व्यावसायिक परीक्षण रिपोर्ट (प्रारंभिक)
COMMERCIAL TEST REPORT
(Initial)

संख्या/No.: SPE/NERFMTTI, B. Chariali/
01/01/570
माह / Month: March 2026

THIS TEST REPORT IS VALID UPTO 31.03.2033

GOMADHI ENGINEERING SERVICE, WBT-6R, PADDY TRANSPLANTER

सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA
कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE
कृषि एवं किसान कल्याण विभाग
DEPARTMENT OF AGRICULTURE AND FARMERS WELFARE
उत्तर पूर्वी क्षेत्र कृषि यंत्र प्रशिक्षण एवं परीक्षण संस्थान
NORTH EASTERN REGION FARM MACHINERY TRAINING & TESTING INSTITUTE
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4. SPECIFICATIONS

4.1 General:

Name and address of the manufacturer	:	M/S. JIANGSU YONGTAO INDUSTRY CO., LTD., THE WEST OF ZENGGUANG BRIDGE, DONGXING TOWN, JINGJIANG CITY, JIANGSU PROVINCE, **CHINA**
Name and address of the applicant.	:	Gomadhi Engineering Service 214, Athiyur Road, Chinnegoundanvalasu Kunnathur, Tiruppur – 638103, Tamil Nadu
Name of machine	:	Paddy Transplanter
Type	:	6 Row, Self-Propelled, Walk Behind
Make	:	Gomadhi Engineering Service
Model	:	WBT-6R
Size of transplanter, mm	:	6 x 300
Serial no.	:	WBT062
Month and year of manufacture	:	2026

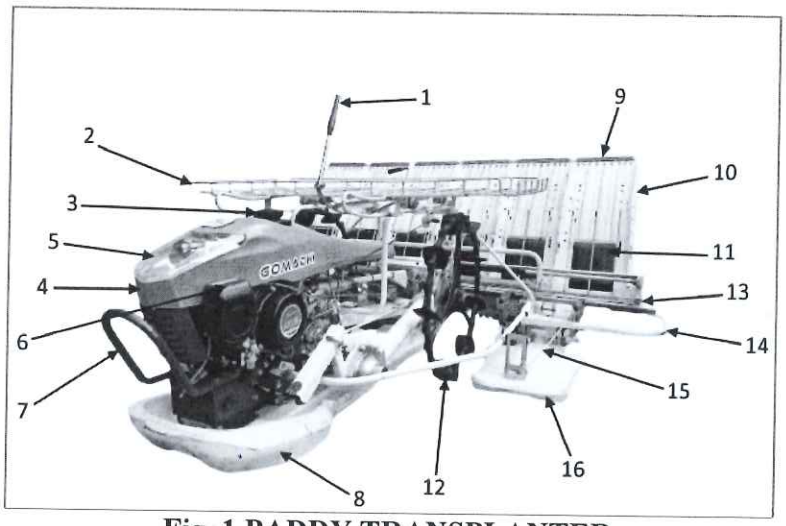

Fig. 1 PADDY TRANSPLANTER
MAKE: GOMADHI ENGINEERING SERVICE, MODEL: WBT-6R

Keywords:

1	Centre guide	7	Bumper	13	Sliding frame
2	Seedling storage stand	8	Centre float	14	Sliding board guard
3	Fuel cap	9	Seedling platform Extension	15	Side guide
4	Bonnet	10	Seedling platform	16	Side float
5	Head light	11	Seedling Guide		
6	Air Cleaner	12	Wheel		

4	Engine bonnet	Front	250*	120*
		Middle	190*	290*
		Rear	270*	350*
5	Head light		180*	190*
6	Gear shifting lever		1250*	430*
7	Main clutch lever		1360*	350*
8	Planting clutch lever		1080*	310*
9	Accelerator lever		1040*	560*
10	Planting arm shaft		840*	550*
11	Quantity of seedling adjusting lever		320*	840*
12	Seedling tray		460*	500*
13	Float	Left	570*	360*
		Middle	170*	440*
		Right	400*	760*
14	Engine mounting base		350*	180*
15	Depth adjusting lever		310*	1270*
16	Tray		230*	460*
17	ON/OFF switch		1130*	360*

*The amplitude of mechanical vibration is on higher side.

