

AUTUMN CROPS



Joe Vickers has been using liquid carbon supplementation on his farm for five years to help improve soil health

Soil health is the key to sustainable production

IMPROVING soil health is becoming increasingly important for long-term and sustainable arable production.

While adding sources of carbon direct to soils at crop establishment could play a significant role in replenishing soil organic matter and improving soil health, approaches such as reduced cultivations and min till or no till are also being taken up alongside the use of cover crops to try to reduce the degradation of organic matter.

A range of soil and crop nutrition supplements based on sustainable molasses is now available to help farmers achieve cost-effective performance improvements at the same time as optimising traditional chemical inputs across

a range of crops.

“They can help to improve soil fertility and crop growth in a sustainable way and reverse some of the problems resulting from declining soil health,” explains Alistair Hugill from ED&F Man Agronomy.

“Reduced soil carbon and lower levels of organic matter compromise crop yields. It is therefore important to reverse this trend, rebuild soil organic matter and promote more efficient nutrient uptake for more profitable and sustainable production.”

Research has shown that increasing the supply of readily available energy to 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.

In a symbiotic relationship, plants provide carbohydrates and carbon to the soil in the form of root exudates – effectively a sugar/carbon solution for the microbes. In return, the microbes and organic acids increase the rate at which mineral nutrients in the soil are dissolved, increasing their availability to the plant.

“Plants produce carbohydrates via photosynthesis, with any surplus used for root exudates to feed the soil microbiota,” Alistair continues.

“When performing well a plant will provide 40 per cent of the products from photosynthesis – which contain carbon and sugars – into the soil via root exudates.

“If we feed the plant with a source of sugar and carbon it can meet its demand for carbohydrates for growth more efficiently while still photosynthesising at the same rate and allowing the production of root exudates to increase, supporting a healthier soil microbial population and in turn increasing nutrient supply to the plant.”

Liquid carbon products from ED&F Man Agronomy are formulated for soil and foliar application. Filtered to

200 microns, they are suitable for use in the majority of spraying systems, typically at about 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.

For five years Lincolnshire grower Joe Vickers has been successfully using liquid carbon supplementation to help improve soil health and rebuild soil carbon content.

Joe manages 1,500ha 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,” Joe says. “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 it has fitted seamlessly

into our operations.

Following advice from his agronomist, Gary White, Joe has been using soil and foliar applied supplements with the aim of encouraging stronger initial root development at the start of the season, then continuing to feed the soil microflora to maintain the supply of nutrients to the plant.

Applied with liquid fertiliser at 3-5 litres/ha, the soil application means Joe is feeding the microbiome around the seed as well as providing 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 to maintain and build carbon levels in the soil.

Foliar applications during the season help to increase the supply of exudates to the roots to maintain the flow of nutrients from bacterial activity, while the organic acids applied help to further boost the supply of nutrients, resulting in stronger plants which are not held back by nutrient availability.

“We are now seeing significant benefits from the focus on soil health,” Joe says.

“We are seeing improved root development which has helped plants to develop strongly, and crops are better able to withstand the effects



Alistair Hugill of ED&F Man Agronomy

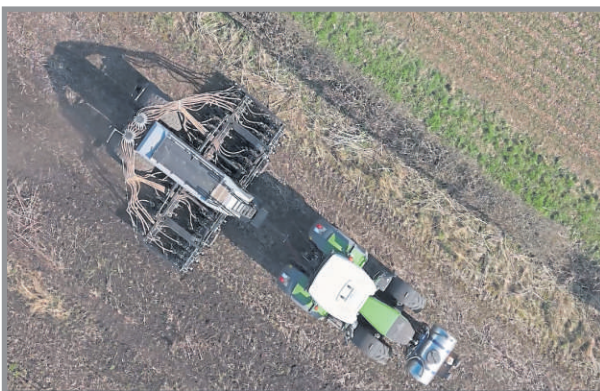
of frost and recover more quickly after any periods of drought.

“We have also seen increased worm counts and soil workability has definitely improved, speeding up crop establishment by reducing tillage.

“Crop yields and quality have been consistent, and we are now reducing nitrogen usage.

“We are producing milling wheat at 13-14 per cent protein from 210kgN/ha whereas previously we had been using in excess of 250kg/ha. Efficiency of nitrogen use has improved.

“Liquid carbon is providing a feed source for the food web in the soil – and if it’s right for the soil, it’s right for the plant and for returns.”



The soil improver is applied with liquid fertiliser