

How direct drilling is delivering lasting gains



*“At harvest
the results spoke
for themselves.”*

RICK DAVIES

Moving from traditional plough-based crop establishment to direct drilling has brought major agronomic and economic benefits to a North Buckinghamshire business. *CPM* finds out more.

By Charlotte Cunningham

During the past decade, direct drilling has become an increasingly important tool for arable businesses seeking to reduce establishment costs, protect soil structure and improve resilience to increasingly variable weather. While interest in low-disturbance systems continues to grow, many growers remain cautious about changing long-established cultivation practices, particularly where consistent yields and soil workability are priorities.

At Newton Lodge Farms in North

Buckinghamshire, the move away from traditional plough-based establishment has evolved into a long-term strategy that now underpins agronomic, operational and machinery decisions. What began as a trial of an alternative drilling system has developed into a whole-farm approach focused on consistency, efficiency and soil improvement.

CRITICAL KIT

More than 10 years on from first making the change, direct drilling

is now central to how the business operates. Farmer, Rick Davies, says the system has become firmly embedded in day-to-day management.

Rick farms 550ha in partnership with his father, Mike, and mother, Christine. Cropping on the farm is predominantly wheat, with 85% going for milling. Spring beans are also part of the rotation, with spring barley and spring oats included to help manage blackgrass.

Soils are predominantly sandy clay loam, running to gravel with limestone over outcrops and heavy silt on the flood plain. Rick says this variation in soil type presents both opportunities and challenges for establishment, making consistency and trafficability key considerations when planning cultivations and drilling.

The business first moved toward direct drilling in 2012, following the

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► purchase of a 3m Claydon Hybrid drill from Claydon Drills. At the time, the primary aim was to establish oilseed rape, but interest soon grew in using the system more widely. “That year we thought we’d have a go at drilling some wheat in a field with the same soil types throughout,” he explains.

To assess the system fairly, the field was divided in two. “On one half we used our old system, Flat-Lift, plough, press, power harrow and then drill with a Massey 30. The other half we drilled straight into stubble with the Claydon, then rolled.”

The difference in establishment was quickly apparent, he reflects. “The Claydon-drilled crop emerged within a week and looked really well; at harvest the results spoke for themselves. The Claydon achieved 12.1t/ha, the conventional system did 12.04t/ha, so literally the same yield.”

With no yield penalty and clear operational advantages, confidence in the system grew rapidly, he adds. “From that point I thought ‘this is for us; this is going to work.’ The next year we Claydon-drilled the whole farm and have never looked back.”

In the early stages of the transition, direct drilling placed greater demands on available power. Rick was operating a 200hp John Deere 7530 with the 3m Hybrid. “When we began direct drilling, our 200hp John Deere 7530

“All our crops are in great shape, and I’m looking forward to seeing how they progress.”



Central operation

More than 10 years on from first making the change, direct drilling is now central to how the Newton Lodge Farms operates. Farmer, Rick Davies, says the system has become firmly embedded in day-to-day management.

sometimes struggled to pull the Hybrid uphill at 7.5-8km/h,” he recalls.

Over time, however, improvements in soil structure reduced draft

requirements and improved work rates. By 2017, Rick had moved to a wider Hybrid and noticed a significant change on the same land.

“In 2017 when I was using the John Deere

with a new 4.8m Hybrid, on that same field I remember going up it and thinking I’m doing 9km/h here, pulling

a drill that’s 1.8m wider, with the same tractor. I thought ‘this is incredible’ – the way the soil’s changed, we’re not bringing up big lumps or aggregates, the soil is structuring itself.”

The Claydon system works by cultivating narrow strips using leading tines, into which following A-shares place the seed. Wider uncultivated areas between the rows remain undisturbed, helping to support machinery and maintain surface strength.

“The wider uncultivated areas between the rows provide excellent support for following machinery,” explains Rick. “When it comes to trafficking, in the spring the ground’s firm because the soil isn’t being moved to depth and it travels a lot earlier.”

Another feature of the establishment system at Newton Lodge Farms is the decision to not operate fixed tramlines. “I drill at an angle every year. Alternately, one year 20° one way, the next year 20° the other.”

This approach helps to level previous wheelings and spread traffic pressure more evenly across the field, he adds. “So we level the tramlines and end up with a green tramline which traffics better in the spring, the wheels are cleaner, I don’t get the rutting.”

Rick believes this has contributed to more consistent establishment, particularly on headlands. “Headlands account for 17% of our fields – 78ha across the farm – so it’s imperative to achieve wall-to-wall cropping.”



