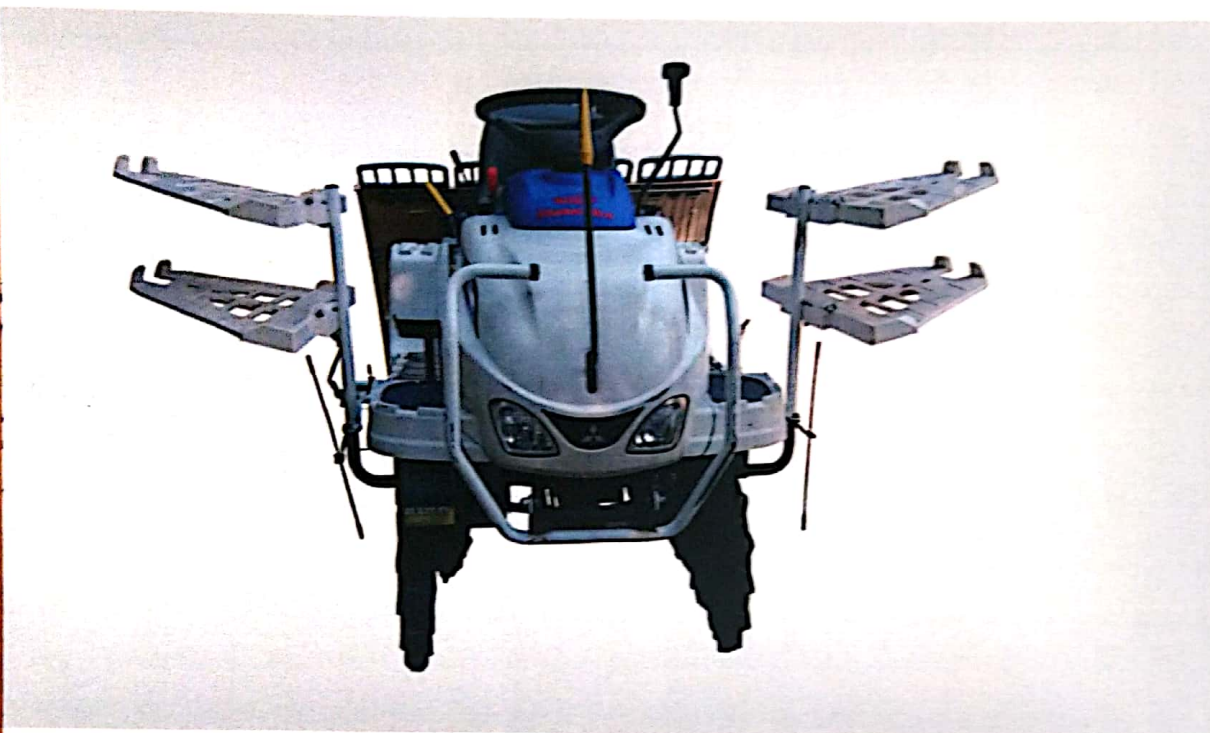




व्यावसायिक परीक्षण रिपोर्ट
COMMERCIAL TEST REPORT

संख्या /No.: Machine 27/291
माह / Month: October, 2017



**“MAHINDRA, LE 4 DB” RICE TRANSPLANTER (Riding Type)
(Self-Propelled) [Commercial]**



सत्यमेव जयते

भारत सरकार

GOVT OF INDIA

कृषि एवं किसान कल्याण मन्त्रालय

MINISTRY OF AGRICULTURE & FARMERS WELFARE

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NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE

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15. SUMMARY OF OBSERVATION, COMMENTS AND RECOMMENDATIONS**15.1 Engine performance test :**

kW (Ps)	Crank shaft torque Nm (kgf-m)	Crank shaft speed, rpm	Fuel consumption			Specific energy kWh/l (hph/l)
			Hourly		Specific gm/kWh	
			l/h	kg/h		
1	2	3	4	5	6	7
Maximum power 2 hour Test :						
5.17 (7.03)	15.20 (1.54)	3250	2.44	1.81	348.55	2.12 (2.87)
4.96 (6.74)	14.56 (1.48)	3250	2.96	2.19	442.65	1.67* (2.24)
Power at rated engine speed (3250 rpm) :						
5.18 (7.04)	15.20 (1.55)	3250	2.44	1.80	348.20	2.12 (2.84)
* High Ambient conditions.						

- a) The maximum gross power of engine was recorded as 5.17 kW (7.03 Ps) at 3250 rpm against manufacturer's declaration of 5.4 kW (7.34 Ps) under natural ambient condition.
- b) The specific fuel consumption corresponding to maximum power was recorded as 348.55 g/kWh under natural ambient condition.

