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ANALYSIS OF POTASSIUM AND SODIUM METAL IN SOIL SAMPLES COLLECTED FROM SOME AREA OF TALA TERTIARY BY FLAME PHOTOMETRY

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ABSTRACT

We are study of soil samples (collected from Tala teriatary) containing inorganic metal- K, Na by Flame photometrically. The inorganic elements are deposited in soil from artificial fertilizers and water, thus constituting to soil pollution index. The soil containing K and Na atom emission intensity are measure by K and Na wavelength range filter and pH of the soil are confirm by pH metrically.

KEYWORDS: Flame photometer, pH- meter, Soil sample, Sodium, Potassium.

INTRODUCTION

Soil is one of the most significant ecological factor on which plants depend for their nutrients, water and mineral supply.[1] The Present study of analyzing from concerns nutrient of soil, important to farmer's plant growth soil management and control the soil pollution. For knowing the soil nutrient content, soil testing is the only way that can to recommend proper fertilizers amount. For sustainable agricultural production, it's necessary to characterize soil to evaluate fertility status of the soil. N, P, K contribute to major soil elements that help in controllingit's fertility and crops yields.[2]

Through fertilizers, chemical pollution accumulating in soil, plants, animals and human being needs to be examined. Thus becomes essential to analyze the physico-chemical characteristics and macronutrient of the soil.

MATERIAL AND METHOD

A soil samples were collected from different villages of Tala- tehsil. these samples were analyzed for different chemical parameters using standard methods.

Equipment's-Flame photometer with Na and K filters Digital pH meter, centrifuge tubes, beakers and volumetric flask.

Reagents

1.0 N ammonium acetate solution of pH 7. (Dissolve77.08 g ammonium acetate in 1 litre double distilled water). Adjust the pH of this solution by pH meter with dilute NH_4OH & acetic acid solution and make up with distilled water.

Preparation of standard KCl solution

(To prepare 1000 ppm stock solution) Dissolve 1.908g AR grade KCl in double distilled water to make volume to 1 litre. Now take 100ml above stock solution in1 lit. standard measuring flask and up to mark with neutral ammonium acetatesolution. This gives solution of 100 ppm K solution. Make series of standard solution using above 100 ppm K solution (0, 2, 4, 6, 8 and 10of 100 ppm K solution in each 100 standard measuring flasks) and dilute up to mark**.**

Preparation of standard NaCl solution

(To prepare 1000 ppm stock solution) Dissolve 2.542 g AR grade NaCl in double distilled water to make volume to 1 litre. Now take 100 ml above stock solution in1 lit. The standard measuring flask and up to the mark with neutral ammonium acetate solution. This gives solution of 100 ppm Na solution. Make series of standard solution using above 100 ppm Na solution (0, 2, 4,6, 8 and 10 of 100 ppm Na solution in each 100 standard measuring flasks)and dilute up to mark**.**

METHOD

The ammoniums acetate extract of soil can be obtained by shaking followed by filtration.

Shaking and filtration

Take a 5g dried collected soil in a 150mL flask& too it pour 25ml of neutral ammonium acetate. Shake on a mechanical shaker for 10 minutes and immediately filter it through Whatmann filter paper No.1.

Determination of K and Na (calibration curve method)

Determine K and Na (individually) in the soil extract prepared by above methods with the help of flame photometer (Model No**.-EQ-855A**) by keeping air pressure at 5 lbs. Adjust the gas feeder so as to have a blue sharp flame. Adjust zero reading on the scale by feeding extract solution (ammonium acetate) in the flame photometer.

Now measure the reading for each standard solution and plot a standard curve between concentration and reading of standard K and Na solution (individually).

Take extract of soil samples and feed in the flame photometer and measure the readings of soil samples and determine K and Na content in the sample with the help of standard curve.[5,6]

