Physico-Chemical Analysis of Soil Samples in Osmanabad District, Maharashtra

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ABSTRACT

Regarding yield of the crops and growth regulation fertility of soil is most important but today's scenario of agriculture farming in India is not care about it. The present study has been undertaken to investigate the physic-chemical characteristics of soil samples collected from different villages of Osmanabad district, Maharashtra, India. The soil characterization was carried out for the parameters like P^H, Electrical conductivity, Total organic Carbon,Nitrogen,Phosphorous(P_2O_5),Potassium(K_2O).This study leads us to the conclusion of the nutrients quality of soil of different villages of Osmanabad district. The present study result shows that average all the villages of Osmanabad district have medium or high minerals content. This information will help farmers to solve the problems related to soil nutrients amount of which fertilizer to be added to increase the yield of crops.

Keywords: Soil quality, Organic carbon, Nitrogen, Phosphorous, Osmanabad District.

I. INTRODUCTION

Soil resources are of vital importance for survival and welfare of the people. As a very small fraction of the huge soil mass is used for analysis, it becomes extremely important to get a truly representative soil sample of the field. One of the most serve and widespread problems facing the agriculture, industry is degradation of soil quality due to salinity. In fact almost 40% of the world's land surface is affected by salinity problem (Bacchevar 2011). Soil sampling is perhaps the most vital step for any soil analysis. As a very small fraction of the huge soil mass is used for analysis, it becomes extremely important to get a truly representative soil sample of the field. Soil test based nutrients management has emerged as a key issue in effort to increase agriculture productivity and production since optional uses of nutrients, based on soil analysis can improve crop productivity and minimizing wastage of these nutrients, thus minimizing impact on environmental leading to bias through optical production. Deficiencies of primary, secondary and micronutrients have been observed in intensive cultivated area (Kaur H. 2002). Soil is natural body on which agriculture product grows and it has fragile ecosystem. Soil is medium in which crop growth to food and cloth the world. Fertility of soil is one of the most important factors which regulate growth and yield of crops. Due to an imbalance and an inadequate use of fertilizers, improper irrigation and various cultural practices, the soil quality is depleting rapidly(Pandeeswari N 2012). Soil is an important natural resource and plays a crucial role in maintaining environmental balance (Bear F E1976). Certain external factor control plant growth, air, temperature, mechanical support, nutrients and water. Plant had element for their growth and completion of life cycle of plant. Growth of all plants is essential of elements like carbon, Oxygen, Nitrogen, Potassium, Phosphorous, Hydrogen etc.

The present work is undertaken to study the physico-chemical analysis of soil samples collected from different villages of Osmanabad district, Maharashtra. In present study characterization of soil was characterized various parameters like PH, electrical conductivity, Total organic carbon, Nitrogen, Potassium(K2O), Phosphorous(P2O5), etc. This study leads us to the conclusion of the nutrients quality of soil of different villages of Osmanabad district.

II. MATERIAL AND METHODS

The soil samples were collected from ten different villages in the depth of 0 to 25cm from the surface of

soil in the polythene bags. The soil samples were collected in the month of Feb. 2014. The ten samples cites from Osmanabad district are Tadwale, Dhoki, Jagaji, Yedashi, Palsap, Ter, Upale, Khamgaon. Analysis of the physico-chemical parameters of the soil sample were suspended in distilled water and allowed to settle down the particles. The PH of the suspension was determined using PH meter. Electrical conductivity (EC) of the soil was determined in the filtrate of water extract using conductivity meter (Chandra R 2009). Percentage of organic carbon content was determined by adopting chromic acid wet digestion method. Nitrogen, Phosphorous and Potassium are determined by standard procedure. Results were compared with standard values.

III. RESULTS AND DISCUSSION

Table 1. Physico-chemical analysis of soil samples from different villages of Osmanabad District Maharashtra(India)

Sr.No.	Name of Villages	P^H	Electrical conductivity mhos	% of organic Carbon	% of Nitrogen	% of Phosphorous	% of Potassium
1	Tadwale	7.65	0.64	0.78	0.06	0.032	0.96
2	Dhoki	7.44	0.80	0.64	0.05	0.028	1.06
3	Jagaji	7.30	0.75	0.78	0.07	0.034	1.12
4	Yedashi	7.80	0.42	0.82	0.08	0.046	0.88
5	Palsap	7.93	1.34	0.62	0.06	0.030	1.26
6	Ter	8.15	0.68	0.86	0.04	0.042	1.04
7	Upale	7.58	0.56	0.48	0.03	0.026	0.98
8	Khamgaon	8.45	1.06	0.74	0.05	0.032	1.03

The physico-chemical analysis of different parameters of soil samples collected from different villages of Osmanabad district is given in table no. 1. The P^H is an important parameter as it helps in ensuring availability of plant nutrients (Dalwadim R 2008).P^Halso helps in maintaining the good soil condition. In the above study P^H values ranges from 7.30 to 8.45 shows basic nature. The measurement of electrical conductivity (EC) is for measure the current that give clear ideas of soluble salts present in the soil. Conductivity depends upon the dilution of the soil suspension. TheEC values ranges from 0.42 to 1.34 mhos suggest normal values(Deshmukh K.K.2012). The organic matter includes all the dead plants material and live or dead animal. Most living in soil including plants, insects, bacteria, protozoa and fungi are dependenton organic matter for nutrition and energy. In the present study the organic carbon percentage ranges from 0.48 to 0.86 shows normal soil. The percentage of nitrogen ranges from 0.03 to 0.08 suggests normal values. The percentage of phosphorous ranges from 0.026 to 0.046 suggest normal values.(Jackson M. L. 1967) and the percentage of potassium ranges from 0.88 to 1.26 also suggest normal values.

IV. CONCLUSION

The present investigation helps in determining the values of different chemical parameters and the nutrient concentration of soil samples collected from ten villages of Osmanabad district of Marathawada region in Maharashtra. All the parameters either directly or indirectly influence on the soil ecosystem. There is a necessity to use of fertilizer depends on soil contains nutrient for good growth of crops.

V. REFERENCES

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