

Special reprint: System comparison Krone BaleCollect

traction

The magazine for professional farming

from no. 5 | September / October 2019

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Collecting pays off

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 **KRONE**
THE POWER OF GREEN

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SANDBAGGER:

What seems an inconspicuous piece of kit turns out to be a veritable chain booster.



Tobias Meyer

Square balers have undergone a major boost in performance over the past few years – in terms of both throughput and density. The beneficiaries are certainly wholesale straw traders and contractors, especially in times of narrowing harvest time windows. But the drawback of this development is that even the most powerful big baler won't make a difference unless the haulage chain is able to keep up. For this reason Krone developed BaleCollect. What appears to be a straightforward and uninspiring piece of kit does have a significant impact on the efficiency of the haulage chain. We carried out a comparison test that probes into the potential of this system and the time savings that can be gained from it.

CLEVER FEATURES

The BaleCollect is attached to a big baler which in our case was a Big Pack 1290 HD-P II that was pulled by a 400hp New Holland T8.410. The owner of the outfit is a German dealership, KeHo Agrarhandel GmbH, which we featured in our 5/2017 issue. On the road, the accumulator attaches to the baler via a regular drawbar tracking behind the baler. Unlike other makes, the combination is homologated for road travel and for speeds of up to 50 km/h, which makes a special road homologation for the tractor-baler-collector combination unnecessary. In the field, the drawbar retracts hydraulically, bringing the

Collecting pays off

Farmers and contractors who run a high-density baler also have to sort out the logistics. Krone developed an accumulator that boasts a number of useful features that really make a difference.

accumulator close to the baler which will then eject the bales right onto the bed, thereby eliminating the need for the traditional chute.

Depending on the mode that is currently selected (see the diagram on page 4), the first bale lands in the middle of the bed from where it is automatically pushed to the right or left wing. The next bale is then pushed to the other side and the third and last bale lands in the middle. Finally, all three bales are deposited as a group. The advantage of this is that the loader can then stack the three bales and collect of them in one operation. This is

different with a baler that uses no BaleCollect. Here, the individual bales are deposited the moment they leave the chamber. So the loader collects bale after bale, running back and forth, which is more time consuming and increases field traffic.

THE COMPARISON

The test involved the collection of 400 bales, 200 of which had been deposited individually as they left the baler, the other 200 being deposited in groups of three by BaleCollect. To simulate real-life conditions as authentically



In our comparison test in a stubble field in eastern Germany, we collected 200 single bales...



... and 200 bales that had been grouped in packs of three by BaleCollect.



as possible, KeHo used a regular front-end loader tractor with a three-spike bale grab to collect the bales although they also had wheeled loaders with 6-spike Meijer grabs in the fleet. But these were considered less typical and, placing the bales transversely on the trailer bed, they were unsuitable for certain bale lengths and had no effect on the distances travelled but only on the time spent stacking. Therefore, the test rig chosen was a Fendt 724 Vario with a Fendt 5X90 loader. The combination proved nimble and stable as it spiked up to three bales (approx. 1.5t)

1 BaleCollect can hold three 120cm or five 80cm packs.

2 In the field, the wheels are unlocked and operate like the caster wheels on a supermarket trolley. On the road, they are made rigid and steered by the telescopic drawbar.

3 The bales are not stacked. The side-by-side arrangement is better in sloping fields.

4 BaleCollect has a standard weighing system that weights each individual bale and is integrated in the terminal via ISOBUS.



1 The harvest fleet for our comparison was sourced from KeHo Agrarhandel GmbH.

2 Work cycles were timed.

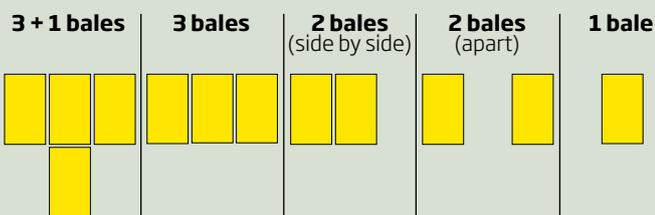
3 The loader chosen was a tractor with a front-end loader and not a wheel loader with a six-spike bale grab.

4 Inside the baler operator's cockpit. All BaleCollect features are set and controlled from the cab.

to place them on the trailer bed. A smaller tractor is also fine of course, but then the operator would have to be more careful and less efficient. The test tractor can therefore be considered as adequate for this job which involved loading thirty 1.20m packs on a Pronar bale trailer. After filling several trailers with bales from the 'single bale' group, the loader tractor settled at about 17 minutes on average to complete one loading cycle for this group.

