COMMERCIAL TEST REPORT

No. : IMP-560/1432

Month : August, 2012

HAPPY SEEDER
“KAMBOJ (11-ROWS)”

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

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

Telephone : 01662-276824, 276172
Website : http://nrfmtti dacnet nic in

Telefax No. : 01662-276984
E-Mail : fmti-nr@ nic in
F. Chemical composition of rotor blade

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Material</th>
<th>Requirement as per IS:6690-Jan. 2007 (% by weight)</th>
<th>As observed (% by weight)</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Carbon I</td>
<td>0.50 to 0.60</td>
<td>0.28</td>
<td>Does not conform</td>
</tr>
<tr>
<td>2.</td>
<td>Silicon(Si)</td>
<td>1.50 to 2.00</td>
<td>0.22</td>
<td>Does not conform</td>
</tr>
<tr>
<td>3.</td>
<td>Manganese (Mn)</td>
<td>0.50 to 1.00</td>
<td>0.53</td>
<td>Conforms</td>
</tr>
<tr>
<td>4.</td>
<td>Sulphur (S)</td>
<td>0.05 (max)</td>
<td>0.046</td>
<td>Conforms</td>
</tr>
<tr>
<td>5.</td>
<td>Phosphorous (P)</td>
<td>0.05 (max)</td>
<td>0.048</td>
<td>Conforms</td>
</tr>
</tbody>
</table>

9. FIELD TEST

Field test of happy seeder was conducted at HLRDC farm Hansi for 20.08 hours consisting of 5 trials. The implement was used for sowing Wheat (PBW-343 & WH-711) after the harvest of paddy crop by the combine harvester and field was not given any cultivation or tillage. The detailed test results are given in Annexure-IV and are summarised as under:

Soil moisture, % : 12.0 to 21.5
Straw moisture, % : 14.8 to 73.3

Summary of field test results:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Parameters</th>
<th>Range of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Av. Depth of seed sowing, cm</td>
<td>5.7 to 7.6</td>
</tr>
<tr>
<td>2.</td>
<td>Av. Depth of fertilizer placement, cm</td>
<td>5.7 to 7.6</td>
</tr>
<tr>
<td>3.</td>
<td>Evenness in depth of sowing, %</td>
<td>86.8 to 94.0</td>
</tr>
<tr>
<td>4.</td>
<td>Av. Width of sowing, m</td>
<td>2.24 to 2.37</td>
</tr>
<tr>
<td>5.</td>
<td>Av. Forward speed, kmph</td>
<td>2.16 to 2.20</td>
</tr>
<tr>
<td>6.</td>
<td>Av. Draft, Kgf</td>
<td>550 to 650</td>
</tr>
<tr>
<td>7.</td>
<td>Field capacity, ha/h</td>
<td>0.38 to 0.43</td>
</tr>
<tr>
<td>8.</td>
<td>Field efficiency, %</td>
<td>78.8 to 82.7</td>
</tr>
<tr>
<td>9.</td>
<td>Seed rate, Kg/ha</td>
<td>87.27 to 95.60</td>
</tr>
<tr>
<td>10.</td>
<td>Fertilizer rate, Kg/ha</td>
<td>103.97 to 107.48</td>
</tr>
<tr>
<td>11.</td>
<td>Fuel consumption, l/h</td>
<td>3.33 to 4.50</td>
</tr>
<tr>
<td>12.</td>
<td>Av. Drawbar horse power requirement, kW(Ps)</td>
<td>3.61(4.91)</td>
</tr>
<tr>
<td>13.</td>
<td>Average rotational power for rotor unit, kW(Ps)</td>
<td>17.33(23.56)</td>
</tr>
</tbody>
</table>
9.1 Quality of work:

9.1.1 The average depth of seed and fertilizer placement was observed as 5.7 to 7.6 cm. Seed and fertilizer rate was found 87.27 to 95.60 Kg/ha and 103.97 to 107.48 kg/ha, respectively.

9.1.2 The weight of swath/stubbles before and after the seeder operation were observed as 1.054 to 1.268 & from 0.278 to 0.376 kg/m² respectively.

9.1.3 The quality of mulch & spreading of hay charge was observed uniform & satisfactory.

9.1.4 Height of stubbles before & after seeder operation were 34.3 to 40.3 cm & 18.5 to 22.5 cm respectively.

9.1.5 The evenness of depth of sowing is 86.8 to 94.0%.

9.2 Rate of Work & Fuel consumption:
The average width of sowing was observed as 2.24 to 2.37 m. The area covered was 0.38 to 0.43 ha/h and fuel consumption varied from 3.33 to 4.50 l/h.

9.3 Field efficiency and labour requirement:
Field efficiency of machine was observed as 78.8 to 82.7%.
Two labours are required to operate the drill. Out of two one skilled labour is required for adjustments & calibrate the seed drill and to operate the tractor and other unskilled to load the seed and fertilizer boxes, cleaning of furrow openers etc.

9.4 During field operation average drawbar & pto power of tractor were observed as 3.61 & 17.33 kW respectively, Hence 10.8% of the drawbar & 45.8% of pto power of tractor were utilized during operation.

10. Wear of soil engaging component:
The wear of furrow openers & rotor blades on mass basis varied from 0.15 to 0.28 % & from 1.73 to 3.35% respectively, whereas wear of the rotor blade on dimension basis at tip & 45 mm from tip varied from 1.28 to 8.16 & 0.11 to 2.63 % respectively.
11. **LUBRICATION & SERVICING**
   All lubrication points were lubricated/greased daily before starting the operation.

12. **EASE OF OPERATION AND ADJUSTMENT**
   Operation and adjustment of happy seeder was observed to be satisfactory. However, the driver has to get down from the tractor to do the adjustments on the machine.

13. **SOUNDNESS OF CONSTRUCTION**
   No breakdown was observed during 20.08 hrs. of operation of happy seeder.

14. **COMMENTS AND RECOMMENDATIONS**
   i) The dimensions of seed metering mechanism do not conform to the requirement of IS: 6813-2000. Metering mechanism complying with IS requirements should be used at regular production level.

   ii) The accessories like suitable covering device, row marker, are not provided in the machine. These must be provided as per requirement of IS:6813-2000.

   iii) Dimension of three point linkage does not conform to the requirements of IS:4468-March 2007. Suitable improvement should be done at production level, to comply with BIS requirements.

   iv) Wear of furrow openers was found normal.

   v) Variation in fertilizer dropping due to the box filling at different depth conforms to IS: 6813-2000.

   vi) The variation of dropping seed and fertilizer at individual outlets does not conform to IS: 6813-2000.

   vii) The fertilizer rate was not adjustable up to 1000 kg/ha as specified in relevant BIS code, which should be looked into at production level.

   viii) The seed and fertilizer boxes are covered with common cover, however a self locking mechanism should be provided on box to avoid entrance of water.

   ix) Agritator and marker must be provided in the machine at regular production level.

   x) All the seed drill should have an identification plate as Cl 14.1 of IS: 6813 at regular production level.

   xi) Carbon and Silicon content of rotor blade do not meet the IS requirement and therefore, blade as per IS: 6690-Jan., 2007 should be used at regular production level.