Mechanical weed control solves resistance issues

Sales of Claydon drills continue increasing as farmers prioritise reduced establishment costs to maximise profits. Year-to-date figures are double last year's. Major investment in sales and production facilities has resulted in a larger production area and improved facilities for sales and administration teams.

The annual spring open days organised by drill manufacturer Claydon, at founder Jeff Claydon's 360ha (900 acre) heavy-land Suffolk farm, are always popular as new and experienced users get together to share opinions and lessons learned each season. This year, a new product was announced, ahead of its public show debuts. David Williams reports.

The open days are an excellent opportunity for those considering investment in a Claydon drill to meet current owners and discuss potential advantages for their situations. Jeff practises what he preaches and has used his strip-seeding direct-drills since 2002 to reduce establishment costs on his challenging land. Farm tours allow visitors to view flourishing crops, but Jeff is equally keen that any less successful establishment is seen, so lessons can be learned for future years.

Sales of Claydon drills in the UK and to over 30 countries, continue to increase and the company has invested heavily in the past year to ensure production can meet demand. Previously sales and administration offices were temporary buildings within the main workshop but state-of-the-art facilities now incorporate meeting and presentation rooms along with excellent training facilities. Forty-eight people are employed, and further expansion is planned.

Like other farmers in eastern England, Jeff's main challenges, apart from the weather, are black-grass, and other herbicide-resistant weeds, and cabbage stem flea beetle which forced him to stop growing oilseed rape; a key part of his cropping rotation until last year.

Opti-Till system

The drill range's success along with increasing issues with persistent pests has caused Jeff to expand his machinery range to include the Claydon Straw Harrow, TerraStar light cultivator and Cambridge rolls, offering a one-stop shop for those looking for a complete direct seeding solution. Described as the Claydon Opti-Till system, the combination of machinery promises significant cost savings and greater profitability, improved timeliness for optimal drilling conditions and reduced weather risk, more even establishment and higher yields. Soil structure improvement, higher earthworm populations and increased carbon sequestration also result from the tillage technique suggests the company.

"With volatile produce prices an increasing issue, production costs need reducing as far as possible to compete with overseas growers," explained Jeff. "It doesn't help that, since 2009, we have lost approximately 240 active agrochemical ingredients. In the same period we have gained just four new actives and our armoury is getting tired. The standard rotation of two wheats then oilseed rape highlighted the issue that something had to change.

"The Opti-Till technique combines a suitable rotation with an appropriate amount of tillage and achieves weed control without excessive chemical stacking," said Jeff.

Claydon's drill design includes a patented unique leading tine to create a slot, followed by a winged A-share. The leading tine lifts and aerates soil and, operating at an optimal 8–12kph, it creates effective shattering without raising clods to the surface. Precise depth control is a feature and Jeff said 8–10cm is sufficient for cereals whereas for oilseed rape the channel depth needs to be approximately 15cm, providing a suitable environment for root penetration and growth. Behind the leading tine, the A-share moves trash to one side and rear 'ski boards' leave the straw between the bands of cultivated soil. A levelling board covers the crop at the rear. "We end up with the larger clods on top, and finer soil underneath which preserves moisture and the seed germinates in a warm, humid environment, essential for growth," he added.

Where soil isn't moved between the bands, later weathering can introduce a suitable growing environment for grass weeds which are quick to take advantage of a lacklustre crop, suggests Jeff, so rapid early crop growth is essential.

Unmoved soil between the tilled bands maintains a free-draining structure and is capable of supporting machinery better than conventional tilled ground. This allows sprayers and spreaders to travel easily, while the corrugated surface allows rain penetration, reducing run-off.

Quantified benefits

Jeff quotes establishment costs for the Claydon Opti-Till system using a 4m Claydon drill and 7.5m straw harrow at approximately £71/ha, compared to £131/ha for a conventional full cultivation regime on a 300ha (750 acre) farm. This provides an annual saving of £17,800 or £53,400 over three years, he said. Time savings too are significant with plough-based seeding techniques requiring 110mins/ha; minimum tillage 42 mins/ha and the Claydon drilling system takes just 26 mins/ha. "The user isn't as dependent on suitable weather windows either, when using the Claydon drill," said Jeff.

