



“ We can do so much more in one pass. ”

Satisfaction comes from experience

Machinery On Farm Opinion

After four decades of direct-drilling one Surrey grower believes he's finally found the ideal machine to get best results from his wide-ranging soil types and varied cropping. CPM paid him a visit.

By Nick Fone

While no-till might be a current buzz-word, for some it's no fad. After 40 years of direct-drilling, you'd think that Surrey grower Roger Colebrook would know all there is to glean about no-till crop establishment. Far from it — he believes there's still plenty to learn about soil and crop management under an almost tillage-free regime.

“It might sound obvious but direct-drilling is all about the soil. The problem is that no two fields are the same and on our land we have every possible soil type from red clays with flint to greensand and gravel.

“That makes it pretty challenging to find the right tools for the job. After four decades I think we're getting closer to finding the ideal combination of equipment — all centered around our new Sky EasyDrill.”

The 6m seeder arrived at Chaldon Court last spring and has since had some 1000ha pass under its frame sowing a mix of cash, cover and forage crops for the business' livestock and arable enterprises.

Its purchase was prompted by a number of factors led by a necessity for a much tighter drilling window.

Narrow window

“With the loss of metaldehyde and our target to reduce our use of insecticides and herbicides, we now need to get all our autumn cereals sown in a five or six-day slot around the second week in Oct. With contract drilling that can amount to over 400ha,” explains Roger.

“Although our 15-year-old Amazone Primera is beginning to show its age it's not ready for full retirement yet. With it moving to a back-up role we can have two 6m drills running and comfortably cover the ground.

“With its tine-type coulters and the Sky's disc openers we have the versatility to cover a range of conditions.”

So how has the direct-drilling approach evolved at Chaldon Court over the past four decades?

In the mid 1970s the Colebrook family farm was based around a small dairy herd with a small arable acreage. Over time the area grew with more rented ground and it was cereal cropping that filled the gaps. The establishment approach was a traditional plough-based regime with lots

of labour-intensive, diesel-hungry passes required to break down the heavy clay furrows into manageable seedbeds.

“Having taken on the responsibility for getting crops in the ground I could see that the system we had in place didn't have a future — we simply couldn't afford to continue with it.

“I tried using our Massey 30 drill to go direct into stubbles but it couldn't get the seed into the ground consistently and our flints just destroyed tyres. ▶



The biggest benefit in direct-drilling comes in the time savings, says Roger Colebrook, who knows he'll get the crops in the ground at the optimum time.



Up front is a small-seed/granule applicator while the main hopper has a 60:40 split and twin metering units for seed and fertiliser.

► “At the time we were using a contractor with a Bettinson drill to sow all our kale and stubble turnips for the cows. With the stubbles burnt off with Gramoxone (paraquat) it worked well so we decided to buy our own for the arable ground.”

The purchase revolutionised

crop establishment at Chaldon Court, slashing costs to a point where profit once more became a possibility and simultaneously boosting yields.

After a number of years of fine-tuning, an approach was found that would reliably result in decent establishment.

To deal with weed issues a

pressure harrow and flat roller were pulled over stubbles to generate a stale seedbed. This had the added advantage of helping counteract the Bettinson’s biggest weakness — its tendency to leave a wide-open slot. By producing a fine surface tilth, the soil behind the double-disc openers would crumble back into the slot, making it a much less attractive place for slugs to munch their way down the rows of emerging seedlings.

“When we made the switch from ploughing we immediately saw cropperformance improve and that was down to a few simple factors — we had fewer slugs, less run-off and more even germination.

“In fact, by the late ‘70s we were flying to the point where we came second in ICI’s national direct-drilling competition which looked at whole-farm performance across the entire acreage.

“Admittedly we were doing a true belt-and-braces job with fertiliser applications every 10 days and PGRs. But it proved we could outperform conventionally established crops even on our flint-strewn difficult clay ground.

“In one crop of winter barley we achieved 1480 ears/m² which resulted in our best ever yield — sadly I’ve never managed to repeat it.”

While all this success had

proved that no-till worked in the Surrey hills, it wasn’t the case across the rest of the country. Grassweed control issues, compaction and the ban on stubble burning prompted many growers to turn away from direct-drilling. At the time the arable acreage had grown once again at Chaldon Court and more output was required. Power-harrow and tine-cultivator drills followed, their flexibility providing the option to sow crops in less than ideal conditions.

