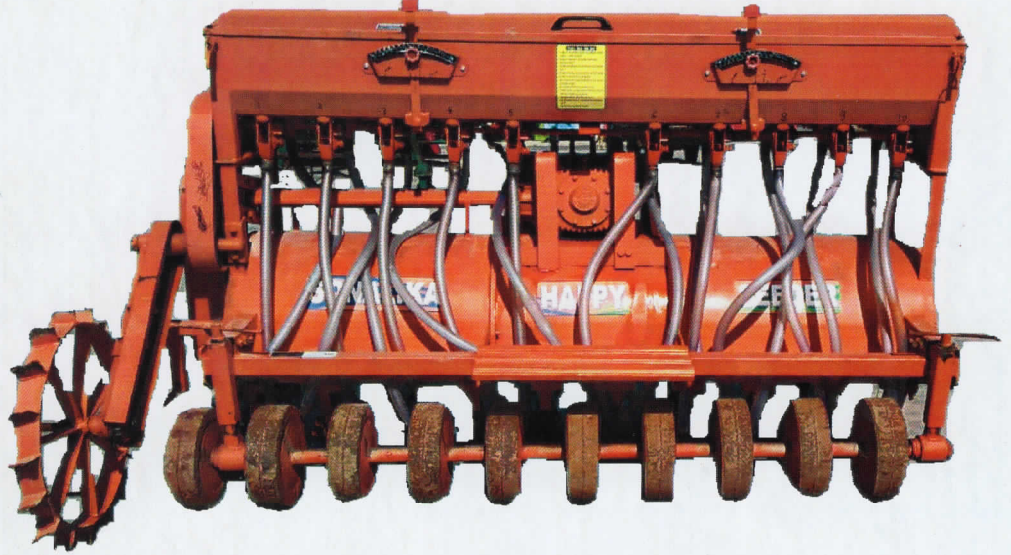


THIS TEST REPORT VALID UP TO : 31st MARCH, 2026



**SONALIKA SLHS-10, HAPPY SEEDER
(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

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

Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001

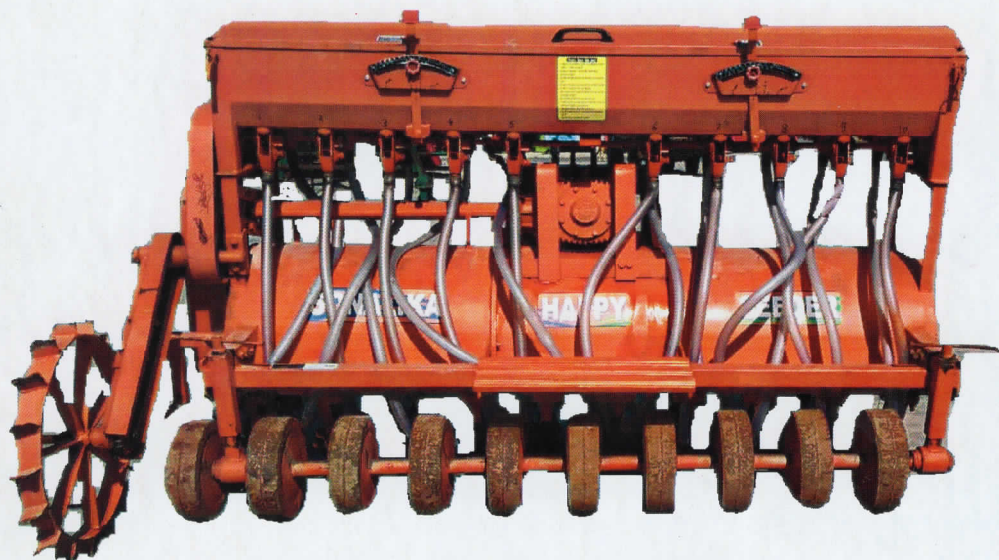
[ISO 9001:2015 CERTIFIED]

