व्यावसायिक परीक्षण रिपोर्ट

COMMERCIAL TEST REPORT

संख्या/ **No.:IMP-1083/3101/2023**

माह/**Month: November, 2023**

THIS TEST REPORT VALID UP TO : 30th November, 2030

TRACTOR OPERATED FERTILIZER BROADCASTER 'MASTER MIND, MFB-55'

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

उत्तरी क्षेत्र कृषि मशीनरी प्रशिक्षण एवं परीक्षण संस्थान

Northern Region Farm Machinery Training and Testing Institute

ट्रैक्टर नगर, सिरसा रोड, हिसार, (हरियाणा) - 125 001

Tractor Nagar, Sirsa Road, HISAR (Haryana)-125 001

[ISO 9001:2015 CERTIFIED]

Website: http://nrfmtti.gov.in/

E-mail: fmti-nr@nic.in

Tele./FAX: 01662-276984

5.4 Labelling plate : Labelling plate is riveted on the machine having following information:-

MASTER BRAIN
AGRO INDUSTRIES PVT. LTD.

1.	Name of Implement	- Fertilizer Broadcaster			
2.	Make	- Master Brain	Sr. No.	-	MFB0820230110
3.	Model	- MFB-55	Type	-	TRACTOR OPERATED
4.	MFG Year	2023	Req. hP	-	30 HP Min.
5.	Weight	- 198.2/Size- 400 kg	Country of origin	-	India

SUKHPURA MOUR- 148108, BARNALA (PUNJAB)
M: 098726-88685, 098767-82957
Email: masterbrain030@gmail.com, Email: mastermind2018@gmail.com

6. MATERIAL OF CONSTRUCTION OF DIFFERENT COMPOSITION:

The material of fertilizer broadcaster was analyzed as per IS: 12337-1988, which is given below:

Sr. No.	Component	Material as per IS: 12337-1988	Observed	Conformity
1.	Hopper	Mild steel/ Galvanized steel sheet/ Aluminum/ Fiber glass/ Reinforced plastic	Mild steel	Conforms
2.	Spreader disc	Mild steel/ Galvanized steel sheet/ Aluminum/ Fiber glass/ Reinforced plastic	Galvanized steel	Conforms
3.	Lid	Mild steel/ Galvanized steel sheet/ Aluminum/ Fiber glass/ Reinforced plastic	Not provided	-
4.	Gear	Mild steel/ Nylon	Mild steel	Conforms
5.	Agitator	Mild steel/ Nylon	Mild steel	Conforms
6.	Feed control mechanism	Mild steel/ Galvanized steel sheet/ Nylon	Galvanized steel	Conforms
7.	Gear shaft	Mild steel/ Carbon steel	Mild steel	Conforms
8.	Centre shaft	Mild steel/ Carbon steel	Mild steel	Conforms

7. FIELD TEST

Field test of fertilizer broadcaster MFB-55 was conducted at NRFMTTI farm, Hisar for 20.76 hours excluding running-in for 0.5 hours. Machine was run at 540 PTO rpm of the tractor. The implement was used for broadcasting the Urea fertilizer. The detailed test results are given in Annexure-IV and are summarised as under:-

Summary of field test results:

Sl. No.	Parameters	Ranage of measurement
1.	Tractor used	Farmtrac-45
2.	Gear selected	L-2
3.	Avg. working width, m	17.87 to 18.10
4.	Overlapping width, m	0.90 to 1.10
5.	Forward speed, kmph	3.57 to 3.77
6.	Fuel consumption, l/h l/ha	 3.43 to 3.87 0.61 to 0.75
7	Actual area covered ha/h h/ha	 5.15 to 5.91 0.17 to 0.19
8.	Field efficiency, %	75.44 to 87.96
9	Fertilizer application rate, kg/ha	233.0 to 248.1
10.	Percentage of variation in fertilizer application rate, %	56.81 to 68.39
11.	Tractor PTO power utilised, kW	7.02

7.1 Quality of work:

7.1.1 The average fertlizer application rate was observed as 233.0 to 248.1 ha. Percentage of variation in application rate was observed as 56.81 to 68.39 %.

7.1.2 Field efficiency of machine was observed as 75.44 to 87.96 % .

7.2 Rate of Work & Fuel consumption :

The average width of fertilizer broadcasting was observed as 17.87 to 18.10 m and overlapping width was observed as 0.90 to 1.10 m. The area covered was observed as 5.15 to 5.91 ha/h and time required to cover one ha area was observed as 0.17 to 0.19 Fuel consumption varied from 3.43 to 3.87 l/h and 0.61 to 0.75 l/ha.

7.3 Power utilization:

During field operation, average PTO power of tractor was observed as 7.02 kW.

