

Observatory monitoring framework – indicator data sheet

Process: Farm management

Indicator C4: Fertiliser use

This indicator monitors fertiliser application rates for England and Wales.

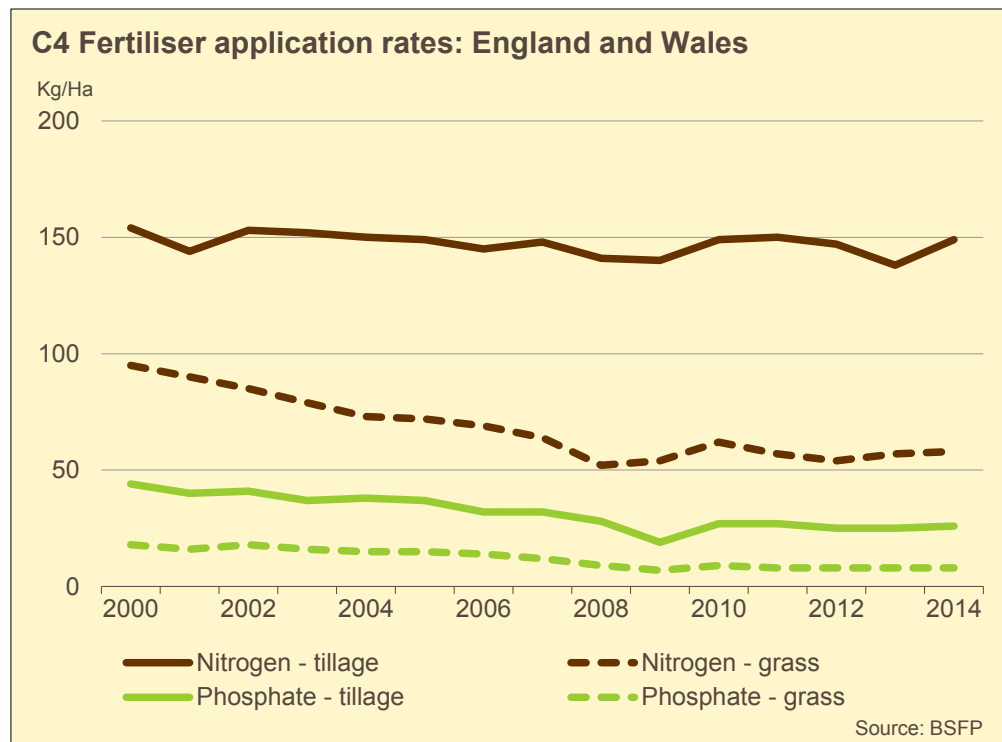


Chart C4 shows the overall application rates of nitrogen (N) and phosphate (P_2O_5) on tillage (crops) and grassland in England and Wales in kilograms per hectare.

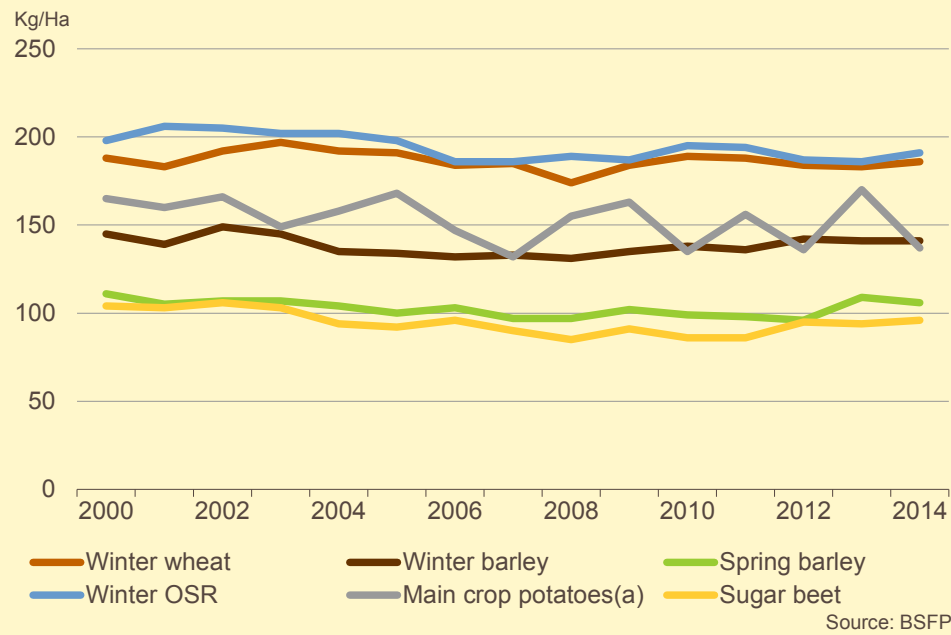
Between 2013 and 2014:

- the overall application rate for nitrogen increased by 2% for grassland, and by 8% for tillage an increase of 1 kg/ha and 11 kg/ha respectively;
- the 8% increase for tillage is mainly due to an increase in the area of winter-sown crops, which generally receive higher rates of fertiliser applications than those sown in the spring. This pattern represents a return to more typical plantings;
- the overall application rate for phosphate remained unchanged for grassland, and for tillage increased by 4%, a rise of 1 kg/ha.

