

Lessons from the field: A strip-tillage review



Norfolk
Rivers Trust

1. Introduction

Farmers are facing pressure to produce food efficiently, whilst also improving environmental outcomes. As a result, interest in reduced or minimum-tillage practices is growing as the use of regenerative methods continues to rise.

Strip-tillage involves cultivating narrow strips within the field to create an ideal seedbed for crops without disturbing the entire field, and is a middle ground between conventional cultivation and no-tillage. It is currently being explored by UK growers, particularly for row crops such as maize and sugar beet.

This case study shares the genuine experiences of three farms across Norfolk that use strip-till on different soil types and rotation methods, highlighting the benefits, challenges, and realities of implementing strip-till in commercial systems.

2. Benefits

Strip-till allows crops to be established in narrow cultivated strips, leaving 70-80% of the soil undisturbedⁱ. This:

- Reduces moisture loss to the atmosphere during cultivation
- Improves water retention in the rooting zone, potentially lowering irrigation needs in drier months

For some, this could shift strip-till from a soil improvement tool to a risk-management strategy, reducing impact on the land whilst maintaining outputs.

The main reason for adopting strip-till is long-term soil health. Healthy soil should act like a sponge, retaining water for crops rather than letting it run across the surface and into watercourses. With increasing periods of droughtⁱⁱ and unpredictable weather patterns, finding tools that enhance landscape resilience is critical for the future of farming.



For example, sugar beet is typically harvested in winter, which often means navigating saturated ground. Using heavy machinery in these conditions not only creates operational hurdles but can also degrade the soil, leaving it prone to runoff and compaction.

This often causes operational problems, leaving fields in poorer condition and more vulnerable to erosion, runoff, and long-term compaction. Since strip-till machinery only cultivates a narrow strip, it leaves the soil between the rows undisturbed. This has been shown to support machinery operations, even in wetter conditions.

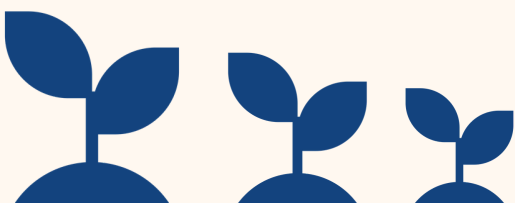


Across all farming systems, reducing erosion and improving water infiltration builds a more resilient farm ecosystem. Crop residue left on the surface protects soil against erosion, reduces evaporation, and supports soil microbiologyⁱⁱⁱ. Simultaneously, maintaining roots supports soil structure, sequesters carbon, and creates deep pathways for water to infiltrate the soil profile. One farmer says:

“ Soil must be viewed as a living system rather than a medium to be worked. ”

Leaving residues and undisturbed zones can create habitat for ground-nesting birds, such as lapwings, and other farm wildlife. Biodiversity gains are not always the primary driver for some farmers, but they represent a step towards farming alongside wildlife, can align with some subsidies, and act as a form of natural pest management.

All three farmers mentioned economic impacts, including a significant reduction in diesel costs, machinery wear, and labour requirements. It was also noted that crop establishment costs were reduced at no consistent yield penalty. This was expressed by one farmer as being a ‘major incentive’ that should be considered by others wanting to adopt the practice.





3. Cropping

Maize is widely regarded as the easiest entry crop for strip-till, with wide row spacing and a tolerance to variable seedbeds. When moisture is retained below the surface, establishment has been strong even under dry conditions. Sugar beet also lends itself to strip-till, but farmers are more conscious of its sensitivity. It is high-value and therefore high-risk if the seedbed quality and timing are not suitable, making some growers reluctant to trial sugar beet without strong reassurance of its benefits.

Other crops, including oilseed rape and some cereals, have been trialled with strip-till operations, but some require further investment in specialised machinery.

Cover crops are the foundation of the strip-till system. Overwinter cover crops protect the soil, add organic matter, and support structure. Cover crops such as rye, mixed with legumes like vetch, naturally bring nitrogen into the soil and reduce the need for artificial fertilisers. Strip-tilling into covers creates a naturally undersown crop, keeping living roots in the soil for longer. Nutrient inputs can be targeted to the cultivated strip, improving nutrient-use efficiency, reducing application rates by 30%^{iv}, input costs, and lowering the risk of diffuse pollution.

One farmer has used strip-till machinery to cultivate and drill wildflower seeds into an existing meadow.



