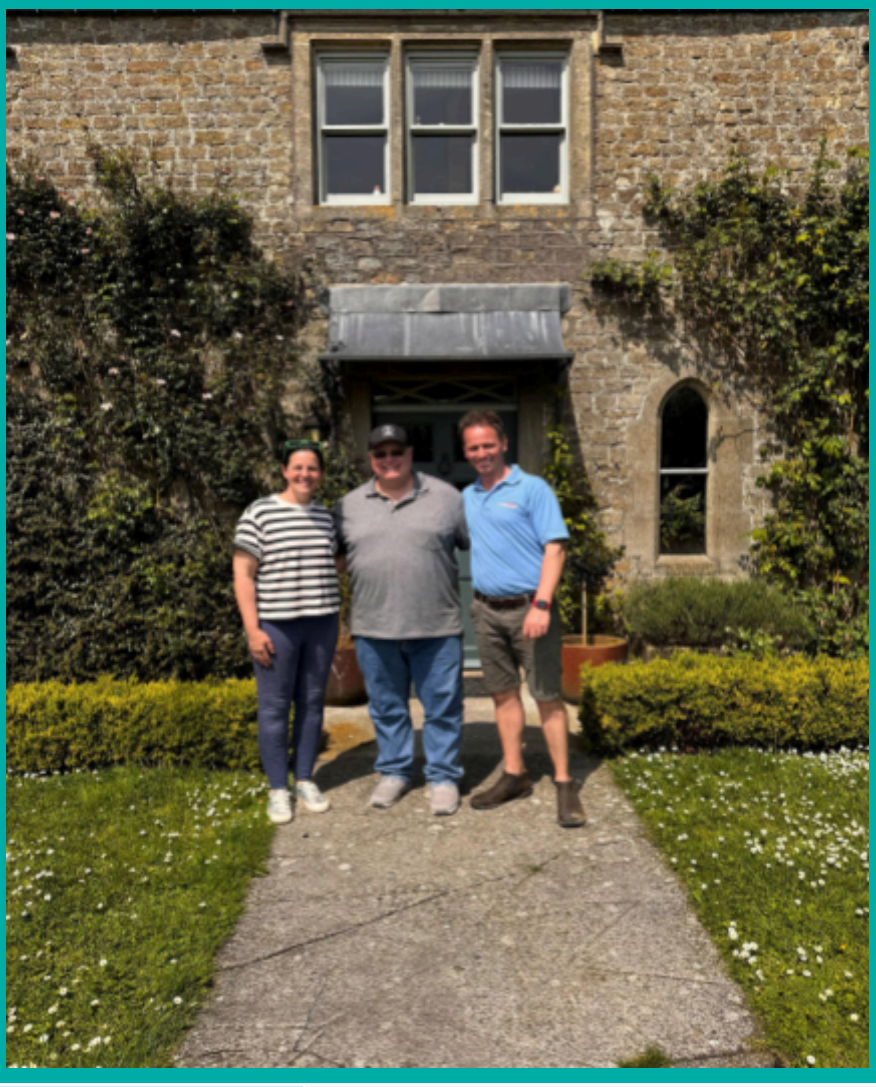
DUCHY of CORNWALL

Farm Carbon Toolkit

Saving carbon and improving biodiversity on a dairy farm

Fact File: Stuart Rogers, Longmoor Farm, Gillingham, Dorset



Date	January 2025
Location	Gillingham, Dorset
Enterprise	Dairy
Size	118 hectares

Actions Taken	Moved to minimum tillage on maize, herbal leys on pasture, improved biodiversity, maintaining high milk yields, reduced inputs.
Impact on Business	Healthier and more resilient soils, improved animal welfare, lower costs, happier place to live and work
Impact on Carbon Footprint	Substantial reductions from fertiliser and diesel use