10. TURNING ABILITY

Characteristics	LHS	RHS
Minimum turning diameter (m):	1.34	1.36
Minimum clearance diameter (m):	3.02	3.04

11. FIELD PERFMANCE TEST

Field tests were conducted for total of 26.17 hours. Total four test trials were conducted in puddled field. Conditions of test plot and nursery & the field performance test results are given in Annexure-I and II and summarized in Table-1 and Table-2.

Summary of condition of field and nursery

Table-1

Sr. No.	Parameters	Range
	Condition of field	
1	Type of soil	Medium
2	Interval between last puddling and planting, days	02 to 03
3	Depth of puddle, cm	16 to 18
4	Depth of standing water over puddle, cm	3.9 to 4.2

	Condition of nursery	
1	Variety of paddy	Joya and Ratna
2	Type of seed bed soil	Medium
3	Area of each tray, m^2	0.162
4	Age of nursery, days	19 to 22
5	Leaf stage (no. of leaves)	3
6	Size of seedlings (thickness at base of root), mm	0.92 to 1.04
7	Length of root (cm)	4.0 to 5.2

Summary of field performance test results

Table-2

Sr. No.	Parameters	Range
1	Average forward speed, kmph	2.33 to 2.51
2	Engine speed, rpm	
	No load	3613 to 3625
	On load	3525 to 3555
3	Average depth of transplanting, cm	4.64 to 5.80
4	Average travel reduction (%)	- 2.42 to - 1.35
5	Average spacing between rows, cm	30
6	Average number of seedlings per hill (nos.)	9 to 11
7	Average spacing between hills, cm	19.4 to 20.8
8	Average total number of hills in 1 m^2	24
9	Percentages of transplanting faults (in 1 m^2) %	
	- Missed hills	Nil
	- Floating seedlings	0 to 0.83
	- Buried seedlings	0.20 to 0.83
	- Damaged seedlings	Nil
	- Total transplanting faults, %	0.83 to 1.67
10	Average area covered, ha/h	0.315 to 0.328
11	Time required to cover 1 ha, (h)	3.05 to 3.17
12	Fuel consumption	
	l/h	0.99 to 1.10
	l/ha	3.06 to 3.39
13	Number of seedling trays consumed per ha	208 to 215

11.1 Rate of work

The average area covered and time required to cover one hectare area was recorded as 0.315 to 0.328 ha/h and 3.05 to 3.17 h, respectively at the forward speed of 2.33 to 2.51 kmph.

11.2 Quality of work

The quality of work was assessed by taking into consideration of the following parameters:-
The average depth of transplanting was recorded as 4.64 to 5.80 cm.
The spacing between row to row was recorded as 30 cm.
The average number of seedlings per hill was recorded as 9 to 11.
The average spacing between hills was recorded as 19.4 to 20.8 cm.
The average total number of hills in 1 m^2 was recorded as 24.
The average percentage of missing hills was recorded as nil.
The average percentage of floating seedlings was recorded as 0 to 0.83.
The average percentage of buried seedlings was recorded as 0.20 to 0.83.
The average percentage of damaged seedlings was recorded nil.
The total percentage of transplanting faults was recorded as 0.83 to 1.67.

11.3 Fuel consumption

The hourly fuel consumption was recorded as 0.99 to 1.10 l and fuel required for planting of one hectare area was recorded as 3.06 to 3.39 l.

11.4 Labour requirement

One skilled operator is required for continuous operation of machine. One person is required for feeding nursery mats to machine and two persons for handling the nursery trays.

11.5 Ingress of water and/or mud

After completion of field tests, the transplanter was partially dismantled to check the effectiveness of sealing provided against ingress of water and / or mud in various assemblies / components.

