

व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

No-29

संख्या / No. : HT. 22/126  
माह / Month : March, 2011



**OM SERRATED SICKLE**



सत्यमेव जयते

भारत सरकार  
GOVT OF INDIA

कृषि मन्त्रालय

MINISTRY OF AGRICULTURE

कृषि एवं सहकारिता विभाग

DEPARTMENT OF AGRICULTURE AND COOPERATION

उत्तर पूर्वी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान

NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE

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### 1.0. SCOPE OF TEST

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

- Specification
- Hardness and material consumption
- Rate of work
- Ease of handling during operation
- Breakdowns and repairs
- Wear of the blade.

### 2.0. METHOD OF SELECTION

The Sickle was submitted directly by the applicant for commercial test and thus method of selection is not known.

### 3.0. TEST PROCEDURE

There is no test code as such for the testing of sickle. The guidelines however, was taken from IS 4358-1996 (Specification for Sickles).

### 4.0. SPECIFICATIONS

#### 4.1. : General

Name	: Serrated Sickle
Make	: OM
Model	: N.A.
Serial Number	: N.A.
Year of manufacture	: N.A.
Manufactured by	: Shree Vyankateshwara Industries Plot No. 94, Chikhli Industrial Area, Near Fire Brigade Office, Kalmana Market Road, Nagpur – 440 035(MS)

#### 4.2 Constructional details (Refer Fig.1):-

##### 4.2.1. Blade

Material	: No details provided
Shape	: Curved, Serrated edge on the inner side of blade
Effective cutting length (Curved teeth to teeth)(mm)	: 215
Size of sickle (mm)	: 213
Length of outer curvature (mm)	: 277
Maximum width (mm)	: 23
Thickness of middle portion(mm)	: 1.1
Pitch of the teeth on the blade (mm)	: 1.25
Total no. Of teeth on the blade	: 144
Method of fixing	: Blade is riveted on the tang and the tang is inserted into wooden handle.

Sl.No.	Parameters	Test Sickle
1.	Variety of crop	Bakul Joha
2.	Moisture content of Grain (%) (Db)	14.0 to 14.5
3.	Moisture content of stem (%) (Wb)	65 to 74
4.	No. Of grains per ear head	153 to 206
5.	Av. Length of ear head (cm)	21.4 to 22.6
6.	Crop- Grain ratio	1:0.16 to 1:0.24
7.	Mass of crop per sq. m area (kg)	0.74 to 1.72
8.	Mass of grains per sq. m area (g)	0.14 to 0.28
9.	Av. Stubble height (mm)	21.6 to 34.0
10.	Losses:- - Pre harvest loss (g/m <sup>2</sup> ) - Post harvest loss (g/m <sup>2</sup> )	0 3.4 to 10.4
11.	Mass of crop harvested in (kg/ha)	6004.45 to 13715.54
12.	Area harvested (ha/h)	0.0065 to 0.0081
13.	Time required for 1 ha (h)	123.46 to 153.85

#### 7.1. Wear of the blade (on mass basis):-

Initial mass (g)	Final mass (g)	Difference in mass (g)	Percentage of wear	
			After 21.11 h	Per hour
190.5	189.0	1.5	0.79	0.04

#### 8.0. EASE OF HANDLING DURING OPERATION

No difficulty was observed in handling the sickle during harvesting of paddy crop. The operator can handle the sickle for one hour continuously without any fatigue.

#### 9.0. DETAILS OF BREAKDOWNS AND REPAIRS

No breakdown was observed during 21.11 hours of harvesting operation.

#### 10.0. COMMENTS AND RECOMMENDATION

10.1. The output (Area harvested) by the Sickle was recorded as 0.0065 to 0.0081 ha/h in normal working conditions. 123.46 to 153.85 man-hours were required for harvesting one hectare of paddy crop.

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- 10.2. Mass of crop harvested was recorded as 6004.45 to 13715.54 kg/ha.
- 10.3. The post-harvest (shattering) losses was recorded as 3.4 to 10.4 g/m<sup>2</sup>.
- 10.4. The hardness of blade of Sickle was recorded as 251 HB which is considered below par against the IS requirement.
- 10.5. The percentage hourly wear of blade was recorded 0.04% which is considered to be normal.
- 10.6. The following points need to be looked into so as to make the sickle IS 4358-1996 compliant.
- Dimensions of sickle
  - Material and dimensions of ferrule
  - Serration on blade
  - Trade mark on sickle
  - Hardness of blade

**TESTING AUTHORITY**

H.L. YADAV AGRICULTURE ENGINEER	
P.K. PANDEY SENIOR TEST ENGINEER	
M.K. VISWAKARMA DIRECTOR	

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**11. Applicant's comment**

**One copy of draft test report was made available to the applicant for their comment. No comment, however, was received in the institute.**