Tags: Dairy farming, minimum tillage, biodiversity, agroforestry

Introduction to the farm

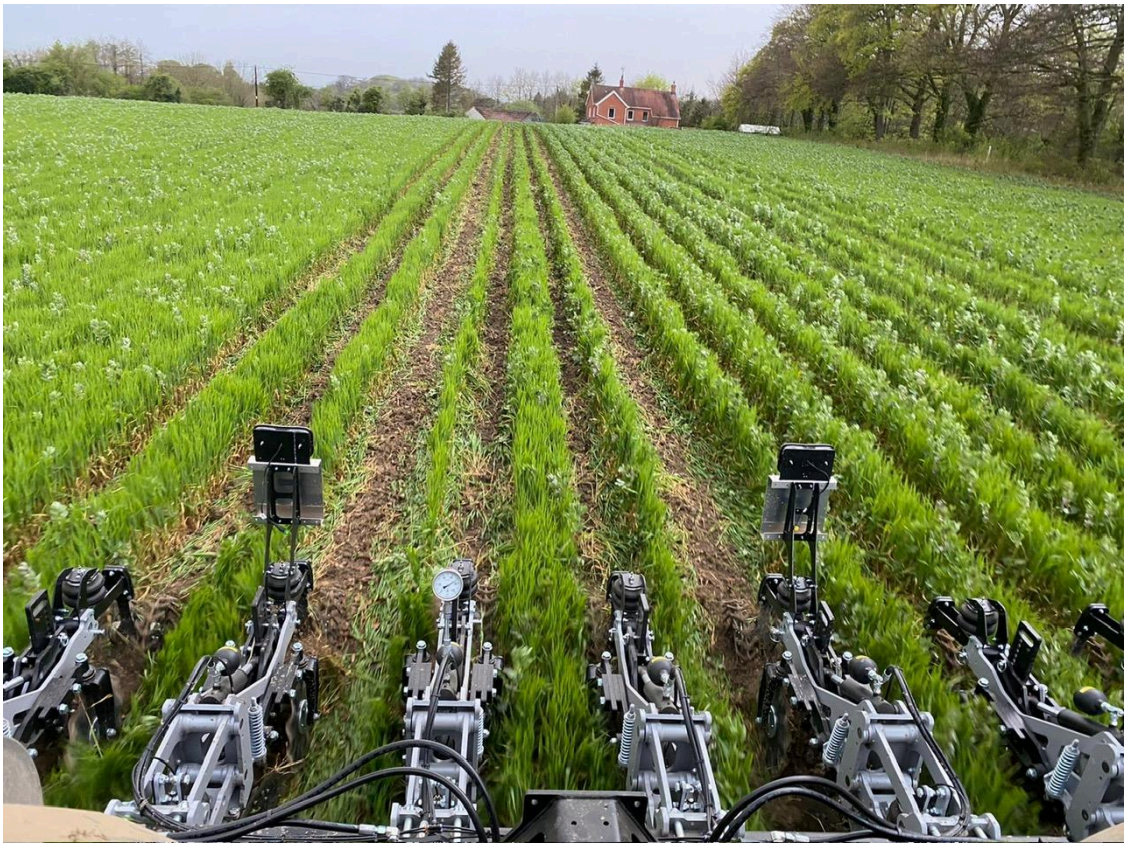
Stuart Rogers and his family have managed Longmoor farm in Dorset for almost 15 years, but the family have been farming for generations. Farming on 300 acres plus an additional 95 acres taken on in 2024, the land is rented from the Duchy of Cornwall. They currently have a dairy herd of 250 cows, plus 150 replacements. Milk is sold in a direct contract with Waitrose.

In an area that grows good grass, the farm has substantially reduced the use of fertiliser, enhanced its biodiversity and maintained milk production of 11, 500 litres per cow per year.

Actions

Cropland

The maize grown on the farm feeds the cows. The farm has moved from traditional cultivation to strip tilling, establishing maize through a cover crop of spring barley and spring beans, which will be drilled in the autumn at 150kg/hectare each (300kg total). This is terminated using a crimper roller (avoiding the use of herbicides) before drilling maize in May.

