# Physico chemical Studies of Agriculture Soil of some village of Dabhoi Taluka, Dist. Vadodara, Gujarat

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*Abstract: In this work carried out Physico-Chemical study of soil from different areas of village of Dabhoi taluka. In this study analyses of soil sample and checked different parameter like total Organic Carbon (OC), available Potassium ($K_2O$), Phosphorus ($P_2O_5$), pH and Electrical Conductivity (EC). From this study leads us to the conclusion of the various nutrients' and their quantity present in soil of villages of Dabhoi taluka. This study will help to solve the problems related to soil nutrients, and from that the farmers decided, which nutrients to be added through various fertilizers and how can increase the yield of crops.*

*Key Words: soil parameters, EC, pH.*

## Introduction

Soil analysis is a various chemical processes that determine the amount of present nutrients in the soil. Chemical soil analysis determines the content of basic plant nutrients; phosphorus ($P_2O_5$), potassium ($K_2O$), pH, humus content, total $CaCO_3$, available lime, organic matter, total sulphur (S), trace elements, and other physical characteristics. The physicochemical study of soil is important to agricultural chemists for to predict the increase the crop yield[1-2]. From the data of the results, we can decide, which fertilizer required for the growth of plant[3-4]. From the results of amount of phosphorus, potassium, organic carbon, electrical conductivity, and pH, we can decide about the fertility of soil. Soil analysis is the combination of three discrete but interrelated processes: analysis, interpretation, and recommendation[5]. All physicochemical properties have their special importance for crop.

Such as moisture, specific gravity, Nitrogen is important for the growth of plant.

Potassium (K) is required for flowering purpose and required for building of protein and it is also important for photosynthesis, fruit quality and for avoid of diseases. Phosphate is necessary for roots growth of plants. Calcium is required for cell wall of plant [6-9].

## MATERIALS AND METHODS:

All the chemicals and reagents used for analysis are of A R grade and from S. d. Fine chemicals.

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.

Organic carbon, present in soil determined by adopting chromic acid wet digestion method as standard procedure of Walkley and Black method. In this method diphenyl amine used as indicator[10-11].

Available potassium content in the soil was determined by using turbidity metric methods[12-13].

## SOIL SAMPLING AND ANALYSIS:

These samples were collected by a proper sampling technique at approximate 15 cm depth below the soil layer. The samples were collected during dry atmosphere and sieving through 2 mm sieve before testing.

## RESULT AND DISCUSSION:

We had collected soil samples from different villages of Dabhoi Taluka. We found the values of soil pH range from 6.83 to 7.68 It is indicating that slight acidic to alkaline in nature of soil. While EC values range from 0.26 to 0.92 mS/cm (normal EC ranges from 0.02 to 2.0 mS/cm) this type soil is called as non-saline. The reason of low EC values is high rainfall in this area and due to that soluble cations are wash out from the soils layer. Phosphorous is necessary for seed germination and essential for flowering and fruits formation deficiency symptoms Observed values of phosphorous range between 16.8 kg/hectare to 37.8 kg/hectare. Sometimes due to deficiency of phosphorous there are purple stems and leaves, yields of fruit are poor. Potassium values range between 357.84 kg/hectare to 487.06kg/hectare. Carbon is found 0.6 to 1.28%.

Following table shows the values of physicochemical parameters of soil samples:

| Sr. No. | Dabhoi Taluka | EC mmho/cm | pH | Organic Carbon(OC) | | Potassium (K) | | Phosphorus (P) kilo/hectare | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | | | Colori meter reading | % | Readin g | Kg/ Hectare | Flame Photo meter Readin g | Kg/ Hectare |
| 1 | Vadhvana | 0.77 | 7.15 | 178 | 1.11 | 17 | 35.7 | 95 | 472.15 |
| 2 | | 0.92 | 7.49 | 205 | 1.28 | 10 | 21 | 85 | 422.45 |
| 3 | | 0.62 | 7.27 | 181 | 1.13 | 10 | 21 | 92 | 457.24 |
| 4 | Mota Habipura | 0.54 | 6.96 | 168 | 1.05 | 16 | 33.6 | 98 | 487.06 |
| 5 | | 0.59 | 7.3 | 172 | 1.08 | 17 | 35.7 | 72 | 357.84 |
| 6 | | 0.47 | 7.28 | 146 | 0.91 | 18 | 37.8 | 94 | 467.18 |
| 7 | Parikha | 0.58 | 7.11 | 148 | 0.93 | 16 | 33.6 | 85 | 422.45 |
| 8 | | 0.45 | 6.92 | 138 | 0.86 | 11 | 23.1 | 75 | 372.75 |
| 9 | | 0.26 | 6.83 | 169 | 1.06 | 18 | 37.8 | 81 | 402.57 |
| 10 | Nada | 0.76 | 7.42 | 148 | 0.93 | 8 | 16.8 | 98 | 487.06 |
| 11 | | 0.66 | 7.24 | 132 | 0.83 | 18 | 37.8 | 88 | 437.36 |
| 12 | | 0.46 | 7.68 | 99 | 0.62 | 16 | 33.6 | 82 | 407.54 |
| 13 | Nanderia | 0.34 | 7.18 | 108 | 0.68 | 12 | 25.2 | 96 | 477.12 |
| 14 | | 0.65 | 6.94 | 117 | 0.73 | 16 | 33.6 | 78 | 387.66 |
| 15 | | 0.49 | 6.83 | 96 | 0.60 | 13 | 27.3 | 93 | 462.21 |

**CONCLUSION**

The study of soil analysis is important to agricultural chemists for crops growth and for management of soil. In this study there were sample collected from fifteen places of Dabhoi taluka. From this study data found that the soil parameters such as, conductivity, pH, percentage of  P, K and Carbon are mostly in normal range. From these studies we can say  about the nature of soil, present amount of nutrient in soil and according to this data farmer select   the amount of which fertilizers and nutrients required to soil for getting more crops  yield .

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