

# ENTAM TEST REPORT



Sprayer type:  
Trade Mark:  
Model:

Air-assisted  
TEYME  
EOLO 2091

## **Manufacturer:**

TEYME TECNOLOGÍA AGRÍCOLA S.L.  
Pol. Ind. SAU III Carrers A-C  
25131 TORRE-SERONA. Lleida.  
Spain

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Test report: PHP0204E

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## Assessment table

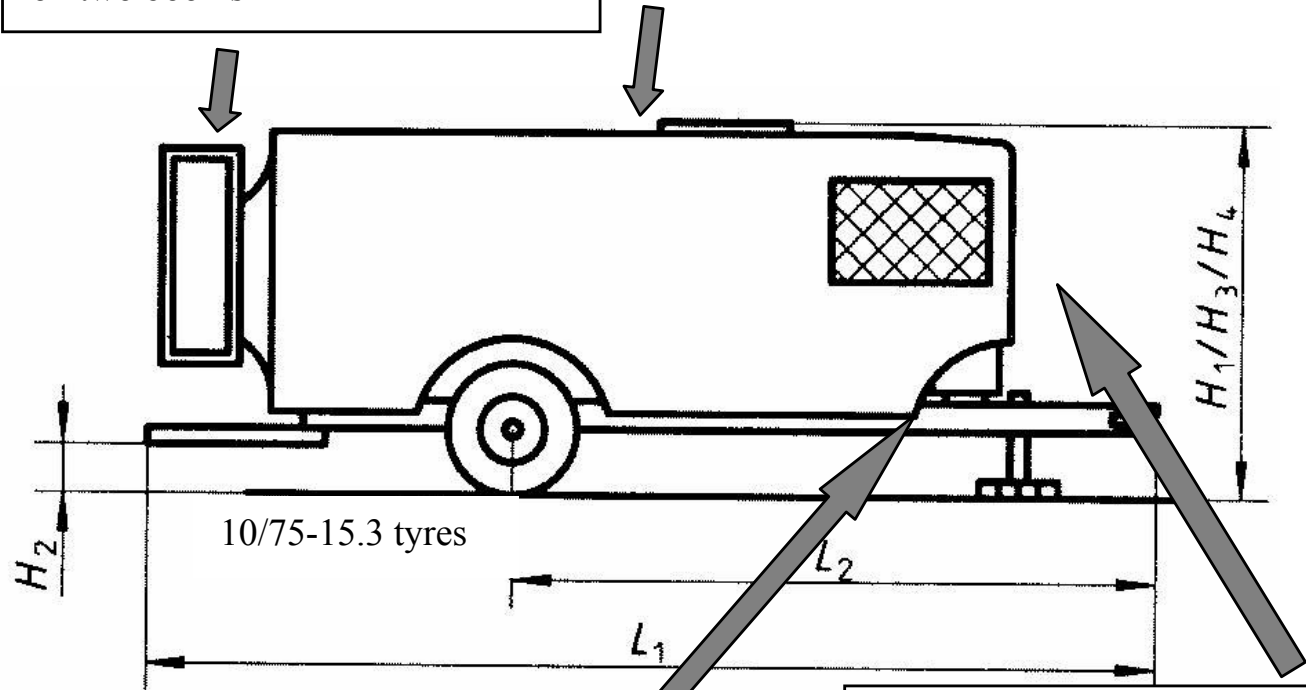
Contents	Assessment
<sup>1)</sup> Spray tank overvolume (min 5%)	+
<sup>2)</sup> Spray tank contents scale up to 20% filling	++
<sup>3)</sup> Spray tank contents scale from 20% filling	+
<sup>4)</sup> Spray tank surface roughness (max 100 $\mu\text{m}$ )	+
<sup>5)</sup> Rinse water tank (min 10 times the dilutable volume)	++
<sup>6)</sup> Agitation system	+
<sup>7)</sup> Volume of total residual	++
<sup>8)</sup> Accuracy of the pressure gauges	++
<sup>9)</sup> Pressure drop between manometer and nozzles	+
<sup>10)</sup> Pressure adjustment devices	+++
<sup>11)</sup> Deviation of single nozzle output from tables	+
<sup>12)</sup> Deviation of single nozzle output from mean	+++
<sup>13)</sup> Liquid flow rate left/right	+++
<sup>14)</sup> Constant volume application rate	+++