Sr. No.	Location	Whether ingress of mud and / or water was observed
1	Engine oil	No
2	Main gear box	No
3	Planting box	No
4	Planting arm drive	No
5	Hydraulic system	No
6	Drive wheel chain case	No
7	Planting arms	No

12. EASE OF OPERATION AND ADJUSTMENTS

No noticeable difficulties were observed in operation and adjustments during the field test.

13. BREAKDOWNS AND REPAIRS

No noticeable defect or breakdown was observed during entire course of test.

14. COMPONENTS / ASSEMBLY INSPECTION AND ASSESSMENT OF WEAR

14.1 Engine:

The engine and other assemblies were dismantled after 38.01 hours of operation.

14.1.1 Cylinder:

Cylinder	Cylinder bore dia (mm)						Max. permissible wear limit, mm
	Top position		Middle positon		Bottom position		
	Thrust side	Non Thrust side	Thrust side	Non Thrust side	Thrust side	Non Thrust side	
1	66.02	66.01	66.02	66.01	66.02	66.01	66.30

14.1.2 Piston:

Piston no.	Piston dia (mm)				Piston liner side clearance observed, mm	Max. permissible wear limit, mm
	At top		At skirt			
	Thrust side	Non Thrust side	Thrust side	Non Thrust side		
1	65.68	65.67	65.95	NA	0.07	65.30

14.1.3 Ring side clearance

Piston rings	Ring side clearance (mm)	Max. permissible wear limit (mm)
1st compression ring	0.05	0.30
2nd compression ring	0.05	0.30
Oil ring	NA	--

14.1.4 Ring end gap clearance

Ring No.	Ring end gap (mm)			Max. permissible wear limit (mm)
	At top	At middle	At bottom	
1st compression ring	0.25	0.25	0.20	1.00
2nd compression ring	0.20	0.20	0.15	1.5
Oil ring	NA	NA	NA	1.20

14.1.5 Big end bearing

Bearing no.	Dia of bearing (mm)	Dia of Crank pin (mm)	Clearance (mm)		Max. permissible wear limit (mm)	
			Dimentrical	Axial	Dimentrical	Axial
1	28.05	28.00	0.05	NA	0.25	0.80

Condition of bearing: Normal

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14.1.6 Main bearing

Two Nos. of ball bearing 6205 were used.

Bearing No.	Diametrical clearance (mm)	Crankshaft end float (mm)	Max. permissible clearance limit (mm)	
			Diametrical clearance	Crankshaft end float
1.	Ball bearing	0.01	NA	0.30
2.	Ball bearing			

14.1.7 Valve guide clearance

Valve guide diameter (mm)		Valve stem diameter (mm)		Valve guide clearance (mm)		Max. permissible wear limit (mm)	
Inlet	Exhaust	Inlet	Exhaust	Inlet	Exhaust	Inlet	Exhaust
5.59	5.59	5.45	5.45	0.14	0.14	0.15	0.20

14.2

Any marked sign of overheating of valves : None
Pitting of seat/faces of valves : Normal
Any visual damage of teeth of timing gears : None
Condition of ignition coil and magneto : Normal

14.3 Transmission gears:

Any visual damage, pitting and chipping of any transmission gear teeth : Normal

14.3.1 Planting mechanism:

The following sub-assemblies were dismantled after completion of all the test to check their condition and damage, if any and reported as under:-

Sr. No.	Sub-assembly	Observations
1	Planting gearbox	Normal
2	Planting arms	Normal
3	Planting fingers	Normal
4	Seedling platform	Normal
5	Cross feed mechanism	Normal
6	Float	Normal
7	Hydraulic systems	Normal

