



A COMPARATIVE STUDY OF SOIL PARAMETERS BETWEEN TWO DIFFERENT COUNTRIES - A GLOBAL APPROACH

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ABSTRACT

A physicochemical study of soil is based on various parameters like soil pH, electrical conductivity (EC), organic carbon (OC), available nitrogen (N), phosphorus (P), potassium (K), and micronutrients (Fe, Mn, Cu and Zn). Soil samples were collected from two different locations i.e Israel and Bethlem (Revgaon). Several analytical techniques were used to determine the chemical and mineralogical compositions of soil sample. The main focus of the work was to document soil characteristics and to study the chemical properties. Results show that all the three selected places of Israel and Bethlem (Revgaon) have medium or high minerals content. There were significant differences in the elemental contents of three soil samples collected from Israel and Bethlem (Revgaon).

Key words: *Physicochemical, Micronutrients, Soil samples.*

INTRODUCTION.

Soil is a key component, medium of unconsolidated nutrients and materials, forms the life layer of plants. Soil developed as a result of pedogenic processes through weathering of rocks, consisting of inorganic and organic constituents, possessing definite chemical, physical, mineralogical and biological properties, having variability from depth to surface of the earth, and provides a medium for plant growth Thakre (2012) .Soil physico-chemical properties affects on the behavior of soil and hence, knowledge of soil property is essential Sumithra.

Soil is a vital component, medium of unconsolidated nutrients and materials, forms the life layer of plants. It is a basic life support components of biosphere. The physicochemical study of parameters is important to agricultural chemists for plants growth and soil management. (Jaishree 2008, Kanimozhi 2011). The soil test based nutrient management has emerged as a major issue in efforts to increase agriculture productivity. In recent years agriculture development has been changed from



conventional and traditional farming method too more intensive practices using chemical fertilizers and pesticides with irrigation facilities. Continuous use of chemical fertilizers slowly changed soil properties, ultimately the production in long run is reduced. It has resulted in leaching of chemical into the surface and ground water (Agarwal and Gupta.1968, Bhattacharya et.al 1989).). Due to increasing demand for cash crops, the practice of monoculture cropping pattern have further helped to deteriorate soil physicochemical properties. (Biswas et.al 1985). Soil testing is the only way to determine the available nutrient condition in soil and the only way we can develop specific fertilizer recommendations. Analysis of soil is carried out for the studies of various parameters like total Organic Carbon, Available Nitrogen (N), Phosphorus (P_2O_5) and Potassium (K_2O), pH, Electrical conductivity etc. The fertility of the soil depends on the concentration of N, P, K, organic and inorganic materials, conductivity. The physicochemical properties such as Nitrogen, phosphorus and organic matter 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.(Black 1965, Chopra and Kanwar 1991).

The main objectives of the study were to assess the present status of soil. The physicochemical properties of soil samples from two different locations i.e Israel and Bethlem (Revgaon) were analyzed

MATERIALS AND METHODS.

Physico-chemical properties were analysed from Soil Health Clinic, Krushi Vigyan Kendra M.S.S.M, Jalna District. Jalna.(M.S) India.

(a). Analyses of chemical properties :

The analysis involves the estimation of soil elements. Soil samples collected from three different locations i.e Israel and Bethlem (Revgaon) were carried out in the present study.

(b). Determination of mineral elements:

The elements were observed from soil sample of Israel and Bethlem (Revgaon) Dist. Jalna, India by the wet digest method. The samples were analyzed for the elemental composition using different standard methods. Ph Ec, Oc, P, K, $CaCO_3$, Ca, $MgSO_4$, Mn, Zn, Fe, Cu, clay and silt were determined and the concentrations of the elements were presented in different units.

RESULTS AND DISCUSSION.

Chemical and mineralogical composition of soil of mount of Zion, Jerusalem, Israel.

Physicochemical properties of soil samples Mount of Zion soil, Israel was studied, The results are mentioned in table 1. It is clear from result summarized in table 1 that all the samples 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 7.7 ,These values are shown in table no 1. The rang of different physicochemicals shows variations as EC 0.67 (dSm⁻¹), P 2.85 (%), K 3.8 (%). Similarly Ca. 2.6 (meq/100 gm), Mg. 1.6 (meq/100gm), S5.3(ppm), Mn.3.02 (ppm), Zn.1.27 (meq/100gm), Fe.0.32 (ppm), Cu1.92 (ppm). There were significant differences in the elemental contents of soil samples collected from mount of Zion, Israel. Several workers have performed on such type of experiments on physicochemical properties of soil samples.

