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# True nutritional status

## Applied Innovation

The eagle eyed among television viewers may have spotted SAP analysis results being scrutinised on a recent episode of *Clarkson's Farm*. CPM looks at why the service has grown in popularity since its inception more than 30 years ago.

By Janine Adamson

Love him or hate him, there's no denying Jeremy Clarkson of *Top Gear* fame has fast become a hit among agriculturalists and the general public alike thanks to his candid account of running Diddly Squat Farm in Chipping Norton.

Through the past three series, viewers have learned just how difficult it can be to make traditional cropping pay, and in more recent episodes, Jeremy has turned to regenerative farming in an attempt to add value.

Part of this involved using SAP analysis to understand the nutritional deficiencies of a regen wheat crop so that applications could be adequately tailored. Diddly Squat aside, Omex Agriculture's Scott Baker says whereas in the past SAP testing has been used to understand poor performance, it's now playing a role in strategic management.

"SAP analysis is essentially a blood test for a plant — it offers a complete overview

of a plant's nutrient uptake while detecting deficiencies and/or excesses before visible symptoms appear.

"Whereas before it was being used to identify the reasons why a crop might not be performing to its potential, we now find SAP testing is being used ahead of key fungicide timings, so that required nutrition can be added into tank mixes for optimum efficiency and output," he explains.

At a very simplistic level, SAP analysis is a means of assuring growers that they're not over or under applying nutritional products, continues Scott.

### Plant-available nutrition

"And whereas conventional tissue testing reports the level of nutrients in a sample, it includes those which are locked up or unavailable to the plant. Although any form of testing is valuable, SAP testing is different in that it identifies the nutrition which is available to the plant."

Omex offers this nutritional analysis service by using the purpose-built Scientific Agricultural Partnership (SAP) laboratories in King's Lynn. The labs extract, analyse and interpret sap samples taken from growing plants, using 17 macro and micro nutrient parameters for a complete picture.

Interpretation is conducted by a team of qualified agronomists, allowing individual recommendations to be created for active nutritional management of the crop. Each report indicates the levels of No3, NH4, P, K, Mg, S, Ca, Na, Cl, Mn, B, Cu, Fe, Zn, Mo, Al in an easy to interpret bar chart, as well as pH.

Scott says the system has been

developed for decades and continues to evolve as new varieties come to the market and cropping systems evolve. "What this gives us is a wealth of data to tap into; we also analyse samples from Europe which adds further intelligence.

"What we have noticed is that there's been a surge in the use of SAP testing since around 2016, which coincides with regenerative farming becoming of greater interest in the UK. The reason behind that is SAP analysis supports the ethos of producing more from less, while taking proactive steps to decarbonise the food chain," he adds.

"It makes sense — stronger, healthier plants are better positioned to withstand stress and external pest pressure. But it's worth remembering that SAP analysis has a place in any system that wants to be targeted and efficient with its use of inputs." ▶



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► With data in mind, Scott points out that Omex provides monthly snapshot trends based on the findings of SAP analysis. "This has been a challenging season and what we've seen so far is a pattern of deficiencies

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Specialising in complex liquid formulations for use in industries ranging from agriculture to energy, Omex develops, manufactures and supplies liquid fertilisers and crop nutrition solutions.

Also part of the company's portfolio is a full nutritional review service known as SAP analysis. This offers a highly accurate and topical assessment of the true nutritional status of a crop. Crucially, SAP analysis measures only the



levels of crop nutrients available for plant growth.

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in highly mobile nutrients such as sulphur, due to waterlogging and leaching. For growers, this can result in an impact on NUE and quality.

"We know sulphur helps to hold amino acids together which are the building blocks of protein. One market where premiums can be achieved is milling wheat, so correcting sulphur deficiencies will be particularly prevalent to those growers," he explains.

According to Scott, other seasonal trends include deficiencies in micronutrients such as boron in sugar beet crops,

and manganese.

But given SAP analysis is about improving production efficiencies, how does the service stack up? "We believe in making it accessible to all, so it's competitively positioned price-wise. As a benchmark, a tissue test costs around £33," he states.

"The benefit of SAP testing is it helps growers to get ahead with a crop's nutritional requirements, before the symptoms of deficiency are visible, which could have a significant impact on yield and therefore profitability," confirms Scott. ■

## Mitigating stress through SAP analysis

SAP analysis was introduced to Albanwise Yorkshire Farms four years ago due to deficiencies in magnesium on the company's chalky soils across the North Yorkshire Wolds, and manganese across the high organic matter land in East Yorkshire.

Will Jones says it's becoming an increasingly essential management tool for the business. "We use SAP analysis to check the nutritional status of crops before a deficiency issue becomes visual, when it's nearly always too late to avoid a degree of yield and quality loss," he explains.

Deficiencies in copper, boron, zinc, and molybdenum are also a common issue across much of the land farmed by the company.

"We only apply essential nutrients when the SAP analysis says there's a deficiency — we send Omex a field map for one of its field staff to come out and take samples two days prior to spraying TO, T1 and T2. Each position is GPS mapped so that when the next sample is taken, it always comes from exactly the same place," says Will.

Analysis is then carried out at the Omex lab with results returned via email within 72 hours.

"A three-way discussion then takes place between Omex's national agronomy manager Scott Baker, our independent agronomist and myself," he continues.

Albanwise has its own bulk storage facility for magnesium and manganese, while IBC quantities

of copper, boron, zinc, and molybdenum are also kept on farm.

"We have a very tight window to apply essential nutrition with the T-spray timings. We're using up to 10,000 litres per year of manganese and magnesium, so any delay in spraying by not having the product on site when we require it isn't an option.

"Before SAP analysis, we had to rely on visual crop inspections but of course by then it's too late to rectify a deficiency problem without inevitable yield loss. It becomes a firefighting exercise rather than a preventative action," explains Will.

Although he doesn't use tissue testing, he recognises that many farming businesses do. "Our preference is SAP — we liken it to a blood test in that through your blood a doctor can accurately determine what a particular problem is exactly at that time.

"The problem with tissue testing in my opinion, is, rather like testing skin, the tissue of a plant contains historical information about a problem that might have been present beforehand, but may not be a problem any longer or the damage of that particular deficiency has already occurred," he points out.

But most importantly, crop stress is something that Will is aiming to avoid. "A stressed crop is usually less green for a start so there's less green leaf area to photosynthesise which



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leads to lower yields.

"I'd add that a stressed crop can be caused by many reasons though, including weather, soils, drought, soil type, temperature, topography and general disease pressure. But, what's certain is that a healthy crop is far better able to deal with any of these issues, in the same way that a human is better able to beat something like a common cold when healthy and fit.

"I'm in no doubt that the future will see more use of SAP analysis and by keeping a crop healthy and in good condition so it can utilise its own immune system, we might be able to reduce our dependency on fungicides," concludes Will.