Short communication
Annals of Plant and Soil Research 20(4): 435-436 (2018)

Status of sulphur in soils of Agra district of Uttar Pradesh

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Received: August, 2018; Revised: accepted, October, 2018

Soil fertility assessment of an area or a region is an important aspect in view of sustainable agricultural production (Rajendiran *et al.* 2018). In recent years, adoption of high yielding varieties and use of high analysis NPK fertilizers led to decline in the status of sulphur in soils to below normal at which productivity of crops can not be sustained. Inventory of available S status of the soil helps in demarcating areas where application of a particular nutrient is needed for profitable crop production (Raj kumar *et al.* 2016). Since, no systematic information is yet available on the status of sulphur in soils of Agra district of Uttar Pradesh. Therefore, present investigation was undertaken to delineate the status of sulphur in soils of Agra district of Uttar Pradesh. GPS based 108 surface soil samples (0-15 cm) were collected covering all block of the district Agra of Uttar Pradesh during October and November 2017. The soil samples were analysed for their physico-chemical properties by adopting standard methods (Jackson, 1973). Total and available sulphur were extracted with perchloric acid and 0.15% calcium chloride solution, respectively. The amount of sulphur in these extracts was determind turbidimetrically (Chesnin and Yien, 1951).

Table 1: Physico-chemical properties and status of sulphur in Agra soils

Soil characteristics	Range	Mean
pH	7.5 – 9.0	-
EC (dSm^{-1})	0.10 – 0.38	0.21
Organic carbon (g kg^{-1})	2.5 – 5.7	3.6
Total sulphur (mg kg^{-1})	75.0 – 155.0	110.0
Available Sulphur (mg kg^{-1})	6.5 – 20.0	12.5
Available S/Total S X 100	7.0 – 19.0	11.0

*Significant at 5% level, **Significant at 1% level*

The total sulphur in soils of Agra district ranged from 75.0 to 155.0 mg kg^{-1} with an average value of 110.0 mg kg^{-1}. These results are fairly comparable to those reported by Singh (2015) and Singh and Yadav (2017). Such variations might have been due to difference in local factors in relation to soil genesis, soil-climate conditions including light texture and cropping system. On the whole, the low values of total sulphur in these soils may be ascribed to low organic carbon content and coarse texture of the soils. The total sulphur had significant and positive relationship with EC and organic carbon (Singh 2015). The available sulphur content in the soils ranged from 6.5 to 20.0 mg kg^{-1} with a mean value of 12.5 mg kg^{-1} (Table 1). Similar results were reported by Singh (2017). The available sulphur deficiency was observed in soils of Agra district. The sulphur deficiency was found to the extent of 42.0 %.

Table 2: Coefficient of correlation ('r' value) between physico-chemical properties and status of sulphur

Soil characteristics	Total	Available
pH	-0.13	-0.21
EC (dSm^{-1})	0.25*	0.39*
Organic carbon (g kg^{-1})	0.44**	0.65**

The sulphur deficiency might be due to intensive cropping, limited use of organic manure and no use of sulphur containing fertilizer by the farmers. Similar results were reported by Dixit (2014) in Lalitpur soils and Singh (2017) in Allahabad soils. Available sulphur was found to have significant and positive relationship with EC and organic carbon as reported by Dixit (2014) and Singh (2015). In soils of Agra, available S constituted, on an average, of 11.0 per cent of total sulphur. Similar results were reported by

(2015). Available S had significant and positive relationship with total sulphur ($r=0.65^{00}$). Similar relationship was observed by Singh (2015).

REFERENCES

Chesnin, L.and Yien, C. H. (1951) Turbidimetric determination of available sulphur. *Proceedings of Soil Science .America.* **14:**149-51

Dixit, H.C. (2014) Status of sulphur and zinc in soils of Lalitpur district of Uttar Pradesh. Annals of Plant and Soil Research 16 (3): 273-274

Jackson, M.L. (1973) Soil Chemical Analysis Prentice Hall of India Private Limited, New Delhi

Raj Kanwar, B., Basumatary, A. and Barua, M.G. (2016) Forms of sulphur and their relationship with soil properties in soil of Jorhat district of Assam. *Annals of Plant and Soil Research* **18** (2): 127-132.

Rajendiran, S., Dotania, M.L., Vassanda coumar, M., Sinha, S., Kundu, S., Srivastava, S., Tripathi, A.KSaha, J.K. and Patra, A.K. (2018) Evaluation of soil fertility status of Alipur: A most backward tribal district of Madhya Pradesh, India. *Annals of Plant and Soil Research* **20** (1):16-21

Singh, R and Yadav, S (2017) Status of available sulphur and micronutrients in soils of Unnao district of Uttar Pradesh. Annals of Plant and Soil Research 19(1):124-126.

Singh, R. (2017) Status of available sulphur and micronutrients in soils of Allahabad, Uttar Pradesh. *Annals of Plant and Soil Research* **19** (2): 237-239

Singh, S. (2015) Forms of sulphur in relation to the soil properties under pearl millet cultivation in soils of Agra, Uttar Pradesh. *Annals of Plant and Soil Research* **17** (4): 362-365.