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FIELD AND ECONOMIC STUDIES OF TRACTOR OPERATED MANURE SPREADER WITH REAR VERTICAL ROLLERS- A NEED BASED STUDY FOR ORGANIC FARMING APPROACH IN INDIAN AGRICULTURE

RAHUL BATTA, MAHESH KUMAR NARANG & RUPINDER CHANDEL

Department of Farm Machinery and Power Engineering, Punjab Agricultural University, Ludhiana, Punjab, India

ABSTRACT

In India, farmers are still following the traditional method i.e. a loaded trolley is moved in the field and stopped at regular intervals to unload a small amount of manure in the form of heap and the heaps are later spread manually. This traditional method results in uneven spreading and undefined rate of application. Mechanized application of farm yard manure is very important to boost the concept of organic farming. But no mechanical means are available for spreading farm yard manure in India. In order to mechanize this operation a tractor operated solid manure spreader with rear vertical rollers was evaluated in the field. The moisture content of manure used for the operation varied from 30-40 % (w.b.) and its density varied from 430-480 kg/m^3. The machine loading capacity varied from 1.0-1.2 tonnes. The machine was operated at different forward speeds between 2.0 to 7.0 km.h^{-1} and at 1400, 1500 and 1600 engine rpm. The machine mean swath width varied from 2.3-4.0 m, mean field capacity varied from 0.11 to 0.55 ha.h^{-1} and mean fuel consumption varied from 5.35-7.80 l.h^{-1}. The manure mean application rate during field experiments varied between 10.58-36.37 t.ha^{-1}. The average saving in time for spreading manure with tractor operated manure spreader was 66.17 % and average saving of cost was 50.43 % as compared to traditional trolley method. Increasing of engine rpm and forward speed of tractor combinedly resulted in increase in field capacity of machine, increase in fuel consumption and decrease in manure application rate per unit area. The farm yard manure spreader can be a boon for organic farming and also it can provide a good employment opportunity for rural youth as this machine can be successfully run on custom hiring basis.

KEYWORDS: Farm Yard Manure, Rear Roller, Manure Spreader, Engine RPM, Fuel Consumption

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