

Farm test-bed for strip-till evolution



INNOVATION INSIGHT

Hundreds of growers in 22 countries have bought a Claydon drill over the past ten years. CPM visits the Suffolk farm where it all began.

By Ted Fleetwood

The lines of Claydon drills in their distinctive yellow livery distinguish the farm in the village of Wickhambrook, Suffolk, from any other arable unit. But it's these 400ha that inspired third generation farmer Jeff Claydon to pioneer a different approach to drilling, and remains an essential part of the fabric of the manufacturing side of the family business.

"Our farm is our shop window," he says. "The majority of farmers who visit the farm feel inspired and many buy a drill. We wouldn't be where we are today without the 12 years experience we've gained from our own land and through working with other farmers.

Result in the field

Indeed, Jeff Claydon's just completed a tour with some prospective customers. They've seen not only the drills, in their various stages of construction in the workshop, but also the result in the field — band-sown lines of wheat and oilseed rape at 300mm centres drilled into the Hanslope series clay — a system used for the past 12 years.

The concept-in-action they've come to see is the Claydon system of strip tillage — cultivating just a small channel around the seed you're sowing, rather than the entire field.

"In 2002, wheat was at £60/t, but we were spending £200/ha ploughing and knocking our clays into a seedbed. The trouble with direct drilling with a disc drill is that it leaves the top 100mm too tight —

“I wanted to improve on the subsoiler seeder, but keep it simple.”

drainage is too slow and crops don't establish. That's how I came to the concept of using a tine.”

Although always keen on farming, Jeff Claydon trained as an engineer from the age of 16. "Father told me farming's not profitable, so I'd need to do something else to earn a living.”

So he decided to combine the two. "It was the late 1970s. There were huge leaps forward in crop technology, but no one was actually measuring the effect in the field.” He developed the Yield-o-meter — a simple electronic device attached to the combine that measured yield on the move — and the engineering arm of the Claydon business was born.

"We worked with Claas, whose UK base was nearby, and supplied well over 1000 Yield-o-meters to them during the 1980s and early '90s. They then took on the development of yield meters in house, and unfortunately that left a bit of a hole.” ▶



Jeff Claydon with the drill that bears his name.

► Then in 1995, he took up his next venture — the Claydon Furrow Cracker that was imported from the continent. “We’d always had a problem ploughing our heavy clay — heavy presses were not a good idea, but slicing clods with a blade worked well. It was a nice, simple piece of kit that attached to the plough and did the job. It arrived painted yellow, and Claydon kit has been yellow ever since.”

But in 2000, wheat prices dropped and growers across the UK started to move to min till. Things came to a head on the family farm in autumn 2001, recalls Jeff Claydon. “We took on some land that had been in set aside, and was as tough as anything — we made 17 passes to get a seedbed. The zenith moment was when we finally got a decent tilth and drilled,

then looked over the hedge to see our neighbour just make one pass with a subsoiler seeder.

“Our crop emerged beautifully, but next door’s was a mess — the only plants that came were in the lines where the subsoiler tines had been, and that didn’t appear out of the stubble until Oct. We knew we’d spent far too much establishing the crop, but reckoned it was the bees’ knees.”

But in spring, it was a totally different story, he recalls. “Our crop had L-shaped roots and was stressed, but the subsoiled crop had beautiful, straight tap roots — there were fewer plants, but every one was three times stronger. It was a sharp lesson for us — you can’t bully a seedbed out of the soil.”

Keeping it simple

This was the inspiration behind the Claydon V-Drill. “I wanted to improve on the subsoiler seeder, but keep it simple. I hit upon the idea of having two tines following each other at 300mm centres — the first breaks the soil in a narrow channel, down to a depth of just 150mm. The second is an A-share that skims the straw away and places the seed into clean soil in a 150mm-wide band.”

This patented design remains the core concept on the drills to this day. “A following press wheel firmed the soil in each channel. We developed a prototype and tried it with our OSR and it worked fantastically. We only moved as much soil

as we needed creating tilth, not clods, and keeping the structure in between the tines, so that the land supported machinery much better. But in the channels themselves, you get a marvellous tilth and a superb tap root. Our average OSR yield leapt from 2.5t/ha to over 4t/ha.”

They also found the crop emerged earlier — in as little as 24 hours. “Then my brother, Frank, who does all the drilling, suggested we try wheat. So we got brave and set about drilling all the first wheats direct into the OSR stubble. Again, the crop was away quickly and we had beautiful, strong plants. The rows looked odd at 300mm centres in 180mm-wide bands, but it was a phenomenal crop.”

At this stage, the plough was still used for second wheats. “But it broke in the last field, leaving 6ha uncultivated. So we ►

One of the original V-Drills, with tines at 300mm spacings attached to one fixed frame.