Photo credit: Jack Robinson

All three farmers have expressed that lighter soils responded more positively to strip-tilling, which could cause a challenge for some farms within Norfolk's mosaic of soil types. Heavier soils require achieving an adequate tilth, so machinery might need to be more specialised. However, one farmer quoted:

“ There's no right or wrong soil type, just different degrees of difficulty. ”

Management is critical as excessive biomass can create additional challenges, particularly with residue handling on machinery and pest pressure. Grazing off cover crops can help with management and reduce the need for chemical destruction, but appropriate stock density and duration is critical to prevent compaction.

Manure management is challenging throughout the whole rotation. One farm mentioned restrictions around application timing when cover crops are within Environmental Land Management Schemes (ELMS). Applying manure ahead of cover crops could result in losing nutrients to non-cash crops, while applying closer to drilling is not always permitted. Always apply manures in accordance with Farming Rules for Water and Nitrate Vulnerable Zone (NVZ) and Source Protection Zone (SPZ) regulations (see resources section for link to more information).

Adoption of strip-till requires a broader mindset change, moving away from the common assumption that effective farming requires visible soil movement, and challenging the belief that 'doing less gives less'. Within strip-till systems, biological processes can play a greater role in maintaining soil health and can substitute some mechanical operations.

5. Opportunities, Machinery, Skills, and Knowledge Exchange



Photo credit: Jack Robinson

Strip-till machinery requires a significant capital investment ranging from £20-60k for the initial purchase, depending on setup. There is also an emphasis on high-accuracy sub-inch Real-Time Kinematic (RTK) GPS systems. For many farms, this expenditure may not be viable without long-term commitment or collaboration. Shared ownership or equipment sharing is an option and offers the benefit of peer learning and confidence-building.

There can be timing issues when multiple farmers share equipment and want to drill the same crops, and biosecurity needs to be considered when moving machinery between farms.

Strip-till should be understood as a whole system rather than a standalone technique. Without cover crops, well-planned rotations, a deep understanding of the land and the wider system, and strong collaboration, the benefits are far less likely to materialise without some trial and error. The farmers interviewed were clear that strip-till requires investment, technical competence, and a willingness to persist through a transition period.

6. Conclusion

Strip-till demonstrates how farming systems can evolve in practical ways towards the ultimate goal of soil health. It presents an opportunity for farmers to work with the soil rather than against it, reducing costs and building resilience to climate and market fluctuations without sacrificing productivity.

The strip-till system can be more demanding and complex than conventional cultivation. However, success depends on having accurate guidance and the correct setup and timings. Waiting for the right conditions is repeatedly emphasised, even when workloads and weather windows can apply pressure.

Sustainable water management starts with improving soil health. Strip-till can support this by creating stable, sponge-like soils that enhance water retention and reduce diffuse pollution. In turn, these improvements contribute to healthier aquatic and terrestrial ecosystems.

Strip-till may not suit every field or farm business, but where conditions are right, and farmers are supported through the transition, the benefits are a compelling example of how the future of food production can be both productive and regenerative.



References

- <https://uk.kverneland.com/tillage-tools/striptiller/kverneland-kultistrip-f> (Last Accessed 25/02/2026)
- ⁱⁱLovett, A., Dockerty, T., Sunnenburg, G., Goodess, C., Quere, C.L., 2019. Scoping report for the New Anglia LEP: Climate Change Adaptation and Carbon Reduction Action Plan. Norwich: University of East Anglia Consulting. Pg. 4.
- ⁱⁱⁱ<https://livetoplant.com/strip-tillage-combining-conservation-and-crop-productivity/> (Last Accessed 25/02/2026)
- ^{iv}<https://www.horizonagriculture.com/strip-tillage-guide> (Last Accessed 25/02/2026)
- *The three Norfolk farmers interviewed have not always been directly referenced, but their input was integrated throughout this case study. We thank those who participated.*

Resources

- Norfolk Rivers Trust - [Norfolk Rivers Trust | Home](#)
- WRAP - [UK Food and Drink Pact: the Water Roadmap | WRAP - The Waste and Resources Action Programme](#)
- Farming Rules for Water - [Farming rules to protect watercourses - policy paper](#)
- NVZ and SPZ regs:
 - [Using nitrogen fertilisers in nitrate vulnerable zones - GOV.UK](#)
 - [Storing organic manures in nitrate vulnerable zones - GOV.UK](#)
 - [Groundwater source protection zones \(SPZs\) - GOV.UK](#)
 - [Check for Drinking Water Safeguard Zones and NVZs](#)
- Nature Friendly Farming Network - [Home | Nature Friendly Farming Network, NFFN](#)
- Pinpoint Guidance - [Best practice guides | The Rivers Trust](#)
- Catchment Sensitive Farming - [Catchment Sensitive Farming: advice for farmers and land managers - GOV.UK](#)



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