Compared to 2000:

- the overall application rate for nitrogen has fallen by 39% for grassland and by 3% for tillage (crops) to 58 kg/ha and 149 kg/ha respectively;
- the overall application rate for phosphate has fallen by 56% for grassland and by 41% for tillage to 8 kg/ha and 26 kg/ha respectively.

C4ai Nitrogen application rates: England and Wales



(a) It is thought the apparent fluctuations in nutrient application rate estimates may be due to fields of potatoes on respondent's farms being let out and grown by a third party. In this case it is not possible to record information in the survey. Likewise, fields of potatoes grown by the respondent on land rented elsewhere are not captured in the survey.

Between 2013 and 2014:

- for the majority of crops shown there were slight increases in application rates (+2%). The exceptions were spring barley and main crop potatoes^(a) where nitrogen application rates decreased by 3% and 19%, respectively.

Compared to 2000:

- nitrogen application rates have reduced for all these crops.

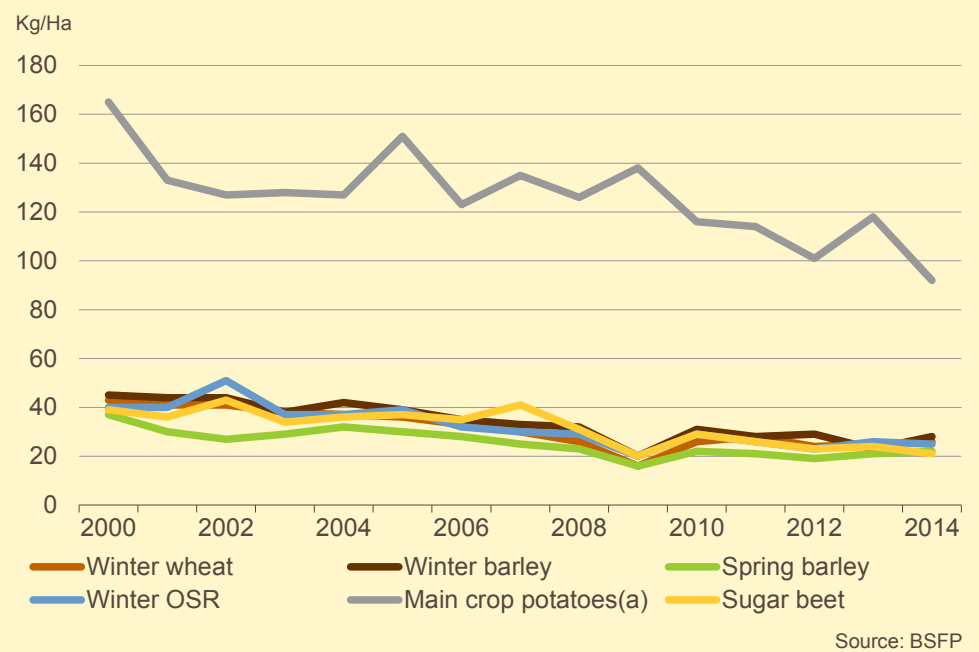
Between 2013 and 2014:

- phosphate application rates increased for winter wheat (+4%), winter barley (+22%) and spring barley (+5%);
- phosphate application rates decreased for winter oilseed rape (-4%), main crop potatoes (-22%) and sugar beet (-13%).

Compared to 2000:

- phosphate application rates have reduced for all these crops;
- potatoes^(a) receive the highest phosphate application rates of the crops surveyed.

