व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या/ **No.: COMP-194/2597/2020**
माह/**Month : November, 2020**

THIS TEST REPORT VALID UP TO : 30th NOVEMBER, 2027

PAL SUPER SMS, FITTED ON PAL-977, SELF- PROPELLED COMBINE HARVESTER

भारत सरकार
Government of India
कृषि एवं किसान कल्याण मंत्रालय
Ministry of Agriculture and Farmers Welfare
कृषि, सहकारिता एवं किसान कल्याण विभाग
Department of Agriculture, Cooperation and Farmers Welfare
उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
Northern Region Farm Machinery Training and Testing Institute
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4. ROTOR BALANCNING TEST

	Date of test	:	06.11.2020
	Make and model of Rotor balancing machine	:	PROTEQ and H - 1 K
	Mass of the job (kg)	:	78.08
	Service speed of the job rpm	:	1824
	ISO balancing grade	:	G 16
	Balancing speed rpm	:	1824

S.No.	**Particulars**	As permissible	As observed	Remark
	Unbalance weight(Left side plane) (g)	39.18	2.3	Balanced
	Unbalance weight (Right side plane) (g)	39.18	61.74	**Unbalanced**

	Unbalance angle (**Left side plane**) (degree)	264.64
	Unbalance angle (**Right side plane**) (degree)	254.28

5. FIELD TEST

5.1 The SMS fitted on PAL-977 combine harvester was operation in the paddy field for 6 hrs, to assess (a) performance of SMS and, (b) performance of combine harvester with SMS.

The crop parameters recorded during the test were as under:-

Crop Parameters

Sl. No.	**Parameters**		**Observations**
1.	Average plant height, cm	:	125 to 130
2.	Average number of tillers/m^2	:	281 to 289
3.	Average length of ear head, cm	:	25 to 28
4.	Average straw/grain ratio	:	1.2
5.	Average moisture, %		
	- Grain	:	13.6
	- Straw	:	68.2

The results of field performance test of Paddy crop harvesting are summarised in Table - 5 and presented in detail in **Appendix – II to V.**

Table- 5 : SUMMARY OF LOSSES & EFFICIENCIES OBSERVED DURING FIELD PERFORMANCE TEST.

Crop variety	Collectable losses (%)	Non-collectable losses (%)	Total processing losses (%)	Threshing efficiency (%)	Cleaning efficiency (%)	Grain breakage in main grain tank (%)	Forward speed (kmph)	Area covered (ha/h)	Fuel consumption		Grain output (kg/h)	Crop through-put (t/h)
									(l/h)	(l/ha)		
1	2	3	4	5	6	7	8	9	10	11	12	13
PADDY												
PR-27 P31	1.6	0.3	1.8	99.2	96.9	0.87	1.73	0.541	9.51	17.58	3801.62	8.23

SUMMARY OF FIELD PERFORMANCE OF SMS

Uniformity of straw spread, CV, (percent)	18.6
Weighted mean size of chopped straw, cm	12.4

6. DEFECTS, ADJUSTMENTS, BREAKDOWNS AND REPAIRS

No noticeable defect observed

7. SUMMARY OF OBSERVATIONS

7.1 Field test

7.1.1	Performance of SMS with PAL-977 Combine Harvester	
1	Uniformity of straw spread, CV, (percent)	18.6
2	Weighted mean size of chopped straw, cm	12.4

7.1.2 Performance of PAL-977 Combine harvester with PAL Super SMS

S. No	Parameters	Observations
1.	Range of average speed of operation (kmph)	1.73
2.	Range of average area covered (ha/h)	0.541
3.	Maximum average fuel consumption: - (l/h) - (l/ha)	 9.51 17.58
4.	Crop throughput (tonne/h)	8.23
5.	Grain breakage in main grain outlet (%)	0.87
6.	Header losses (%)	0.15
7.	Total non-collectable losses (%)	0.3
8.	Total collectable losses (%) (un threshed + broken from main outlet)	1.6
9.	Total processing losses (%)	1.8
10.	Threshing efficiency (%)	99.2
11.	Cleaning efficiency (%)	96.9

9. CRITICAL TECHNICAL SPECIFICATIONS

Deferred till 31.12.2020 vide Ministry O.M. No 13-13/2020 M&T, (I&P) dated 24.04.2020

10. COMMENTS AND RECOMMENDATIONS

10.1 Field performance test

No noticeable defect observed during field test.

10.2 Applicant has recommended PAL-977 combine harvester for SMS field testing. This is vital information and therefore the same must be inscribed in labelling plate also for the guidance of users.

10.3 In the labelling plate, the power requirement is given as 74.3 kW, whereas the power of the combine harvester recommended is 78.7 kW. **This is misleading and therefore Must be looked into for corrective action.**

10.4 In the labelling plate manufacture has declared the weight of SMS as 205 kg, which is misleading. The actual weight was observed as 195 kg. It may be looked into.

10.5 The labelling plate **MUST** be provided on the machine with following information.

1) Name and address of manufacture.
2) Country of origin
3) Make
4) Model
5) Year of manufacture
6) Serial Number
7) Type
8) Size
9) Required size of prime mover (kW)
10) Weight of the machine (kgs)
11) Make and Model of Combine Harvester

10.6 Ease of operation and safety provision

No noticeable difficulties observed during field test.

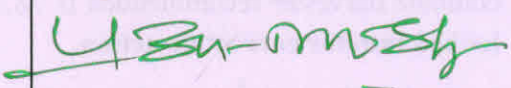
10.7 The SMS rotor shaft is unbalanced. It **MUST** be looked into corrective action.

10.8 Material of SMS blade is not specified. It **MUST** be specified

10.9 Literature supplied with the machine

One technical booklet "without any title on it" was provided with the SMS during testing. The same needs to be revised, upgraded and updated as per IS: 8132-1999.

TESTING AUTHORITY

SANJAY KUMAR AGRICULTURAL ENGINEER	
P. K. PANDEY **DIRECTOR**	

Draft test report compiled by C. Veeranjaneyulu, Senior Technician

11. APPLICANT'S COMMENTS

No comments received from the applicant.