

VALID UP TO: 30 JUNE, 2030



ಭಾರತ ಸರ್ಕಾರ

GOVERNMENT OF INDIA

ಕೃಷಿ ಹಾಗೂ ರೈತರ ಕಲ್ಯಾಣ ಸಚಿವಾಲಯ

MINISTRY OF AGRICULTURE AND FARMERS WELFARE

(ಕೃಷಿ ಸಹಕಾರ ಹಾಗೂ ರೈತರ ಕಲ್ಯಾಣ ಇಲಾಖೆ)

(DEPT. OF AGRICULTURE, COOPERATION AND FARMERS WELFARE)

ಕೃಷಿ ಯಂತ್ರೋಪಕರಣಗಳ ಪರೀಕ್ಷಣಾ ಕೇಂದ್ರ

FARM MACHINERY TESTING CENTRE,

ಕೃಷಿ ಯಂತ್ರೋಪಕರಣ ಮತ್ತು ಶಕ್ತಿ ಇಂಜಿನಿಯರಿಂಗ್ ವಿಭಾಗ

DEPARTMENT OF FARM MACHINERY AND POWER ENGINEERING

ಕೃಷಿ ಇಂಜಿನಿಯರಿಂಗ್ ಮಹಾವಿದ್ಯಾಲಯ, ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾಲಯ,

ಬೆಂಗಳೂರು-560065 (ಕರ್ನಾಟಕ)

COLLEGE OF AGRICULTURE ENGINEERING, UNIVERSITY OF AGRICULTURAL
SCIENCES, BENGALURU - 560065 (KARNATAKA)

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Telephone & Fax: 080-23330153/406

IMP/No. TT- 331	SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM FERTILIZER DRILL (TRACTOR MOUNTED)	COMMERCIAL
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SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM
FERTILIZER DRILL (TRACTOR MOUNTED)



IMP/No. TT- 331	SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM FERTILIZER DRILL (TRACTOR MOUNTED)	COMMERCIAL
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Manufacturer: Sandeep Agro Works
Near Buldhana Urban Ware House,
Akola Road, Akot Dist – Akola
Maharashtra State - 444 101
Applicant: Sandeep Agro Works
Near Buldhana Urban Ware House,
Akola Road, Akot Dist – Akola
Maharashtra State - 444 101

**Commercial Test Report of
SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM
FERTILIZER DRILL (TRACTOR MOUNTED)
Make/Model: SARJA™ / SA 9.S.D
No .DR/ TT No-331 Dated 16/01/2023**

Report No: CTR-261

Month: JUNE

Year: 2023

VALID UP TO: 30 JUNE, 2030



सत्यमेव जयते



TESTED BY

**FARM MACHINERY TESTING CENTRE,
DEPARTMENT OF FARM MACHINERY AND POWER ENGINEERING
COLLEGE OF AGRICULTURAL ENGINEERING, GKV,
UAS, BANGALORE-560065 (KARNATAKA)
AN IDENTIFIED TESTING CENTRE OF
GOVERNMENT OF INDIA,
MINISTRY OF AGRICULTURE AND FARMERS WELFARE
(DEPT. OF AGRICULTURE, COOPERATION AND FARMERS WELFARE)**

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Telephone & Fax: 080-23330153/406

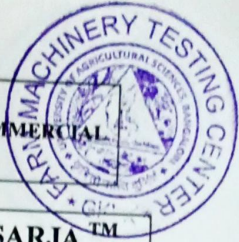
FARM MACHINERY TESTING CENTRE, COLLEGE OF AGRICULTURE
ENGINEERING, UAS, GKV, BANGALORE, KARNATAKA STATE