8. LABOUR REQUIREMENT:

Two labours are required to operate the Fertilizer broadcaster. One skilled labour is required for adjustments, calibration of the fertilizer broadcaster and to operate the tractor and other unskilled labour to load the fertilizer hopper.

9. EASE OF OPERATION AND ADJUSTMENT

Operation and adjustment of fertilizer broadcaster was observed to be satisfactory. However, the operator has to get down from the tractor to do the adjustments on the machine.

10. SOUNDNESS OF CONSTRUCTION

No breakdown was observed during 20.70 hrs. of operation of fertilizer broadcaster.

Summary of field test results:

Sl. No.	Parameters	Ranage of measurement
1.	Tractor used	Farmtrac-45
2.	Gear selected	L-2
3.	Avg. working width, m	17.87 to 18.10
4.	Overlapping width, m	0.90 to 1.10
5.	Forward speed, kmph	3.57 to 3.77
6.	Fuel consumption, l/h l/ha	 3.43 to 3.87 0.61 to 0.75
7	Actual area covered ha/h h/ha	 5.15 to 5.91 0.17 to 0.19
8.	Field efficiency, %	75.44 to 87.96
9	Fertilizer application rate, kg/ha	233.0 to 248.1
10.	Percentage of variation in fertilizer application rate, %	56.81 to 68.39
11.	Tractor PTO power utilised, kW	7.02

7.1 Quality of work:

7.1.1 The average fertlizer application rate was observed as 233.0 to 248.1 ha. Percentage of variation in application rate was observed as 56.81 to 68.39 %.

7.1.2 Field efficiency of machine was observed as 75.44 to 87.96 % .

7.2 Rate of Work & Fuel consumption :

The average width of fertilizer broadcasting was observed as 17.87 to 18.10 m and overlapping width was observed as 0.90 to 1.10 m. The area covered was observed as 5.15 to 5.91 ha/h and time required to cover one ha area was observed as 0.17 to 0.19 Fuel consumption varied from 3.43 to 3.87 l/h and 0.61 to 0.75 l/ha.

7.3 Power utilization:

During field operation, average PTO power of tractor was observed as 7.02 kW.

8. LABOUR REQUIREMENT:

Two labours are required to operate the Fertilizer broadcaster. One skilled labour is required for adjustments, calibration of the fertilizer broadcaster and to operate the tractor and other unskilled labour to load the fertilizer hopper.

9. EASE OF OPERATION AND ADJUSTMENT

Operation and adjustment of fertilizer broadcaster was observed to be satisfactory. However, the operator has to get down from the tractor to do the adjustments on the machine.

10. SOUNDNESS OF CONSTRUCTION

No breakdown was observed during 20.70 hrs. of operation of fertilizer broadcaster.

11. CRITICAL TECHNICAL SPECIFICATION

[Vide Ministry Letter No. 13-9/2019-M & T (I&P)-Part dated 26.04.2019 and F. No. 9-1/2019 M&T (I&P) dated 20.8.2019]

Sr. No.	Parameters	Specifications	Observed	Remarks
1	Hopper capacity, Kg	Min. 200 (180 L Min)	400	Conforms
2	Fertilizer hopper sheet thickness, mm	2 (min.) Galvanized/powder coated	2.5	Conforms
3	Feed control mechanism	Proper graduations should be provided	Provided	Conforms
4	Fertilizer agitator	Must be provided	Provided	Conforms
5	Fertilizer spreading range (m)	6 (Min.)	18.10	Conforms
6	Drive safety	Must be provided	Provided	Conforms
7	Material of construction of Hopper	MS Steel, Galvanized Sheet, Aluminum fiber Glass Reinforced plastic	MS Steel	Conforms
8	Anti-corrosive painting of fertilizer hopper	Must be provided	Provided	Conforms
9	Marking/labeling of machine	The labeling plate should be riveted on the body of machine having Name and address of manufacturer, Country of origin, Make, Model, Year of manufacturer, Serial number, Type, Size, required size of prime mover (kW)	Provided	Conforms
10	Literature	Operator manual, Service manual and Parts catalogue should be provided	Provided	Conforms

12. COMMENTS AND RECOMMENDATIONS

i) Hopper tank lid is not provided, it may be provided to avoid ingress of moisture in fertilizer.
ii) During field performance test, fertilizer application rate variation was observed more. It may be looked into.

13. TECHNICAL LITERATURE:

The following literatures were provided with fertilizer broadcaster for guidance to the user.
i) Operator manual
ii) Service manual
iii) Parts catalogue
However, the manuals of broadcaster should be updated as per IS:8132-1999

TESTING AUTHORITY

Er. SANJAY KUMAR **AGRICULTURAL ENGINEER**	
Dr. MUKESH JAIN **DIRECTOR**	08-11-2023

The test report compiled by: Sh. Vikram, Sr. Tech.

14. APPLICANT'S COMMENTS

No specific comments received from the applicant.