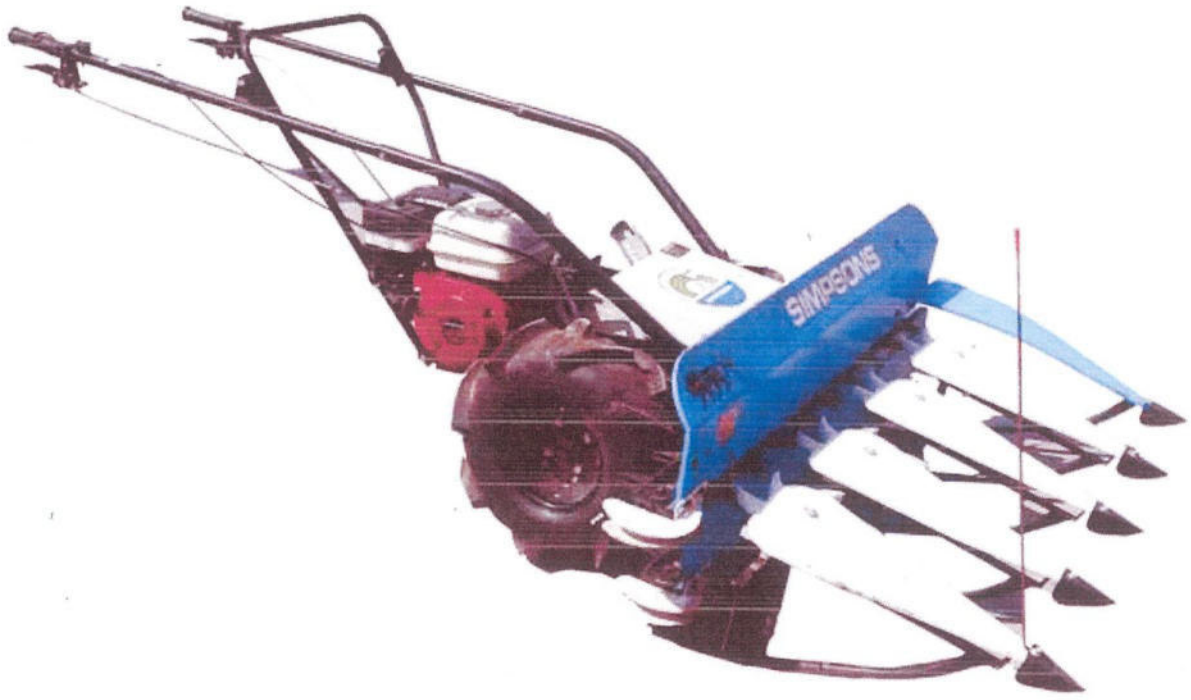
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: Reaper – 16/2990/2023**
माह/**Month: April, 2023**

THIS TEST REPORT VALID UP TO : 30th April, 2028



SIMPSON, I5 RSP
HARVESTING REAPER (WALK BEHIND) (COMMERCIAL)

भारत सरकार
Government of India
कृषि एवं किसान कल्याण मंत्रालय
Ministry of Agriculture and Farmers Welfare
कृषि एवं किसान कल्याण विभाग
Department of Agriculture and Farmers Welfare
उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
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10. AIR CLEANER OIL PULL OVER TEST

10.1 Atmospheric conditions:

Temperature, °C	:	24.5 to 27.5
Pressure, kPa	:	99.07 to 99.54
Relative humidity, %	:	45.8 to 48.8
Mass of oil in the air cleaner assembly when fitted with recommended grade of oil 5% in excess than marked level (g)	:	57.75

	Position	Slope (degree)	Loss of oil (g)	Oil pull over (%)	Remarks if any
i)	Horizontal	-	0.09	0.16	NIL
ii)	Tilted longitudinally with front end up	15	0.08	0.14	
iii)	Tilted longitudinally with rear end up	15	0.10	0.17	
iv)	Tilted laterally with right side up	15	0.10	0.17	
v)	Tilted laterally with left side up	15	0.11	0.19	

11. FIELD TEST

The reaper was operated for 27.46 hrs. (excluding 1.16 hrs. Running- In) for harvesting the paddy crop. During the test, RNR-15048 available variety of paddy was harvested to assess the performance of reaper with regard to quality of work, rate of work, fuel consumption, safety and soundness of construction. The crop and atmospheric conditions during field test are given in Annexure-I

The crop parameters recorded during the test with paddy crops are as given below:

Parameter	**Paddy**
Plant height (cm)	96 to 140
Plant population (Nos./m^2)	205 to 310
Moisture (%)	
Grain	14.6 to 17.5
Straw	55 to 64

The results of field performance test are given in Annexure –II and are summarized in Table-3

Summary of field test: Table-3

S. No.	**Parameters**	**Observations**
1.	Variety of crop	Paddy - RNR 15048
2.	Forward speed , kmph	2.57 to 2.95
3.	Area covered, ha/h	0.220 to 0.280
4.	Width of cut, m	1.11 to 1.13
5.	Fuel consumption	
	l/h	0.80 to 1.0
	l/ha	2.92 to 4.10