Changing direction

Fields are drilled at a different angle every year, one year 20° one way, the next year 20° the other.



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After several seasons working successfully with mounted drills, Rick began considering toolbar systems and front-mounted hoppers. The opportunity came in 2024, when Claydon introduced the Evolution Twin Front Hopper and Evolution Drill Toolbar. Visibility, residue handling and ease of calibration were key attractions.

“There’s no hopper so you can see everything under the drill, the leading disc works well in cover crops or trash, the front hopper is easy to fill, and calibration is easier. But it’s the balance of the tractor that I really like.”

The business is now in its second season using a 2200-litre Twin Front Hopper and 6m Drill Toolbar on a 280hp John Deere 6250R, fitted

with 800-section rear and 710 front tyres. “Because it’s almost 2t lighter, I can then let the tyres down and run them at a more even pressure.”

Rick adds that the front-mounted hopper provides additional options when establishing crops and companion species. “Its 55/45 split allows me to drill wheat at 160hg/ha from one side and peas at 10kg/ha as an SFI companion crop from the other side, down the same pipe. It’s great having that flexibility.”

In spring 2025, the system was used to place seed at different depths and positions. Rick drilled barley at around 6cm and SAM3 grass cover on the surface through different pipes onto splash plates; additional applications

have included slug pellets alongside seed and fertiliser, he comments.

After more than a decade of operating the Claydon system, Rick is clear about the advantages it’s delivered across the business. “The Claydon System provides so many benefits. We’re really impressed with the output of the machine, the workability of the soil, the increase in organic matter, no yield drop, reduction in labour units and fuel savings and general crop output.”

Fuel use has been reduced significantly compared with the previous plough-based system. “Compared with 33-35 l/ha of fuel for our old plough-based system, we’re using just 10 l/ha to establish and roll the crop.”

Soil organic matter levels have also increased substantially, he explains. “I conducted a blanket organic matter testing across the whole farm in 2016, which was roughly 4.5%, and in 2025, it was up to 6.2%.”

Rick attributes this improvement to a combination of residue retention and organic inputs. “Except for 2025, we haven’t baled any straw so we’ve been putting organic matter back in. We also apply cattle manure, sewage sludge goes on every three years, a significant tonnage of compost has been spread on the home farm, and gypsum has been used on our stiffer soils.”

These practices have contributed to improved soil workability and biological activity, he believes. “They’ve led to easier to work soils, worm numbers are up, headlands are more productive and consistent, and even in an extremely dry year like 2025, we’ve had some okay yields where in the neighbouring area it’s been poor.”

Improvements in soil structure and organic matter have also enhanced the farm’s ability to cope with heavy rainfall. “After a run of wet autumns, 2025 was much better. I couldn’t be happier with how our crops established and look now.”

Despite receiving around 200mm of rain between early October and early December, infiltration remained strong. “We didn’t have a single drain running, because all of the water was absorbed into the soil profile, another benefit of the Claydon System.”

Rick believes this reflects the cumulative impact of long-term soil management. “All our crops are in great shape, and I’m looking forward to seeing how they progress.” ●

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What's new in drills?

With establishment strategies becoming more varied, manufacturers are refining drill design to improve placement accuracy, coulter control and operational flexibility



FARMDROID

FarmDroid's autonomous 'seed, weed and spray' robot has recently received a significant capability boost for 2026 with the introduction of the +Seed 14 mm precision sowing system, as unveiled at LAMMA. Following field trials across Europe, the upgraded unit is designed to handle a broader crop spectrum, enabling the solar-powered robot to drill larger and more irregularly shaped seeds including maize, beans, peas and chickpeas.

The new seeding system accommodates seeds from 0.8mm up to 14mm in diameter, while retaining placement precision of 8mm, matching the accuracy of the previous 6mm configuration. Seeding

capacity is increased by up to 20%, supported by a larger 7-litre hopper to reduce refill frequency and forward speeds of between 720-900 m/hr, crop dependent. Row spacings from 25cm to 90cm allow adaptation to different crop architectures.

Beyond drilling, the upgrade enhances in-row mechanical weeding, with tools able to operate closer to the crop and an expanded choice of shares and blades to suit specific applications. Compatible with 111 seed types and capable of individual, row or clustered placement, the +Seed 14mm system broadens the robot's relevance for both organic arable and high-value vegetable systems seeking precise, low-input establishment.

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MACHINERY Drills

HE-VA

Debuted at LAMMA, HE-VA's new 3m G-Drill is positioned as a low-disturbance establishment option for growers looking to integrate drilling with minimal cultivation input. The design centres on two rows of 400mm Vector scalloped discs, set at a shallow 4° angle, which lightly open the soil surface to create a consistent, narrow slot while preserving soil structure and residue cover.

