

A new era in nutrient management planning

Pat Murphy
Teagasc Crops Environment and Land Use Programme

Over the last two years, Teagasc has been developing a new system, NMP Online. The system has the potential to greatly improve nutrient management planning on Irish farms. It is being introduced in early 2016 and will be used to provide nutrient management plans for farms applying for a nitrates derogation and for participation in GLAS. However, the ambition for the system goes further than scheme compliance – the goal is to radically improve nutrient management and fertiliser efficiency.

Improving nutrient management has been identified as a key target within Food Harvest 2020 and Foodwise 2025 for three main reasons. Firstly, the production targets set out in these plans requires good levels of soil fertility on Irish farms. Secondly, the challenging obligations for greenhouse gas emissions reduction will require a significant improvement in fertiliser efficiency and other changes in practice aimed at reducing nitrous oxide emissions. Thirdly, 10 years on from the introduction of the Water Framework and Nitrates Directive measures, a considerable gap still remains between the current status of Irish waterbodies and the targets set. Failure to deliver on these key environmental objectives is likely to lead to increased regulation, which will affect farmers' income.

Good overall fertility

Soil analysis results carried out by Teagasc reveal an alarming statistic: only one in 10 of the soils tested could be described as being of good overall fertility. This is defined as having a soil P index of 3 or 4, a soil K index of

3 or 4 and a pH of 6.2 or greater.

Worryingly, this has fallen in recent years. Regulation is often blamed for the fall in fertility. However, it isn't quite that simple. Breaking the overall figure down reveals the following:

- 54% of soils are below index 3 for phosphorus.
- 50% of soils are below index 3 for potassium.
- 65% of soils are below pH 6.2.

Of the three components regulation only applies to phosphorus. Farmers are not limited in relation to potassium and lime application. In reality, falling fertility can be put down to a combination of regulation, high fertiliser prices, pressure on income and a general failure to put in place sustainable nutrient management practices at farm level.

Of particular concern is the fact that the most rapid declines in soil fertility have occurred on the most productive farms. For example, on dairy farms in Co Cork, only 10% of samples are at optimum level.

Informing better practice

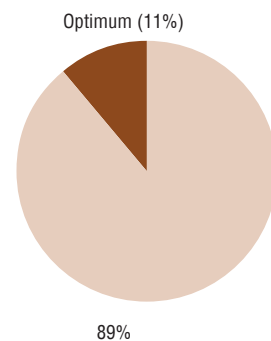
NMP Online focuses firstly on providing better baseline information for farmers to understand the issues and challenges relating to soil fertility on their own farms. Based on the soil samples and analysis carried out for the plan, an assessment of soil fertility is provided. This assessment looks at overall farm fertility status and breaks it down into its component parts. In the example presented in Figure 1, only 7% of soils are of good overall status. In the pH, P and K charts the darker colour represents the proportion of land achieving required levels. In this case, it is clear that the key problems that need to be addressed are soil pH and potassium levels. This analysis provides the basis for the fertiliser plan.



Figure 1

Soil fertility summary

Overall fertility status
pH > 6.2, P and K index 3 or 4



Soil fertility index

NMP Online will introduce a new concept – soil fertility index. This single figure will estimate the percentage loss in crop yield on the farm arising from sub-optimal soil fertility. It will provide an indication of why achieving good soil fertility is important, while at the same time providing a basis for tracking performance over time and also for providing comparison between farms in a group setting. As well as the overall figure, an estimate of potential production loss for each of the individual nutrients is presented.

Losses in production v optimal fertility

Overall	pH	P	K
30%	20%	8%	15%

Key messages

- NMP Online is designed to be efficient and user-friendly by linking directly with existing data sources, such as mapping and animal number data from DAFM and soil results from soil laboratories.
- It delivers a range of outputs to meet multiple output needs.
- NMP Online will meet the statutory requirement for nutrient management planning, but its main objective is to facilitate improved uptake of effective nutrient management on Irish farms and, in doing so, to meet the dual objectives of increasing farm incomes and improving environmental outcomes.



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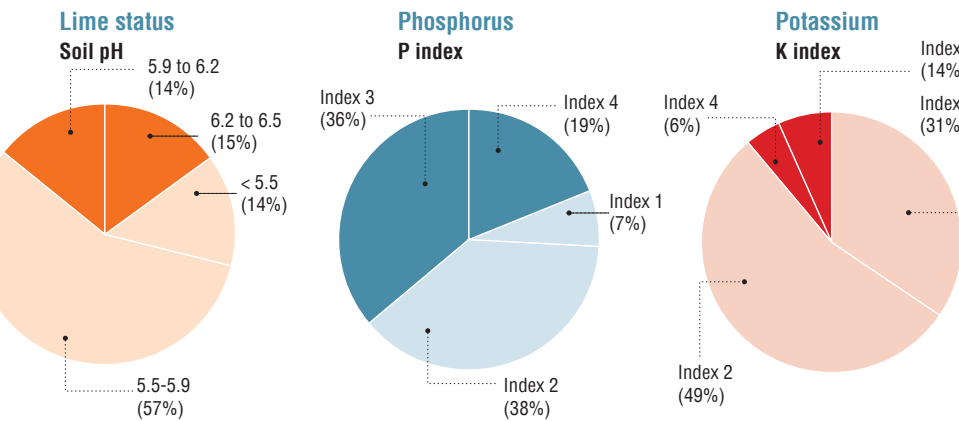
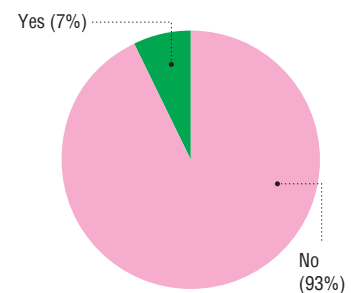


Figure 2

Good overall fertility
Soil pH > 6.2; soil P and K index 3 or 4



Your fertiliser plan

Understanding the soil fertility problems on the farm is the first step. Developing and implementing a practical and understandable fertiliser plan is the next step.

In the past, a nutrient management plan was all too often a regulatory requirement which, at most, set out limits for overall fertiliser use and was little used for guiding fertiliser application.

Developing a fertiliser plan which is usable has been the key challenge in developing NMP Online.

Calculating overall maximum levels of fertiliser, which can be used on the farm, is a key part of any nutrient management plan, but it is only the start. NMP Online develops a series of outputs in tabular and map format

to support implementation of the plan.

The first area of focus is lime. Based on soil analysis, a field-by-field liming plan is prepared. The potential duration of the plan can be four or five years. This is supported by a map-based output, which identifies the plots to receive lime and the amount to be spread.

Getting the best value from organic fertiliser is the key to effective nutrient management planning. Allocating slurry on the basis of requirement rather than convenience is vital. Once the organic manures are planned for plots, maps can be prepared which are colour-coded for nutrient status and have organic fertiliser recommendations indicated.

Preparing the plan for chemical

fertiliser is based on two key sets of data – regulatory maxima and recommendations base on stocking rates from the Teagasc Green Book.

The focus is on applying the appropriate amount of chemical fertiliser for the needs of the farm while staying within regulatory levels and making appropriate allowance for the use of organic manures. This provides a plot-by-plot fertiliser plan and an overall summary of chemical fertiliser requirement.

In addition to these capabilities, NMP Online facilitates the development of other components of detailed nutrient management plans such as the calculation of slurry/farmyard manure and soiled water produced, calculation of total farm storage capacity.