

## Changes in Soil Properties due to Tillage by Four Wheel Tractor Mounted Tillage Implements

\*Luxshana, T., Kannan N. and Prabhakaran, M.

Department of Agricultural Engineering, University of Jaffna, Sri Lanka

\*Corresponding E-mail: [rajahshana@yahoo.com](mailto:rajahshana@yahoo.com)

Soil bed preparation plays a major role in developing productive rhizosphere, which influences yield of plants significantly by improving suitable soil root zone environment. Hence, an attempt has been made to investigate the effect of different land preparation activities on some selected soil properties such as bulk density, particle size distribution, penetration resistance, compaction, width of cut and depth of cut. Experiment was carried out with four wheel tractor driven land preparation implements such as disc plough, rotavator and tine tiller. The treatment combinations were disc plough, rotavator, tine tiller, combination of disc plough with rotavator and combination of disc plough with tine tiller in normal moisture condition. Effect of these operations in selected soil properties were investigated by standard methods and procedures. Fuel consumption was measured with total time for the above experiment to evaluate the economic viability of the tillage treatment. Results of this experiment help to find the tillage treatment with the positive soil physical properties to promote plant growth and development with an economic cost that is affordable for farmers. Results revealed that impact of treatment rotavator on bulk density, penetration resistance and fuel consumption is highly significant compared to other treatments. In case of depth of cut treatment disc plough is highly significant. Therefore, it can be concluded that treatment rotavator is economical with positive soil conditions. However, continuous evaluation of these treatments with different crops is essential to introduce the best tillage treatment to farmers.

**Key words:** Four wheel tractor, mounted implements, soil physical properties, tillage