



व्यावसायिक परीक्षण रिपोर्ट  
COMMERCIAL TEST REPORT

संख्या / No. : Imp.174/227  
माह / Month: May, 2015

Exds - 11



NEW SWAN, NSE PH 2R, POTATO HARVESTER



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

विश्वनाथ चारिआलि, जिला-शोणितपुर (असम)

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

Website: <http://nerfntti.dacnet.nic.in>

Ph. No. 03715-222094

E-Mail: [fnti-ner@nic.in](mailto:fnti-ner@nic.in)

Fax No: 03715-230358

**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
- Chemical analysis of critical components
- Wear analysis of critical components

**1.2 Field test**

- Rate of work
- Quality of work
- Power requirement
- Ease of operation, maintenance and adjustments
- Labour requirement
- Defects, breakdowns and repairs

**2. METHOD OF SELECTION**

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

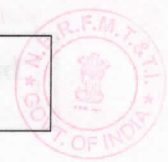
**3. TEST PROCEDURES**

- |      |  |   |   |
|------|--|---|---|
| i)   | IS: 13818-1999                                   | : | Test code for tractor operated potato digger shakers.             |
| ii)  | IS: 4931 – 1995<br>(Reaffirmed in December 1999) | : | Agricultural tractors-Rear Mounted PTO shaft (Types 1, 2 & 3)     |
| iii) | IS: 4468 – 1997 (Part-1)<br>(Reaffirmed in 2012) | : | Agricultural wheeled Tractors - Rear Mounted three point linkage. |

**4. SPECIFICATIONS****4.1 General**

- |                                  |   |   |
|----------------------------------|---|---|
| Name and address of manufacturer | : | M/s. New Swan Enterprises Agro Division,<br>C-213, Phase-8, Focal Point,<br>Ludhiana-141010, Punjab |
| Name of the machine              | : | Potato Harvester (Tractor Drawn)  |
| Type                             | : | Tractor mounted   |
| Make                             | : | New Swan  |
| Serial No.                       | : | Not specified   |
| Model                            | : | NSE PH 2R   |
| Year of manufacture              | : | Not specified   |
| Effective width of machine (mm)  | : | 1112  |





Recommended power source : 35 to 70 hp Tractor  
 Power as used during test : Swaraj 855 FE Tractor  
 (Refer Annexure-V)

#### 4.2 Constructional details

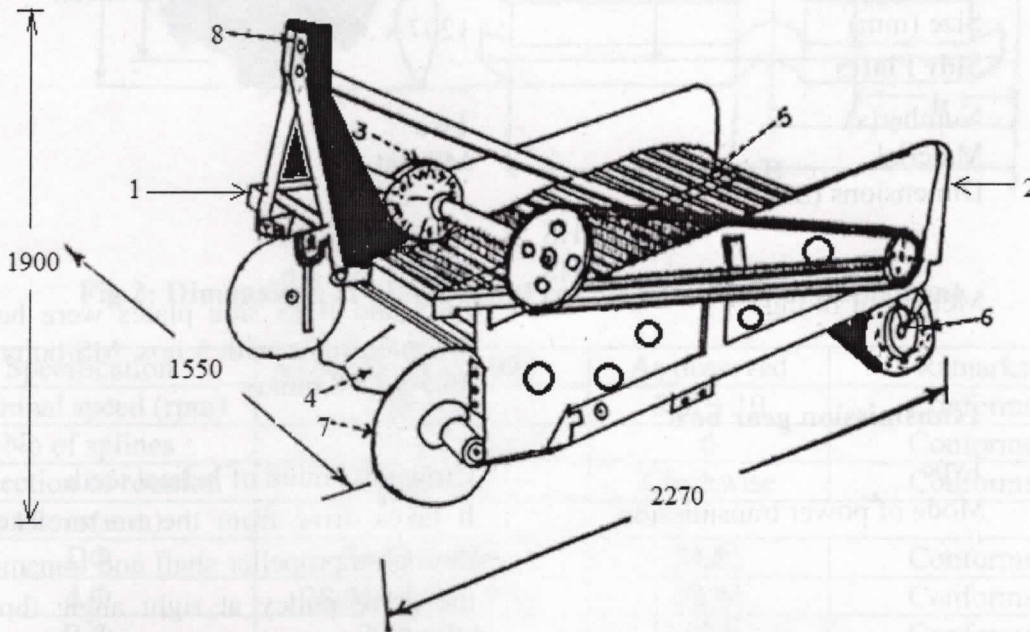


Fig.1: Schematic view of Potato Harvester

#### KEY WORDS:

- |                      |                            |
|----------------------|----------------------------|
| 1. Main frame        | 5. Elevator chain conveyor |
| 2. Side plate        | 6. Roller                  |
| 3. Transmission gear | 7. Disc                    |
| 4. Cutting blade     | 8. Hitch pyramid           |

