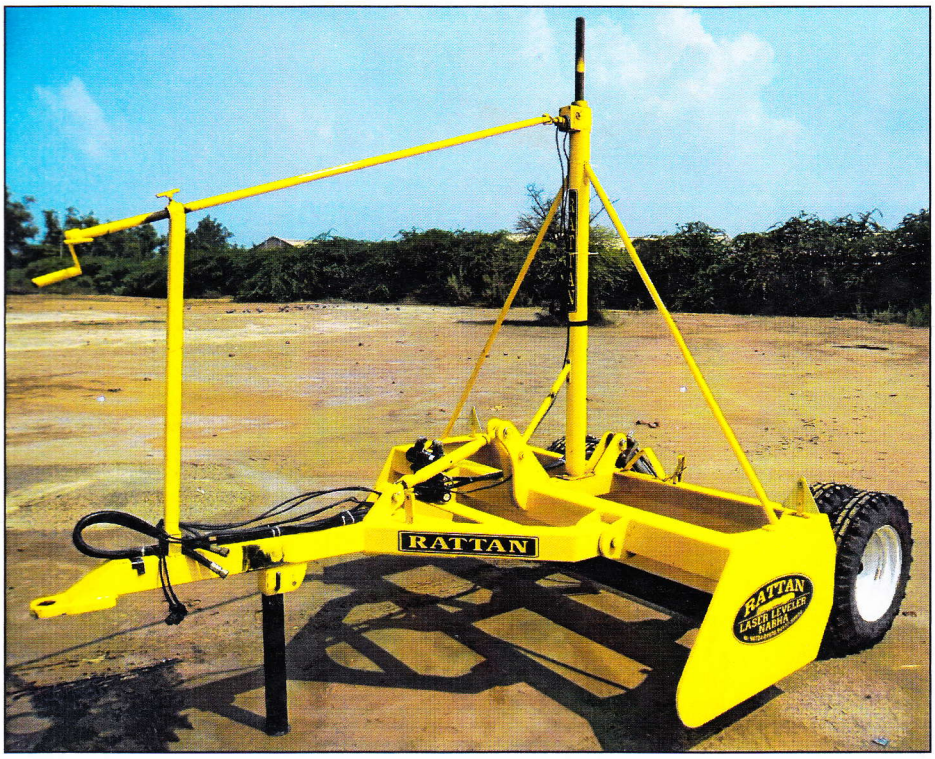
व्यावसायिक परीक्षण रिपोर्ट संख्या / No. : IMP-675/1648/2014

COMMERCIAL TEST REPORT माह / Month: October, 2014



LASER LEVELLER
'RATTAN-88-7FT'

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
ट्रैक्टर नगर, सिरसा रोड़, हिसार- 125001 हरियाणा)

NORTHERN REGION FARM MACHINERY TRAINING AND TESTING INSTITUTE TRACTOR NAGAR, SIRSA ROAD, HISAR-125001 (HARYANA)

दूरभाष / Phones: 01662-276172
फैक्स स०. / Fax No. 01662-276984
वेबसाईट / Website: http://nrfmtti.dacnet.nic.in
ई-मेल / E-mail: fmti-nr@nic.in

	The exposed metallic parts shall be free from rust and shall have a protective coating.	The exposed metallic parts are free from rust and shall have a protective coating.	Yes
5.13	**Marking and packing:**		
	Marking- Each terracer shall be marked with: a) Manufacturer's name and trade-mark, if any. b) Size; and c) Batch or code number These particulars shall be stamped, embossed or engraved on metallic plate and rigidly fitted on a non-wearing part of terracer	An identification plate with following parameters is provided on chassis frame. i)Serial No. ii)Model No.& size iii) Mfd. By iv) Year of manufacture	Yes

6. FIELD TEST

The field tests of 20.17 hours with 5 replications were conducted. The each replication was of minimum 3 hour. The field performance observation are given in annexure II

