RESEARCH ARTICLE

DISTRIBUTION OF IRON FRACTIONS AND THEIR RELATIONSHIP WITH SOIL PROPERTIES IN DIFFERENT SOIL SERIES OF HARYANA

Rakesh Kumar* and P.S. Sangwan

Department of Soil Science, CCS Haryana Agricultural University, Hisar-125 004
Email: rakeshsheoran143@gmail.com

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Abstract: A laboratory experiment was conducted to determine the distribution of iron fractions and their relationship with soil properties in different soil series of Haryana. Surface soil samples (0-15 cm) were collected from each soil series using Global Positioning System (GPS). The soil samples were processed and analyzed for the determination of total Fe and Fe fractions (exchangeable, organic bound, calcium carbonate bound and residual). Iron fractions were analyzed by sequential extraction procedure. Results showed that total amount of the Fe ranged from 689.47 to 913.50 mg kg^{-1} with a mean value of 813.74 mg kg^{-1} in soil series of Aeolian Plain while it ranged from 979.18 to 1560.56 mg kg^{-1} with an average value of 1133.00 mg kg^{-1} in soil series of Alluvial Plain. In soil series of Aravali Hills, the total Fe content was 972.44 mg kg^{-1}. Iron associated with Ex- and $CaCO_3$- fractions was found to represent a minor fraction (< 0.40%) of total soil Fe. On an average OM-Fe was less than 0.74%. The majority of the soil Fe was found to be associated with residual fraction which was nearly 98% of total soil Fe. Iron as percentage of total soil Fe in different fractions was in the order: Res- > OM- > $CaCO_3$- ~ Ex- in Aeolian Plain, Alluvial Plain and Aravali Hills soils. Ex-Fe fraction was positively and significantly correlated with soil organic carbon. OM-Fe fraction showed positive and significantly correlation with EC, OC, CEC and clay. Results reflected that soil properties influence the distribution of different Fe fractions in soils.

Keywords: Sequential extraction, Organic bound, Calcium carbonate bound, Residual

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*Corresponding Author