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Engineering Study on Controlling Broadcasting Machine Feeding Rate

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ABSTRACT

This study was carry out to cond**u**ct the laboratory and field performance of the pendulum broadcast spreader in term of field capacity, field efficiency, wheat grain rate (g/m^2) , wheat application rate per faddan, number of plant per matter square ,fuel consumption rate, slip ratio %, energy requirement, criterion cost and determine the optimum parameters affecting the performance the modified pendulum broadcast spreader.

Laboratory and field results indicated that: the performance of the modified broadcasting implement will be influenced by tractor forward speed, balls mass of governor, group of springs specification of pulling lever grain out, sprocket wheel transmission systems. The developed attained by adding unit transmission systems, controlling unit and group of spring specification of pulling lever which moving lever feeding disc in the towered to increase widely feeding out area or narrow according to increasing or decreasing speed of broadcasting implement.

The main result of the present study revealed that, the modified pendulum broadcast spreader implement is recommended to be use for broadcasting wheat grain and some other crops, because it fulfill the requirement of agronomy such as low application rate to 57.4 kg/fed, increasing actual field capacity, low cost, and reduced farmer effort with following parameters such as forward speed 4.5 km/h, balls mass of governor about 200 gram, spring specification index ratio of pulling lever about 10.92 and group of sprocket wheel transmission systems (37and18teeth) is recommended for broadcasting wheat grain using the modified implement.