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## The turn of the Epsilon

distributed by:

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# The turn of the Epsilon

**Endurance test** In France, fertiliser spreaders by Sulky are firmly established. Which gave us reason enough to take a closer look at the new X 36 with 2500 L and Epsilon spreading blades.

**F**oreign companies often have a niche existence in the case of fertiliser spreaders in Germany. Amazone and Rauch dominate the market. But the X 36 from Sulky has no need to shy away from comparisons. Our testers confirm that it is easy to use and distributes precisely. We tested an X 36 with a distribution range of 12 to 36 m. In the basic model, the hopper has a capacity of 1900 L, extensions make it possible to hold 2500, 2600 or 3000 L in the hopper. Following the latest trend, we tested a fertiliser spreader with the new Vision X electronic box and a speed signal via GPS antenna. Jobs can be easily com-

municated to the PC using the integrated SD card slot. A connection to GPS systems such as Greenstar, Agrocom etc. is also possible.

## Four levers and Epsilon spreading blades

When you see the spreader for the first time, the first thing you notice are the four levers on the distributor. But there's no need to be scared, the controls are nonetheless extremely easy: the outer control levers adjust the working width and the back controls determine the rate per hectare. If you take a



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closer look at the distribution discs, you will also see the stainless steel distribution blades. The shape is similar to an epsilon and distributes the fertiliser in two streams. As the blades are stepped, there are two spread patterns per blade.

This gives four fertiliser streams per disc as the disc distribution blades vary in length. Through this distribution and the wide overlap, Sulky promises triangular distribution curves and thus a homogeneous spread pattern overall. The variation coefficients should be around 5%. Anything below 5% is classified by the test institutes as very good.



**The Sulky X 36 is a good processing weighing fertiliser spreader with very precise distribution and simple controls**

The test results available to us from Institut Cemagref confirm a very good fertiliser spreading. Following our practical test, we are able to confirm the spreader has a good spread pattern.

### Ease of use

The controls are very simple. Firstly, the spreader is horizontally installed behind the tractor at 80 cm above the soil. Vertical setting indicator on the frame quickly gives assurance above the right angle. Then the working width is set using the two outer levers. The appropriate value is given in the setting charts for most fertilisers. The drop point of the fertiliser stream is defined using the spout. The closer the drop point gets to the centre of the disc, the further the fertiliser is spread and vice versa. In the case of weighing system on spreader, you can save having to carry out a calibration test with the Vision X box. The software does everything that is necessary. We avoided calibrating the speed signal thanks to the GPS antenna. At the beginning, the empty spreader is set to zero (tare) following the instructions of the Vision X box. The spreader can then be filled up and the driver chooses the fertiliser and the application amount on the terminal. If a new fertiliser is spread for the first time, the system must be calibrated in static mode. Here a T value is calculated and saved. This means briefly stopping after 200 kg and acknowledging the weight. From now on, the fertiliser is spread in dynamic mode. In dynamic



**The distributor can largely be operated and controlled via the easy-to-use Vision X terminal**

mode, the calibration adapts automatically to the fertiliser flowing characteristics and promises higher precision in application. The respective last T value is saved by the Vision X box and used as the initial value the next time.

### Controlling the working width

Two spreading discs are proposed for the X 36: one for working width from 12 to 28 m and one for width from 24 to 36 m. Within these limits, the working width is set using the two outer control levers. As the working width is set by adjusting the drop point, you should check the spreading width. The simplest way to check is to see whether the fertiliser flies to the next tramline. If you want to be more precise, you can check the spreading pattern during the outward and inward ride using the supplied set of collecting trays and then adjust the settings, however more than 200 kg should be applied. Nevertheless the working width was amazingly accurate every time we tested. The fertiliser

### Sulky X 36

Minimum application (ME): 441 ha/year

$ME = \frac{fk}{\ddot{u}V - vK} = \frac{€1809}{€4.5 - €0.40}$

fc fixed costs/ year: €1809  
(= 14 % of the purchase price €12,920)

vc variable costs/ ha: €0.40  
(wear and tear, maintenance)

lr lending rate of interest €4.50/ ha  
(Lending rate of interest for 2500 L distributor)

Exemplary calculation with average values

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**The working width is set using the control lever. An actuator changes the drop point for border spreading.**



**The distribution blades are split and throw the fertiliser in two streams, the special border distribution blade is on the left.**

amounts which were applied depending on the weighing spreader matched the results of the weight bridge well. The spreader also tackled the side slope well and precisely. The spread pattern convinced us with all fertilisers. We applied nitrogen fertiliser, urea and NPK fertiliser with amounts of 100 to 800 kg. In addition, the Sulky X 36 can also be used to apply slug pellets or seeds.

