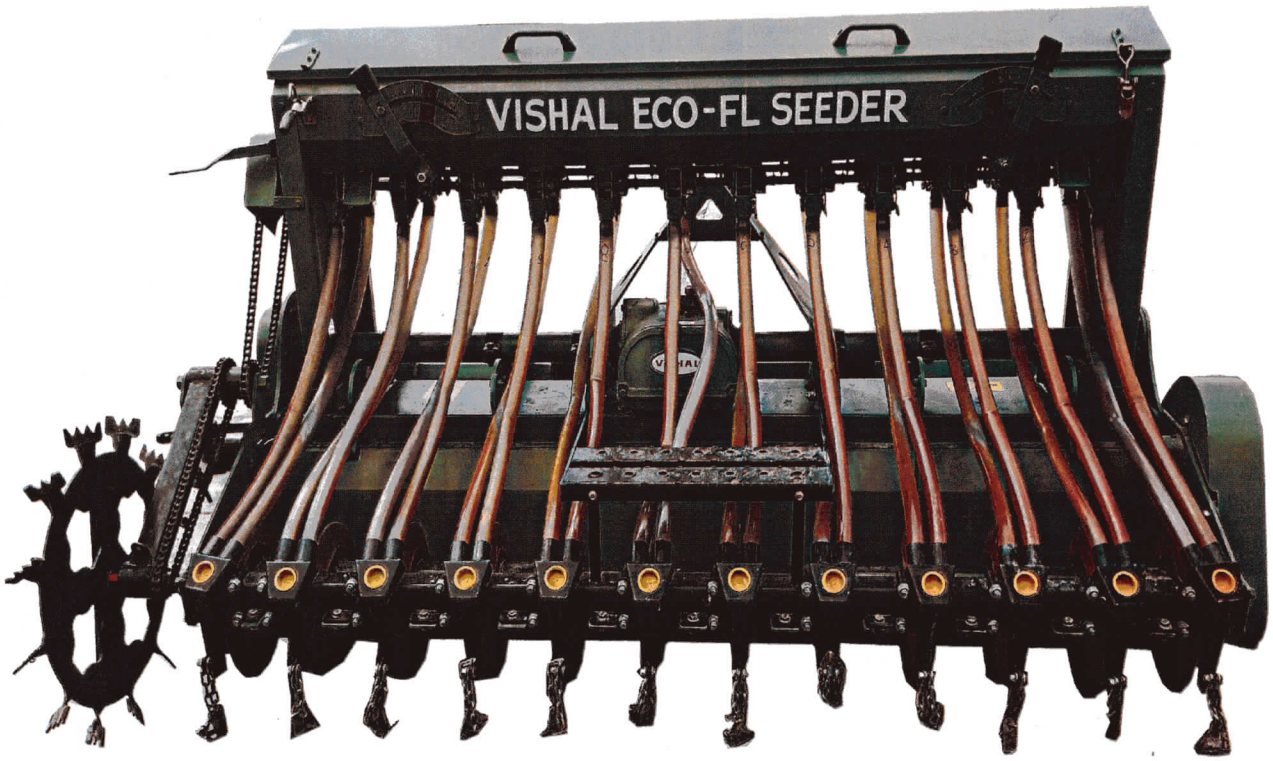
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: MACHINE-13/2495/2020**
माह/**Month : August, 2020**

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



VISHAL ECO-FL SUPER SEEDER (TRACTOR MOUNTED)

सत्यमेव जयते

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
ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001
Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001
[ISO 9001:2015 CERTIFIED]

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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	41 to 55
2	Avg. spacing between seeds (cm)	2.0 to 2.5
3	Deviation of seed from center line (mm)	Nil

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

Description	As per IS: 6690:1981 (HRC)	Hardness as observed (HRC)	Remarks
Edge portion	53 to 59	51.9 to 53.3	**Does not conform in toto**
On shank portion	37 to 45	51.9 to 53.3	**Does not conform**

6.8 Chemical Composition

A piece of blade opener was got analyzed for chemical composition. The results of chemical analysis which is given below:

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	0.5432	Conforms
Silicon (Si)	0.10-0.40	1.5 to 2.00	1.5401	Conforms
Manganese (Mn)	0.50-1.0	0.50 to 1.0	0.6709	Conforms
Sulphur (S)	0.5(Max)	0.5(Max)	0.0343	Conforms
Phosphorous (P)	0.5(Max)	0.5(Max)	0.0184	Conforms

7. FIELD PERFORMANCE TEST

The Vishal super Seeder was operated for 25.17 hours for sowing of wheat seed & DAP fertilizer under varying soil and moisture condition in well-prepared seedbed. Total five test trials were conducted (refer **Annexure-XIII**).

