

Estimation of Nutrients (N, P, K, Zn) in Some Villages of Dhrangadhra Taluka

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Abstract

Soil samples were collected from the villages of Dhrangadhra Taluka for analysis. Dhrangadhra Taluka is situated in Surendranagar district. There are 64 villages in Dhrangadhra Taluka. The study was carried out during the period of 2012-2013. Four sites of Dhrangadhra Taluka were selected to collect sample. It is a very good step for soil analysis. Various parameters like EC, PH, N, P, K, OC can be known with the help of the soil analysis. By knowing these results, farmers will decide the problem about soil nutrients and also decide which types of and how much fertilizers are to be added to increase agricultural products.

Keywords: Mineralization; Nutrient; Production; Soil samples

Introduction

Soil sampling is the important step for any soil analysis as very small fraction of the huge soil mass is used for analysis. A good knowledge of the soil properties and their relationships with weeds distribution is said to be highly essential for integrated weed management programmes. Fertile soil is important for the living society. The soil can be made fertile with the help of plants and animal communities. Apart from providing a solid substratum on which we live, the soil provides us most of our necessities through the plant and animals communities which develop on it [1].

The soil analysis programme has been undertaken in different ways in different states like Gujarat, Rajasthan, Madhya Pradesh and Uttar Pradesh [2-4]. The soil analysis was always undertaken to examine the quantity of nutrients which helps in increasing agricultural productivity and quality. With the help of soil analysis, the farmers of the villages of Dhrangadhra Taluka have got the information about which and how much nutrients are to be added to their farmers to increase the agricultural products. The main objective of the paper is to analyze the nutrients of the soil of different villages of Dhrangadhra Taluka.

Materials and Methods

pH was measured by using pH meter (Model type-322). EC was measured by using a conductivity meter (Model no. 303). Potassium was measured by flame photometer (Modiflame 127, Systronic India Ltd. Sr. no. 2913). Organic carbon was measured by using flame photometer (Model No. 130). Phosphorous was measured by using flame photometer (Model No.130) (TABLE 1). Nitrogen was measured by Kjeldahl process using Kjeldahl Digestion Assembly [5-7].

Results and Discussion

TABLE 1. Soil samples analysis from different villages.

Village	pH	EC	OC	N	P	K
Haripur	7.4	0.42	0.73	0.05	1.5	30.2
Vavdi	7.5	0.56	0.62	0.04	3.4	30.6
Dudapur	7.3	0.62	0.34	0.03	3.9	20.8
Isadra	7.2	0.44	0.56	0.06	4.4	35.6
Soldi	7.1	0.51	0.48	0.07	5.3	38.4
Rajpar	7.3	0.49	0.79	0.06	1.6	20.9
Kankavati	7.2	0.51	0.85	0.08	8.3	42.4
Vaghgath	7.4	0.54	0.36	0.07	5.6	39.8
Jasmatpur	7.6	0.56	0.64	0.03	6.8	35.5
Kuda	7.8	0.53	0.73	0.06	4.3	26.8
Narali	7.9	0.62	0.41	0.05	3.9	42.3
Jegadava	7.6	0.64	0.85	0.08	4.4	29.3
Navalgath	6.9	0.46	0.68	0.04	5.8	38.5
Bavali	6.8	0.53	0.52	0.03	6.3	41.6
Kondh	7.1	0.48	0.83	0.07	7.4	33.5

Parameters in PPM Except pH

EC=mmho/cm

OC=mm

The soil sample of 15 villages of Dhrangadhra Taluka, Dist. Surendranagar were collected in neat plastic bags and brought to the laboratory. All the soil samples were parched in well ventilated room and crush with the help of pestle and mortar. Then all the soil samples were ready for the testing.

Determination of soil

Soil temperature: Soil temperature depends on the chemical and biological action of the soil.

pH: The pH value is very significant characteristic of the soil [8-10].

Knowing pH value of soil, we can realize that soil samples are acidic or alkaline.

The limit of pH value for soil, Acidic<6.3, Alkaline>7.6-8.3 normal value=6.6-7.5.

pH value of soil samples of Kuda and Narali villages are found 7.8 and 7.9 respectively because of both villages were situated near salt-pit. So, soil samples of both villages are found alkaline. These soils of both villages were not fertile because of high pH value [11-13].

OC and nitrogen (N): Soil organic carbon is the place of nitrogen in soil and its measurement is carried out as a content of nitrogen. Organic matter is oxidized with chromic acid in the colorimeter method OC in Dhrangadhra Taluka villages 0.34 to 0.85. Authentic value of OC is 0.55 to 0.72.

Potassium: Authentic value of K as K_2O in soil up to 20 ppm. In given table values are between 20.8 to 42.4 [14].

Phosphorous: Here phosphorous values are between 1.5 to 8.3. The most significant micro nutrient is utilized by plant in the form of H_2PO_4 and HPO_4^{2-} .

Conclusion

pH value of soil samples of Kuda and Narali villages are found 7.8 and 7.9 respectively because of both villages are situated near the salt-pit. Standard value of K as K_2O in soil up to 20 ppm here some villages like Kankavati, Narali and Bavli villages have a higher K values.

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