C4aii Phosphate application rates: England and Wales

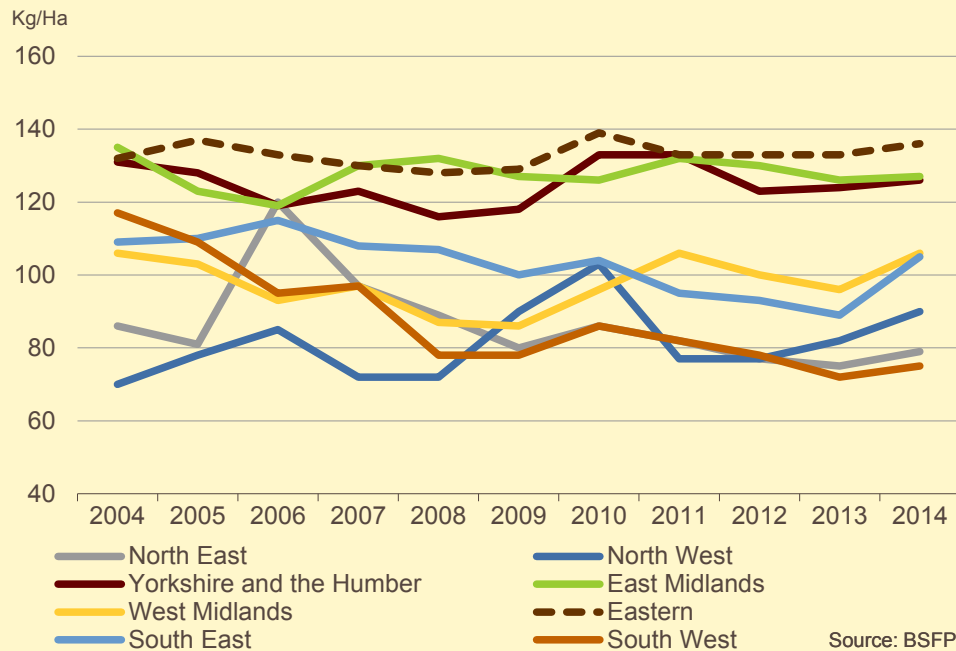


(a) It is thought the apparent fluctuations in nutrient application rate estimates may be due to fields of potatoes on respondent's farms being let out and grown by a third party. In this case it is not possible to record information in the survey. Likewise, fields of potatoes grown by the respondent on land rented elsewhere are not captured in the survey.

Regional data

Charts C4bi and C4bii show the overall nitrogen and phosphate application rates for all crops and grass by Government Office Region (GOR).

C4bi Nitrogen application rates: GOR English Regions



Between 2013 and 2014:

- there were increases in the overall application rates in all regions, with the largest increase being in the South East (+18%).

Compared to 2004:

- there were decreases in all regions with the exception of the North West (+29%) and the West Midlands where there was no change.

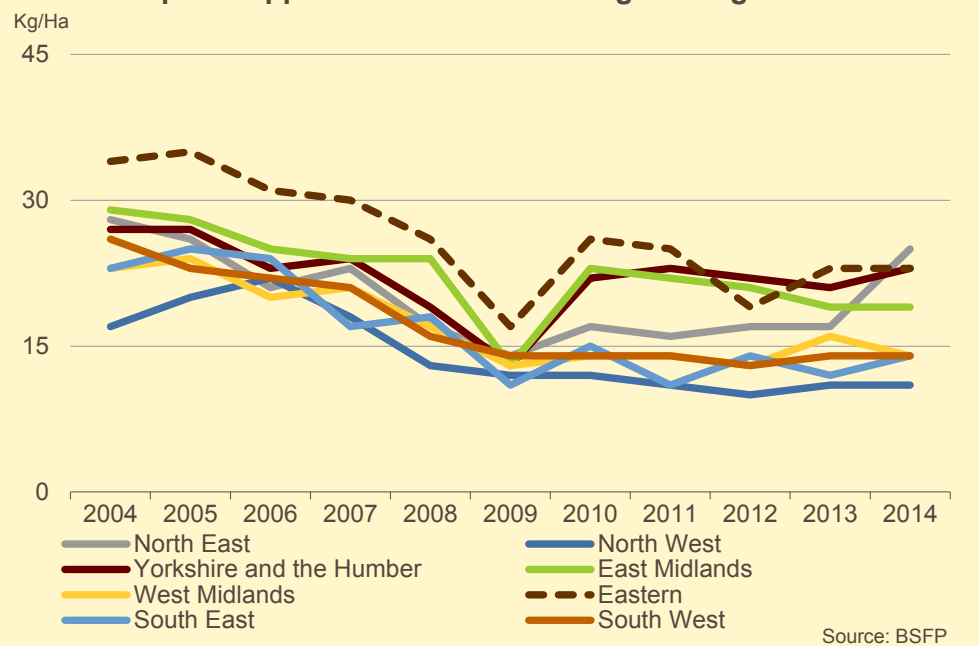
Between 2013 and 2014:

- there were increases in 3 regions, North East (+47%), Yorkshire and Humber (+10%) and the South East (+17%);
- the West Midlands was the only region to show a reduction in the overall application rates (-13%);
- the remaining four regions showed no change.

