



How much difference does a header make?

Combine headers

According to combine draper head makers and users, benefits include higher outputs, head-first feeding, more accurate ground contour-following and better performance in low and laid crops, plus longer harvest days. *CPM* finds out more.

By Martin Rickatson

On the journey across the Fens to visit the A Markillie Ltd harvesting team who are cutting the last of their 2023 wheat, it's not immediately apparent why the additional expense of a draper-type contour-following combine header would be justified.

The topography is flatter and field undulations, let alone hills of any description, are hard to spot across the largely stone-free silty clay loam land, while most remaining wheat is standing well.

With the area being prime country for big combines with wide cutting widths, the benefits of a sectional header frame and precise ground-hugging soon become

apparent, especially with a wet year resulting in deep tramlines and laid crops evident nearer the harvest field.

There are also other reasons why such headers were developed, which are popular in the somewhat similar landscapes of the North American wheat belt.

Thrashing performance

It isn't only the ability of their three-section design to follow contours that sets them apart — but the head-first elevator feed ensured by the laterally-running belts that bring the crop to the longitudinal elevator-feeding belt, and make a conventional header auger obsolete.

That, the makers suggest, improves threshing performance and output, and can extend harvesting days because there's no auger for damp unripe straw to wrap around. Then there's the relatively lighter overall weight from not having a conventional auger, coupled with the use of aluminium components and free-moving plastic reel fingers designed to produce a combing and lifting effect.

“Because there's no auger for crop to start wrapping around, you can perhaps get an extra hour's combining done and in a tight season that's invaluable.”

Lastly, most designs have an extended feeder coupling to the combine elevator, allowing the header to be pivoted up or down to work underneath low or laid crop.

Because of their more complex and therefore costly nature, draper headers have tended to be a product developed and manufactured by specialists.

Arguably the most well-known of these is Canadian firm, MacDon.

In the UK, MacDon has long sold these units through its dealer network and continues to do so, but in late 2021, the firm announced a partnership with CNH Industrial's New Holland and Case IH brands. This was to offer a full line of branded combine draper headers through the two CNHi brands' dealers, allowing the MacDon FlexDraper 2 (FD2) units to be dealer-ordered as an alternative to the standard New Holland and Case IH headers.

The Markillie family has to balance not cutting wheat over 18% moisture unless absolutely necessary, with having 950ha of its 1,200ha farmed area down to the crop, and more than half of that being Group 1 ▶

Combine headers



The draper headers raise daily combine output by a minimum of 5% from better heads-first feeding and the ability to combine later in the night, says Jason Esser.

► milling. Therefore, the operation relies on having surplus capacity in its machinery fleet to ensure quality is protected and maximum crop is cut within available weather windows. For them that means running a pair of New Holland CR9.90 combines with 12.3m/41ft MacDon headers.

"Because it's early and has always yielded well for us — this year it did 10.8t/ha at 13.5% protein — we still grow

about 50ha of Gallant, but the majority of our milling wheat is KWS Zyatt," explains Jason Esser, the business's farm manager, as he pilots one of the CR9.90s in mid-August through some of the last wheat to cut.

Wheat quality

"It seems to suit our land, and with a £60/t premium, milling wheat is worth the additional inputs. But, we invest a lot in it to ensure it yields well while also meeting quality targets. That means 310kg/ha of nitrogen plus a foliar application. To keep on top of septoria in this past wet spring we used a six-spray fungicide programme, plus a good PGR to keep it standing," he says.

Jason explains that growing just a small area of spring barley with no oilseed rape or winter barley, means harvest starts with early-drilled wheat in late July. As a result, they have to work through a lot in a short period while protecting quality, hence the justification for two combines.

"This year the Zyatt largely stood well despite the rain, averaging 11.4t/ha over the weighbridge and mostly making 13% protein, so we were pretty pleased. But it's been a challenging harvest — wheat after

beans didn't stand so well with the higher fertility meaning thicker crops were then knocked by the July weather.

"We prioritised cutting the laid crops, and maximising cut area between the wet days was helped not just by combine capacity, but also by the abilities of the headers."

For many years the business ran an all-John Deere fleet but today its tractors are from the AGCO stable, while its favoured combines have for some time come from New Holland.



The reel can be pitched down to lift laid crop against the contour-following knife and onto the lateral belts. The top auger is used to help feed bulky crops such as OSR.

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"Our combines were 7.5m John Deere C670i models but we required more capacity and they were due for replacement," explains Jason.

"We had combines from John Deere, Claas and New Holland on demo, and found the latter's CR9.90 model to be the best all-rounder. While it perhaps didn't have the highest output of them all, for losses, grain quality and all-round package it just seemed to tick all of the boxes."

In 2016, the business bought their first CR, with a New Holland 10.5m Varifeed header with moveable knife. For the next two years it ran alongside one of the Deeres, at which point the capabilities of a MacDon header were realised, purchasing a 12m FD1 unit.

"Based on its performance, last year we bought a second CR9.90 which was a three-year old machine, sold its header and gave it the original MacDon head, before purchasing a second CR9.90 and an updated 12m FD2 header," says Jason.