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

E-mail: fmti-nr@nic.in

Tele./FAX: 01662-276984

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6.7 Hardness: The surface hardness of furrow opener was recorded as under:

Sl. No.	Hardness as per IS: 6813-2000 (HB)	Hardness as observed, HB (Hardened zone is not separately provided on furrow opener)	Remarks
1	350 to 450	355 to 367	Conforms

6.8 Chemical Composition

A piece of furrow 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	2.1466	Does not conform
Silicon (Si)	0.10-0.40	1.5 to 2.00	4.1791	Does not conform
Manganese (Mn)	0.50-1.0	0.50 to 1.0	1.5814	Does not conform
Sulphur (S)	0.5(Max)	0.5(Max)	0.0000	Conforms
Phosphorous (P)	0.5(Max)	0.5(Max)	0.0151	Conforms

7. FIELD PERFORMANCE TEST

The Sonalika Industries, SLHS-10, Happy Seeder was operated for 27.32 hours for sowing of wheat seed & SSP fertilizer under varying soil and moisture condition in well-prepared seedbed. Total five test trials were conducted (refer **Annexure-XIII**).

The tractor Sonalika 745 DI 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 (%)	23.0 to 24.0
3	Gear used of tractor	L-3
4	Avg. speed of travel (km/h)	4.14 to 4.45
5	Avg. Wheel slip (%)	0.74 to 3.52
6	Variety of crop	Wheat-HD-3086
7	Avg. depth (cm)	
	- Seed	4.12 to 4.65
	- Fertilizer	4.26 to 4.78
8	Avg. seed spacing (cm)	1.50 to 1.84
9	Area covered (ha/h)	0.602 to 0.736
10	Time required for one ha (h)	1.33 to 1.66
11	Seed rate (kg/ha)	119.7 to 128.5
12	Fertilizer rate (kg/ha)	119.1 to 123.9
13	Field efficiency (%)	69.6 to 78.2
14	Avg. draft (kN)	3.63
15	Avg. Drawbar power requirement (kW)	4.38
16	Avg. P.T.O. power requirement (kW)	15.8
17	Fuel consumption	
	l/h	2.30 to 2.75
	l/ha	3.13 to 4.57

7.1 Rate of work

- The average area covered was recorded as 0.602 to 0.736 ha/h at average operating speed 4.14 to 4.45 km/h
- The field efficiency of seed cum fertilizer drill was recorded as 69.6 to 78.2%.

7.2 Quality of work

- The average depth of sowing the seed was recorded as 4.12 to 4.65 cm.
- The average depth of placing the fertilizer was recorded as 4.26 to 4.78 cm.
- The average number of seeds per meter row length was recorded as 60 to 64
- The average spacing between seeds was recorded as 1.50 to 1.84 cm.
- The deviation of seed from centre line was observed as 4.1 to 4.6 mm.

7.3 Metering rate**7.3.1 Wheat**

The seed rate of wheat was recorded 119.7 to 128.5 kg/ha.

7.3.3 Fertilizer

The fertilizer rate of was recorded 119.1 to 123.9 kg/ha.

7.4 Power requirement

7.4.1 The average draft observed during wheat sowing was 3.63 kN.

7.4.2 The Drawbar power requirement during wheat sowing was 4.38 kW.

7.4.3 The average P.T.O power requirement during Barley sowing was 9.58 kW.

7.5 Rate of wear of furrow opener on mass basis (for 27.32 hours of field operation):

Furrow opener	Initial Mass (g)	Final Mass (g) after 27.32 h	Percent Wear (%)		
			Loss of mass (g) after 27.32 h	Percent (Wear)	Wear Per hour
1.	8574.2	8540.6	33.6	0.39	0.01
2.	8705.6	8678.3	27.3	0.31	0.01
3.	8837.7	8802.5	35.2	0.40	0.01
4.	8628.6	8610.3	18.3	0.21	0.01
5.	8886.6	8862.8	23.8	0.27	0.01

Remark: The hourly rate of wear on mass basis was observed as 0.01%.



