



EVALUATION OF SOIL FROM DIFFERENT PLACES OF AKKALKOT, DIST. SOLAPUR (M.S.) INDIA.

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Abstract:

Evaluation of different soil samples from eight different nearby places from Akkalkot. Akkalkot is located in Solapur District. The study of soil reveals that the quality and present status of pollution from the different sampling stations of Akkalkot. The study emphasizes on the status of soil with respect of following parameters i.e. pH, NPK, chlorides, conductivity, water holding capacity and organic matter of the soil from the different sampling stations of Akkalkot. This study will become useful to farmers to select the crop varieties in cultivation practice.

Keywords: Soil, NPK, Parameters,

1 Introduction

Earth shows variety of Soil types. The soil types are formed by the process of weathering of rocks from back millions of year's process of synthesis Halvorson, et.al.(1997). The soil texture is depending on the type of weathering of rocks from which it is processed. The soil may be Black or Red or any other colored. The black soil most productive and it accumulates high amount of water, so it is called as the "Black Soil". Soil is mixture of weathered rock and organic materials on which the quality of the soil depends. The quality of the soil depends on mixture of weathered rock and organic materials present in that rock as well as in that geography of that area. It provides necessary minerals for the plants so the varieties of plants depends on the type of soil. Soil can hold water necessary for plant growth. The varieties of plants and animals are different from places to place depending on the type of soil, so the soil is the limiting factor for the occurrence of plants and animals Strock, et.al. (2004).

Generally Soils that are dominantly gray or with brown or yellow mottles immediately below the surface horizon is usually hydric Harris, et.al. (1994). Soil color is typically described using some form of color reference chart, such as the Munsell color chart of soil identification. Munsell system of identification of soil or soil color is described in reference to the color's "hue", "value", and "Chroma". According to Hue, soil described as in the color spectrum where the soil color exists, which for soils includes the colors yellow, red, blue, green, and gray. This Value describes the lightness of the color. The term Chroma indicates that strength of the color of that soil. According to a Munsell notation, the soil color is written in the order hue-value-Chroma. The soil color "5YR 4/3" is an example of a Munsell notation, where 5YR is the hue, 4 is the value, and 3 is the Chroma was explained.

The Soil texture refers to the proportion of the soil “separates or separated units” that make up the mineral component present in that soil Brady, N.C. (1990). These separated units are called sand, silt, and clay. Generally we considered the following soil separates with this size ranges i.e. Sand have <2 to 0.05 mm, the Silt particles have 0.05 to 0.002 mm and the Clay particles have <0.002 mm. Sand as well as silt are the “inactive” part of the soil content, because they do not participate to a soil’s ability to retain soil water as well as nutrients texture. These differentiate commonly or comprised as quartz or some other inactive part like mineral. This is because of its small particle size and sheet-like texture, clay structure has a large amount of surface area present in per unit mass, and its surface charge attracts ions and water molecule. Because of this, clay is the “active” portion of the soil texture.

Due to various aspects of pollution from various sources like population, urbanizations, industrialization, use of organic pesticides or organic farming, as well as domestic life activities. This all above activities disturbed the soil health Gregorich, E.G. et. al.(1994). So it needed that each piece of earth is analyzed to check the soil status. In India, many workers worked on the quality of soil such as Singh T.P. and Joshi P.K. (1999), Trivedi and Goel (1986), V.K. Mukke(2005), M.G.Babare et. al. (2013), etc. at various parts of Indian continent.

2 Materials and Methods

To analysis the soil samples which collected from eight different sampling stations located at each direction from the Akkalkot. The sampling stations were fixed in four directions and each direction located two samplings. In East direction we choose i.e. first SS₁ & 2 in the field of Shivaji Yekule, second in the field of Prakash Malpani, and serially named as S₁, and S₂. In west direction we chooses i.e. Second SS₃ & 4 in the field of Satish Siddhe, another in the field of Mahadev Yekule, and serially named as S₃, and S₄. In North direction we choose i.e. Madhukar Kshrisagar, and Suraj Phutane and serially named as S₅, and S₆ respectively. In east direction we choose i.e. Uttam Sawant and Satish Lamjane and serially named as S₇, and

S₈ respectively. The samples from each sampling station collected in small and thick polythene bags and immediately brought to the laboratory for further analysis. For the analysis of soil standard methods were used suggested by Andrews, et.al. (2004), Doran, J.W.(1996), Trivedi and Goel (1986, 89). The parameters as pH, Electrical conductivity, Alkalinity, Chloride, Water holding capacity, Nitrogen, Phosphorus, Potassium, Organic matter etc.