### Neatly finishing

The Sulky hopper is made from steel painted in blue. We were very pleased with the paint quality. The lighting is standard and very nicely integrated into the hopper so that the lamps are well protected from damage. Furthermore, they do not get dirty quickly. The corners of the extension painted in red are made from cast iron steel. This makes them more resistant to possible shocks. The safety guard tube made from stainless steel is very robust and can also be used as a step. The hopper is split in the lower third to ensure a continuous flow of fertiliser. The hopper base includes the outlet shutter and is made from stainless steel in one piece. The outlet shutter placed in a inclined surface should allow for more precise dosing than a horizontal shutter, particularly after long transportation. Instead of an agitator, the



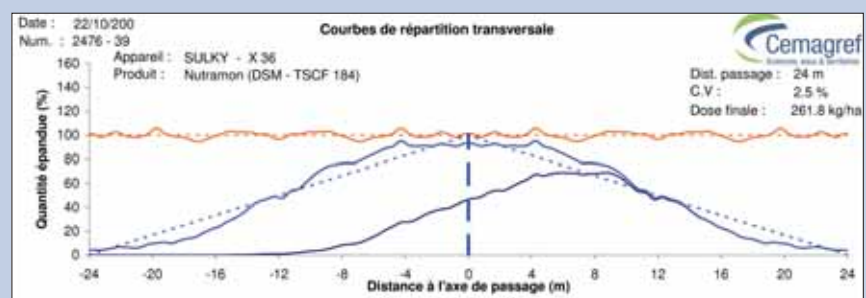
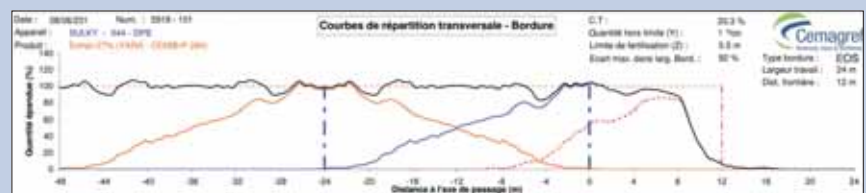
spreader is equipped with an oscillating, spring-tine rate regulator. This pendular finger is particularly gentle on the fertiliser. We can confirm this. We did not see any dust of fertiliser. Like all parts which intensively come into contact with fertiliser, the spreading discs and blades are made from stainless steel. The blades are also carbide treated.

- 1 The working width is set on both sides using the outer levers.
- 2 This changes the drop point on the spreading disc. The drop point is also adjusted for border spreading.
- 3 The overlap is checked with the grid trays and thus the working width. The distance between the grid trays is given in instruction book.
- 4 The content of all four grid trays is equal if the spreader is set correctly.

Test level	
Criteria	Verdict
Controls/Function	■ ■ ■ ■ ■
Mounting on the tractor	■ ■ ■ ■ □
Setting the application rate	■ ■ ■ ■ □
Calibration test	■ ■ ■ ■ □
Changing of the distribution blades	■ ■ ■ ■ □
Setting the border spreading	■ ■ ■ ■ ■
Functioning of the weighing system	■ ■ ■ ■ ■
Emptying of the residue	■ ■ ■ ■ □
Filling up	■ ■ ■ ■ □
Setting of the working width	■ ■ ■ ■ □
Agitator	■ ■ ■ ■ ■
Spreading charts	■ ■ ■ ■ □
Suitability / spread pattern	
Nitrogen normal 12, 15, 24 and 30 m	■ ■ ■ ■ ■
Nitrogen border spreading to border	■ ■ ■ ■ □
Nitrogen border spreading from the border	■ ■ ■ ■ □
NPK (800 kg) 21 m	■ ■ ■ ■ ■
NPK (250 kg) 21 m	■ ■ ■ ■ ■
Ammonium sulphate (250 kg) 21 m	■ ■ ■ ■ □
Maintenance work	
Cleaning	■ ■ ■ ■ □
Lubrication	■ ■ ■ ■ ■




