Dynamics of zinc fractions in calcareous soils of Saurashtra region of Gujarat

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ABSTRACT
Soils of Saurashtra region are comprised of 10 soil groups and majority of soils are medium black calcareous in nature. One hundred sixty nine surface soil samples were collected (0-15 cm) at an interval of 10 years and different fractions of Zn were determined. The WS, EF and AF of Zn showed an increasing trend after a span of 10 years, while RF decreased. During 1990, predominant components were DTPA available and RF, while after decade during 2000, the EF was found predominant followed by DTPA available form. The total Zn content in soils of Saurashtra region increased, while residual forms of Zn decreased marginally. The per cent available and total available Zn also increased after 10 years.

RESULTS AND DISCUSSION

Water soluble-Zn (WS):

The data presented in the Table 1 showed that water soluble form of Zn, on an average, increased after a decade from 0.187 to 1.2 ppm. This increase was invariably in all the soil group of Saurashtra. The highest value of water soluble Zn was recorded in soil group SBBT (1.484 ppm) and MBTB (3.025 ppm), while the lowest values were recorded in SBLS (0.0 ppm) and DBTB (0.062ppm) both in 1990 and 2000, respectively. The increase in water soluble Zn content can be attributed to the possibility of addition of Zn by the farmers, and the inter conversion of different forms of Zn (Randhawa and Singh, 1995).

Exchangeable-Zn (EF):

The results revealed overall increase in exchangeable form of Zn in the soil group SBSS, MBTB, RAD, MBLS and DBTB, while in rest of the soil groups it marginally increased and there by exhibiting a constant status (Table 1). The highest mean values were found in stony (2.28 ppm) and SBSS (12.37 ppm), while lowest in RAD (0.15 ppm) and CD (0.17 ppm) soil group during the years 1990 and 2000, respectively. The increase in exchangeable form of Zn over time can be attributed to the inter-conversion from the reducible form of zinc.

DTPA available-Zn:

Most of the soil groups showed in a span of 10 years, DTPA available Zn status in soil increased (Table 1). The highest increase was recorded in soil group MBLS (0.519) followed by SBTB, CS, SBSS and DBTB. The soil group