

Improving soil ecology is the goal for Yorkshire mixed farm

Boosting soil ecology was the primary reason R. H. Mason in Yorkshire changed from conventional plough-based crop establishment to direct strip seeding. Five years' experience has shown that the system has numerous other benefits, including massive labour, time, and cost savings.

"As farmers, our aim should be to enhance levels of soil ecology rather than simply preserving them. Retaining organic matter through the use of non-inversion techniques is fundamental to that objective," Wayne Turnbull states. Manager of R. H. Mason's mixed enterprise near Drifffield, he decided five years ago that the best way to improve the situation was to stop all heavy cultivations on the 400ha of Yorkshire Wold over chalk land at Wold Newton Grange.

"Our 100 suckler cows do not put enough organic matter into the soils to raise levels significantly. We have about 20cm of soil before hitting chalk, so ploughing made no sense to me," says Mr Turnbull, who grew up on his parents' farm and served 12 years in the military before returning to a life on the land.

"I worked here for four years before being appointed farm manager in 2016, and always felt that our approach to crop establishment needed to change. A key goal was to improve the soils, which meant working them less, as well as reducing the time and cost involved in establishing crops. Labour is also a big issue, because fewer people seem to want to work and even less want to work on farms, so that was another priority."

No shortage of doubters

When Mr Turnbull was thinking of changing to the Claydon Opti-Till direct strip seeding system, he says many people had an opinion. Comments ranged from "You won't be able to go when it is wet", to "You'll

get a lot of weed issues", but none had tried it for themselves, so he says they were in no position to judge.

His counter argument was that, if ploughing is the ultimate way to control weeds, why after centuries of using it are there any left in the soil, and why do they remain a perennial challenge? "Rather than invert the soil and mix weed seeds throughout the profile, I felt it would be best to confine them to a shallow layer close to the surface and progressively reduce their numbers by chemical and mechanical means."

“ Analysis by SOYL confirmed that after two years of using Opti-Till, black-grass had been reduced to a level at which it could be hand rogued. ”

Having heard a lot of good things about Claydon Opti-Till from speaking to various owners on the phone, Mr Turnbull visited six farms in the area which were using it to establish crops and on different soil types. These included one with the same type of land. All were happy with it and after discussing the advantages with Wold Newton Grange's owner, Christine Mason, he was given the green light to look for a Claydon drill.

"Our 4.8m Hybrid was two years

old when we bought it, and had been traded in against a new trailed Claydon Hybrid drill," Mr Turnbull explains.

"Initially, I adopted a 50:50 approach to compare our conventional system with Claydon Opti-Till. The loss of our ploughman earlier that year put pressure on the labour situation and time, so the ratio turned out to be 80:20 in favour of the Claydon, which performed well from the start.

"The first year was very dry, but the drill's leading tines broke the soil and seed went into moisture, so it got off to a flying start and yielded well. Although time and costs have been massively reduced, yields are on a par with conventional establishment, 12-13t/ha for winter wheat, which we grow alongside winter barley, winter oilseed rape and vining peas.

"We continued to compare our conventional approach with the Claydon System in two fields with similar soil. Analysis by SOYL confirmed that after two years of using Opti-Till, black-grass had been reduced to a level at which it could be hand rogued. In the third year we continued to use the Claydon System in one field and ploughed the other to compare the two methods."

Mr Turnbull says ploughing was a big mistake, because it brought a huge bank of weed seeds up from depth and took the next two years to clean up. "I also noticed that, when we drilled directly on unploughed land, it left barely a mark - whereas the ploughed land was badly rutted, due to a wet harvest, creating soil damage which had to be rectified. That was

when we stopped ploughing and went all-in on the Claydon approach.

"Our largest field is 50ha, and had a legacy of light black-grass from years of conventional cultivations. I have Claydon-drilled it in December for each of the last four years without any problems, and the land has become so supportive that travelling on it has never been an issue - even late in the year. The black-grass has completely disappeared," he says.

Nutrient leaching is a potential problem on the very free-draining soils, so Mr Turnbull grows 100 acres of multi-species cover and catch crops to maintain ground cover over winter in land destined for spring crops. "To maximise their potential, they must be drilled correctly rather than being muddled in, so the Claydon drill's A-share creates a good tilth and achieves the best germination. We have also reintroduced up to 500 sheep on our arable land to help with carbon sequestration," he explains.

Transitioning to strip seeding

While people go into direct drilling or direct strip seeding purely to save money, this was not Mr Turnbull's main objective. Primarily, the benefits of direct strip seeding to soil ecology were what drove him down that path.

There are several important aspects to appreciate when strip seeding, one of them being attention to detail when it comes to stubble hygiene and management. The potential for volunteer cereals in the next cereal crop is ever present, especially if stubble management is



With a little help from his son Amos, Wayne Turnbull checks how deep the leading tine is operating while drilling first wheats for 2022 harvest into stubble left by the previous crop of oilseed rape.

not completed, so it is not as simple as just going straight into stubbles with the drill. Rolling for consolidation on the small amount of soil that has been moved is important and a key operation in the system.

Mr Turnbull comments: "Our 7.5m Claydon Straw Harrow is a key part of that process. We use it immediately after our Claas Lexion has finished harvesting the crop and cereal straw has been baled for our cattle. We like to leave a longer stubble, because this provides more food for the worms over winter, helps to discourage pigeons which do not like landing on it, and creates a microclimate that helps to protect the emerging crop from cold winds off the North Sea which are a feature of this area.

"The Straw Harrow helps to spread loose straw, chit volunteers and pull out any weeds that are growing, as well as killing slugs and destroying their eggs. This process is carried out

two or three times prior to drilling.

"The Claydon Straw Harrow and drill are used behind a John Deere 6250R which operates at 1,400rpm. Our 4.8m drill will cover 4-5ha/hr at a sensible forward speed and, by not cultivating land before drilling, we eliminate weather risk. The total amount of fuel used to establish crops can be as little as 13 litres/ha; a massive reduction compared with our previous approach. With fuel prices where they are now, that is a significant cost saving.

"Soil ecology has benefitted enormously from the change to direct strip seeding, the number of worm casts on the soil surface is phenomenal and surface drainage is much improved. There is no need to dig a trench to see the worms, because any root pulled from the ground will be covered in them. They are always working to improve the soil and much cheaper than wearing metal." FG