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IMP/No. TT- 331

**SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE
TYNE SEED CUM FERTILIZER DRILL
(TRACTOR MOUNTED)**

COMMERCIAL



**COMMERCIAL TEST REPORT OF SANDEEP AGRO WORKS SARJA™
SA 9.S.D. NINE TYNE SEED CUM FERTILIZER DRILL
(TRACTOR MOUNTED)**

UAS B Ref: No .DR/ TT No-331 Dated 16/01/2023

- Name of implement** : SEED CUM FERTILIZER DRILL
- Make/Model** : SARJA™ / SA 9.S.D
- Type** : Tractor mounted
- Name of Manufacturer** : Sandeep Agro Works
Near Buldhana Urban Ware House,
Akola Road, Akot Dist – Akola
Maharashtra State - 444 101
- Test conducted by** : **Dr. Jayashree G.C (FPM)**
Testing Engineer & Assistant Professor
Department of Farm Machinery and Power
Engineering College of Agricultural Engineering,
UAS, GKVK, Bangalore-560065
- Assisted by** : **Mr. Naveen B.V,**
Senior Research Fellow
College of Agricultural Engineering
UAS, GKVK, Bangalore-560065
- : **Er. Gopal krishna. T S,**
Senior Technical Assistant
College of Agricultural Engineering
UAS, GKVK, Bangalore-560065

TESTED AT

**Farm Machinery Testing Centre
Department of Farm Machinery and Power Engineering
College of Agricultural Engineering
UAS, GKVK, Bangalore-560065**

IMP/No. TT- 331	SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM FERTILIZER DRILL (TRACTOR MOUNTED)
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Type of test	:	Commercial
Period of test	:	January - June, 2023
Test Report No.	:	CTR-261
Month / Year	:	JUNE 2023
Duration of Test		26.30

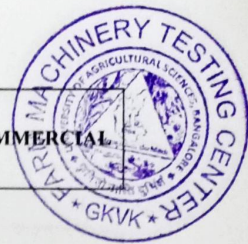
1. This Test Report should not be reproduced in part or full without prior permission of the Testing Authority, Farm Machinery Testing Centre, College of Agriculture engineering, University of Agricultural Sciences, Bangalore (KARNATAKA).
2. The data given in the Test Report pertain to the particular machine/implement submitted by applicant for test.
3. The data collected during the test do not conform in any way attribute to the durability of the machine/implement.
4. The results reported in this report are observed values and no corrections have been applied for atmospheric and site condition.

SELECTED CONVERSION

Sl. No.	Units	Conversion factor
1	Force	
	1 kgf	9.80665 N
		2.20462 lbf
2	Power	
	1 hp	1.01387 metric hp (Ps)
		745.7 W
	1 Ps	735.5 W
	1 kW	1.35962 Ps
3	Pressure	
	1 psi	6.895 kPa
	1 kgf/cm ²	98.067 kPa = 735.56 mm of Hg
	1 bar	100 kPa = 10 N/cm ²
	1 mm of Hg	1.3332 m-bar

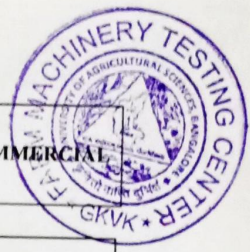
IMP/No. TT- 331	SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM FERTILIZER DRILL (TRACTOR MOUNTED)
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COMMERCIAL



4. SPECIFICATIONS

4.1	GENERAL	
	Name and address of manufacturer :	Sandeep Agro Works Near Buldhana Urban Ware House, Akola Road, Akot Dist – Akola Maharashtra State - 444 101
	Name and address of applicant :	Sandeep Agro Works Near Buldhana Urban Ware House, Akola Road, Akot Dist – Akola Maharashtra State - 444 101
	Name of machine :	Seed Cum Fertilizer Drill
	Type :	Tractor Mounted
	Make (apa) :	SARJA™
	Model (apa) :	SA 9.S.D.
	Serial number (apa) :	BC 0255
	Year of manufacture (apa) :	2022-23
	Working width, mm (Spacing, mm × No. of rows) :	200 × 9 (Adjustable)
	Power sources as recommended (apa), hp :	Above 35
	Recommended travelling speed of the drill (apa), kmph :	3 to 5
	Location of fertilizer outlet in relation to seed outlet :	Fertilizer outlet is in front of seed outlet
	Type of seed to which the drill is designed to sow (apa) :	Multicrop (Wheat, Soyabean Bengalgram, Groundnut, Maize, Greengram and Maize)
	Seeds on which test trials were requested to be conducted :	Soyabean and maize
4.2	Prime mover	
	Tractor :	MAHINDRA 475 DI
	Chassis No. :	REOSS1554
	Max. Power hp/kW :	31.31 (42)
4.3	Constructional details (Refer Fig.1)	
4.3.1	Main frame (Fig. 2)	
	Constructional details :	A rectangular shape main frame was fabricated with MS C - section as horizontal bars of size 2046 × 40 × 40 × 6 mm. Two MS hollow C – section of size 510 × 40 × 40 × 6 mm welded to the main frame as endplates. A MS flat of size 3890 × 65 × 8 mm were welded to the main frame as cross member.



