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Title Key: Studies of the Physicochemical Parameters of Soil …

Studies of the Physicochemical Parameters of Soil Samples Around The Aland Area, District-Parbhani

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Abstract

In the present investigation the physicochemical parameters of soil is based on various parameters like Carbon(C) Nitrogen (N), Phosphorus (P_2O_5), Potassium (K_2O), pH and Conductivity. This study leads us to the conclusion of the nutrient's quantity present in soil of Aland District Parbhani (Maharashtra). Results show that all the six selected places of Aland have medium or high minerals content. In order to study the effect of phosphate fertilizer, phosphorus, and application of nitrogen to increase percentage yield of crops. This information will help farmers to solve the problems related to soil nutrients, amount of which fertilizers to be used to increase the yield of crops.

Keywords: Physicochemical, Conductivity, Organic Carbon

1. Introduction

Soil is one of the most important resources of nature. All living things depend on plants, and grow in soil from day to day need. Soils are medium in which crop grows to food and cloth. Soil is not only important for agriculture but also have more useful for living organism. Soil as a component of the terrestrial ecosystem fulfills many function including those that are sustaining plant growth. Soil is a vital component, medium of unconsolidated nutrients and materials, forms the life layer of plants. It is basic life support components of biosphere. The physicochemical parameters are important to agricultural chemists for plants growth and soil management. [1-2]. A collection of soil samples from six villages of Aland , Parbhani District, which represent soils of that village. The soil samples were collected by standard procedure and collected in polythene bags. All the samples were collected in winter season. In laboratory these samples were analyzed to measure various chemical parameters by standard methods. Analysis of soil is carried out for the studies of various parameters like total Organic Carbon, Nitrogen (N), Phosphorus (P_2O_5) and Potassium [K_2O]. The pH, conductivity and estimations of $Mg^{2+,}$ Ca^{2+}, K^+ , HCO^{3-}, $PO^{4-,}$ NO_3.Percentage of soil was studied. The fertility of the soil depends on the concentration of N, P, K, organic and inorganic materials, conductivity. The physicochemical properties such as moisture content, specific gravity Nitrogen as a fertilizer required for the growth of plant. Potassium is used for flowering purpose, it is also required for building of protein, photosynthesis, fruit quality and reduction of diseases and phosphate is used for growth of roots in plants. Calcium is an essential part of plant cell wall, which provides normal transport and retention of other elements. [3-6].

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2. Materials and methods

All the chemicals and reagents used for analysis, they are AR grade from S. d. Fine Mumbai. Analysis of physicochemical parameters of the soil samples were suspended in distilled water (1:4 w/v) and allowed to settle down the particles. The pH of the suspension was determined using pH meter (Equiptronics, India).Electrical conductivity of the soil was determined in the filtrate of the water extract using Conductivity meter(Equiptronics, India). Percentage Organic carbon (OC) content was determined by adopting chromic acid wet digestion method as standard procedure of Walkley and Black method using diphenylamine indicator, available nitrogen was estimated by alkaline permanganate method, available phosphorus determined by volumetric method [7-14]. Available potassium content in the soil was determined by using turbiditimetric methods, calcium can be determined by titration with standard $KMnO_4$ solution, magnesium can be determined by precipitation in alkaline medium as magnesium ammonium phosphate. Carbonate in soil was determined by rapid titration method using bromothymol blue indicator. [15-20].

3. Results and discussion

Physicochemical properties of soil samples were studied all the samples are black gray in color and have unpleasant smell. The pH of soil is one of the most important physicochemical parameter. It affects mineral nutrient soil quality and much microorganism activity. The pH range of 6.2 to 8.5 has been recommended optimum for plants growth, the pH of soil samples shows variation 6.2 to 8.7, the above 7.5 value of pH shows basic nature. The Conductivity study of soil samples shows variation in conductivity values between 0.15 mhos to 1.25 mhos this value suggest normal soil. Percentage of carbon varies from 0.49 to 0.65also shows normal soil. Percentage of N, P and K are also in normal range. The percentage of Calcium varies from 0.94 to 3.45 (normal range of calcium is 0.98-2.45% by weight) in sample S_6 the percentage of Ca is (3.28% by weight) abnormal. The percentage of magnesium varies from 0.0.84 to 2.60% by weight, the normal percentage of magnesium was 1.20 to 2.00% by weight, and in sample S_6 we observed 2.75% of Mg by weight which is abnormal.

4. Conclusion

The physicochemical study of parameters is important to agricultural chemists for plants growth and soil management. A physicochemical studies of soil samples from six places of Alandi shows that all the soil parameters conductivity, pH, %Ca, % Mg, %N, %P, %K and % carbon are normal range. These studies give information about nature of soil, present nutrient in soil, according to this information farmer arrange the amount of which fertilizers and nutrients needed to soil for increase the percentage yield of crops.

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7.References

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