

Cover crop rewards

Cover crops

The right cover crop mix can help improve nutrient management and provide an environmentally-friendly alternative to chemical pest control. *CPM* speaks to two growers who are making the most of Severn Trent's funding scheme.

By Rob Jones

Farm manager, Will Baker, began trialling different cover crop mixes in 2020, with the main aim of investigating alternative options to nematicides for the Thoresby Estate's vegetable growing operation.

However, after working with Jim Egan from Kings and his Severn Trent agricultural adviser, he realised the benefits stretch beyond just nematode control, so now includes cover crops within his cereal and maize rotations.

"Nematodes have been historically problematic in our soils, affecting carrot and potato crops, and with limited chemical options available, we looked into alternative ways of control," explains Will.

"We worked closely with Kings and

Severn Trent to see how cover crops could work and trialled different options. This included investigating the best cover crop mix for our soils — crucially including a specific oil radish that's been shown to reduce populations of free-living nematodes. Then, through a Severn Trent Environmental Protection Scheme (STEPS) grant, we secured £60/ha per year to grow the crop," he says.

With the primary aim of improving soil health, Will has since trialled cover crop variations to find the best fit.

"Due to very sandy soil conditions in parts of the farm, we're also testing how the cover crops can minimise wind-blow and enhance soil structure," he explains.

Defender mix

"Although every field and every season is different which affects results, we've seen the most success with a Defender radish/phacelia mix for controlling nematode populations, which we can also graze with sheep in late autumn.

"Before destroying the plant annually in April for the following maize crop, we check nematode populations again and have seen up to 99% reduction in target nematodes," adds Will.

Through SOYL nutrient mapping, Will says he's also seen how considerable quantities of nitrogen, phosphorus and potassium are being stored by the cover

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Undersowing maize at the Thoresby Estate has resulted in better travelling conditions at harvest time with reduced disturbance.

crop, helping to reduce leaching and nutrient loss over winter.

“With more nitrogen available in the soil, the next maize crop should benefit with fewer inputs required,” he says.

Alongside cereals and potatoes, the estate also grows 240ha of maize for biomass production, supplying three local anaerobic digestors. To help overcome challenges linked to maize production, including soil erosion, compaction and run-off, Will says he’s also used STEPS funding to under-sow maize.

“We found under-sowing a combination of ryegrass and tall fescue performs the best, drilled at the same time as planting maize in May.”

Grown on Bunter sandstone, the later-maturing maize is harvested in mid-October. “By investing in improving soil structure with under-sowing, we’ve found travelling conditions are better at harvest time with reduced disturbance. So this helps to protect soils for the following spring barley crop.”

He believes the farm’s investments in cover crops have earned their place, supported by stacking Sustainable Farming Incentive (SFI) funding on top of the Severn Trent grant. “This

funding has allowed us to make investments that we wouldn’t have made, which have had significant environmental and performance benefits,” says Will.

Over in Gloucestershire, former dairy farmer James Lowe now grows 280ha of wheat and maize near Newent. He’s also invested in cover cropping through the STEPS initiative to bolster his sandy soils.

For the past two years, STEPS has provided funding for him to grow a ryegrass and radish mix between maize crops, as a priority item that helps to protect groundwater quality.

With the aim of enhancing the health and structure of the farm’s light, sloping terrain, he came to this decision by discussing options with his local Severn Trent agricultural adviser, Susan Bamber.

On top of this, James rents out the cover-cropped ground for sheep grazing. “Not only does the cover crop offer an extra income source from the maize ground post-harvest, but the root mass also improves the organic matter and structure of the soil, benefitting my next maize crop,” he says. “With public perception in mind, a green field always looks better than bare earth.” ▶



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For the past two years, STEPS has provided funding for James Lowe to grow a ryegrass and radish mix between maize crops to help to protect groundwater quality.