IMP/No. TT- 331	SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM FERTILIZER DRILL (TRACTOR MOUNTED)		COMMERCIAL
Material (apa)	:	Mild Steel	
Dimensions of frame, mm	:	2046 × 510	

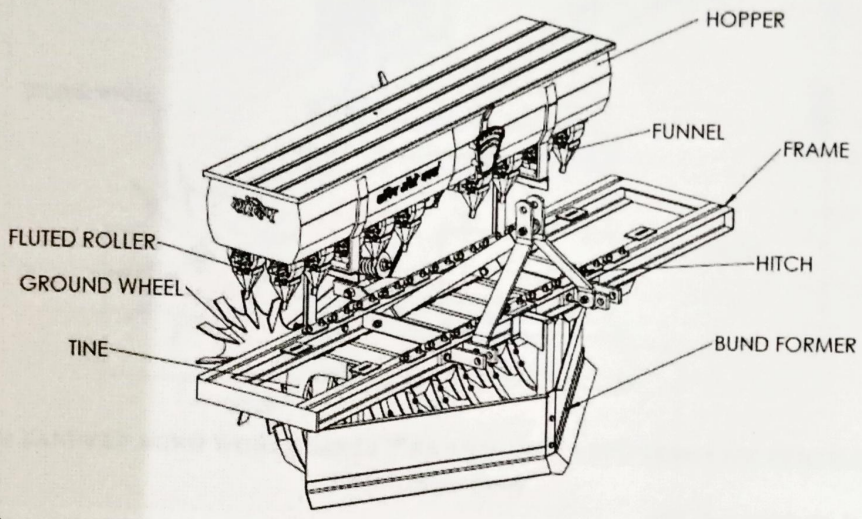


Fig. 1a SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM FERTILIZER DRILL (Isometric view)

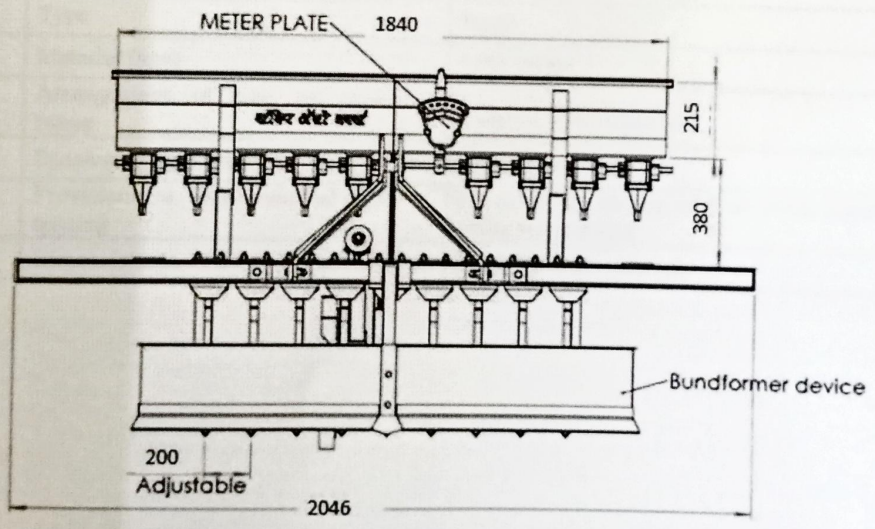


Fig. 1b SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM FERTILIZER DRILL (Front view)

(All dimensions are in mm)

IMP/No. TT- 331

SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM FERTILIZER DRILL (TRACTOR MOUNTED)

