A step on in performance

> *"The Matrix allows growers to go that extra step with their beet crop."*

Machinery Machinery Masterclass

For growers looking for the next step from their beet crop, could it be the seeder that holds the key? *CPM* talks to a Norfolk grower about the capabilities of his 12-row Matrix.

By Tom Allen-Stevens

For those committed to conservation agriculture, there's one crop that doesn't quite fit the no-till or even limited min-till paradigm: sugar beet. Shotesham Park Estate in Norfolk may have found a beet establishment system that does, however.

The sticking point is often the drill — a number of cereal drills now have coulters and other engaging parts that slip the seed into undisturbed soil. Increasingly they're equipped with variable-rate seeding while GPS-guided precision puts tramlines where they should be and shuts off seed with little overlap on headlands. The traditional precision beet drill has tended to lag behind on such technical advances, however, and has always demanded a fair degree of turning the land upside down.

Faced with this quandary, farm manager at Shotesham Jon Nott chose to invest in a Grimme Matrix 1200 12-row seeder. "We've taken a major change in cultivation policy towards conservation agriculture," he explains. "We've extended the rotation, bringing in more spring cropping. There's a focus on building the soil organic matter across our loamy sand to sandy clay soils with increased use of cover crops."

Logical step

The farm has been mapped into soil zones and cereal seed is now drilled at variable rate to even up establishment. "We're also trying to fix the tramlines — it's not quite a controlled traffic system, but we're getting there. The next logical step was to bring the sugar beet in within this system."

The mixed farming estate totals 600ha and established 43ha of sugar beet this year to Kortessa KWS, Lightning and Advena KWS. It's the second season the farm has had the Matrix drill, although it was used as a demo three years ago.

Grimme UK only started selling sugar beet seeders in 2017, notes the firm's David Wadsley. "We've built up a good reputation with our beet harvesters, so it was a logical step to offer seeders. Grimme purchased the Kleine precision seeder technology that's been in the market for over 35 years. It's similar in many respects to other precision drills, but Grimme's since added to it."

The key aspects that drew Jon to the drill were electric drive for the seed-metering system and the ability to establish a crop with reduced tillage. "It's not a direct drill," he notes. "We've

Jon Nott is bringing in a major change in cultivation policy at Shotesham Park Estate towards conservation agriculture.

tried strip-tilling beet before and it doesn't work — the soil's too fresh to put the seed into. So we spray off the cover crop and make a shallow pass with the Väderstad Carrier before drilling."

Jon believes it's important to have the right cover crop in front of the beet crop. "The first year we tried them we put in fodder radish and black oat, but that introduces another brassica into the rotation, the cover is harder to destroy and we found that herbicide on the trash can damage the following cash crop, especially spring beans. So now we go for phacelia, vetch and black oat, which provide a mix of species with three rooting zones to set up the tilth for the sugar beet."

Fast folding to a compact form

With its hydraulic parallel folding, the Matrix is ready for road transport in just 12secs, to a low height and a width of 3m. The dual marker arms wrap up neatly, allowing accurate seeding up to field edge.

Mulch seeding

There's still plenty of trash on the surface, but that's handled with the mulch seeding unit on the drill. "We have the clod deflectors, but often find the trash bunches up in front of the drill, so lift them out the way. The discs are very effective at cutting through the trash for the coulters to work properly. We've had tungsten tips fitted to the coulters to help them cut into the surface, which has altered the dynamics slightly. But the press wheel and then the finger roller leave a good finish behind, with no capping."

The electric drive allows Jon to take full advantage of the drill's precision features. "We've found auto shut-off accurate to within 5cm. We drill the headland first,

The Matrix seeder comes with the same level of service and back-up growers have come to appreciate from Grimme's harvesting and potato equipment, says David Wadsley.

which gives us the boundary line, then make sure we keep a consistent speed going into and exiting each run — about 7km/h. You not only save on seed but don't have to hoe out any overlaps," he notes.

"We're trying to drill to the same tramlines and are finding they now rut less as a result. The Matrix increases the seed rate automatically either side of the ▸

Optimal seed placement

The mulch seeding unit is preferred by most UK growers.

At the heart of the Matrix precision seeder is the seeding unit itself, set on a parallelogram to keep it stable and seeding depth steady. Optional clod clearers sweep clods and surface trash out the way of each seeding coulter, preventing discs or coulters bunging up. Their intensity is adjusted via tension springs, while in the case of mulch seed equipment, working depth is determined by a simple wing screw.

The conventional seeding unit is suited for use on ploughed and conventionally cultivated areas while the mulch seeding unit, preferred by most UK growers, is designed for areas with reduced tillage intensity. This has V-shaped cutting discs with lateral fitted depth control wheels. It runs in front of the coulter and cuts through organic material on the surface.

Seed depth is adjusted in a range up to 5cm in 0.5cm intervals via an excenter-lever. Pressure to the mulch unit is adjusted mechanically as standard up to a maximum of 90kg or via optional hydraulic balancing up to 150kg per seeding row. The coulter operates slightly below the cutting disc, putting seed into firm, more moist soil, or optionally with low side blades working to the same depth for less wear.

The coulter's fed by the inner filled seed plate closely positioned to provide minimum drop height and an exact seed spacing, while an optical sensor is used to avoid missing plants. The seed plates come with six holes as standard, while an eight-hole plate is available for accurate planting at a faster forward speed.

A 5kg spring-loaded rubber-covered steel press wheel is larger than most and sets the seed in place, followed by one of a range ofcovering rollers. The fingertip press wheel provides the seedling with a microclimate to protect it from frost and allows the soil to warm up fast for rapid seed emergence.

