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How much zinc is accumulated in soil microbial biomass?

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To our knowledge, there is no optimized and calibrated method to determine the amounts of Zn in soil microbial biomass (Zn_{mic}). We developed a chloroform fumigation-extraction (CFE) procedure for measuring Zn_{mic} . Ten samples of surface soils (0–15 cm) were collected from calcareous soils of central Iran. To determine the efficiency of CFE for Zn_{mic} the soils were spiked with bacterial or fungal suspensions, separately. The known concentration of Zn in the inoculum served as a basis for Zn_{mic} conversion factor calculation. Spiked and un-spiked soil samples were fumigated and the amount of Zn released from the microbial suspensions was calculated by the difference in Zn concentration between spiked and un-spiked samples. Microbial biomass Zn conversion factor (K_{Zn}) was 0.33 based on the relative distribution of the soil bacterial and fungal biomass. The Zn_{mic} varied from 90.9 to 1363.6 $\mu\text{g kg}^{-1}$ with a mean value of 599.9 $\mu\text{g kg}^{-1}$. Compared to the amounts of DTPA-extractable Zn in the calcareous soils (680 to 2380 $\mu\text{g.kg}^{-1}$), it is obvious that the Zn_{mic} is a significant Zn pool in the calcareous soils and cannot be neglected.

Biography

Farshid Nourbakhsh has completed his PhD from Isfahan University of Technology, Isfahan Iran. His PhD thesis has been performed in Agriculture Canada, He is currently Professor of Soil Microbial Ecology at the Dept. of Soil Sciences, Isfahan University of Technology. He has published more than 50 papers in reputed journals. The details of his research interests and activities are available in google scholar.

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