"Before buying the first MacDon unit, we took advice from New Holland and our dealer Ernest Doe on the best match for the CR9.90. Our aim was to go as wide as possible, accepting a slight drop in forward speed over a smaller conventional



A Markillie Ltd now runs two New Holland CR9.90 combines with 12m MacDon headers – one the latest New Holland-branded FD2 design and one an earlier FD1.

header. We thought we were unlikely to ever have a smaller machine, so buying a 12m unit means we're prepared should we switch to a larger combine — ours are the second-largest New Holland models.

"The plan is that a header will last for two combines, a system often practised in other countries. The only challenge is selling on a machine without a header."

A key difference between the FD1 and FD2 models is that on the FD2 the belts are a third deeper at 1,200mm, explains Jason, which allows more volume of crop to be ingested.

"But it also has large carriage wheels, which take more weight and follow ground contours better, while the FD1 runs on skids alone," he explains. ▶



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Combine headers



Longitudinal belts transfer cut crop heads-first across to the elevator feed belt.

► "I think the MacDon deal with CNH Industrial makes sense, as MacDon has been making these units longer than anyone and I'm happy to have the original rather than a version or imitation. It also means we're working with the same dealer for headers and combines.

"Ernest Doe at Littleport is only 30 minutes from us. Their sales manager used to work here plus they have a knowledgeable harvester manager and an excellent service engineer, Jake Hindmarch, who knows the combines and dealers well. You can have the best combines and headers available, but good back-up is just as important."

The decision to buy the first MacDon wasn't wholly simple, acknowledges Jason, who says that for its first two harvests he was unsure whether the additional expense — around 30% over a conventional header — was justified in relatively easy years.

"However, in a year like we've just had I'd say it's been money well invested. Firstly, there were the time savings when

cutting crop which had gone down — we didn't have a lot of flat wheat, but there was enough and this year has probably almost paid for that extra investment," says Jason.

"Because you can pitch the header forward to get the knife under laid crop, there's no stopping and reversing to try and achieve the same effect, or working in only one direction. During normal work the wheels on the back of the bed take some of the weight with the skids on the front just skimming the surface."

Angled performance

"To work under a laid crop you can tilt the whole header forward, which changes the knife angle and the unit then runs fully on the skids. Dropping the reel with its long plastic tines forwards and down onto the crop means you can virtually lift it onto the table, there's no requirement for conventional lifters."

Jason says even in a standing crop there's still an output advantage as everything is being fed ear-first smoothly

and evenly across the table belts and into the elevator belt. "And when it starts becoming damp in the evenings, because there's no auger for crop to start wrapping around, you can perhaps get an extra hour's combining done. In a tight season that's invaluable."

He also acknowledges the important effect of enhanced contour following in ensuring an even stubble height ready for establishment of the following crop.

"While our land is largely flat, across headers this wide there's a noticeable benefit as the header wings hug the ground, and a close, even cut makes following cultivations with our Väderstad TopDown easier.

"We used to be fairly plough-based but now only winter plough for beans, and having reduced cultivations we're seeing better seedbeds. I think with min-till it's important to chop as much straw as possible to accelerate breakdown but not to take the stubble too low; there's a compromise.

"But we then have to properly incorporate chopped straw and any muck applied. Most land is TopDowned once, sometimes with a second pass at an angle, and depending on conditions we may cultivate over that before drilling with a 6m Väderstad Rapid. An even stubble height is the starter for all of that, so it's important."

Despite frequent rain interruptions including nearly a week-long standstill, this year's wheat harvest, which began on 26 July, was completed by 20 August. With most land in a 12-mile radius, much of it in ring fences and block-cropped where possible, it isn't necessary to remove the headers too often, explains Jason.

"On our main block where the average field size is 20ha, we run the combines

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together. Once you're in a rhythm the combines and two trailers work well as a team. When our contract farm wheats are ready, though, we split them.

"Despite the additional features over a conventional header, there's not much more to do when coupling or uncoupling from the combine bar a couple of extra electronic connections, and the Ziegler four-wheel steer trailer follows nicely," he says.

Maintenance

"And nor is there much additional maintenance required. There are a couple of daily grease nipples, and most others have 50-hour or weekly intervals. We check draper belt tensions every couple of days but they rarely require adjusting and it's usually a post-season procedure, as is an oil and filter change for the independent hydraulic system. We've never broken a knife section.

"Judging the load which the wheels and skids should be carrying is almost best done by eye – if it looks right it generally is. When the FD2 was new it was a little bit 'happy', turning up the ends, but once bedded in it hugged the ground well. Ideally it should curve very slightly down to the outsides to ensure it sits level."



With high-capacity combines and wide cutting widths, enhanced contour-following and even stubble height aids following cultivations and crop establishment, says Jason Esser.

One of the few downsides of the Flexdraper design is that if the header isn't cutting a full width, on a last run for example, the strip must be centred, explains Jason.

"If not it can pull cut crop under the unloaded belt. Alternatively, you can put the reel right in and down so it forces the crop into the elevator. Other than that, the only fault I've found is with the dividers, which aren't brilliant in laid crop as they

can ride over the top.

"With the CRs we can average about 70t/hr and do 75ha in a day on a midday start. The headers are giving us a minimum of 5% more daily output from better heads-first feeding and probably another hour's combining at night thanks to the lack of an auger for straw to wrap around. In seasons like Harvest 2023, they've certainly proved their worth," he concludes. ■



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