



“ A trailed hopper and rear-mounted coulter frame can handle dry or liquid fertiliser. ”

Machinery Drills

Tine to direct drill?

There's plenty of choice for those who prefer a tine coultter over a disc when seeding direct. *CPM* rounds up a selection.

By Peter Hill

The minimum disturbance offered by a disc coultter has its merits, especially where blackgrass is a problem. But for many direct drills, it's not the favoured method of getting seed into the ground.

Soil type or the presence of a large volume of stones may dictate the tine as the best coultter. There's a risk with discs of hair-pinning trash into the seed channel, or smearing the slot in some soil types, especially when conditions are less than ideal. And sometimes just a little disturbance is needed, even when drilling direct.

Fortunately, growers have plenty of choice when it comes to tracking down a machine for direct sowing with a tine, with various configurations, ways in which they create the tilth and leave the seed.

Amazone

The trailed Cayena is available in a single working width of 6m, deploying three rows of TineTeC heavy-duty chisel openers with bolt-on wear blocks, unless easy-working soils allow the 'regular' version to be used.

Both are mounted on trailing arms with rubber inserts in the frame clamp allowing some vibration and also three-way displacement around stones and other obstructions.

Straight discs added ahead of the tines cut through trash and the coultters are followed by an Exact S levelling/covering harrow and then an 800mm diameter wedge-ring tyre roller.

Seed and fertiliser are metered individually on the Cayena 6001-C combo version but are then combined in the seed pipe.

The wide-working Condor trailed drill comes in 12m and 15m widths, with soil engagement solely the preserve of the ConTeC pro heavy-duty tine coultters.

Tungsten carbide/cobalt alloy tips aim to minimise wear in abrasive soils and up to 120kg of pressure is available at the tines, which are arranged in three staggered rows with rubber clamp inserts allowing movement over the surface.

A close-coupled wheel, either air- or

foam-filled or Otico flexi type, provides pressing and depth control duties and mechanically-driven metering rollers operate through a Vario gearbox; ditto for the down-the-pipe fertiliser system.

Available in 3m and 6m working widths, Amazone's Primera dedicated direct drill (main picture) uses chisel tines in an assembly with a close-coupled steel hoop clearing trash and a steel dish roller regulating the depth.

Parallel linkage incorporating torsion spring lower links and an auto-reset spring-loaded upper link allows horizontal and vertical break-away.

Seed covering is performed by the combination roller immediately aft of the tines plus an Exact harrow, but a packer ▶



The Cayena deploys three rows of TineTeC heavy-duty chisel openers.

Tine drill tech specs

(Note: M-Mounted, T-Trailed format)

