Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.4012

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. **5 (3):** 579-581 (2017)

Research Article

International Journal of Pure & Applied Bioscience

OPEN ACCESS

Physico Chemical Analysis of Soil of Ladpura Tehsil of Kota District

Kirti Mohan Sharma[1*] and Hardev Singh Chaudhary[2]

[1]Professor Chemistry, [2]Research Scholar

Department of Chemistry, Career Point University, Alaniya, Kota, Rajasthan, India

*Corresponding Author E-mail: kirti.sharma@cpur.edu.in

Received: 8.06.2017 | Revised: 19.06.2017 | Accepted: 20.06.2017

ABSTRACT

As we all know that availability of soil is decreasing for agriculture year by year due to rapid growth of industrialisation and construction activity. So to improve production level of any crop only quality of soil is become very important parameter. In this study we focus various physical & chemical parameters of soil Ladpura Tehsil head quarter and various different villages of Ladpura Tehsil of Kota district. Kota is very important area from agriculture point of view so we hope that present study will be beneficial for farmers also. By the outcome of study we can recommend which nutrient is needed and in which amount to increase in yield of particular crop.

Key words: *Kota district, soil analysis, nitrogen, phosphorus*.

INTRODUCTION

Physicochemical study of soil is very important for proper management of soil[1,2] & also important for chemist which involved in soil analysis, so for sustainable agriculture production property of soil is very important[3,4].

If we see the geographical distribution of kota district, it is situated along with bank of river Chambal and it is on $25^0$11' N & $75^0$50' E / 25.18^0 N & 75.83^0 E. Avarage elevation is 271 metres (889 ft). Total geographical area of district is 5198 sq km. Swaimadhopur is on its north and north west part, Bundi on west, Chittorgarh and baran district in east, Jhalawar on south east.

In some part of kota district soil degradation is a big problem due to water erosion due to which physical and chemical properties of soil changes. Various researchers work on field of soil problems and soil erosion in various parts of world[5,6]. Soil fertility is depends upon main major and micro nutrients such as nitrogen, phosphorus, potassium, inorganic and organic material, pH and conductivity of soil. Along with these major nutrients Ca & Fe also play vital role for development of plants[7-10].

But none of researcher focus previously on Ladpura Tehsils of kota, In our present study we choose Ladpura Tehsil of kota and took total eight samples from various villages which are

I. Bargaon
II. Manasgaon
III. Tather
IV. Rasulpur
V. Dhaba
VI. Rel
VII. Jagpura
VIII. Ladpura tehsil headquater

Cite this article: Sharma, K.M. and Chaudhary, H.S., Physico Chemical Analysis of Soil of Ladpura Tehsil of Kota District, *Int. J. Pure App. Biosci.* **5(3):** 579-581 (2017). doi: http://dx.doi.org/10.18782/2320-7051.4012

MATERIAL AND METHODS

For analysing physical and chemical properties of soil, all instrument used first properly calibrated with standard solution all of (A.R.) grade. All parameters such as pH, EC, % 0C, N, P, K, Zn, Fe and Mn analysed at research centre Ummedgunj which comes under Kota Agriculture University[11,12].

RESULT AND CONCLUSION

1) pH: - This is an important parameter to determine acidic or basic nature of soil, in the present study pH found in the range 7.08 to 8.13 ds/m (All samples show alkaline nature of soil. pH of soil is important in determining growth and establishment of various plant diseases[13,14].
2) Electrical conductivity (EC): - It explains availability of salts in soil and determines its salinity which effect plant health[15]. In present research electrical conductivity found in range 0.42 to 0.61 ds/m.
3) % Organic carbon (% OC): - % of organic carbon found in range 0.59 to 0.72 Soil organic carbon is the seat of nitrogen in the soil and its determination is often carried out as an index of nitrogen in availiability.
4) Nitrogen (N): - It comes in main three parameters of soil analysis and very important for overall growth of plant. In all samples nitrogen comes in the range 0.54 to 0.95 %. Nitrogen must be available in sufficient amount to promote the maximum number of grains. But main problem of nitrogen is its excess causes delay maturity so its optimum amount in soil is always required.
5) Phosphorus (P): - Phosphorus present in all samples range 21.45 to 42.85 Kg/ha. Phosphorus improves resistance of plant for various diseases by balance of nutrients in plant by accelerating the maturity of crop and allowing it to escape from infection by pathogens.
6) Potassium (K): - It is important for various physiological process such as photosynthesis, activation of enzymes and reducing excess uptake of Na and Fe[17]. Potassium is found in range 404.54 to 642.82 Kg/ha.
7) Zinc (Zn): - Zinc is found in the range 1.11 to 2.04 ppm. It is important constituent of enzymes and proteins which are crucial for overall plant development.
8) Manganese (Mn):- Mn is found in the range 14.41 to 19.92 ppm. It is also important in photosynthesis process and in formation of chlorophyll.
9) Iron (Fe): - Iron is found in the range 13.09 to 19.9 ppm. Iron is involved in synthesis of chlorophyll. Its deficiency is found in highly alkaline soil which can be overcome by adding additional (external) iron supplement.

So study of soil nutrient is necessary for checking the suitability of soil for plant growth. By this we can make optimum use of fertilizers for growth of plants and improve disease resistance in plants and can do better disease management.

Table 1: Data analysis of soil samples of Ladpura Tehsil, Kota

Propérties/ Sample No.	KL1	KL2	KL3	KL4	KL5	KL6	KL7	KL8
% 0C	0.66	0.68	0.59	0.64	0.71	0.65	0.72	0.66
P^H	7.08	7.19	7.51	8.01	7.84	8.13	7.84	7.15
temp (^{0}C)	42	43	44	45	45	45	44	43
EC (ds/m)	0.42	0.46	0.54	0.61	0.58	0.48	0.51	0.54
Macronutrients								
N (%)	0.68	0.95	0.85	0.74	0.54	0.65	0.59	0.64
P (Kg/ha)	23.52	42.85	23.54	31.88	21.45	25.74	25.58	24.56
K (Kg/ha)	530.4	404.54	510.87	458.85	485.85	420.81	642.82	452.89
Micronutrients								
Cu (ppm)	66.6	78.1	75.1	68.9	74.2	80.1	61.4	69.9
Fe (ppm)	13.09	17.5	14.8	15.5	16.6	19.9	18.5	17.9
Zn (ppm)	1.11	1.75	2.04	1.25	1.54	1.41	1.85	1.64
Mn (ppm)	16.38	18.1	19.92	17.52	15.32	14.41	15.32	16.96

.*KL :- Kota, Ladpura sample numbers

CONCLUSION

In the present study we found that majority of soil samples do not require additional or external nutrition and they are nutrient sufficient.

This study will helpful for prediction of soil for various parameters such as salinity, alkalinity and acidity for a particular area. With the help of study we found that if farmers grow crops on rotation basis it will prevent quality of soil and it will be much beneficial for soil health.

Acknowledgement

We are thankful to Career Point University for providing platform for research. We are also thankful agriculture university research centre, Ummedgunj Kota for allowing us analysis of our soil samples.

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