व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक)
COMMERCIAL TEST REPORT (ICT)

संख्या/No.: Imp 320/430
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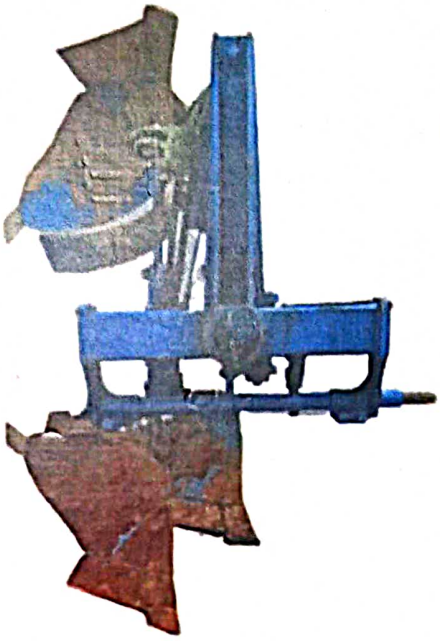

NEW VISHAVKARMA AGROTECH
TWO BOTTOM HYDRAULIC REVERSIBLE M.B. PLOUGH
Model: 2 BOTTOM

सत्यमेव जयते

भारत सरकार

GOVT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

कृषि, सहकारिता एवं किसान कल्याण विभाग

DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE

उत्तर पूर्व क्षेत्र कृषि यंत्र परीक्षण एवं प्रशिक्षण संस्थान

NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE

बिश्वनाथ चरियाली: बिश्वनाथ: असम, पिन-784 176

BISWANATH CHARIALI: BISWANATH: ASSAM, PIN - 784 176

[AN ISO 9001:2015 CERTIFIED INSTITUTION]

Website: http://nerfmtti.nic.in

Ph. No. 03715-222094

Fax No: 03715-230358

E-Mail: fmti-ner@nic.in

1. SCOPE OF TEST

The scope of test was to check and assess the following:

1.1 Laboratory Test:

a) Checking of specifications
b) Hardness of soil engaging parts
c) Chemical analysis of critical components
d) Wear analysis of critical components

1.2 Field Test:

a) Rate of work
b) Quality of work
c) Ease of operation and adjustments
d) Labour requirement
e) Power requirement
f) Defects, Breakdowns & Repairs

2. METHOD OF SELECTION

As per Govt. of India, OM No. 13-13/2020-M&T (I&P), dated 10.09.2020, the random selection was exempted. Hence, the machine was directly submitted by the applicant at this Institute for test.

3. TEST PROCEDURE

The following codes were referred for testing of Two Bottom Hydraulic Reversible Mouldboard Plough.

i)	IS: 6288:1971 (Reaffirmed Mar 2009)	:	Test code for mouldboard ploughs.
ii)	IS: 10691:1983 (Reaffirmed Feb 2011)	:	Specification for Share for tractor-operatedmouldboard ploughs
iii)	IS: 4468 (Part I): 1997 (Reaffirmed Feb. 2012)	:	Agricultural wheeled tractors – Rear-mounted Three-Point Linkage: Part 1 Categories 1, 2, 3 & 4

4. SPECIFICATIONS

4.1 General:

Name and address of the manufacturer	:	**M/s. New Vishavkarma Agrotech, Janal Raod, Dirba Mandi, Sangrur, Punjab-148035**
Test requested by (Applicant)	:	**M/s. New Vishavkarma Agrotech, Janal Raod, Dirba Mandi, Sangrur, Punjab-148035)**
Name of machine	:	Two bottom Hydraulic Reversible M.B Plough
Make	:	New Vishavkarma Agrotech
Model	:	2 Bottom
Serial Number of machine	:	NVD 00005
Size of implement (mm)	:	2 x 300
Year of manufacture	:	2019
Country of origin	:	India
Power Source as recommended, hp	:	50
Prime Mover Used:		
Tractor	:	John Deere 5310 4WD
Chassis No./ Engine no.	:	1PY5310ECLA049490/PY3029H143675
Max. PTO Power, kW (Ps)	:	36.4/49.5

			Conform
	d) Batch or code number.	Not Provided	Does not Conform

7. RUNNING–IN

Running-in was not recommended by the applicant. Hence, the implement running-in was not conducted before the actual test.

8. FIELD PERFORMANCE TEST

The implement was operated for 28.62 hr. for assessing its field performance. Total six trials were carried out and reported in Annexure and are summarized in ensuing Table. John Deere 5310 4WD tractor was used as prime mover during field performance test.

