

# dlz agrarmagazin

The agricultural magazine

# magazin

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**Precise, uncomplicated –  
but not cheap either**

Given to you by:

**bogballe** 

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# Precise, uncomplicated –

**dlz-Endurance test** Bogballe builds fertilizer spreaders which are unique. This includes the trend border spreading system, the weighing technology and the company's own Uniq board computer. In the test: The M2W base with 2350 l.

**M**eanwhile Bogballe is considered to be one of the steady giants on the German fertilizer spreader market. The business is going well in this country. In the current program of the Danes the two models L1 (500 to 1600 l, up to 18 m) and L2 (700 to 2050 l, to 24 m) cover the beginner's and middle class ranges. For demanding customers, the M3 spreader (1800 to 4050 l, up to 42 m) and the M2 models (to 42 m) are suitable. The M2 is available in two measurements. With the

M2-base, the container is 240 cm wide (up to 2350 l), with the M2-plus 290 cm (up to 3000 l).

## Uniq: Computer with a lot of capacity

The newly developed brain of the Bogballe spreaders is the Calibrator Uniq. This computer is included in the basic price with the W models with scales, without the scale equipment it costs extra (€ 2940).

Those who have worked for a while with the Uniq must recognize how professionally the programmers worked. Thus first of all the important functions like spreading amount for each hectare, switching to border spreading etc. can be directly selected. The pleasant thing is that the switched function is explained with understandable texts. This helps you to easily get to know the spreader.

In addition, the driver is continuously informed about how much fertilizer is still in the container and how much area or what distance he can still reach with this. The permanently changing calibrator value is also shown. And with deviations which are too extreme of above 20 percent, the computer triggers an alarm since there is possibly a disturbance.

Developers of other manufacturers should especially take the help function of the Uniq as an example. Because for every menu level and setting, you can ask what you should do with the press of a button. An explanation is given in full sentences about what is going on. This helps you enormously in everyday working life. In all the Uniq offers 64 storage spaces in order to be able to store the amounts produced relating to the areas to be fertilized. In everyday life, the Uniq is overall quite convincing, even if the computer reacts slightly delayed to the key commands. And the Uniq is still not ISO bus capable. The Danes have in the mean time reacted to the criticism about the high extra charge for the Uniq. Whoever does not want to weigh, but at least to dose depending on speed, can select the more simply constructed, more inexpensive (€ 1830) Calibrator Icon (see box).

## Working width up to 42 m

The working width of the M spreader is determined through the selection of the spreader wings.



**Bogballe M2W**  
– **dlz recommends** –  
**Minimum use (MU):**  
**ca. 464 ha/year**

$$MU = \frac{fc}{\ddot{u}V - (vc)} = \frac{1670 \text{ €}}{4 \text{ €} - 0,4 \text{ €}}$$

**fc:** fixed costs / year: 1670 € €  
(= 14% of M2W without wagon: 11 930 €)

**vc:** variable costs/ha: 0,40 €  
(spreading buckets, cleaning agent, ...)

**üV:** LU-set: 4 €/ha  
(Loaning rate for 2500 l spreader)

Sample calculation with average values



# but not cheap either

With four different pairings, the M2 covers widths up to 42 m depending on the fertilizer.

With urea in a capsule form, the limit is at 24 m. With more valuable products like Piagran, Alzon or Piammon, according to Bogballe you can even reach 36 m with the special E8-T spreader wings, with a tested CV (coefficient of variation) under 10 percent.

Unfortunately there is no longer a quick locking on the spreader buckets. Therefore you have to have a number 13 ring spanner with you if you want to change the wings.



The Calibrator UniQ can be controlled quite well with a bit of practice. The help key (1) gives instructions in clear text – exemplary. Below are the pre-selection keys (2), e.g. for border spreading, on the right side the keys for adjusting (3) as well as spread start / stop.

The spreader wings are made of MN12 manganese steel. The traces of wear are within an acceptable range after 280 t of spread fertilizer, mainly KAS.

