

## DISTRIBUTION OF DTPA-EXTRACTABLE MICRONUTRIENT IN *VERTISOL* OF DHAMTARI BLOCK UNDER DHAMTARI DISTRICT IN CHHATTISGARH

Baby Vaisnow, S.S. Sengar, G.K. Jatav, Tekchand Patel and R.K. Bhagat

Department of Soil Science and Agricultural Chemistry,  
Indira Gandhi Krishi Vishwavidyalaya, Raipur, Chhattisgarh, 492012  
Email: gouravjatav143@gmail.com

**Abstract:** Evaluation of the soil fertility status of *Vertisol* group of Dhamtari block of Dhamtari district in Chhattisgarh was undertaken during 2009-10. Grid based (GPS) surface (0-15 cm) soil samples by systematic survey were collected from 69 villages in Dhamtari block in such that each 10 ha area represented one sampling point and total 1450 soil samples covering all soil types out of this, 516 samples were identified from *Vertisol*. These samples were analyzed for pH, EC, organic C and DTPA-extractable Zn, Cu, Fe, Mn. The pH (soil reaction) varied from 4.70 to 7.50 with the mean value 5.89, EC ranged from 0.05 to 0.37 with the mean value 0.13 dS m<sup>-1</sup>. The variation in organic C content in sampled soils was from 0.23 to 0.83 with the mean value 0.44 %. DTPA-extractable Fe, Mn, Cu and Zn status were recorded as 4.54 to 68.70 (30.18 mg Fe kg<sup>-1</sup>), 3.72 to 59.58 (26.08 mg Mn kg<sup>-1</sup>), 0.2 to 8.78 (2.79 mg Cu kg<sup>-1</sup>) and 0.06 to 3.34 (0.68 mg Zn kg<sup>-1</sup>), respectively. Soil pH showed significant and negative correlations with DTPA-extractable Fe, Mn, Cu and Zn. EC exhibited significant and negative correlated with DTPA-extractable Mn, Cu and Zn. The organic C showed negative relationship with DTPA-extractable Fe, Mn, Cu and Zn.

**Keyword:** DTPA-Extractable Micronutrient, *Vertisol* and Fertility status

### REFERENCES

- Black, C.A.** (1965). Method of soil analysis American Agronomy Inc., Madison, Wisconsin, USA. pp.131-137.
- Goovaerts, P.** (1998). Geo-statistical tools for characterizing the spatial variability of microbiological and physico-chemical soil properties. *Biol. Fertil. Soil.* **27**: 315-334.
- Katyal, J. C. and Randhawa, N. S.** (1983). In *Micronutrient F.A.O. Fertilizer and Plant nutrition Bulletin* No. 5, Rome. 92.
- Kumar, Rakesh., Sarkar, A. K., Singh, K.P., Agrawal, B.K. and Karmakar. S.** (2009). Appraisal of available Nutrient Status in Santhal Paraganas Region of Jharkhand. *Journal of the Indian Society of Soil Science.* **57** (3): 366-369
- Lindsay, W.L. and Norvell, W.A.** (1978). Development of DTPA soil test for zinc, iron, manganese and copper. *Soil Science. Society of America Journal.* **42**: 421-428
- Meena, H. B., Sharma, R. P. and Rawat, U. S.** (2006) Status of Macro and Micronutrients in some soils of Tonk District of Rajasthan. *Journal of the Indian society of soil science.* **54**(4): 508 -512.
- Mongia, A.D. and Bandyopadhyay, A.K.** 1993. Soil nutrients under natural and planted forest in Island ecosystem. *J. Indian Soc. Soil Sci.* **42** (1): 43-46.
- Nazif, W., Perveen, S. and Saleem, I.** (2006). Status of micronutrients in soils of district Bimber Azad Jammu and Kashmir. *Journal of Agricultural and Biological Science.* **1**(2), 35-40.
- Piper, C.S.** (1967). Soil and Plant analysis. *Inter science publisher Inc.*, New York.
- Rajeswar, M., Rao, C. S., Balaguravaiah, D., and Khan, M. A. A.** (2009). Distribution of Available Macro and Micronutrients in Soils Garikapadu of Krishna District of Andhra Pradesh. *Journal of the Indian society of soil science.* **57**(2), 210-213.
- Rathore, G. S., Khamparia, R. S., Gupta, G. P., Dubey, S. B., Sharma, B. L. and Tomar, V. S.** (1995). *Twenty five years of micronutrients research in soils and crops of Madhya Pradesh.* Department of Soil Science and Agricultural Chemistry, J.N.K.V., Jabalpur.
- Sen, P., Majumdar, K. and Sulewski, G.** (2008). Importance of spatial nutrient variability mapping to facilitate SSNM in small land holding systems. *Indian J. Fert.* **4**(11): 43-50.
- Sharma, Y. K. and Pal, B.** (2001). Status of nutrient in soils and vetiver roots. *Ann. Pl. Soil Res.* **3** (1), 137-139.
- Sharma, J.C. and Chaudhary, S.K.** (2007) Vertical distribution of micronutrient cations in relation to soil characteristics in lower Shiwaliks of Solan district in North-West Himalayas. *J. Indian Soc. Soil Sci.* **55**, 40-44.
- Shukla, U.C. and Gupta, B. L.** (1975). *J. Indian Soc. Soil Sci.* **23**: 357-360.
- Venkatesh, M.S., Majumdar, B., Kumar, K. and Patiram** (2003). Status of micronutrient cations under various land use systems of Meghalaya. *J. Indian Soc. Soil Sci.* **51**, 60-64.
- Walkley, A. and Black, C.A.** (1934). An examination of the degtjareff method for determining the soil organic matter and a proposed modification of the chromic acid titration method. *Soil Sci.* **37**: 29-38.
- Yadav, R. L., and Meena, M. C.** (2009). Available Micronutrients status and their relationship with soil properties of Degana soil series of Rajasthan. *Journal of the Indian Society of Soil Science.* **57**(1), 90-92.