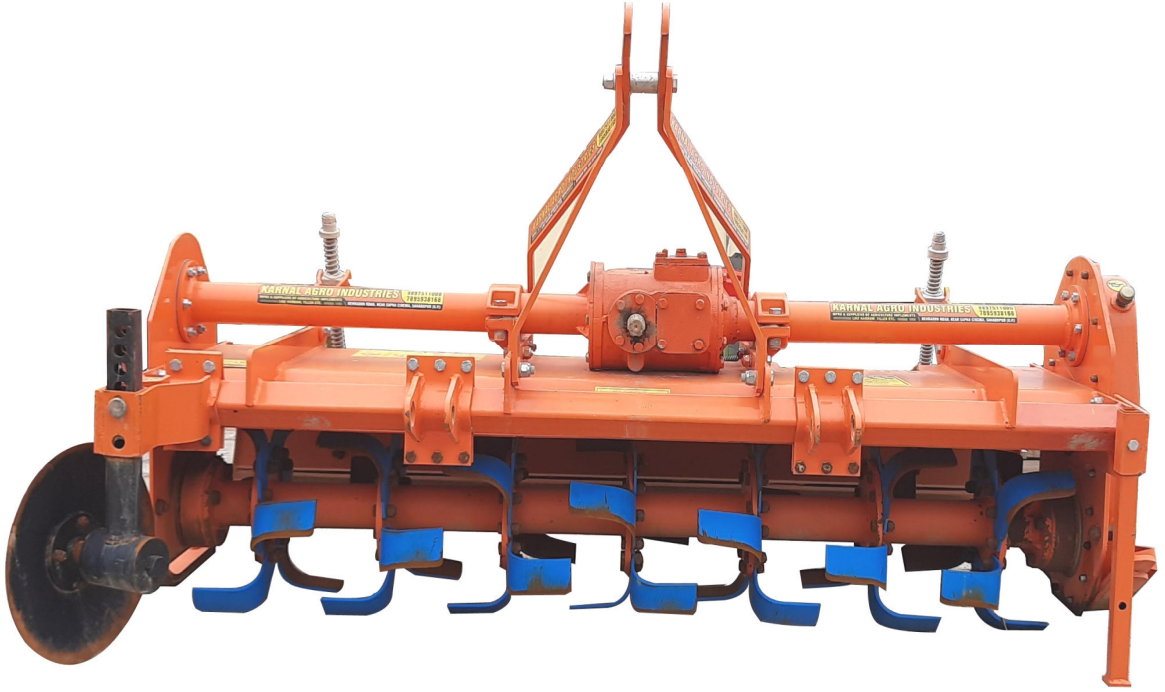


**THIS TEST REPORT VALID UP TO : 31<sup>st</sup> July, 2029**



**KARNAL AGRO, GROFARM-6,  
ROTARY TILLER, (ROTAVATOR) TRACTOR MOUNTED**



भारत सरकार

**Government of India**

कृषि एवं किसान कल्याण मंत्रालय

**Ministry of Agriculture and Farmers Welfare**

कृषि एवं किसान कल्याण विभाग

**Department of Agriculture and Farmers Welfare**

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

**Northern Region Farm Machinery Training and Testing Institute**

ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001

**Tractor Nagar, Sirsa Road, Hisar (Haryana)-125 001**

**[ISO 9001:2015 CERTIFIED]**

Website: <http://nrfmtti.gov.in/>

E-mail: [fmti-nr@nic.in](mailto:fmti-nr@nic.in)

Tele./FAX: 01662-276984

## Summary of Field Performance Test

Sr.. No.	Parameters/operations	Dry land operation	Wet land operation (Puddling)
I	II	III	IV
1.	Tractor used	Swaraj 744 FE	
2.	Gear used	L-1	L-1
3.	Type of soil	Sandy loam	
4.	Average soil moisture (%)	4.9 to 5.7	--
5.	Average depth of standing water (cm)	--	10.75 to 11.16
6.	Bulk density of soil (g/cc)	1.61 to 1.70	--
7.	Average speed of operation (kmph)	2.25 to 2.33	2.34 to 2.47
8.	Avg. travel reduction (%)	--	-1.05% to 2.44%
9.	Avg. wheel slip (%)	-0.33 to -1.83	--
10.	Average depth of puddle (cm)	--	17.17 to 21.0
11.	Average depth of cut (cm)	11.67 to 12.17	--
12.	Avg. effective width (m)	1.94 to 1.98	--
13.	Area covered (ha/h)	0.35 to 0.38	--
14.	Time required for one ha (h)	2.63 to 2.86	--
15.	Field efficiency (%)	77.80 to 84.44	--
16.	Puddling index (%)	--	72 to 74
17.	Fuel consumption		
		l/h	5.30 to 5.67
		l/ha	14.22 to 15.67
18.	Avg. PTO power consumption, kW	16.91	--

**6.1 Dry land operation****6.1.1 Rate of work**

- i) The rate of work was recorded 0.35 to 0.38 ha/h, and the speed of operation varied from 2.25 to 2.33 kmph.
- ii) The time required to cover one hectare was recorded as 2.63 to 2.86 h

**6.1.2 Quality of work**

- i) The depth of operation was recorded as 11.67 to 12.17 cm.
- ii) Average effective width was observed as 194 to 198 cm.
- iii) Field efficiency was observed as 77.8 to 84.44 %.