## High distribution accuracy

We were able to determine with the M2 predecessor EXW (test in dlz 1/97) that the fourfold overlapping of the spreader surface ensures a high distribution exactness through the plates which



Everything at a glance: (1) Current fertilizer amount in the tank, (2) so much surface / distance can still be spread with this, (3) average spread amount on this area, (4) spreading width and added surface, (5) desired application amount, (6) current travelling speed, (7) tractive unit rotation speed, (8) calibrating or turning value, (9) change to the previous calibration value, (10) the slides are open and the automatic dosage VAD is active.



Both border spreading variations (to the border and from the border) can be started with the push of a button ...



The trick behind the trend border spreading system: the spreader wings have deflectors on the front and back sides which are formed differently. Through reversing ...



... the rotation directions for border spreading the back side (right) is active and the special casting image is reached – a good solution.



With border spreading from the border, the claw – here the reinforced model (1) – keeps the right slide closed. In our case a too labile compensator was attached.

turn to the inside with the Bogballe spreaders.

The M2W also reaches generally good (< 10 percent) to very good (< 5 percent) coefficients of variation (CV = medium deviation from the mean value) with settings according to the table. That is shown by spreader tests with three different fertilizers and working widths between 24 and 30 m (table “surface spreading”).

We have determined CVs under 7.5 percent.

With one exception: with NPK from Ferviva the basic setting had a CV with a medium 12.9 percent. The cause was a fertilizer amount which was too large between the lanes. For this case, the manual says that the incline of + 4 degrees should be taken back to 0 degrees – with success. In the next sequence the CV decreased to a very good 4.5 percent. Valid in general is that if the CVs are under 20 percent, “row illnesses” are not a topic in the inventory.

In case there is no exact information on the fertilizer, Bogballe in the mean time offers an analysis set (€ 65). Through a pressure scale, the stability of the granulate material can be determined, with the shaker box the size fractions.

On [www.bogballe.com](http://www.bogballe.com), you can find the corresponding setting. This analysis lasts 25 minutes, but the result fitted in well in our case.

## Setting is not difficult

In all the M2 can be set in an uncomplicated manner. Bogballe doses the fertilizer through a double slide system to the casting discs. Thus neither the task point nor the position of the spreading wings must be adjusted.

It is sufficient to adjust the pitch of the spreader. Here values between + 6 and minus 4 degrees are common.



Only with border spreading from the border, in addition a small shield (1) is folded up via servo motor so that more fertilizer is placed on the right.

A small water level helps to find the necessary adjustment angle.

A disadvantage of the system: if you don't have a hydraulic upper guide, the pitch must be set before filling the container. With a full tank, a mechanical spindle cannot be turned.

## Trend border spreading switch

The border spreading system Trend is designed simply but still sophisticated.

### Technical data

#### Measurements / weights

Capacity	1250 + 1100 l
Spreading width (depending on casting buckets)	12 - 42 m
Width (base = narrow trough)	240 cm
Filling height (without back wall)	98 cm
Filling opening (width x length)	238 x 121 cm
Empty weight (M2W)	505 kg
Max. payload	3000 kg
Entire weight	ca. 3500 kg
Production amount (from / to)	0.5-ca. 1500 kg/ha

#### Rotations

Drive rotation	540 r/min
Slide rotation	750 r/min
for tractors as of	
(without lower wagon)	ca. 90 PS/66 kW

#### Price of the test machine <sup>1)</sup>

Basic device M2 base (2350 l, without scale)	5695 €
UNIQ - (electr. amount control)	2980 €
Weighing unit (not upgradeable)	3255 €
Lower wagon	3975 €

#### Price <sup>1)</sup> 15905 €

#### Further special equipment

Border spreading from the border	740 €
Trimming set	220 €
Lighting equipment	210 €
Cover canvas	485 €
Spreader buckets 30 m (E6-T)	340 €

Meanwhile it is a part of the standard equipment for all Bogballe spreaders.

For spreading on the edge of the field, the rotation direction of the slides is reversed. A servo motor changes the running direction of the drive at the press of a button. In addition the back sides of the spreader wings are formed in such a way that the fertilizer is equally distributed within the border and flies up to a line limit.

