An Asian Journal of Soil Science, (June to November-2009) Vol. 4 No. 1 : 156-157

Research note :

Status and depletion of sulphur in the soils of Saurashtra region of Gujarat

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Accepted : *May, 2009*

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ABSTRACT

District wise picture with regard to changes in available sulphur over a cycle of ten years in the soils of Saurashtra region of Gujarat was studied by collecting 169 surface soil samples (0-15 cm) from tagged cultivated farmer's field during the year 1990 and 2000. All the district in the year 1990 exhibited high levels of available S but after a span of 10 years different districts registered depletion of available S. Overall, the available S status was declined from 24.4 to 14.5 ppm in soils of Saurashtra region during a span of 10 years.

Key words : Available S status, Depletion of available S, Soils of Saurashtra

Among the major nutrients, sulphur has been recognized as an essential nutrient for physiological and metabolic activities of the plants, an integral part of certain vitamins and enzymes (Hoagland and Novelli, 1954). The areas under S deficiency is increasing alarming owing to adoption of high yielding varieties, high cropping intensity and use of high analysis fertilizers (Tondon, 1991). Sulphur, being vitally important for complete life cycle of plants, its presence in adequate quantities in the soil and in the form available to plants is very essential. Sulphur exists in soil as free and adsorbed sulphate and in diverse organic and inorganic compounds.

MATERIALS AND METHODS

From the six district of Saurashtra region of Gujarat *viz*. Amreli, Bhavnagar, Jamnagar, Junagadh, Rajkot and Surendranagar 20, 42, 31, 41, 17 and 18 surface (0-15 cm) soil samples were collected from tagged cultivated farmer's field during the year 1990 and 2000, respectively. The collected samples were analyzed for determining available Sulphur as per standard method adopted by Williams and Steinbergs (1959).

RESULTS AND DISCUSSION

The data presented in Table 1 showed that the highest and lowest range of available S in Junagadh (4.7-159.6 ppm) and Amreli (9.5-28.5 ppm) district, respectively, during the year 1990, while the highest mean value (29.2 ppm) was recorded in Junagadh district. However during the year 2000, Bhavnagar recorded the highest, while Amreli recorded the lowest range. The highest mean value (15.8 ppm) and lowest (10.6 ppm) was recorded in Rajkot and Jamnagar districts, respectively. Overall, the available S status was decline from 24.4 to 14.5 ppm in soils of Saurashtra region during a span of 10 years.

Table 1 : District wise range and mean of available sulphur (ppm) in the soil of Saurashtra region

Districts	Available S	
	1990	2000
Amreli	9.5-28.5 (18.1)	8.5-22.7 (15.8)
Bhavanagar	9.5-49.1 (23.6)	2.8-105.1(18.3)
Jamnagar	9.5-45.9 (19.6)	2.8-18.5 (10.6)
Junagadh	4.7-159.6 (29.2)	2.8-24.1 (10.9)
Rajkot	14.3-74.5 (27.7)	7.1-65.3 (19.5)
Surendranagar	9.5-118.8 (27.3)	4.5-59.6 (14.1)
Overall	4.7-159.6 (24.4)	2.8-105.1 (14.5)

Figures in parentheses indicates the mean value

District wise distribution of available S content and temporal change in span of 10 years are presented in Table 2. All the district in the year 1990 exhibited high levels of available S but after a span of 10 years different districts registered depletion of available S. The 30 to 76 and 0 to 24 per cent samples of all the districts were rated high in available S during 1990 and 2000, respectively. In Junagadh district, the content of S depleted to low levels of 65 per cent samples while in Bhavnagar, Surendranagar, Jamnagar, Rajkot and Amreli 52 and 31, 44 and 44, 39 and 61, 35 and 41 and 30 and 50 per cent samples felt in low and medium categories, respectively. In overall, the percentage of soil samples increased in low category in a value of 7 to 44 after a span of 10 years in term of available S and the reverse trend was