COMMERCIAL TEST REPORT

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ROSSAVATOR
‘BALDEV G-7’

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)

Website: http://nrfmtti.dacnet.nic.in
E-mail: fmti-nr@nic.in
4.8.6 Safety clutch/device : Not Provided
4.9 Rotavator Stand : Provided
4.10 Furrow wheel : Provided
4.11 Overall Dimensions, mm (Ref. Fig.4)
Length : 2420
Width : 1260
Height : 1090.0
4.11.1 Mass, kg : 552.0

5. LABORATORY TEST

5.1 The hardness of blades was determined at edge and shank portion. The results of hardness test are tabulated in Table-I.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Material</th>
<th>Requirement as per IS:6690-2002 ( % by weight )</th>
<th>As observed ( % by weight )</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Carbon (c)</td>
<td>0.50 to 0.60</td>
<td>0.24</td>
<td>Does not conform</td>
</tr>
<tr>
<td>2</td>
<td>Silicon(Si)</td>
<td>1.50 to 2.00</td>
<td>0.53</td>
<td>Does not conform</td>
</tr>
<tr>
<td>3</td>
<td>Manganese (Mn)</td>
<td>0.50 to 1.00</td>
<td>1.20</td>
<td>Does not conform</td>
</tr>
<tr>
<td>4</td>
<td>Sulphur (S)</td>
<td>0.05 to max</td>
<td>0.005</td>
<td>Conforms</td>
</tr>
<tr>
<td>5</td>
<td>Phosphorous (P)</td>
<td>0.05 to max</td>
<td>0.014</td>
<td>Conforms</td>
</tr>
</tbody>
</table>

TABLE-2

5.2 Chemical composition
The chemical composition of blades is tabulated in Table-2

6. FIELD TEST

The field tests of the implement comprising of dry and wet land operation were conducted for 21.0 & 15.8 hours in different soil moisture conditions to assess the performance of the implement. The details of tractor used for field operations are given in annexure-I.

The tractor PTO speed was maintained at 540 rpm. The performance of implement is reported in Annexure-II and summarized in Table-3.
### TABLE-3  Summary of field performance

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Parameters</th>
<th>Dry land operation</th>
<th>Wet land operation (puddling)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Tractor used</td>
<td>New Holland 3630</td>
<td></td>
</tr>
<tr>
<td>ii)</td>
<td>Type of soil</td>
<td>Sandy loam</td>
<td></td>
</tr>
<tr>
<td>iii)</td>
<td>Av. Soil moisture, %</td>
<td>11.0 to 12.8</td>
<td>11.4 to 13.1</td>
</tr>
<tr>
<td>iv)</td>
<td>Depth of standing water, cm</td>
<td>-</td>
<td>11.4 to 13.1</td>
</tr>
<tr>
<td>v)</td>
<td>Field efficiency, %</td>
<td>84.4 to 88.7</td>
<td>-</td>
</tr>
<tr>
<td>vi)</td>
<td>Puddling Index, %</td>
<td>-</td>
<td>75.0 to 83.0</td>
</tr>
<tr>
<td>vii)</td>
<td>Av. Speed of operation, kmph</td>
<td>3.18 to 3.33</td>
<td>2.69 to 3.07</td>
</tr>
<tr>
<td>viii)</td>
<td>Av. Depth of cut, cm</td>
<td>10.3 to 11.4</td>
<td>-</td>
</tr>
<tr>
<td>ix)</td>
<td>depth of puddle, cm</td>
<td>-</td>
<td>12.8 to 14.1</td>
</tr>
<tr>
<td>x)</td>
<td>Av. Working width, m</td>
<td>1.97 to 2.01</td>
<td>-</td>
</tr>
<tr>
<td>xi)</td>
<td>Area covered, ha/h</td>
<td>0.532 to 0.572</td>
<td>-</td>
</tr>
<tr>
<td>xii)</td>
<td>Time required for one hectare, h</td>
<td>1.75 to 1.88</td>
<td>-</td>
</tr>
<tr>
<td>xiii)</td>
<td>Fuel consumption</td>
<td>-1/lh: 5.02 to 5.79</td>
<td>4.94 to 5.86</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1/ha: 8.76 to 10.68</td>
<td></td>
</tr>
</tbody>
</table>

#### 6.1 Rate of Work

**6.1.1 Dry land operation**
- The rate of work in sandy loam soil was recorded as 0.532 to 0.572 ha/h and the forward speed as 3.18 to 3.33 kmph.
- The time required to cover one hectare area was recorded as 1.75 to 1.88 h.

**6.1.2 Wet land operation**
- Speed of operation varied from 2.69 to 3.07 kmph.

#### 6.2 Quality of work

**6.2.1 Dry land operation**
- The depth of operation was recorded as 10.3 to 11.4 cm.
- The field efficiency was recorded as 84.4 to 88.7%.

**6.2.2 Wet land operation**
- Depth of puddle was recorded as 12.8 to 14.1 cm.
- Puddling index was recorded as 75.0 to 83.0%.
8. EASE OF OPERATION, ADJUSTMENTS & SAFETY

8.1 The drive shaft (universal coupling shaft) is provided with shear bolt for safety.

8.2 The propeller shaft has telescopic sections with universal joints, to adjust the length of drive shaft, which is adequate.

8.3 Depth adjustment can be made by raising or lowering the skids.

8.4 Implement has provision to vary rotor shaft speed to cater to different soil and moisture conditions.

8.5 The operator has to get down from the tractor to make necessary adjustments.

9. SOUNDNESS OF CONSTRUCTION

No breakdown occurred during 36.8 hrs operation in the field.

10. COMMENTS & RECOMMENDATIONS

10.1 Dimensions of three point linkage system are not conforming to the requirements of IS:4468 Part-I, March-2007. Therefore standard linkage system should be incorporated in the rotavator at regular production.

10.2 It is recommended to have provision for change in rotor speed to suit wider range of soil and soil moisture conditions.

10.3 Maneuverability of tractor with Rotavator and quality of work were observed to be satisfactory.

10.4 Dimensions of splined of pinion shaft do not conform to IS:4931-2004 this shaft incorporated at regular production level.

10.5 The percentage wear of hatchet blades on mass basis during field operation of 36.8 hr, ranged from 4.51 to 6.61% which is considered to be normal.

10.6 The percentage wear of hatchet blades on dimensional basis during field operation of 36.8 hr, ranged from 7.04 to 12.46% and 3.78 to 5.64 % respectively at edge and at 65 mm from edge.

10.7 The PTO power requirement of rotavator was observed from 20.7 to 26.0 kW (28.1 to 35.4 Ps) in dry land operation and is 62.72 to 78% of the tractor pto power at standard pto speed.

10.8 The hardness of hatchet blade does not comply with the requirements of IS:6690-2002. Therefore, the necessary improvement should be made at regular production.