

'Liquid carbon' helps to rebuild soil health

Easy-to-apply plant-based product

A Lincolnshire growing is using "liquid carbon" to improve soil health and improve crop nutrient uptake.

Joe Vickers manages 1500ha across four units within a 32-mile radius near Spilsby on the Wash in Lincolnshire. Farming a wide range of soils from Grade 1 silt to heavy fen land and sand, he grows combinable crops, sugar beet and potatoes.

"I had become increasingly interested in soil health and the benefits it could bring," says Mr Vickers.

"As part of a wider plan to improve soils, I decided we needed to take steps to improve soil biology while building and maintaining soil carbon levels, which we knew would be a long-term activity.

"As part of a holistic approach I was encouraged to include liquid carbon supplementation in our programme, and they have fitted seamlessly into our operations."

Feeding the soil

ED&F Man Agronomy offers various products containing liquid carbon, primarily derived from molasses and other plant-based sources. These products are designed to enhance soil health and improve crop yields, says the company.

"Reduced soil carbon and lower levels of organic matter compromise crop yields," says Mr Vickers.

Rebuilding soil organic matter can promote more efficient nutrient uptake for more profitable and sustainable production, he adds.

Improving the soil microbiome is an effective way to stimulate soil biology,

increasing the activity of fungi and protozoa as well as bacteria. Additionally, increasing the supply of carbon will help to improve the soil's physical and chemical properties.

"Plants produce carbohydrates via photosynthesis, and any surplus is used for root exudates to feed the soil microbiota," explains Alistair Hugill, from ED&F Man.

"When performing well a plant will provide 40% of the products from photosynthesis into the soil via root exudates, containing carbon and sugars.

Sugar and carbon

"If we feed the plant with a source of sugar and carbon, it can meet its demand for carbohydrates for growth more efficiently and allowing the production of root exudates to increase, supporting a healthier soil microbial population."

Liquid carbon products from ED&F Man are formulated for soil and foliar application. Filtered to 200 microns, they are suitable for use in the majority of spraying systems typically at around 2-5 litres/ha depending on the crop.

All products are high in carbon and sugars from sustainable sources complemented with a range of other ingredients. The high carbohydrate content stimulates microbial populations in the organic layer and drives microbial activity.

Mr Vickers has been using soil and foliar applied supplements for five years. Applied with liquid fertiliser at 3-5 litres/ha, the soil application means he is feeding the microbiome around the seed.

Stronger roots

This provides a feed and carbon source to increase soil bacteria which in turn encourages stronger rooting and better crop establishment. The increased carbon supply also helps maintain and build carbon levels in the soil.

Foliar applications during the season help increase the supply of exudates to the roots to maintain the flow



Healthier soil means healthier crops and higher yields, says Joe Vickers

of nutrients from bacterial activity. The organic acids applied help further boost the supply of nutrients, resulting in stronger plants.

"We are now seeing significant benefits from the focus on soil health," says Mr Vickers. "We have seen increased worm counts and soil workability has definitely improved, speeding up crop establishment by reducing tillage.

"We are seeing improved root development which has helped plants develop strongly. Crops are better able to withstand the effects of frost and recover more quickly after any periods of drought.

Efficiency of nitrogen use has also improved, says Mr Vickers.

"Crop yields and quality have been consistent, and we are now reducing nitrogen usage. We are producing milling wheat at 13-14% protein from 210kgN/ha whereas previously we had been using in excess of 250kg/ha.

"Liquid carbon is providing a feed source for the food web in the soil. If it's right for the soil, it's right for the plant and for returns."

“We need to improve soil biology

Left: Alistair Hugill gives tips on feeding crops

