

Chemical properties and micronutrient status of some soils of Ausa tahsil of Latur, Maharashtra

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ABSTRACT

Studies were conducted to know the status of available micronutrient in relation to chemical properties in soils of Ausa tahsil of Latur district. For this purpose 100 surface soil samples were collected from 20 villages. The data show that these soils were neutral to alkaline in reaction, safe in EC, low to medium in organic carbon, and non-calcareous to calcareous in nature. Considering soil nutrient index value these soils were low in Zn and high in respect to Fe, Mn and Cu. Data show that available Zn was significantly and positively concluded with EC (0.20*) and O.C. (0.28*). Fe had significant negative relationship with pH (-0.47*) and CaCO_3 (-0.32**) while Mn possessed significant negative correlation with pH (-0.33**) and CaCO_3 (-0.36**) and significant positive with O.C. (0.36**). Copper did not exhibit significant correlation with chemical properties.

Key words : Available Zn, Fe, Mn, Cu and soil.

The chemical properties of soils play an important role in determining the retention, and availability of nutrients in the soils. The nutrient supply in soils is depends on the level of organic matter, calcium carbonate, degree of microbial activity, change in pH, types and amount of clay and status of soil moisture (Zende, 1984). Maharashtra are clayey in texture, neutral to alkaline in reaction, low to medium in organic carbon and non-calcareous to calcareous in nature (Gajbe *et al.*, 1976). Further Malewar (1994) reported that large area of Maharashtra are under Zn and Fe deficiency. Deficiency of Zn, Mn and Cu is spreading in soils at faster rate due to intensive cropping, imbalance fertilizer use and lack of efficient management. Hence, it is important to maintain soil health for sustainable productivity, food security and increasing agricultural production for multiple demands against fast mounting pressure on limited soil resource base. Therefore, the present study was conducted to study the status of micronutrients available in relation to some chemical properties.

MATERIALS AND METHODS

Total 100 samples were conducted from 20 villages of Ausa tahsil (5 samples from each village) during the year 2006-2007. The processed soil samples were analyzed for their chemical properties as per standard methods suggested by Jackson (1978). The available Zn, Fe, Mn and Cu were determined by Lindsay and Norvell (1978) method.

Soil nutrient index was calculated as per formula given by Ramamurthy and Bajaj (1969). The simple correlation of available micronutrients with chemical

properties were worked out as per standard method given by Panse and Sukhatme (1967).

RESULTS AND DISCUSSION

Chemical properties of soils :

The data presented in Table 1. and Fig. 1 show that pH of soils from Ausa tahsil were neutral (20%) to alkaline (80%) in nature which varies from 7.05 to 8.9 with an average value of 8.07. The lowest pH was recorded in soils of Jau village (7.05) whereas, highest in Jawala village (8.95). The relative high pH in these soils might be due to the presence of high degree of base saturation. Similar findings were reported by Gajbe *et al.* (1976). The EC values of these soils were safe (99 %), ranging from 0.17 to 1.34 dsm^{-1} with an average value of 0.32 dsm^{-1} . Lowest EC (0.17) was recorded in soils of Selu, Bhada and Kininavre villages and highest (1.34) EC was recorded in soils of Kininavre village.

The low EC in these soils might be due to proper management of soil and thereby leaching of salt takes place from surface to sub-surface. These results were in confirmatory with the results reported by Padole and Mahajan (2003).

Organic carbon content ranged from 0.18 to 0.87 per cent with mean value of 0.51 per cent. The lowest organic carbon content was observed in soils of Andura village while highest organic carbon content was recorded in village Lodga. The above value shows that the soils of Ausa tahsil were low (43%) to medium (53%) in organic carbon content. The variation in organic carbon content in these soils may be ascribed to high temperature of Latur district (39°C) which is responsible for hastening the rate