STUDY OF SOME FERTILITY CHARACTERISTICS OF IRON TOXICITY AFFECTED RICE SOILS IN SRI LANKA

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A field survey and a laboratory study were carried out to evaluate some fertility characteristics in iron toxic rice soils in Low Country Wet Zone of Sri Lanka. The parameters considered were pH, redox potential, dry weight of mud, exchangeable Na^+,K^+,Ca^{++},Mg^{++}, total exchangeable bases (TEB), base saturation, cation exchange capacity (CEC), organic carbon, active iron and active manganese.

Almost all the bronzed fields were found adjacent to highlands. Brown scum (precipitated ferric hydroxide) was a common feature and impeded drainage resulted in high accumulation of iron. Bronzing susceptible soils observed were Histosols, Ultisols and Entisols. Among the Histosols were highly susceptible. Typical symptoms of bronzing and partially filled or empty grains were observed in entoxified plants. Results show a significant increase of active iron content with the increase of organic matter, probably due to formation of organo-iron complexes. With the decrease of Eh, an increase of active iron in soils having an organic carbon content higher than 5% reflect the occurrrence of high Fe (11) under low redox status. Further, Sri Lankan iron toxic soils exhibit low pH values, CEC, exchangeable K^+,Ca^{++},Mg^{++}, TEB, base saturation compared with the properties of fertile and average of rice soils.