He acknowledges that efficient farming isn't all about saving money and that good results are essential. Saaten Union trials monitoring 17 varieties averaged over 10 years have demonstrated that yields from the Claydon drill achieved 9.42t/ha against the equivalent trial areas established through a full ploughed seeding regime which achieved 8.64t/ha; almost a tonne less. "The crop gets a better start with the Claydon drill, the straw acts as mulch in the spring helping maintain warmer temperatures," he said. "We also compared results in very dry years and again the Claydon system achieved significantly higher yields."

After 15 years using the Claydon drill, Jeff said he has learned that stubble management is critical, mainly to reduce slug numbers. "We must manage slugs to reasonable levels and make sure pellets work effectively," he said. "Going straight into stubble with a min-till cultivator creates the perfect environment for slugs. But using a straw harrow is effective. It's a high speed operation, consumes little fuel and using a straw harrow has reduced our reliance on metaldehyde," he said. "Applying 5kg/ha of metaldehyde costs £19/ha including application, and for ferric phosphate the cost is higher; £21/ha. The 7.5m straw harrow costs £7.95/ha, so three passes are £23.85/ha and volunteer numbers are also reduced as are other weeds and residues.

The TerraStar light cultivator produces a deeper tilth and its plucking action creates dips on the surface improving water penetration, but leaves the surface dry for impoved traction for future field operations.

Cropping and weed control

"Where we have high black-grass pressure we have opted for spring oats, but used the autumn period to harrow stubbles every 7–10 days. Last year we took out the last lot at the end of October. Harrowing reduces Roundup use and we waited

continued over...

A crop of spring oats thrives on Jeff's farm. A big advantage of the Claydon Opti-Till system is reduced headland damage, due to fewer field operations, explained Jeff who is pictured (inset) examining the young crop. Up to 30 per cent of the field is headland, he points out, and compaction damage, worse through a conventional tillage regime, can pull average field yields down.

The Inter-Row Hoe works easily between the Claydon drill's 300mm spaced drilled strips.

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until the end of November to spray, achieving a clean stubble overwinter ready for the spring crop. Previously we made up to four Roundup applications in the autumn, then one in spring but using the harrow reduced this to one application in the autumn, then one pass with the harrow in early March, before drilling straight in. This has left land much cleaner," he explained. "Where weeds started to germinate before drilling we used a straw harrow pass to to damage the cotyledons which proved successful. Where we moved the top 3cm during several passes this almost completely removed the weed issue," he added.

Inter-Row Hoe launch

Claydon's brand new Inter-Row Hoe will be available this autumn, having been in development for two seasons. "Any new products we add have to be fully proven on-farm," said commercial director Spencer Claydon. "An advantage to band seeding is that an inter-row hoe can tackle weed populations in growing crops and while inter-row hoeing has been used for many years in precision-drilled crops such as sugar beet, it isn't possible for cereals in 125mm rows. But band sowing at 300mm leaves 14–15cm unseeded strips between plants which can be mechanically hoed, allowing elimination of weeds from that area easily and reliably and in an environmentally sensitive way."

"We have remained on top of weed issues by increasing our spring-cropped area and using our Opti-Till system including the Claydon Straw Harrow, TerraStar light cultivator and Claydon Hybrid drill," said Jeff. "During the past few years the new Claydon Inter-Row Hoe has kept areas between the rows clear of weeds later into the growing season and selectively reduced the weed burden in areas where it's an issue. Because our soil is in such good condition through use of our Opti-Till system for 15 years, machinery is well supported, even early in the season, so a tractor with a front linkage-mounted hoe can operate as the first flush of weeds appears. Seed only grows once, and as soon as it is killed it is dealt with."

The new hoe is front-linkage mounted and operates up to 6kph at 20mm depth. It is manually steered and the 6m trial version achieved work rates up to 40ha/day. Final trials this spring will result in development of a range of sizes to match the drill line-up later this year. ■

A crop of wheat on Jeff's farm served as one of this season's test areas. On the left is a control area where black-grass can be seen between seeded strips and, on the right, an area of the same field, hoed a few weeks before. Most weeds had been killed and many of those remaining were loose on the surface and likely to die as their roots dried.

Spencer Claydon is pictured with a handful of dead black-grass, removed from a wheat crop by the hoe three weeks earlier.