**6.2 Wet Land operation****6.2.1 Quality of work**

- i) The depth of puddle was recorded as 17.17 to 21.0 cm.
- ii) The puddling index was recorded as 72 to 74 %.

**6.3 Labour requirement**

In all, two skilled operators are needed to ensure continuous operation of rotavator for day long period.

**6.4 Wear analysis (on mass basis)**

Wear of hatchet blades (on mass basis) was measured and recorded in ensuing table:

<b>8. Category of Breakdowns/Defects</b>					
	<b>Category of Breakdown</b>	<b>Category (Evaluative/ Non Evaluative)</b>	<b>Requirements</b>	<b>As Observed</b>	<b>Whether meets the Requirements (Yes/No)</b>
i)	Critical breakdown	Evaluative	No critical breakdown	None	Yes
ii)	Major breakdowns	Evaluative	Not more than one and neither of them should be repetitive in nature	None	Yes
iii)	Minor breakdowns	Evaluative	Not more than three and frequency of each should not be more than two	None	Yes
iv)	Total breakdowns	Evaluative	In no case, the total number of breakdowns should exceed four, that is, (1 major / 3 minor or 4 minor breakdowns.	None	Yes

### 11. CRITICAL TECHNICAL SPECIFICATION

(Vide Ministry's communication No 13-9/2019 M &T (I&P) dated 26.04.2019)

<b>Sr. No</b>	<b>Parameters</b>	<b>Specification</b>	<b>Observed</b>	<b>Remarks</b>
1.	Working width (mm)	1200 (Min.)	1750	Conforms
2.	Type of blade	C/L/J shape as per demand Hatchet blade	L- Shape	Conforms
3.	Thickness of blade (mm)	7-8 (Min.)	7.0	Conforms
4.	No. of blades	30(Min.)	42	Conforms
5.	Total Number of flanges	5 (Min.)	08	Conforms
6.	Number of blades per flanges	6 (Max.)	06	Conforms
7.	Outer diameter of rotor shaft mm	75-90	90	Conforms
8.	Rotor diameter, including flange and blade mounted on flange, mm	425 (Min.)	425	Conforms
9.	Side Drive	Gear Drive /Chain Drive (Optional)	Gear drive	Conforms
10.	Depth control mechanism	Arc shaped skid on both side of rotavator	Skid on both Side of rotavator	Conforms

11.	Material of blades	Boron 27/28/30 Mn (28MnCrB5) / High Carbon steel of grade EN42/EN45/EN47	Boron	Conforms
12.	Hardness of blade Material, HRC	38 (min)	46.17	Conforms
13.	Safety clutch/Device (Shear bolt) in PTO drive shaft	Must be provided	Provided	Conforms
14.	Rotavator stand	Must be provided	Provided	Conforms
15.	Guard over propeller shaft	Must be provided	Provided	Conforms
16.	Sheet metal	AS36 / IS 2062	IS 2062	Conforms
17.	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of Origin, Make, Model, Year of manufacturer, Serial Number, Type, size, required of prime mover (kW)	Meet the requirement	Conforms
18.	Literature	Operator manual, Service manual and Parts catalogue should be provided.	Provided	Conforms

**12. COMMENTS AND RECOMMENDATIONS**



- 12.1** The hardness of blades does not conform, the requirements of IS: 6690-1981. This needs to be looked into for corrective action.
- 12.2** The dimension of PIC of implement does not conform, in toto, to the requirement of IS:10318-2002 and therefore, it may be looks into for corrective action.
- 12.3** The chemical composition of blades does not conform, in toto, to the requirements of IS: 6690-1981. This needs to be looked into for corrective action.
- 12.4** The hardness of blades does not conform, in toto, to the requirement of IS:6690-1981. This needs to be looked into for corrective action.

ROTAVATOR-370/2874/2022	KARNAL AGRO, GROFARM-6, ROTARY TILLER, (ROTAVATOR) TRACTOR MOUNTED (COMMERCIAL)
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**12.5 Technical Literature:**

One booklet entitled "Owner's manual" was provided for reference during test. The same, however, needs to be updated as per IS:8132-1999.

**TESTING AUTHORITY**

Er. SANJAY KUMAR AGRICULTURAL ENGINEER	
Dr. MUKESH JAIN DIRECTOR	 25-07-2022

**13. APPLICANT'S COMMENTS**

We will work on the recommendations.