In practice, one distinguishes between two types of border spreading. The actual border spreading is an environmentally oriented type. If possible no fertilizer should fly beyond the border, for example along bodies of water. The environmental norm requires that the maximum loss is less than 0.3 percent beyond the border.

Edge spreading is in contrast a yield oriented variation, e.g. when spreading in the meadow. What counts here is to come as close to the border as possible with the desired application amount. It is accepted that certain fertilizer amounts fly beyond the border.

The instructions therefore offer three setting categories for the possible adjustment of slider rotations and dosage amounts. “Minimum” fulfils the requirements of the fertilizer regulations (see box).

With “medium” the amount at the border is between 25 and 70 percent.

“Maximum” doses the full amount up to the border.

Also with border spreading, the M2 is given a good grade. It safely adheres to the legal regulations (see “good border spreading”, variation: to the border).

## Spreading from the border

Those who place the outermost track directly next to the path can also use the M2.

Again at the touch of a button a third servo motor tilts a claw. This ensures that the



The stirring equipment (1) with an eccentrically rotating star works gently and still effectively. Important: don't forget the grease nipple. The cover grade (2) now lies better in the tank.

## Good border spreading – required by law

The fertilizer ordinance has determined three complicatedly defined border values which new spreaders must adhere to.

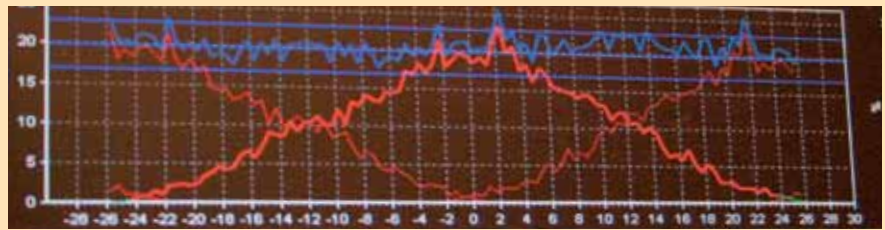
1) In the area of the last 5 meters to the border of the field the amount may reach a maximum of 120 percent of the spreading amount (see table, last line)

2) The so-called CT coefficient of variation (third line) states how high the medium deviation in the area of the first proper lane is to the border. Here a maximum of +25 percent is admissible.

3) Y (fourth line) states the amount of fertilizer which is cast beyond the field border. Here the limit is 0.3 percent.

With 270 kg / ha spread amount, on a 100 m long edge strip a maximum of 810 g fertilizer may fly too far.

As the following table shows, the M2W adheres to the required limits. Important for the reaching of the values is however a reduction of the amount as is listed in



The M2W gives you good to very good distribution results. Here a normal spreading curve.

the spreading table (in this case minus 10 or minus 20 percent). Depending on the spreader wing and the fertilizer, in addition a reduction of the slide rotation is necessary.

If there is a field next to the border instead of a body of water, if necessary you can do without this additional measure. A glance into the manual helps here.

Border spreading (24 m)	Fertilizer Variation	Yara KAS granulated (27 percent N)		
		To the border	To the border	From the border
Spreading amount (kg/ha)		216	243	243
Amount adjustment (%)		- 20	- 10	- 10
Coefficient in completion (in %, max +25%)		17.1	17.8	16.6
Y (amount outside of the border, in %, max. 0.3 %)		0.27	0.08	0.09
Z (distance outside of the border) m		6	3,5	5
max. amount over the entire width (%)		116.9	128.9	114.6
max. deviation in % (max. 120 %)		92.1	105.4	96.2



We keep the weight - what about you?

## Fully automatic “Weight Watcher“

Yes, we know - keeping the weight is difficult. With our fully automatic dosage, the spread amount is continuously monitored and adjusted to your instructions. That keeps your inventory and your finances fit.

*But you have to exercise alone – because all spreader functions are operated from the cabin.*

**boqballe** 



Photographs: Pfänder



Between the parallel running frames (1)+(2) is the weighing cell (3). The system works exactly. Also good: the scale shows the current slider position (4).

slides above the right slide remain permanently closed. Thus the M2 only casts to the left side in the mode "from the border". The result of the test stand with KAS is with 24 m track also good (box).