The recording for each cycle started at the moment the tines spiked the first bale and ended when the last bale was placed on the trailer and the tractor was stationary again. This type of loading could involve a lot zigzagging and bale shunting on the trailer. In addition, the two operators have to work in harmony for the scattered bales to be collected in the shortest possible time and with

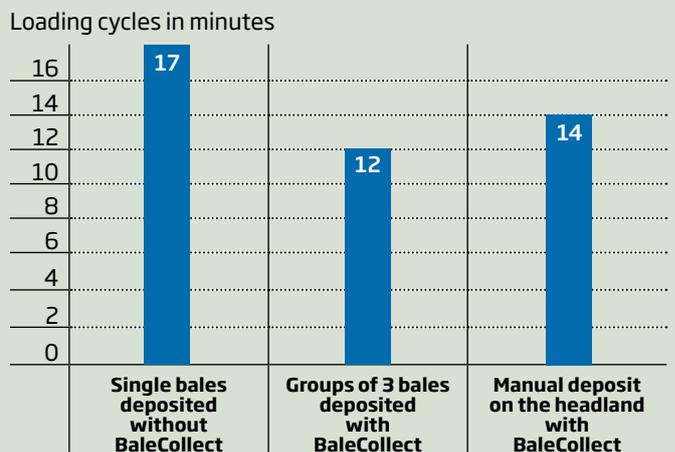
Krone BaleCollect: Modes and time savings



The diagram shows the five different modes of depositing the bales. The operator enters the desired mode to the terminal, selecting 1 or 2 bales (side by side for subsequent wrapping), or 3 or even 4 bales deposited as a group. A group of four would also include the bale ejected after number three.

The bar graph shows the time taken for loading 30 bales (1 bale transporter). Grouping three bales before depositing them is the most efficient mode, saving five minutes (30 percent) over depositing the bales individually in the field. Yet, depositing three bales on the headland saves less time.

WORK CYCLES TO FILL ONE TRAILER TO CAPACITY (30 SQUARE BALES)



Photos: Meyer



5

5 The bale trailer held 30 bales. The 6-spike grab wouldn't have been efficient here.



6

6 In manual mode, the operator unloads the group in a specific spot on the headland or in the field.

minimum field traffic. This may lead to a situation where one or the other bale is left uncollected and then has to be moved to the next field corner, because the trailer has been filled.

By contrast, this is very different when loading the bales in groups of three. In this scenario, the loader took slightly more than 12 minutes to fill one trailer, which translates into a time-saving of 30 percent. Ideally, each group was placed as closely as possible to the trailer. So, a tractor driver who thinks ahead has an advantage in securing optimum results. After stacking the three bales that make up a group, the tractor loader had to travel only a few metres further and the job was done and the bales on the trailer. In addition to that, the loader operator assured us that he found this type of work considerably less fatiguing – a great boon on long working days. Furthermore, he said that he was also able to collect and load the bales nearly as quickly as the baler was churning them out. This means that a good team made up of an HDPII with BaleCollect, two haulage tractors and one loader can go into the field as a team and also leave it as a team, a significant help for the manager or the dispatcher.

MANUAL MODE

The baler operator can also deposit the bales manually in one central point, for example on the headland or in a stack in the middle of the field. Testing this approach, we found

Conclusion

Not only does BaleCollect save handling time but, by reducing field traffic, it also reduces compaction. In addition, it eases operator strain. The most efficient strategy and mode depends on the specific situation, such as the haulage chain and material quality. The ideal situation is to deposit three bales on the headland, which however is not really feasible in long fields.

Yet bear in mind that BaleCollect does, of course, absorb drawbar power. The baler operator said that he didn't feel the extra weight in flat land, but on steeper slopes he occasionally had to drop two bales manually (by fingertip control) to free some engine power. This was not an issue in our test field where the slopes were so shallow they didn't really affect the tractor's drawbar power. Unlike other accumulators that stack the bales and then struggle to prevent the bales from toppling on slopes, BaleCollect does not have this issue.

that the loader took a bit more than 14 minutes for one haul. Admittedly, the distances were short, but often the number of bales and placement mode within a group varied, and sometimes there were single bales. All this led to more shunting and collecting and stacking of individual bales. But manual mode is also very useful when the bales are collected in a one-man operation, meaning you take the trailer to the field, remove it from the tractor and then use the tractor to collect the bales. In the previous scenarios, the trailer was operated by a second tractor driver who followed the loader. Placing the bales in a specific spot at the field border means that you can park the trailer there and then load it in a one-man operation.

Another option is to cultivate immediately after the baler, because all bales are collectively deposited in a very small area in the field for collection at a later time. Here they can also be stacked and covered quickly, or for example, picked up by a truck that is too heavy to enter the field. What's really great is that Krone is developing a solution that allows operators to have the bales deposited automatically at GPS positions. And we also liked the fact that BaleCollect is ISOBUS-compatible and can be controlled from the terminal (which in our case was a CCI 1200).



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translated into English by trans-agrar