Fertiliser Statistics

agricultural industries confederation

2010 Report

The market influence on cropping decisions is reflected in the patterns of fertiliser use reported in this *Fertiliser Statistics Report*. However, while annual fluctuations are of interest, far more important is the longer term underlying trends that these tables and figures show.

The whole industry - from manufacturer and distributor to farmer - is under pressure to address the challenges of climate change. There are siren voices that call for less reliance on fertilisers; ignoring the fact that fertiliser is now required to feed almost half the world population. To minimise the need for more land for food production it is more realistic to use products, especially nitrogen fertilisers, to maximum efficiency. An important aspect of realising that efficiency is maintaining soil pH and avoiding deficiencies of phosphorus, potassium and sulphur. Evidence shows how lack of these nutrients can limit N efficiency; only with adequate supplies of all nutrients can the industry optimise production and reduce N loss to air and water.

These statistics, drawn in part from the British Survey of Fertiliser Practice and the UK soil laboratories, have an important part to play in ensuring crop nutrition in Britain is both sustainable and efficient.

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Table 1: Areas of main crops and managed grass in the UK ('000 ha)

Growing season:	2004/05 5-yrs ago	2005/06	2006/07	2007/08	**2008/09**	1 year % change 2008-09	5 year % change 2005-09	crop area as % of total 2008/09
Wheat	1867	1836	1830	2080	**1775**	- 14.7	- 4.9	14.7
Barley	938	881	898	1032	**1143**	+ 10.8	+ 21.9	9.5
Total cereals	2919	2864	2885	3274	**3076**	- 6.0	+ 5.4	25.5
Potatoes	137	140	140	144	**149**	+ 3.5	+ 8.8	1.2
Sugar beet	148	130	125	120	**119**	- 0.8	- 19.6	1.0
Oilseeds	564	604	687	614	**599**	- 2.4	+ 6.2	5.0
Peas/beans (dry)	239	231	161	148	**233**	+ 57.4	- 2.5	1.9
Other crops (excl. grass)	429	448	441	435	**519**	+ 19.3	+ 21.0	4.3
Industrial crops on setaside	77	0	0	0	**0**			
Grass, < 5 yrs old	1193	1137	1176	1141	**1262**	+ 10.6	+ 5.8	10.5
Grass, 5 yrs old+	5711	5967	5965	6036	**6085**	+ 0.8	+ 6.5	50.5
Total UK area*	11417	11521	11580	11912	**12042**	+ 1.1	+ 5.5	100.0
Uncropped arable land	699	663	605	195	**254**	+ 30.3	- 63.7	

* Area of potentially fertilised arable and managed grass, including industrial crops on set-aside up to 2004/05, after which they are included in the main crop group.

Source: Defra Statistics

Some charts in this report illustrate data for England & Wales because these are the longest-running data sets in the UK. Amalgamated GB data are only available in detail since 1992.

Table 2: Overall rates of fertiliser usage, Great Britain

			kg/ha				
			2004/05	2005/06	2006/07	2007/08	2008/09
Arable	**Total Nitrogen**		150	147	148	144	139
	Compound N	N	20	18	15	16	14
	Straight N		130	129	133	128	125
	Total Phosphate	P_2O_5	40	35	34	31	23
	Total Potash	K_2O	54	49	47	43	33
Grass	**Total Nitrogen**		74	72	65	55	57
	Compound N	N	47	44	39	32	29
	Straight N		27	28	26	23	28
	Total Phosphate	P_2O_5	16	16	14	10	9
	Total Potash	K_2O	20	21	18	13	12
Arable & Grass	**Total Nitrogen**		109	107	105	96	97
	Compound N	N	35	33	28	24	22
	Straight N		74	74	77	72	75
	Total Phosphate	P_2O_5	27	25	24	20	15
	Total Potash	K_2O	35	34	32	27	22

Source: British Survey of Fertiliser Practice

Figure 1: Changes in overall fertiliser nutrient application rates, England and Wales

The overall application rate (kg/ha) of nitrogen (N) in England and Wales appears to show a modest upturn in 2008/09 (Figure 1). However, the longer-term trend remains downward, driven by a continuing reduction in the mineral fertiliser N rate on grassland. The N application rate on arable crops remains relatively constant, despite significant alterations in the N price. The same cannot be said for phosphate (P_2O_5) nor for potash (K_2O), with application rates continuing to decline on arable crops and grassland. The very significant recent price spikes of phosphate and potash had a major impact with overall arable application rates down by about 25%. The reduction in overall rates of P_2O_5 and K_2O on arable crops was largely the result of an increased area of combinable crops not receiving a dressing, rather than a reduction in the actual rate applied. On grassland both the dressing cover and average mineral fertiliser application rates of all three nutrients declined. The overall effect is reflected in the total UK fertiliser consumption estimates (Table 3) although the total tonnage used is also affected by changes in crop areas, notably almost 15% less wheat (Table 1).

