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Chemistry

Analysis of Soil Sample of Becharaji Taluka Villages, Mehsana District, Gujarat State, India.

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ABSTRACT

The basic needs on the earth for the survival of human, animals and organisms are Air, water. and Food. Soil provides the surface for water and food for human animals and others. If there is no soil life is not possible. Soil is a mixture of many substances such as minerals, gases, organic matter, liquids and countless micro organisms. It provides the life on Earth. Soil is a vital part of the natural environment. It is an important for everybody human beings, plants animals, landforms. Soil also supports animal biodiversity above and below ground. It is essential to the lives of both wild life and domesticated livestock .Soil contains number of micro organism such as earthworms it maintain the soil quality. Soil is important in providing food, an adequate water supply and maintains its quality. The water absorption properties of soil play an important role in reducing pollution from chemicals in pesticides and other compounds. Soil provides the structural support and the source of water and nutrients for plants that used in agriculture. The aim of this study is to check the quality of agriculture soil and some nutrients which is helpful to crops and plants, by the use of different kind of physico chemical parameters. For the analysis, soil samples were collected from ten different villages of Becharaji taluka area ,District Mehsana, Guarat State ,India .and the physico- chemical parameter as like as the pH of the soil ,Electrical conductivity (EC), Organic carbon(OC),and available P and K were analyzed for the soil samples.

KEYWORDS : Soil, Physico Chemical Parameter, Organic Carbon, Quality.

Introduction:

Soil is a mixture of minerals, organic matter, gases, liquids and countless organisms that together support life on earth . Soil is a natural body called the pedosphere which has four important function. It is a medium for plant growth. It is a mean of water storage supply and purification. it is a modifier of earth's atmosphere.

Soil is called the skin of the earth .Soil consists of a solid phase of minerals and organic matter as well as porous phase that hold gases and water . So that soil is three state system of solids liquids and gases. there are somany application of soil one of the major application of soil is for the agriculture which provides food for all human life,animals and some microorganism.

Soil is a vital part of the natural environment .without soil we would not be able to grow crops and plants which are used both human and animals. To obtain the good quality of crops it is necessary to know the chemistry of soil .Some of the areas in the villages the farmer are not familiar with the information, and farming is a complex process.that also need studing and constant exchange of information for the healty crops. It is necessary to analysis of soil .the purpous of this study to check the parameter and how it is useful for good quality of crops and plants.

Materials and Method:

Study Area :

In this study the soil samples were collected from villages of Becharaji taluka.District Mehsana ,Gujarat state in India .Becharaji is a temple town and taluka capital in Mehsana.The Latitude of Becharaji is 23.4989 and longitude is 72.0439. It is 75 Km away from Ahmedabad.

Sampling:

In this study the soil samples were collected from 10 different villages of Becharaji taluka.soil samples were taken scientifically below the surface level.samples were dried and packed with lable in polythene bags. Soil samples were brought in the Lab for the analysis of physic chemical properties as like as pH, Electrical conductivity(EC),Organic carbon (OC), Potassium(K) and Phosphorous (P).

Experimental Method :

The experimental methods for the parameter of soil sample are shown in the following Table 1

Table No :1

Sr.No.	Physico chemical Parameter	Experimental Method
1	pH	pH Metry
2	Electrical conductivity	Conductometry
3	Organic carbon	Colorimetry
4	Phosphorus	Colorimetry
5	Potash	Flame photometer

Table : 2 Physico chemical parameters data of Soil Samples

Sample Nos.	Name of Village	pH	EC	OC(%)	P	K
S1	Dedarda	7.4	1.97	1.04	16.79	16.91
S2	Ganeshpura	7.6	0.96	0.61	112	12.2
S3	Modhera	7.4	0.30	0.97	77.4	29.56
S4	Poyada	7.3	0.21	0.95	68.03	35.5
S5	Nava Delvada	7.8	0.25	0.70	27.83	14.82
S6	Delvada	7.8	0.15	0.85	19.59	13.36
S7	Kalari	7.5	0.18	0.96	39.73	23.39
S8	Chadasan	7.4	0.14	1.19	31.77	29.65
S9	Pratapnagar	7.9	0.18	1.20	50.44	35.11
S10	Asjol	7.4	4.6	0.84	42.13	18.77