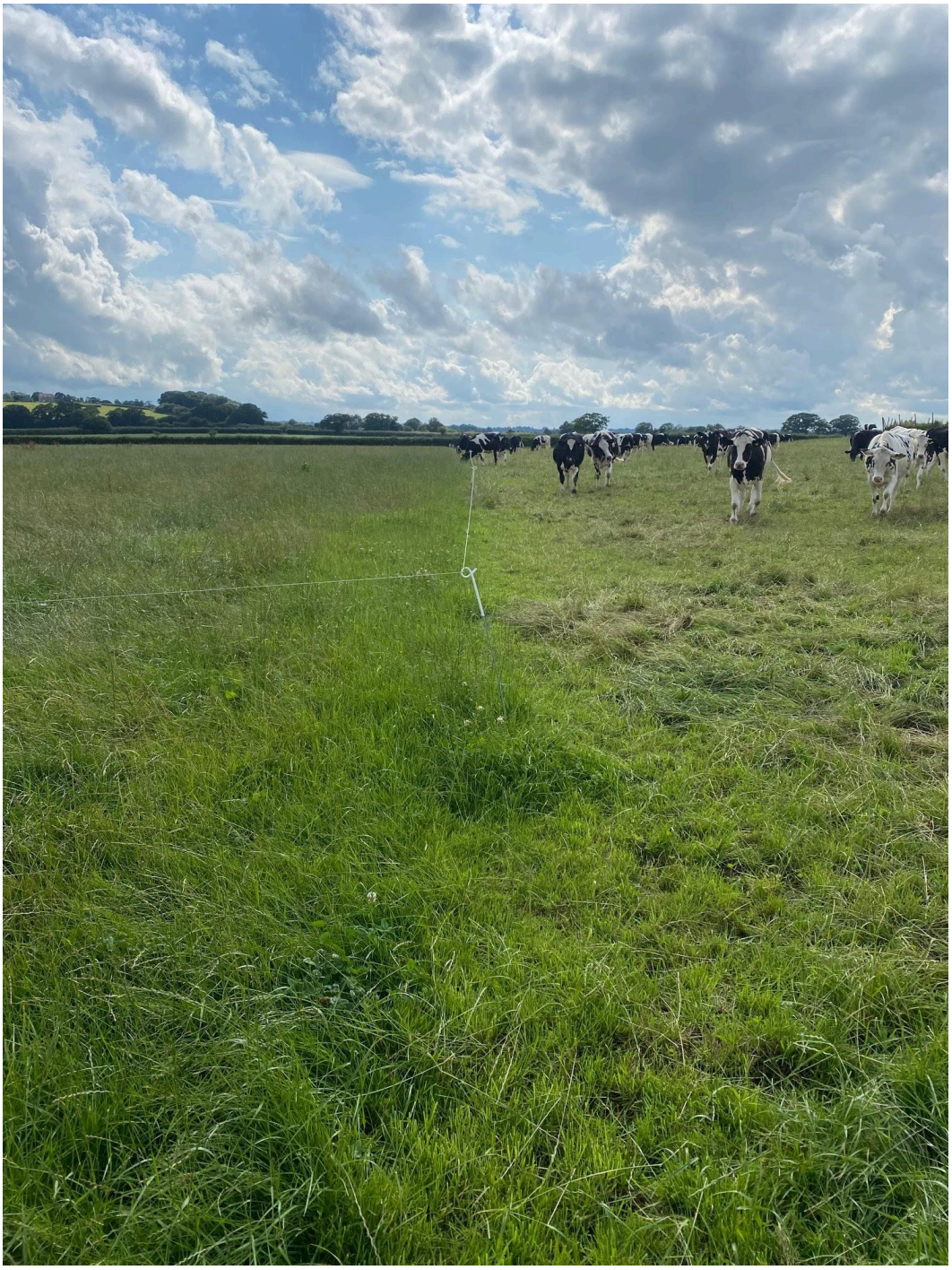


The farm aims to improve establishment of cover crops, preferably with the drill following the forage harvester, therefore minimising the amount of bare ground. Increasingly, the weather is becoming a challenge to get crop establishment right.

“The plough is a heavy reset that asks a lot from the soil and is very high risk,” comments Stuart. No ploughing has been done at Longmoor for five years.

