ZERO TILL SEED CUM FERTILIZER DRILL (11 ROWS)
“M.M.S.”

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D. **Wear of soil engaging component:**

The test implement was operated for 21.9 hours. Wear of soil engaging components (furrow openers) is given in Table-1.

**TABLE-1 : Wear of furrow openers**

<table>
<thead>
<tr>
<th>Furrow opener</th>
<th>Initial mass of furrow opener before test (g)</th>
<th>Final mass of furrow opener after test (g)</th>
<th>Loss in mass (g)</th>
<th>Wear (%) by mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2772</td>
<td>2722.0</td>
<td>50.0</td>
<td>1.81</td>
</tr>
<tr>
<td>2</td>
<td>2808</td>
<td>2743.0</td>
<td>65.0</td>
<td>2.31</td>
</tr>
<tr>
<td>3</td>
<td>2790</td>
<td>2735.0</td>
<td>55.0</td>
<td>1.97</td>
</tr>
<tr>
<td>4</td>
<td>2680</td>
<td>2640.0</td>
<td>40.0</td>
<td>1.50</td>
</tr>
<tr>
<td>5</td>
<td>2776</td>
<td>2330.0</td>
<td>46.0</td>
<td>1.65</td>
</tr>
</tbody>
</table>

8. **FIELD TEST**

Field test of Seed cum fertilizer drill was conducted at H.L.R.D.C. field for 21.9 hours, consisting of 6 trials. The implement was used for sowing Wheat varieties of PBW-373 & DBW-17 in paddy harvested field. The field was manually harvested and combine harvested followed by straw burnt on field. The detailed test results are given in Annexure-IV and are summarised as under in Table-2:

**Table 2 : 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>8.1 to 8.9</td>
</tr>
<tr>
<td>2</td>
<td>Av. Depth of fertilizer sowing, cm</td>
<td>8.3 to 9.1</td>
</tr>
<tr>
<td>3</td>
<td>Av. Width of sowing, m</td>
<td>2.01 to 2.05</td>
</tr>
<tr>
<td>4</td>
<td>Av. Forward speed, kmph</td>
<td>3.01 to 3.69</td>
</tr>
<tr>
<td>5</td>
<td>Av. Draft, Kgf</td>
<td>425 to 525</td>
</tr>
<tr>
<td>6</td>
<td>Field capacity, ha/h</td>
<td>0.451 to 0.590</td>
</tr>
<tr>
<td>7</td>
<td>Field efficiency, %</td>
<td>69.4 to 79.7</td>
</tr>
<tr>
<td>8</td>
<td>Seed rate, Kg/ha</td>
<td>99.0 to 120.0</td>
</tr>
<tr>
<td>9</td>
<td>Fertilizer rate, Kg/ha</td>
<td>114 to 126</td>
</tr>
<tr>
<td>10</td>
<td>Fuel consumption, l/h</td>
<td>2.51 to 3.28</td>
</tr>
</tbody>
</table>

8.1 **Quality of work:**

The average depth of seed and fertilizer placement was observed as 8.1 to 8.9 & 8.3 to 9.1 respectively. Seed and fertilizer rate was found 99.0 to 120.0 Kg/ha and 114 to 126 Kg/ha, respectively.
8.2 Rate of Work & Fuel consumption:
The average width of sowing was observed as 2.01 to 2.05 m. The area covered is 0.451 to 0.590 ha/h and the fuel consumption varied from 2.51 to 3.28 l/hr.

8.3 Field efficiency and labour requirement:
Field efficiency of seed drill was observed as 69.4 to 79.7%.
Two labours are required to operate the drill. One skilled labour to make adjustments / calibration of the seed drill and operate the tractor and other unskilled to load the seed and fertilizer boxes and cleaning of furrow openers as and when required

8.4 Wear of soil engaging component:
The wear of furrow openers varied from 1.50 to 2.31 % by mass basis which is considered to be normal.

9. LUBRICATION & SERVICING
Greasing was done daily before starting the operation.

10. EASE OF OPERATION AND ADJUSTMENT
Operation and adjustment of seed cum fertilizer drill was observed to be satisfactory.

11. BREAKDOWN AND REPAIRS
No breakdown was observed during 21.9 hrs. of operation of seed drill.

12. COMMENTS AND RECOMMENDATIONS
i) The dimensions of seed metering and cut of seed cut off mechanism do not conform to the requirement of IS: 6813-2000. Suitable improvement should be done at production level
ii) The marker is not provided in machine. This may be provided as per requirement of IS:6813-2000.
iii) Provision should be made to drop fertilizer at a minimum of 25 mm to the side of the seed.
iv) Provision should be made to adjust fertilizer application rate upto 1000 kg/ha.
v) The drill is not provided with make, model, Sr. No. And size of machine, type of seed & mass. This should be provided at regular production level.
vi) The seed and fertilizer box covers should be provided as per Cl. 18.4 (c) and (e) of IS:6316-1999 at regular production level.
vii) An identification plate as per Cl. 14.1 of IS 6316-1999 should be provided at regular production level.
viii) The accessories should be provided as per Cl. 11 of IS6316-1999 with each drill.
13. Literature :-

Inadequate literature in form of booklet was provided with machine. It is recommended that a manual containing operator cum service manual, spare parts catalogue and took ket etc. Should be brought out as per IS:8132-1999 for guidance of users and service personnel.

TESTING AUTHORITY

<table>
<thead>
<tr>
<th>(J.P. MANDAL)</th>
<th>(P.K. CHOPRA)</th>
<th>(A.N. MESHRAM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGRICULTURE ENGINEER</td>
<td>SR. AGRICULTURE ENGINEER</td>
<td>- DIRECTOR-</td>
</tr>
</tbody>
</table>

APPLICANT'S COMMENTS

As per comments, we will make the improvement in future at regular production level :-

i) Seed & fertilizer metering & cut off mechanism will be provided as per IS 6813-2000.
ii) Marker will be provided as per IS:6813-2000.
iii) Provision will be made to apply the fertilizer 25 mm to the side of seed.
iv) Provision will be made to apply the fertilizer rate upto 1000 kg/ha.
v) Identification plate will be provided with make, model, Sl. No. And size of machine at regular production level.
vii) Cover will be provided on seed & fertilizer boxes.
vii) Accessories will be provided to the farmers.