

THIS TEST REPORT IS VALID UPTO 31.01.2031



**SUN AGRO SA-7000P POWER WEEDER**



भारत सरकार  
GOVT OF INDIA

कृषि एवं किसान कल्याण मंत्रालय

MINISTRY OF AGRICULTURE & 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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[AN ISO 9001:2015 CERTIFIED INSTITUTION]

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#### 4. SPECIFICATIONS

##### 4.1 General:

Make	: SUN AGRO
Model	: SA-7000P
Name and address of manufacturer	: <b>Chongqing Rato Technology Co., Ltd., Zone-B, Shaungfu Industry Park, Jiangjin District, Chongqing, China</b>
Name and address of applicant	: <b>Sun Agro, Adarsh Service Station, G.E. Road, Durg- 490020, Chhattisgarh</b>
Name of machine	: Power weeder
Type of machine	: Self propelled, Walk behind
Working size of machine (mm)	: 1080
Year of manufacture	: 2022
Serial no. of machine	: A2306058171



##### 4.2 Details of prime mover:

Make	: Not Specified
Model	: R210
Type	: 4 stroke, Single cylinder, Air cooled, Spark Ignition
Year of manufacture	: 2023
Serial Number	: A2306058171
Country of origin (apa)	: <b>CHINA</b>
Recommended high idle speed (rpm)	: 3850 ± 50
Recommended low idle speed (rpm)	: 1660 ± 50
Recommended rated speed (rpm)	: 3600
Rated power observed (kW)	: <b>4.22</b>
Rated power declared (apa) (kW)	: 5.11

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## 11.2 Chemical composition of rotor blades :

Constituents	As per IS 6690:1981 (Reaffirmed 2012)		Composition as observed (% by weight)	Remarks
	Carbon Steel (%)	Silicon Manganese Steel (%)		
Carbon ( C )	0.70 -0.85	0.50-0.60	0.785	Conforms
Silicon (Si)	0.10 -0.40	1.50-2.00	0.776	<b>Does not conform</b>
Manganese (Mn)	0.50 -1.0	0.50-1.00	0.840	Conforms
Sulphur (S)	0.05(max)	0.05(max)	0.009	Conforms
Phosphorous (P)	0.05(max)	0.05(max)	0.016	Conforms

## 12. FIELD PERFORMANCE TEST

The field tests were conducted for 27.51 hours of field operation for testing the said Power Weeder. The field tests were conducted at rated speed of 3600 rpm. The detailed test results are represented in the Annexure and summarized in the ensuing table:

Sl.No.	Parameters	Observations
1	Type of soil	: Light
2	Soil moisture (%)	: 7.60 to 9.33
3	Bulk density of soil (g/cc)	: 1.53 to 1.60
4	Forward Speed of operation (kmph)	: 0.99 to 1.08
5	Depth of cut (cm)	: 5.58 to 6.01
6	Width of cut (m)	: 1.07 to 1.10
7	Area covered (ha/h)	: 0.084 to 0.093
8	Time required for one ha (h)	: 10.57 to 11.90
9	Field efficiency (%)	: 75.68 to 81.31
10	Weeding efficiency (%)	: 69.92 to 77.01
11	Fuel consumption	
		l/h : 0.91 to 1.09
		l/ha : 10.42 to 12.18

### 12.1 Rate of work

- Rate of work was recorded as 0.084 to 0.093 ha/h and the forward speed of operation varied from 0.99 to 1.08 kmph.
- Time required to cover one hectare was recorded as 10.57 to 11.90 h.

### 12.2 Quality of work:

- Depth of cut was recorded as 5.58 to 6.01 cm.
- Working width was observed as 1.07 to 1.10 m.
- Field efficiency was found as 75.68 to 81.31 %.
- Weeding efficiency was found as 69.92 to 77.01 %.





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- 15.2 **Clutch:** No noticeable defects observed  
15.3 **Transmission gears:** No noticeable defects observed  
15.4 **Rotary drive unit:**  
The rotary drive unit was dismantled and all the components were found in normal condition.

## 16. COMMENTS & RECOMMENDATIONS

- 16.1 The average rated power in rating test of engine was observed as 4.22 kW against declared value of 5.12 kW by the manufacturer. This should be looked into for corrective action.
- 16.2 The specific fuel consumption (SFC) in rating test of engine was observed as 386.4 g/kWh against declared value of 205 g/kWh by the 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 2011). This should be looked into for corrective action.
- 16.3 The engine was not marked with Manufacturer name or trade-mark, Rated power, Rated speed and type of fuel used which does not fulfill the requirement of IS 7347-1974 (Amended 2011). This may be looked into.
- 16.4 It was observed that during engine performance test, at full Load, engine speed was not stable at rated speed. This shall be looked into for corrective action.
- 16.5 The hardness and chemical composition of rotary blades does not conform to the requirement of IS 6690:1981 (Reaffirmed 2012). This may be looked into for corrective action.
- 16.6 Machine maneuverability while taking turns during field operation was not comfortable. It shall be looked into for ease of operation for the operator.
- 16.7 Noise at operator's ear level was observed on higher side against danger limit of 90 dB (A) as specified by International labour Organization (ILO) for continuous exposure of 8 hours per day. **This calls for reduction in noise level to improve the operator's comfort & safety.**
- 16.8 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 affect the useful life of machine components. In view of above, this deserves to be given top priority for corrective action.
- 16.9 Working width of the machine, type of engine (Petrol/Diesel) & manufacturer's address should be provided on the labeling plate of the machine. This should be looked into for corrective action.

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16.10 The mentioned value of rated power 7.5 hp of engine on the labeling plate of the machine was not matching with the observed value of 5.66 hp during engine test. This should be looked into for corrective action.

16.11 **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: 8132-1999.

**TESTING AUTHORITY**



(M.R. PATIL)  
AGRICULTURAL ENGINEER



(Dr. P.P. RAO)  
DIRECTOR

Draft test report compiled by - **Shri Khagendra Bora**  
Sr. Technical Assistant

**17. APPLICANT'S COMMENTS**



Para No	Our Reference	Applicant's Comments
17.1	16.1 to 16.11	We will take necessary step with your recommendations in future production.