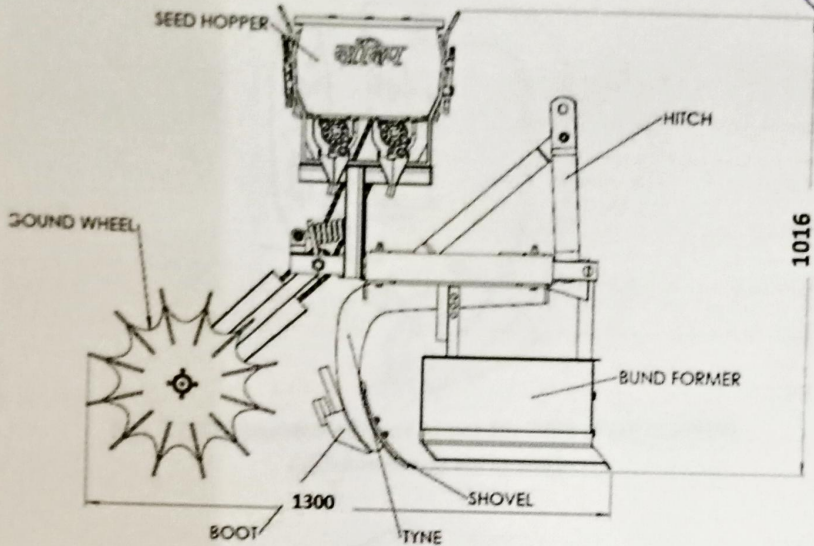


Fig. 1c SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM FERTILIZER DRILL (Side view)

(All dimensions are in mm)

4.3.2	Tine (Refer Fig.3)	
	Number of tines	: Nine
	Type	: Rigid
	Material (apa)	: Mild Steel
	Arrangement of tine on main frame	: Single line arrangement
	Spacing of tines, mm	: 200 (adjustable)
	Provision for adjustment of row spacing	: Provided by sliding tyne on main frame by using nut and bolt
	Dimensions (L × W × T), mm	: 780 × 80 × 26 (curved)

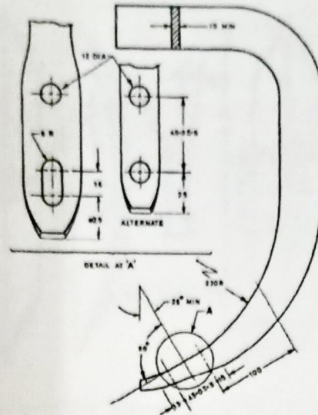


Fig. 2 (a) Dimension of tine (As per IS: 7565 (Part 1) -1975)
 (All dimensions are in mm)

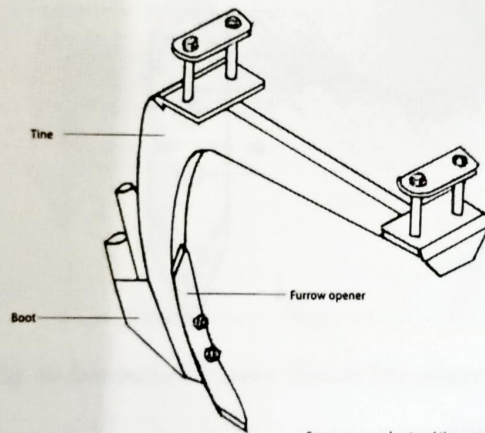
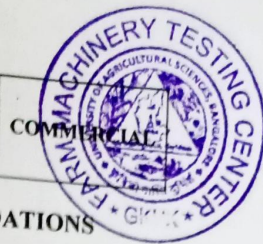


Fig. 3 Dimension of tine (As observed)

(All dimensions are in mm)

4.3.3 Furrow openers (Refer Fig. 4a and 4b)		
Type	:	Reversible shovel
Numbers	:	Nine
Material (apa)	:	Mild Steel
Size of shovel (L × W × T), mm	:	280 × 40 × 18
Method of fixing	:	Each shovel is fixed to the tine using 2 nut and bolts spaced at 60 mm
Fertilizer placement with respect to seeds	:	Infront of the seed



