NUTRI-CHECK NET
OPTIMISING CROP NUTRITION

Earlier this year a new, ADAS led European wide project kicked off, which will address crop nutrition decision making on arable farms. Europe faces huge and urgent challenges of increasing crop productivity whilst reducing use of synthetic fertilisers and nutrient losses. During the next three years, this project will establish a self-sustaining, multi-actor, Thematic Network called "NUTRI-CHECK NET" that builds farm-level adoption of best field-specific nutrient management practices across Europe. Widespread adoption of 'measure-to-manage' or 'check-to-change' approaches to crop nutrition will enhance nutrient recycling and crop productivity, whilst reducing synthetic fertiliser use and nutrient losses across Europe.

In the UK, groups of farmers and advisors have come together to form three Crop Nutrition Clubs, based around Fife, Nottinghamshire and the Staffordshire/Shropshire border. These clubs have already started to discuss and baseline their uncertainties about crop nutrition, their challenges, and barriers to change. Crop Nutrition Clubs will supplement their current strategies and decision making processes with additional approaches, tools and services with the aim of improving the precision of the decisions made.

In parallel a National Expert Group has recently been established, as part of the project, to understand the needs, challenges and barriers faced by farms and establish how farms achieve more optimised nutrition decisions. The members of the National Expert Group represent farmers, advisors, policy makers, researchers, the fertiliser & manure industry, crop end-users, laboratories and nutrition software companies. This group met in June at Sherwood Farms in Leicestershire, hosted by James and Michael Parker who have recently come to the end of their AHDB Monitor Farm programme tenure. Providing a case study example for stakeholders to examine, the father and son pair display appetite for refining their nutrition strategies based on as much information as possible, building an impressive

Funded by the European Union
UK Research and Innovation
Funded by the European Union and UK Research and Innovation (UKRI). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union, European Commission or UKRI. Neither the European Union, European Commission nor UKRI can be held responsible for them.

dataset of soil, tissue, sap and grain analysis along with fertiliser input information over time. Working with ADAS Crop Physiologists, the Parker's have been able to use a Nutrient Balance approach to understand the success of their decision by means of checking inputs vs outputs through grain analysis and tailor their strategy for future years.

Discussions between experts highlighted the impact of fragmented data and a lack of software and support to farms who are already progressive in the measurements they are taking and data accumulating as a result. The benefit of building farm-specific datasets over time that can help to 'check' on nutrition decisions and inform future strategies was emphasised. Many of the participants at the meeting agreed that improved data -sharing protocols and opportunities for better data integration would be key to improving crop nutrition management over the next 5 years. A summary of other changes that would help to improve nutrition, and ways in which farms can check whether their crops' nutrition was optimised is sumamrised in the table below.

How is it best for farms to check whether their crops' nutrition was optimised?	What changes do you believe would improve crop nutrition management over the next 5 years?
Yield and quality calculations	Improved nutrient management software to compile data over years
Nitrogen Use Efficiency (NUE)	More on farm experimentation
Nutrient balancing	Open access data sharing to improve benchmarking
Grain & tissue analysis, soil analysis	Sharing experiences to change perceptions
Field observations	Simplification of the decision-making process
Consider weather data & implications for nutrient uptake	Dynamic tools to support tactical decision-making
Peer comparisons/benchmarking	Improved yield prediction capability
Patterns across farms and fields within farms and across seasons	Improved weather forecasting
Consistency of measurement/analysis methods	A discerning food industry that encourages nutritional optimisation
On-farm experiments	Understanding carbon footprint of fertiliser applications

Funded by the European Union
UK Research and Innovation
Funded by the European Union and UK Research and Innovation (UKRI). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union, European Commission or UKRI. Neither the European Union, European Commission nor UKRI can be held responsible for them.