

# Design, development and testing of tillage cart with cultivator and hook patella attachments

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Received : 10.01.2013; Revised : 14.09.2013; Accepted : 15.10.2013

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■ **ABSTRACT** : In order to improve the utilization of human and animal energy and to popularize the organic and animal farming for sustainable rural development through making animal farming more pleasant and comfortable, a prototype implement named Animal Drawn Tillage Cart (ADTC) was designed, developed and tested with two suitable attachments *i.e.* cultivator, and hook patella. The above attachments tested for preparation of seed bed with collecting and removing clogged debris by sitting on the cart. The unit was developed at the Faculty of Agricultural Engineering, IGKV, (CG) during year 2005. Both the attachments were tested in the inceptisol soil at different moisture (18 to 24%, db) and depth level (5 to 10 cm). Performance parameters with animal fatigue were observed. The draft and field capacity increased with the depth and number of tines, respectively. Average draft with the three tined cultivator and 11 tined hook patella were recorded 85 and 80 kg, field capacity about 0.9 and 1.0 ha/day, field efficiency 64 and 72 %, cost of operation 323 and 321 Rs./ha, respectively. In 4 hr continuously working the animal shown fatigue level (score 19) while operator reported negligible fatigue. The control lever functioned well and the unclogging of whole debris by pressing the foot lever and lowering/raising of implement achieved promptly through operating levers by sitting position. Additional saving of Rs412/ha in cost of operation was recorded over traditional local ploughing (Rs 734/ha), beside saving in time by 13.5 % AND SAVING IN ENERGY BY 163 mj/HA. The fabrication cost of animal drawn tillage cart (ADTC) with cultivator and hook patella attachments was found to be Rs. 8000/per set.

■ **KEY WORDS** : Tillage cart, Cultivator, Hook patella

■ **HOW TO CITE THIS PAPER** : Verma, Baljeet Bahadur and Mishra, B.P. (2013). Design, development and testing of tillage cart with cultivator and hook patella Attachments. *Internat. J. Agric. Engg.*, **6**(2) : 349-355.