



ANALYSIS OF SOIL QUALITY USING PHYSICO-CHEMICAL PARAMETERS OF CHARAI VILLAGE, TAHSIL-POLADPUR RAIGAD (M.S).

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Abstract

In the present study the analysis of soil samples collected from the rice field of At Charai village, Tahsil-Poladpur Raigad (M.S). In the first place soils samples from 10 representative locations were collected for their analysis of Physical parameters like PH, Electrical Conductivity(EC), Total Organic Carbon, Available Nitrogen (N), Available Phosphorus (P₂O₅) and available Potassium (K₂O) were analyzed. . These studies lead us to the conclusion of the nutrient's quantity of soil of Lunawada Taluka. Result show that overage the Charai village, Tahsil-Poladpur Raigad have various parameter like EC, PH, OC,N,P,K. This information will help farmers to decide the problems related to soil nutrients amount of fertilizers to be added to soil to make production economic.

Keywords: *Soil, physico-chemical parameters, pH, Conductivity, Organic Carbon.*

1.0 INTRODUCTION

The soil forms the intermediate zone between the atmosphere and the rock cover of the earth, the lithosphere. It also forms the interface between water bodies (hydrosphere) and the lithosphere and thus forming a part of biosphere. The soil may be defined as the uppermost weathered layer of the earth's crust in which are mixed organisms and products of their death and decay. It may also be defined as the part of the earth's crust in which plants are anchored. The soil is a complex organization being made up of some six constituents' namely inorganic matter, organic matter, soil organisms, soil moisture, soil solution and soil air. Roughly, the soil contains 50-60% mineral matter, 25-35% water, 15-25% air and little percentage of organic matter. Soil is important everyone either directly or indirectly. It is natural body on which agricultural product grow and it has fragile ecosystem [1,2] Soil are medium in which crop grow 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. Plants had elements for their growth and completion of life cycle. They are carbon, hydrogen, oxygen, nitrogen, phosphorus, potassium, etc [3].

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 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 environment leading to bias through optimal production [4]

The status of available micronutrients in soils and their relationship with various physico-chemical properties have been attempted by several investigators [6-7]. Investigation of some parameter and Nutrients from Soil samples of Rice field by Jadhav S. D. *et.al* .but the investigation of nutrients and parameters of Soil of Rajura Bazar village in Warud Tahsil of Amravati district in Maharashtra.

Present study is an attempt to find out the nutrient's quantity in soil At Charai village, Tahsil-Poladpur Raigad (M.S). 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 status of soils of Charai village, Tahsil-Poladpur Raigad (M.S).

2.0 Materials and Methods:

2.1 Study Area:

The soil samples were collected from the area Charai village, Tahsil-Poladpur Raigad. The Charai is located on the western ghat in Maharashtra State of India. It lies between 17.985591° north latitude and 73.466735° east.

2.2 Soil sampling

Soil samples were collected randomly at 0 to 20 cm depths with ten plots, ten samples from each plot, respectively. In well sterilise polythene pouches.

Soil sample were collected from following Farmers fields

1. Sample 1(R-1) was collected from Mr. Raju Utekar Rice field.
2. Sample 2 (R-2) was collected from Mr Salvi S. Rice field.
3. Sample 3(R-3) was collected from Mr. Bhima Utekar Rice field.
4. Sample 4 (R-4) was collected from Mr. shailar C. Rice field.
5. Sample 5 (R-5) was collected from Mr. Jagtap K. Rice field.
6. Sample 6 (R-6) was collected from Mr. Salvi V. Rice field.
7. Sample 7 (R-7) was collected from Mr. Salvi J. Rice field
8. Sample 8 (R-8) was collected from chavan C, Rice field

9. Sample 9 (R-9) was collected from Utekar M Rice field
10. Sample 10 (R-10) was collected from Chittibabu G. Rice field

2.3 Sample Preparation –

The soil samples were air dried for a period of one week, ground with a clean porcelain mortar and pestle and passed through a 2.0 mm sieve. Sieved samples were mixed and stored for subsequent physical, chemical analysis.

In laboratory these samples were analyzed for different chemical parameters following standard methods [9]. AR grade reagents and double distilled water were used for soil analysis. The collected samples were analyzed for major Physical and Chemical quality parameter like PH, Electrical Conductivity (EC), and Organic Carbon (OC), Nitrogen (N), K and P analysis by standard method (DIRD Pune 2009).

Methods uses for estimation of various parameters are -

1. Determination of Moisture: by Weighting Method.
2. Determination of pH: by Digital pH Meter
3. Determination of Electric Conductance: by Conductometer
4. Determination of Organic Carbon: by Titration Method
5. Determination of Nitrogen (N): by Titration Method
6. Determination of Phosphorous (P): by Titration Method
7. Determination of Pottasium (K): by Flame Photometry
8. Determination of Colour Of Soil ; by Viewing soil

Results were compared with standard values [9] to find out low, medium or high nutrient's content essential for STR.

3. RESULTS AND DISCUSSION:

1. Colour of Soil :

The all soil sample from R-1 to R-10 was Faint Reddish Brown in colour.

2. Moisture :

The moisture content value ranges from .2 % - 8.4 %. It is clear from the result that soil sample R-5, R-6 and R-10 moisture which is high as compared to other samples.

3. pH :

The most significant property of soil is its pH level, Its effects on all other parameters of soil. Therefore, pH is considered while analysing any kind of soil. If the pH is less than 6 then it is said to be an acidic soil, the pH range from 6-8.5 it's a normal soil and greater than 8.5 then it is said to be alkaline soil. pH was observe in

the range 7.73 to 8.02. The All Soil sample from R-1 to R-10 are very slightly alkaline sample.