Amazon	Seed/fertiliser	Width	Row spacing	Hopper (litres)	Horsch	Seed/fertiliser	Width	Row spacing	Hopper
Cayena 6001	S	6.0m T	166mm	3600	Sprinter 3 ST	S	3.0m T	250mm	3000kg
Cayena 6001-C	S+F	6.0m T	166mm	4000	Sprinter 3 ST	S+F	3.0m T	250mm	3800kg
Condor 12001	S+F	12.0m T	250mm or 333mm	8000	Sprinter 4 ST	S	4.0m T	286mm	2800kg
Condor 15001	S+F	15.0m T	250mm or 312mm	8000	Sprinter 4 ST	S+F	4.0m T	286mm	5000kg
Primera 3000	S+F	3.0m T	187mm	4200, 5000 or 5800	Sprinter 6 ST	S	6.0m T	273mm	3500kg
Primera 6000-2	S+F	6.0m T	187mm	4200, 5000 or 5800	Sprinter 6 ST	S+F	6.0m T	273mm	5000kg
Claydon	Seed/fertiliser	Width	Row spacing	Hopper (litres)	Sprinter 8 ST	S	8.0m T	320mm	4000kg
Hybrid M 3	S	3.0m M	333mm	1750	Sprinter 8 SW	S+F	8.0m T	285mm	8000kg
Hybrid M Fert 3	S+F	3.0m M	333mm	2455	Sprinter 9 SW	S+F	9.0m T	300mm	8000kg
Hybrid M 4	S	4.0m M	308mm	1750	Sprinter 10 SW	S+F	10.0m T	300mm	8000kg
Hybrid M 4.8	S	4.8m M	320mm	1750	Sprinter 12 SW	S+F	12.0m T	300mm	8000kg
Hybrid M 6	S	6.0m M	316mm	1750					
Hybrid T 4	S	4.0m T	308mm	3500					
Hybrid T 4 Fert	S+F	4.0m T	308mm	3500					
Hybrid T 4.8	S	4.0m T	320mm	3500					
Hybrid T 4.8 Fert	S+F	4.0m T	320mm	3500					
Hybrid T 6c	S	6.0m T	316mm	3500					
Hybrid T 6c Fert	S+F	6.0m T	316mm	3500					
Hybrid T 6	S	6.0m T	316mm	5500					
Hybrid T 6 Fert	S+F	6.0m T	316mm	5500					
Hybrid T 8	S	8.0m T	320mm	5500					
Hybrid T 8 Fert	S+F	8.0m T	320mm	5500					
Cross Slot	Seed/fertiliser	Width	Row spacing	Hopper (litres)					
Cross Slot PW3	S	3.0m T	158mm	2600					
Cross Slot PW4	S	4.0m T	190mm	2600					
Cross Slot PW5	S	5.0m T	200mm	2600					
Cross Slot 6	S+F	6.0m T	222mm	2 x 1200					
Dale Drills	Seed/fertiliser	Width	Row spacing	Hopper					
Eco-Drill S 3	S+F	3.0m M	125-250mm	1500kg					
Eco-Drill S 4	S+F	4.0m M	125-250mm	1500kg					
Eco-Drill S 5	S+F	5.0m M	125-500mm	1500kg					
Eco-Drill M 3	S+F	3.0m T	125-250mm	2000kg					
Eco-Drill M 4	S+F	4.0m T	125-250mm	2000kg					
Eco-Drill M 5	S+F	5.0m T	125-250mm	2000kg					
Eco-Drill M 6	S+F	6.0m T	125-250mm	2000kg					
Eco-Drill L 6	S+F	6.0m T	125-250mm	3000-5000kg					
Eco-Drill L 8	S+F	8.0m T	125-250mm	3000-5000kg					
Eco-Drill L 9	S+F	9.0m T	125-250mm	3000-5000kg					
Eco-Drill XL 10	S+F	10.0m T	125-250mm	3000-5000kg					
Eco-Drill XL 12	S+F	12.0m T	125-250mm	3000-5000kg					
					McConnel	Seed/fertiliser	Width	Row spacing	Hopper
					Seederator 3000	S	3.0m M	333mm	650 or 1250kg
					Seederator 3000 TwinTank	S	3.0m M	333mm	650 or 1250kg + 120kg
					Simtech Aitchison	Seed/fertiliser	Width	Row spacing	Hopper (litres)
					T-Sem 300A	S	3.0m M	187mm	750 or 1050
					T-Sem 300	S	3.0m M	150mm	750 or 1050
					T-Sem 300AP	S	3.0m M	187mm	1000
					T-Sem 300P	S	3.0m M	150mm	1000
					T-Sem 400AP	S	4.0m M	182mm	1000
					T-Sem 480AP	S	4.8m M	188mm	1700
					T-Sem 600AP	S	6.0m M	188mm	1700
					Sumo	Seed/fertiliser	Width	Row spacing	Hopper (litres)
					DTS 3 Toolbar	S	3.0m M	333mm	front hopper
					DTS 4 Toolbar	S	4.0m M	333mm	front hopper
					DTS 3	S	3.0m M	333mm	1600
					DTS 4	S	4.0m M	333mm	3000
					DTS 4	S	4.0m T	333mm	3000
					DTS 4 G&F	S+F	4.0m T	333mm	3000
					DTS 4.8	S	4.8m T	320mm	3000
					DTS 4.8 G&F	S+F	4.8m T	320mm	3000
					DTS 5	S	5.0m T	333mm	3000
					DTS 5 G&F	S+F	5.0m T	333mm	3000
					DTS 6	S	6.0m T	333mm	3600
					DTS 6 G&F	S+F	6.0m T	333mm	3600
					DTS 8	S	8.0m T	333mm	3600
					DTS 8 G&F	S+F	8.0m T	333mm	3600
					DTS 9	S	9.0m T	346mm	3600
					DTS 9 G&F	S+F	9.0m T	346mm	3600

Note: Sprinter ST - frame-mounted hopper; Sprinter SW - trailed hopper, rear-mounted coulter frame.

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Soil engagement on the Condor is solely the preserve of the ConTeC pro heavy-duty tine coulters.

- ▶ roller aligned with each row can be added.

Claydon Hybrid

With mounted models from 3m to 6m and trailed versions in 4m to 8m widths, there's plenty of choice in the Claydon Hybrid range.