## Great: the weighing technology

The perfect control of amounts when spreading is possible with the weighing technology which Bogballe has offered



View from below: the weighing cell (1) is screwed on better than before. The laying of cables could be more elegant. Dust protection bags (2) protect the three servo motors.

since 1988. Since then the Danes have remained loyal to their system. Through a frame which is set parallel, the 6 ton weighing cell carries the spreader. Two needled guiders below and two distance holders above lead the spreader free of clearance. The exactness of the system is high. Properly calibrated, the M2W scale deviates less than one percent.

With a load amount of e.g. 2012 kg, with us the difference was 4 kg. That is a deviation of 0.15 percent – excellent.

## What the dlz readers think about the M2W spreader

Each year our M2W (1600 l, 21 - 27 m) spreads on 400 ha. The setting is simple, the scale keeps you from having to turn manually. It pays off that the dosing is adjusted to the changing flowing characteristics of the fertilizer. The fourfold overlapping ensures an exact spreading. Weighing cells and Calibrator Uniq work properly. Thanks to the border spreading equipment, which is easy to convert, the spreading into the corners is possible. The electrical system is well protected against splashing water. The Bogballe price is also appropriate when you take a glance at the competition, the processing is very good. In addition, I like the display of the spread amount, the dealer took a lot of trouble.

**Heinrich Bartels, 29378 Wittingen**

With the M2W (3000 l, 21 m) we have replaced our Bogballe EXW weighing spreader because the electronics no longer worked without problems. The M2W has been running on 1350 ha without problems, now the electronics are fully developed.

Scale and amount regulations function exactly. The spreading accuracy is high. Only emptying the remaining amounts is intricate. We would buy the M2W again.

**Josef Götz, 85229 Markt Indersdorf**

With our M3W plus (4000 l, 24 m) we have already spread 6800 ha. We reach up to 300 ha a day. 4000 kg load capacity are almost not quite enough for us. The M3W is already our second Bogballe weighing spreader. Up till now, the stable spreader has worked reliably. The setting is simply and quick, also the changing to border spreading. We assess the dosing and spreading accuracy as being very high. After around 350 t KAS and 100 t Kali, we change the spreading buckets. Every two years, we must exchange the coating of the safety clutch. Two discs are too few here. Weighing technology and board computer are simple to operate without problems. Only the emptying of remaining amounts is intricate. For us however there is not a better spreader. **H. Büttner, 99192 Nottleben**

## dlz test overview

Criteria	Assessment
<b>Handling / Function</b>	
Attachment to the tractor	+
Setting spreading amounts	++
Turning test	++
Change spreader wings	○
Setting to edge spreading	++
Function weighing system	++
Emptying remaining amounts	-
Filling (240 cm tub)	+
Setting spreading values	+
Mixer	++
Spreading table	+
<b>Suitability for use / spreading ability</b>	
KAS normal 24 m / 30 m	++ / +
KAS border spreading to the border	+
KAS border spreading from the border	+
NPK (400 kg) 27 m/optim.	○ / ++
NPK (600 kg) 27 m	+
NPK (100 kg) 27 m	+
<b>Maintenance work</b>	
Cleaning	+
Lubricating	+

+++ = very good, ++ = good, ○ = average, - = bad, -- = very bad

## Automatic turning

Thanks to the weighing cell, the W spreaders can turn in the field without getting off. In doing so, the Uniq adjusts the actually spread amount of fertilizer with the surface spread over. There are two methods: The automatic turning AA is the right method in locations on slopes. On the Uniq the calibration is activated. If at least 200 kg of fertilizer has been spread, there is a signal – you stop. Now the weight balances itself out, the compensation between target and actual amounts takes place. If there is a difference, the Uniq takes over the new value – and you go on. Even more comfortable and also more exact in flat areas is the fully automatic dosing FAD. Here the weight is recorded permanently ten times a second. Whenever 100 kg has been spread, the adjustment of the flow ability follows automatically and without stopping. We have the best experiences with FAD – the exactness of the amount is high even with fertilizers from different batches. The deviations between the target and the actual amounts are generally below two percent.

