

Right balance essential for farming future

Good husbandry and environmental management go hand-in-hand

A Cambridgeshire farmer is using environmental measures to bolster business performance.

David Felce, who farms 404ha at Midloe Grange, near St Neots, says actions to improve environmental sustainability are only viable if they support the economic sustainability of his arable unit too.

Many approaches which reduce the environmental impact of farming can also increase costs, reduce margins and lower profitability, says Mr Felce, a former Agrii agronomist. It's crucial to strike the right balance, he adds.

Here and now

"Economic sustainability is short term sustainability. It is about the here and now. Environmental sustainability is more long term. But without economic sustainability we can't hope to deliver environmental sustainability."

The land comprises his own farm and land run with a neighbour. Economic sustainability keeps the business running while the environmental benefits are realised, says Mr Felce.

"Businesses need to understand how much can be diverted from margins to invest in the environment.



"It's vital to determine what is best for your business and your circumstances as all businesses are different," he adds.

Businesses must first invest in the proven techniques to drive margins, says Mr Felce. These include drainage, pH, weed and pest control and nitrogen applications, he adds. These are all well-understood and science proven improvements and their use should be non-negotiable.

It's vital to determine what is best for your business, says David Felce

A drone view of Midloe Grange Farm

Next, Mr Felce says the approach should be to invest in new techniques which can all bring environmental benefits. These are not replacements for proven techniques but should be seen as add-ons to help improve environmental sustainability.

Sustainability

"What you are doing is making an investment in the future, funding this by using some of today's economic



sustainability. Determining the price point at which these investments are economic can be difficult.

“If you invest in improving the soil you might see a yield increase which can be quantified but how do you quantify that the soil is working better?”

On his own farm, Mr Felce grows winter wheat, spring barley, some permanent pasture and a legume fallow with some land allocated to biodiversity net gain. This will be the last year of legume fallow – and Mr Felce says will probably return to growing oil-seed rape.

Blackgrass affects both the rotation and field operations. While he will low-disturbance subsoil and disc for second wheats, he tends to plough before spring barley.

Good establishment is

“**It is vital to determine what is best**

Alistair Hugill: Symbiotic relationship

If winter wheat has blackgrass, Mr Felce goes straight into a spring crop.

In the past, cover crops were grown. But Mr Felce has concluded that they aren't suited to the farm. Unless you get a fine seed bed, you won't get a good establishment, he says. On his soils with 50% silt crops have struggled to get away.

That's because the soil goes hard, making it impossible to create a friable seedbed. “The establishment and removal costs mean the crop isn't worth it. My focus now is looking to improve soils which are the foundation of all we do.

Organic content

“Without access to organic manures, we need to understand how to manipulate the chemical, biological and phys-

ical functions of soils as this is what allows crops to thrive,” says Mr Felce.

“What will work on any farm will depend on the soils present as all soil types are different. The challenge is how to improve and maintain organic matter and the carbon has to be in the right form.

Straw, for example, needs to be broken down before the carbon can be utilised. “The combination of 4-6% organic matter and a healthy soil microbial population will allow soils to function most effectively.”

For the last two years, the farm has trialled a specially formulated molasses supplement, Fortis CP, to boost soil function. Adding the supplement increases the supply of readily available energy to the soil microbiome.

Mr Felce says this is an effective way to increase 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 and soil

“There has always been a symbiotic relationship between plants and the soil,” explains Alistair Hugill from ED&F Man Agronomy.

“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, and any surplus is ex-



Profile | Midloe Grange Farm

>> creted as root exudates to feed the soil microbiota. When performing well a plant will provide 40% of the products from photosynthesis into the soil containing carbon and sugars.

“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.

Healthier soil

This means the production of root exudates increases. In turn, this supports a healthier soil microbial population and in turn increasing nutrient supply to the plant. ED&F Man Agronomy has a range of supplements based on sustainable molasses to boost crop performance cost-effectively.

Adding sugar-based carbon helps release the nitrogen in the soil, says Mr Felce. Providing carbohydrates as a microbial feed source increases the breakdown of straw, he adds. If soil microbes are not fed, their activity stalls and straw is not broken down.

“I was interested in using a molasses-based crop nutrient for several reasons. The science behind it was sound, it was not cost-prohibitive, using it would not over-complicate the system and it is a natural co-product.”

Liquid fertiliser

The initial applications are applied with liquid fertiliser. Mr Felce applies 10 litres/ha with the first nitrogen application to give a large dose of nitrogen combined with a high level of carbon. A further 10 litres/ha will be applied before the end of March.

A final 5 litres/ha are applied with fungicide at T0 or T3. The molasses-based supplement is easily applied by bucket from an IBC, adds Mr Felce. It mixes easily and has meant no changes to field work.



My focus now is to improve the soil

Soil microbes must be fed to break down straw



“By increasing the availability of soil nitrogen, it might be possible to achieve the same yields and reduce nitrogen applications,” says Mr Felce.

However, it might be more efficient keeping applications the same and increasing total supply to the crop.

This will improve nitrogen use efficiency and carbon capture from a larger crop.

“At present, I am happy to be investing some of the current margins in the supplement to help improve environmental impact of our system.”



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