

ENTAM - Test Report



Sprayer type: Self propelled Field Crop Sprayer
Trade mark: AGCO Fendt
Model: RoGator RG665

Manufacturer:
AGCO Netherlands B.V.
Horsterweg 66
5971 NG Grubbenvorst
Netherlands

Test report: D - 2306
Oktober 2022

Assessment table

Table 1: Assessment table

Number	Contents	Assessment
1	spray tank surface roughness	++
2	spray tank over volume	+
3	volume of total residual	+
4	spray tank contents gauge up to 10% filling	+
5	spray tank contents gauge from 10% to 20% filling	+
6	spray tank contents gauge from 20% filling	+
7	effectivity of agitation system	++
8	width of nozzle bar section	+++
9	boom height adjustment range	++
10	accuracy of pressure gauge	++
11	accuracy of flow meter	+++
12	regulation speed	++
13	even transverse distribution	+++
14	size of rinsing water tank	+
15	deviation of volume/hectare adjustment device from desired value	++
16	repeatability of volume/hectare adjustment device	+++
17	pressure drop between manometer and nozzle	+++
18	deviation of single nozzle output from table	++

Assessment keys are listed at the end of the report.

Note:

This ENTAM report is prepared as an accessible document.

Technical data of sprayer

Tanks + pumps:

- 6000 liter tank
- electronic level indicator
- rotating nozzles für inner tank cleaning
- 720 liter rinsing water tank
- 37,0 liter hand wash tank
- HYPRO 9306S centrifugal pump as spraying and agitating pump
- HYPRO 9302C centrifugal pump as cleaning pump

Spray boom:

- 39 meter working width, 9 mechanical segments
- Lateral folding
- Lifting mast with stepless adjustment from 450 - 2320 mm
- 8,8 ° pendulum device
- Slope compensation up to 15,0 %
- Pressure circulation system
- single nozzle circuit with 4 compartment nozzle carriers
- Syringe operation via machine terminal with softkey and touch function and multi-function joystick

Frame + chassis + drive:

- 1110 mm ground clearance axle with 480/80 R50 tyres
- track width 2000 mm
- Track width and ground clearance hydraulically adjustable

Dimensions + weights:

- Total length 9100 mm
- Height 4000 mm
- Width 3000 mm
- Unloaded weight 6000 kg
- Total weight 12500 kg

Description of sprayer

In this test, the AGCO Fendt Rogator 665 self-propelled field sprayer was tested with a HYPRO 9306S centrifugal pump as a spraying and agitating pump and a HYPRO 9302C centrifugal pump as a cleaning pump. The HYPRO 9306S centrifugal pump produces a volume flow of 715 l/min at 4 bar.

The chassis consists of a central steel profile. The wheels are attached to the frame by hydropneumatically suspended wishbones. The ground clearance can be adjusted in the terminal (field and road mode). The measured ground clearance in field mode is 1.11 m. The track width adjustment is controlled hydraulically via the terminal. The travel distance is 450 mm. In the configuration presented, the track is 2.0 m in the contracted position. The drive is infinitely variable from 0 to 50 Km/h by the hydraulic wheel motors. The steering offers 3 modes, front wheel, all-wheel and crab steering. The self-propelled unit is equipped with a trailer towing device. The towing capacity is 16 t.

The spray liquid tank made of polyethylene is specified with a nominal volume of 6000 l and can be overfilled by up to 5.8 %. The level is recorded electronically and displayed in the terminals. The tank is emptied via an electrically switched ball valve. Furthermore, the tank can also be emptied with the centrifugal pump via the 2" pressure connection. The container is filled via the 3" Camlock suction connection on the left side of the unit using the centrifugal pump. The operation is fully electric and is controlled via the terminal in the operating centre. For cleaning the tank, rotating cleaning nozzles are centrally located in the tank, which are supplied by the separate cleaning pump. The intensity of the agitator is infinitely variable from the control station and can be switched off or can be controlled automatically by the tank level.