##### 4.2.1 Main frame details

: It consisted of a MS sheet of size 1200 x 592 (curved) x 6.2 mm fabricated in "U" shaped channel. One another MS sheet of size 395 x 242 x 6 mm was fabricated in both the ends of the main frame. Transmission gear box was mounted on the main frame and from the transmission gear box two hexagonal shaped half shafts were connected up to LHS and RHS plate. LHS

**7.2.2 Rate of Work**

The rate of work was assessed by the area covered and output of the potato harvester as 0.262 to 0.286 ha/h with an output of 553 to 658 kg/h potatoes.

**7.2.3 Quality of Work**

Quality of work was assessed by the percentage of exposed potatoes and cut potatoes. The percentage of exposed potatoes ranged between 98.24 to 99.73 % and cut potatoes 0 to 1.46 %.

**7.2.4 Long Run Test**

Potato digger was operated for 21.1 hours with continuous run for 5.5 hours. During the test no problem was occurred. However, belt tightening was done after 2 to 3 hrs of continuous operation of the machine.

**7.2.5 Labour requirement**

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

**7.2.6 Adequacy of power of prime mover as used during test**

The power of the prime mover as used during test was found adequate.

**7.2.7 Service and maintenance**

Requires checking & tightening of all nuts & bolt of the implements especially blade, lower hitch clamps and propeller shaft.

**8. EASE OF OPERATION ADJUSTMENT**

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

**9. DEFECTS, BREAKDOWN & REPAIRS**

9.1 The transmission belt became loose during 2 to 3 hrs. of operation during long run field test.

**10. COMMENTS & RECOMMENDATIONS**

10.1 The dimensions of the three point linkage (hitch pyramid) of the potato harvester do not conform to Ct. I & Cat. II to IS: 4468-2012. This should be looked into for corrective action for standardization.

10.2 It is recommended that the propeller shaft of the potato harvester should be protected with proper shield.

10.3 Dimensions of PIC and PIC yoke bore of implement, do not conform to IS: 4931-1995 and therefore, it should be provided as per Indian Standard for standardization.

10.4 The percentage wear of cutting blade on mass basis and dimension basis during 26.1 hours of field operation ranged from 0.012 % and 0.008 to 0.013% respectively. It is considered as normal.

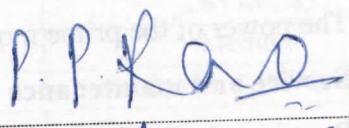
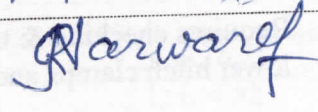
10.5 The rate of work was recorded 0.262 to 0.286 ha/h at forward speed of 2.65 to 2.85 kmph.

10.6 The depth of cut was recorded as 12.7 to 14.2cm with soil moisture content of 5 to 7 % in medium soil.



- 10.7 Manuverability of tractor with potato harvester was found to be satisfactory. The quality of work was observed satisfactory.
- 10.8 The labeling plate was provided with the implement, it do not cover all information such as - size of the implement, operating speed and power requirement. Hence, it is recommended, it should be provided during the commercial production of machine.
- 10.9 Technical literature:  
A photo copy of instruction manual and parts catalogue was provided with the implement. It should be in Hindi and other vernacular languages as per IS: 8132-1999.

**TESTING AUTHORITY**

<p align="center"><b>P.P.RAO</b> <b>SENIOR AGRICULTURAL ENGINEER</b></p>	
<p align="center"><b>J.J.R. NARWARE</b> <b>DIRECTOR</b></p>	

Test report compiled by Shri P. C. Dihingia, STA

**11. APPLICANT'S COMMENTS**

Para No.	Our Reference	Applicant's comments
11.1	10.1	We will ensure the same for future production
11.2	10.2	We will ensure the same for future production
11.3	10.3	We will ensure the same for future production
11.4	10.8	We will ensure the same for future production
11.5	10.9	We will ensure the same for future production