HAPPY SEEDER
“RATTAN (9- ROWS)”

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

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9. **FIELD TEST**

Field test of happy seeder was conducted at CSF farm Suratgarh (Raj) for 20.08 hours consisting of 5 trials. The implement was used for sowing Wheat (UP-2565 & RAJ-4120) 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, %: 13.9 to 15.3
- Straw moisture, %: 9.1 to 35.1

**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>4.8 to 7.7</td>
</tr>
<tr>
<td>2</td>
<td>Av. Depth of fertilizer placement, cm</td>
<td>4.8 to 7.7</td>
</tr>
<tr>
<td>3</td>
<td>Evenness in depth of sowing, %</td>
<td>83.3 to 89.8</td>
</tr>
<tr>
<td>4</td>
<td>Av. Width of sowing, m</td>
<td>1.95 to 2.02</td>
</tr>
<tr>
<td>5</td>
<td>Av. Forward speed, kmph</td>
<td>2.55 to 2.67</td>
</tr>
<tr>
<td>6</td>
<td>Av. Draft, Kgf</td>
<td>550 to 575</td>
</tr>
<tr>
<td>7</td>
<td>Field capacity, ha/h</td>
<td>0.37 to 0.41</td>
</tr>
<tr>
<td>8</td>
<td>Field efficiency, %</td>
<td>73.1 to 77.4</td>
</tr>
<tr>
<td>9</td>
<td>Seed rate, Kg/ha</td>
<td>86.11 to 93.62</td>
</tr>
<tr>
<td>10</td>
<td>Fertilizer rate, Kg/ha</td>
<td>72.40 to 87.44</td>
</tr>
<tr>
<td>11</td>
<td>Fuel consumption, l/h</td>
<td>4.50 to 5.20</td>
</tr>
<tr>
<td>12</td>
<td>Av. linear horse power requirement, kW(Ps)</td>
<td>4.02 (5.47)</td>
</tr>
<tr>
<td>13*</td>
<td>Average rotational power for rotor unit, kW(Ps)</td>
<td>18.4 (25.0)</td>
</tr>
<tr>
<td>14</td>
<td>Av. Weight of swath/ stubbles before seeder operation, g/m²</td>
<td>372.6 to 919.3</td>
</tr>
<tr>
<td>15</td>
<td>Av. Weight of swath/ stubbles after seeder operation, g/m²</td>
<td>266.4 to 726.5</td>
</tr>
<tr>
<td>16</td>
<td>Av. length of stubbles before seeder operation, cm</td>
<td>16.0 to 23.6</td>
</tr>
<tr>
<td>17</td>
<td>Av. Length of stubbles after seeder operation, cm</td>
<td>13.6 to 23.0</td>
</tr>
<tr>
<td>18</td>
<td>Rotor blade speed index</td>
<td>60.8 to 63.7</td>
</tr>
</tbody>
</table>

* Based on fuel consumption of tractor.

9.1 **Quality of work:**

9.1.1 The average depth of seed and fertilizer placement was observed as 4.8 to 7.7 cm. Seed and fertilizer rate was found 86.11 to 93.62 Kg/ha and 72.40 to 87.44 kg/ha respectively.

9.1.2 The weight of swath/stubbles before and after the seeder operation were observed as 372.6 to 919.3 & from 266.4 to 276.5 g/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 16.0 to 23.6 cm & 13.6 to 23.0 cm respectively.

9.1.5 The evenness of depth of sowing is 83.3 to 89.8%.

9.2 Rate of Work & Fuel consumption:
The average width of sowing was observed as 1.95 to 2.02 m. The area covered was 0.37 to 0.41 ha/h and fuel consumption varied from 4.50 to 5.20 l/h.

9.3 Field efficiency and labour requirement:
Field efficiency of machine was observed as 73.1 to 77.4%. 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 4.02 & 18.4 kW respectively, hence 22.3 % of the drawbar & 82.1 % of pto power of tractor were utilized.

10. Wear of soil engaging component:
The wear of furrow openers & rotor blades on mass basis varied from 0.21 to 1.15 % & from 2.19 to 6.62% respectively, whereas wear of the rotor blade on dimension basis at tip & 50 mm from tip varied from 6.87 to 14.29 & 3.17 to 17.20 % 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 machine. These must be provided as per requirement of IS:6813-2000.

iii) Dimension of three point linkage do not conform fully 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 does not conform 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 upto 1000 kg/ha, which should be looked into at production level.

viii) Although the fertilizer boxes is covered. Hence, cover with suitable self locking mechanism should be provided on both boxes to avoid entrance of water.

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

x) Contents 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.

15. LITERATURE:

The manufacturer has not provided the literature of machine, however it should be provided as per IS: 8132-1999 in Hindi & other regional languages for the guidance of users & service personnel.