व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या / **No. Imp-699/1691/2014**
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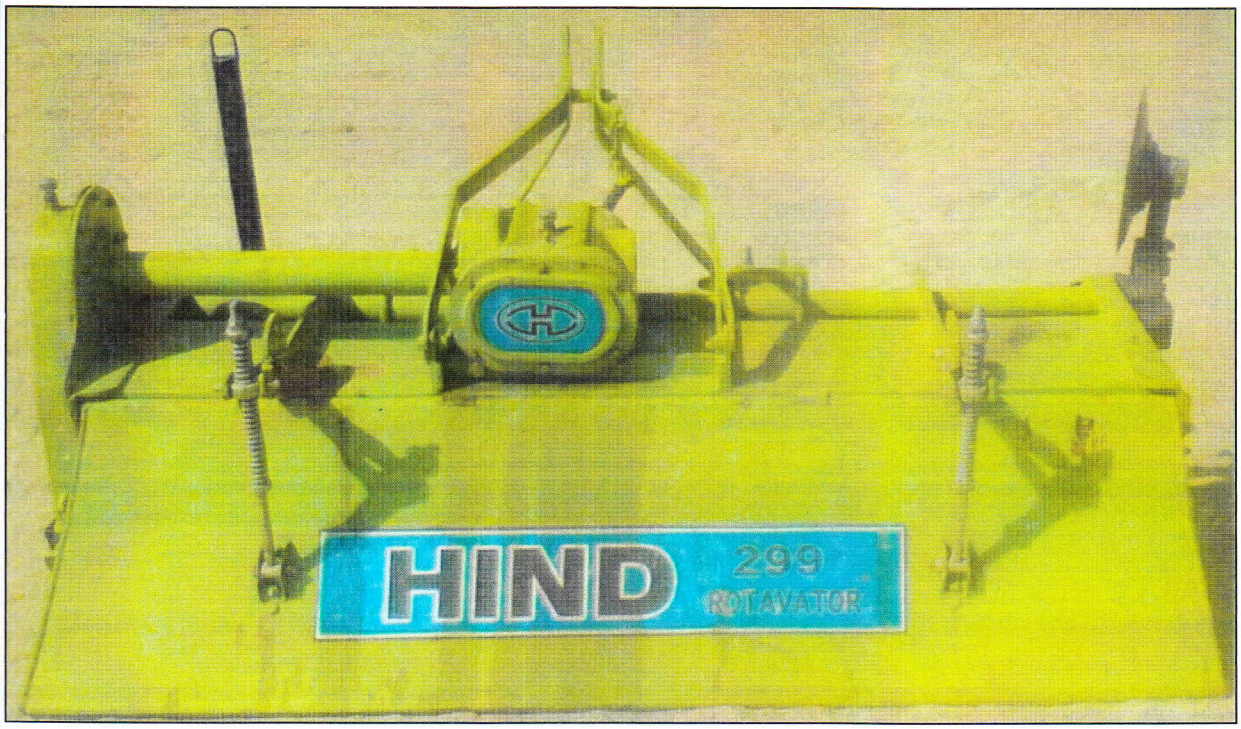

ROTAVATOR
"HIND-299"

सत्यमेव जयते

भारत सरकार
कृषि मंत्रालय
कृषि एवं सहकारिता विभाग)

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE
(DEPARTMENT OF AGRICULTURE & COOPEARATION)

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
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6. FIELD TEST

The field tests of the implement comprising of dry and wet land operations were conducted for 20.5 to 15.09 hours respectively to assess the performance of the implement. The details of tractor used for field operations are given in annexure-I.

The tractor pto speed was maintained at 540 rpm. The performance of implement is reported in Annexure-II and summarized in Table-3.