6.	Losses	
	Pre-harvest losses, kg/ha	13.3 to 17.0
	Post harvest losses, , kg/ha	23.0 to 37.50
	Un-cut crop by cutter bar, kg/ha	6.50 to 15.05
	Grain loss due to post harvest loss due to shattering by cutter unit, conveyor handling unit, kg/ha	16.70 to 25.50
7.	Stubble height, cm (after harvesting)	4 to 6

11.1 Paddy Harvesting

11.1.1 Rate of work

i) The speed of harvesting ranged from 2.57 to 2.95 kmph during the test. The rate of work varied from 0.220 to 0.280 ha/h.

ii) The fuel consumption varied from 0.80 to 1.0 l/h

iii) The fuel consumption per unit area harvested varied from 2.92 to 4.10 l/ha.

11.1.2 Quality of work

i) During harvesting grain loss due to cutter bar unit, conveyor unit, handling unit etc. was observed from 6.50 to 15.05 kg/ha.

ii) Post harvest losses observed from 23.0 to 37.50 kg/ha.

11.2 Ease of operation and safety provisions:

No noticeable difficulty observed during test.

11.3 Time required for daily maintenance

15 to 20 minutes are required for daily servicing and maintenance of reaper.

11.4 Work rest cycle

Two persons are required for operation of the machine in the field. The first operator operates the reaper for $1^1/_2$ hrs. and then needs rest. After this, the other operator operates the machine for next $1^1/_2$ hrs. and the cycle continues.

12. ADJUSTMENT, DEFECTS, BREAKDOWNS & REPAIR

No noticeable defect or breakdown was observed during the test.

13. COMPONENTS/ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR

13.1 Engine :

The Engine and other assemblies were dismantled after 32.06 hrs. of engine operation.

13.1.1 Cylinder:

Cylinder bore dia., mm						
Top Position		Middle Position		Bottom Position		Max. permissible wear limit
Thrust	Non-thrust	Thrust	Non-thrust	Thrust	Non-thrust	
68.00	68.00	68.00	68.00	68.00	68.00	68.065

14	Hardness of ledger blade	45 (Min)	54	Conforms
15	Provision for adjusting the height of cutter bar	Must be provided	Provided	Conforms
16	Guards against all moving parts/drives and hot parts	Must be provided	Provided	Conforms
17	Spark arrester in engine exhaust	Must be provided	**Not Provided**	**Does not conform**
18	Location and direction of exhaust emission to be away from the operator and machine for satisfactory operation	Must be provided	Provided	Conforms
19	Slip clutch/safety pins at cutter bar drive	Must be provided	Safety pins	Conforms
20	Slip clutch/safety pins at conveyor drive	Must be provided	**Not Provided**	**Does not conform**
21	Provision of row maker/ crop guide	Must be provided	Crop guide	Conforms
22	Marking/Labelling of machine	The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacture, Serial Number, Type, Size, Size of prime mover (kW)	Country of origin, Make and Size of machine is not provided on the plate.	**Partially conforms**
23	Literature	Operator manual, service manual, parts catalogue should be provided.	Provided	Conforms

15. COMMENTS AND RECOMMENDATION

15.1 The specifications of knife section and knife back do not conform to IS: 6025-1999 and IS:10378, respectively. This needs to be looked into for corrective action.

15.2 Spark arrester in engine exhaust is not provided.

15.3 Slip clutch/Safety pins at conveyor drive should be provided.

15.4 The labelling plate should be riveted on the body of machine having Name and address of manufacturer, Country of Origin, Make, Model, Year of manufacturer, Serial Number, Type, size, power required (kW).

15.5 Mechanical vibration

The amplitude of mechanical vibration marked as (*) on the relevant chapter are on drastically higher side. It is not just directly concerned with operator's health, safety and comfort, but also affect the useful life of the components. In view of above, this deserve to be given top priority for corrective action.

16. TECHNICAL LITERATURE

The following literature were provided with machine during test.

i) Instruction and spare parts manual of engine
ii) Parts catalogue of engine
iii) User manual of machine
iv) Assembly instruction of machine
v) Parts catalogue of machine

However, the user manual should be updated as per IS : 8132-1999.

TESTING AUTHORITY

SANJAY KUMAR **AGRICULTURAL ENGINEER**	
Dr. MUKESH JAIN **DIRECTOR**	17.04.2023

17. APPLICANT'S COMMENTS

Sr. No.	Our Reference	Applicant Comments
17.1	15.1	We will take necessary corrective action for meeting he specification for the next lot of production.
17.2	15.2	We will take up with the engine manufacturer and implement the same.
17.3	15.3 & 15.4	We will implement the same in the next lot of production.
17.4	15.5	We are working for the reduction of vibration by implementing AVM's (Anti Vibration Mountings) in the next lot of production.