



# Trends in fertiliser use

TEAGASC National Farm Survey data shows how fertiliser use changed over the space of 11 years on Irish farms.

This research examines long-term developments in farm and crop scale fertiliser use across the Republic of Ireland. The analysis is based on over a decade's worth of data collected by the Teagasc National Farm Survey covering the years 2005-2015. This is a period when the Republic of Ireland has been bound by EU Nitrates Directive regulations governing fertiliser use. Longer-term studies of this kind are of particular value since the data provides a better picture of trends at farm level than is available from short-term analysis. Data showing short-term trends in fertiliser usage can be affected by fertiliser price levels and weather variations, and are a less reliable indicator of longer-term developments.

## Methodology

The data used for this analysis is taken from the Teagasc National Farm Survey (NFS). The NFS is based on a nationally representative random sample of the farming population. The 2015 results are based on a sample of 898 farms, which represents 84,259 farms nationally. Results are presented for average quantities of nitrogen (N), phosphorus (P) and potassium (K) applied at farm level on grassland and arable farms between 2005 and 2015. Trends in fertiliser use by nitrates zone, land use class, farm system, stocking rate and agri-

environmental scheme participation are part of the overall research project (Teagasc, 2018). Results were validated by comparison with published annual sales data of N, P and K from the Department of Agriculture, Food and the Marine (DAFM) and it was found that the NFS data closely tracks national fertiliser sales of N, P and K over the study period.

## Results and conclusions

Results indicate that average N, P and K fertiliser application rates on grassland tended to be between 11% and 16% lower at the end of the study period compared to the start, with more dramatic declines in application rates noticeable in the mid-study period (23-52%) (Figure 1). The years of lowest grassland fertiliser use (2008-09) coincided with the period of higher fertiliser prices, while higher than average period application rates in 2013-2014 were associated with the aftermath of a national fodder shortage. Higher application rates of N, P and K on grassland were generally associated with farms in nitrates zone A, farms of wide land use potential, dairy farms and farms with higher stocking rates. Similarly, average fertiliser application rates across the main cereal crops (wheat, barley, oats) were lower in the higher price period of 2008-09. Comparing 2005 with 2015 showed that N application rates on the main cereal crops actually

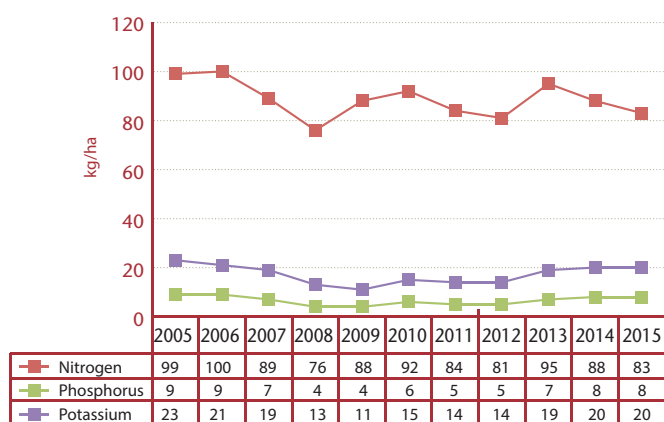


FIGURE 1: Average fertiliser applications on grassland area.

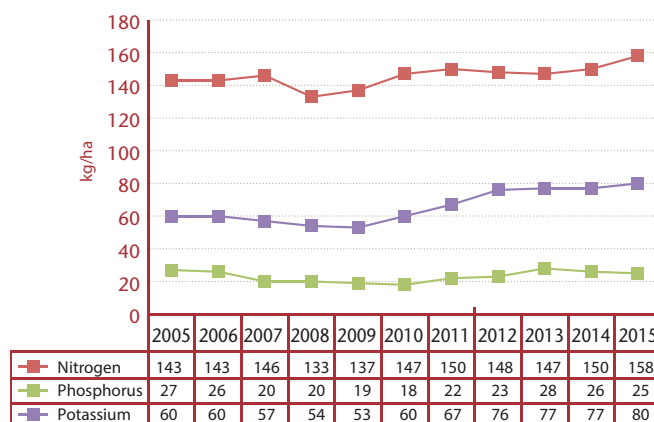


FIGURE 2: Average fertiliser applications on main cereal crops.

increased by about 10%. P application rates on the main cereal crops in 2015 were broadly in line with usage levels in 2005. K application rates showed the largest increase, up 33% in 2015 relative to 2005, as shown in **Figure 2**. Agri-environmental scheme membership had a large impact on fertiliser usage. Fertiliser application rates on grassland were on average 34-38% lower for farms participating in an agri-environment scheme and 3-15% lower for cereal production.

A concern raised by the research is that a minority of farms are engaged in ongoing application of lime from year to year. Adequate liming is essential to achieve optimum soil pH levels in order to maximise the effectiveness of fertilisers. It is notable that on average just over 20% of farms used lime year on year over the study period. The lowest rate of liming was evident in 2006, at just 16% of the farm population, and the highest liming rate over the period was recorded in 2013 at 26% of total farms. Higher rates of liming were associated with dairy farms (see **Figure 3**) but also on farms of wide land use potential and farms with higher stocking rates.

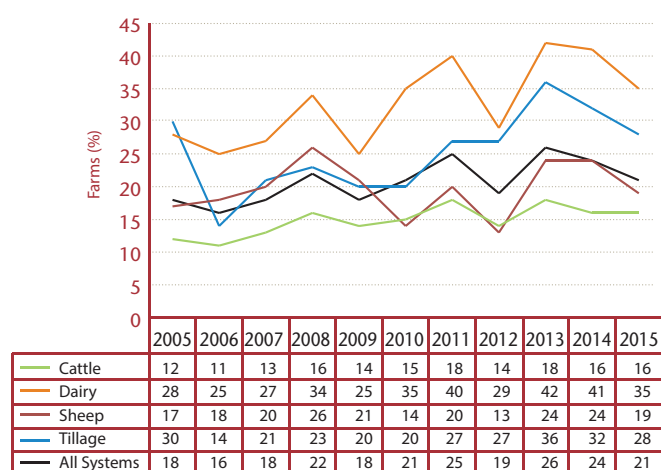


FIGURE 3: Percentage of farms using lime by farm system.

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### References

Teagasc National Farm Survey: Fertiliser Use Survey 2005-2015, 2018. Available from: [www.teagasc.ie/media/website/publications/2018/Fertiliser-Use-Survey---290518.pdf](http://www.teagasc.ie/media/website/publications/2018/Fertiliser-Use-Survey---290518.pdf)

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