TABLE-3

Summary of field performance

Sl.No.	Parameters	Dry land operation	Wet land operation (puddling)
i)	Tractor used	Mahindra-555 DI, Arjun	Mahindra-605 DI, Arjun
ii)	Type of soil	Sandy loam	Clay loam
iii)	Av. Soil moisture, %	10.4 to 14.7	-
iv)	Depth of standing water, cm	-	5.46 to 8.94
v)	Field efficiency, %	71.4 to 87.9	-
vi)	Puddling Index, %	-	72.8 to 81.6
vii)	Av. Speed of operation, kmph	4.55 to 4.59	2.35 to 2.53
viii)	Av. Depth of cut, cm	9.3 to 9.4	-
ix)	Av. depth of puddle, cm	-	13.58 to 14.21
x)	Av. Working width, m	1.76 to 1.81	-
xi)	Area covered, ha/h	0.60 to 0.73	-
xii)	Time required for one hectare, h	1.37 to 1.67	-
xiii)	Fuel consumption		
	- l/h	5.0 to 6.0	3.70 to 4.0
	- l/ha	7.60 to 8.35	-

6.1 Rate of Work

6.1.1 Dry land operation

-The rate of work in sandy loam soil was recorded as 0.60 to 0.73 ha/h and the forward speed as 4.55 to 4.59 kmph.

-The time required to cover one hectare area was recorded as 1.37 to 1.67 h.

7. EFFECTIVENESS OF SEALINGS

After completion of field test in wet land operation for 15.09 hrs., the implement was dismantled for checking effectiveness of sealing provided against ingress of dust and water/mud in various sub-assemblies and also to check the condition of components of the rotavator.

Sl.No.	Location	Whether ingress of mud and/or water was observed
1.	Primary reduction gear box.	No
2.	Secondary reduction chain; drive	No
3.	Hub of rotor assembly	No

8. EASE OF OPERATION, ADJUSTMENTS & SAFETY

8.1 Propeller shaft is provided with safety bolt as its safety device.

8.2 The propeller shaft has telescopic sections with universal joints, to adjust the length of drive shaft, which is adequate.

8.3 Depth adjustment can be made by raising or lowering the skids.

8.4 Implement does not have provision to vary rotor shaft speed to cater to different soil and moisture conditions.

8.5 Operator has to get down from tractor to make adjustments in rotavator.

9. SOUNDNESS OF CONSTRUCTION

No breakdown occurred during 35.59 hrs of operation in the field.

10. COMMENTS & RECOMMENDATIONS

10.1 The dimensions of three point linkage of the implement partly conform to IS: 4468 (Part-I):1997. Standard three point linkage system should be used at regular production level.

10.2 It is recommended to have provision for change in rotor speed to suit wider range of soil and soil moisture conditions.

10.3 Maneuverability of tractor with rotavator and quality of work were observed to be satisfactory.

10.4 Dimensions of power input shaft of rotavator does not conform to IS:4931:1995. The shaft with specification comply with BIS standard under reference should be used at regular production level.

10.5 The hardness of hatchet blades in the edge portion and in the shank portion was 48 to 49 HRC against the requirement of 53 to 59 HRC (edge portion) and 37 to 45 HRC (on shank portion) as per IS:6690:1981. This calls for improvement at production level.

10.6 The percentage wear of hatchet blades on mass basis during field operation 35.59 hrs, ranged from 0.971 to 1.48% which is normal.

10.7 The percentage wear of hatchet blades on dimensional basis after field operation 35.59 hrs, ranged from 0.39 to 5.97 % and 1.74 to 7.88% respectively at edge and at 65 mm from edge.

10.8 The PTO power requirement of rotavator was observed from 11.94 to 13.18 kW in dry land operation; however tractor of pto power as 30.6 kW (corresponding to 540 rpm) was used during field test. Hence, 39.0 to 43.1% of pto power was utilized.

10.9 An identification/Labeling plate with following details should be provided on chassis of rotavator.

i.) Make
ii.) Model
iii.) Serial No.
iv.) Year of manufacture
v.) Weight & size of rotavator.

10.10 Chemical composition of rotar blade are not within limit as specified limit as in IS: 6690:1981 hence these should be looked into in future at regular production level.

11. **LITERATURE:-** The manufacturer has not developed the literature of machine. there. Therefore, the manufacturer should develop the literature in Hindi or English & other regional languages as per IS: 8132:1999 for the guidance of users & technical personnel.

TESTING AUTHORITY

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HIMAT SINGH **Director**	

Test report compiled by: **Sh. B. N. Dixit, Sr. Tech. Assistant**

12. **APPLICANT'S COMMENTS**

No comments from applicant.