- 1) 5-8% +; >8-12% ++; >12-15% +++
- 2) >2/3-3/3 of the permissible value +; 1/3-2/3 of the permissible value ++; <1/3 of the permissible volume +++
- 3) >2/3-3/3 of the permissible value +; 1/3-2/3 of the permissible value ++; <1/3 of the permissible volume +++
- 4) >70-100  $\mu\text{m}$  +; 30-70  $\mu\text{m}$  ++; <30  $\mu\text{m}$  +++
- 5) 10-12 times +; >12-14 times ++; >14 times +++
- 6) >10%-15% +; 5%-10% ++; <5% +++
- 7) >2/3-3/3 of the permissible value +; 1/3-2/3 of the permissible value ++ ; <1/3 of the permissible volume +++)
- 8) >0.4 bar +; 0.2-0.4 bar ++; <0.2bar +++
- 9) >7%-10% +; 3%-7% ++; <3% +++
- 10) >5% +; 2.5%-5% ++; <2.5% +++
- 11) >7%-10% +; 3%-7% ++; <3% +++
- 12) >7%-10% +; 3%-7% ++; <3% +++
- 13) >4% +; 2%-4% ++; <2% +++
- 14) >7%-10% +; 3%-7% ++; <3% +++

**Technical data**

-915 mm aluminium fan with adjustable blades (78500 m<sup>3</sup>/h at 2430 r/min)  
 -adjustable air outlet width  
 -26 hollow-cone nozzles mounted on two booms

-2000 L spray tank with three contents indicators  
 -internal cleaning system; hydraulic agitation  
 -195 L rinsing water tank



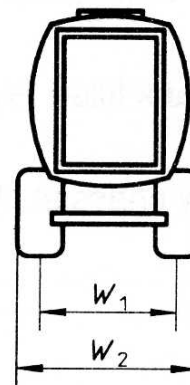
Unloaded weight: 970 kg  
 M. allowed weight: 3200 Kg

3-chamber membrane pump. Type AR BHS 140.  
 135 L/min at 15 bar.

Constant pressure regulation system. Solenoid valves to turn on and off the sprayer and for pressure adjustment.

**Dimensions of the sprayer (mm)**

- L<sub>1</sub>: 4040
- L<sub>2</sub>: 2250
- H<sub>1</sub>: 1540
- H<sub>2</sub>: 220
- W<sub>1</sub>: 1280
- W<sub>2</sub>: 1540



## Description of the sprayer

Trailed air-assisted sprayer for tree crops. Polyethylene tank with rinsing system for interior cleaning. The rinsing



**Fig. 1. Front view of the sprayer**

system, which uses water from an independent rinsing tank, can be controlled from the valves placed in front of the sprayer (figure 1). The hydraulic agitation system can be also turned on and



**Fig. 2. Solenoid valves**

off from the same position. There is also a pressure gauge and a float tank con-

tents indicator, which are visible from the driver's position.

The inlet filter has got a blockage indicator and there are also pressure filters at both sides of the sprayer before the nozzles.



**Fig 3. Nozzle position**

The sprayer is fitted with solenoid valves to turn on and off the boom sections (figure 2). There is a pressure compensating system for the two sides of the nozzle boom to prevent the working pressure from increasing, when the nozzles of one side are turned off. The electrical switchboard is also equipped with a manometer.

The nozzles are placed inside the air flow outlet. There are double nozzle holders with an antidrip system, which can be independently adjusted. The sprayer is equipped with two sets of hollow cone nozzles.

The blowing unit is based on an axial fan. The 10 aluminium fan blades can be placed in five different positions. The width of the air outlet can be also changed and there are three conical deflectors to achieve a uniform air velocity distribution. The fan can be turned at two speeds and can be disconnected of



**Fig 4. Introduction device**

the sprayer transmission. On top of the spray tank, there is an introduction device with a cleaning system for plant protection product cans (figure 4).

## **Test results**

The results of the tests carried out in the TEYME EOLO 2091 sprayer are shown in the following tables. Next to the sprayer components and the corresponding tests, the measured value obtained is depicted, together with the maximum or minimum allowed values.

### Summary of test results

			Result (measured value)	
Spray tank	Over volume		6.4 %	*min 5%
	Tank scale (accuracy)		4%	*max. $\pm 7.5\%$ up to 400 L
			-3.7%	*max. $\pm 5\%$ between 400 and 2000 L
	Surface roughness		96 $\mu\text{m}$	*max 100 $\mu\text{m}$
Rinse water tank	Volume		195 L (12.2 times the dil. volume)	*min. 10 times the dilutable volume
Cleaning device for crop protection cans		Volume of residue	<0.005%	*max. 0.01% of the nominal volume
Agitation performance	Deviation from required concentration (reagitation and emptying process)		-10.55%	*max $\pm 15\%$
Volume of total residual	Dilutable volume		16 L	*max 40 L
	Non dilutable volume		4 L	
Clean water tank	Volume		15 L	*min 15 L

Pressure gauges (2)	Graduation of the scale		1 bar	*max 1 bar
	accuracy		-0.2, 0.2 bar	*max $\pm 0.5$ bar
Adjustment of the volume application rate	Deviation after switching off and on the sprayer and the sections		0%	*max $\pm 7.5\%$
	Pressure drop between manometer and nozzles		8%	*max 10%