Soil structure

“Moving back to more intensive cultivations we slowly saw our yields tail off, often as a result of water-logging and slug issues — much caused by tillage-induced panning and the almost complete destruction of any soil structure.

“Having gone through the 1980s and 1990s watching crop performance drop off, by the early 2000s I was convinced that we needed to return to no-till. The Bettinson had proved the concept would work but it wasn’t without its faults — particularly its tendency to leave an open, slug-friendly slot.

“We’d been in the privileged position of working with Amazone on some of their trial work with combination drills so we had a good relationship.



When working at 25-50mm what’s needed is minimal surface disturbance to stop blackgrass becoming an issue.

I'd heard about a new tine-type direct-drill and was keen to be one of the first to try it."

So when the opportunity came up to demo the German giant's new Primera, Roger leapt at the chance.

"It was the first drill to come along that offered a realistic opportunity to return to no-till. The way each knife-opener could move independently meant it could deal with our flints — rather than riding up over them, compromising seed depth, they'd just work round them.

"We were so convinced by it that we immediately put our name down for it and ended up with the 6m UK prototype."

It's that same drill that was still doing all the establishment work 15 years later at Chaldon Court — some 1000-1215ha a year with cover and forage crops.

"The Primera was exactly what we needed at the time and we saw yields return to what they had been with the Bettinson. You could go in any conditions and as fast as you liked.

"But its big weak point was that when working at 25-50mm it moved way too much soil and with blackgrass becoming an issue we needed to minimise surface disturbance."

So when it came to looking for a new drill this was a key factor for Roger. Having made the decision that the Primera needed an easier ride and that the target of getting all the autumn crops sown in a week would require more output, he set out to find another 6m drill that ▶



Disc depth adjustment is done by slackening off a nut on the front of each coulter carriage and adding or removing collars.



Serrated disc openers are carried in pairs on individual bogey-type coulter carriages with a rubber press wheel up front and smooth steel press rings at the rear.



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A ram on each wing section sets the fore-aft pitch and weight bias of the coulter carriages to suit soft or hard going.

► answered these niggles.

In the autumn of 2017 and spring the following year all makes and manner of no-till drills were trialled at Chaldon, all of them on the trickiest soils to make sure they had what it took to deal with the worst the farm could offer.

Some struggled to get a consistent, even depth while others just weren't able to deal with the wide-ranging soil types, says Roger.

"Pricing varied widely as did build quality and given that I'm expecting my drills to do a good 20-30 years' work that's pretty important. It was the Sky drill that stood out on this front.

"Effectively an updated take on the Moore Unidrill concept, I liked the way the discs could bury seed to a decent depth without digging a wide-open trench. But where it really stood apart from the

Key pointers from 40 years of no-till

- **Patience is essential** – only go drilling when the conditions are right. If it won't go in the autumn, there's always the option of spring cropping
- **With direct-drilling it's all about germination** – focus on even establishment and everything else will follow
- **Soil structure is the critical factor** – focus on improving it by increasing organic matter and rooting and workability will follow
- **Straw and muck** – pretty much everything is baled behind the combine so there's no issue with crop residue (except cover crops) and it all goes for cattle feed and bedding, returning to the land as FYM
- **Erosion** – lots of steep banks means hill-sides are always worked across the slope to minimise run-off
- **Rolling** – ring rolls achieve very little on Chaldon's direct-drilled clays. Heavy flat rolls are employed instead to close the slot and conserve moisture

competition was in its ability to sow and drill three different seeds/products at once."

Roger has been experimenting with different cover and catch crops for decades, sticking with the goal of ensuring no ground is left bare at any point. While this might not always be possible, the EasyDrill's ability to sow different species independently means seed rates can be varied according to conditions.

Versatile tool

"Being able to keep seed separate — rather than using mixes — and tweak rates to suit as well as applying slug pellets or Avadex (trillate) all make the Sky drill a really versatile tool. We can do so much more in one pass.

"After years of trying different cover crops I've pretty much settled on using oats, vetches and phacelia in different proportions according to the season. The ability to alter the ratios is particularly important because we don't want to end up with too much bulk from any particular species. The combination we've settled on doesn't compromise our take-all situation but it's vigorous and quick to establish."

Working into thick, well-established

cover crops to sow spring cereals, the EasyDrill copes well, cutting through the mat of material to place the seed into tilth at a decent depth.

