

One-pass wonder brings multiple benefits

A move to an Opico subsoiler seeder, with a band application of nitrogen, has done more than just significantly cut costs for a Yorks farming business. CPM visits the farm to find out.

By Nick Fone

Having oilseed rape to get in the ground when the combines are still rolling isn't an unusual scenario but it does put pressure on at the busiest time of the year. That can stretch both workforce and equipment to breaking point when you add a doubling in acreage into the mix.

It was this situation that prompted a radical change in strategy for Yorks farming business JP Mason and Sons a few years ago.

With over a quarter of the farm's 960ha of arable land given over to OSR, its importance isn't underestimated in the rotation. Moving to a one-pass establishment system for the crop has cut the workload to

a third of what it once was for the family firm.

Moreover, by adopting a seed-and-feed approach, Martin Mason is confident in the crop's early development, knowing that the young seedlings are given a boost and have developed a decent root structure going into the winter.

But it was reducing the pressure on both men and machines at that crucial harvest pinchpoint that was the key driver for a change in tack.

"Up until three years ago we were very traditional in our approach to OSR establishment," he explains.

"Like so many people we would plough, power harrow and then drill but the opportunity came up to take on an extra 480ha, and then we knew we'd have to change things.

"To begin with we continued on with what we were familiar with, but with

so much more ground to cover it was a stretch. We had two combines running flat out, so it really piled the pressure on to be cultivating and drilling at the same time."

Knowing he ultimately wanted to move to a one-pass establishment system, initially Martin Mason trialled a subsoiler followed by the power harrow and Väderstad Rapid drill. The results were promising and he felt the concept had proved itself.

"The crop got going just as well as any other and yielded just fine. But what surprised us was how much easier it was to establish the following wheat.

"The combination of the subsoiler's action and the deep tap roots left the ground open,

Agronomist's angle

"Most of my customers sow their OSR in the conventional way following either the plough or a min-till approach," comments Kevin Hubery of Agril, Martin Mason's agronomist.

"However, where growers are using a subsoiler seeder, the crops generally look streets ahead of the traditionally established ones. They're also saving on the amount of seed and fertiliser they're using."

Taking the Masons as an example, typically

they're running their OSR out at 1-1.5kg/ha, he says, whereas previously it would have been three times that.

"And where they were spreading 40kg/ha as a blanket application to the whole field, with the NitroJet band sprayer they're now applying it at that same rate but only to the crop row — about a third of the field area. So again, they've cut their fertiliser costs by two thirds and they've knocked out the additional expense of a pass from the spreader."

Reducing seed rates gives the young plants room to grow, while the early nitrogen gives them a bit of a kick-start, he points out. This helps the young crop establish quickly and get a decent root down before winter comes.

"The tap root can sometimes get down to well over 30cm ahead of Christmas, helping the crop scavenge nutrients better. By giving them plenty of room in their rows, they'll often have six, seven or eight true leaves by that time, while conventionally drilled crops will be lucky to have four or five.

"That means they've a decent photosynthetic

The folding seven-leg HE-VA subsoiler gives the young OSR seedlings an open rooting-zone.



free-draining and easily worked. The next step was to decide on a machine that would do it in one go."

Having read much about the subsoiler seed-and-feed approach in the press, Martin Mason contacted local dealer Scrutons who

suggested he talk to growers who'd already gone down that route.

"When I went to look at the crops, they were some of the best I'd ever seen and the guy I spoke to said he'd never go back to ploughing and drilling OSR again.



The combination of deep roots and lots of leaves means the crop can get away quicker once it warms up in the spring, says Kevin Hubery.

area to make the most of what little sun there is."

The combination of deep roots and lots of leaves means the crop can get away quicker once it warms up in the spring, continues Kevin Hubery. So there's the potential to reduce the rates of top dressings, without suffering a yield penalty at harvest.

"Other than that, there's very little difference in the way we treat traditionally established OSR and a crop sown off the back of a subsoiler. The key distinction is that it generally yields better off the back of fewer inputs."

"I was convinced that it was the right way to go and, as we were already applying seedbed fertiliser, it didn't take much to persuade me a band applicator was a good idea too."

With various subsoiler options on offer ▶

“Our work rates almost tripled overnight”





Work rates have almost tripled while OSR establishment costs are a third of what they were previously, says Martin Mason.

► from a range of different manufacturers, he did some homework. Knowing he wanted a 4m seven-leg unit to match his 355hp

Challenger MT765C, he was faced with a choice — trailed or linkage mounted?

"We liked the look of a number of different machines but with most makes, once you got over 3m, you had to go to a trailed format which added about £10,000 to the price.

