B-60: Effect of incorporation of green manure on soil reaction and pH buffering

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An incubation experiment was conducted in the laboratory to study the effect of incorporation of Tithonia and Gliricidia on pH buffering and soil reactions in a Non Calcic Brown soil (NCB) and a Red Yellow Podzolic soil (RYP) of Sri Lanka. The duration of the experiment was 8 weeks. Green manures were incorporated to soils at a rate representing 4 ton/ha. Incubation was done in dark plastic bottles with 200 g of soil. Moisture of the soil was maintained at 60% water holding capacity. The treatments tested were soil alone, soil + Gliricidia and soil + Tithonia. pH and buffer curves for soils were monitored at 1st, 2nd, 4th, 6th, 8th, week.

RYP soil showed a higher buffering capacity than the NCB soil and it was increased by addition of green manures. Buffering capacity also increased with time. Tithonia treatment showed higher increase of buffering power than gliricidia treatment.

Saturation of acidic cations was higher in RYP than in NCB. RYP had higher amounts of Al^{+++} ions in soils solution. Added green manure affected the saturation of acidic cations in NCB but not in RYP.

This experiment showed that pH buffering capacity of soils and saturation of acidic cations of soils were affected by green manures. The degree of increment depends on soil type, type of green manure and time of incubation.