▶ Reflecting on the STEPS application process, he encourages other farmers to speak to their local adviser. “It’s a straightforward process to apply so I’d recommend other farmers look into which funding options could suit you and your system — it can’t do any harm,” adds James.

By encouraging the absorption of soil nutrients, over-wintered cover crops help to mitigate the impacts of waterlogging — not only does this prime the ground for spring drilling, it also protects the environment, says Susan.

She adds that the nutrient retention function of cover crops helps to prevent run-off and leaching into local watercourses and groundwater which is particularly valuable in the instance of a wet winter.

“The erosive force of rain downpours is most likely to cause significant soil loss

through surface run-off if fields are left bare. This poses the risk of contaminating local watercourses and groundwater, impacting water quality.

“However, on cover-cropped fields, the plants intercept the raindrops before they hit the soil surface. Providing physical protection, the cover helps reduce the soil’s vulnerability to erosion and compaction.”

Breaking up compaction

Equally, Susan says the extensive root systems of cover crops such as vetch and oil radish effectively break up compacted soil layers. “By creating channels for improved water infiltration and drainage, the cover crop roots enhance soil porosity and aggregation,” she says.

“This reduces the likelihood of prolonged waterlogging and the associated damage for spring crop drilling.”

Sodden fields not only make seedbed preparation more challenging and less effective, but waterlogging can also exacerbate the loss of essential nutrients through leaching, explains Susan.

“Highly soluble nutrients such as nitrates and phosphates are particularly conducive to leaching in wet conditions, causing nutrient pollution if they’re carried beyond the root zone and into groundwater or surface water bodies.”

Furthermore, she adds that cover crops act as nutrient sinks, playing a pivotal role in farm nutrient management strategies. “The vigorous growth and extensive root systems of cover crops mean they exhibit high rates of nutrient uptake — absorbing nitrogen, phosphorous and potassium, even throughout winter.

“This reduces the amount of soluble



Susan Bamber says cover crops act as nutrient sinks, playing a pivotal role in farm nutrient management strategies

nutrients free in the soil, minimising leaching and runoff, which both negatively affect local water quality.”

Cover crop root systems are also known to secrete various beneficial compounds into the soil while growing, directly enhancing soil fertility ready for spring-drilled crops. “The roots release exudates which stimulate microbial activity in the soil’s rhizosphere,” explains Susan.

“These exudates include sugars, organic acids and other simple carbohydrates, which serve as carbon sources for soil microbes, stimulating their growth and metabolic activity.”

Cover crop roots also exude amino acids, peptides, and proteins into the soil, which offer nitrogen sources for soil microorganisms without posing a risk to water quality. “Nitrogen-rich exudates encourage nitrogen-fixing bacteria,” she adds.

“Legumes such as clover and vetch are excellent for this. By stimulating nitrogen cycling in the soil, the root exudates help make nitrogen more available for plant uptake and improve soil fertility in a nature-friendly way,” concludes Susan. ■



Cover crops can help to offset the challenges associated with maize production.

Funding scheme

To help improve soil health and protect water quality, Severn Trent is encouraging farmers in its nitrate priority catchment areas to include cover crops in their rotations.

The water company is supporting this investment with match funding through the Severn Trent Environmental Protection Scheme (STEPS), which has gained popularity since its launch ten years ago.

Severn Trent’s Susan Bamber says cover crops continue to be one of their most popular STEPS options, with up to £136/ha per year, for farmers in groundwater catchment areas, and £60/ha in surface catchment areas.

“Under-sowing maize with a tall fescue or

perennial ryegrass is another STEPS option that can help to maintain ground cover, enhance soil health and protect water quality,” she says.

Applying for STEPS

- Check the farm is located in a priority catchment: www.stwater.co.uk/steps
- Seek advice from a local Severn Trent agricultural adviser on options best suited to the farm
- Fill out an application online
- Make applications are in by 30 November 2024 (with 12 months to complete the work after an application has been accepted)