

“ The future viability of the agricultural sector will depend on growers embracing more environmentally and financially sustainable crop production systems. ”

Soil preservation dictates choice

Machinery Cultivators

As the demand grows for a less invasive approach to groundwork, machinery manufacturers have adapted their offerings. *CPM* takes a look at the latest innovation in cultivator design.

By Charlotte Cunningham

Some prefer deep and slow, while others favour shallow and fast, but as agriculture continues to come under pressure to do more to protect the environment and soil health, there's arguably been a pretty seismic shift towards reduced tillage systems in recent years.

As a result, many manufacturers have had a rethink on the design of their cultivation equipment to incorporate this higher demand for a gentler approach.

To get a better feel for what's on the market right now, *CPM* takes a look at what's new in the world of cultivators.

Kuhn

Kuhn has recently extended its range of independent disc stubble cultivators with the addition of the high capacity Optimiser L.

Available in 9m and 12m working widths, the Optimiser L is designed for high quality shallow cultivation at operating speeds of 13 to 18km/h.

With a working depth range from 3cm to 10cm, it's sufficiently versatile to fulfil a range of roles including enhanced crop residue management, stale seedbed creation and fine seedbed preparation, says Kuhn.

Two rows of 510mm diameter discs operate with high rotation speeds and are set at 16° horizontal and 6° vertical for optimum tilth creation.

Discs are available with small notches — for shallow cultivation — or large notches, for deeper soil penetration, and are mounted individually on support arms with each having four integral polyurethane elastomeric blocks to provide protection and depth control.

Each disc has a single maintenance-free

bearing on the outer side, which — along with an underframe clearance of 55cm — ensures clear flow of residues through the machine and prevents disruptions due to jamming.

Working depth on the Optimiser L is hydraulically assisted, allowing simple and accurate adjustments to be made, says the firm. This is maintained across the full width of the machine through hydraulically controlled pressure on the extension cylinders, otherwise known as Kuhn's Steady Control system.

The Optimiser L is fitted with the firm's Double-U self-cleaning and anti-clogging roller, designed to provide optimum soil tamping. By turning on the roller at the headlands, the machine maintains stability and minimises risk of soil compaction in these areas, says Kuhn.

Machines fold into a compact transport position through a four-step process, ▶

Kuhn has recently extended its range of independent disc stubble cultivators with the addition of the high capacity Optimiser L.



Virtual open day puts machinery's role in soil health in the spotlight

As the COVID-19 pandemic continues to limit social interaction, Claydon turned to the virtual world recently to keep growers up to date with the latest cultivation and soil-care advice for a sustainable future, as well as issuing viewers with information on the benefits of its Opti-Till system.

"The future viability of the agricultural sector will depend on growers embracing more environmentally and financially sustainable crop production systems," emphasised Jeff Claydon at the event.

"After a season of very erratic weather, farmers have been in reflective mood as many who relied on conventional or min-till methods were often unable to establish their planned area of autumn- and spring-sown crops.

"To avoid being in that position again, many are reconsidering their approach and looking to adopt

a more efficient, resilient system which reduces the weather-related, agronomic, environmental, and financial risks involved in crop production."

Jeff believes that conventional full cultivations and min-till systems often over-work the soil and destroy its structure, with an adverse impact on worm populations and activity. "This reduces the soil's ability to drain water away in wet weather and increases moisture loss in dry conditions.

"Starving the crop's roots of essential air and nutrients also reduces yield potential and increases the cost per tonne of production, while the risks from flooding and soil erosion are substantially higher.

"Similarly, min-till systems and disc-type direct drills can create soils which drain slowly, resulting in crops with poor rooting structures and low yield potential."

As a solution, Claydon believes its Opti-Till

system does just enough cultivation in the seeding and rooting zone to provide the crop with the ideal growing environment, give it the strongest possible start and produce plants with strong rooting structures. "The leading tine, which is adjustable to operate from 0-150mm depth, lifts and aerates the soil whilst creating a drainage tract and space for roots to develop," says Jeff. "The separate seeding tine then places seed within a band, batter boards cover it over and the following harrow levels the surface.

"On the Claydon farm we've seen huge benefits from using the Opti-Till System, the most important being the ability of the farm to produce higher-yielding crops more cost effectively and more profitably, even in a season such as this when the weather has been as extreme as I have seen in 52 years on the farm."



McConnel has enhanced its Shakaerator subsoiler leg design with a new Pin-Point system.

▶ activated by a mode switch on the control panel that also includes an operating depth indicator and an extension position guide.

Sumo

Re-released last year was Sumo's Mixidisc with the Mixidisc / S.

According to the firm, the machine is designed for high-speed stubble cultivation, post-harvest, to quickly incorporate much larger volumes of crop residues, creating a micro-till in the soil for fast germination of volunteers and weed seeds — perfect for forming a stale seedbed.

In terms of the nuts and bolts, the Mixidisc / S has a twin row of independently mounted 50.8cm discs, designed to provide the ultimate shallow tillage solution, believes Sumo. "The suspended design of the discs provides accurate contour following and depth control," says Mark Curtis, general manager at Sumo UK. "A row of sprung levelling paddles, designed to carry soil and even out the peaks and troughs, follows the disc and Sumo's proven Multipacka leaves the surface level and evenly consolidated.

"Working faster and shallower minimises fuel and labour costs and creates a more supported soil structure."

Sumo's new Vaxio high-speed cultivator also made its debut at LAMMA this year.