15. PARAMETERS APPLICABLE FOR QUALIFYING MINIMUM PERFORMANCE CRITERIA

Sr. No.	Characteristics	Category (Evaluative/Non Evaluative)	Requirements as per IS:18718-2024	Vaules declared by the applicant (D)/ Requirement (R)	As observed	Whether meets the require-ments (Yes/No)
(In the ensuing table, **'D'** stands for applicant's declarartion where as **'R'** stands for requirement as per BIS test code)						
1	2	3	4	5	6	7
15.1	**Engine performance:**					
a)	Power at rated engine speed, (kW)	Non Evaluative	To be declared by the manufacturer	3.50 (D)	2.25	**No**
b)	Maximum operating temperature (°C)					
	1) Engine oil	Evaluative	The declared value should not exceed the max. value specified by the oil company. Manufacturer/applicant shall supply the recommendation of oil company along with the applicatioin form	150 (D)	114	Yes
	2) Cylinder liner	Evaluative	Observed value should not exceed the declared value	Not declared	Not recorded	--
c)	Parking brake:	Evaluative	No rotation of drive wheels at a slope of 18% facing up and facing down.	Yes (R)	NA	--
d)	Air cleaner oil pull over	Evaluative	0.25% max	Yes (R)	NA	--
15.2	**Noise measurement:**					
a)	Maximum ambient noise emitted by the paddy transplanter dB(A)	Evaluative	85	85 (R) Maximum	79.5	Yes
b)	Maximum noise at operator's ear level dB (A)	Evaluative	96	96 (R) Maximum	87.9	Yes
15.3	**Amplitude of mechanical vibrations at:**					
	a) Steering handle grips	Non Evaluative	100 microns (max)	100 (R) Maximum	1430	**No**
	b) Gear lever (s) 1) Transmission 2) Planting				1250 1080	**No** **No**

1	2	3	4	5	6	7
	c) Clutch/brake lever (s)/pedal (s)				1270	**No**
	d) Accelerator lever/knob				1040	**No**
	e) Operator's seat				NA	--
	f) Foot rest				NA	--
15.4	**Field requirements:**					
a)	Variation in seedling trays consumption per ha., %	Non Evaluative	5 % max.		1.78	Yes
b)	Variation in number of hills per meter of row length, %	Evaluative	5 % max.		Nil	Yes
c)	Transplanting faults in 1 m^2, %					
	1 Missed hills	Evaluative	5 % max.		Nil	Yes
	2 Floating seedlings	Evaluative	3 % max.		0.83	Yes
	3 Buried seedlings	Evaluative	2 % max.		0.83	Yes
	4 Damaged seedlings	Evaluative	2 % max.		Nil	Yes
	5 Total faults	Evaluative	10 % max.		1.67	Yes
d)	Variation in number of seedlings per hill	Non Evaluative	15 % max.		10	Yes
e)	Variation in planting depth	Non Evaluative	15 % max.		14.2	Yes
15.5	**Effectiveness of sealings:**					
	a Engine oil	Evaluative	The entry of mud/water should not take place in components/ sub-assemblies		Yes/No	Yes
	b Hydraulic oil	Evaluative				Yes
	c Transmission oil	Evaluative				Yes
	d Clutchassembly	Evaluative				Yes
	e Planbting gear box oil	Evaluative				Yes
	f Planting arms	Evaluative				Yes
15.6	**Safety requirements:**					
a	Provision of guard on moving parts	Evaluative	Yes	Yes	Yes	Yes
b	Location and direction of exhaust emission to be away from the operator	Evaluative	Yes	Yes	Yes	Yes
c	Cover on hot parts	Evaluative	Yes	Yes	Yes	Yes

