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Drill demo

# Drills on demo...

**With increasing numbers of its customers reducing cultivations and even moving fully to direct drilling, Hutchinsons held a March drill demo day in East Yorkshire for multiple manufacturers to show what their machines could do in different cover crop residues. *CPM* was there.**

*By Martin Rickatson*

**There's nothing like a wet demo day to draw the crowds. While there might be land work to do, it will be too damp to do it, and so arable folk will generally be forced to choose between a dull day in the office, sometime in the workshop — or donning the waterproofs to see just how well kit can cope in sodden soils.**

To be fair, it wasn't raining on the day of Hutchinsons' East Yorkshire direct drill demonstration during early March, but it had rained plenty the day before — more than enough to make most fieldwork impossible. On the light land of the chosen demo site, though, it was still possible to put drills on the field and in the ground, and so it was that the demo went ahead.

While the cost of shiny new equipment continues to climb, the potential offered by direct/no-till crops establishment systems to cut costs by reducing fuel, steel and labour inputs, and benefit from soil's natural restructuring capacity, particularly when allied to the deep rooting of cover crop mixes, continues to attract interest. And with recent global events having caused fuel prices to climb steeply, minds have unarguably been concentrated on further reducing input costs, even if investment in a new drill may be required to achieve them

## Well supported

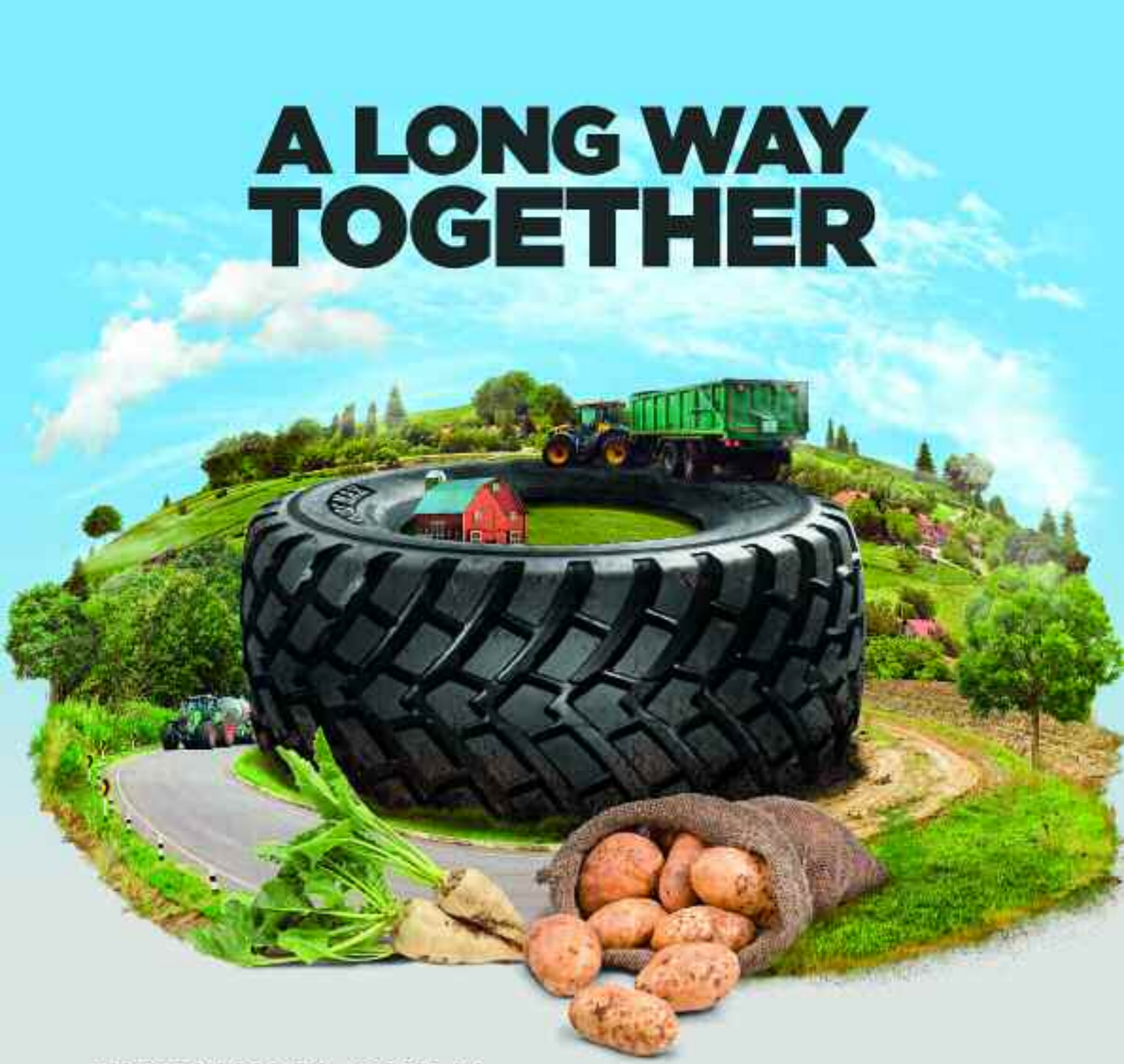
To this end, the demonstration was particularly well-timed and very well-supported, attracting a dozen manufacturers to demonstrate direct drills through their local dealers. A crowd well into three figures watched the machines drill into sprayed-off cover crop mixes on some wet, light soil, allowing assessment of differences in soil structure, drilling ease, seedbed quality and seed establishment from each drilling system.

