COMMERCIAL TEST REPORT

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WHEAT STRAW REAPER ‘DEEP’

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

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9. FIELD TEST

The straw reaper fitted with Sonalika - 750 DI tractor at engine throttle setting corresponding to 1650 rpm was tested in the field for 41.67 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 split 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 0.44 to 0.56 ha/h. The forward speed varied from 2.05 to 2.80 kmph in L-1 & L-2 gears respectively. Fuel consumption varied from 4.60 to 5.75 l/h.

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

### SUMMARY OF FIELD PERFORMANCE TEST

<table>
<thead>
<tr>
<th>Wheat Crop variety</th>
<th>Forward speed (kmph)</th>
<th>Rate of work (ha/h)</th>
<th>Fuel consumption (l/h)</th>
<th>Average Length of straw (mm)</th>
<th>Straw split (%)</th>
<th>Straw recovery (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBW-373</td>
<td>2.05 to 2.80</td>
<td>0.44 to 0.56</td>
<td>1.79 to 2.27</td>
<td>4.60 to 8.50 to 14.55</td>
<td>97.0 to 70.7</td>
<td>66.6</td>
</tr>
<tr>
<td>PBW-343</td>
<td>2.06</td>
<td>0.44</td>
<td>2.27</td>
<td>5.75 13.05 to 15.75</td>
<td>97.0</td>
<td>66.6</td>
</tr>
</tbody>
</table>

9.3 Quality of work:

9.3.1 Wheat straw harvesting:

During field tests straw split & straw recovery ranged from 97.0 to 98.0 % and 66.6 to 80.0 % respectively.

The length of straw in wheat ranged from 14.55 to 22.80 mm. The straw recovery mainly depends upon the left over stubbles height in the field after harvested by the combine harvester. The length and splitting of straw so formed is considered to be satisfactory as animal feed.
<table>
<thead>
<tr>
<th>IMP-433/1238</th>
<th>WHEAT STRAW REAPER (DEEP)</th>
<th>COMMERCIAL (ICT)</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>77.8</td>
<td>77.5</td>
<td>0.39</td>
</tr>
<tr>
<td>10.</td>
<td>80.1</td>
<td>79.9</td>
<td>0.25</td>
</tr>
<tr>
<td>11.</td>
<td>64.8</td>
<td>64.6</td>
<td>0.31</td>
</tr>
<tr>
<td>12.</td>
<td>79.8</td>
<td>79.7</td>
<td>0.13</td>
</tr>
<tr>
<td>13.</td>
<td>76.3</td>
<td>76.1</td>
<td>0.26</td>
</tr>
<tr>
<td>14.</td>
<td>80.6</td>
<td>80.3</td>
<td>0.37</td>
</tr>
<tr>
<td>15.</td>
<td>70.6</td>
<td>70.4</td>
<td>0.28</td>
</tr>
<tr>
<td>16.</td>
<td>78.5</td>
<td>78.3</td>
<td>0.25</td>
</tr>
<tr>
<td>17.</td>
<td>76.5</td>
<td>76.3</td>
<td>0.26</td>
</tr>
</tbody>
</table>

The blades of chaffer cylinder & concave after 41.67 hours of operation had normal wear in the range of 0.14 to 2.98% & 0.13 to 0.50 % respectively.

13 SOUNDNESS OF CONSTRUCTION

No breakdown was observed during 41.67 hrs. of field tests.

14 SUMMARY OF OBSERVATIONS, COMMENTS & RECOMMENDATIONS:

14.1. Rate of work and fuel consumption:

On the basis of the field tests, output of machine varied from 0.44 to 0.56 ha/h. The forward speed of tractor Sonalika – 750 DI varied from 2.05 to 2.80 kmph in L-1 & L-2 gears respectively. Fuel consumption of tractor varied from 4.60 to 5.75 l/h (8.50 to 13.05 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 97.0 to 98.0 %. The average length of straw observed as 14.55 to 22.80 mm. The straw recovery was from 66.6 to 80.0 %.

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 97.0 to 98.0. This is considered to be normal.
4. Hardness of blades of cutter bar & chaffer drum in hardness zone were observed 58 HRC & 58 HRC respectively. These values conforms to relevant Indian Standard (IS:6025-1999).

5. Carbon content of blade sample of knife and chaffer drum meets the requirement specified in IS: 6025-1999 but the content of manganese in both blades are higher than the requirement specified in said BIS code.

6. Identification plate need to be provide on each machine at regular production level.

15. LITERATURE

Inadequate literature was provided with machine. It is recommended that operator cum service manual, Spare part list and tool etc. should be brought out as per IS : 8132-1983 for guidance of users & service personals, in Hindi, English & other regional languages.

TESTING AUTHORITY

<table>
<thead>
<tr>
<th>(R. M. TIWARI)</th>
<th>(P. K. CHOPRA)</th>
<th>( A. N. MESHRAM )</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSISTANT ENGINEER ( W/S)</td>
<td>SENIOR AGRICULTURAL ENGINEER</td>
<td>DIRECTOR</td>
</tr>
</tbody>
</table>

Test Report compiled by: Shri B. N Dixit (Tech. Asstt.)

APPLICANT'S COMMENT

No comments

NORTHERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE, HISSAR