



ORIGINAL ARTICLE

THE EFFECT OF THREE DIFFERENT SPEEDS OF TWO TYPES OF PLOWS ON THE PERFORMANCE INDICATORS OF THE MECHANICAL UNIT

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Abstract: A field experiment was conducted in an agricultural field belonged to Al-Hussainiya district located in the Holy Karbala governorate, during the year 2021-2022 in a silty- clay soil, in order to study the effect of different speeds and types of plows on the performance indicators of the mechanical unit. The New Holand TD80 tractor was used in this experiment. The research included studying of two factors, the first factor composed of three levels of speed (2.65, 4.20 and 6.05) km.h⁻¹, which represented the main plots, the second factor composed of two types of plows (the inverting- moldboard plow and the inverting-disk plow), that represented the secondary plots. The percentage of slippage, practical productivity, field efficiency, and fuel consumption were all studied. The experiment was carried out using split plots in a Complete randomized block design with three replications. The results showed that the speed of 6.05 km.h⁻¹ exceeded in obtaining the highest rate of practical productivity of 0.28 hectares.hr⁻¹ along with the lowest rate of fuel consumption of 28.23 liters.ha⁻¹ and the highest rate of field efficiency of 58.08%, whereas the speed 2.65 km.h⁻¹ exceeded in obtaining the lowest slippage percentage of 8.02%. While, the moldboard plow outperformed the disc plow in terms of obtaining the lowest slippage percentage of 8.56%, the highest practical productivity of 0.21 ha.h⁻¹, the highest field efficiency percentage of 56.44% and the lowest fuel consumption average of 31.69 L.ha⁻¹. The results also showed that the speed 6.05 km.h⁻¹ along with using the inverted moldboard plow exceeded in obtaining the best interaction in all the studied traits.

Key words: Disk plow, Moldboard plow, Practical productivity, Fuel consumption.

Cite this article

K.H. Swain, K.Z. Amer and Sara Ali Muter (2022). The effect of three different Speeds of two types of Plows on the Performance Indicators of the Mechanical Unit. *International Journal of Agricultural and Statistical Sciences*. DocID: <https://connectjournals.com/03899.2022.18.315>