

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: MACHINE-14/2496/2020

माह/Month : August, 2020

THIS TEST REPORT VALID UP TO : 31st August, 2027



**KHANDEWALA SUPER SEEDER 0017
(TRACTOR MOUNTED)**



भारत सरकार

Government of India

कृषि एवं किसान कल्याण मंत्रालय

Ministry of Agriculture and Farmers Welfare

कृषि, सहकारिता एवं किसान कल्याण विभाग

Department of Agriculture, Cooperation and Farmers Welfare

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

Northern Region Farm Machinery Training and Testing Institute

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6.6 Seeding Uniformity

The seeding uniformity test was conducted on well-prepared sand bed of 5 m lengths and the width is equal to that of implement's width. The seed cum fertilizer drill was operated over this bed with seed tube very near to the top surface of the bed. The data on number of seeds dropped, average distances between two seeds and the deviation of seed dropped from centerline were recorded. The results are summarized as under: -

Sl. No.	Parameters	Range
1	Avg. number of seeds per meter of row length	37.0 to 56.0
2	Avg. spacing between seeds (cm)	1.8 to 2.7
3	Deviation of seed from center line (mm)	Nil

6.7 Hardness :- The surface of blade was recorded as under:-

Description	As Per IS : 6690 : 1981 (HRC)	Hardness as observed (HRC)	Remarks
Edge portion	53 to 59	44.7 to 47.2	Does not conform
On Shank portion	37 to 45	44.7 to 47.2	Does not conform in toto

6.8 Chemical composition : The chemical composition of blades is tabulated as under

Constituents	As per IS: 6690-1981		Composition As observed (% of weight)	Remarks
	Carbon Steel	Silicon Manganese Steel		
Carbon (C)	0.70-0.85	0.50 to 0.60	0.3376	Does not conform
Silicon (Si)	0.10-0.40	1.5 to 2.00	1.6919	Conforms
Manganese (Mn)	0.50-1.0	0.50 to 1.0	0.7581	Conforms
Sulphur (S)	0.5(Max)	0.5(Max)	0.1015	Conforms
Phosphorous (P)	0.5(Max)	0.5(Max)	0.0166	Conforms

7. FIELD PERFORMANCE TEST

The Khandewala, Super Seeder was operated for 25.90 hours for sowing of wheat seed & DAP fertilizer under varying soil and moisture condition in well-prepared seedbed. Total seven test trials were conducted (refer **Annexure-XIII**).

The tractor Famtraec-6055F17 was used during the test and reported data are summarized in ensuing table.

Table: Summary of field performance results:

Sl. No.	Parameters	Range
1	Type of soil	Sandy loam
2	Soil moisture (%)	20.4 to 25.5
3	Gear used of tractor	L-1
4	Avg. speed of travel (km/h)	2.32 to 2.44
5	Avg. Wheel slip (%)	-1.40 to -0.70
6	Variety of crop	HD 2967 & WH- 1124

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7	Avg. depth (cm)		
	- Seed	7.0 to 7.5	
	- Fertilizer	8.0 to 8.5	
8	Avg. seed spacing (cm)	1.8 to 2.7	
9	Area covered (ha/h)	0.311 to 0.371	
10	Time required for one ha (h)	2.70 to 3.22	
11	Seed rate (kg/ha)	89.21 to 102.09	
12	Fertilizer rate (kg/ha)	90.70 to 104.17	
13	Field efficiency (%)	62.30 to 76.80	
14	Avg. P.T.O. power requirement (kW)	37.53	
15	Fuel consumption		
		l/h	4.48 to 5.98
		l/ha	13.14 to 17.14

7.1 Rate of work

- The average area covered was recorded as 0.311 to 0.371 ha/h at average operating speed 2.32 to 2.44 km/h
- The field efficiency of seed cum fertilizer drill was recorded as 62.3 to 76.8%.

7.2 Quality of work

- The average depth of sowing the seed was recorded as 7.0 to 7.5 cm.
- The average depth of placing the fertilizer was recorded as 8.0 to 8.5 cm.
- The average number of seeds per meter row length was recorded as 37 to 56
- The average spacing between seeds was recorded as 1.8 to 2.7 cm.
- The deviation of seed from centre line was observed as Nil mm.

7.3 Metering rate

7.3.1 Wheat

The seed rate of wheat was recorded 89.21 to 102.09kg/ha.

7.3.2 Fertilizer

The fertilizer rate of was recorded 90.70 to 104.17 kg/ha.