Claydon system suits Essex clays

In autumn 2013, Billy Robinson took delivery of his sixth Claydon drill. Based at Hockley in Essex, he farms 526ha with his nephew, Chris Every, spread over seven different units up to 22 miles apart.

“Since we bought our first V-Drill in 2006, we haven’t drilled with anything else,” he maintains. “They’re simple, strong and have a very good residual value, and they do a good job across all of our crops.”

The farm currently has a 6m and a 4m Hybrid, with all crops direct-drilled into the Grade 3 and 4 medium clay and marshland soils. “We had a John Deere Mulch Tiller before. But we were finding it was leaving the soil too compacted — the disc made a slot that just filled with water.”

He saw the V-Drill demonstrated at a Young Farmers’ show and was drawn by what he considered to be a decent seedbed from a

low-cost, low-labour system. “With just myself and my nephew, mainly, and with so many farms on the urban fringe, we need more than one drill and an ability to get the job done in one pass,” he explains.

He sets the front tines to a depth of 100mm for cereals and 150mm for OSR. “You don’t want to go too deep — that’s important. After you’ve drilled a bit, it’s vital to look behind to make sure it’s doing a good job.”

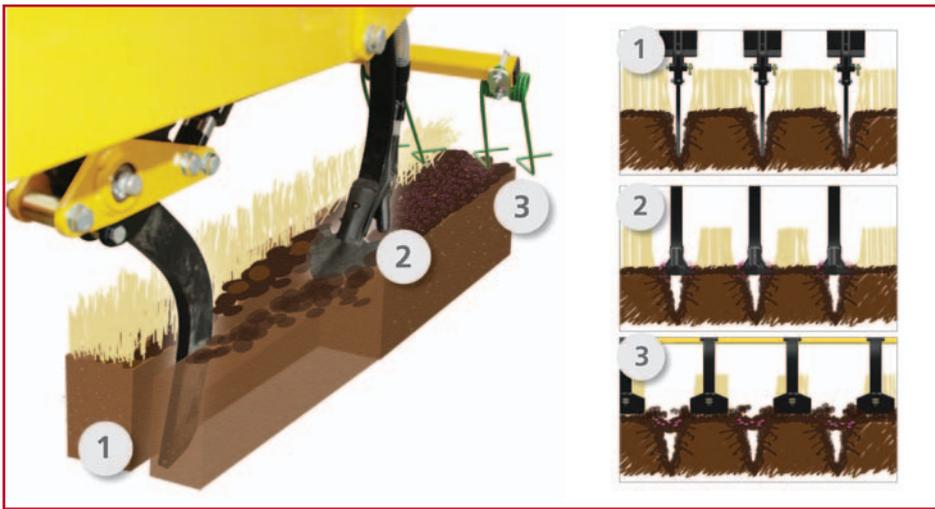
He always uses two of the rear toolbar options, switching between batterboards, press wheels and harrows, followed by a second set of harrows, depending on field conditions. “The drill also leaves the ground nice and firm so the sprayer travels better in the autumn,” he adds.

“You do have to be careful what conditions you go in, although the wet-weather kit helped in 2012. Having said that, we drilled beans in Dec this season. We used worn tines and the



Billy Robinson takes care not to let the tines too deep, and checks behind to make sure the drill’s doing a good job.

bean kit that places the seed two inches above the bottom of the channel so it doesn’t drown out. It was wet, but the beans are now up and looking good,” reports Billy Robinson.



The front tine (1) creates a deep-drainage tract down to 150mm depth that lifts the soil for the A-share (2) to plant the seed in a 150mm band. A choice of batterboards, harrows or press wheels at the back (3) cover the seeds.

► decided to use this as an in-field trial — some was ploughed and drilled with a tine drill; some was drilled into the ploughed land with the V-Drill; and the final 6ha was direct-drilled with the V-Drill into chopped straw wheat stubble.”

The ploughed land established well, with the only difference being fewer wheel marks where the V-Drill had been. “But the direct-drilled bit looked a disaster, so we thought we’d hit the limitations of the concept. By June, however, the crop looked no different across the field, and the direct-drilled part yielded the same as the rest — around 10t/ha. But of course,

it was costing £200/ha less, and that really focused our minds.”

Interest was gathering pace outside the farm, and a number of growers had spotted the farm’s distinctive band-sown crops. Local agronomy business Agrivice bought two drills for OSR contract-work, and nine further drills were manufactured and sold in 2003. “In 2004 we sold 40 drills, including one to Latvia. But this was used on stoney ground and we realised a potential limitation. Meanwhile, in the UK, autumn 2004 was a difficult one, and trash clearance was an issue on the V-Drill.”