## Praise and reprimand of the details

The agitator also gets a good grade. The eccentrically positioned finger stars above the slider opening work gently with

flowing fertilizer, with lumpy material intensively through additional turning. Also microgranulates can be spread with the M2W. For this the two ring templates must be turned above the dosing outlet. That works. However there are no real grips which would make easier the turning of the smooth disc segments. Still the emptying of the remaining amounts is troublesome since the spreader discs cannot be taken off. Luckily there is the scale with which you can generally avoid overhangs which are too big. The laying of the cables is less attractive if you look underneath the spreader. And the viewing windows on the container front wall hardly help you to control the filling level. They are too high. And with a closed cover canvas, there is no light in it. The lower wagon has three important advantages for daily use. Firstly the attachment and detachment of the spreader is quicker since you don't have to squeeze between the tractor and the device. Secondly, the distribution of the weight is ideal.

Surface spreading	Fertiva NPK		12 + 7 + 15 + 2 + 13		Yara KAS granulated	Yara KAS granulated
Fertilizer	400 kg/ha (according to table)	400 kg/ha (optimized)	(600 kg/ha)	100 kg/ha	270 kg/ha	270 kg/ha
Working width (m)	27	27	27	27	24	30
Angle of inclination (degrees)	+4	0	0	+6	+2	0
Spread amount (kg/ha)	353	345	516	92	217	218
Coefficient of variation CV (%)	12.9	4.5	6	6.9	5.2	7.5
max. deviation (%)	+ 23.4 - 16.3	+ 11.7 - 8	+ 12.8 - 11.6	+ 20,0 - 15.7	+ 12.8 - 13.9	+ 17.7 - 13.1

■ = average; ■ = good; ■ = very good

A 60 HP tractor is enough to pull a 2500 kg spreader on the carriage. In addition the lower wagon provides the board computer with the non-slip speed and thus the exact speed. These advantages balance out the disadvantages like reduced ground clearance and limited face width – 165 to 200 cm.



With chassis (€ 3975), also a 60 HP four cylinder tractor is enough for spreading. The speed measurement is non-slip, the attachment and detachment speedy.

## The new Icon

The Calibrator Uniq computer can do a lot (see article) and in addition is easy to operate. The problem is however the high additional price of € 2980.

A more reasonable alternative to this – for the spreader without a weighing cell – is now the new Calibrator Icon (€ 1830). With it the dosing depending on the path is possible as well as the simple, automatic turning probe. In five percentage steps, the amount can be varied while working. The operation is done with the help of the symbols in the lighted display. Also the border spreading can be activated with the press of a key.



Only the high cost of acquisition of € 3975 cannot be discussed.

## Our conclusion

The M2W is a fully successful fertilizer spreader.

tics of the fertilizer ensures a high spreading exactness.

A point of criticism is the bothersome emptying of the remaining amounts since the distribution discs cannot be taken off. That a one-sided switching off is not possible through two separate sliders is not really disturbing in practice. The M2W is not cheap in its full, competent stage of expansion. Thus the M2 base with 2350 l containers and hydraulic slider activation starts at € 5695 (list price, plus VAT). If you then order the speed-dependant amount regulator together with electric switching of the border control, you must spend € 2980 for the Uniq computer. You can get the Icon for € 1830. And the faultless weighing equipment costs a further € 3255. The practical chassis (€ 3975) raises the entire price to € 15 905. As a trade-off for this, there is a really high-quality, effective spreader with which you can precisely spread the expensive fertilizer. (gp)

**dlz**

## Bogballe takes a position ...

...On the criticism about the emptying of remaining amounts: Our constructors have recognized this point. We are intensively working on an improvement of the emptying of remaining amounts.

...On the storage capacity in the Uniq board computer: Our developers are working on a modified software.

Thus in future there will be 200 instead of 64 surface storage spaces available. The new software will be available in short free of charge at [www.bogballe.com](http://www.bogballe.com). Our customers can then connect the Uniq directly to the PC and update it without additional costs.



**Technology**

**boqball** 