1	2	3	4	5	6	7
d	Provision of head lights	Non Evaluative	Yes	Yes	Yes	Yes
15.7	**Literature (Submission to test agency)**					
a	Operator manual	Evaluative	Provided	Provided	Provided	Yes
b	Parts catalogue	Evaluative	Provided	Provided	Provided	Yes
c	Workshop/Service manual	Evaluative	Provided	Provided	Provided	Yes
15.8	**Labelling plate of machine (Provision of labelling plate):**					
	a) Name of manufacturer	Evaluative	Metallic plate shall be welded/ riveted permanently on the machine at place where it can be easily identified	Provided	Not provided	**No**
	b) Country of origin	Evaluative		Provided	Not provided	**No**
	c) Make	Evaluative		Provided	Provided	Yes
	d) Model	Evaluative		Provided	Provided	Yes
	e) Year of manufacture	Evaluative		Provided	Provided	Yes
	f) Engine number	Evaluative		Provided	Not provided	**No**
	g) Chassis number	Evaluative		Provided	Not provided	**No**
	h) Size of machine	Evaluative		Provided	Not provided	**No**
	i) Max. Engine power, kW	Evaluative		Provided	Not provided	**No**
	j) Specific fuel consumption, g/kWh	Evaluative		Provided	Not provided	**No**

16. CRITICAL TECHNICAL SPECIFICATIONS

Sr. No.	Parameters	Specifications	Observations	Remarks
1	2	3	4	5
1.	Type of machine	Manually operated walk behind/ self-propelled walk behind/ self-propelled ride-on type	Self-propelled walk behind	Conforms
2.	Working width (mm)	880 (Min)	1800	Conforms
3.	Type of planting mechanism	Finger type for mat type nursery/ cup type for seedling cups	Finger type for mat type nursery	Conforms
4.	Number of rows	4,6,8	6	Conforms
5.	Row spacing (mm)	220 to 300 (Adjustable)	300 (Not adjustable)	**Does not conform**
6.	Average hill spacing (mm)	120 to 250 (Adjustable)	120-210 (adjustable)	Conforms

1	2	3	4	5
7.	Type and number of floats	Wooden plank/metallic sheet/PVC sheet/hollow plastic	Hollow plastic, 3	Conforms
8.	Angle of mat sliding board (degrees)	45 to 70 (Adjustable)	55.5	Conforms
9.	Material of planting fork/fingers/tweezers	Stain steel type 4 and above	Stainless steel	Conforms
10.	Provision for adjusting the row spacing	Must be provided	Not provided	**Does not Conform**
11.	Provision for adjusting depth of planting	Must be provided	Provided	Conforms
12.	Provision for adjusting hill spacing	Must be provided	Provided	Conforms
13.	Provision for adjusting no. of plants per hill	Must be provided	Provided	Conforms
14.	Provision for area recorder	Must be provided	Not Provided	**Does not conform**
15.	Marking/labeling	The labelling plate should be riveted on the body of machine having name & address of manufacturer, country of origin, Make, Model, year of manufacture, serial number, size, required size of prime mover kW/hp	Name & address of manufacturer, country of origin, size and required size of prime mover kW/hp was not provided.	**Does not conform**
16.	Literature	Operator manual, Service manual and Parts catalogue should be provided	Provided	Conforms

17. COMMENTS AND RECOMMENDATIONS

17.1 The average rated power in rating test of engine was observed as 2.25 kW against declared value of 3.50 kW by the applicant/manufacturer. This should be looked into for corrective action.

17.2 The specific fuel consumption (SFC) in rating test of engine was observed as 424 g/kWh against declared value of 380 g/kWh by the applicant/manufacturer which exceeded by more than 5 percent of that declared by the manufacturer and hence does not fulfill the requirement of IS 7347-1974 (Amended 2021). This should be looked into for corrective action.

17.3 Name and address of manufacturer, country of origin, size and required size of prime mover kW/HP were not provided on the labeling plate of the machine. This should be looked into for corrective action.

17.4 The amplitude of mechanical vibration marked as (*) is on drastically higher side and is directly concerned with operator's health, safety and comfort. Besides, it is also adversely affecting the useful life of machine components. This should be looked into for corrective action.

17.5 Noise at operator's ear level was observed on higher side against warning limit of 85 dB(A) as specified by the International Labor Organization (ILO) for continuous exposure of 8 hours per day. This calls for reduction in noise level to improve the operator's comfort and safety.

