertilizer recommendation for various crops and crop sequences. It also useful for reclamation of soil problems. The major objectives of soil testing are-

1. Soil fertility evaluation for making fertilizers recommendation for specific field and farming situation.
2. Prediction of likely crop response to applied nutrients.
3. Classification of soil into different fertility groups for preparing soil fertility maps of given area.
4. Assessment of the type and degree of soil related problems like salinity, acidity, sodality etc. and suggesting appropriate reclamation measures.

Considerable research work has been done regarding the study of nutrients from various types of soil in Maharashtra as well as in India also but the investigation of nutrients and parameters of soil from warud district- Amravati was still lacking. Therefore we are taken this work for performing the nutrients and parameter of warud region.

EXPERIMENTAL

Soil sample was collected in different area in "Warud", tahsil dist- Amravati for the characterization of soil below different plants. From the selective sites, samples were collected in the depth of 20cm. from the surface of land which were taken in polythene bag. Soil sample collected from below the trees of Citrus, Red gram, Soya bean, Herbara, Jwar, Maiz, they are named as S_1, S_2, S_3, S_4, S_5, S_6 respectively. This samples are analyze in the laboratory of Department of Chemistry, Sant Gadge Baba Amravati University, Amravati. Reagents uses for this project work were AR grade and chemicals other than

reagent are LR grade manufactured by S.D. fine, LOBA and Merck Fishcer. The soil sample were dried in oven for 95^0C about 24 hr. and grinded more finely. Methods use for estimation of various nutrients and parameters are shown in Table-1

Table-1

S. No.	Nutrients/Parameters	Method
1	Moisture	By weighing
2	pH	pH metry
3	Conductivity	Conductometry
4	Organic Carbon	Titration method
5	Available Nitrogen	Titration method
6	Available Phosphorous	Titration method
7	Available Potassium	Flame photometry
8	Alkalinity	Titration method
9	Zinc	Atomic absorption
10	Copper	Spectrophotometry
11	Magnesium	EDTA titration
12	Manganese	Atm. Absorption spectrophotometry

RESULTS AND DISCUSSION

Moisture

The moisture content value ranges from 1.51 % - 6.32 %. It is clear from the result that soil sample S_5 only 1.20 % moisture which is very less as compared to sample S_1, S_2, S_3, S_4 and S_6.

pH

pH was observe in the range 7.03 – 8.0. The Soil sample S_1, S_2, S_3 is very slightly alkaline sample and S_4, S_5 and S_6 soil sample is medium alkaline.

Conductivity

Conductivity values ranged from 0.21 – 0.48 µS . Conductivity of sample S_5 is less as compared to sample S_1, S_2, S_3, S_4 and S_6.

Organic Carbon

Organic carbon values were recorded in the range of 0.26 – 0.68 %.The soil sample S_1 has high organic carbon and sample S_6 have less.

Available Nitrogen

Available nitrogen content in the soil sample ranged from 102.81- 345.28 kg/hect. The soil sample S_1, S_2 and S_3 have high nitrogen content as compared to sample S_4, S_5, and S_6

Phosphorous

Phosphorous content in the soil sample ranged between 14.23 - 42.21 kg/hect. The soil sample S_1 and S_2 have more phosphorous content as compared to sample S_3, S_4, S_5 and S_6.

Potassium

Potassium content in the soil sample ranged between 340.28 – 680.28 kg/hect. The soil sample S_1, S_2 and S_4 have more potassium content as compared to sample S_3, S_5, and S_6.

Alkalinity

Alkanility was observed in the range between 4.5 – 19.5 meq/100gm. It is seen that soil sample S_3 and S_4 have more alkalinity as compared to S_1, S_2, S_5 and S_6.

Zinc
The zinc content in the soil sample ranged from 0.15 – 1.20 ppm. The soil sample S_1, S_2, and S_3 have much less amount of zinc as compared to sample S_4, S_5 and S_6.

Copper
The copper content in the soil sample ranged from 0.15 – 1.45 ppm. It is seen that soil sample S_2 and S_3 have less amount of copper as compared to sample S_1, S_4, S_5 and S_6.

Magnesium
The Magnesium content in the soil sample ranged from 0.50 – 1.50%. It is seen that soil sample S_1, S_2 and S_3 have less amount of magnesium as compared to sample S_4, S_5 and S_6.

Manganese
The Manganese content in the soil sample ranged from 2.6 – 5.10 ppm. The soil sample S_1 and S_4 have less amount of manganese as compared to sample S_2, S_3, S_5 and S_6.
All results are shown in Table-2.

Table-2

S. No.	Parameters	S_1	S_2	S_3	S_4	S_5	S_6
1	Moisture(%)	6.32	2.31	5.24	1.82	1.20	1.51
2	pH	7.61	7.52	7.03	7.59	8.00	7.88
3	Conductivity (µS)	0.24	0.34	0.48	0.35	0.21	0.32
4	Organic Carbon (%)	0.68	0.43	0.34	0.38	0.30	0.26
5	Available Nitrogen (kg/hect)	345.28	245.33	220.18	198.50	107.52	102.81
6	Available Phosphorous (kg/hect)	42.21	30.21	20.21	21.20	14.23	16.21
7	Available Potassium (kg/hect)	598.21	680.28	441.52	560.41	345.81	340.28
8	Alkalinity (meq/100gm)	4.5	5.5	16	19.5	13.3	9.3
9	Zinc (ppm)	0.25	0.15	0.20	0.40	0.60	1.20
10	Copper (ppm)	0.55	0.20	0.15	0.60	1.20	1.45
11	Magnesium (%)	0.50	0.60	0.70	0.90	1.20	1.50
12	Manganese (ppm)	2.6	4.8	4.2	3.9	4.10	5.10

CONCLUSION

It is concluded from the data as soil from citrus tree (S_1) is having high percentage of moisture. In case of pH of all most soil solution in water is slightly alkaline. All the soil samples are having good quality of nitrogen, phosphorous and potassium nutrients. The quantity of zinc nutrient is found to be minimum in ppm. Conducting capacity of all samples is found to be very less. Soil containing organic carbon varies from sample $S_1 – S_6$.

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