

# Making maize pay



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BOB FABRI

**With 2024 proving a poor year for UK maize thanks to below optimum starch, protein and dry matter levels, are there steps growers can take to help the crop pay its way? CPM attended this year’s maize forum to find out the answer.**

*By Janine Adamson*

**S**pring last year will long remain etched on the memories of many. The relentless inclement weather meant planting and therefore rotations were thrown up in the air and in some cases, the result was growing a completely different crop entirely, if drilling a crop at all.

Among the options cast under the spotlight was maize thanks to its later drilling date, multiple end uses and viability as a cereal break. However, with wet conditions continuing throughout spring followed by a cooler than average summer, Harvest 2024 results were far from groundbreaking.

With fingers burnt a little, will this prove enough to undo maize’s improving status with farmers, particularly those in the arable sector? Acknowledging the reputational risk of last harvest and how to overcome it was the theme of this year’s online maize forum – a venture involving Eurofins, Origin Soil Nutrition and Limagrain.

Opening up the discussion was

Eurofins’ Bob Fabri who shared thoughts on why maize silage tests have revealed starch and dry matter levels have hit a five-year low.

“Reviewing maize samples analysed by Eurofins in 2020-2024, we see that although ME (metabolisable energy) levels are relatively stable, there’s been a decline in average starch levels, an increase in NDF (neutral detergent fibre) with fluctuating sugar levels and TFAs (see table).”

### QUESTIONING WHY

“Looking at starch specifically, this means a poorer quality product, although this isn’t reflected through the ME. Why are we seeing this?” questioned Bob.

He referred to a similar scenario in the Netherlands which had been attributed to a dry summer and as such, Bob shared the UK’s cumulative rainfall levels for the past five years.

“Looking at a conventional maize plant, it uses most water June-August. Unlike in the Netherlands when that

period was very dry, in the UK, there was a steep increase in cumulative rainfall during all years, therefore this can’t be the reason for the decline in starch.”

Then, Bob reminded that maize is a C4 plant, in that it ‘supercharges’ its photosynthesis in hot, dry environments. “Maize thrives in conditions with a lot of sunlight and requires high temperatures to mature effectively, the ideal being 25-30°C during the day.

“Looking at the UK’s average monthly temperatures, in July 2024 it was cold and average sunlight hours per month were



### Changing conditions

Eurofins’ Bob Fabri said it’s clear climatic conditions are hugely impactful on the quality of maize.

	ME MJ/kg DM	Starch gr/kg DM	Digestible OM (%)	NDF g/kg DM	Sugar gr/kg DM	TFA gr/kg DM
2024	11.2	265	74.1	447	17	69
2023	11.2	296	74.5	432	15	63
2022	11.6	303	76.5	408	18	70
2021	11.3	310	74.9	415	15	66
2020	11.5	299	75.7	412	17	71

also down meaning conditions weren't optimum for photosynthesis and therefore crop growth. Although in August there was an increase in both temperature and sunlight hours, it wasn't enough to boost the starch levels," he explained.

To add a further layer of complexity, Bob pointed out that in 2022 average temperatures were high during the summer months with good sunlight hours but starch levels still weren't outstanding. He said this was likely due to a lack of rainfall at an earlier stage in the crop's growth cycle.

"You have to combine all factors so it's hard to pinpoint one primary influencer behind the crop's performance. However, it's clear climatic conditions are hugely impactful on the quality of maize.

"Overall, the UK is seeing a shift in temperature with warmer conditions earlier in the season and less sunlight later in the year. This reaffirms the importance of varietal selection and whether those chosen remain appropriate for the UK given the changing conditions," said Bob.

Another key influencer of maize performance is crop nutrition, particularly in young plants, stressed Guillaume Franklin from Origin Soil Nutrition. He began by referring to RB209, highlighting that nitrogen recommendations for the crop are lower than wheat and barley, whereas phosphate can be a little higher and potash is mostly supplied via FYM and organic sources.

Then, he reiterated the role of soil pH. "If the basics aren't correct, the crop will be limited because below pH 6.0, a lot of the key nutrients won't be available to the plant. In fact below 6.5 and phosphate starts to become unavailable.

"However, the Potash Development Association (PDA) recommends a pH between 5.8 and 7.0 for maize and fields should be limed if the pH is 6.0 or lower."

Returning to the role of phosphate – in a practical on-farm sense, it's important for early establishment and to ensure a good rooting system, explained Guillaume. "In dry years, a larger root

mass for a maize crop not only helps it to access deeper soil moisture, but also allows it to find more nutrients. Phosphate boosts the growing tips of plants whereas a deficiency exhibits as a purple or reddish tinge on leaves."

He added that phosphate is in fact relatively immobile in soil. "This means it doesn't leach easily, which could contradict other messaging within the industry. But once it's in the soil, it doesn't move around much which can make it hard for the crop to take up, there's also the risk of lock-up particularly if pH isn't correct."

### PHOSPHATE LOCK-UP TRIALS

Guillaume shared trial data from Harper Adams University which investigates the relationship between phosphate lock-up and maize yields (dry). The work – conducted across four sites – demonstrates that 62kg/ha of DAP plus OEP (Origin Enhanced-P) yields an average of +2.3t/ha more than a standard application of 125kg/ha DAP.

"OEP is a liquid polymer fertiliser enhancer designed to protect DAP from being fixed into unavailable forms, stopping elements such as iron, aluminium, calcium and magnesium from locking onto P fertiliser," he said.

Guillaume also highlighted zinc which assists early maize crops and can help to bring harvest date forward, whereas sulphur is just as important as nitrogen.

"Sulphur improves nitrogen use efficiency to ensure the investment the farmer is making is being used effectively. It also boosts protein content in maize while increasing digestibility to result in optimum silage quality, which is critical for feed markets.

"However, heavy rainfall increases sulphur deficiency as it's very mobile in the soil so that's something to be wary of following the recent wet autumn. Furthermore, due to a sustained reduction in UK sulphur emissions, the PDA recommends that sulphur is included in all fertiliser programmes for 2025."



### The role of sulphur

**Sulphur helps to boost protein content in maize while increasing digestibility for optimum silage quality, said Guillaume Franklin from Origin Soil Nutrition.**

From Limagrain's Tim Richmond's perspective, 2024's poor maize performance should be mostly attributed to either weather conditions or the crop being sown too late. "Our main challenge in the UK is we have difficult and variable weather – the seasons are becoming more changeable.

"Essentially what happened last year was the rainfall in May – which is the conventional timing for planting maize – was quite high so growers had difficulty accessing land. Consequently crops were sown 2-3 weeks later than usual which cut the growing period down considerably during a summer which was the coolest since 2015.

"However, those who did plant at a conventional timing, did achieve a reasonable crop," he said.

To overcome this, Tim stressed the importance of matching a variety's maturity to site potential and that there are online tools to assist. "Limagrain has a Maturity Manager which is a post code-based app that helps to calculate how many heat units are available in your area; some locations are unsuitable for maize at all due to insufficient heat units through the season," he said.

He then reminded that harvesting early, thus having a shorter growing period, also incurs incentives from varying sources whether that be grants from water companies or the ability to plant cover crops and sign up to SFI actions.

"Our trials show that selecting specialist early varieties can improve UK crop performance, including feed quality, while providing a more flexible harvest. The shorter growing season mitigates against late sowing and poor harvest conditions," he concluded. ●