11. SUMMARY OF OBSERVATION, COMMENTS AND RECOMMENDATIONS

- 11.1 Furrow openers should be provided with depth adjusting arrangement to meet the requirements of IS 6813:2000
- 11.2 Accessories like covering device, foot board, row marker, press wheel and area recorder are not provided.
- 11.3 Material of construction does not conform to IS 6813:2000 fully. It should be looked into.
- 11.4 The chemical composition of furrow opener does not meet the full requirements of IS: 6690-1981. This should be looked into for corrective actions.
- 11.5 The hourly percentage wear of furrow opener on mass basis was recorded as 0.26 to 0.43 %
- 11.6 Suitable clutches are not provided to stop the movement of metering mechanism when the wheels are turned in reverse direction. This should be looked into
- 11.7 It is recommended that a permanent metallic calibration plate indicating the metering position and quantity of seed and fertilizer should be attached under top cover of seed box.
- 11.8 The labelling plate is provided on the planter with few details. It is recommended that, a labelling plate with all the following information may be provided on the machine
- Name of Manufacturer and trade mark, if any
 - Make
 - Model
 - Year of Manufacturer
 - Recommended power source, (kW)
- Type of seed suitable to sow
- 11.9 Adequacy of Literature:

The manufacturer not submitted part catalogue. Hence the same should be provided containing performance, special features, drawing and dimensions of the implement in English, Hindi and other regional languages as per IS:8132-1999.

12. APPLICANT'S COMMENTS

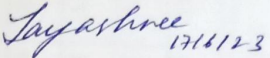
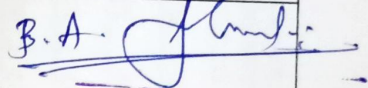
Draft test report was made available to the applicant and no specific comments were received.

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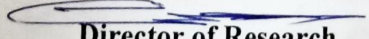
IMP/No. TT-331	SANDEEP AGRO WORKS SARJA™ SA 9.S.D. NINE TYNE SEED CUM FERTILIZER DRILL (TRACTOR MOUNTED)	COMMERCIAL
Date of mailing draft report to Applicant	06 - 06 - 2023	
Remarks received if any		

TESTING AUTHORITY

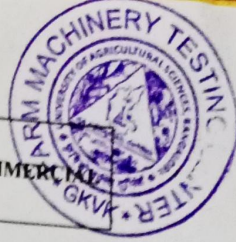
Dr. Jayashree G.C (FPM) Testing Engineer & Assistant Professor Department of Farm Machinery and Power Engineering College of Agricultural Engineering, UAS, GKVK, Bangalore-560065	 17/6/23 Dr. JAYASHREE G.C Assistant Professor (Farm Machinery) College of Agricultural Engineering University of Agricultural Sciences GKVK, Bangalore - 560 065.
Co-ordinator Farm Machinery Testing Centre, College of Agricultural Engineering, UAS, GKVK, Bangalore-560065	 Dr. B.A. ANAND Co-ordinator Farm Machinery Testing Center Dept. of Farm Machinery & Power Engineering CoAE, UAS, GKVK, Bengaluru - 560 065

No. DR/STA/TT-331(2022-23)/2023-24 dtd. 19/6/23

COUNTERSIGNED


Director of Research
University of Agricultural Sciences, GKVK, Bangalore

Director of Research
University Of Agricultural Sciences
G.K.V.K Bengaluru-560 065



ANNEXURE - XVIII

SYMBOLS AND ABBREVIATIONS

SYMBOLS:

Symbols assigned to basic SI units

Sl. No.	Physical Quality	Name of SI unit	Symbol
1	Length	Metre	m
		Millimetre	mm
2	Mass	Kilogram	kg
		Gram	g
		Tonne	t
3	Time	Second	s

Sl. No.	Physical Quality	Name of SI unit	Symbol
1	Area	Square centimetre	cm ²
		Square metre	m ²
		Hectare	ha
2	Speed/Velocity	Metre per second	m/s
		Kilometre per hour	kmph
3	Pressure	Newton per square millimetre	N/mm ²
4	Time	Minute	min
		Hour	h
5	Volume	Cubic centimetre	cm ³
		Millilitre	ml
		Litre	l

ABBREVIATIONS

As per applicant	: apa	Clause	: Cl
Degree	: deg	Figure	: Fig.
Indian standard	: IS	Kilowatt	: kW
Number	: No.	Not available	: N.A.
Not Recorded	: N.R.	Percent	: %
Reference	: Ref.	Revolutions per minute	: rpm