

*Improve fertiliser efficiency**... by feeding the soil microbes*

## How L-CBF TERRA FED has helped a Shropshire potato grower become more sustainable

Using the organic carbon-based fertiliser L-CBF TERRA FED has been an integral part of an overall package of measures that has helped Shropshire grower John Bubb reduce nitrogen fertiliser use on his 800ha farm by 20%.

It's part of an ongoing journey to make the farm's practices more sustainable, after recognition that years of using various pesticides, especially soil sterilants and nematicides for potato cyst nematode control, alongside leaving soil bare over winter and intensive cultivation practices had left the farm's soils in poor health.

"We've used pesticides as an insurance policy, with a mentality that even with a small risk we would still use nematicides on our potato land just in case," John says.

"In 2019, we were buying 4.5t of nematicides that cost over £50,000, and our yields weren't getting any better. It was obvious it wasn't going to be sustainable in the long run."



The farm grows 184ha of potatoes for processing by McCain, alongside flowers for drying, wheat and oilseed rape, and a whole raft of changes have been made to how these crops are grown over the past four seasons.

Examples include the adoption of growing multi-species cover crops before potatoes and flowers, growing catch crops between oilseed rape and wheat, and reducing cultivations including before potatoes, where the farm is involved in an Innovate UK research project helping to develop machinery to reduce tillage intensity in the crop.

One of the very first changes was to include L-CBF TERRA FED to mitigate the impact of either cultivation or liquid fertiliser on soil biology.

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“The initial idea was to use it whenever we cultivate, as we couldn’t be completely zero-tillage,” John explains.

“Every time we cultivate, the soil is oxygenated, which wakes up all the soil microbes. They want to eat something, but we don’t want them to use our organic matter, so the point of the molasses is you’re putting some carbon in the soil to use. It’s a different form of carbon and in a form they like.

“So using L-CBF TERRA FED is helping the soil biology out, and helping us out because they don’t consume our organic matter.”

In potatoes, the planter is equipped with an in-furrow applicator through which he applies L-CBF TERRA FED mixed with liquid fertiliser along with humic acid. “It’s the obvious way to apply it.”

The farm uses a strip-till system to plant flowers and oilseed rape, where a small amount of fertiliser is placed, again with added L-CBF TERRA FED and humic acid, while in wheat it’s applied in combination with liquid fertiliser during spring applications.



Applying a carbon source with liquid fertiliser has the benefit of softening the effects of the nitrogen fertiliser on both the crop and soil, adds John’s agronomist Ed Brown of Hutchinsons.

“There’s anecdotal evidence that it reduces scorch, and while I would never rely on it because if it is the right weather to produce scorch, it’s not going to reduce scorch by a significant amount, the fact it can potentially help is a good thing.

“It’s also a good source of carbon for soil biology. I add humic acid to help reduce ammonia losses. Ammonium is positively charged, while L-CBF TERRA FED and humic acid are negatively charged so obviously opposites attract.

“In that way, it’s essentially doing the same job as a urease inhibitor in a much, in my opinion, preferable way as it doesn’t interfere with soil biology as the inhibitors do,” he says.

Using L-CBF TERRA FED and humic acid isn’t the only change John has made to his nutrition programmes. The liquid fertiliser product has changed to 30% nitrogen + sulphur, rather than a 9:5:11 blend, which has helped improve efficiency at planting by reducing the application rate from 1200 L/ha to 400 L/ha.

He also adds boron, calcium, and PC25, a phosphate solubilising bacteria, at planting and uses sap analysis throughout the growing season to better understand the crop’s nutrient use and help tailor micronutrient use to keep the crop healthy.

All of those changes, plus the use of clover in cover crops, have contributed to an 18% reduction in 2023 in applied nitrogen compared with the last year of more conventional potato growing in 2019.



“Testing for available phosphorus, and not just indices, plus using buckwheat in cover crops and the PC25 bacteria has reduced phosphate use by 92%, while testing for available potash and ensuring enough for peak crop demand, has reduced it by 34%,” John says.

While John doesn't believe any single one of those changes is responsible for the reduction, the combination has resulted in useful reductions.

“**...both crops yielded 74t/ha with an identical marketable yield, which gave a saving of £345/ha from the new (L-CBF TERRA FED) programme.**”

“To back this up, we did a trial comparing the farm standard with the new recommendations. Nitrogen was reduced from 210 kgN/ha to 180 kgN/ha, plus the L-CBF TERRA FED. The soil test showed enough available phosphate, so we didn't add any in the new recommended treatment and just enough potash to meet the peak demand from the crop.

“During the growing season, we did a couple of sap tests and realised that nutrient levels were the same in both crops, despite putting a lot less nutrient on in the new programme.

“And at the end of the season both crops yielded 74t/ha with an identical marketable yield, which gave a saving of £345/ha from the new programme,” he concludes.

*Find out more*