Grassland

Fertiliser hasn’t been applied on the grassland for the past five years. Instead the farm has extensive herbal leys - established through the use of herbicide, subsoiler, and a direct drill. They are “looking great”, with a mix of clovers, chicory and plantain.



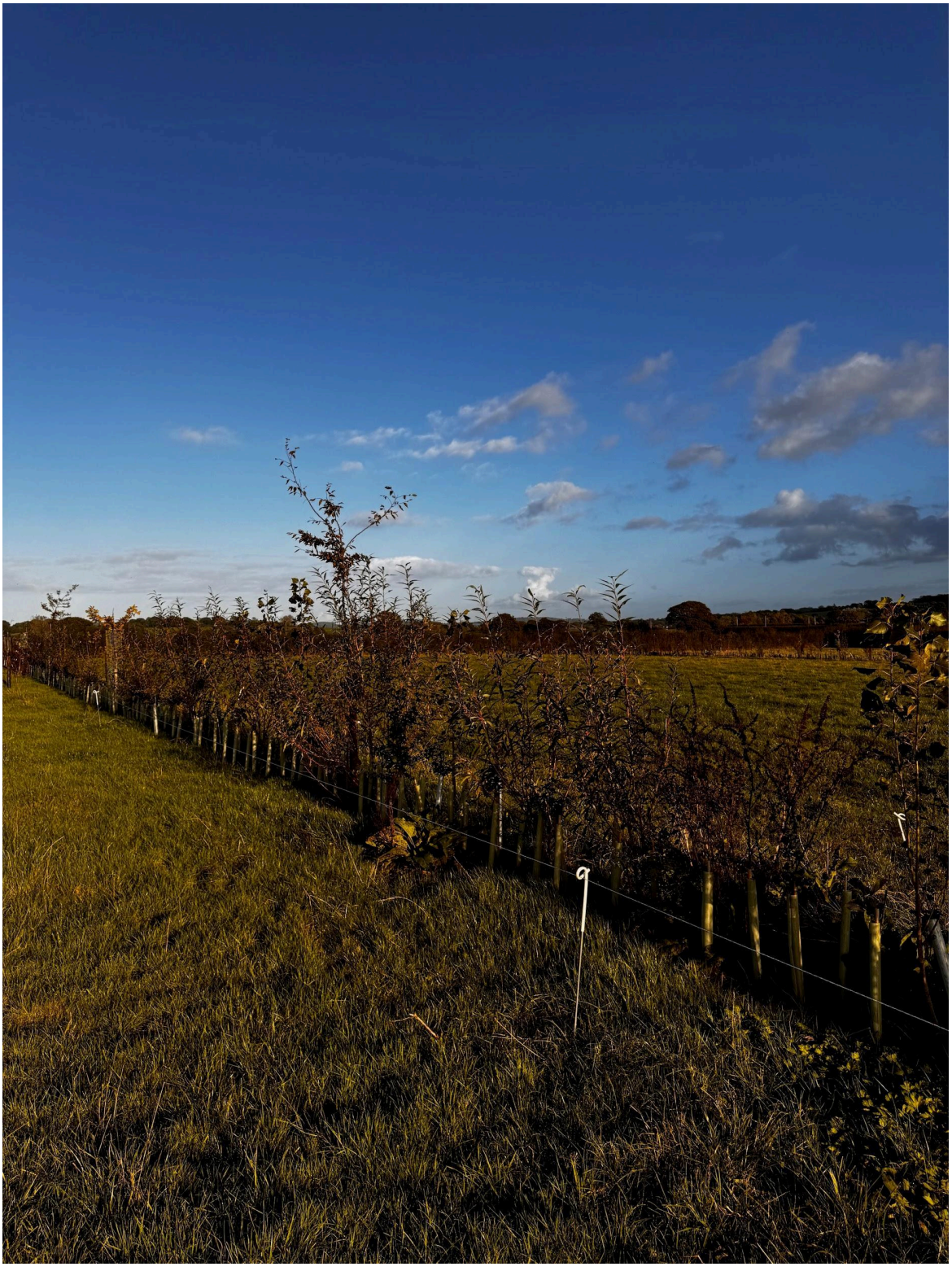
The way the grassland is managed has changed too, with very few mechanical interventions. Today, the cows are used to manage the grass, rather than by using chemicals and topping. By running a higher stock density over the land, grass growth and recovery is better. The cows are even controlling the docks well!