### Good distribution curves



The distribution of the fertiliser was verified by the Institut Cemagref in France. All variation coefficients (CV) below 5 % are evaluated as very good. The X 36 generally achieved values below 5 %. The better the spreading distribution is, the more regular the upper cumulative curve which results from the outward and inward ride (see bottom graphic for normal distribution). We also found a good precision of the spreading distribution

in practice. The crops developed very uniformly. In the case of border spreading, as in the top graphic, the fertiliser steeply falls to the field border. At the edge of the field, the full amount is not spread so that nothing flies over the border. The setting also worked in practice. Only occasionally did a fertiliser granule go over the border. The drop point and the distribution pattern are modified using the 3Dcontrol device. fe

Technical data	
<b>Dimensions/ weights</b>	
Capacity	1900 to 3000 L
Working width (per distribution disc)	12 to 36 m
Width	270 cm
Filling height (with attachment)	1.39 m
Filling opening (width x length)	2.31 x 1.17 m
Empty weight	490 kg
Max load	3000 kg
Total weight	3490 kg
Application rate (from/to) at 28 m and 12 km/h	3 to 820 kg
<b>Rotations</b>	
PTO speed	540 rpm
Disc speed	810 rpm
<b>Basic price - test machine</b>	<b>€12,470</b>
Fertiliser spreader X 36 Vision WPB 1900 L, inc. Vision X box, weighing system, Tribord 3D border spreading device, carbide treated vanes, lighting, warning kit, stainless steel safety guard tube, loader step and overlap control set with granulometer	
<b>Other special equipment</b>	
Hopper extension 2500 L	€450
GPS speed sensor	€795
Folding hopper cover	€642
<b>Total price of the test machine</b>	<b>€14,357</b>
	

Johannes Wippenbeck bought a Sulky X44. He is overall very happy with the fertiliser spreader. The farmer from Vilsbiburg was quite surprised about the 2 to 3 % difference between the display on the spreader and the weight of the weight bridge. At 4000 kg the figure is a couple of kilograms short. The operations manager finds it quite inconvenient that the terminal is not ISOBUS compatible. The technology is not yet required but this would make it well-equipped for the future. The pig keeper is very happy with the spread pattern. He is also convinced that the application amounts are right. Last year, Johannes Wippenbeck applied 3 to 6 kg of slug pellets using the distributor over a 28 m work surface. „This worked out better than with the slug pellet distributors,“ said the pleased farmer. The Tribord spreading system works well. Along a ditch, it reduces the rotation speed to preventing throwing over the borders. „This works better than with the Limiter border spreading deflector which we had before,“ explained Wippenbeck. The farmer and even his father get on well with the Vision X box. It is easy and logically designed. Even when changing the fertiliser amounts using the plus and minus buttons, Johannes Wippen-

beck has pressed the wrong button in the past and the terminal cuts off.

**Johannes Wippenbeck, 84137 Vilsbiburg**

**A** Sulky X 36 fertiliser spreader was used at Markus Schwarzfischer's farm, from Roding. At the time, the connection to the John Deere Greenstar terminal was crucial to the purchase. However, the technology was not used for applying fertiliser. The fertiliser is generally applied over 30 m on the farm. The farmer judges the distribution precision and the border spreading to be very good. Setting it is easy. The Vision X box is easy to use and the user interface very simple to understand. However, the box is usually only used to set the application amount. The documentation functions are currently unused. The weighing system has convinced Markus Schwarzfischer. Above all, he values the elimination of empty drives as it always carries precisely the amount of fertiliser needed. But the application amount also corresponds exactly to the results on the weight bridge. The farmer from Roding is very happy with the distributor's processing and coating.