The tractor John Deere 5055 E V3 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 (%)	21.0 to 24.6
3	Gear used of tractor	A-1

4	Avg. speed of travel (km/h)	1.78 to 1.93
5	Avg. Wheel slip (%)	-1.76 to -2.66
6	Variety of crop	HD 2969 and WH-1124
7	Avg. depth (cm)	
	- Seed	6.5 to 7.9
	- Fertilizer	6.5 to 7.9
8	Avg. seed spacing (cm)	1.0 to 3.0
9	Area covered (ha/h)	0.280 to 0.336
10	Time required for one ha (h)	2.98 to 3.57
11	Seed rate (kg/ha)	91.23 to 96.72
12	Fertilizer rate (kg/ha)	88.18 to 102.80
13	Field efficiency (%)	63.9 to 77.2
14	Avg. P.T.O. power requirement (kW)	29.81

15	Fuel consumption	
	l/h	7.40 to 8.07
	l/ha	22.50 to 27.86

7.1 Rate of work

- The average area covered was recorded as 0.280 to 0.336 ha/h at average operating speed 1.78 to 1.93 km/h
- The field efficiency of seed cum fertilizer drill was recorded as 63.9 to 77.2%.

7.2 Quality of work

- The average depth of sowing the seed was recorded as 6.5 to 7.9 cm.
- The average depth of placing the fertilizer was recorded as 6.5 to 7.9 cm.
- The average number of seeds per meter row length was recorded as 41 to 55
- The average spacing between seeds was recorded as 1.0 to 30 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 91.23 to 96.72 kg/ha.

7.3.2 Fertilizer

The fertilizer rate of was recorded 88.18 to 102.80 kg/ha.

7.4 Power requirement

7.4.1 The average P.T.O power requirement during Wheat sowing was 29.81 kW.

7.5 Rate of wear of Rotor Blade on mass basis (for 25.87 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.	942.4	896.4	46.0	4.88	0.19
2.	959.2	908.9	50.3	5.24	0.20
3.	945.3	900.2	45.1	4.77	0.18
4.	958.3	922.5	35.7	3.73	0.14
5.	942.1	907.2	34.9	3.70	0.14
6.	960.8	924.6	36.2	3.77	0.15
7.	947.2	912.9	34.3	3.62	0.14
8.	926.4	897.9	28.5	3.08	0.12
9.	942.2	908.0	34.2	3.63	0.14
10.	932.6	900.5	32.1	3.44	0.13
11.	953.2	916.3	36.9	3.87	0.15
Remark: The hourly rate of wear on mass basis was observed as 0.12 to 0.20%					

7.6 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

During field test the furrow roller drive chain broke at 2.02 hrs

11. COMMENTS & RECOMMENDATIONS

11.1 The dimension three point linkage system of the Super Seeder does not conform to IS:4468 (Part 1):1997. This should be looked into.

11.2 **The seed and fertilizer box is not provided with self-locking mechanism. This may be looked into.**

11.3 Accessories like , row marker and area recorder may also be provided.

11.4 Dimensions of PIC of implement does not conform in toto to IS: 4931:1995 and therefore, It should be looked into for corrective action.

11.5 The hardness of blades does not conforms in toto as per IS : 6690:1981. This needs to be looked into for corrective action at production level.

11.6 No provision against overload on power take off drive shaft . It **MUST** be looked into.

11.7 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

11.8 The variation in dropping due to box filling at $\frac{3}{4}^{th}$, $\frac{1}{2}^{nd}$ and $\frac{1}{4}^{th}$ of rated capacity and mechanical damage of seed were excessive and calls for improvement in the design.

11.9 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.

11.10 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

11.11 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

ANSHUL PANDEY AGRICULTURAL ENGINEER (I)	
P. K. PANDEY **DIRECTOR**	

12. APPLICANT'S COMMENTS

Para No.	Our reference	Applicant's Comments
12.1	11.3	We ensure to provide the same as advised please.
12.2	11.4	The PIC will be provided as per the IS: 4931 : 1995, as advised.
12.3	11.6	It will be provided as advised.
12.4	11.8, 11.9	We ensure that the design will be rectified as per the guidelines.
12.5	11.10	We ensure that all the information will be added to the labelling plate.
12.6	11.11	The same will be provided as advised.