

The effect of power losses for agricultural tractor on tractive efficiency

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Corresponding author:**Hussein Abbas Jebur****ABSTRACT:**

The present study was conducted to determine the effect of depths of plough at the farm by tractor on tractive efficiency and operation costs. The studied variables were two depths of plough (16-20 and 21-24cm), three equipment plough (disk, chisel and sweep) and five different forward speeds. The average soil moisture content was (18.61%) and the soil texture was found to be silt-clay. The study was focused on the rate of power losses, fuel consumption, pull ratio, tractive efficiency and operation costs. The experiment was carried out by using split-split plot with complete randomized block design, three replicates. The obtained results, for the range of tests, showed that the use of disk plough superposed the chisel plough and sweep plough, in recording lowest rate of fuel consumption (16.016 l/h). While the sweep plough superposed the chisel plough and disk plough, in recording lowest rate of power losses (10.13 kW) and higher rate of tractive efficiency (75.17%). The forward speed (8.14 km/h) superposed in recording higher rate of pull ratio (0.482) and lowest rate of operation costs 23592 ID/ha. While the first forward speed (2.72 km/h) was superior on other forward speed in recording lowest rate both of fuel consumption (13.80 l/h) and power losses (1.99 kW), and higher rate of tractive efficiency (75.49%), in the meantime, the depths of plough (16-20cm) recorded lowest rate of fuel consumption (16.97 l/h), power losses (9.64 kW), operation costs 23903ID/ha and higher rate both of tractive efficiency (75.36%) and pull ratio (0.441).

Keywords:

Costs, Chisel, Plough, Power, Sweep.