The 6m machine combines surface cultivation, loosening, levelling and ▶

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Cultivators



New from Horsch is the Joker CT and RT disc harrows, designed for stubble cultivation and seedbed preparation.

► consolidation, all in one pass, starting with a twin row of concave discs followed by two staggered rows of spring tines working to 250mm, capable of incorporating large amounts of trash. Hydraulic paddles then level the soil and a Multipacka roller creates a weather-proof finish.

Väderstad

In vogue from Väderstad is its Carrier XL 425-625, fitted with CrossCutter Disc, which made an appearance at LAMMA earlier this year.

The Carrier XL 425-625 is a trailed disc

cultivator, available in working widths between 4.25 to 6.25m and can be fitted with 510 or 610mm discs, with adjustable disc angles.

According to Väderstad, the sizes of the discs make the Carrier XL 425-625 well suited for deeper cultivation, incorporating large amounts of crop residues or breaking up pasture, and a wide range of front tools can be added to increase the versatility of the machine.

"The adjustable MultiSet disc hubs allow the disc angle to be set to one of three positions between 11° and 17°," explains

Andrew Gamble, marketing manager at Väderstad. "This enables the disc aggressiveness to be adjusted to fit different working depths.

"This means perfect slicing can be achieved during shallow cultivation, and a good penetration can be ensured at a greater working depth."

The maximum working depth is set on the machine, while operational depth settings are carried out hydraulically from the cab.

The Carrier XL design allows for the transport wheels to be set down in the field, which makes the disc cultivator very manoeuvrable.

On headlands, the machine can be turned on either the packer or the wheels. The wheels can be lowered in damp areas or when shallower cultivation is required. By raising up the frame it's easy to back into corners, allowing the whole field to be cultivated, notes Andrew.

To be able to match the working results to the conditions in the field, Carrier XL 625 is equipped with hydraulically adjustable wing pressure.

"This ensures that the machine gives the same cultivation effect across the entire working width," adds Andrew.

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Re-released last year was Sumo's Mixidisc with the Mixidisc / S.

McConnel

Where a more robust approach is needed, McConnel has enhanced its Shakaerator subsoiler leg design with a new Pin-Point system that includes a quick-attach shin, new point with secure locking and additional wearing metal.

According to McConnel, the Shakaerator shank remains the same but now includes two additional locking lugs that enable the shin to be fitted without tools. The leading edge of the shin has also been redesigned with a sharper face to reduce surface disturbance and additional wearing metal has been added to the bottom of the shin to protect the shank and extend its working life.

The new point design now features a knock-through Lock-Pin that quickly secures the point to the shank and retains the shin in place. Additional wearing metal has also been added to the nose and wings of the new point

for extended wear rates.

A choice of wide delta and standard Euro points are available to allow operators to tailor their machine for peak performance in deep or shallow soil. For a wider heave and greater soil movement at shallower depths, the 250mm wide delta point can be fitted.

"Pin-Point represents a major development over the existing Shakaerator shank system," says McConnel marketing manager, Wayne Brown. "We've improved on this system which now provides improved performance and a longer wear life".

All new Shakaerator and Discaerator builds now come with the Pin-Point leg as standard and retro-fitting kits are available for all older Shakaerator and Discaerator models.

Horsch

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As the COVID-19 pandemic continues to limit social interaction, Claydon turned to the virtual world recently to keep growers up to date with the latest cultivation and soil-care advice.

► and seedbed preparation.

Available as the mounted CT model with working width from 3m to 6m, or as the trailed RT model with working widths from 5m to 12m, the Joker was seen for the first time at last year's Agritechnica.

The discs are serrated for aggressive working and a good penetration of the soil, and their position has been optimised improve working quality. They are arranged in pairs on the 40cm wide suspension, providing a large clearance for harvest residues and are equipped with a maintenance-free, well-proven and solid bearing, says Horsch.

The new Joker RT features Horsch's DiscSystem, with 52cm discs as before, but their arrangement has been improved and the soil adaption and stone protection of the Joker RT is carried out via the rubber bearing.

According to Horsch, the flexible machine can be used on stubble and ploughed land thanks to a hydraulically operated levelling board. The board comprises a row of levelling paddles at the leading edge of the RT's frame.

Customers can choose additional tools in front of the discs, like a KnifeRoller or a CrossBar and the Joker RT can now be equipped with a wide range of single or double packers. The transport chassis is located behind the packer and allows for a safe road transport. The design guarantees a smooth running of the machine in the field, too.

The compact Joker CT also has 52cm discs for more intensive working in residues like straw and volunteer crops. The redesigned frame hasn't increased the weight, allowing a 90hp tractor to easily handle the 3m version and offers improved visibility of the working area, says Horsch.

Six different packers are available for the Joker CT and in addition to the RollFlex Packer (54cm diameter), there's also a tyre packer (65 cm diameter), RollCut packer (60cm diameter), FarmFlex packer (55 cm diameter), SteelDisc packer (58 cm diameter) and a cage drum roller (54 cm diameter) available.

Depth adjustment is made via spacer clips or via an optional hydraulic depth adjustment. A new preparation kit for the liquid manure attachment comprises a distributor support and liquid manure outlets. Joker 3 and 3.5 CT can still be combined with the deep loosening Mono TG. The latter with its LD (low disturbance) points is used for deep loosening up to 35cm without transporting rough soil to the surface. ■



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