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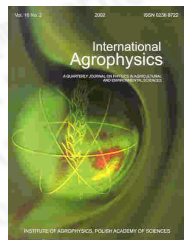
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Effects of tillage operation on soil properties from Pakdasht, Iran

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J. Massah , S. Noorolahi

Department of Agricultural Technical Engineering, Abouraihan Campus, University of Tehran, Tehran, Iran

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abstract Soil mechanics has of late, taken on a new significance as a field worthy of expended research and application. The basic problem encountered in this field is the determination of certain basic parameters and fundamental principles involved which facilitate a logical evaluation of the system. The characterization soil parameters are of great importance for determining the off-road vehicle performance and the rolling resistance of agricultural soils. One of the well-known methods for measuring the vehicle performance and mobility is that proposed by Bekker. In Bekker's equation k_c , k_j and n are pressure-sinkage parameters. Based on Bekker's model three types of terrains (plowed soil, disked soil and dirt road) were considered for determine the pressure-sinkage parameters. Hence a bevameter was developed that consisted of movable chassis, three rectangular plates and a slide gauge. Sigmaplot software was applied for plotting and graphical solution the Bekker's equation. Tests were replicated three times for each of the rectangular plates in each of the three types of terrains. Results identified that the type of tillage operation and soil bulk density affect the values of k_c and k_j parameters. However, the effect of soil bulk density on the value of n was not significant.

keywords bevameter, pressure-sinkage relationship, sinkage plates, soil properties