प्रारंभिक ब्याबसायिक परीक्षण रिपोर्ट संख्या/No. **CSIR/CMERI/FMTTC/2022/019**

INITIAL COMMERCIAL TEST REPORT माह/Month: December, 2022

THIS TEST REPORT VALID UP TO : 31ST DECEMBER, 2029

BHOOMI AGRO
MANUALLY OPERATED SEED CUM FERTILIZER ROUND DIBBLER (BSFD - 01)

कृषि मशीनरी प्रशिक्षण और परीक्षण केंद्र

Farm Machinery Training and Testing Centre

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1 SCOPE OF TEST

The scope of test was to check and assess the followings:

1.1 Laboratory test

Checking of Specification:

- Variation in seed rate due to different depths of seed boxes.

1.2 Field test

- Rate of work
- Quality of work
- Labor requirement
- Ease of operation & adjustments
- Defects, Breakdown and repairs.

2 METHOD OF SELECTION

The test sample was directly submitted by applicant, hence method of selection is not known. Moreover, the random selection of test sample is exempted vide O.M. No 13-13/2020 M&T (I&P), dated 27th July, 2021 upto September, 2021.

3 TEST PROCEDURE / CODES

- IS: 6316— 1993 Sowing Equipment – Seed-cum-fertilizer Drill – Test Code (First revision)
- IS: 6813—2000 Sowing Equipment – Seed-cum-fertilizer Drill—Specification (Second revision)
- IS: 11271—1985 Specification for Groundnut Planter

4 PERFORMANCE AND CHARACTERISTICS OF SEEDERS

- This product is applicable to the ploughed land with or without ridge in plain, mountainous area and hill.
- The hand-propelled seeding in rolling manner is easy and efficient, and environmental-friendly.
- The transparent polycarbonate engineering plastic used make the seeding can be directly seen and is solid and durable.
- The design is scientific and the seeding is accurate. The planting distance and density can be adjusted at any time according to requirement.

Suitable seeds	: Maize, Beans, Peanuts, Cotton, Black gram (like round seeds)
Function	: Planting & Fertilizer
Hole seeding rate	: 1-2 adjustable
Seeding depth (mm)	: 35
Seeds box (kg)	: 3.5
Fertilizer box(kg)	: 5.8
Space (seed to seed) (cm)	: 25 – 31 (can adjust)
Spike number	: 07 Seed, 07 Fertilizer (can adjust)

8 FIELD TEST

The test was conducted for maize seed and DAP fertilizer for 22.5 hours at CSIR-CMERI, Durgapur. The observed results are shown below

8.1 Trial – I

Sl. No	Parameters	As observed
1	Date of Test	26.10.2022
2	Duration of Test (h)	7
3	Type of soil	Sandy loam
4	Soil moisture (%)	14
5	Name of seeds used	Maize
6	Variety of seed	GK 3155
7	Name of Fertilizer	DAP
8	Average forward speed (km/h)	2.16
9	Average depth of seed placed (cm)	4.9
10	Average spacing between seeds (cm)	28.5
11	Average depth of fertilizer placed (cm)	6.9
12	Average spacing between Fertilizer (cm)	27.1
13	Distance Between Seed to fertilizer (cm)	10.6
14	Average working width (m)	0.75
15	Area covered (ha/h)	0.10
16	Time required for one ha (h)	10.20
17	Seed rate (kg/ha)	15.6
18	Fertilizer rate (kg/ha)	1127.8
19	Field efficiency (%)	60.5

8.2 Trial – II

Sl. No	Parameters	As observed
1	Date of Test	28.10.2022
2	Duration of Test (h)	8
3	Type of soil	Sandy loam
4	Soil moisture (%)	16
5	Name of seeds used	Maize
6	Variety of seed	GK 3155
7	Name of Fertilizer	DAP
8	Average forward speed (km/h)	2.1

Summary of the field performance

Sl. No	Parameters	Range
2	Duration of Test (h)	22.5
3	Type of soil	Sandy loam
4	Soil moisture (%)	14 to 16
5	Name of seeds used	Maize
6	Variety of seed	GK 3155
7	Name of Fertilizer	DAP
8	Average forward speed (km/h)	2.1 to 2.25
9	Average depth of seed placed (cm)	4.9 to 5.3
10	Average spacing between seeds (cm)	27.1 to 28.5
11	Average depth of fertilizer placed (cm)	6.6 to 7
12	Average spacing between Fertilizer (cm)	25.9 to 27.1
13	Distance Between Seed to fertilizer (cm)	10.1 to 10.6
14	Average working width (m)	0.75
15	Area covered (ha/h)	0.1 to 0.12
16	Time required for one ha (h)	8.6 to 10.2
17	Seed rate (kg/ha)	15.6 to 20
18	Fertilizer rate (kg/ha)	922.7 to 1127.8
19	Field efficiency (%)	60.5 to 68.5

9 RATE OF WORK

- The average area covered was recorded as 0.10 to 0.12 ha/hr. at average operating speed of 2.1 to 2.25 km/hr.
- The field efficiency was recorded as 60.5 to 68.5%.

9.1 QUALITY OF WORK

- Average depth of sowing was recorded as 4.9 to 5.3 cm.
- The average spacing between seeds was recorded as 27.1 to 28.5 cm
- Average depth of fertilizer placed was recorded as 6.6 to 7.0 cm
- Average spacing between Fertilizer was recorded as 25.9 to 27.1 cm
- Average distance between seed to fertilizer 10.1 to 10.6 cm

10 EASE OF OPERATION AND ADJUSTMENT

Operation and adjustment of the seed cum fertilizer can be done easily.

11 LABOUR REQUIRMENTS

One labour can effectively operate the seed cum fertilizer.

12 DEFECTS, ADJUSTEMENTS, BREAKDOWNS AND REPAIRS

There is no breakdown occurred during the total operation of 22.5 hours of operation.

13 COMMENTS AND RECOMMENDATIONS

13.1 The Fertilizer rate is observed between 922.7 to 1127.8 kg/ha, which is very high and causing the loss of fertilizer and time in refilling it. This needs to be improved.

14 TECHNICAL LITERATURE

The User manual of the seed cum fertilizer drill are provided by the applicant during the test along with the application form. However, these manuals need to be updated as per IS: 8132-1999.

TESTING AUTHORITY

Report Prepared by	Sr. Technical Officer, CSIR-CMERI Farm Machinery Testing Centre	13/12/2022
Report Verified by	Scientist, CSIR-CMERI Farm Machinery Testing Centre	13/12/2022
Report Approved by	In-Charge, CSIR-CMERI Farm Machinery Testing Centre	Subrata Mandal 13.12.2022
Report Approved for release by	Head, Business Innovation and Skill Group, CSIR-CMERI, Durgapur	14/12/22

15 APPLICANT'S COMMENTS

Para No.	Our Reference	Applicant's Comments
15	13.1	Noted, we will rectify during our regular production