The spray boom is a spatial framework construction made of aluminium profiles and is driven with a parallelogram suspension. The boom is hydraulically folded to the side. In addition, the lateral boom sections can each be individually raised or lowered by up to 8° against the horizontal. The height adjustment is infinitely variable hydraulically via the parallelogram from 450 to 2320 mm. The pendulum suspension has a pendulum range of up to 8.8° against the horizontal. The tested machine was also equipped with a slope compensation system that can compensate for slopes of up to 15 %. If desired, six ultrasonic sensors take over the height guidance / contour guidance of the boom, whereby the boom is automatically raised and lowered when it is extended and reinserted at the headland. The boom is mechanically divided into a total of nine segments. The last segment is equipped with an obstacle deflector that can avoid obstacles to the front and rear. The nozzles are protected from contact with the ground or branches by the arrangement in the boom profile.

Swing-out induction hopper made of polyurethane with rotating container rinsing nozzle and rotating container cleaning nozzle in the upper area, as well as three rinsing nozzles in the area of the suction opening. The nozzles placed laterally on the container wall are arranged in such a way that the liquid is set into a rotating motion during operation.

All spraying, GNSS steering, operation and job management relevant data are displayed, selected and set via the terminal. All necessary parameters are entered in the terminal via the touch display and function keys.

Result table

Table 2: Result table

Requirement	Result
1 spray tank over volume	5.81 %
2 spray tank contents gauge graduation marks	electronical display
3 spray tank contents gauge deviation between 10 - 20 % tank filling	-6.99 %
4 spray tank contents gauge deviation over 20 % tank filling	-4.33 %
5 spray tank surface roughness	0.0041 mm
6 rinsing tank volume	710 liter
7 rinsing and dilution possible?	yes
8 cleaning performance of tank (cleaning effectivity)	91.88 %
9 rinsing efficiency of can rinsing equipment	0.0100 %
10 manometer graduation marks	0.10 bar
11 manometer deviation	0.07 bar
12 agitation system performance (deviation from even concentration)	-3.19 %
13 dilutable residual in spray tank	86.025 liter
14 non dilutable residual in spray tank	non
15 spray boom height adjustment range from - to	450 - 2320 mm
16 spray boom nozzle ground contact protection?	yes
17 spray boom pressure loss between manometer and nozzle at 5.0 bar	2.20 %
18 spray nozzles dripping after switch off	non
19 maximum deviation of single nozzle flow rate from table	-4.400 %
20 maximum deviation of single nozzle flow rate from mean	2.400 %
21 spray boom transverse distribution with nozzle	Lechler IDK 110-04
22 transverse distribution at 40 cm and 3 bar	8.34 % CV
23 transverse distribution at 60 cm and 3 bar	3.45 % CV
24 transverse distribution at 50 cm and 5 bar	4.96 % CV
25 volume/hectare adjustment device - spray computer	2.30 seconds
26 spray computer repeatability of adjustment deviation, ascending maximum	1.67 %
27 spray computer repeatability of adjustment deviation, descending maximum	1.21 %
28 spray computer regulation speed, switching on/off single sections	1.90 seconds
29 spray computer regulation speed, switching on/off complete sprayer	1.50 seconds
30 spray computer reaching steady state in varing conditions, changing gear	3.50 seconds

Explanation on testing:

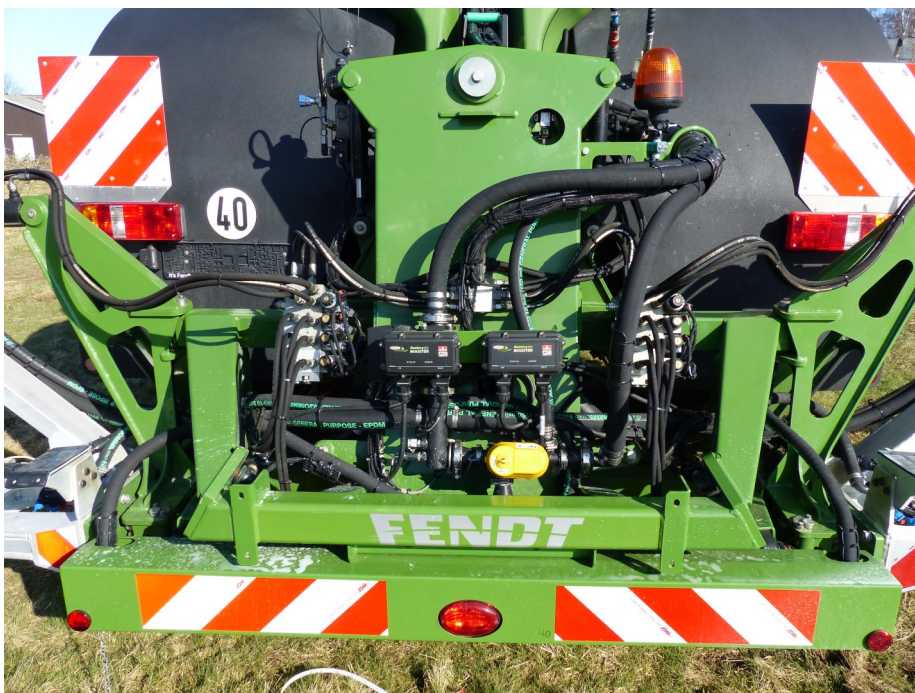
Testing takes place according to the Technical Instructions for ENTAM-Tests of Field Crop Sprayers (Rel.5). This procedure was developed by the competent testing authorities of the European countries participating in ENTAM and is based on the standard EN ISO 16119. This test is only a technical performance test which takes place without an accompanying field test. The test results apply only to the tested appurtenances of the sprayer. Statements on the behaviour of the sprayer with different appurtenances cannot be derived from these results.

Pictures of sprayer



Test report: D - 2306

Pictures of sprayer



Assessment keys for assessment table

Table 3: Assessment keys for table 1 Assessment table

assessment point	unit	+	++	+++
1	mm	> 0.070 - 0.1	0.030 - 0.070	< 0.030
2	%	5 - 8	> 8 - 12	> 12
3	of allowed value	> 2/3	1/3 - 2/3	< 1/3
4	%	15.0 - 10.0	10.0 - 5.0	< 5.0
5	%	7.5 - 5.0	< 5.0 - 2.5	< 2.5
6	%	5.0 - 4.0	< 4.0 - 2.0	< 2.0
7	%	> 10 - 15	5 - 10	< 5
8	m	4.5 - 6	> 3 - 4.5	3 or less
9	m	1 - 1.5	> 1.5 - 2.0	> 2.0
10	bar	> 0.10 - 0.20	> 0.05 - 0.10	0.00 - 0.05
11	%	4 - 5	2 - 4	0 - < 2
12	% or seconds	> 7 - 7.5	> 3 - 7	0 - 3
13	CV	> 7 - 9	4 - 7	< 4
14	% of nominal tank volume	10 - 12	> 12 - 15	> 15
15	s	> 4 - 7	2 - 4	< 2
16	deviation %	> 4 - 6	2 - 4	< 2
17	%	> 7 - 10	3 - 7	< 3
18	%	> 7 - 10	3 - 7	< 3

Pictures:

Page 6, top: Left side of the sprayer.

Page 6, middle: Unfolded boom.

Page 6, bottom: Control centre and filling connections on the left side of the sprayer.

Page 7, top: induction bowl at the left sprayer side.

Page 7, middle: Field sprayer tank with agitator

Page 7, bottom: Lifting mast with boom on the rear of the self-propelled sprayer

Free download of reports:

Complete test report under: www.ENTAM.net or www.openagrar.de

Responsibility and recognition



Performing competent authority

Julius Kühn-Institute (Germany)
 Institute for Application Technique in Plant Protection
 Messeweg 11-12
 D-38104 Braunschweig

This test is recognized by the ENTAM members



CMA-Administració de la Generalitat de Catalunya, Centre de Mecanització Agrària (Spain).

Recognition number EPH04/22



ENAMA Ente Nazionale per la Meccanizzazione (Italy). Recognition number ENTAM

Recognition number: Rif. ENTAM: 03/22



INRAE - Institut National De Recherche en Agriculture, Alimentation et Environnement (France).

Recognition number INRAE/CEMAGREF/ENTAM/22/013



ŁUKASIEWICZ-PIT – Sieć Badawcza Łukasiewicz – Poznański Instytut Technologiczny – POLAND

Recognition number Ł-PIT-334/ENTAM/22

10.5073/20220920-114553

<https://doi.org/10.5073/20220920-114553>