

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT



संख्या / No.: Imp.199/271
माह / Month: December, 2016



**NEW SWAN, NSML RTT 11 TYNE RIGID TYNE CULTIVATOR
(Tractor Mounted)**



NERFMTTI, LIBRARY

I. R. No. 2884

Date 27-1-17

भारत सरकार

GOVT OF INDIA

कृषि एवं किसान कल्याण मन्त्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

कृषि, सहकारिता एवं किसान कल्याण विभाग

DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE

उत्तर पूर्वी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान

NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE

विश्वनाथ चारिअली, जिला-विश्वनाथ (असम)

BISWANATH CHARIALI :: BISWANATH :: ASSAM, PIN - 784 176

Ph. No. 03715-222094

Website: <http://nerfmitti.nic.in>

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 (Shovel)
- c) Chemical analysis of critical components (Shovel)
- d) Wear analysis of critical components (Shovel)

1.2 Field Test:

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

2. METHOD OF SELECTION

The implement was directly submitted for test by the applicant at this Institute. Hence, the method of selection is not known.

3. TEST PROCEDURE

The following codes were referred for testing of rigid tyne cultivator.

- i) IS: 7565 (Part-I): 1975 (Reaffirmed Mar. 2009) : Specification for Tynes for Tractor operated cultivators: Part 1 Rigid tynes
- ii) IS: 4468 (Part I): 1997 (Reaffirmed Feb. 2012) : Agricultural wheeled tractors – Rear-mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4
- iii) IS: 3342:1998 (Reaffirmed Mar., 2009) : Soil Working Equipment – Cultivators, Animal Drawn - Specification

4. SPECIFICATIONS**4.1 General:**

- | | | |
|--------------------------------------|---|---|
| Name and address of the manufacturer | : | M/s. New Swan Multitech Limited.
Village Raian, Kohara-Machiwara Road
PO Heeran, Ludhiana-141 112 (Punjab) |
| Test requested by (Applicant) | : | M/s. New Swan Multitech Limited.
C-124, Naraina Industrial Area. Phase-I, Road
No. 12. New Delhi-110 027 |
| Name of machine | : | Cultivator |
| Make | : | NEW SWAN |
| Model | : | NSML RTT 11 Tyne |
| Type | : | Rigid Tyne, Tractor Mounted |
| Size (mm) | : | 11 x 230 |
| Serial Number of machine | : | 12 |
| Year of manufacture | : | 2016 |
| Country of origin | : | Not Provided |
| Power Source as recommended, hp | : | Not Provided |
| Power source used during the test | : | Swaraj 855 FE Tractor (Refer Annexure-II) |

1	2	3	4	5	6	7
5	A	283.8*	--	--	--	--
	B	57.0*	--	--	--	--
	C	50.6*	--	--	--	--
6	A	282.9*	--	--	--	--
	B	56.8*	--	--	--	--
	C	54.4*	--	--	--	--
7	A	284.2*	--	--	--	--
	B	57.1*	--	--	--	--
	C	51.3*	--	--	--	--
8	A	281.6*	--	--	--	--
	B	57.1*	--	--	--	--
	C	51.5*	--	--	--	--
9	A	282.2	272.0	10.2	3.61	0.14
	B	58.0	56.5	1.5	2.59	0.10
	C	50.1	44.9	5.2	10.38	0.39
10	A	282.2*	--	--	--	--
	B	56.67*	--	--	--	--
	C	52.7*	--	--	--	--
11	A	277.0*	--	--	--	--
	B	56.8*	--	--	--	--
	C	53.5*	--	--	--	--

Remarks: The hourly wear percentage of reversible shovel on dimensional basis was recorded as 0.09 to 0.39.

Note: The broken shovel during field test was marked with * (one side) and ** (both side) on Table-II and wear analysis on dimensional basis was not able to carried out.

8. EASE OF OPERATION & ADJUSTMENTS

No noticeable difficulty was observed during the operation and adjustment of cultivator.

9. DEFECTS, BREAKDOWNS AND REPAIRS

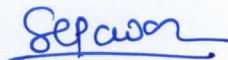
During field performance test of the implement, it has been observed that some of the reversible shovel was broken after operating for 13.20 progressive h. However the broken shovel has been inverted and continued for its field test a total of eight shovel was broken while assessing it field performance test. The broken/reused shovel was marked with * (one side) and ** (both side) on the table-I.

10. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS


- 10.1 The dimension of tyne and the reversible shovel does not conform to IS: 7565 (PART I) – 1975 and IS: 3342-1998 respectively. This should be looked into for corrective action for standardization.
- 10.2 The dimension of hitch point of the implement does not conform to IS: 4468-1997 (Part-1). This should be looked into for corrective action for standardization.
- 10.3 The hardness of the shovel does not conform to IS: 3342-1998. This should be looked into for corrective action.

- 10.4 The chemical composition of the shovel does not conform to IS: 3342-1998. This should be looked into for corrective action for standardization.
- 10.5 **Performance of the cultivator:**
- 10.5.1 a) The area cover was recorded as 0.693 to 1.095 ha/h at the speed of operation from 3.40 to 5.11 km/h.
b) The time required to cover one hectare area was recorded as 0.91 to 1.44 h.
- 10.5.2 **Quality of work:**
- a) The depth of cut was recorded as 8 to 12 cm.
b) Average working width was observed as 214 to 254 cm.
c) Field efficiency was observed as 78.9 to 88.2 %.
- 10.5.3 **Power requirement:**
The draft of implement was recorded from 508 to 1147 kgf and power requirement was calculated as 7.07 to 14.77 kW.
- 10.5.4 **Labour requirement:**
One skilled operator was needed to operate the tractor with the implement.
- 10.6 **Wear Assessment:**
During field test of the cultivator 8 shovel has been broken. Therefore it was unable to take the wear analysis of the broken shovel on mass and dimensional basis. This should be looked into for corrective action.
- 10.7 The critical component (shovel) of the cultivator was found inadequate. There for, it is recommended to produce a better quality of critical component (shovel) for future production. Provision was not made for adjustment of tyne spacing, which should be looked into for correction to suit different row spacing conditions.
- 10.8 As the implement is rigid tyne type, it is not suitable for root & stone infested lands.
- 10.9 **Labelling plate:**
Manufacturer's name, address, type, model, serial no. and year of manufacture was indicated on the labeling plate. However, it is recommended to specify size of implement and power requirement on the labelling plate.
- 10.10 **Technical literature:**
No technical literature was submitted during the course of testing.

TESTING AUTHORITY



**S. G. PAWAR
AGRICULTURAL ENGINEER**



**K.K. NAGLE
DIRECTOR**

Test conducted & Report compiled by -

Sh. Vithato Keyho & Sh. Rahul Prajapathi

11. APPLICANT'S COMMENTS

Para no.	Our reference	Applicant's Comments
11.1	10.1	For further production we shall take appropriate action to improve the same as per IS: 7565 (Part 1)-1975 and IS: 3342-1998 in future.
11.2	10.2	For further production we shall take appropriate action to improve the same as per IS:4468—1997 (Part-1) in future
11.3	10.3	Review the same ensure to comply the requirement of shovel as per IS 3342-1998 in future
11.4	10.4	Review the same ensure to comply the requirement of shovel as per IS 3342-1998 in future
11.5	10.6	We shall take immediately corrective action & change the supplier of shovel.
11.6	10.7	Shall review the design for Tyne spacing adjustment & shall change the supplier for future supplies of shovel.
11.7	10.12	Same is in process & we shall ensure to provide the same for further supplies both technical literature.