Table.1 - Chemical and mineralogical composition of soil of mount of Zion, Jerusalem, Israel.

Sample No	Parameters checked	soil of mount of Zion, Jerusalem, Israel.	
		Report:SP5087/18	
		Unit	Observations
1.	pH	--	7.7
2.	EC	dSm ⁻¹	0.67
3.	OC	%	0.95
4.	P	%	2.85
5.	K	%	3.8
6.	Ca	weq/100gm	2.6
7.	Mg	weq/100gm	1.6
8.	S	ppm	5.3
9.	Mn	ppm	3.02
10.	Zn	ppm	1.27
11.	Fe	ppm	0.32
12.	Cu	ppm	1.92



Chemical and mineralogical composition of soil of mount of olives, Jerusalem, Israel.

Chemical and mineralogical composition of soil of mount of olives, Jerusalem, Israel was studied. The results are mentioned in table 2. The analyzed chemical and physical properties show the wide variation range, as can be seen in the results summarized in table 2. The pH of all soil samples were found to be ranged in 7.0 of soils. The rang of different physicochemicals shows variations as EC 2.17 (dSm⁻¹), OC1.02 (%), P 2.71 (%), K 3.45 (%). Similarly Ca. 1.6 (meq/100 gm), Mg.1.4 (meq/100gm), S.6.2 (ppm), Mn.1.45 (ppm), Zn.0.22 (meq/100gm), Fe.0.48 (ppm), Cu3.06 (ppm). There were significant differences in the elemental contents of soil samples collected from mount of olives, Jerusalem, Israel

Table.2 - Chemical and mineralogical composition of soil of mount of olives, Jerusalem, Israel.

Sample No	Parameters checked	soil of mount of olives, Jerusalem, Israel.	
		Report:SP5088/18	
		Unit	Observations
1.	pH	--	7.0
2.	EC	dSm ⁻¹	2.17
3.	OC	%	1.02
4.	P	%	2.71
5.	K	%	3.45
6.	Ca	weq/100gm	1.6
7.	Mg	weq/100gm	1.4
8.	S	ppm	6.2
9.	Mn	ppm	1.45
10.	Zn	ppm	0.22
11.	Fe	ppm	0.48
12.	Cu	ppm	3.06

Table 3 - Chemical and mineralogical composition of soil of Israel and Bethlem (Revgaon)

Sr. No	Parameters checked	Soil of Israel and Bethlem (Revgaon)		
		Report:F01/15		
		Unit	Israel	Bethlem (Revgaon)
1	Ph	--	8.1	8.2
2	Ec	--	0.33	0.33
3	Oc	%	2.7	0.4
4	N	%	0.053	00
5	P	%	0.01515	0.155
6	K	%	0.031	0.016
7	CaCO ₃	%	17.2	6.1
8	Ca	Meq/lit	6.2	5.8
9	Mg	Meq/lit	3.4	2.1
10	SO ₄	Ppm	298	283
11	Mn	Ppm	3.2	3.3
12	Zn	Ppm	3.3	3.2
13	Fe	Ppm	3.7	0.0
14	Cu	Ppm	6.0	0.81
15	Sand	%	50	38
16	Caly	%	17	28
17	Silt	%	36	34

Chemical and mineralogical composition of soil of Israel and Bethlem (Revgaon) was studied. The results are mentioned in table 3. It is clear from result summarized in table 3 that the soil samples were quite rich in soil of Israel as compared with soil of Bethlem (Revgaon) as mentioned in table 3. There were significant differences in the elemental contents of soil samples collected from Israel and Bethlem (Revgaon). Several workers have performed such type of experiments on Chemical and mineralogical composition of soil. The most prominent factors that dictate the amount of F in most soils are the quantity of clay minerals, the soil pH and the concentrations of Ca and P in soils Begum et.al (2008). Same results found in the study of Larsen and Widdowson(1971) [16], (Chhabra and Abrol 1980, Omuetti and Jones 1980) high adsorption of fluoride by soil mineral components is at about pH 6 to 8 (Andrews, 2004 Wenzel and Blum 1992).

CONCLUSION

This paper has examined the physico-chemical characteristics of soil sample of Israel and Bethlem (Revgaon) Dist. Jalna, India. Characterization of soil sample of Israel showed quite rich in chemicals and minerals as compared with soil sample of Bethlem (Revgaon) Dist. Jalna, India



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