"However you could have Opico's subsoiler as a mounted version right up to 5m. It folds leaving enough clearance for both a seeder and liquid fertiliser tank."

Having worked out his figures, he was also drawn by the fact that Opico could offer the whole package in one, with its HE-VA subsoiler, air-seeder and NitroJet fertiliser rig. So he duly ordered a seven-leg unit.

Putting it to work during harvest 2011, the benefits it could bring were immediately apparent.

"Our work rates almost tripled overnight and we were covering over 40ha in a 12-hr day, as opposed to just 16ha with

our old plough-based system.

"More importantly we were using just one machine to do the job, whereas before we had individual plough, power-harrow and drilling tractors all working at the same time — that's a lot of men, machines and critically diesel."

Today, with the Challenger up front running at 12km/h and the legs set at 25cm depth, the whole operation uses 12.9 l/ha of fuel. The previous approach was estimated to use three times that amount. It was a similar story when Martin Mason looked at the overall costings (see panel below).

So what about performance? One of its strongest points is its ease of use, he says. With working depth set hydraulically by the rear packer roller, it's straightforward to adjust on the move and set using simple spacer collars on the ram pistons to limit the amount the roller can lift.

That simplicity continues to the seeder and liquid fertiliser rig. "Calibrating the seeder takes less than ten minutes — it couldn't be any easier," says Martin Mason.

"It's a little more involved with the NitroJet. You have to set the control box to calibration mode, measure how much liquid it pumps out in a minute and then multiply that up to get an idea of the actual rate. We generally

Cultivations costings

Operation	Cost/ha
Plough	£59
Power harrow	£44
Drill	£51
Fertiliser spreader	£9
Total	£163
One-pass subsoiler seed-and-feed	£61

Running directly behind the subsoiler legs, the NitroJet nozzles apply fertiliser in the narrow band where the seed is placed.



With fertiliser applied to only about a third of the cropped area at 40kgN/ha, fill-ups are relatively infrequent.

work to 50 l/ha and it's pretty much spot-on accurate every time."

The fertiliser pump and metering unit take an electronic signal from the seeder's forward speed sensor, limiting the extra wiring needed on the subsoiler frame.

For an extra level of precision the Masons have invested in AutoFarm GPS steering with RTK correction. This not only ensures there are no overlaps or misses in the drilling, no fertiliser is wasted either.

Exact distance

"The auto-steering has made a huge difference to our work rates. We're always the exact distance from the last pass, and at 12km/h, you're not trying to constantly correct your path.

"Of course it's the same story with diesel usage. It's a no-brainer — you save on everything."

Although he liked the concept of buying the complete package from Opico, he feels there are a few tweaks that could be made to the fertiliser rig and seeder set-up.

"The mounting brackets for the seed outlets are too flimsy and can't handle the stress so they work loose and won't stay in place. They need to be riveted onto the box-section toolbar.

"And when a shear-bolt breaks in one

of the subsoiler legs, it snaps back and collides with the fertiliser jet, either breaking or damaging it. That said, we haven't had any issues with the nozzles blocking, even with all that dust and muck flying about."

Opico has since revamped the nozzle arrangement to avoid damage when the subsoiler legs kick back.

With such wet conditions for the last two years, he has had to reconsider his approach to slug control. Previously Cambridge rolls had done the trick when it came to seedbed consolidation following the subsoiler. Now however, that's set to change. Equipped with a pellet applicator, next season the business' Väderstad Rexius Twin ring press will be put to work to create a tight, mollusc-hostile environment. With its ripper lines and levelling boards lifted out of work, all its weight will be used to ensure the surface lith is as fine as possible and any daytime slug havens are eradicated.



Fuel use has been cut by two thirds, compared with the old plough-based approach.

"With the subsoil loosened, extra nutrients on top right from the off, and slugs kept under control, our OSR crops should get off to the best possible start for minimal cost," concludes Martin Mason.

"We're now confident we're giving them the best possible chance to yield to their maximum potential." ■

Farm facts

JP Mason and Sons, Melton, N Yorks

- **Soil:** heavy clay through to light sandy loam
- **Cropping:** wheat, barley, oilseed rape, spring beans
- **Machinery**
 - **Tractors:** 2 x Ferret 939s, 724, MF 7480 and Challenger MT765C
 - **Combines:** Claas Lexion 780 and 580 TT
 - **Loader:** JCB 536-7J
 - **Sprayer:** Chafar Sentry 5000-litre, 30m booms
 - **Drill:** 6m Väderstad Rapid