Among the most familiar machines present was Claydon's Hybrid, with its leading opener and following coulter arrangement. Shown in 3m mounted format, its design is said to meet the often-heard need for a farm to ideally have two drills depending on soil conditions by being modular in opener design. While a leading tine is the standard opener, it's also possible to fit a leading single- or double-disc opener in place of this. Likewise, there are single or twine seeding tine options and, at the rear, board, press wheel or cage wheel consolidation options, all with covering tines.

Sumo was another that chose to show a compact 3m mounted version of one if its direct drills, the DTS, or Deep Tine Seeder. The machine features leading opener discs followed by deep-loosening tines to alleviate compaction below the seeding zone. An opener boot makes the seed furrow, while covering discs place loose soil over the seed, and a foam-filled press wheel, which also governs drilling depth, provides consolidation. Again, there's also a fertiliser option. ▸

*Sumo's Deep Tine Seeder features leading opener discs followed by deep loosening tines to alleviate compaction below the seeding zone.*

# A LONG WAY TOGETHER



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*Claydon's Hybrid can be configured in multiple ways is the standard opener, with leading tine or single/double disc openers, and single or twine seeding tine options.*

*A high-output tine drill, Amazone's Cayena is reckoned particularly suited to hard, dry soils, its narrow-profile TineTeC HD coulters are arranged across three rows.*

▸ Mzuri's Pro-Til, shown in 3T 3m trailed configuration, works on similar principles, but has some key differences. Optional front disc openers are designed to slice through surface residue, while auto-reset leading tines clean the sowing strip of surface trash. As with the Claydon, it's possible to specify a fertiliser placement option. Staggered wheels then reconsolidate the tilled strips before the individually hydraulically-pressured seed depth wheels with individual depth adjustment place the seed. A hydraulically-operated adjustable pressure harrow follows up.

## Long established

Like most of the disc coulter-based drills, John Deere's long-established 750A remains available only as a trailed machine. Its single-disc openers are 457mm units angled at seven degrees. Smooth-sided gauge wheels aid seed placement precision, while semi-pneumatic press wheels consolidate the soil around the seed, and a following angled closing wheel closes the seed slot. The drill also boasts uniform depth control — active hydraulic down pressure of up to 250kg/seeding unit is claimed to aid contour-following.