Stuart observed previously that the most successful fields always tended to be the ones that were not re-seeded. He remarked that: “it’s easy to get stuck in the trap of reseeding 25% of the farm each year - it just doesn’t work long term.” Re-seeding is becoming increasingly high risk, especially with changing weather patterns.

In the future would they look to a diet change for the cows, relying on an even higher proportion of grass? “Maybe, but it depends on the price of milk; higher volumes of milk make the business more profitable. Moving to completely grass based is possible, but not yet.” says Stuart.

Agroforestry

Starting in 2022, 800m of agroforestry strips have been planted into paddocks on the farm, which despite initial predation and drought, are now well established. This year, a further 600m are being established, and an additional 500 trees have been planted in existing hedgerows. Woodchip mulch has been very helpful in encouraging the establishment of young trees.



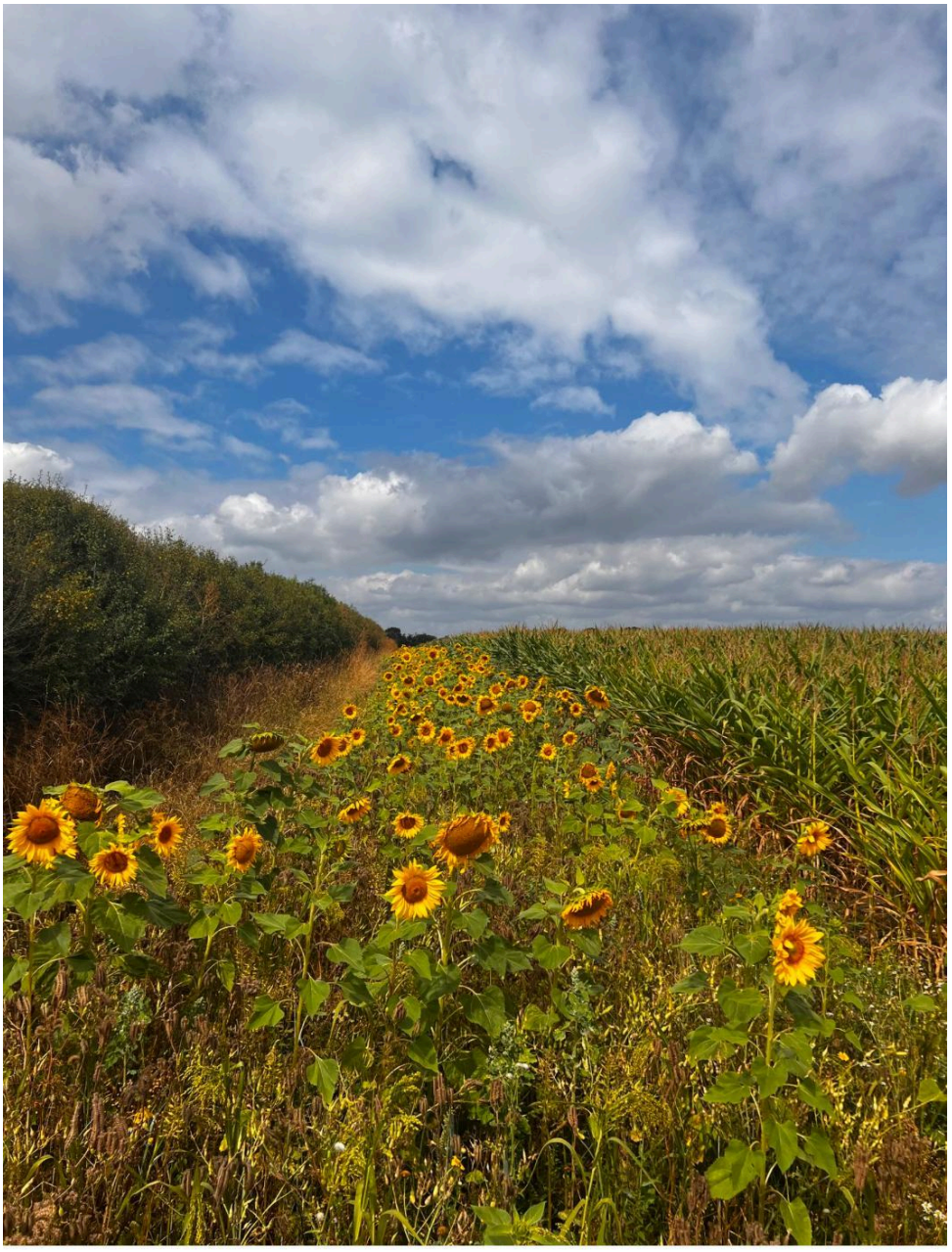
The agroforestry strips include willow, poplar, maple, hornbeam, oak, wild cherry, and hawthorn. These are fenced off, and flailed as little as possible. The aim is to

