

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ No.: IMP-986/2281/2019

माह/Month : March, 2019

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



**DASMESH LALLI CLASSIC- 13 TYNE
ZERO TILL SEED CUM FERTILIZER DRILL**



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

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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	478 to 484	Does not conform

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	0.50-0.60	4.1927	Does not conform
Silicon (Si)	0.10-0.40	1.50-2.00	1.436	Does not conform
Manganese (Mn)	0.50-1.0	0.50-1.0	1.7519	Does not conform
Sulphur (S)	0.05-(Max.)	0.05-(Max.)	0.0137	Conforms
Phosphorous (P)	0.05-(Max.)	0.05-(Max.)	0.0436	Conforms

7. FIELD PERFORMANCE TEST

The Dashmesh Agro works, Lalli Classic-13, Zero Till Seed Cum Fertilizer Drill was operated for 26.67 hours for sowing of Wheat seed & DAP fertilizer under varying soil and moisture condition in well-prepared seedbed. Total four test trials were conducted (refer **Annexure-XIII**).

The tractor Sonalika-750-DI 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 (%)	21.5 to 22.1
3	Gear used of tractor	H-1
4	Avg. speed of travel (km/h)	3.48 to 3.81
5	Avg. Wheel slip (%)	3.33 to 6.75
6	Variety of crop	Wheat HD 2967
7	Avg. depth (cm)	
	- Seed	4.65 to 4.93
	- Fertilizer	5.17 to 5.26
8	Avg. seed spacing (cm)	1.55 to 1.86
9	Area covered (ha/h)	0.533 to 0.672
10	Time required for one ha (h)	1.49 to 1.88
11	Seed rate (kg/ha)	107.7 to 109.3
12	Fertilizer rate (kg/ha)	107.8 to 110.6
13	Field efficiency (%)	66.3 to 76.4

14	Avg. draft (kN)	3.04
15	Avg. power requirement (kW)	3.08
16	Fuel consumption	
	l/h	2.10 to 2.45
	l/ha	3.13 to 3.94

7.1 Rate of work

- The average area covered was recorded as 0.533 to 0.672 ha/h at average operating speed 3.48 to 3.81 km/h
- The field efficiency of seed cum fertilizer drill was recorded as 66.3 to 76.4%.

7.2 Quality of work

- The average depth of sowing the seed was recorded as 4.65 to 4.93 cm.
- The average depth of sowing the fertilizer was recorded as 5.17 to 5.26 cm.
- The average number of seeds per meter row length was recorded as 52.6 to 55.4
- The average spacing between seeds was recorded as 1.55 to 1.86 cm.
- The deviation of seed from centre line was observed as 4.6 to 4.8 mm.

7.3 Metering rate

7.3.1 Wheat

The seed rate of Wheat was recorded 107.7 to 109.3 kg/ha.

7.3.3 Fertilizer

The fertilizer rate of was recorded 107.8 to 110.6 kg/ha.

7.4 Power requirement

7.4.1 The average draft observed during wheat sowing was 3.04 kN.

7.4.2 The power requirement during wheat sowing was 3.08 kW.

7.5 Rate of wear of furrow opener on mass basis (for 26.67 hours of field operation):

Furrow opener No	Initial Mass (g)	Final Mass (g) after 26.67 h	Percent Wear (%)		
			Loss of mass (g) after 26.67 h	Percent (Wear)	Wear Per hour
1	6628.3	6605	23.3	0.35	0.01
2	6061.3	6042	19.3	0.32	0.01
3	6130.2	6115	15.2	0.25	0.01
4	6574.0	6550	24.0	0.37	0.01
5	6506.0	6491	15.0	0.23	0.01
6	6642.4	6613	29.4	0.44	0.02
7	6368.3	6338	30.3	0.48	0.02

Remark: The hourly rate of wear on mass basis was observed as 0.01% to 0.02%.

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 OPERATION AND ADJUSTMENT

No noticeable difficulty was observed during operation and adjustment of Zero till seed cum fertilizer drill.

9. DEFECTS, BREAKDOWNS, ADJUSTMENTS AND REPAIRS

No noticeable defect occurred in the seed cum fertilizer drill 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	13x188 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
	Seed feed roller, Seed feed cut-off, and Seed plate	CI, MS, Nylon	Aluminum	Does not conform
	Seed feed cup	Aluminum	Aluminum	Conforms
	Retaining ring and cover	Brass, Gun metal, Bakelite	Gun Metal	Conforms
	Pulley, Sprocket	CI, MS	MS	Conforms
Hitching Mechanism	MS	MS	Conforms	
Fertilizer feed plate	CI, MS, Nylon	--	--	

11. COMMENTS & RECOMMENDATIONS

- 11.1 The three point linkage system of the seed cum fertilizer drill does not conform 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 Furrow openers should be provided with depth adjusting arrangement to meet the requirements of IS 6813:2000.
- 11.4 Accessories like covering device, press wheel and area recorder may also be provided.
- 11.5 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.
- 11.6 Seed agitator has not been provided. It should be looked into for corrective action.
- 11.7 **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.**
- 11.8 **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 were excessive and this MUST be looked in for improvement in the design.
- 11.10 The labeling plate is not provided on the drill. 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

No technical literature was provided for reference during the testing, therefore, it is recommended to provide operator's manual, service manual and Parts catalogue. And operator's manual should be brought out as per IS: 8132- 1999.

TESTING AUTHORITY

R. K. NEMA SENIOR AGRICULTURAL ENGINEER	<i>Ran</i>
P. K. PANDEY DIRECTOR	<i>Y. S. N. - Mosh</i>

12. APPLICANT'S COMMENTS

No specific comment received from applicant.

