

व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या / No. : IMP 523/1365
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**WHEAT STRAW REAPER
"ANAND"**



सत्यमेव जयते



भारत सरकार
कृषि मंत्रालय

(कृषि एवं सहकारिता विभाग)

GOVERNMENT OF INDIA

MINISTRY OF AGRICULTURE

(DEPARTMENT OF AGRICULTURE & COOPERATION)

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान
ट्रैक्टर नगर, सिरसा रोड, हिसार -125001 (हरियाणा)

NORTHERN REGION FARM MACHINERY TRAINING AND TESTING INSTITUTE
TRACTOR NAGAR, SIRSA ROAD, HISAR-125001 (HARYANA)

Telephone : 01662- 276824, 276172

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

Telefax No. : 01662-276984

E-Mail : fmti-nr@nic.in

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9. FIELD TEST

The straw reaper fitted with John Deere - 5310 tractor at engine throttle setting corresponding to 1900 rpm was tested in the field for 35.17 hours for reaping of left over straw stubbles after harvesting by grain combine. During tests field performance of straw reaper was assessed with regard to quality of work, rate of work, fuel consumption, safety and soundness of construction etc. The crop parameters and atmospheric conditions as observed during field tests are also given in Annexure-II.

9.1 Rate of work and fuel consumption

The “split straw percentage” is defined as the percentage of straw splitted to the total weight of straw sample collected after passing through the machine. The quantity of straw collected is expressed in terms of **straw recovery percentage** which is defined as the percentage of difference of straw weight before and after machine operation to the initial weight of straw in the randomly selected sample area of test field.

During straw field tests, output of the machine varied from 0.41 to 0.55 ha/h. The forward speed varied from 3.08 to 3.24 kmph in A-2 gear. Fuel consumption varied from 4.17 to 4.53 l/h

The results of field performance tests are summarized in Table-1 and detail is given in Annexure-II.

TABLE -1

SUMMARY OF FIELD PERFORMANCE TEST

WheatCrop variety	Forward speed (kmph)	Rate of work		Fuel consumption		Av. Length of bhusa (mm)	Straw split (%)	Straw recovery (%)
		(ha/h)	(h/ha)	(l/h)	(l/ha)			
WH -711	3.08	0.41	1.96	4.17	8.19	26.6	96.0	69.9
	to 3.21	to 0.51	to 2.44	to 4.50	to 10.71	to 29.9	to 97.0	to 80.1
DBW -17	3.14	0.54	1.82	4.26	7.88	27.5	96.0	74.3
	to 3.24	to 0.55	to 1.85	to 4.53	to 8.38	to 34.7	to 98.0	to 75.1

9.3 Quality of work :

9.3.1 Wheat straw harvesting:

During the field tests straw split ranged from 96.0 to 98.0% and straw recovery ranged from 69.9 to 80.1%

The length of straw in wheat varied from 26.6 to 34.7 mm. The straw recovery mainly depends upon the left over straw stubbles height in the field harvested by the combine harvester. The length and splitting of straw so formed is considered to be satisfactory as animal feed.

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13 SOUNDNESS OF CONSTRUCTION

No breakdown was observed during 35.17 hrs. of field tests.

14 SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS:

14.1. Rate of work and fuel consumption

On the basis of field test, output of machine varied from 0.41 to 0.55 ha/h. The forward speed of tractor John Deere -5310 varied from 3.08 to 3.24 kmph in A-2 gear. Fuel consumption of tractor varied from 4.17 to 4.53 l/h (7.88 to 10.71 l/ha).

14.1.2 Quality of work

Quality of straw is expressed in terms of split straw percentage and length of straw. The split straw was observed as 96.0 to 98.0%. The average length of straw ranged from 26.6 to 34.7 mm. The straw recovery ranged from 69.9 to 80.1 %.

14.2 COMMENTS AND RECOMMENDATIONS

1. Quality of wheat straw was observed to be satisfactory and is considered to be satisfactory as animal feed.
2. The Straw split & straw recovery percentage was observed from 96.0 to 98.0 & from 69.9 to 80.1 %. respectively. This is considered as normal.
- 3 Adequate arrangements have to be made for protecting drive shafts, belts & pulleys viz. main drive, guide drum, threshing drum, blower and cutter bar assembly etc.
4. Chemical composition of chaffer & cutter blades are not meeting the requirement of IS: 6025-Dec. 2004 and therefore the blades conforming to relevant code should be used at regular production level.
5. The bearings are protected against the ingress of dust and foreign material.
6. Adequate provision has been made for making the adjustments of the moving parts.
7. Adequate provision has been made for lubricating/ greasing of the moving parts.
8. Shape of the toeing hook of the straw reaper is not as per the code IS: 12362-(Part-1) 2007. The details of the same is given in fig. 5.
9. A safety clutch should be provided in drive shaft or chaffer drum pulley drive to protect the braking or damage in a event of overloading.
10. Some provision should be made in machine which can lift the wheat stubbles on which the tractor wheels just passed over otherwise it is not in grip of cutter blade and left uncut in field.
11. The hardness of chaffer drum blade does not conform to relevant IS requirement and therefore, blade of hardness conforming to IS:6025-Dec. 2004 should be used at regular production level.