17.6 Provision for adjusting row to row spacing and provision for area recorder should be provided. This should be looked into corrective action.

17.7 Adequacy of literature:
The following literature in English language was provided for reference during testing:
- Operator's/ Service manual
- Parts catalogue

It is recommended to bring out the manual in Hindi and other vernacular languages as per IS: 8132-2023.

TESTING AUTHORITY

(M.R. PATIL)
SENIOR AGRICULTURAL ENGINEER

(P. KAMALABAI)
DIRECTOR

Draft test report compiled by - Shri Rahul, Senior Technical Assistant

18. APPLICANT'S COMMENTS

We have received your comments and recommendations; we will do the necessary corrective action in future products.

ANNEXURE-I

CONDITION OF FIELD AND NURSERY

Places of test: 1. Village - Bhoitikara, Kumbhari, Dist. Bargarh, Odisha
2. Village - Pothapallai, Distt. Bargarh, Odisha
Name of crop: Paddy
Type of soil: Medium
Variety of crop: Joya and Ratna
Gear used: Transplanting

Sr. No.	Parameters	Test trials			
1	Date of test	17-02-2026	18-02-2026	19-02-2026	20-02-2026
2	**Condition of field:**				
i	Type of soil	Medium			
ii	Previous treatment	Puddling by rotavator			
iii	Interval between last puddling and planting (days)	03	02	02	02
iv	Depth of puddle (cm)	16.0	17.6	17.4	18.0
v	Depth of standing water over puddle (cm)	4.2	4.0	4.0	3.9
3	**Condition of nursery:**				
i	Variety of paddy	Joya			Ratna
ii	Type of soil of nursery seed bed	Medium			
iii	Area of tray (m^2)	0.162			
iv	Age of nursery, days	22	22	21	19
v	Leaf stage (No. of leaves)	3	3	3	3
vi	Height of seedlings (cm)	18.8	17.3	18.8	18.6
vii	Length of root (cm)	4.8	5.2	4.9	4.0

ANNEXURE-II

FIELD PERFORMANCE TEST RESULTS

Places of test: 1.Village- Bhoitikara, Kumbhari, Distt. Bargarh, Odisha
2. Village- Pothapallai, Distt. Bargarh, Odisha
Name of crop: Paddy
Type of soil: Medium
Variety of crop: Joya and Ratna
Gear Used: Transplanting

Sr. No.	Parameters	Test trials			
1	Date of test	17-02-2026	18-02-2026	19-02-2026	20-02-2026
2	Duration of test (h)	6.00	7.17	7.00	6.00
3	Field length (m)	57.5	72.4	80.5	85.2
4	Engine speed (rpm)				
	No. load	3616	3613	3615	3625
	On load	3555	3535	3525	3530
5	Forward speed (kmph)	2.33	2.36	2.51	2.48
6	Average travel reduction (%)	-1.35	-2.42	-1.38	-2.08
7	Av. depth of transplanting, cm	5.48	5.72	5.80	4.64
8	Av. spacing between rows, cm	30.0	30.0	30.0	30.0
9	Av. number of seedlings per hill	10	10	9	11
10	Av. spacing between hills, cm	19.4	20.4	20.6	20.8
11	Av. number of hills per m^2	24	24	24	24
12	Transplanting faults in one m^2 (%)				
	Missed hills	Nil	Nil	Nil	Nil
	Floating seedling	Nil	0.83	Nil	0.83

	Buried seedling	0.83	0.83	0.20	0.83
	Damaged seedlings	Nil	Nil	Nil	Nil
	Total	0.83	1.67	0.83	1.67
13	Area covered (ha/h)	0.315	0.327	0.325	0.328
14	Avg. time required to cover 1 ha (h)	3.17	3.06	3.08	3.05
15	Fuel consumption				
	l/h	0.99	1.00	1.10	1.05
	l/ha	3.14	3.06	3.39	3.20
16	No. of trays consumed per ha	210	215	208	212