Practical steps to improve crop nutrition for next season's fertiliser strategy

Planning for next season's fertiliser approach may already be under way and having the knowledge to make informed decisions before purchasing will make the best use of any investment.

Arable farmers looking for ways to improve crop nutrition for next year's growing season should be focussing on some simple on-farm changes to increase the return on fertiliser. Toby Ward, nutrition agronomist at Origin Fertilisers, explains why knowing what the soil and crop demands are will influence strategies for future years.

"We need to be managing what is in our control to make better use of any nutrition applied to the soil. Farmers should be questioning if their fertiliser policy is the right one, as the most expensive fertiliser is the wrong fertiliser," says Mr Ward, who provides advice for farmers in East Anglia and the south-east.

"Helping the plant to achieve a better nitrogen recovery has a quantifiable economic benefit. Not only is more of the applied nitrogen accessible to the plant to increase yields and crop protein, but losses through leaching and volatilisation are drastically reduced. It starts at farm level and there are steps that all farmers can take to understand how feeding their soil has multiple benefits."

1. **Broad spectrum analysis**

Growers should be looking to carry out three separate analyses throughout the season. The first should be a broad-spectrum soil analysis that will allow a FACTS qualified advisor to tailor a nutrient strategy specific to any given soil.

"This can be through a prescription fertiliser service, such as Origin's Nutri-Match, that develops bespoke fertiliser blends with up to 14 nutrients to provide an exact match to the soil and crop needs," Mr Ward explains.

"Grower should be looking to calculate the soil nitrogen supply available in the soil using the Field Assessment Method or the measurement method. A broad-spectrum soil analysis, rather than just analysis of the main nutrients, will provide the required information to build a nutrient programme. Calculating the organic matter that is already present lets the nutrient additions from subsequent fertiliser applications take these residual stocks into account."

Analysis of the leaf during the growing season and then a final analysis of the grain after harvest will give the farm a full picture of exactly how effective a nutrient strategy has been.

"Soil analysis tells us what we think is going to happen, leaf analysis is a live account of how the crop is accessing the nutrients and if there is anything that needs changing during the season, while a final grain mineral analysis enables us to accurately determine the specific nutrient off-take in the crop.

"These measurements provide a baseline, and every farmer should be testing as matter of course. This detailed and cost-effective insight can help fine tune advice and shouldn't be neglected just because fertiliser prices have increased, if anything, in-depth analysis on soil and crop performance is more valuable than ever," adds Mr Ward.

2. Calculating nitrogen use efficiency

Once the data has been recorded, farmers are able to work out nitrogen use efficiency (NUE), which is a % measurement that benchmarks against the total nitrogen input during a growing year and total nitrogen taken out by the crop.

“Increasing NUE allows more nitrogen to be recovered by the crop, but this is only possible if farmers know what nutrient factors are limiting the access to the unused nitrogen. Small incremental increases in NUE will see yields rise and grain proteins increase and could also contribute to lowering the amount of nitrogen applied year on year.

“The enhanced efficiency fertilisers in Origin’s NUE-TRITION range have been proven through independent trails and research to increase NUE. This has been achieved through micro-nutrient coatings on fertiliser such as molybdenum and manganese, along with prescription fertilisers and urease and nitrification inhibitors,” adds Mr Ward.

By working out this figure, farmers have a start point and can benchmark any increases in future years against it.

3. Tailor your approach

When fertiliser is expensive, targeting areas that need nutrition by using informed analytics rather than topping up already well-stocked nutrients, is more essential than ever.

“Currently, nitrogen is costing well over £2/kg, so every extra kg that is available to the crop is a significant saving to the farmer. Growers shouldn’t forget that sulphur is a key part of a nutrient strategy and is proven to increase nitrogen uptake, so could allow farmers to reduce the amount of nitrogen applied.

“Other areas of improvement could be if the soil has a low pH level, then a lime application in either spring or autumn should be a high priority, while adjusting the P and K balance within the profile will improve the overall fertility of the soil.”

4. Micronutrient additions

Additional micronutrients can help create a balance within the soil profile. This will enable farmers to be proactive rather than reactive during the growing season by identifying deficient micronutrients at the beginning of the year and applying them in time for the crop to use them.

“A crop that’s become deficient in a micronutrient, such as copper or molybdenum, during the growing season means that valuable yield potential has already been lost. By using the data and providing a curative measure at the start of the season, rather than a reactive one at the point of deficiency, the crop’s yield potential won’t be limited.”

Using micronutrients can also help promote the nitrifying bacteria that feeds the nitrogen cycle to maximise N recovery. Growers should also consider using protected nitrogen and urea with urease inhibitors, such as Origin Enhanced N, Sustain or ENTEC.

“Using analytics to drive advice that informs specific fertiliser and nutrition programmes should be a key factor in fertiliser planning for next year,” concludes Mr Ward.