Summary of Field Performance Test

Sl.No.	Parameters	Observations
1.	Gear used	A-2
2.	Type of soil	Light
3.	Average soil moisture (%)	3.60 to 11.93
4.	Bulk density of soil (g/cc)	1.50 to 1.92
5.	Previous treatment	Nil
6.	**Engine speed (rpm) :**	
	- No load	2543 to 2561
	- On load	2394 to 2428
7.	Speed of operation (kmph)	2.37 to 3.07
8.	Wheel slippage (%)	2.65 to 14.40
9.	Depth of cut (cm)	12.47 to 15.73
10.	Working width (cm)	93.0 to 99.0
11.	Area covered (ha/h)	0.169 to 0.207
12.	Time required for one ha (h)	4.82 to 5.91
13.	Field efficiency (%)	65.35 to 72.08
14.	**Fuel consumption**	
	-l/h	4.78 to 6.27
	-l/ha	28.30 to 32.06
15.	Implement draft (kgf)	421 to 675
16.	Drawbar Power requirement (kW)	3.31 to 5.73

8.1.1 Rate of work :

a) The area covered was recorded as 0.169 to 0.207 ha/h at the speed of operation from 2.37 to 3.07 km/h.

b) The time required to cover one hectare area was recorded as 4.82 to 5.91 h.

8.1.2 Quality of work:

a) The depth of cut was recorded as 12.47 to 15.73 cm.

b) Average working width was observed as 93.0 to 99.0 cm.

c) Field efficiency was observed as 65.35 to 72.08 %.

8.3.3 **Share nose :**

8.3.3.1 **Share nose of front bottom I:**

S. No.	Notation	Dimension (mm)		Wear (%)	
		Initial	Final	After 28.62 h	Per hour
1.	Total length	337.0	330.0	2.08	0.07
2.	Total width	94.30	93.90	0.42	0.01

8.3.3.2 **Share nose of front bottom II :**

S. No.	Notation	Dimension (mm)		Wear (%)	
		Initial	Final	After 26.01 h	Per hour
1.	Total length	333.0	324.0	2.70	0.10
2.	Total width	95.56	94.53	1.08	0.04

8.3.3.3 **Share nose of rear bottom I :**

S. No.	Notation	Dimension (mm)		Wear (%)	
		Initial	Final	After 28.62 h	Per hour
1.	Total length	335.0	333.0	0.60	0.02
2.	Total width	95.22	94.36	0.90	0.03

8.3.3.4 **Share nose of rear bottom II :**

S. No.	Notation	Dimension (mm)		Wear (%)	
		Initial	Final	After 26.01 h	Per hour
1.	Total length	338.0	336.0	0.59	0.02
2.	Total width	95.18	94.90	0.29	0.01

Remarks: The hourly percentage of wear on dimension basis for share nose was observed as 0.01 to 0.10.

9. EASE OF OPERATION AND ADJUSTMENTS

No noticeable difficulty was observed during the operation and adjustment of Two Bottom Reversible M.B plough.

10. DEFECTS, BREAKDOWNS AND REPAIRS

1. Share nose of both rear bottoms were broken after 2.61 hours of field operation and were replaced with new one.
2. Standard (Front bottom-I) was found bend during field operation.

11. COMMENTS AND RECOMMENDATIONS

11.1 The dimensions of the share and share nose of plough do not conform to IS: 10691-1983. This should be looked into for corrective action for standardisation.

11.2 The dimensions of three point linkage, hitch pyramid does not conform to IS: 4468–1997. Therefore, this should be looked into for corrective action.

11.3 The chemical composition of share and share nose does not conform to the requirement of IS: 10691-1983. This may be looked into for improvement.

11.4 The hardness of share and share nose does not conform to the requirement of IS: 10691-1983. This may be looked into for improvement.

11.5 The bevelled width of cutting edge of share was not as per IS: 10691-1983. This should be looked into for corrective action for standardisation.

11.6 Thickness of cutting edge of share does not confirm to IS: 10691-1983. This should be looked into for corrective action.

11.7 **Share nose of both rear bottoms were broken After 2.61 hours of field operation. This should be looked into for quality improvement.**

11.8 **Standard (Front bottom-l) was found bend during Field operation. This should be looked into for improvement in quality.**

11.9 Shares were not marked with particulars like manufacturer's name and recognized trade mark, size, type and batch or code number as per IS: 10691-1983. This should be looked into for corrective action.

11.10 The model of the implement as mentioned in the labelling plate and as mentioned in the application form was different. This should be looked into for corrective action.

11.11 Total weight of the implement as mentioned on the labelling plate was 600 kg. However, observed weight was 451 kg. This should be looked into for corrective action.

11.12 **Technical literature :**
Operator manual, service manual, parts manual covered in English was submitted along with the implements. However, it is recommended to bring out the same covered in Hindi and other vernacular languages as per IS: 8132-1999

TESTING AUTHORITY

(M.R. PATIL)
AGRICULTURAL ENGINEER

(J.P. MANDAL)
SENIOR AGRICULTURAL ENGINEER

(K.K. NAGLE)
DIRECTOR

Draft Test Report Compiled By - **Shri Khagendra Bora, Sr. Technical Assistant**

12. APPLICANT'S COMMENTS

No comments were received from the applicant.