

Effect of Two Wheel Tractor Mounted Tillage Implements on Selected Soil Properties

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Soil bed preparation is a major operation to develop productive rhizosphere which influences yield of plants significantly. Land preparation can be carried out by different means based on the types of the root zone of the crops. In Sri Lanka, two different land preparation activities, primary and secondary, are done to cultivate various crops. However, there are many factors influencing the efficiency of each land preparation method. Hence, an attempt has been made to investigate the effect of different land preparation activities on some selected soil physical properties such as penetration resistance, compaction, width of cut and depth of cut. An experiment was carried out with two wheel tractor driven land preparation implements such as mouldboard and rotavator. The treatment codes T1, T2 and T3 resemble mouldboard, rotavator and combination of mouldboard with rotavator, respectively, in two different moisture levels such as normal and saturation levels. The effect of these operations on selected soil properties was investigated by standard methods. Fuel consumption was measured with total time for the experiment to evaluate the economic viability of the tillage treatment. The results of this experiment help find the tillage treatment with the positive soil physical properties to plant growth and development with an economic cost that is affordable for farmers. Results of this study revealed that impact of treatment T3 on penetration resistance and width of cut under both moisture levels is highly significant compared to other treatments, while, treatment T1 was highly significant for depth of cut. Therefore, it can be concluded that treatment T3 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.

Keywords: Physical properties, soil bed, tillage, two wheel tractor