

# Studies On Some Physico Chemical Parameters Of Soil Sample In Vedharnyam, Nagapattinam District, Tamil Nadu

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## Abstract:

In the present study investigation the physicochemical study of soil is based on various parameters like pH, conductivity, Potassium, phosphorous. This study leads us to the conclusion of the nutrient quantity present in soil of Vedharnyam Taluka, Nagapattinam district, Tamil Nadu. The soil samples were collected in February 2018 from rice field. Result shows that result show that all the five selected places of vedharnyam have medium minerals content. Conductivity of all samples is found to be less. The result were matched IAS value This information will help farmers to solve the problems related to soil nutrients. .

**Key words:** Soil, pH, IAS, E.C, Nagapattinam.

## I. INTRODUCTION

Soil is one of the important gifts of nature and is a major component of the Earth's ecosystem. It is the mixture of minerals, organic matter, gases, liquids, and the countless organisms that together support life on Earth. Soil particles move from place to place by natural processes like rain and wind, however, a protective cover of grass on the land, trees or other vegetation, slowed down the rate of soil removal by soil erosion <sup>[1]</sup>. Soil is crucial to life and is the basis of agriculture. There is a very complex relationship between soils other components of the environment. Technology which had seemed to be a boon to the world is a kind of paradox. It provides many of the things which improve the quality of life but in some cases it is responsible for lowering the quality of an environment<sup>[2]</sup>

Soil plays a vital role in supporting the growth of crops and other vegetation maintain the environment clean and act as source and sink for atmospheric gases. Soils are natural bodies on which plant grow. The increasing population, industrialization and changing life style have negative on soil and responsible for soil pollution. Good soil and climate for more crop production are valuable things for any nation.<sup>[3]</sup>

## II. MATERIAL AND METHODS

### 2.1 Collection of soil sample:

Different location was selected for sampling and five samples were collected from different depth. The depth was used because it is believed that pollution decreases with increase in depth. The soil sample were collected into labelled sterile polyethylene bags and taken in ice-packed cooler to the laboratory for physico-chemical analysis.

### 2.2 Preparation of soil sample for analysis:

Each sample meant for physico-chemical analysis was air dried for seven days and then sieved to ensure homogeneity using a 2 mm size sieve.

### 2.3 Material analysis:

Analytical grade reagents are used for the preparation of reagents. Glassware were washed thoroughly with detergent and then with deionized water.

Sr.no	Area	Sample code	Depth(cm)
1	Thethakudi	S1	15-30
2	Pudhupalli	S2	15-30
3	katharipulam	S3	15-30
4	Thennampulam	S4	15-30
5	Vilundhamavadi	S5	15-30

Table1.Details of soil samples at different location point

S.No	Particulars	Method used
1	pH	pH-Metry
2	Conductance	Conductometry
3	Phosphorous	Olen's Method
4	Potassium	Flame Photometric Method
5	Zn,Fe,Cu,Mn	Atomic absorption Spectrophotometric Method
6	Organic carbon	Titration

Table:2 Laboratory methods used for chemical analysis of soil

### III. Result and discussion:

#### 3.1 pH

The soil pH value is a measure of soil acidity or alkalinity and directly affects nutrient availability. The pH scale range from 1 to 14 with 7 as neutral numbers less than 7 indicate acidity while number greater than 7 indicates alkalinity. In the present study pH values observed from 6.95 to 7.51. these values were in normal range and agree with IAS (international agriculture standard) value.

#### 3.2 Electrical conductivity

Electrical conductivity is one of the important parameters of the soil sample because it shows the salinity of the soil. In the present study conductivity of the samples observed from 0.13 to 0.15.

#### 3.3 Phosphorous

Phosphorous provides plant with means of using the energy harnessed by photosynthesis to drive its metabolism. The normal range for phosphorous is 22.5 kg/ha to 56 kg/ha. Phosphorous content in the soil samples ranged from 19.4kg/ha to 21.5 kg/ha. This slightly lower than normal value.

#### 3.4 Potassium

Potassium regulates many metabolic process required for growth food development. Many vegetables and fruits crop are high in potassium which is vital for animal and human nutrition. Potassium content in the soil sample ranges between 278kg/ha to 296 kg/ha. All samples values are within the normal range.

#### 3.5 Zinc

The zinc content in the soil samples ranged from 0.06 to 0.80 ppm. Sample 3 have less than zinc content compare than other samples.

#### 3.6 Copper

The copper content in the soil sample ranged from 0.40 to 0.46ppm. All the samples are normal value.

#### 3.7 Organic carbon

Organic carbon is the index for nitrogen content in the soil. The source of organic carbon in the cultivated soil included crop residue, animal manure, cover crops, green manure and organic fertilizer. Organic carbon values were recorded in the range from 0.25 to 0.40%

### 3.8 Manganese

The manganese content in the soil sample ranged from 0.84 to 6.94. Sample 4 is very high compare than other samples.

### 3.9 Nitrogen

Nitrogen is essential to nearly every aspect of plant growth. Nitrogen is absorbed from the soil as nitrate and ammonium, this soil parameters estimate there current levels. It range agree with IAS value.

S.No	Soil Parameters	S1	S2	S3	S4	S5	IAS For Soil Analysis
1	Colour	Faintblack	Faintblack	Faintblack	Dark black	Darkblack	-----
2	Organic Carbon	0.25	0.32	0.40	0.35	0.30	-----
3	pH	7.01	7.31	7.25	7.51	6.95	5.8-8.3
4	Nitrogen	287	266	279	272	269	217-272
5	Phosphorous	21.0	20.5	20.6	19.4	21.5	22.5-56
6	Potassium	296	278	286	294	288	150-340
7	Zinc	0.80	0.80	0.06	0.18	0.54	-----
8	Copper	0.40	0.40	0.42	0.46	0.40	-----
9	Iron	30.00	30.00	18.62	31.00	26.00	150-340
10	Manganese	1.62	1.62	1.82	6.94	0.84	-----
11	Boron	44.00	44.00	44.00	44.00	44.00	-----
12	Electric conductivity	0.13	0.13	0.15	0.13	0.14	<1

Table 3: physico- chemical parameters of soil samples.

## IV. CONCLUSION

The physicochemical study of parameters is important to agriculture chemists for all plants growth and soil management. A physicochemical study of soil samples from five places of Vedharnayam talka, Nagapattinam. Shows that the soil parameters From the present study it has been concluded the pH value they

were agreed with IAS value. Phosphorous value were low compared than normal value. The Iron value are very low compared than IAS Value. The Electrical conductivity of all soil samples is found to be very less. The Potassium and Nitrogen values are normal. These studies give information about nature of soil, present in 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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