Determination of physico-chemical parameters

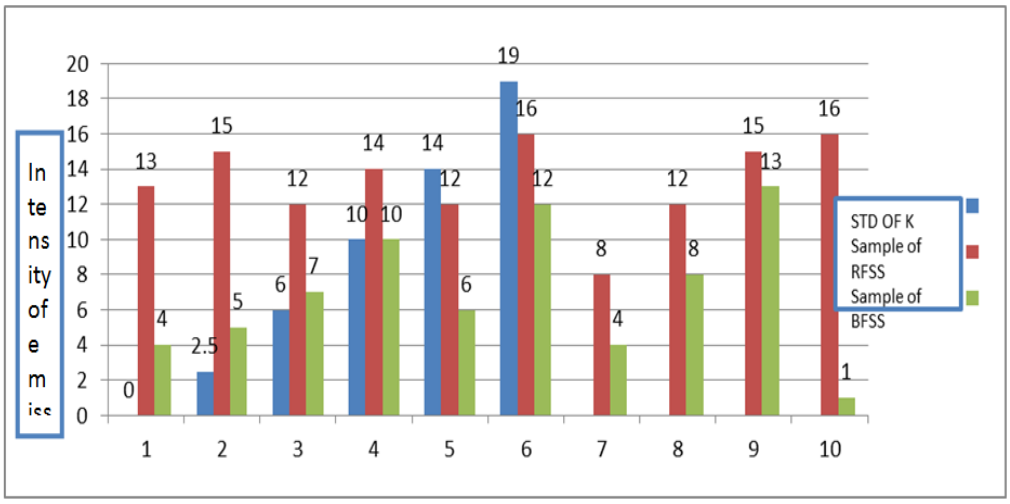
The pH of soil was determined by calibrated digital pH meter (10 g of soil sample in beaker and add 25 mL of double distilled water and check the pH of solution).[7]

RESULTS AND DISCUSSION

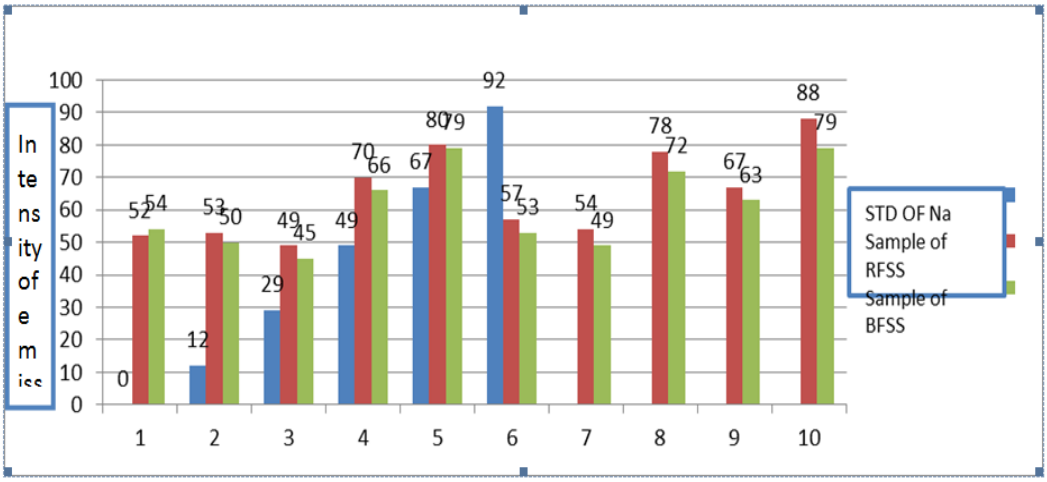
K and Na Analysis

				Conc. of K (ppm)	**Emission for K^+ (STD samples)**		**Conc. of Na (ppm)**	**Emission for Na^+ (STD samples)**	
				0	0		0	0	
				04	2.5		03	12	
				10	06		10	29	
				16	10		16	49	
				22	14		22	67	
				30	19		30	92	
Sr. No.	**Name of area**	pH			**Emission for K^+** (Unknown samples)			**Emission for Na^+** (Unknown samples)	
		RFSS	BFSS		RFSS	BFSS		RFSS	BFSS
1.	Tala	6.86	6.64		13	04		52	54
2.	Adnale	6.79	6.74		15	05		53	50
3.	Ambeli	6.93	6.76		12	07		49	45
4.	Bhanang	6.98	6.74	-	14	10		70	66
5.	Bhanang k.	7.06	6.93		12	06		80	79
6.	Girne	7.00	6.78		16	12		57	53
7.	Gaulwadi	6.59	6.53		08	04		54	49
8.	Pachghar	6.67	6.62		12	08		78	72
9.	Nanvali	7.01	6.95		15	13		67	63
10.	Borichamal	7.16	6.99		16	19		88	79