<b>Summary of test results</b>				
Distribution of liquid and air				
Single nozzle output				
Nozzle type Albus ATR orange		Result (measured value)		
	Spraying pressure (bar)	Application rate (L/min)	Max. deviation from table *(max $\pm 10\%$ )	Max. deviation from mean value *(max $\pm 10\%$ )
	5	1.01	9.1	6.7
	8	1.27	8.1	5.5
	12	1.54	6.3	4.3
	15	1.74	8.3	5.3
Albus ATR red				
	5	1.44	9.4	-4.4
	8	1.79	8.7	-5.9
	12	2.17	7.7	3.8
	15	2.43	8.8	4.4
Lurmark 30 HCX orange				
	5	0.51	5.0	-5.0
	8	0.64	4.2	-5.0
	12	0.77	-6.0	-4.7
	15	0.86	-5.6	-5.1
Lurmark 30 HCX grey				
	5	0.71	8.8	4.9
	8	0.88	5.4	-2.7
	12	1.04	-5.6	-4.1
	15	1.17	-3.4	2.6
Volume application rate	Deviation from the mean		0.42 %	*max 10%
Liquid flow rate left/right	Deviation from 50% of the total flow rate		0.7 %	*max $\pm 5\%$
Air volume	Maximum deviation from nominal output		-9.3 %	*max $\pm 10\%$

## **Assessment of the results**

The tests showed that all ENTAM test requirements were met.

### **Tank**

The tank contents can be easily seen from both the driving and filling position by means of three indicators. The agitation system can be turned off to reduce the volume of total residual. Besides the tank design helps to keep this volume low enough and permits a good performance of the hydraulic agitation system

There is a rinsing water tank placed below the main spray tank and a clean water tank in the rear of the machine. The volume of the rinsing tank is higher than 10 times the dilutable volume.

### **Adjustment of the volume application rate**

The two manometers used for the pressure regulation have got the required scale markings, accuracy and dimensions. The pressure drop between the manometer and the nozzles

is acceptable, even though when the bigger nozzle set is used.

### **Distribution of liquid and air**

The flow rate of the individual nozzles is in accordance with the nominal flow rate provided on the sprayer. The antidrip system prevents any kind of leakage once the spray is turned off.

The air flow rate measured at the inlet of the fan agrees with the nominal flow rate provided by the manufacturer. The measurement of the air flow velocity at both sides of the blowing unit outlet shows a rather symmetrically distribution, with only a small effect of the rotation of the fan.

### **Safety examination**

The sprayer is equipped with safety pictograms on the sprayer and an operation manual in the language of the country which contains additional safety instructions. The sprayer is provided with a CE-symbol and a vehicle identification plate. The CE-symbol indicates that a product meets the re-

quirements defined by the respective EC-regulations and that the supplier has gone through the procedures provided to obtain the conformity. The CE symbol is put on the sprayer by the

## **Annex**

Testing takes place according to a procedure which was developed by the competent testing authorities of the European countries participating in ENTAM. This procedure is based on the EN standard 12761 “Agricultural and forestry machinery – Plant protection equipment for the application of plant protection products and liquid fertilisers – Environmental protection”. The test were conducted according to the current Technical instructions for air-assisted sprayers. This test is only a technical performance test which takes place without an accompanying field test. The test results apply only to the tested components of the sprayer. Statements on the behav-

manufacturer. The manufacturer confirms that this sprayer was designed and constructed according to the harmonised EC-regulation 98/37/EEC and that the standard EN 907 is met.

aviour of the sprayer with different components cannot be derived from these results

The present Test Report is registered at ENTAM (European Network for Testing Agricultural Machines) as the performing Institution is a Member of this Network. ENTAM has the aim of establishing and recognising tests carried out on performance, safety and environmental aspects of agricultural and forestry machinery and implements.

Please find more information about the network at [www.entam.com](http://www.entam.com) or send an email to [info@entam.com](mailto:info@entam.com)”

## Responsibility and recognition

Test carried out by:



Generalitat de Catalunya  
Departament d'Agricultura, Ramaderia i Pesca



Centre de Mecanització Agrària (CMA)  
Rovira Roure 191  
25198. Lleida. Spain

Francesc Solanelles  
Agricultural Engineer

Felip Gracia  
Head of CMA

### This test is recognised by the ENTAM members:



**BBA** - Biologische Bundesanstalt für Land- und Forstwirtschaft (Germany)

ENT-ES-01/05



**FAT** - Eidgenössische Forschungsanstalt für Agrarwirtschaft und Landtechnik (Switzerland)

E - 07.05



**HIAE** - Hungarian Institute of Agricultural Engineering (Hungary)

E-1/2005



**NAGREF** - National Agricultural Research Foundation (Greece)

AE/59/01/ZZ



**PIMR** - Industrial Institute of Agricultural Engineering (Poland)

PIMR3/ENTAM/05



**DIAS** - Danish Institute of Agricultural Sciences (Denmark)

952



**BLT** - Bundesanstalt für Landtechnik (Austria)

13/05



**EMA** - Estación de Mecánica Agrícola (Spain)

06/05/01