Each disc is mounted on a rubber-damped torsion arm, allowing individual contour following and obstacle protection, with hydraulic weight transfer providing consistent



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penetration in firmer conditions. The drill can be specified with 32 openers at 9.4cm spacing for intensive grass reseeds, or 24 openers at 12.5cm for mixed grass and arable applications, enabling flexibility across cultivation systems.

Rear consolidation is handled by either 450/500mm Star Ring rollers to fracture surface tilth and manage trash, or a 600mm flat roller where smoother finishes are required. Optional levelling paddles and a following harrow allow the G-Drill to complement existing shallow cultivation passes or operate as a standalone pass in reduced tillage systems, offering an alternative route to establishment without increasing soil movement.

HORSCH

Horsch has strengthened its large-scale drilling line-up with updates across the Pronto, Avatar and Versa ranges, focusing on higher output and increased product capacity for broad-acre systems.

The new-generation Pronto 9 DC features a revised, more robust frame and retains a 9m working width, while hopper capacity increases to up to 6000 litres. Designed for high forward speeds, the drill can be specified with either the TurboDisc or ParaDisc seed coulters systems, supporting consistent seed placement across varying soil conditions and cultivation regimes. The increased tank volume is intended to reduce refill frequency and improve daily



work rates on larger units.

Within the direct drilling segment, the new Avatar 12 LC extends the range to 12m and is equipped as standard with a 9400-litre triple tank, split 50:15:35, enabling up to four separate components to be metered. Row spacing options of 25cm or a new 20cm configuration provide flexibility to suit crop and residue levels.

Completing the updates, the 7.2m Versa 7 SW combination drill is aligned with a 36m spraying system and features a 6300-litre double hopper for grain and fertiliser, targeting high-output establishment within conventional power harrow-based systems.

LEMKEN

Lemken has expanded its mounted drill range with the Solitair MF, a folding pneumatic seed drill combining active seedbed preparation with a rear-

mounted seed hopper.

Designed as a higher-output counterpart to the Solitair MR, the machine is available in 4m, 4.5m and 6m working widths and is intended to maximise drilling capacity within short sowing windows.

As standard, the Solitair MF is equipped with two electrically driven metering units, each supplying a separate distributor head, enabling half-width shut-off and section control. On the 6m model, this can be extended to four sections. Application rates from 0.5 to 500kg/ha can be set from the cab, while tool-free metering wheel changes and integrated shut-off gates simplify calibration and crop changes.

A 2000-litre hopper is standard, with optional 60:40 split tank and compatibility with the Solitair F front tank for multi-product applications.



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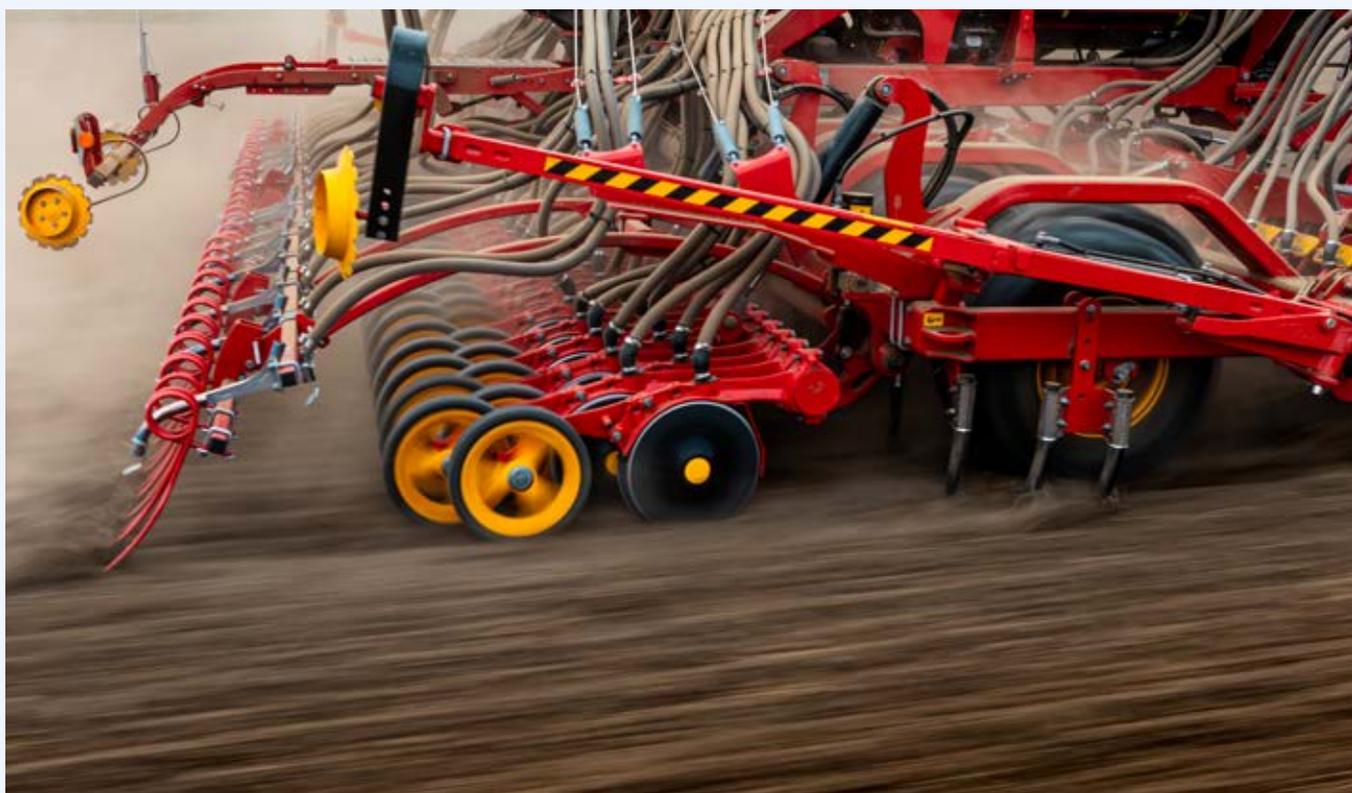