4. Electrical conductivity :

Electrical conductivity is also a very important property of the soil, it is used to check the quality of the soil. It is a measure of ions present in solution The electrical conductivity of a soil solution increases with the increased concentration of ions. Electrical conductivity is a very quick, simple and inexpensive method to check health of soils. It is a measure of ions present in solution. The electrical conductivity of a soil solution increases with the increased concentration of ions.

5. Organic Carbon :

Soil organic carbon is the basis of soil fertility. It release nutrient for plant growth, promotes the structure, biological and physical health of soil, and is buffer against harmful substances. Increasing soil organic carbon has two benefits- as well as helping to mitigate climate change, it improves soil health and fertility. Many management practices that increase soil organic carbon also improve crop and pasture yields Organic carbon values were recorded in the range of 0.38 – 1.20 %.The soil sample R-3 has more organic carbon ,sample R-5 R-6 and R-10 have moderate and while sample R-1, R-2, R-4, R-7, R-8 and R-9 has very low percentage of organic carbon.

6. Available Nitrogen :

Available nitrogen content in the soil sample ranged from 68 to 152 kg/hect. The soil sample R-3 has good nitrogen content as compared to other all samples.

7. Phosphorous :

Phosphorus is a most important element present in every living cell. It is one of the most important micronutrient essential for plant growth. Phosphorus most often limits nutrients remains present in plant nuclei and act as an energy storage. **4.** Phosphorous content in the soil sample ranged between 35.4- 103.2 kg/hect. The soil sample R-3 has only phosphorous content high as compared to all other samples.

8. Potassium :

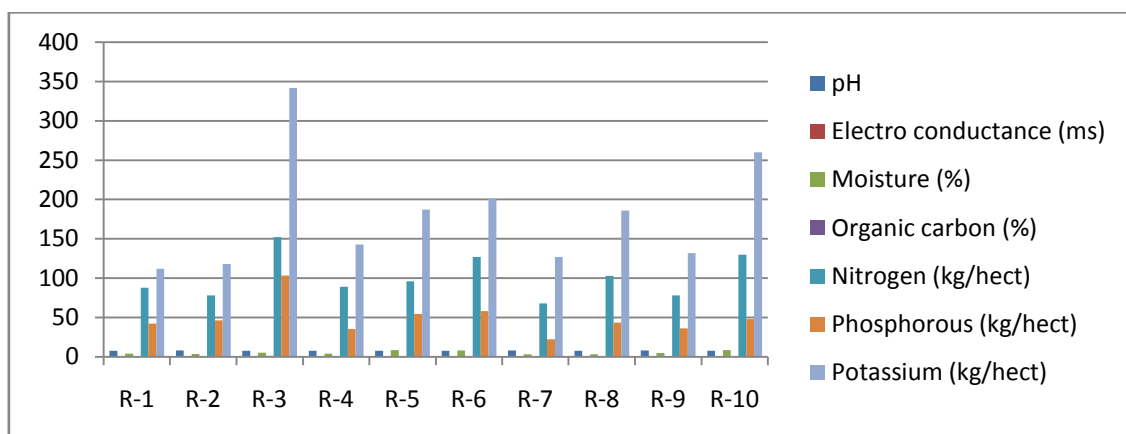
Potassium plays an important role in different physiological processes of plants; it is one of the important elements for the development of the plant. It is involved in many plant metabolism reactions, ranging from lignin and cellulose used for the formation of cellular structural components, for regulation of photosynthesis and production of plant sugars that are used for various plant metabolic needs.

Potassium content in the soil sample ranged between 112- 342 kg/hect. The soil sample R-3 and R-10 have more potassium content as compared to other samples.

Table 1. Physicochemical Parameters of Soil Samples

Sr . No .	Parameter s	R-1	R-2	R-3	R-4	R-5	R-6	R-7	R-8	R-9	R-10
1	colour	Reddish Brown	Reddish Brown	Reddish Brown	Reddish Brown	Reddish Brown	Reddish Brown	Reddish Brown	Reddish Brown	Reddish Brown	Reddish Brown
2	pH	7.89	8.02	7.76	7.85	7.82	7.73	7.96	7.7	7.94	7.85
3	Electro conductance (ms)	0.342	0.42	0.45	0.56	0.634	0.554	0.432	0.756	0.43	0.48
4	Moisture (%)	4.2	3.5	5.2	4.1	8.4	8.3	3.4	3.2	4.8	8.4
5	Organic carbon (%)	0.26	0.38	1.2	0.38	0.63	0.78	0.41	0.82	0.43	0.32
6	Nitrogen (kg/hect)	88	78	152	89	96	127	68	103	78	130
7	Phosphorus (kg/hect)	42.3	46.4	103.2	35.4	54.6	58.2	22.5	43.4	36.3	48.2
8	Potassium (kg/hect)	112	118	342	143	187	201	127	186	132	260

Figure 1: Number of samples of Charai villages Poladpur taluka lies in EC, PH, moisture, OC, N, P, K



4. Conclusion:

The physicochemical parameters are important to agricultural for plant growth. Maintenance or enhancement of soil quality is a more important criterion for analysis and sustainability of soil ecosystems[10] From the results of the work, it can be concluded that the pH of soil samples were slightly acidic, conductivity, organic carbon and NPK values of

all soil samples were found to be very less. In all samples were in lower amount so fertilizers containing were added for proper growth and development of crop.

5. ACKNOWLEDGEMENT

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