**Markus Schwarzfischer, 93426 Roding**

### Self-cleaning insert system

The spreader has a shutter for each hopper side. These are hydraulically actuated, separated left and right. The setting and adjustment of quantities are defined via the shutter opening and electrically adjusted via the control box. It is closed under oil pressure, when opened a spring pulls the shutter as soon as the valve is open. To prevent accidental shutter opening through hydraulic valves which are not 100 % tight, the hydraulic cylinders are equipped with a pilot check valve. This construction should

guarantee fast movements so that the rate shutter closes precisely at the edge of the field and the desired amount of fertiliser is applied quickly. If the electrics fail, the X 36 can be used as a conventional spreader. For this purpose, the electric actuators are unhinged with a split pin. The rate setting levers can move freely. The desired application amount can be set using the scale according to the table and the knurled screws firmly tightened. The opening and closing of the shutters continues to take place from the tractor seat.

### Good vision

We were very pleased with the control box. The SD card reader makes transferring data on to a PC easy. Up to eight fertilisers can be saved on the computer. This makes alternating between fertilisers easier. Application rate per hectare is shown, as well as the spread surface and the spread quantity. Unfortunately, the display light is quite dim. This makes it hard to read in bright sunlight and at night. Operation using the keypad is easy. We were also pleased with the menu screen. Only the calibration for



The sieve prevents the clotted fertiliser from falling into the Hopper base.



The oscillating finger remedies any clumps or inadequate pouring of the fertiliser.



Via the GPS antenna, the Vision X computer receives a very precise speed signal although there is a slight delay.



The distributor hangs in a weighing frame with a 10 tonne load cell.

a new fertiliser is somewhat long-winded. The fertiliser can be adjusted in amounts of 10 % by pulse. This is useful in places where less or more fertiliser needs to be applied. The computer is prepared for use in precision farming.

### Border spreading at the press of a button

Unlike in the case of other manufacturers, border spreading is not carried out by swinging a border spreader deflector or reversing the rotational direction but by adjusting the drop point and a third distribution blade. Operation is controlled using the electronic box. For models without a console, adjustment takes place using electric remote control. There are three settings: full width, eco-intensive border and environmental border. For border spreading, the fertiliser flies to the field border and some what beyond in a yield optimised way. This is practical if the field borders other crops. If there are rivers or paths at the border, "environmental border" is the right choice as this should prevent fertiliser spreading

beyond the border. However, in our test this could not be entirely avoided. Despite border spreading, a little fertiliser flew over the edge of the field nonetheless. However, this type of edge/border spreading is a fine thing. Depending on the setting, more or less fertiliser is hurled to the right field edge via the specially shaped third distribution blade. The amount does not have to be reduced for edge spreading. In the case of border spreading, the amount is reduced by 15 % so that there will be less fertiliser at the edge of the field.

### What we also noticed

The spreader gives a solid impression and empties nicely. From 200 kg, the terminal switches the swash plate mode to stationary. This means that a modified trickle behaviour is no longer considered. But in this way, the remaining residue can be kept very small. Emptying the remaining residue is some what laborious as the shutters are closing themselves without a speed signal. If you want to empty there maining residue whilst stationary, either the actuator must

be attached or aspeed must be specified. Then the residue can be emptied well after the distribution discs are removed.

The GPS antenna makes calibrating the speed unnecessary. This is practical, particularly if fertilising with different tractors. Nonetheless, if you would like to use the tractor signal, up to four tractors can be saved. However, the GPS signal has a certain time delay and the rate shutters do not open for a few metres. A flying start is thus recommended to avoid unintentional fertiliser windows.

### Conclusion

The Sulky fertiliser distributor X 36 performs its job well. The weighing technology with a load cell functions well. Operating the spreader with the control box and the two hydraulic shutters and setting the working range is easy. Only calibration for a new kind of fertiliser is some what more complicated. The processing of the distributor is good and can be easily cleaned. Therefore, for €14,000 this is an alternative to Amazone and Rauch. fe ■



The fertiliser from every swing shovel is distributed through the epsilon shape in two trajectory streams. This should improve the accuracy of distribution.



The fertiliser spreader hangs in a weighing frame with a 10 tonne load cell. In the case of the weighing distributor, an electric actuator adjusts the distribution amount according to the speed and trickle ability.