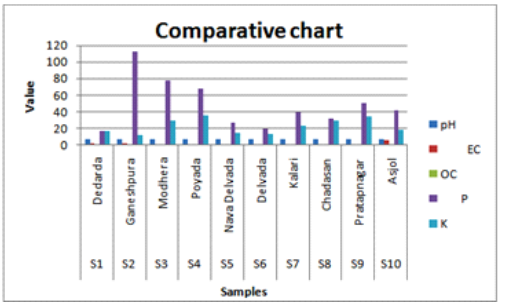

Table 2: Interpretation of soil properties (Reference MM-SOIL Govt.Of India-2011)

Parameters	Interpretation	
pH	< 4.6	Extremely acidic
	4.6 – 5.5	Strongly acidic
	5.6 – 6.5	Moderately acidic
	6.6 – 6.9	Slightly acidic
	7	Neutral
	7.1 – 8.5	Moderately alkaline
	> 8.5	Strongly alkaline
EC dS/cm	0 – 2	Salt Free
	4 – 8	Slightly Saline
	8 – 15	Moderately Saline
	> 15	Highly Saline
OC (%)	< 0.5	Low
	0.5 – 0.75	Medium
	> 0.75	High
P Kg/ha	< 10.0	Low
	10 – 24.6	Medium
	> 24.6	High
K Kg/ha	< 108	Low
	108 – 280	Medium

PH : The pH is the measurement of hydronium ion concentration in the aqueous solution. It is the important parameter for the both water and soil. as the hydronium ion activity increases the pH of soil decreases. And the decreases in soil pH make adverse effects it becomes less available on crop and nutrients and it determines the acidic or alkaline properties of the soil. A soil pH is of paramount importance. It affects the fertility of soil by controlling how well nutrient are dissolve. If the pH of soil is out of range plant and crop will be unable to access or utility that fertilizer. The pH of the sample was observed in the range from 7.3 to7.9

Electrical conductivity: It is an important indicator of soil health. Electrical conductivity of soil is a measure of the amount of the salt present in the soil. Electrical conductivity is the most common measure of soil salinity and is indicative of the ability of the aqueous solution to carry an electric current. Plant are detrimentally affected, both physically and chemically, by excess salts in same soils and by high levels of exchangeable sodium in others The electrical conductivity of the sample was observed in the range from 0.14 to 4.6.

Organic carbon: Soil organic carbon is the basis of soil fertility. It releases nutrients for plant growth, promotes the structure, biological and physical heath of soil, and is buffer against harmful substances.

Soil organic carbon is a part of the natural carbon cycle, and the world's soils holds around twice the amount of carbon that is found in the atmosphere and in vegetation. Organic material is manufactured by plants using carbon dioxide from the air and water .Plants (and animals, as part of the food chain), die and return to the soil where they are decomposed and recycled. Minerals are released in to the soil and carbon dioxide is released in to the atmosphere.

Phosphorus: Phosphorus(P),is a micronutrient that plays anumber of important role in plant growth.It is one of the important essential key element in agriculture fild.For the fertilization of crops the largest portion of phosphorus is used in agriculture .In the soil phosphorus is one of the major plants nutrients . It is a constituents of plant cells and essential for the growth of the plants Without phosphorus the growth of plant is retarded.Chemically phosphorus is a very stable element. The range of phosphorus was found from 16.79 to 112

Potasium : Potasium (K) is considered second important only to Nitrogen and it required in a large amounts for proper growth and re production of plants. It affects plant size,color and other measurements Plants absorb potassium in the ionic form ,K Potassium plays an important role in the activation of enzyme in plants potassium .The range of Potassium was found from 12.2 to 35.5.

Result and Conclusion: from the above studies it can be conclusion that the data of physico chemical parameter is very useful to know the soil quality the pH was found moderately alkaline in the nature. The pH affect the availability of fertilizer nutrients the pH is slightly acidic is good for the crops. Soil Electrical conductivity (EC) that measure the properties of soil that affect crop productivity ,soil texture organic matter level ,salinity cation exchange capacity. EC value was found slightly salty. The phosphorus was found high insome sample high level of P is harmful to crop if high phosphorus in soil then avoid using fertilizer with P . The amount of Potassium in out of four samples was found higher level and other six samples were in medium in the level. Organic carbon was found in the higher level in all the samples.

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