The Monoflex-roller is now more popular in the UK, better for stickier conditions in which the fingertip press wheel can get blocked, and puts more soil around the seed. The V-Farmflex roller is suitable for heavier soils, as the seed furrow itself is not rolled over and compacted, but pressed from both sides at an angle that can be varied to put the right amount of soil on the seed furrow.

Seed depth is adjusted via an ecenter-lever.

The seed plates come with six holes as standard, while an eight-hole plate is also available.

The range of covering rollers includes (L to R) the V-Farmflex, Monoflex and fingertip press wheel.

TOGETHER.

Even in this exceptional situation, BKT is always by the farmers' side, who have shown great passion and responsibility while they have been doing their job in the fields – incessantly. It is thanks to farmers that the companies in the agro-food chain are able to continue their business activities and that all families have enough fruits of the earth to put on the table. **Together, we will never stop.**

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▸ tramlines to compensate for the lost area — another advantage of the electric drive."

For the first time this year he's tried variable-rate seeding with the sugar beet. "The farm was soil-mapped and zoned by IPF some years ago, although we now use SOYL for our variable-rate maps. So this stepped up the seed rate in 10-15% jumps from 116,000 seeds/m² on the kindest soil to 165,000 seeds/m² over some of our horrible clay caps, aiming to establish 100,000 plants/m² over all," explains Jon.

"We're doing a trial with BBRO, comparing the variably seeded area to one established with a flat rate. My gut feeling is that it'll work out as well, if not better than a cereal drill — since it's precision seeded, you won't get bunching up in the rows."

All of the precision features are handled by the CCI 800 terminal that came with the drill, notes Jon. "It's a capable unit, but it takes a little while to get accustomed to it. We've now started also establishing oilseed rape with the Matrix to get maximum use from the drill."

This is done to the same principle, with a good coating of manure applied in front of the Carrier. "We drilled early, on 10 Aug, aiming to give the crop every chance — it was a hybrid variety with phosphite-treated seed. We achieved a very good emergence, and I think the difference the drill brings is to conserve soil moisture," says Jon.

Factory interaction

He's also been impressed with the service he's received from Grimme. "There's very good back-up and their level of enthusiasm and determination to ensure everything works smoothly is refreshing. What's also interesting is that there's interaction with the factory — you feel they listen to the changes you suggest," he notes.

David points out the Matrix seeder comes with Grimme's standard two-year warranty and the same level of service and back-up growers have come to appreciate from the firm's harvesting and potato equipment. "Jon is pushing the capabilities of the drill, and it's good to see it's performing well. We're particularly keen to see how the variable-rate trial turns out.

"The Matrix is an accurate seeder that's easy to use and allows growers to go that extra step with their beet crop while ensuring a good establishment — with all the uncertainty in farming at the moment, it's good to have a piece of kit you can rely on," he concludes. ■

Machinery Masterclass

Technology is advancing fast, and the capabilities of equipment found on farm far outstrips what was available just five years ago. For growers who embrace the change, the potential to cut cost, refine production systems and boost output is immense. But how can you make an informed choice about whether an innovation will deliver the refinements you seek if you've not operated it before?

This is where Machinery Masterclass comes in. In this article, sponsored by Grimme, *CPM* has worked with the manufacturer to get a true user experience and an insight into the technology advances it has introduced. We hope this will bring you a 'try before you buy' feel for specific features found on this item of machinery and help you remain at the forefront of progression in crop production.

Targeted technology

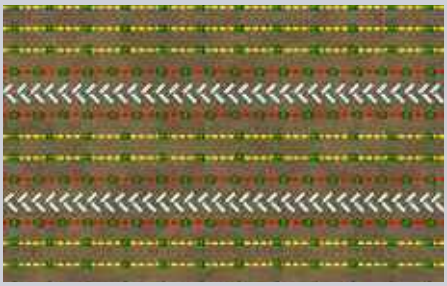
Automatic Section Control avoids ineffective cross-seedings at the headland.

The Matrix seeder is equipped with ISOBUS as standard while there's electric drive to the seeding units. These provide the basis for a number of advanced technical features.

Automatic Section Control is an optional feature designed to deliver seed savings and avoid ineffective cross-seedings at the headland. This works by setting a boundary for the field using GPS that determines the exact position of the inner row of the headland, which can be drilled either before or after the centre of the field. Seed provision to each unit is shut off in exactly the right place, provided the same entry and exit speed is maintained on the headland.

Clever Planting comes as standard and reduces the seeding distance in the rows beside tramlines. It works by maintaining the same percentage of seeds planted per m^2, ensuring consistent overall plant density and minimising loss of yield from the tramlines.

The same capability, through the electric drive, delivers variable-rate seeding. This works in exactly the same way as for a cereal drill — provided you have a variable-rate licence, the seed rate is determined via the controller and metering system from a variable-rate application map. Seed rate can be increased or decreased to take account of soil variation, allowing optimised plant establishment.



Clever Planting reduces the seeding distance in the rows beside tramlines.

The CCI 800 has a 200mm multitouch screen.

All these functions can be controlled either through the tractor's ISOBUS-compatible terminal, or through the CCI terminal available through Grimme with the drill. The CCI 800 is an ISOBUS operation terminal with a 200mm multitouch screen providing the user interface with the drill. Additional features such as Section Control can be integrated at any time and it connects to the Agrirouter data-exchange platform to transfer information between different software platforms via the Cloud. You can also display the image of an additional camera.

The CCI 1200 has a 300mm screen and allows two ISOBUS-compatible machines to be displayed and operated simultaneously, either portrait or landscape.