So the Claydon SR (Stone Release)

evolved. The main improvements were stone protection and staggered tines, so the 300mm row spacings were retained, but there was 600mm for trash clearance — essential for drilling into stubble.

“We now had a drill that could tackle anything — even two-foot high set aside. But it was heavy, and limited to a 4m width.”

Jeff Claydon was keen to stay with the mounted-drill approach. So the Hybrid, introduced in 2009, has optional stone protection and the same 600mm trash clearance from staggered tines. A much lighter machine, it’s available in a 3m, single-frame version. But there’s also larger 4m, 4.8m and 6m widths which fold for transport to 2.85m.

The folding frames allow flexibility to follow the ground contours, but it’s essentially a fixed-frame machine, he points out. “The A-share is designed to grade the soil level and place the seed at an even depth. We’ve resisted any move to have the seeder units independently mounted. The drill brings the soil to the seed, rather than the other way round, so over time, you get much more level seedbeds.

“But an independently mounted unit tends to be pushed out of vertical alignment by bumps in a field, so you end up with a crop drilled at varying depths, and you’re still left with the bumps.”

Another development was having batterboards at the back, instead of press wheels. “I came up with the idea when skiing,” recalls Jeff Claydon. “Soil and seed tend to stick to the press wheels in freshly moved damp soil, and you can suffer punctures. The boards are offset between the rows so that they skim the

Trash clearance was improved with the SR drill — a two-frame, heavier design with Bellota tines with spring break-back in front of Goliath S-shaped tines.



The twin-tine kit comprises two low-disturbance tines which follow the main breaker tine in sequence, and can be retro-fitted.

and testing of a twin-tine kit for wet weather. These two low-disturbance tines, offset by 75mm, follow the main breaker tine in place of the A-share, and can be retro-fitted.

The challenging autumn of 2012

One of the wettest autumns on record worked against growers, admits Jeff Claydon. “You need warm soils to help the crop get away, so in a normal year, it works best if you get drilled early — before the end of Sept. If it subsequently turns wet, the soil will be cold, and that happened much earlier than normal in 2012.”

On the Claydon’s farm, the drill directly followed the combine, and OSR achieved an average 3.75t/ha, with winter wheat at 9.5t/ha. 30ha failed, but was drilled again in the spring. “It’s the other way round for spring drilling — you need to wait for soils to warm up. We drilled spring wheat on 28 April and still achieved 7t/ha. Bad blackgrass fields are also best left till spring, unless you’re confident the soil temperature is still high enough for late autumn drilling and you can produce a very strong competitive crop to compete against the weed.”

The wet conditions prompted the development



The distinctive, wide spacing of a strip-tilled wheat – the soil in between the rows is left undisturbed which aids travelling and preserves natural structure.

- ▶ soil back over the seed rows, filling wheel tracks, leaving a level, even surface across the width.”

The company now has 40 employees, selling over 200 machines every year, to 22 different countries, including Chile and New Zealand. The appeal is the drill’s simplicity, he claims. “This comes with a low price tag, considering the savings that are made. The company is growing rapidly as more and more farmers in the UK and now across Europe have replicated the results we’ve been getting.”

Recently introduced is the Claydon straw harrow, available in 3m, 7.5m and 15m widths. “This is brilliant at sorting out the straw when the combining’s gone slightly wrong. It doesn’t appear to do much but once you start using it, you realise it’s the icing on the cake for direct drilling or min till.”

Pulled at 30° to the tramlines as soon as the combine leaves the field, this distributes straw and chaff and knocks around slug eggs, he explains. It also encourages a chit and disturbs weed

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seeds and volunteer cotyledons ahead of achieving a stale seedbed before drilling.

Firmer surface

The heavy Claydon rolls, introduced at Cereals 2013 and available in 6.3m, 8.3m and 12.3m widths, complete the package, he says. “The drill achieves a fine enough seedbed, but it’s often too damp for using press wheels, so we recommend rolling when it’s dry enough, leaving a firmer surface to help residual chemicals work.”

Fertiliser placement has been introduced with a dual-hopper version of the Hybrid, or through a front-mounted liquid or granular tank. “We’re now looking at trailed drills as well,” he admits. “There’s demand from European and larger farmers, and this would mean we could go up to 8m widths. But my real target is to achieve 12t/ha consistently on the farm at home at a third of the establishment cost we used to spend.”

So what’s the next innovation that’ll achieve that? For once Jeff Claydon falls silent, and all you’re left with is the warm smile and a mischievous twinkle — if he has it, it’ll presumably be seen first on the fields at Wickhambrook, before it’s introduced through the pages of *CPM*. ■



The batterboards are offset so that they skim the soil back over the seed rows, leaving a level, even surface across the width.

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