

Horizon Agriculture DSX drill:

Direct drilling on the Horizon

Horizon Agriculture may be a relatively new name on the UK drill scene, but the people behind the British manufacturer have a wealth of manufacturing and farm experience. We caught up with the 4.0m demonstrator DSX in some sticky conditions last autumn

DATA SHEET

Horizon DSX 40-20 direct drill

Working width	4.00m
Transport width	3.00m
Coulters	Disc at 20° with rubber gauge wheel running vertically alongside
Coulter spacing	160mm (other options include 187, 200 or 250mm)
No. of coulters	20
Hopper capacity	4,400 litres, split 60:40 or 40:40:20
Metering system	Up to three metering units
Fan	Hydraulic drive
Chassis tyre size	710/50 R26 (also 650s or 800s)
Total machine weight	6,000-7,000kg (depending on options)
Power requirement	112kW/150hp minimum
Options	Precision Planting row cleaners; liquid fertiliser tank
Price (starting)	£80,000
Price (full spec)	£140,000

Manufacturer information



Developed using the expertise from the Sly drills team, the Horizon DSX has been designed to work in direct drilling conditions.

In an industry where there are already plenty of direct drills is there room for a new one? Horizon Agriculture thinks so, and the DSX Drill has attracted support since its initial launch from as far afield as Denmark, Bulgaria and Tasmania. In fact the drill is not a completely new concept - Horizon Agriculture was formed from a management restructure of Sly Agri, which has been developing seeding technology for 10 years, most recently with the Sly Boss coulter (see *profi* 6/2019).

British build

Sly's design engineer has transferred from France to the company headquarters in Spalding, Lincolnshire, where the Horizon DSX is being built. Welding and fabricating of components is outsourced locally, while blasting, powder coat and paint are kept in house to ensure quality control. Designed for direct drilling, including working into trash and cover crops, the DSX can also work in firm cultivated conditions. "We plan to sell the drills direct to customers



With its modular build, the drill can be modified to match increasing acreages; 1.0m sections can be bolted onto the 4.0m version and additional row units added for 6.0m working width.



The main tank is specified with two hoppers as standard, with the option of three, its 4,400 litres being split 60:40 or 40:40:20.



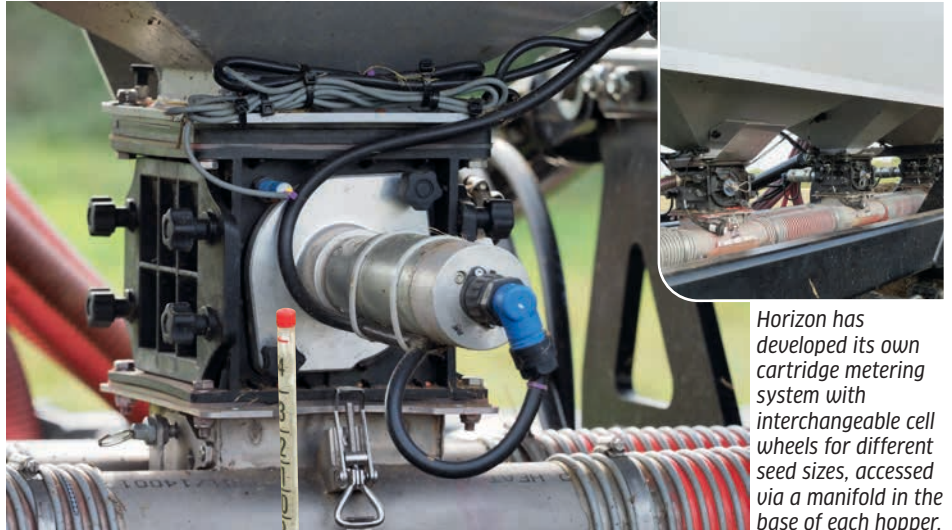
Diffuser units between the distribution heads and the coulters combine air and seed in an anti-cyclone which forces the air out of the top while seed drops down to the seeding boot via gravity. In the event of a blockage, seed comes out of the top, and is visible from the cab.

in the UK, as conservation agriculture is more of a holistic process rather than just selling a machine,” explains managing director, George Sly. “It’s important to consider the conditions, what type of cover crops are being grown and what the objectives are.”

Add more as you grow

Working widths are 4.0 to 8.0m, folding to 3.0m; wider models in the pipeline will have a 3.0m centre section to keep the transport height down. There is no 3.0m wide version available. With its modular build, he suggests, the drill is designed to last for 15-20 years and can be modified to match increasing acreages; 1.0m sections can be bolted onto the 4.0m version and additional row units added for 6.0m working width, while the adjustable row units can work at 16.0, 18.7, 20.0 and 25.0cm row spacings.

The main tank is specified with two hoppers as standard, with the option of three, its 4,400 litres being split 60:40 or 40:40:20; a separate liquid fertiliser tank can be added, or the split hopper used in a traditional grain/fertiliser configuration.



Horizon has developed its own cartridge metering system with interchangeable cell wheels for different seed sizes, accessed via a manifold in the base of each hopper.



