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Technical Evaluation Of A New Combined Machine For Seedbed Preparation

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Abstract : Field experiments were carried out on clay loam soil in split-split plots design at the experimental center, Faculty of Agricultural, Cairo University, Giza Governorate, Egypt in cooperation with National Research Center, Egypt. The aim of the investigation was to evaluate a new combined implement for seedbed preparation, concerning fuel consumption (F_{Con}), tractor wheel slip(S%), Actual Field Capacity (AFC), and Brake horsepower requirement (BHP) under the following circumstances: (1)Three different soil moisture content (SMC) at θ_1, θ_2, θ_3 (23, 18.2; 9.5%V/V), (2) Three different working forward speed (FS); S_1, S_2, S_3 (3.85, 4.69; 5.30 Kmh-1) and (3) Two plowing depth (PD), D_1, D_2 (15;25 cm). Data obtained were subject to statistical analysis to find the effects of the treatments and their interaction a ction on evaluation criteria. The differences in criteria among treatments were significant at the 5% level. The most important results was increasing of AFC of machine compared to the traditional method of preparing soil, the highest value of it was 1.98 fed/h compared to the traditional method 1.23 fed/h. Combined machine had lowest wheel slip percentage under different operating conditions, the minimum value of S was 5.39% . The results showed an decreasing in fuel consumption which the minimum value was 4.86l/h.

Keywords: Combined impelement, Seedbed preparation, Clay loam, Technical evaluation.

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