

Challenge the status quo

Crop nutrition

It's easy to keep on doing the same thing but could alternative nutritional products have advantages beyond just feeding the crop. *CPM* takes a closer look.

By Rob Jones

After the driest summer in nearly 50 years and a drought declared across the majority of England, the pressure on farmers has been unrelenting, with warnings of crop failures.

There's no denying that not only are global temperatures increasing, but extreme weather conditions are also becoming the norm and that's giving farmers a whole host of problems to contend with.

"There seems to be an issue with the weather every year," comments Brett Fordham, commercial manager at Fakenham-based Payne Crop Nutrition. "For instance, while we have just had the driest July on record in the East, 18 months ago we saw the wettest winter ever."

It's possible a harbinger of things to come. Experts expect the weather to become even more unsettled, with the Met Office predicting winters will be between

1 and 4.5°C warmer and up to 30% wetter, and summers will be 1-6°C warmer and up to 60% drier by 2070.

As a result, Brett says farmers may have to adjust their practices accordingly to ensure their soils are resilient to the stresses they could face.

"With the autumn crop establishment period here, the focus should not only be on getting crops off to the best start, but also on making sure they're resilient to the weather extremes they may face during the growing cycle," he says.

Building resilience

The first step to this is by building healthy soils," says Brett. "Resilient soils are better able to cope with extreme weather events. They hold more water and enable roots to establish more quickly and deeply, as well as recover sooner from cultivation and other mechanical stresses.

Whether or not soils are resistant to the stresses caused by cultivations, weather and crop production depends on several mechanical, biological and chemical factors, he notes. "These include soil structure, organic matter, soil biology, nutrition, and pH."

Because of this complexity, it can be difficult for growers who want to improve the resilience of their soils to know where to begin. But a good starting point is to look at sustainable nutrition which aids crop establishment, he suggests.

“It's not just about providing nutrition, we encourage people to use more organic matter, and then use products and management tools which makes it possible to utilise plant-friendly nutrition.”

Autumn soil management is the starting point for nutrient plans, he says, which are usually based on a combination of soil analysis and a historical understanding of the field in question. He recommends all fields, post-harvest, should be soil tested to understand the mineral composition and wider soil health status.

"The ability for crops to uptake some nutrients can be impacted by other mineral deficiencies, so having a full outlook of macro and micronutrients is key, as well as organic matter levels, as this will give you an idea of your soil fertility," he adds.

Brett says this process also involves grabbing a spade and looking at the wider soil structure. "Look at the worm population, the target should be more than 10 per ▶



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Once the soil analysis is known, nutrition plans can be built. “Don’t be afraid to challenge the status-quo,” he notes. “With the backdrop of extreme weather challenges, volatile input prices and uncertainty around government support, this is the year to review practices”.

One farmer ripping up the usual rule book is Frank Stennett of Genevieve Farms, who has reviewed his approach to crop nutrition this autumn.

The farm grows 12,000 tonnes of sugar beet, as well as 120ha of oilseed rape and up to 400ha of cereals in Norfolk and Suffolk. Frank explains that this year he has moved to Timac Agro fertiliser products, for two primary reasons; firstly, to reduce the number of passes needed to apply spring fertiliser, which he believes allows him to be timelier in his operations, and secondly to reduce costs in the long-term.

For example, he says rather than having to follow up an initial nitrogen application with another application, using a product like Timac’s Sulfammo provides both nitrogen and sulphur in a single pass.

He believes this pass saving, together with the extra nutrients that the product contains, justifies the increased cost when compared with simple products such as ammonium nitrate or straight urea.

“Sulfammo also contains magnesium and calcium. It has an enhancer which prevents leaching and makes the nutrients available to the crop for a longer period, which also provides a bit more of a buffer and extended nutrition window,” explains Frank.

“With its sulphur and magnesium content, I expect it to be particularly useful on our OSR crops which can be a bit short of

magnesium, especially on our lighter land, while the enhancer also improves nutrient use efficiency. So, we’re expecting the crop to get much more of the nitrogen that’s been applied, which should mean we’re able to slightly reduce our rate but get a better response.”

As well as Sulfammo, Frank will be using a starter fertiliser, Physiostart, on his OSR. He explains it contains the plant hormone cytokinin, which stimulates germination and rooting, as well as nitrogen, phosphorus, sulphur, zinc and calcium.

Plant-friendly nutrition

“As a micro-granule the nutrition is immediately available for the seedling, enabling extra root growth giving the plant the opportunity to obtain more nutrition throughout the season. It gives the plant a better start and greater resilience, as early root growth carries through the life of the plant.”

Increasing natural resilience lies at the heart of Timac’s philosophy. “It’s not just about providing nutrition,” says David Newton, the firm’s technical manager. “We encourage people to use more organic matter, and then use products and management tools which makes it possible to utilise plant-friendly nutrition.”

Many of the company’s products include its N-Pro biostimulants, which opens up the nitrogen uptake pathway and stimulates extra nitrate reductase production within the plant, he claims.

“This increases the plant’s capacity to deal with nitrogen, so it converts more nitrate into protein,” explains David. “If you keep that pathway open, the plant stays hungry for more nitrogen and other nutrients. The effect is persistent, so you can put on a product like Sulfammo early in the season then apply another fertiliser up to three months later, and the plant is still stimulated to uptake that nitrogen more efficiently.”

He adds that in Sulfammo, the humates are used to bind urea and ammonium sulphate so they’re released slowly on demand by the plant.

“However, there’s more to our products than biostimulants. For example, Top-Phos contains a completely new form of water-soluble phosphate which is more efficient than Triple Super Phosphate (TSP) or monoammonium phosphate,” he notes.

“This means it can be used in a variety of different soils and different situations and at a much lower rate than TSP,” says David. “Less phosphate is locked up and wasted, so it’s a lot better for the crop, the environment, and less likely to



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leach into water courses.”

So what’s the basis of his claim? “The phosphate is protected by natural humates, and these help to stimulate the soil biology, so you see an uplift in soil bacterial action which results in extra mineralisation of organic matter. This means the plant utilises more of the natural phosphate and nitrogen in the soil,” he says.

David explains that because Top-Phos is a slow-release form of phosphate, a large amount isn’t released into the soil system at any one time. This means the natural balance of biology and chemistry in the soil is stable, and the phosphate is actually available when the plant needs it most — often around the flowering period.

“Both Top-Phos and Sulfammo also provide sulphur which is essential for crop yield, crop quality and crop protein production,” he adds.

“By providing slow-release nitrogen, together with calcium and magnesium, we’re reinforcing the soil’s ability to be able to provide other nutrients,” he suggests. “In trials, the use of Sulfammo has shown an increase in soil bacterial activity, so you’re getting perhaps 5-6% more nitrogen available to the plant than is directly supplied by the product through increased efficiency and retrieval of soil nitrogen.”

David believes that by applying these technical fertilisers early in the season, plants are stimulated to be more resilient throughout their growth and make more efficient use of other nutrients. “With macro and micro-nutrient prices set to stay inflated for some time and concerns over some input availability, planning now to ensure you’re setting crops up well will pay dividends at harvest.” ■