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Seed placement is handled by the OptiDisc coulters bar with parallelogram-mounted double disc coulters, offering mechanically adjustable pressure up to 45kg and central depth adjustment. Row spacings of 12.5cm or 15cm are available, with optional following harrows for surface levelling.

ISOBUS compatibility and Lemken's iQblue operating system support automated section control, task management and mobile-based calibration. For transport, the 6m model features an automatic support wheel to enhance stability when folded.

Also from Lemken, the firm has expanded its precision drilling portfolio with the introduction of the Faya MF, a single-row precision seed drill designed to complement the Azurit's DeltaRow concept.

Available initially as a pre-series machine ahead of full production in 2027, the Faya MF targets growers and contractors seeking high placement accuracy combined with increased work rates across a broader crop mix.

The drill is built around a modular 6m frame with two-section folding and is offered in 8-, 9- or 12-row configurations. Row spacings can be set between 45cm and 80cm, with rapid conversion possible between 12x50cm and 8x75cm layouts, allowing adaptation to crops from sugar beet to

maize and improving seasonal utilisation.

Seed singling is handled via an overpressure metering system housed in die-cast aluminium, designed to reduce energy demand while maintaining consistent singulation. Scraper control can be mechanical, electric or sensor-automated, supporting accurate placement at forward speeds of up to 16km/h.

An offset double disc coulters with a narrow opening angle, capable of up to 350kg coulters pressure, minimises soil disturbance and supports precise depth control.

VÄDERSTAD

Väderstad has updated its Spirit 400-900C/S and Inspire 1200C/S seed drills with a series of developments aimed at improving depth accuracy, coulters stability and operational control across a wider range of soil conditions. Central to the next-generation machines is a new seed coulters featuring the patented TriForce II suspension system, designed to enhance contour following and maintain consistent seed placement at higher forward speeds.

The revised coulters arm uses a rubber-mounted triangular beam layout to manage vertical and lateral movement, allowing each unit to respond independently to surface undulations and variable soil resistance.

As a result, maximum coulters pressure has been increased from 80kg to 120kg, improving penetration and slot formation in firmer seedbeds and higher-residue situations. According to Väderstad, this delivers greater seed depth precision compared with conventional double-disc systems.

Further updates include a new following harrow option for improved seedbed finishing and residue management, alongside extended coulters pressure adjustment. A new hydraulic depth setting system is also available, enabling working depth to be adjusted directly from the cab, reducing setup time and improving in-field responsiveness.

Together, the upgrades position the latest Spirit and Inspire models as higher-output, precision-focused drills for both conventional and reduced tillage establishment systems.

Alongside the drill updates, Väderstad has introduced E-Connect, a telematics platform designed to provide real-time machine data, field progress monitoring and operational analysis. Compatible with major farm management systems, E-Connect will be available on seed drills, planters and tillage equipment fitted with a connected gateway, with roll-out beginning in early 2026, following its public debut at Agritechnica 2025.