3 Results and Discussion

1.pH:-

The most important effect of the pH on the soil health is on ion solubility property, which in turn affects microbial and plant growth of that soil. The pH range 6.0 to 6.8 is ideal (Benayas, et. al., 2009) for most crops because it coincides with optimum solubility property of the most important as a plant nutrient. Some minor elements like iron and most heavy metals are more soluble at lower pH range. This is because the proper pH management was important aspect in controlling movement of heavy metals and potential groundwater contamination in that soil Karlen, et.al.(1998). The pH of the present investigated stations ranged between 7.2 to 8.4. The soils of all the sampling sites were alkaline in nature. The all sampling stations i.e. S₁ to S₈ are represented in the table No.- 1. To decrease the soil pH, sulfur can be added, which produces sulfuric acid.

2.Organic matter: The Organic matter is the index for nitrogen content present in that soil. The source of organic carbon or matter in the cultivated soil included crop residue, animal manure, covercrops, green manure and organic fertilizer etc. In present investigation Organic matter of sampling stations ranged between 6.9 to 8.5%. The all sampling stations observed values i.e. S₁ to S₈ are represented in the table No.- 1.

3.Total Alkalinity: The total alkalinity of all the sampling stations ranged between 4.9 to 7.6 mg/100gm of Soil. The all sampling stations observed values i.e. S₁ to S₈ are represented in the table No.- 1.

4. Water holding capacity: The water holding capacity of the sampling stations was ranged between 52 to 64%. The all

sampling stations observed values i.e. S₁ to S₈ are represented in the table No.- 1.

Table-1. Physico-chemical parameters of Soil of Akkalkot.(May-2016).

Parameter sample	Soil	pH	Organic content %	Total Alkalinity Mg/100gm	Water holding Capacity %	Electrical Conductivity $\mu\text{mho}/\text{cm}$	Chlorides %	Kg/ha		
								N	P	K
S ₁		7.3	6.9	4.9	62	0.72	4.37	150	23	280
S ₂		7.2	7.1	5.4	64	0.78	4.89	126	16	228
S ₃		8.0	7.0	7.2	53	0.61	4.59	123	23	380
S ₄		8.1	6.9	7.6	56	0.67	4.93	131	30	420
S ₅		7.9	7.8	5.7	58	0.61	5.48	154	23	280
S ₆		8.4	8.3	6.1	52	0.68	5.88	123	18	230
S ₇		7.6	8.5	7.0	64	0.81	3.63	123	23	380
S ₈		7.9	8.0	7.4	61	0.87	3.18	131	28	423

5. Electric conductivity: The evaluation of conductivity is for measure the current that gives a clear idea of soluble salt present in the soil texture. Conductivity value depends upon the dilution of soil suspension of soil particle. In present investigation the electric conductivity of sampling stations was ranged between 0.61 to 0.87 $\mu\text{mho}/\text{cm}$. The all sampling stations observed values i.e. S₁ to S₈ are represented in the table No.- 1.

6. Chlorides: The Chloride content of sampling stations ranged between 3.18 to 4.93%. The all sampling stations observed values i.e. S₁ to S₈ are represented in the table No.- 1.

7. N.P.K.:

The Nitrogen content ranged between 123 to 154 kg/ha. The all sampling stations observed values i.e. S₁ to S₈ are represented in the table No. - 1.

The Phosphorus content ranged between 16 to 30 kg/ha. The all sampling stations observed values i.e. S₁ to S₈ are represented in the table No.- 1.

The Potassium content was ranged between 228 to 423 kg/ha. The all sampling stations observed values i.e. S₁ to S₈ are represented in the table No.- 1.

4. Conclusion and Future Scope

The study emphasis on the status of soil with respect of following parameters i.e. pH, NPK, chlorides, conductivity, water holding capacity

and organic matter of the soil from the different sampling stations of Akkalkot. This study will become useful to farmers to the select the crop varieties in cultivation practice.

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