keep plenty of fresh growth and cows will be able to feed off them when they're properly established - they already show a great liking for willow!

Wildlife

Being nature focussed is at the backbone of farm management. At Longmoor, they are trying to find the best path focussing on input reductions, and maintaining milk yields while improving biodiversity. Stuart believes in the importance of nature and the biodiversity around the farm.

Field margins have been established, including winter bird feed, and wildflower margins (including wild carrot, oxeye daisies, knapweed, etc). These are prime hunting areas for owls.



Hedge management under a previous tenant consisted of annual flailing at chest height, but now they have been allowed to grow out. The hedges are now 4m wide, and 2-3m high after cutting. They are left for 3-4 years and cut only one side at a time.

On the new 95 acres, three ponds have been opened up, plus new riparian strips next to the stream. As this land is not suitable for tractor or grazing, trees will be

planted next year. These projects have been achieved with help from FWAG and the Duchy of Cornwall.

A kingfisher has been sighted at the re-established pond, which is a good indicator species. There has also been evidence of an otter in the brook.

Dung beetles is a subject Stuart wants to know more about; some research has been done on the farm, but it needs re-visiting. He's interested to see what effect buffer feeding has on the beetles, as they thrive more on manure from grass-based feed.

In addition to the rented land at Longmoor, the family have got 95 acres of their own nearby, including woodland. More trees are being planted there - clearly trees are a passion!

Soil

Soil has improved in terms of structure and feel. Many more worms are visible, especially at the base of maize plants and under the pastures. Soil Organic Matter measurements will demonstrate how much carbon the soil is sequestering over time.

It's a constant learning process, but Stuart is certain that the changes in grazing and lack of cultivations are having a positive effect on the soil across the farm.

Impacts

Cropland

The strip tillage has been successful. There has been substantial reduction in the use of fertilisers and machinery passes - and therefore diesel. Herbicide use has reduced substantially too, with the use of the crimper roller and a change in system to minimum tillage. Fertiliser reductions of 35-40% have led to significant financial and carbon savings.

The first year of strip tillage was done on the field by the farm drive. Stuart remembers: “walking on ploughed land you would sink right in after cultivation, but it was easy to walk on the strip till land”.

This is evidence of the improved soil structure, with reduced losses on soil carbon, better water management, improved soil biodiversity, and much less fuel needed for cultivation.

Using a spade for assessing soil health, at least 10 worms per spade of soil were visible, mostly feeding on maize stubble. This is a sign of healthy levels of soil organic matter and a functioning soil ecosystem.

Grassland

Productivity has improved with the herbal leys and concentrated grazing pattern. Animal health is better, with fewer wormers and fly controls required. Overall the system seems to be working more efficiently and needs less management.

