# EFFECT OF INCORPORATION OF ORGANIC MATERIALS ON REDOX POTENTIALS IN SOILS

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The rate and the magnitude of soil reduction are influenced by nature and the quantity of organic matter (Ponnamperuma, 1972). In this investigation, redox potentials in an Alfisol and an Entisol mixed with coir dust, saw dust and paddy husk were measured daily.

Organic materials were separately mixed with 4 kg of each soil at 4t and 8t per hectare levels. Each pot was installed with a Pt-electrode bridged by a KCl/Agar column. Untreated soils were controls. Each treatment was triplicated. Soils were first kept submerged with distilled water and after stabilization of the potentials those were reaerated.

There was a rapid drop in redox potentials from around 600 mV to -100 mV in all pots within 5 days subsequent to submergence. Within another 15 days these values reached the lower most level around -200 mV which lasted until reaeration. There were hardly differences between treatments. However, the rate and the level of increase in controls by aeration were slightly higher than in the treated soils. The immediate increase by aeration in all treatments were between 350 - 450 mV.

Results showed that the redox potentials were much governed by submergence. Amounts and forms of organic materials hardly influence the potentials apparently due to restricted availability of carbon for microorganisms compared to most other materials. (This work was supported by NARESA)

References:

Ponnamperuma, F.N. (1972) : The chemistry of submerged soils, Advances in Agronomy, Vol. 24: 29-88