The summary of field performance test is given in Table VIII

TABLE-VIII: Summary of field performance

Sl. No.	Parameters	Observations
i)	Tractor used	Swaraj- 855
ii)	Gear used	H-1
iii)	Type of soil	Sandy loam
iv)	Av. soil moisture, %	1.3 to 8.5
v)	Bulk density of soil, g/cc Before operation(Undisturbed soil) After operation(Disturbed soil)	 1.78 to 1.82 1.510 to 1.659
vi)	Av. Depth of cut, mm	5 to 7
vii)	Av. Working width, m	2.07 to 2.10
viii)	Av. speed of operation, kmph	5.86 to 7.40
ix)	# Wheel slippage, %	0.72 to 22.9
x)	* Area covered, ha/h	0.055 to 0.083
xi)	Time required for one hectare, h	12.05 to 18.18
xii)	Fuel consumption	
xiii)	- l/h	3.175 to 4.400
	- l/ha	40.13 to 79.99
xiv)	Draft requirement, kg	828 to 1328 (Av.=1119)
xv)	Drawbar horse power, kW	18.1 to 22.9
xvi)	Range dia. of laser beam, m	700

xvii)	Land slope before operation , % Lengthwise Widthwise	 0.62 to 1.87 0.14 to 2.73
	Land slope after operation , % Lengthwise Widthwise	 0.044 to 0.052 0.039 to 0.056
xvii)	Blade bucket capacity, kg (Approx)	704.91 to 774.47
xviii)	Coefficient of variation of leveling after leveling	0.003 to 0.013
xviv)	Evenness in leveling, %	98.7 to 99.7

Vary with depth of cut of blade
* Vary with land slope & depth of cut

6.1 Rate of Work

6.1.1 The rate of work in sandy loam soil was recorded as 0.055 to 0.083 ha/h and the forward speed as 5.86 to 7.40 kmph

6.1.2 The time required to cover one hectare area was recorded as 12.05 to 18.18 h.

6.1.3 Fuel consumption of tractor varies from 3.175 to 4.400 l/h whereas fuel consumption per hectare varies from 40.13 to 79.99 l/ha

6.2 Quality of work

6.2.1 Depth of cut of soil cutting blade was varies from 5 to 7 mm.

6.2.2 Slope of land across its length & width after laser leveler operation was observed as 0.044 to 0.052% & 0.039 to 0.056% respectively.

6.2.3 Coefficient of variation & evenness of the operation of leveling after operation were observed as 0.003 to 0.013 and from 98.7 to 99.7 % respectively.

6.2.4 Working diameter of laser beam was recorded 700 m

7. EASE OF OPERATION, ADJUSTMENTS & SAFETY

7.1 Depth of cut of soil cutting blade can be adjusted by raising/lowering the receiver height from operator seat & for this operator need not to get down from tractor

7.2 Maneuverability of the laser leveler unit during field operation was satisfactory.

8. SOUNDNESS OF CONSTRUCTION

No breakdown occurred during 20.17 hrs. of operation field operation

9. COMMENTS & RECOMMENDATIONS

9.1 Quality of field leveling was satisfactory.

9.2 Deflection of laser beam before & after the field test was within the limit & the deflection was also normal after the temperature gradient & vibration test

9.3 No leakage of hydraulic oil from hydraulic circuits observed during field & lab test.

9.4 No mist or water vapour were observed inside emitter prism glass when tested as per IP 65 for water resistance test.

9.5 Hardness & carbon content of soil cutting blade are not conforming the limit as specified in their relevant codes & therefore these should be looked into in future at regular production level.

9.6 Draft requirement varies from 828 to 1328 kg, where as the average draft requirement was observed as 1119 kg.

9.7 An identification plate is provided on the chassis of laser leveler

9.8 Safety signs and hazard pictograms should be provided on machine.

10. LITERATURE :

Following literatures was supplied by the manufacture

1. Laser operation guide

2.A literature in English with detail technical specification, calibration & adjustments of control box, receiver & emitter

However the literature should be brought out as per IS: 8132-1999 in Hindi, English & other regional languages for the guidance of users & technical personnel.

TESTING AUTHORITY

G. R. AMBALKAR **Agricultural Engineer**	GRambalkar
R. K. NEMA **Senior Agricultural Engineer**	
HIMAT SINGH **Director**	

Test report compiled by: **Sh. B. N. Dixit (Astt. Agri. Engg.)**

APPLICANT'S COMMENTS

No comments received from applicant