COMMERCIAL TEST REPORT

No. : Imp-556/1414
Month : May, 2012

RICE TRANSPLANTER
“CLAAS (PADDY PANTHER-14)”
(SELF PROPELLED-WALKING TYPE)

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
15. SUMMARY OF OBSERVATIONS, COMMENTS AND RECOMMENDATIONS

15.1 Engine Performance Test

<table>
<thead>
<tr>
<th>Brake power kW (Ps)</th>
<th>Crank shaft torque Nm (kgf-m)</th>
<th>Crank shaft speed (rpm)</th>
<th>Specific fuel consumption kg/kWh (kg/hph)</th>
<th>Specific energy kWh/l (hph/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum power two hours test</td>
<td>2.02 (2.75)</td>
<td>10.6 (1.08)</td>
<td>1816</td>
<td>0.469 (0.344)</td>
</tr>
<tr>
<td>Power at rated engine speed (2000 rpm)</td>
<td>1.98 (2.69)</td>
<td>10.5 (1.07)</td>
<td>1800</td>
<td>0.477 (0.351)</td>
</tr>
<tr>
<td>Maximum torque</td>
<td>1.82 (2.47)</td>
<td>11.2 (1.15)</td>
<td>1550</td>
<td>0.505 (0.372)</td>
</tr>
</tbody>
</table>

- The maximum power kW (Ps) of engine was recorded as 2.02 (2.75) at 1816 rpm againsts manufacturer’s declared power of 2.2 (3.0) kW (Ps).
- The specific fuel consumption kg/kWh (kg/hph) corresponding to maximum power was recorded as 0.469 (0.344).
- The maximum torque N-m (kgf-m) of the engine was recorded as 11.2 (1.15).
- The back up torque of engine was recorded as 6.61%.
- The maximum lubricating oil temperature was recorded as 133.5 °C which is considered to be normal against the manufacturer declared limit of 140 °C.
- Pre cleaner must be provided in engine specially in Indian conditions.

15.2 Noise Level

Noise level at operator’s ear level was recorded as 85.7 dB(A), which is 85dB(A) the maximum noise level but within danger limit of 90 dB(A) specified for continues exposure of 8 hours.

15.3 Mechanical Vibration

The amplitude of mechanical vibration on all the controls and components are above 100 microns except rear of engine bonnet, head lights and planting arm shaft.

15.4 Field Test

15.4.1 The transplanter was operated in varying field conditions for 36.13 (including 1.13 h as running in) hours to transplant ‘HKR 47’ and ‘Basmati 1121’ variety of paddy seedlings. The results are summarized as under.

- The percentage of coefficient of variation in a transplanting depth was recorded as 5.0 to 50.89%.
- The percentage of coefficient of variation in a row to row spacing was recorded as Nil to 13.29%.
- The average number of plants per hill was recorded as 1 to 8.
The percentage of coefficient of variation in hills spacing was recorded as 3.35 to 20.92%.

The percentage of coefficient of variation in a number of hill in 1 m of row was recorded as Nil.

The percentage of evenness of spacing between rows was recorded as 86.71 to 100.0%.

The average number of missing hills was recorded as 3.35 to 20.92%.

The average number of floating seedlings was recorded in 1 m² as Nil to 0.8.

The average number of buried seedlings was recorded in 1 m² as Nil to 0.4.

The total number of transplanting faults was recorded as 1.4 to 8.7 / m².

The hourly fuel consumption was recorded as 0.422 to 0.574 l/h and fuel required for planting of one hectare area was recorded as 2.706 to 3.986 l/ha.

15.4.2 During the field operation, at no stage any momentary overloading of the engine was noticed.

15.4.3 The quality of puddling, uniformity in leveling of the field. Standing water over puddle, uniformity of the nursery mats and presence of weeds remained in the puddle soil affected the performance of the planter to a great extent. To obtain best results from the machine, it is necessary to have the field well puddled and subsequently allow to settle for 2-3 days field with 2-4 cm depth of standing water.

15.4.4 The number of missing hills per square meter area is attributed mainly to the non uniform germination of nursery.

15.4.5 The quality of work was observed to be smooth during entire transplanting operation overall performance of the machine was found satisfactory.

15.5 Components / assembly inspection

15.5.1 The engine was dismantled after 53.0 hours of operation and wear of critical components were observed to be within the limits.

15.6 Safety Provisions

The machine has the following safety provisions.

- A front bumper.
- Front and rear bonnet above the engine and gear box.
- Drive belt protective covers.
- A slip clutch (torque limiter) inside the planting arm case to protect the planter drive mechanism.

15.7 Ease of operation and adjustments

- All the controls, which are required to be used frequently are within the easy reach of the operator.
- The handling of machine was easy and stable and the operator can work continuously for about two hours.
- The planting depth, hill spacing and number of seedling per hill can be adjusted easily.

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The seeding carrier is provided just above the engine for holding nursery trays.

No operational difficulty was noticed during the operation of the transplanter even in small fields.

One touch hydraulic swing system is provided to enable the operator to cross over the bunds as well as turning the machine (even with full load) at end of each pass.

One water pump with hose and suction pipe is provided in machine for washing transplanter after daily work.

The machine turned easily at the end of field. It is also able to cross the bunds easily at the time of transplanting.

The performance of air cleaner was found satisfactory.

The firm should also provide the prime mover details viz. Max. Power, rated rpm etc. on the Identification plate.

The chassis no. given on the ID sticker should be punched on embossed on the machine as far as possible. The separate identification no. should be given on engine as well as gear box.

15.8 Labour requirement

A trained operator is required for efficient operation of the machine. One helper is required for safe handling and loading of mats.

16 LITERATURE

The manufacturer has provided operator’s manual with the machine. Therefore the same should be brought in Hindi, English and other regional language as per IS: 8132-1999 for guidance of the users.

TESTING AUTHORITY

(P.K.CHOPRA)
SENIOR AGRICULTURAL ENGINEER

(A.N.MESHRAM)
-DIRECTOR-

Tests conducted/reports compiled by:
1. Sh. R. M. Tiwari, Asstt. Engineer(W/S)
2. Sh. S.A.Hinge. Senior Technical Assistant

APPLICANTS COMMENTS

CL. 10: We would be looking into the possibility to reduce vibration and noise level in future.
M/s Claas India will provide operator’s manual with the machine in Hindi, English and other regional languages for operator guidance in future.
All the comments and suggestions as given by you will try to incorporate the same in our future product.