Again available only in trailed format, the

*On John Deere's 750A, single-disc openers are 457mm units angled at seven degrees, while smooth sided gauge wheels aid seed placement precision, and semi-pneumatic press wheels consolidate.*

Avatar from Horsch features 16.7cm-spaced single-disc coulters arranged over two rows, with 33.4cm clearance per row, a format claimed to particularly suit high residue/post cover crop situations. Coulter pressure is up to 350kg/row, and each coulter has individual depth control. Closing wheels are adjustable to suit different soil types and conditions.

Amazone chose to demonstrate a high-output tine drill, a 6m model of its trailed Cayena. Claimed to be particularly suited to hard, dry soils, its narrow-profile TineTeC HD coulters, arranged across three rows, are reckoned to pull into the ground

## Compromise required in most situations

Picking the ideal direct drill that's sufficiently flexible for varying soil types, moisture levels, trash presence and other factors is a minefield, acknowledged Dick Neale, Hutchinson's technical manager.

"You almost need different tine and disc set-ups for autumn creation of stale seedbeds and establishment of cover crops and, later on, the lower disturbance system required for planting the crop itself.

"Some drills, like the Claydon tine drill, can be adapted with disc openers. At perhaps £5,000 or so extra, specifying a drill that way, with an adaption option, is much cheaper than buying a second drill.

"With a damp or wet soil surface, some surface movement is good, to get air into the profile — it's no good direct drilling with minimal movement into an anaerobic environment, a sad-looking crop will result. Surface tilth is a compromise between good grassweed control and having a vigorous crop.

"Diesel costs have become a real issue, and are another reason for looking at reducing cultivations. But raking and rolling are important parts of the direct drilling process, and shouldn't be missed — they use little fuel."

*Sky's EasyDrill HD features a 'Tandem' seeding arrangement, said to aid depth stability when large stones and clods are encountered.*

while creating minimal soil disturbance. Further benefits are said to include a low power requirement — a minimum 136hp is reckoned sufficient for a 6m model — and minimal coulter wear.

While most of the smaller mounted direct drills are of the tine coulter type, Weaving offers its GD double-disc coulter machines right down to 3m mounted sizes. At Hutchinson's demo day, however, it was the trailed 6m GD6001T it chose to demonstrate. GD machines use a double-disc coulter design, for a claimed combination of low draught requirement and long service life. The leading outer disc slices through trash and cuts into the soil surface, with the smaller inner disc creating an opening for the seed placement, before the soil is firmed back into place.

Handled in the UK by Opico, the range of Sky direct drills from France includes the EasyDrill HD. Its 'Tandem' seeding arrangement, said to aid depth stability ▶

## Getting cover crops right

"Lowest possible surface disturbance is important when you have a significant grassweed problem, or a weed problem in general," emphasised Dick Neale.

"But there has to be compromise between grassweed control and having a really good commercial crop. Getting air into the soil surface is also important, and the reason why a total lack of surface disturbance from a direct drill is not necessarily a good thing.

"Unfortunately it's too wet at this event to allow visitors to properly judge drill performance, and in normal circumstances this field would be left a week to dry. But visitors have still had a good opportunity to compare drill features, and also assess different conditions left behind by the different cover crop mixes that had been sown across this site. What I'm keen to do is help those who have had bad early experiences with cover crops, which I think have an important role in soil management.

"Most first ventures into cover crops are usually based on an oat species plus something like radish or vetch. These are cheap, reliable, cover the ground, look impressive and condition the soil underneath beautifully.

"However, almost all growers comment on how wet they can leave the ground underneath, and many give up on these covers as they see others drilling where their cover-cropped ground remains wet. But this is what oats do — they draw water up and with quite a bit of soil cover the surface retains moisture. When the cover is sprayed off, there's a lack of air movement across the surface as a lot of canopy remains."