Trailed versions can have rubber press wheels or shouldered trash cutting discs across the front of the implement, and all feature the OptiTill set-up of a leading tine to loosen soil and create a drainage channel, followed by a spring tine coulters on the same trailing arm with interchangeable points and band-sowing boots.

Alternatively, a flat trash-cutting disc or a twin tine kit can replace

the leading tine and there is a twin-tine coulters for single-line sowing in wet, sticky soils.

Seed covering is by paddle tines and a levelling harrow; paddle tines and press wheels; a two-row levelling harrow; or press wheels followed by a levelling harrow. (For more, see On Farm Opinion on p54)

Cross Slot

The trailed Cross Slot drill deploys two rows of Baker inverted 'T' coulters, each located alongside a notched disc, with liquid fertiliser placement where available being delivered from the wing section opposite the seed outlet.

This combination is mounted

All Claydon Hybrids feature the OptiTill set-up of a leading tine, followed by a spring tine coulters and band-sowing boots.



on parallel linkage with hydraulic cylinder lift-lower also providing damage protection and downforce.

A pair of close-coupled angled press wheels closes and firms the slot while also providing depth control.

Wing folding on 4m models and wider enables the drill to travel on its on mid-mounted flotation tyres.

Common to all Dale Eco-Drills are chisel tines arranged in three rows in staggered pairs.



Dale Drills Eco-Drill

The Eco-Drill comes in tractor-mounted 'S' versions and trailed 'M' format, both with a frame-mounted hopper; 'L' models with a hopper at the rear mounted directly above the field support/road transport wheels, and in 'XL' form with a seed cart carrying the coulter frame.

Common to all are chisel tines arranged in three rows in staggered pairs on parallel linkage with adjustable row spacing. Optional fertiliser placement is via the front coulter when in wide-spaced configuration.

A hydraulic cylinder on each linkage assembly provides coulter suspension and damage protection, while Dale's own serrated press wheel is shaped for seed row consolidation while also providing seeding depth control.

All trailed sizes above 3m have wing folding to 3m for travel on transport wheel assemblies.

Horsch Sprinter

The Duett double seed row wing tine coulter features on the Horsch Sprinter, protected by a coil spring mechanism providing up to 285kg of pressure.



The trailed Cross Slot drill deploys two rows of Baker inverted 'T' coulters, each located alongside a notched disc.

Horsch's PPF system dispenses fertiliser separately at the coulter below seed depth; ST versions with a frame-mounted hopper handle dry fertiliser only, while on SW models, a trailed hopper and rear-mounted coulter frame can handle dry or liquid fertiliser.

A tyre packer can be installed across the front of all versions to provide support and also seedbed consolidation when ▶

SPRINTER



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The Duett double seed row wing tine coulters features on the Horsch Sprinter.

▶ working on cultivated ground but stand post-coulter equipment comprises two rows of flexible covering tines and a choice of 650-780mm diameter packer tyres.

McConnel Seedaerator

This tractor-mounted drill can be equipped with a staggered row of flat trash-cutting discs or a soil-loosening tine and press wheel ahead of the two rows of wing tine coulters.

These come in a choice of dimensions from 60-170mm twin row, all mounted on parallel linkage and with a coil spring providing compliance and damage protection.

A soft press and depth control close-coupled on the coulters parallel linkage closes and consolidates the resulting tilth, with one or two rows of paddle tines or levelling harrow tines available as further finishing elements if required.

Micro fertiliser placement is available on the TwinTank model.

SimTech Aitchison T-Sem

A 3m 'box drill' hopper with ground-drive metering and gravity-fed coulters is a novelty in this range but all other T-Sem drills use central metering rollers and air distribution.

Common to all is a row of flat trash-cutting discs or a Pneuflex roller ahead of inverted 'T' coulters points arranged in three rows, each on its own double-coil flexible tine.

The simplicity theme continues with a chain covering harrow, which on pneumatic models can be replaced by a flexible tine packer.

Liquid or dry fertiliser placement can also be had.

Sumo DTS

There are trailed versions to 9m wide and mounted models in 'one piece' and weight-spreading toolbar-plus-front hopper configuration in the Sumo DTS range.

Straight trash-cutting discs are followed by a tine for soil ▶

The tractor-mounted Seedaerator can be equipped with a staggered row of flat trash-cutting discs or a soil-loosening tine.



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Flexible systems give discs a cutting edge

The choice for disced direct drills is far from limited, with a number of recent and forthcoming additions shaking up the market.

