

**EFFECT OF DIFFERENT TILLAGE OPERATIONS ON SOME SELECTED  
SOIL PHYSICAL AND HYDRAULIC PROPERTIES UNDER MAIZE  
CULTIVATION**



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## ABSTRACT

Farmers in Batticaloa district use different tillage practices. Most of the farmers perform tillage operations without being aware of the effect of tillage operations on soil physical properties and crop responses. Therefore, a field study was conducted during May - July, 2015 on loamy sand soil at the Agronomy Farm of Eastern University to compare the effect of different tillage practices on some selected soil physical properties under maize cultivation. The experiment was arranged in a split plot design with three replications where the experimental variables were two types of implements (mould board plough and rotovator) as main plot factor and the speed of operation of the implements such as 0.45, 0.65 and 0.85 m/s as sub plot factors. Effects of tillage implements on soil moisture content, bulk density, porosity, hydraulic conductivity, field capacity of implements and seedling emergence rate index (ERI) of maize were studied. Tillage implements had a significant effect on all soil physical properties, hydraulic conductivity, field capacity and ERI at  $P < 0.05$ . However, the soil moisture content and field capacity of implement were significantly affected by rotovator with an operating speed of 0.85 m/s. Compared with the other treatments, the tillage with rotovator treatment enhanced favorable soil conditions, such as decreased dry bulk density, increased soil moisture content, total porosity, hydraulic conductivity, field capacity and seedling ERI. The tillage plots with mould board plough produced comparatively less favorable soil conditions such as increased dry bulk density, decreased soil moisture content, total porosity, hydraulic conductivity, field capacity and seedling ERI. Therefore, under the soil and weather conditions of this experiment, the better tillage practice identified for improved soil properties is tillage with rotovator at an operating speed of 0.85 m/s.

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