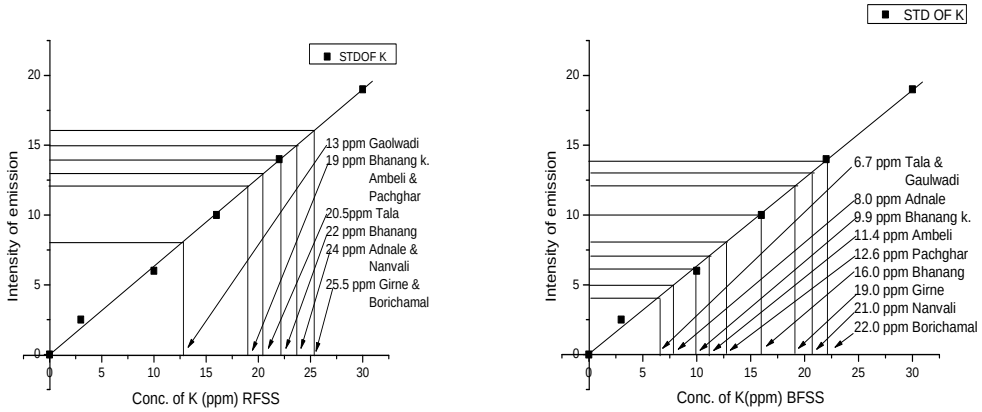
(Table-1) *RFSS= Rice Field Soil Sample and BFSS= Barren Field Soil Sample

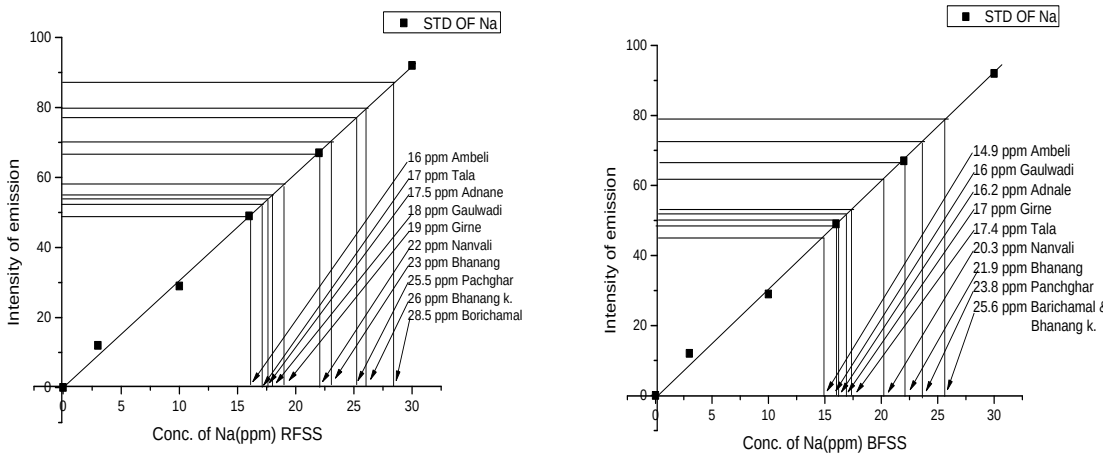


Potassium content



Sodium content





Graph 1-4. Unknown conc. of K and Na.

Table 1 shows that, the highest K concentration was found in RFSS of Girne and Borichamal (25.5 ppm) and lowest in RFSS of Gaulwadi (13 ppm). In case of BFSS, highest was found in Borichamal (22ppm) and lowest in Tala and Gaulwadi (6.7 ppm).

The highest Na concentration was found in RFSS of Borichamal-(28.5 ppm) and lowest in RFSS of Ambeli (16 ppm). In case of BFSS, highest was found in Bhanang k. and Borichamal(25.6 ppm) and lowest in Ambeli(14.9 ppm) (Graph 1-4).

Also, Table-1 shows that, the highest pH wasof Borichamal-RFSS (7.16) and lowest in RFSS of Gaulwadi (6.59) and in case of BFSS, highest pH of Borichamal of BFSS (6.99) and lowest was BFSS Gaulwadi(6.53)Table 1.

CONCUSSION

We have conclude that, the concentration of sodium present in the soil sample is more than potassium and The RFSS has greater K content than BFSS, and the Na content of RFSS is slightly greater than BFSS. This may be due to use of chemical fertilizers and Alkali water. This method is easy for handling and accurate.

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