15.2 Noise level test :

The noise level was recorded in puddled field as 90.1 dB (A) at by stander's position and 105.4 dB (A) at operators ear level, which is considered to be on higher side then the danger limit of 90 dB (A) as specified by ILO for continuous operation of 8 hours per day. This calls for reducing in the noise level to improve the operational comfort and safety.

15.3 Mechanical vibration :

The amplitude of mechanical vibration was measured in puddled field on Safety transporting lever was observe higher side. This calls for dampening of vibration to improve the operational comfort and service life of the component.

15.4 Turning Ability :

The minimum radius of turning circle and minimum turning space was measured as 1345/1351 (Left/Right) and 1905/1911 (Left/Right) mm respectively.

15.5 Rate of work :

- a) The rate of work was recorded as 0.159 to 0.257 ha/h with a forward speed 2.73 to 2.85 kmph at 22 cm planting position.
- b) The time required to cover one hectare was recorded as 3.89 to 6.29 h.

15.6 Quality of work :

- a) The average depth of planting was recorded as 4 to 6 cm.
- b) The spacing between row to row was recorded as 29.4 to 30.3cm.
- c) The spacing between hill was recorded as 22 to 23 cm.
- d) The average number of plants per hill at max. plant collection was recorded as 6 to 7.
- e) The average total number of plants in 10 m row length was recorded as 41 to 45.



- f) The average percentage of missing seedling was recorded as 3.96 to 13.39.
- g) The average percentage of floating seedling was recorded as Nil to 4.46.
- h) The average percentage of buried seedling was recorded as 1.1 to 5.96.
- i) The average percentage of damaged seedling was recorded Nil to 1.98.
- j) The consumption of mat nursery for one hectare was recorded as 167 to 234.

15.7 Fuel consumption :

The hourly fuel consumption was recorded as 1.70 to 2.30 and fuel consumption for planting one hectare was recorded as 7.94 to 11.59 at 22 cm planting position.

15.8 Labour requirement :

- a) One skilled operator was needed to operate the Rice transplanter
- b) Two labours are required to feed the seedling in the feeding tray.
- c) Two labours are required to transport the seedling to the field boundary/bunds.
- d) One labour is required to transplant the missing hills and the area left at the corners.

15.9 Ease of operation and adjustment :

The operator can easily adjust and control the machine from operator's seat in the field as the adjustments and controls are within the easy reach of operator. No noticeable difficulty was observed during operation, moreover it has been observed that the operator can operate the machine continuously for two hours without any fatigue.

15.10 Defects and breakdown :

No breakdown was occurred during field test and laboratory test.

15.11 Components/assembly inspection :

15.11.1 The engine was dismantled after 57.5 h. No abnormal wear or damage of bearing, shaft, gears pitting on piston head/valve face was observed.

15.11.2 After 32.2 h of operation various components/assembly of the machine was dismantled for inspection. All the components were found to be in satisfactorily normal working condition.

15.12 Safety provision :

The machine has the following safety provisions.

a)	Starting current circuit is engaged only when pressing clutch cum brake pedal.	e)	Electrical fuse is provided to prevent short circuit.
b)	Automatic stopping of planting and wheel marker shrinkage when planting mechanism is lifted.	f)	Safety guard provided for engine and engine drive belts.
c)	Torque Limiter (safety clutch) is provided to resist the overloading of machine.	g)	Markers are provided for maintaining row-to-row distance after every pass.
d)	Automatic raising of planting mechanism when engages to reverse gear.	h)	Safety transporting lever for easy and safe transportation in steep areas.

15.13 The numerals of all the adjusting levers and safety precautions tag on the machines are printed with foreign (Japanese) language. However, it is recommended to bring out numerals of all the adjusting levers and safety precautions tag on the machines which may covered with English and other vernacular language.

**15.14 Technical Literature :**

One operator's manual covered with English is provided with rice transplanter during the course of testing. However, it is recommended to bring out service manual and parts catalogue which may covered with English and other vernacular language.

TESTING AUTHORITY

S. G. PAWAR AGRICULTURAL ENGINEER	
A.K. UPADHYAY SENOIR AGRICULTURAL ENGINEER	
K.K. NAGLE DIRECTOR	

Test conducted & Report compiled by -

Sh. Vithato Keyho

16. APPLICANT'S COMMENTS

Para no.	Our reference	Applicant's Comments
16.1	15.2	High noise level concern will be studied & necessary action will be taken to reduce & maintain in recommended dB range.
16.2	15.3	High amplitude of mechanical vibration on safety transporting lever will be studied & necessary action will be taken to reduce & dampening of vibration.
16.3	15.13	Recommendation to translate stickers & decals in English or vernacular will be incorporated in future machines.
16.4	15.14	Recommendation to bring up Service Manual & Parts Catalogue in English or vernacular will be incorporated in future machines.