Just launched at SIMA 2019 (after *CPM* went to press — see April issue for details) is Kuhn's new Aurock triple-disc seed drill. It offers the capability to establish crops under cover, in minimum tillage or direct drilling conditions.

Targeting the growing conservation agriculture sector but with the versatility for wider applications, the Aurock is launched in a 6m format and will be available from this summer.

With either single or dual-metering options, it offers the versatility of managing approaches such as dual cropping or sowing one row in two with independently managed sowing depths.

The Aurock is an ISOBUS-compatible machine, available with the Kuhn CCI 1200 or CCI 50 control terminals.

Väderstad's dedicated direct drill is the Seed Hawk, although the model hasn't been available to UK growers for about four years, says Väderstad UK's Andy Gamble.

"These machines are not designed for European agriculture due to their transport width. But anyone with a Rapid already has the original Väderstad direct drill — System Disc was added later to create extra tilth in dry seasons, and the toolbar can be lifted out of play if direct drilling in good conditions."

In high trash situations, such as in cover crops, you can remove the CrossBoard and switch to the three-row kit that's now available, he adds. "The Rapid gives you the penetration and depth control needed for heavier soils, while the third axle of seed coulters allow heavy residue to pass through."

Lemken has the Solitaire drill, available in various formats, which is neither a tined nor direct drill. "But the beauty of Lemken's crop

establishment system is that it's modular — the Solitaire is designed to work in conjunction with a cultivation tool in a single pass if required," says the company's Richard Relph.

He advises those looking for minimum disturbance, or a strip-till system, to opt for Lemken's Dolomit. Available in a 3m or 4m working widths, this pre-loosener has 60cm wide wing shares that work the soil at a 35cm depth, which allows mulch seeding in a single pass, when used in conjunction with the Solitaire.

The Sky EasyDrill is specifically designed for conservation agriculture systems, with the versatility to drill direct into cover crops, stubble or cultivated land. A single-disc notched coulter, angled at just 3.5°, moves as little soil as possible, but enough to create a tilth, says Sky Agriculture. A dual metering system, split hopper and optional small-seed Prohopper offer a plethora of dual-cropping and placement options.

Horsch's Avatar is the company's dedicated conservation agriculture/direct drill. Two rows of single-disc coulters at a row spacing of 16.7cm and a clearance of 33.4cm per row cope with harvest residues and catch crops, says the company. It's available in 3-8m working widths with the standard 5000-litre double hopper or there's the Avatar 12, available with a seed wagon of up to 12,000-litre capacity for larger units.

The 750A is John Deere's well proven and popular direct drill, suitable for establishing a crop straight into cover crops. It's available in 3m, 4m and 6m working widths with an 1800 or 2300-litre hopper. With a single-disc coulter angled at 7°, the 750A can drill with minimum disturbance at depths up to 90mm, while coulter pressure can be varied up to 250kg.



Kuhn launched its new Aurock triple-disc seed drill at SIMA.



A three-row kit is available for the Väderstad Rapid.



The Sky EasyDrill is specifically designed for conservation agriculture systems.

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Tine after tine can be sublime



The Primavera is billed as a low-cost seed drill for min-till systems.

Not every tined drill is suitable for drilling direct into stubble or cover crops, nor will slot into a single-pass system. But they offer

considerable benefits in terms of cost and in conditions that simply aren't suitable for direct drilling.

Kuhn offers the Megant drill to those wedded to tines, especially on heavy or rocky soils. It's available in 4.8m, 5m, 5.6m and 6m formats, all with a 1700-litre hopper. It's not designed for direct drilling, but includes Kuhn's Quantron S electronic seed-metering system.

For tined enthusiasts, also available through Opico is Maschio's Primavera. Available in 4-6m working widths with a 1500 or 1700-litre hopper, it's billed as a low-cost seed drill for min-till systems. Four rows of tined coulters are designed to work in trashy or stony conditions.



The Megant drill is suitable for heavy or rocky soils.

► loosening and to form a drainage channel, with auto reset protection and up to 250mm working depth.

Rigid wing tine coulters follow, sowing in a 50mm band or 35mm line, from seed boots each mounted on a trailing, pivot-mounted arm.

Hydraulic cylinders on parallel linkage provide coulters suspension and obstruction protection, while a pair of serrated seed

Straight trash-cutting discs on the DTS are followed by a tine for soil loosening and to form a drainage channel

covering discs followed by a foam-filled rubber tyre combine consolidation with depth control.

Fertiliser placement puts nutrients into the root zone from the seed coulters. ■



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