

Changing systems

The purchase of a Sky EasyDrill has been a key addition to the Wills Estate as it transitions to a regenerative farming regime

Covering more than 900 hectares of arable ground just north of Banbury, the Wills Estate has, over the last three seasons, adapted its cultivation and drilling regime to keep soil movement down and increase the level of organic matter. It's a transition overseen by estate manager Hamish Gardiner, with farm manager Ben Whale and agronomist Ben Taylor-Davies.

"Until 2005, the estate housed 425 cattle which provided ample muck and slurry for the ground but since then we've seen the organic matter steadily decrease," explained Hamish. "Soil conditions aren't ideal, with around 70% being shallow brash and the rest being heavy clay."

The farm saw other pressures, particularly grass weeds outcompeting the established rotation of wheats, barleys, oilseed rape and spring beans. "When we started working with Ben Taylor-Davies, we started to see some of the areas that really needed work, and this only encouraged us to start changing how we farm," he added.

They started importing organic matter on to the farm through a contract with a local composting company, as well as digestate and a small amount of sewage cake – spread away from the ringfenced acreage,

ABOVE
The Sky EasyDrill is central to the Wills Estate transitioning to regenerative agriculture. The use of cover crops has extended the working window for establishing crops and protected the soil structure

which is too close to the village of Edgcote. These are applied in a targeted manner, with soil maps highlighting the areas most in need of organic matter.

Alongside the increase in organic matter, Hamish and Ben have started a campaign of cultural control of weeds and volunteers to maximise yields. This has included introducing cover crops to the rotation, sowing 6m border strips to distract pests from the cash crops (and provide additional pollination targets for the beehives kept on site), and by reducing soil movement during drilling.

"We realised that if we were going to win the battle against weed pressure, black-grass in particular, and improve yields, we would need to change how we established our crops by providing year-round ground cover so we could delay drilling and still be able to travel when the weather is against us," Hamish said.

The transition to regenerative

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agriculture required a level of investment. The Wills Estate does not have a large armoury of machinery, despite the acreage covered, and instead relies on a few key pieces of equipment, driven by high horsepower New Holland tractors. The Sky EasyDrill, with a 6m working width, was the latest addition bought specifically to aid with the change of processes.

Just two seasons in, both agree that the machine has proven its worth. The wet weather over the last two years have created some unprecedented challenges and Hamish believes they would have struggled to sow the winter crops without the Sky drill.

"We delayed our drilling to get as many flushes of black-grass as possible but this meant we were fighting the weather," he explained. "With the T8 Genesis on the front, we were able to cover all of our winter ground in seven days. The Sky drill worked well even when it started to rain, and we saw even germination across the board."

They highlight the coulter set-up, which has proven itself both on bare soil and into cover crops, which are being introduced as the five-year rotation progresses. The front roller works particularly well on the brash soils, pressing stones into the soil to ensure a level seedbed and even

sowing depth. Behind the coulter discs, a following roller presses the soil to provide good soil-to-seed contact.

Hydraulic cylinders can transfer weight from the front press wheels to the rear press wheels depending on where it is required, meaning it can close the slot after the coulter or consolidate the soil ahead of it.

"Honestly, there were some fields where we could have gotten away with not following the drill with the HE-VA King Roller," farm manager Ben Whale said.

He also mentioned the benefit of having three hoppers on the Sky EasyDrill. "It reduces the passes when we want to apply fertiliser or slug pellets with the crop. However, it has proven to be invaluable when we sow cover crops. We've been working with our agronomist to find the best combinations to suit the soil types, whether we need to fix nitrogen, or improve the soil structure with deep-rooting varieties," he said.

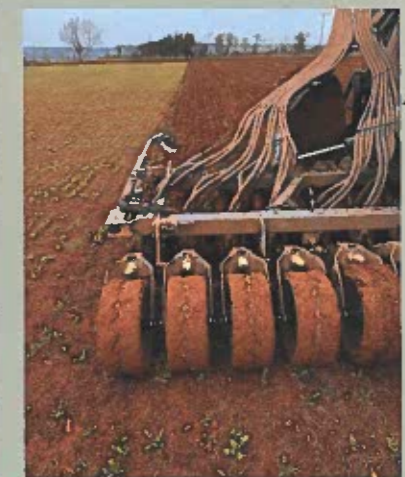
They choose to buy straights, instead of pre-packaged crop mixtures, meaning that the individually metered hoppers are a benefit. Each crop can be sown at a different application rate, at a variety of depths to ensure the best possible germination.

To find the best options for the ground, the Wills Estate has hosted various trials in recent years, including black-eyed peas and Japanese millet, alongside more standard cover crops such as clovers and buckwheat. Soil pits are utilised extensively, and Hamish and Ben use the What3Words GPS app to check the same point each year to gain tangible proof of what various methods are doing to the soil.

Cameras are fitted to each of the three hoppers, linking to a terminal in the cab so that the operator can easily see when refills are needed. "The different application rates means that we can't take what is relayed on the ISOBUS display as gospel. Some of the cover crops have such a low application rate that we could finish the field, even when the warning is there to refill," Hamish said.

Both have also been impressed with the ride on the road. The Sky drill hydraulically lowers to reduce the centre of gravity on the road, so that it pulls like a trailer.

It is the centrepiece of the new system on the Wills Estate, but everything else has been geared towards making the transition work. A tine drill has been kept as a backup for the worst conditions, while a Väderstad TopDown has been adapted to suit the soils and apply molasses to increase the



soil biology.

"We took out every other subsoiler leg to provide 50cm spacings," said Hamish. "On the brash soils, this reduces the number of stones brought up to the surface. Then, we added the applicator for the molasses, which we apply at 50 litres per hectare."

Other cultivation measures include a 12m HE-VA King Roller, which has impressed with its weight transfer system for consistent ground pressure. "We roll all the fields after seeding to lock in the moisture and encourage germination. We even rolled some wheat after emergence, which we found encouraged tillering and led to a highly successful crop."

The system is being brought in gradually with the rotation. Hamish explained that the farm cannot afford to move across wholesale and risk potential crop losses. This way, each crop and field can be assessed individually and any changes to the system can be made gradually.

"It's a work in progress," he explained. "We're planning on transitioning the rest of the farm over

“ Learning about the different biological processes in the soil has changed the way I look at each operation ”

TOP
With over 900 hectares of arable cropping, output remains a key factor and the Sky drill has impressed in this regard

ABOVE LEFT
Ben Whale, who has handled the majority of the drilling during the changeover on the estate

ABOVE RIGHT
Weight can be transferred from the front to the rear press wheels to consolidate the soil either before or after the coulters

the next five years, which should minimise any yield penalties. Working with Ben Taylor-Davies has really opened our eyes to the possibilities in our soils. We can get the yields, 10 or 11 tonnes per hectare on some fields, but to continue building the profitability of the farm we have had to seriously consider the cost of inputs and the methodology."

Ben adds to this, saying that it has been a completely new way of thinking: "It's something that we will all have to consider as the industry moves to a more environmentally friendly way of farming. Learning about the different biological processes in the soil has changed the way I look at each operation." 🌱