



**NBSU, NBCL07, SPRING LOADED NINE TYNE CULTIVATOR  
(Tractor Mounted)**



सत्यमेव जयते

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कृषि एवं किसान कल्याण मन्त्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

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## 1. SCOPE OF TEST

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

### 1.1 Laboratory Test:

- Checking of specifications
- Hardness of soil engaging parts (Shovel)
- Chemical analysis of critical components (Shovel)
- Wear analysis of critical components (Shovel)

### 1.2 Field Test :

- Rate of work
- Quality of work
- Power requirement
- Labour requirement
- Ease of operation and adjustments
- 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 CODE AND PROCEDURE

The following codes were referred for testing of cultivator.

- |      |                                                |   |                                                                                                 |
|------|------------------------------------------------|---|-------------------------------------------------------------------------------------------------|
| i)   | IS: 6638 – 1972 (Reaffirmed Feb.-2011)         | : | Specification for tractor mounted spring loaded cultivator.                                     |
| ii)  | IS: 7565 (Part-I): 1975 (Reaffirmed Mar. 2009) | : | Specification for Tines for Tractor operated cultivators: Part 1 Rigid tines                    |
| iii) | IS: 4468 (Part I): 1997 (Reaffirmed Feb. 2012) | : | Agricultural wheeled tractors – Rear-mounted three-point linkage: Part 1 Categories 1, 2, 3 & 4 |
| iv)  | IS: 3342:1998 (Reaffirmed Mar., 2009)          | : | Soil Working Equipment – Cultivators, Animal Drawn - Specification                              |

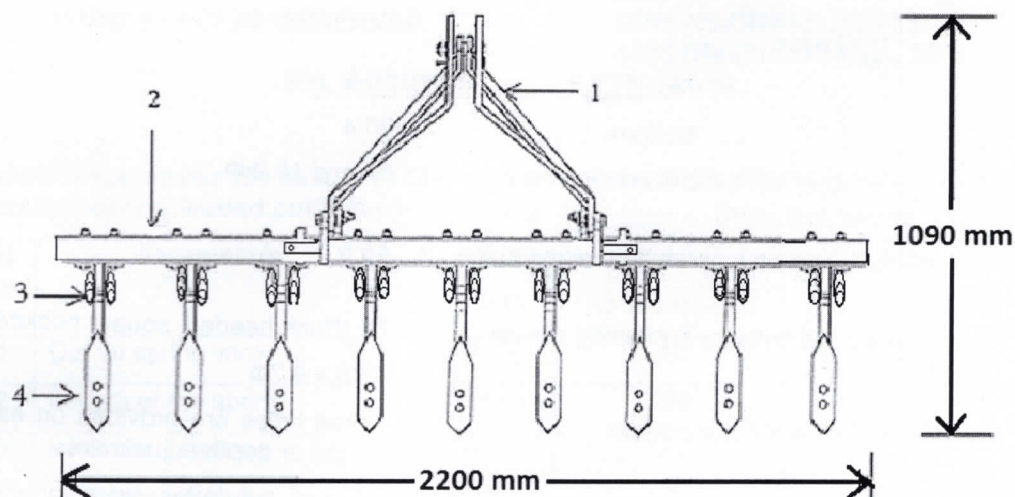
## 4. SPECIFICATION

### 4.1 General:

- Name and address of the manufacturer : **M/s. New Bihar Sellar Udyog,**  
Village - Shitalpur, Post - Jokiyari,  
P.S.- Raxaul – 845 305, Dist - East Champaran  
(Bihar)

Name & Address of Applicant	: Mr. Saroj Prasad M/s. New Bihar Sellar Udyog, Village - Shitalpur, Post - Jokiyari, P.S.- Raxaul – 845 305, Dist - East Champaran (Bihar)
Make	: NBSU
Model	: NBCL07
Type	: Tractor Mounted
Serial Number of machine	: 035
Year of manufacture	: 2016 (As on labelling plate) 2015 (As on literature)
Size of implement (mm)	: 9 × 225
Nominal size of implement (mm)	: 8 × 225
Working size of implement (mm)	: 2025
Country of origin	: India
Power Source as recommended	: 30 hp or above
Power source used during the test	: Swaraj 855 FE Tractor (Specification given in <b>Annexure-II</b> )

#### 4.2 Constructional Details (Refer Fig.1) :



- |                  |           |
|------------------|-----------|
| 1. Hitch pyramid | 3. Tyne   |
| 2. Mainframe     | 4. Shovel |