7.6 Rate of wear of flail blade on Mass basis (for 27.32 hours of field operation)

Furrow opener No	Initial Mass (g)	Final Mass (g) after 27.32 h	Percent Wear (%)		
			Loss of mass (g) after 27.32 h	Percent (Wear)	Wear Per hour
1	1234.8	1224.6	10.2	0.83	0.03
2	1270.3	1255.2	15.1	1.19	0.04
3	1222.4	1202.6	19.8	1.62	0.06
4	1236.7	1220.3	16.4	1.33	0.05
5	1254.3	1236.8	17.5	1.40	0.05
Remark: The hourly rate of wear on mass basis was observed as 0.03 to 0.06%.					

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 OPERATION AND ADJUSTMENT

No noticeable difficulty was observed during operation and adjustment of Happy seeder

9. DEFECTS, BREAKDOWNS, ADJUSTMENTS AND REPAIRS

No noticeable defect occurred in the Happy Seeder during the test

10. CONFORMITY TO INDIAN STANDARDS

Cl. No	Requirement as per IS: 6813: 2000	Observations	Remarks	
CI 4	Type	Tractor mounted	--	
CI 5.1	Size	266 x 10 mm (Adjustable)	--	
CI 6.1	Material: - Component Requirement			
	Frame and toolbar	MS	MS	Conforms
	Wheel	MS, Cast iron	MS	Conforms
	Axle & shaft	MS	MS	Conforms
	Seed box	MS, GI sheet, Seasoned wood, Plastic, Fiberglass, Reinforced plastics.	MS	Conforms
	Tynes	MS, carbon steel	Carbon steel	Conforms
	Boot	MS, carbon steel	MS	Conforms
	Furrow Opener	High Carbon Steel	High carbon steel	Conforms
	Seed tubes	Steel Ribbon/Plastic/ Rubber	Plastic	Conforms


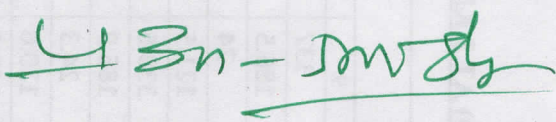
11. COMMENTS & RECOMMENDATIONS

- 11.1 The 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 **The seed and fertilizer box should be provided with self-locking mechanism on being opened.**
- 11.3 Accessories like covering device, row marker, press wheel and area recorder may also be provided.
- 11.4 The chemical composition of inverted T shoe type furrow opener does not meet, in full, the requirement of IS: 6690-1981. This should be looked into for corrective action.
- 11.5 No provision against overload on power take off drive shaft is provided. It **MUST** be looked into.
- 11.6 Safety guard in power take off drive shaft is not provided. It **MUST** be looked into.
- 11.7 **The recommended power of tractor is not specified, it MUST be specified.**
- 11.8 **The variation in dropping of seed among different furrow openers was observed to be too high and therefore needs to be looked into for improvement in design.**
- 11.9 **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.**
- 11.10 The percentage of visible damage to seed drill is high ,hence its MUST be looked in to for improvement in design.
- 11.11 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.
- 11.12 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

11.13 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

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	
P. K. PANDEY DIRECTOR	

12. APPLICANT'S COMMENTS

Para No	Our reference	Applicant's comments
12.1	11.1	The dimension of three point linkage system of the Happy Seeder will be implemented in our regular production as per IS : 4668 (Part-1): 1997
12.2	11.3	Will be provided as per recommendations.
12.3	11.4	The chemical composition of inverted T shoes type furrow opener will be implemented during our regular production as per IS : 6690: 1981
12.4	11.6	The safety guard in power take off drive shaft will be provided.
12.5	11.7	The power of tractor required is above 45 HP and same will be provided on the labeling plate.
12.6	11.8	The dropping variation of seed among different furrow opener will be improved.
12.7	11.9,11.10,11.11	We will improve the design.
12.8	11.13	We will provide the operator manual as per IS- 8132 : 1999.