Nitrogen Application Special

GrowHow View Update

advice

February 2010

"I can't understand why more people aren't using N-Min."

Andrew Ward, Glebe Farm, Lincolnshire

"N-Min targets Nitrogen efficiently."

Martin Smart P & J Awdry & Son, Wiltshire

"Takes the guesswork out of fertiliser calculations."

Michael Taylor, H & D Murray Wells Farming Partnership, North Yorkshire

Flying start for GrowHow N-Min®

Double the amount of N-Min samples have already been submitted for analysis compared to last year. As we head into spring this trend is predicted to continue.

More and more farmers, it seems, have realised that measuring how much Nitrogen will come from the soil makes good crop management sense. There has also been plenty of interest in improving Nitrogen management at farmer meetings this winter. The sessions where GrowHow Advisers covered how Nitrogen can be used more efficiently were particularly well received.

"With the 2,000 commercial samples and the results from the 200 plus deep core sites used for calibration - see box right - we are beginning to get a picture of what's happened to Nitrogen over the winter," says Allison Grundy, company agronomist at GrowHow. "As in previous years it's the heavier soils which seem to contain less Nitrogen. Around 10% less N in the heavier soils compared to lighter soil types and typically 6% less compared to medium soil types."

Timing advice

The most important piece of advice on application timing is to go out and look at crops.

"Thin backward cereal and oilseed rape crops may well need some Nitrogen early but only if ground conditions are suitable and only if the crops are struggling," says Allison. "Remember if you are going to apply early then get your N-Min samples taken before any fertiliser is applied. Samples can be taken now through to the end of March."

Finding time to sample soils can be difficult, especially for advisers who may have tens of farms to get round. "For this reason we have been looking at whether useful results can be obtained from soil samples taken pre-Christmas," says Allison.

"We anticipate that pre-Christmas sampling may be a useful option for heavier soils which generally contain less N and are less prone to overwinter leaching losses," she adds.

Deep cores used to calibrate GrowHow N-Min

GrowHow commissioned soil sampling specialists, Envirofield, to take over 600 deep core samples on 200 sites in January. These have been analysed to calibrate the 2010 N-Min model.

"By using Envirofield we can be sure that we have consistency across all our calibration sites, wherever they are in the UK," says GrowHow's Allison Grundy.

"This process means, that unless manures have been applied, GrowHow N-Min samples only need to be taken down to a practical 30 cm. The N that will come from lower in the soil profile is calculated using a proven model based on the deep core analysis results."

N-Min sampling practical tips:

- Samples can be taken now through to end March provided no fertiliser has been applied.
- Sample down to 30 cm (60 cm if manure has been applied at any time in the previous 24 months).
- Take samples of each soil type on the farm at the same point in the rotation; a minimum of four fields is recommended.
- Take a representative sample following the 'w' pattern with a minimum of 20 cores per field and mix the cores thoroughly.
- Send off to the lab in the GrowHow N-Min box provided.

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GrowHow Company Agronomist, Allison Grundy

Soil N is key to accurate N rates

When it comes to Nitrogen fertiliser, the way farmers and advisers can ensure the best value for money is an easy enough concept to understand.

GrowHow Agronomist Allison Grundy explains: “Getting best value for money is about using fertiliser as efficiently as possible and treating it as a valuable resource. So, that means thinking about application rates and timings carefully, just as you would with, for example, a crop protection programme,” she adds.

The start point is to find out how much N is going to come from the soil. “If there's N in the soil then, financially and environmentally, it makes sense to take account of it when calculating the amount of fertiliser N that needs to be applied,” she advises.

Often the emphasis is on the cost saving which can be achieved by reducing N application rates but it is just as important to remember that assuming the Soil Nitrogen Supply (SNS) is higher than it actually is will mean too little is applied, limiting yield and quality and so reducing income.

HGCA recommends soil N test

The new HGCA Nitrogen guidelines emphasise the need to take account of soil N and come down in favour of soil sampling. This is because the data shows that even a basic SMN (Soil Mineral Nitrogen) test is much more likely to provide an accurate prediction of SNS than the look-up tables in RB209.

“This is music to our ears at GrowHow,” says Allison. “It's something we've been convinced about for years and it is the reason that we've been investing even more in R&D for the past six years to develop the GrowHow N-Min & N-Calc system further.”

The HGCA guidelines recommend a basic SMN test. This is simply a way of measuring how much N was in the soil when the sample was taken. But it has two main drawbacks. Firstly, to be accurate, samples must be taken down to 90 cm which, in practice, can be difficult to achieve. Secondly, SMN does not give any idea of what extra Nitrogen is going to mineralise from the soil and become available to the crop. This Additionally Available Nitrogen or AAN is a vital piece of the jigsaw. It is also important not to delay submitting SMN samples to the lab to minimise any in transit additional mineralisation effects.

N-Min better than SMN

The N-Min system is better because it measures the SMN and accurately predicts the AAN to provide a Total Soil Nitrogen figure. It is also more practical as samples only have to be taken down to 30 cm. “GrowHow N-Min users don't have to be quite so quick in getting the samples to the lab, although we still recommend within three days,” adds Allison. “This is because the fraction that will be mineralised is also being measured so there is less impact on the final answer.”

Of course the optimum N rate is not based exclusively on the amount of N coming from the soil. The amount already in the crop and the likely yield and quality requirements are also needed. Predicting yield involves assessing the potential of the field as well as the variety, so field history is very important.

“It is essential that farmers are honest about their yield predictions,” adds Allison. “Predicting a 10 t/ha crop when 8.5 t/ha is more likely will result in over application. When planning to increase crop yields it is best to fertilise for small yield increments, for example from 8.5 t/ha to 9 t/ha as this reduces fertiliser spend, minimises environmental impact and ensures that crop responses are managed,” she advises.”

All this information – N-Min results, crop N, yield prediction and quality requirement – should then be entered into GrowHow’s N-Calc programme which works out the optimum N fertiliser rate. N-Calc has been validated by ADAS and incorporates all the latest research on crop N requirements for cereals and oilseed rape.

Why you should use N-Min & N-Calc:

- The only N test which accurately predicts the total N that will come from the soil
- Also takes account of crop N and yield expectations
- Does all the arithmetic for you based on the latest research on crop N requirements
- Produces a Nitrogen Plan to meet NVZ requirements and fulfils cross compliance
- Thoroughly researched and validated by independent experts from ADAS and Hill Court Farm Research

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