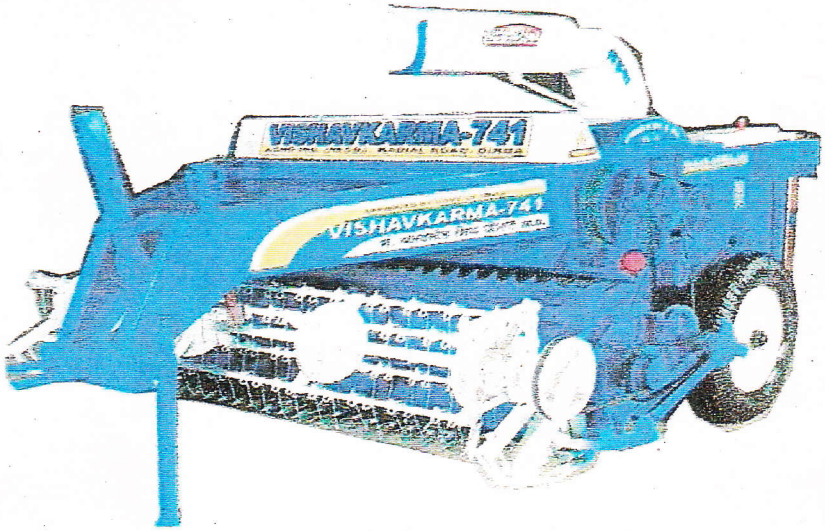
व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या / No. : Imp- 421/1226
माह / Month : April, 2010



WHEAT STRAW REAPER
'JAI BABA VISHWAKARMA'

भारत सरकार
कृषि मंत्रालय
(कृषि एवं सहकारिता विभाग)

GOVERNMENT OF INDIA
MINISTRY OF AGRICULTURE
(DEPARTMENT OF AGRICULTURE & COOPERATION)

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9. FIELD TEST

The straw reaper fitted with Sonalika – 60 DI tractor at engine throttle setting corresponding to 1700 rpm was tested in the field for 41.15 hours for reaping of left over straw stubbles after harvesting by grain combine. During tests (Refer Annexure-II) 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 splited 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 0.28 to 0.39 ha/h. The forward speed varied from 1.98 to 2.15 kmph in L-1 gear. Fuel consumption varied from 4.25 to 5.67 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 straw (mm)	Straw split (%)	Straw recovery (%)
		(ha/h)	(h/ha)	(l/h)	(l/ha)			
PBW-509	2.02 to 2.06	0.28 to 0.35	2.86 to 3.57	4.25	12.16	16.4 to 21.2	96.0 to 97.0	64.9 to 74.9
PBW-527	1.98	0.35	2.86	5.67	16.22	15.4	96.0	78.5
HD-2922	2.14 to 2.15	0.39	2.56	5.0	12.8	15.4 to 15.9	96.0 to 97.0	77.9 to 81.9
WH-711	2.09 to 2.12	0.39	2.56	5.67	14.52	12.8 to 17.7	96.0	69.9 to 71.6

9.3 Quality of work :

9.3.1 Wheat straw harvesting:

During the field tests 'straw split' & straw recovery ranged from 96.0 to 97.0% and from 64.9 to 81.9% respectively.

The length of straw in wheat varied from 12.8 to 21.2 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.

9.	93.1	92.8	0.32
10.	92.9	92.7	0.22
11.	88.4	88.3	0.11
12.	94.2	94.0	0.21
13.	92.3	92.0	0.33
14	92.5	92.1	0.43
15	93.2	93.0	0.21
16	91.3	91.0	0.33
17	92.4	92.0	0.43
18	91.0	90.6	0.44
19	92.4	90.9	1.62

The blades of chaffer cylinder & concave after 41.15 hours of operation had normal wear in the range of 0.11 to 0.62% & 0.11 to 1.62% respectively .

13 SOUNDNESS OF CONSTRUCTION

No breakdown was observed during 41.15 hrs. of field tests .

14 SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS:

14.1. Rate of work and fuel consumption:

On the basis of field tests, output of the machine varied from 0.28 to 0.39 ha/h. The Forward speed of tractor Sonalika 60 DI varied from 1.98 to 2.15 kmph in L-1 gear. Fuel consumption of tractor varied from 4.25 to 5.67l/h (12.16 to 16.22 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 percentage was observed as 96.0 to 97.0%. The average length of straw ranged from 12.8 to 21.2 mm. The straw recovery was 64.9 to 81.2 %.

14.3 COMMENTS AND RECOMMENDATIONS:

1. Quality of wheat straw was observed to be satisfactory and is considered to be satisfactory as animal feed.

2. It is recommended to incorporate the safety device in drive shaft and safety guards/ covers need to be provided.

3. The Straw split percentage was observed from 96.0 to 97.0 This is considered to be normal .

4. Hardness of blades of cutter bar & chaffer drum in hardness zone was observed 37 HRC & 66 HRC respectively. These values do not conform to relevant Indian Standard (IS:6025-1999).

5. Carbon & manganese content of knife blade and manganese content of chaffer cylinder blade are not conforming to IS requirement. Blades as per IS: 6025-1999 should be used.

15. LITERATURE

Inadequate literature was provided with machine. It is recommended that operator cum service manual, Spare part list and part's catalouge etc. should be brought out as per IS : 8132-1983 for guidance of users & service personnels.

TESTING AUTHORITY

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APPLICANT'S COMMENT

No comments received.