

# SOIL FERTILITY STATUS OF MAJOR NUTRIENT IN VERTISOL OF DHAMTARI BLOCK

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:** The present investigation entitled “Evaluation of soil fertility status in *Vertisol* of Dhamtari block, under Dhamtari district in chhattisgarh.” was carried out for soil fertility evaluation during 2009-10 and analyzed for nitrogen, phosphorus and potassium content for delineation the fertility status in *Vertisols* in relation to salient physicochemical characteristics. There was Grid based surface (0-15 cm) soil samples by systematic survey were collected from 69 villages in Dhamtari block where 516 samples were identified from *Vertisol*. The available phosphorus and potassium was negative but non-significant correlation showed with soil pH and the positive but no significant correlation with nitrogen, the pH was positively and significant correlated with electrical conductivity. The positive and significant correlation observed between organic carbon and nitrogen. The organic carbon showed the negative and non-significant correlation with phosphorus and potassium. The nitrogen, phosphorus and potassium showed no significant correlation among them. After evaluation found as the status of available nitrogen in *Vertisols* were found to be low nitrogen status, available phosphorus found low to high and available potassium content generally found medium to high and only 1.75 percent soil samples tested low in available potassium. The nutrient index with respect to available nitrogen, phosphorus and potassium were also calculated on village basis. Four categories of soil fertility viz. Low- Low- Low (LLL), Low-Low-Medium (LLM), Low-Medium-Medium (LMM) and Low-Medium-High (LMH) were observed in *Vertisol* of Dhamtari Block.

**Keywords:** fertility status, major nutrients, *Vertisol*

## REFERENCES

- Black, C.A. and Evans, D.D.** (1965). *Method of soil analysis*. American Society of Agronomy, Madison, Wisconsin, USA. 131-137.
- Bray, R.H. and Kurtz, L.T.** (1945). Determination of total, organic and available forms of phosphorus in soils. *Soil Science*. **59**, 39-45.
- De Datta, S.K. and Buresh, R.J.** (1989). Integrated Nitrogen Management in irrigated Rice .Advances in Agronomy **10**: 143-169.
- Jackson, M.L.** (1967). *Soil Chemical Analysis*, prentice Hall of India Pvt. Ltd., New Delhi, 205.
- 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.
- Kumar, P., Sharma, S. P. and Sharma, P. D.** (1995). Distribution at N, P and K in Soan river valley soils of lower Shiwaliks. *Journal of the Indian Society of Soil Science*. **43**(3): 360-364.
- Olsen, S.R.,** (1953). Inorganic phosphorous in alkaline and calcareous soils in W.H. Pierre and A.G. Norman (ed. *Soil and Fertilizer phosphorous*), American Society. Agronomy. Madison Wis., *Agronomy* **4**, 81-122.
- Olsen, S.R., Cole, C.V., Watanabe, F.S. and Dean, L.A.** (1954). Estimation of available phosphorus in soils by extraction with sodium bicarbonate. *United State Department of Agriculture, Circular*, **19**, 939.
- Piper, C.S.** (1950). *Soil and Plant analysis. Inter-Science Publication.*, 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.
- Sharma, P.K., Sood, Anil, Setia, R.K, Tur, N.S., Mehra, Deepak and Singh, Harpinder** (2008). Mapping of macronutrients in soils of Amritsar district (Punjab) - A GIS approach. *J. Indian Soc. Soil Sci.* **56**(1):34-41
- Sharma, and Bhandari, A.R.** (1995). Mineral nutrient status at apple orchards in Himachal Pradesh . *Journals of Indian society of soil science*. **42** (2), 236-241.
- Sood, Anil., Patel, L.B. and Sharma, P.K.** (2003). N, P and K Status of Sub Mountainous Tract of Punjab. *Journal of the Indian Society of Soil Science*, **19**, 33- 40.
- Subbiah, B.V. and Asija, G.L.** (1956). A rapid procedure for the determination of available nitrogen in soils. *Current Science*, **25**, 259-260
- Thangaswami, A., Naidu, M.V.S., Ramavatharam, M. and Raghavareddy, C.** (2005). Characterization, classification and evaluation of soil resources in Sivagiri Micro-watershed of Chittoor District in Andhra Pradesh for sustainable land use planning. *Journal of the Indian Society of Soil Science*. **53**, 11-21.
- Walkey, A., and Black, C.A.** (1934). An examination of the degtjareff method for detemining the soil organic matter and a proposed modification of the chromic acid titration method. *Soil Science*. **37**, 29-38.