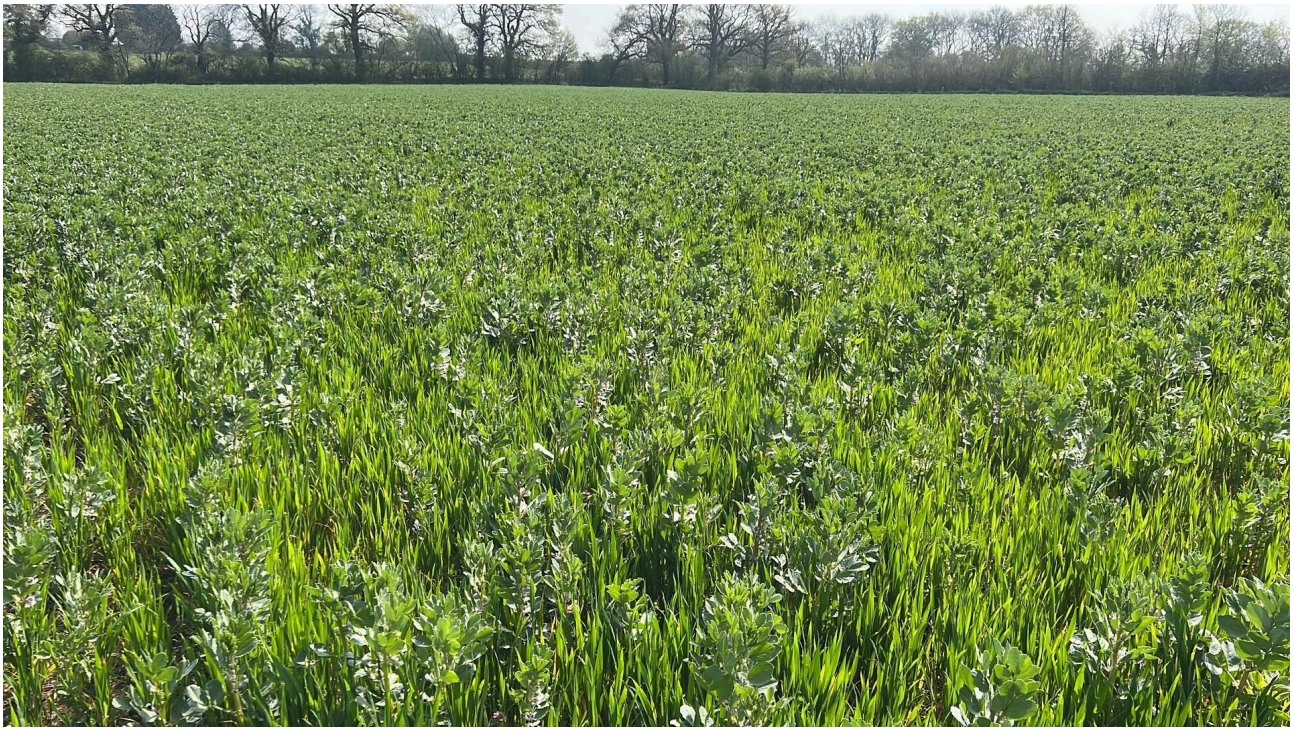
Agroforestry

The new agroforestry strips provide multiple benefits for the cows - vertical grazing, shade and shelter, in addition to wildlife corridors. This is important for both the productivity and biodiversity of the farm, marrying two key objectives of the business well.

It is hoped that Soil Organic Matter increases in the field emanate from the agroforestry strips, through leaf litter and root exudates.

Wildlife

There is now so much more life on the farm! Stuart observes: “When we first came the farm was quiet, but now you hear birds all the time. Go up the drive and see 50 goldfinches flying up. The contractor said the life coming out of the hedges was like nothing he’d seen before.”



They have noticed barn owls and buzzards are back in better numbers. Because badgers are fenced out of the grazed areas of the farm, hare and skylark numbers are much improved.

The hedges are teeming with life, and adding a lot more carbon now as they increase in volume, adding organic matter both above and below ground.

Weather

Increasingly the weather windows to major operations such as harvesting and crop establishment are shorter and less predictable. One cover crop established last August was looking fantastic, but one drilled a month later just rotted and so the field had bare soil over the winter. This variability is challenging.

Working with these differences is a challenge and not easy for farmers. It requires a shift in thinking about farming systems.