In addition to spending his time in a soil pit, pointing out the impacts of cover crops and reduced cultivations on structure, Dick also demonstrated the role soil management can play in cover crop growth. Sample tubs had been filled last April with identical compost and Maxicover seed mixes, but one compost had been in a wormery for two years.

"Both tubs were sown with the same seed mixes, right down to individual seed numbers," he explained.

"The difference between them is that the compost in one had come from a wormery, and the worms have created a completely different microbiology in the compost. This has selected for the soil microbiology conducive to legumes but not brassicas. We can see the same in certain field areas.

"We selected seed mixes with brassicas in because when we did the original soil assessment the structure was good and we wanted to maintain it, but our key target was to maximise natural soil nitrogen, so we went for a legume-rich cover crop seed mix. However, we found that the soil here will grow brassicas, linseed, phacelia fine, but all of the legumes failed.

"It was not the legume seed that failed in itself but, I believe, the fact that the soil is bacterially-dominated, a situation found in many UK arable soils and one we've created through the use of ammonium nitrate, urea, residual herbicides, and fungicides," he commented.

*Tine and disc drills both have their place, and many farms would benefit from having one of each according to the season – or an adaptable machine, says Dick Neale.*

"This selects for certain weed species, and that's why we have fields with bad blackgrass and other problem weeds. So on top of managing structure and maximising natural nitrogen availability in the soil, we should target changing the balance of bacteria and fungi.

"Some of that can be done by taking advice from your agronomist before you jump into selecting a cover crop mix. Bear in mind the soil aggregate mix; soil nutrient fixation, storage and release; the need for adjusting factors, such as soil type stabilisation or the C:N ratio; the duration of cover planned; your exit strategy from it; and the following crop planned."

*The Horsch Avatar features 16.7cm-spaced single disc coulters arranged over two rows, with 33.4cm clearance per row, to handle high trash levels.*

▸ when large stones and clods are encountered, consists of a rubber front depth wheel connected to two rear metal press wheels which pivot bogie-fashion. The seeding disc is mounted between the front and rear wheels so that its depth is controlled by the wheels.

When drilling into cover crops, the front press wheel compress plant material to allow the disc coulter to cut through it and place the seed. The hardened discs are set at a 3.5-degree angle, which the firm says minimises soil disturbance, power requirement and subsequent weed emergence. Running alongside the disc and keeping it clean is Sky's carbide-tipped monobloc skim coulter, which is tungsten carbide-faced and cleans out the seed slot in front of the seed tube.

Behind each disc coulter is an angled metal press wheel which works in tandem with its neighbour. These press the soil sideways and downwards to close the seed slot and cover the seed. Weight distribution between the rear press wheels and front press roller can be altered to place maximum pressure on the rear in dry conditions to consolidate the seedbed and ensure maximum soil to seed contact. In wetter conditions weight can be transferred to the front to keep the drilling running clean.

*While most smaller mounted direct drills are of the tine coulter type, Weaving offers its GD double disc coulter machines right down to 3m mounted sizes.*

The Sicura SSP, which Yorkshire firm Ryetec imports from Italian manufacturer Ma/Ag, features floating disc coulters with individual pressure adjustment and depth control, each floating on a parallel linkage, an arrangement said to aid uniform seed placement across the full width on undulating land. Serrated opener discs aid drainage below the seed depth, promoting root development and discouraging slugs, claims the firm.

Coulters are spaced in two alternate rows at the front and rear of the frame for effective trash flow. Coulter pressures are individually adjustable up to a maximum 250kg. Rubber concave press wheels close the seed slots, and also control drilling depth, so once desired seed depth is achieved the full coulter pressure is then transferred to the rear rubber press wheel. As this has hard edges and a soft centre, it's said to press in the soil to both sides of the seed. Mounted models are also available. ■

*Ma/Ag's Sicura SSP, from Ryetec, features floating disc coulters with individual pressure adjustment and depth control, each floating on a parallel linkage.*