

**IMPACT OF LEACHING WITH ORGANIC
AMENDMENTS ON RECLAMATION OF SALINE SOIL**

BY

MISS. MIRTHHIKA THANGARAJAH



FACULTY OF AGRICULTURE

EASTERN UNIVERSITY

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ABSTRACT

Soil degradation caused by salinization is of great concern in current concept because it reduces potential of agricultural lands. It usually leads to the deterioration of soil properties like structure, water retention, porosity, electrical conductivity, sodium adsorption ratio and soil flora and fauna and consequently causes losses in both qualitative and quantitative in agricultural production. A leaching column study was conducted at soil science laboratory, Eastern University, Sri Lanka during March 2013 to June 2013 to study the impact of leaching with organic amendments on reclamation of saline soil. Farmyard manure (FYM), *Gliricidia* (G), partially burnt paddy husk (PBPH) and tank silt (TS) were used as soil amendments. All amendments were applied alone (4 treatments) and combination with farmyard manure (3 treatments) at the rate of recommendation by previous studies and Department of Agriculture, Sri Lanka. These eight treatments including control (simple leaching) were replicated three times in a complete randomized design (CRD). The amendments were added to saline soil which was collected from Vaharai area, Batticaloa having electrical conductivity (EC) = 13.1 dSm^{-1} and soil pH = 7.8. Treatments were mixed with soil, filled in columns, and then incubated in room temperature for three weeks. After incubation period, known amount of distilled water was added to each column in two weeks interval and four leachates were collected individually. Then, these were measured for EC, pH nitrate, potassium, manganese, copper and iron content of leachate. After whole leaching, physicochemical properties of soil were measured. The results revealed that leaching with organic amendments significantly improved the soil fertility of saline soil as well as reduced the soil salinity. Integration of farmyard manure with tank silt is more effective in terms of reducing electric conductivity in saline soil. Tank silt was the second best amendment.

At the end of experiment reduction in soil pH was observed. That was ranged from 7.32 -7.55 in amended soil than control (7.72). Highest cat-ion exchange capacity was recorded in farmyard manure with tank silt amended soil. *Gliricidia* and FYM supply the ample amount of nutrients and most amounts of such nutrients washed through leaching. Although, tank silt supply low amount of nutrients, it retain the nutrients in saline soil at higher amount compared with other treatments. Sole Tank silt, FYM and their combination efficiently improved the physical properties of saline soil such as bulk density, porosity and moisture content. Combination of FYM with tank silt is the best amendment in reclamation of saline soils. Because FYM supply the nutrients and tank silt retain the nutrients and both improved the properties of saline soil.

Key words: Electrical conductivity, Salinity, Amendments

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