Compared to 2004:

- application rates have generally reduced in each region.

C4bii Phosphate application rates: GOR English Regions



This indicator was updated in August 2015. The next update will be in 2016.

Further information and contact

Further information can be found in the accompanying fact sheet.

For queries or information on this indicator contact Defra's Observatory team on +44 (0) 1904 455058 or email Observatory@defra.gsi.gov.uk

Observatory monitoring framework – indicator fact sheet

Process: Farm management

Indicator C4: Fertiliser use

<i>Indicator</i>	<p>C4 Overall fertiliser application rates (2000 – 2014)</p> <p>C4ai Fertiliser application rates by crop: nitrogen (2000 – 2014)</p> <p>C4aii Fertiliser application rates by crop: phosphate (2000 – 2014)</p> <p>C4bi Fertiliser application rates by English GOR region: nitrogen (2004 – 2014)</p> <p>C4bii Fertiliser application rates by English GOR region: phosphate (2004 – 2014)</p>
<i>Data</i>	Nitrogen (N) and phosphate (P_2O_5) overall application rates for grass, all tillage and selected crops.
<i>Geographic coverage</i>	England and Wales, Government Office Regions (GORs)
<i>Years</i>	2000 – 2014
<i>Source</i>	The British Survey of Fertiliser Practice.
<i>Origin of data</i>	Annual data from the British Survey of Fertiliser Practice.
<i>Updates</i>	This indicator will be updated annually. The next update will be in 2016.
<i>Background</i>	<p>Inorganic fertilisers are a major source of nutrient input on the majority of agricultural land although a considerable proportion also receives organic manures. Nutrient input, particularly nitrogen, is the biggest determinant of yield and also has major impacts on crop/sward structure and botanical composition. Nutrient losses to ground and surface waters can cause pollution affecting biodiversity (through eutrophication) and the quality of drinking water. Gaseous losses as ammonia and oxides of nitrogen also cause air pollution, contributing to eutrophication of sensitive habitats and climate change.</p> <p>The production of inorganic fertilisers uses high energy levels, particularly fossil fuels.</p> <p>This indicator shows the total use of nitrogen (N) and phosphate (P_2O_5) on grassland and tillage (arable), together with application rates on these and major arable crops.</p> <p>The overall application rate is defined as the total quantity of nutrient used (in kilogrammes) divided by the total extent of the crop area (in hectares). The application rate is calculated on the basis of the sown area rather than the total field area and includes areas which did not have an application of the nutrient.</p> <p>Historical data back to 1984 are available within the accompanying dataset, including regional breakdowns.</p>
<i>Statistical & methodological information</i>	<p>The British Survey of Fertiliser Practice (BSFP) is an annual nationally representative survey. In 2014 responses were obtained from 1,363 farms in England and Wales. A “recorder” visits each farm and records field level fertiliser use and the timing of applications.</p> <p>Standard errors for application rates are published within each report. For the 2014</p>

survey, the 95% confidence intervals for overall application rates in England and Wales were:

Nitrogen (tillage)	149 +/-4 kg/ha
Nitrogen (grass)	58 +/-4 kg/ha
Phosphate (tillage)	26 +/-2 kg/ha
Phosphate (grass)	8 +/-1 kg/ha

Regional analysis of the Survey data for England are classified in two ways:

- From 1990 data are presented for BSFP regions, these equate to 1995 MAFF administrative regions. Details on the counties included within each region can be found within the BSFP reports.

From 2004, data are also presented using the Government Office Regions (GORs) classification.

Revisions

During the 2012 data validation process an error was identified in the weight/volume conversion factor used for liquid nitrogen fertilisers. This was corrected and revisions to the data were made back to 2004 (earliest year for which full raw data were available for revision) except for potatoes. At the overall level of tillage and grass, the scale of the revisions is relatively small, typically around 2 kg/ha lower. At an individual crop level, rates are now around 4-5 kg/ha lower for the major arable crops of wheat and oilseed rape. The changes were higher for crops such as potatoes and vegetables but the standard errors are higher for these crops, related to the relatively small sample sizes.

Potatoes

For explanation on accuracy and reliability of the information, please see page 5 of the BSFP 2015 report (link below).

Further information

Further information on the BSFP can be found at:

<https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/series/fertiliser-usage>

Statistics from Defra can be found at:

<https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/about/statistics>

Further information on GORs can be found at:

<http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/administrative/england/government-office-regions/index.html>