7.4 Power requirement

7.4.1 The average P.T.O power requirement during Wheat sowing was 37.53 kW.

7.5 Rate of wear of disc opener with boot on mass basis (for 26.45 hours of field operation):

Furrow opener No	Initial Mass (g)	Final Mass (g) after 26.45 h	Percent Wear (%)		
			Loss of mass (g) after 26.45 h	Percent (Wear)	Wear Per hour
1	14200.5	14176.6	23.9	0.17	0.006
2	14228.3	14203.5	24.8	0.17	0.006
3	14194.5	14177.8	16.7	0.12	0.005
4	14059.1	14032.6	26.5	0.19	0.007
5	14297.4	14275.8	21.6	0.15	0.006
6.	14306.7	14279.2	27.5	0.19	0.007

Remark: The hourly rate of wear on mass basis was observed as 0.005 to 0.007%



7.6 Rate of wear of rotor blade on Mass basis (for 26.45 hours of field operation) Including running in.

Rotor blade	Initial Mass (g)	Final Mass (g) after 25.87 h	Percent Wear (%)		
			Loss of mass (g) after 25.87 h	Percent (Wear)	Wear Per hour
1.	1042.1	1027.4	14.7	1.41	0.05
2.	1037.4	1028.6	8.8	0.85	0.03
3.	1078.2	1065.5	12.7	1.18	0.04
4.	994.0	983.1	10.9	1.10	0.04
5.	1046.1	1035.4	10.7	1.02	0.04
6.	1007.9	995.0	12.9	1.28	0.05
7.	1039.5	1028.9	10.6	1.02	0.04
8.	1031.1	1020.5	10.6	1.03	0.04
9.	1011.3	1000.7	10.6	1.05	0.04
10.	1038.2	1025.9	12.3	1.18	0.04
Remark: The hourly rate of wear on mass basis was observed as 0.03 to 0.05%					

7.7 Labor requirement

One skilled operator was required to operate the tractor and one more labour is needed for filling the seed and fertilizer box, to check the furrow openers and seed tubes against chocking.

8. EASE OF OPEARATION AND ADJUSTMENT

No noticeable difficulty was observed during operation and adjustment of Super Seeder

9. DEFECTS, BREAKDOWNS, ADJUSTMENTS AND REPAIRS

No noticeable defect occurred in the Super Seeder during the test



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CI 14	MARKING & PACKING:		
CI 14.1	Each drill shall be marked with the following particulars: a) Indication of the source of Manufacture b) Model, code and serial number c) Type d) Size e) Type of seeds (suitability) f) Mass	Labeling plate is provided. But not as per requirement.	Does not conform in toto

11. COMMENTS & RECOMMENDATIONS

- 11.1 The dimension of three point linkage system of the seed cum fertilizer drill does not conform to IS:4468 (Part 1):1997. This should be looked into.
- 11.2 Accessories like , row marker and area recorder may also be provided.
- 11.3 The grade of gear box oil is not specified. It **MUST** be specified.
- 11.4 The chemical and hardness of blades does not conforms to as per IS : 6690:1981 in toto. This needs to be looked into for corrective action at production level.
- 11.5 Seed feed roller, seed feed cut-off, seed plate and fertilizer feed cup does not conform. It **MUST** be looked into.
- 11.6 No provision against overload on power take off drive shaft . It **MUST** be looked into.
- 11.7 The seed and fertilizer metering mechanism components of fluted feed roller doesn't conform in toto. It **MUST** be looked into.
- 11.8 The recommended power of tractor is not specified. It **MUST** be specified
- 11.9 The variation in dropping of seed among different furrow openers was observed to be too high and therefore needs to be looked in to for improvement in design
- 11.10 Variation in the quantity of seed dropping due to change in the speed was excessive and this **MUST** be looked in for improvement in the design.
- 11.11 The variation in dropping due to box filling at $\frac{3}{4}^{\text{th}}$, $\frac{1}{2}^{\text{nd}}$ and $\frac{1}{4}^{\text{th}}$ of rated capacity and mechanical damage of seed were excessive and calls for improvement in the design.
- 11.12 Variation in the quantity of seed dropping due to change in the speed was excessive and this **MUST** be looked in for improvement in the design.
- 11.13 It is recommended that a permanent metallic calibration plate indicating the metering position and quantity of seed and fertilizer should be attached under the top cover of the seed box.



11.14 The labeling plate is provided on the machine but without adequate information. It is therefore recommended that, a labeling plate with following information may be provided on the machine

- I. Name of manufacturer and trade mark, if any
- II. Make
- III. Model
- IV. Year of manufacturer
- V. Serial No.
- VI. Recommended power source, (kW)
- VII. Seed to be sown


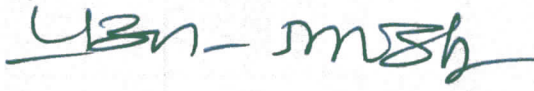
11.15 Technical Literature

Operation & Service manual was provided for reference during the testing,

It is recommended to provide Parts catalogue.

Operation & Service manual should be updated as per IS: 8132- 1999.

TESTING AUTHORITY

RINKU PRASAD GUPTA TECHNICAL ASSISTANT	
P. K. PANDEY DIRECTOR	

Test report compiled by C. Veeranjanyulu Senior Technician

12. APPLICANT'S COMMENTS

No comments received from applicant.