**Fig.1: NBSU, NBCL07 SPRING LOADED NINE TYNE CULTIVATOR**

1	2	3	4	5	6	7
5.	A	270.5	258.0	12.5	4.62	0.17
	B	55.1	53.6	1.5	2.72	0.10
	C	54.0	50.0	4.0	7.41	0.27
6.	A	272.8	263.3	9.5	3.48	0.13
	B	55.7	54.2	1.5	2.69	0.10
	C	53.0	47.4	5.6	10.57	0.38
7.	A	271.3	266.3	5.0	1.84	0.07
	B	55.4	54.5	0.9	1.62	0.06
	C	54.8	51.2	3.6	6.57	0.24
8.	A	269.9	257.9	12.0	4.45	0.16
	B	54.8	52.8	2.0	3.65	0.13
	C	52.8	42.3	10.5	19.89	0.72
9.	A	272.9	265.9	7.0	2.57	0.09
	B	55.5	54.6	0.9	1.62	0.06
	C	53.6	43.7	9.9	18.47	0.67

**Remarks:** The hourly percentage wear of reversible shovel on dimensional basis was recorded as 0.05 to 0.72.

### **8. EASE OF OPERATION & ADJUSTMENTS**

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

### **9. DEFECTS, BREAKDOWNS AND REPAIRS**

No breakdown was occurred during 27.50 h of field test of the cultivator.

### **10. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS**

#### **10.1 Performance of the cultivator :**

##### **10.1.1 Rate of work :**

- The average area cover was recorded as 0.473 to 0.536 ha/h at the speed of operation from 3.02 to 3.34 km/h, which is considered normal.
- The time required to cover one hectare area was recorded as 1.9 to 2.1 h.

##### **10.1.2 Quality of work :**

- The depth of cut was recorded as 10 to 11 cm, which is considered normal for secondary tillage operations.
- Average working width was observed as 184 to 199 cm.
- Field efficiency was observed as 80 to 87 %.

##### **10.1.3 Power requirement:**

The draft of implement was recorded from 584 to 654 kgf and power requirement was calculated as 4.9 to 5.8kW.

##### **10.1.4 Labour requirement:**

One skilled operator was needed to operate the tractor with the implement.

- 10.2 The dimension of hitch does not conform with IS: 4468-1997 (Part-1) (Reaffirmed Feb., 2012). Hence, it is recommended to look into at production level for standardization.
- 10.3 The specification of the reversible shovel and tyne does not conform to IS: 3342-1998(Reaffirmed Mar., 2009)andIS: 7565 (PART I) – 1975(Reaffirmed Mar., 2009) respectively. This should be improved and provided as per the requirement of Indian Standard.
- 10.4 Chemical composition and hardness of shovel does not conform to relevant Indian Standards. This needs to be looked into for corrective action.
- 10.5 The specification of springs for tractor mounted Spring loaded Cultivator, does not conform to IS: 6638 – 1972(Reaffirmed Feb. 2011). This should be improved and provided as per the requirement of Indian Standard.
- 10.6 **Wear Assessment:**  
The hourly rate of wear of the reversible shovel on mass and dimensional basis was recorded as 0.21 to 0.52% and 0.05 to 0.72% respectively. The hourly percentage of wear was considered normal.
- 10.7 The Centre-to-centre distance between tool bars was observed as 441 mm against the requirement of 525 mm (Min) as per IS: 6638-1972. This should be looked into for corrective action.
- 10.8 The contact angle of the shovel with tyne was not declared as per the recommendation if IS: 6638-1972.
- 10.9 Necessary tools for adjustments, service and repair were not provided during the course of testing. Hence, it is recommended to provide a set of necessary tools with the cultivator as per the requirement of Indian Standard.
- 10.10 Burrs were observed in the welding joints on the mainframe which are undesirable. Necessary corrective actions should be taken during future production.
- 10.11 The quality of protective coating applied on the implement was found inadequate. It is therefore recommended to provide paint coating all over the implement satisfactorily so as to prevent the surface deteriorations due to rusting.
- 10.12 The name of manufacturer was indicated in the correspondences as **M/s. New Bihar Sellar Udyog**, whereas in the labelling plate is has been marked as **M/s New Bihar Sheller Udyog**. Moreover, the model was indicated as NCL07 in the application, whereas the same has been indicated as NBCL07 in different technical literatures and labeling plates. In the same way, year of manufacture was indicated as 2015 in literatures and 2016 in the labeling plate. All of these are erroneous and needs corrective measures.

**10.13 Labeling of the Implement:**

Labeling Plate was provided on the main frame. However, the information provided was insufficient as per the relevant codes. This should be looked into.

**10.14 Adequacy of Literature:**

Operator Manual, Service Manual & Parts Catalogue was provided in Hindi along with the implement during the course of testing.

**TESTING AUTHORITY****S. G. PAWAR****AGRICULTURAL ENGINEER****K. K. NAGLE****DIRECTOR**

Test conducted and report compiled by - **Sh. P. Lodh, Technical Assistant**

**11. APPLICANT'S COMMENTS**

We have gone through the report and will take care of the shortcomings in the machine during future production.