The two distributor heads are plumbed front to rear so you can divert the flow from either the front or rear metering units, for example to send oilseed rape from the to the front coulters and buckwheat to the rear and slug pellets to both.



The disc unit is angled at 20° to the vertical and slightly to the horizontal to create a slice similar to a plough mouldboard.

Back, front or both

Horizon has also developed its own cartridge metering system with interchangeable flutes/cell wheels for different seed sizes, accessed via a manifold in the base of the hopper. The two distributor heads are plumbed front to rear rather than left to right so can divert the

flow from either the front or rear metering units, for example to send oilseed rape to the front coulters and buckwheat to the rear openers and slug pellets to both. Diffuser units between the distribution heads and the seeding units combine air and seed in an anti-cyclone which forces the air out of the



Individual depth control for each row unit allows seed to be planted at different depths when establishing companion crops or different cover crop seeds.



Pressure on the disc is repeated on the rear press wheel, helping to fully close the slot.



An RDS Artemis controller monitors tank fill level, seeding rate, fan speed and coulter; precision farming software can be unlocked to offer variable rate and recording functions; the drill is also ISO-compatible.

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Its all about the disc

The disc unit, says Horizon, is the defining feature of the DSX. It is angled at 20° to the vertical and slightly to the horizontal to create a slice similar to a plough mouldboard, while its solid rubber side wheel prevents the soil inverting completely. At the outer base of the disc, the seed boot drops the seed into the slot before the pneumatic rubber press wheel closes the slot.

“Pressure on the disc is repeated on the rear press wheel, helping to fully close the slot,” explains Mr Sly, “But it is the angle of the disc that makes it ‘want’ to penetrate the soil, so excessive pressure on the row units, which

can lead to compaction, is not needed. It’s never necessary to take the rear wheels off the ground to force the disc in.”

Optional Precision Planting row cleaners can be fitted up front to clear large amounts of trash, for example when establishing oilseed rape into wheat stubble, avoiding ‘hair-pinning’ which can inhibit germination. The row cleaners are pneumatically engaged and can float or be pressurised depending on the conditions.

Individual depth control for each row unit allows seed to be planted at individually selected depths when establishing companion crops or different cover crop seeds.

Where a fertiliser tank is fitted, liquid is dispensed via a diaphragm pump to the coulters, controlled wirelessly from a tablet in the cab, with ball indicators visible from the cab showing a blockage or leak.

Hydraulic requirements

Operation is via four hydraulic services, one to fold, one for the rear axle, one for the fan needing unrestricted flow and one for the row units; priority for the row unit and fold are switched via a lever while down pressure to the row units is adjusted via a tap.

In the cab, the RDS Artemis controller monitors tank fill level; four cameras, one in each hopper and one to the rear keep tabs on these areas using a separate screen. Precision farming software on the control box can be unlocked to offer variable rate and recording functions; the drill can also be operated via a tractor’s ISObus terminal using a task controller.

Maintenance is minimal with sealed bearings and phosphor bronze bushes on the row units; grease nipples are restricted to the folding points and hitch.

The drill folds to 3.0m for transport; wider versions have a 3.0m centre frame to keep transport height down.



With the hopper split three ways on our test machine, the two larger compartments hold 1.5 tonnes and the centre bin 200kg. Calibration is push button at the metering units with the sample weight entered into the controller. Again, access is easy with the drill lifted slightly on the hitch and wheels; a slide for each unit allows for emptying into a half tonne bag when switching seed types.

How much horsepower?

Designed to work at about 8km/hr, the 4.0m version demonstrated was on a 150hp CVT John Deere; Mr Sly suggests that a DirectDrive version would be better on the Cotswold banks shown. Customers are pulling 7.5m models comfortably with 250hp. "It's not so much draft that's needed, more weight as the 4.0m drill is between six and seven tonnes."

He comments that adoption of regenerative agriculture is driven by the potential not just for improving soil quality which can in itself cut herbicide and fertiliser inputs but also for reducing machinery costs. "Fewer passes and reduced soil disturbance makes a big difference to fuel bills - I'm using about 6.0l/ha on this 4.0m drill."

He notes interest from farms looking to companion crops as a way to help protect oilseed rape from flea beetle attack, using the drill's ability to work at different depths and spacings.

"In addition, relay cropping, where more than one crop is established in the same season, is an increasingly popular technique in France, and using the DSX you can take every other row unit out for the first crop and then drill a second crop into the gaps before harvest."

The 4.0m Horizon DSX is priced from £80,000 to £140,000 depending on spec. But the biggest seller so far has been the 6.0m version set at 18.7cm row spacing.

Summary: An interesting option for those committed to direct drilling, especially if looking to work in high residues or cover crops. Conditions during the demonstration were decidedly on the sticky side and trash did build up around the row units, but the DSX was able to keep going and planting consistently. Mr Sly says that the Horizon has been working well in a range of situations from very hard ground drilling rape at the end of summer to thick cover in the wet autumn of 2020. With unpredictable weather in both autumn and spring seasons experienced recently, this should stand purchasers in good stead.

Jane Carley



A substantial ladder gives access to the hopper when filling with the lid acting as a handrail.

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