The ability to quickly alter seeding depth is seen as a major plus-point — each bogey-type coulter carriage looks after a pair of openers. To adjust seed placement a locking nut is loosened and simple collars are used to vary how far the discs drop into the dirt.

Hydraulic rams set downforce by adjusting the fore/aft bias on the coulter carriages' front and rear press wheels. To date the system has worked well — there was just one day last autumn when drilling had to stop.

"We were working on the worst ground we have — extremely heavy clay with large amounts of big flints — which was baked hard after last summer's drought. It's contract farmed land that hasn't had the benefit of decades of cover cropping so it hasn't had the chance to build organic matter.

"We have similar soils in other places that we've farmed for years but because it's been looked after it can now 'self-structure' and is workable no matter what the weather's been doing."

AVACAST GR Get Back Control



Machine Key Features:

- Electronic rate control
- Fitted to rollers up to 16m
- 200L, 400L & 1200L hoppers
- High capacity hydraulic fan
- 0.5m nozzle spacings (no drift)
- Metering unit designed for Avadex
- Also apply OSR or slug pellets

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After 1000ha work — much of it in some pretty extreme, dry, hard conditions — the opener discs' scalloped serrations are beginning to show signs of wear. The ability to alter the height of the combined scraper/coulter boot means that there's the option to wear the discs right back without compromising seed placement. However Roger's not one for getting caught short and has a full set of wearing metal on the shelf in the workshop to ensure the drill can keep moving.

"Seeing the discs disappear in last autumn's horrendously harsh conditions I was nervous about just how long they'd last so I ordered up a new set.

"I was pleasantly surprised at the cost — they came in at about £70 per disc. Although on a 6m drill with 36 coulters that tots up to a fair lump of cash, if you work it out on a per ha basis it's peanuts."

On the subject of costs, Roger estimates there's a saving of at least 25-30% to be had by switching to direct-drilling when compared to the old plough-based approach. But it's not all about pounds, shillings and pence.

"Putting the potential yield benefits and environmental impact to one side, the biggest saving comes in time savings. It used to take three months of ploughing, cultivating, harrowing, drilling and rolling

to get our autumn crops in the ground — now it's just five or six days with two 6m drills and a heavy set of flat rolls.

"That means we can pick and choose when to go drilling — always in the best conditions. By sowing cereals at the optimum time we get the best possible results — this is the single biggest factor in direct-drilled crops outperforming conventionally established ones.

"By only going out when conditions are ideal we get uniform crop emergence which directly translates into even growth and ultimately a more uniform crop all the way through. I believe that has a huge impact on yields an equally importantly quality.

"But there's another less tangible benefit — when the direct-drilled crops are



The extremely high level of flint in Chaldon's red clays makes for some pretty challenging drilling conditions.

up and away nothing else ever looks as good. That provides an enormous sense of satisfaction." ■

Farm facts

Chaldon Court Farm near Caterham, Surrey

- **Farmed area:** 708ha
- **Cropping:** Winter wheat (220ha), oilseed rape (60ha), winter barley (70ha), spring barley (120ha), canary grass (30ha), spring beans (6ha), forage maize (44ha), permanent pasture (162ha) plus 57ha golf club
- **Soils:** Predominantly red clays with flint also a range from chalk and greensand to gravel and gault clay
- **Elevation:** 180m
- **Livestock:** 350 finishing cattle (12-30months)
- **Mainline tractors:** 3x Valtra T174; JCB 4220 Fastrac
- **Combine:** New Holland CR 9.80 with 9m header
- **Loaders:** 2x JCB Loadalls
- **Sprayer:** 2000-litre Knight de-mount with 24m booms
- **Drill:** 6m Sky EasyDrill; 6m Amazone Primera
- **Staff:** Roger, Peter, Andrew and James Colebrook plus two others full-time

The Combi-Disc brings together subsoiling and disc elements in one frame and HE-VA's clever design allows all the components to be adjusted hydraulically on the move.

- **Subsoiling legs** - restructure soils to 16" (40cm) deep.
- **Long leg stagger** - reduced soil squeeze means lower HP requirement.
- **510mm discs** - cut and mix to 5" (125mm) deep.
- **600mm V profile press roller** - weather proof consolidation.
- **Hydraulic leg and disc depth adjustment** - on the move.
- **Mounted and trailed models**
Mounted 300 & 350 - Trailed 450 & 550



Rolls + Shattaboard



Front Press



Disc Roller Contour



Euro Tiller