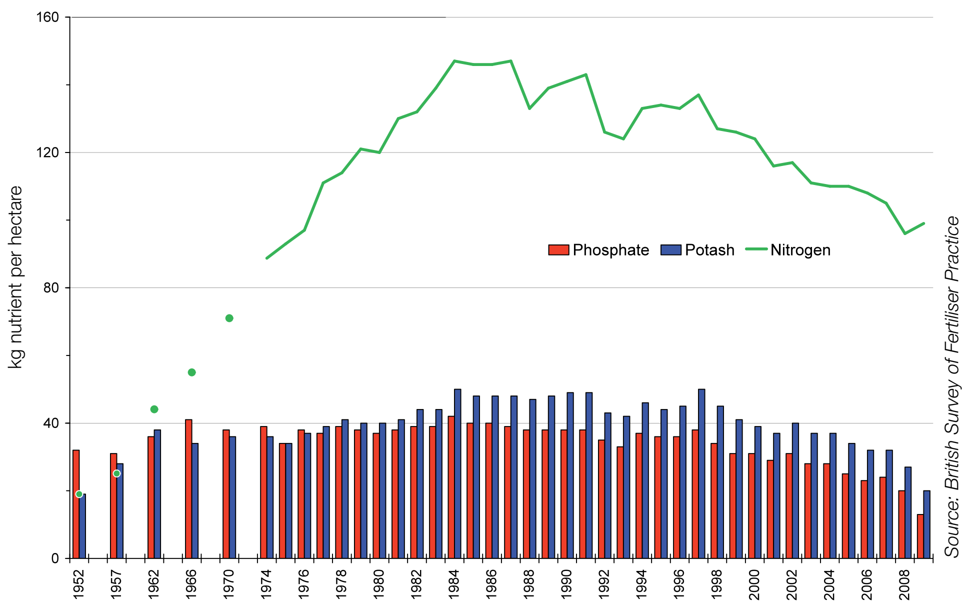


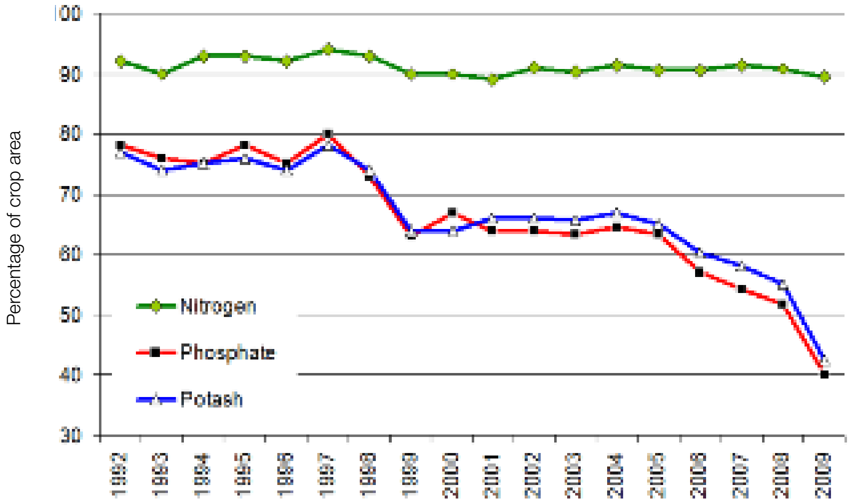
Table 3: UK consumption of fertiliser nutrients ('000 tonnes)

Growing season:	1998/99 10 yrs ago	2004/05	2005/06	2006/07	2007/08	2008/09	1 year % change 2008-09	10 year % change 1999-09
Nitrogen (N)	1284	1061	1003	1008	1006	913	- 9.2	- 28.9
Phosphate (P_2O_5)	347	259	235	224	215	129	- 40.0	- 62.8
Potash (K_2O)	451	352	325	317	325	208	- 36.0	- 53.9
Total Plant Food	2082	1672	1563	1549	1546	1250	- 19.1	- 40.0

Source: AIC Statistics

Figure 2: Percentage of cropped arable area receiving manufactured fertilisers in Great Britain

The imbalance of mineral fertiliser inputs to arable cropping in Great Britain has been highlighted in previous issues of the Fertiliser Statistics Report. Figure 2 illustrates how the situation has changed from 1992 to the 2008/09 season. The dressing cover, ie the percentage of the crop area receiving a fertiliser dressing of nitrogen has altered little, despite some large changes in the price of both N and crop products. However, the dressing cover for P_2O_5 and K_2O has declined significantly over the same period, with a major fall in the 2008/09 season. Clearly both P_2O_5 and K_2O are much more affected by price changes than is nitrogen. Any inability by crops to access sufficient P_2O_5 and K_2O is likely to affect their yield and N use efficiency.



Source: British Survey of Fertiliser Practice

Figure 3: Phosphate and potash balances for main arable crops, E&W

Calculations of the annual fertiliser nutrient inputs and the offtakes in harvested crops, including baled straw, have been calculated for wheat, barley, oilseed rape, potatoes and sugar beet in England and Wales. The positive and negative balances for phosphate and potash are shown in Figures 3A and 3B. Where the balance for a crop is shown above the zero line the balance was positive, with those below being negative. In the early to mid-1990s the positive balances for potatoes and sugar beet offset the negative balances from cereals, but this is no longer the case. Only the use of phosphate on potatoes showed a surplus over offtake in 2008/09. Inputs from manures and other recycled nutrient sources are not included in these calculations, but nevertheless the trend is clearly negative and yields and productivity cannot be sustained if balanced fertility is not maintained.

Fig 3A

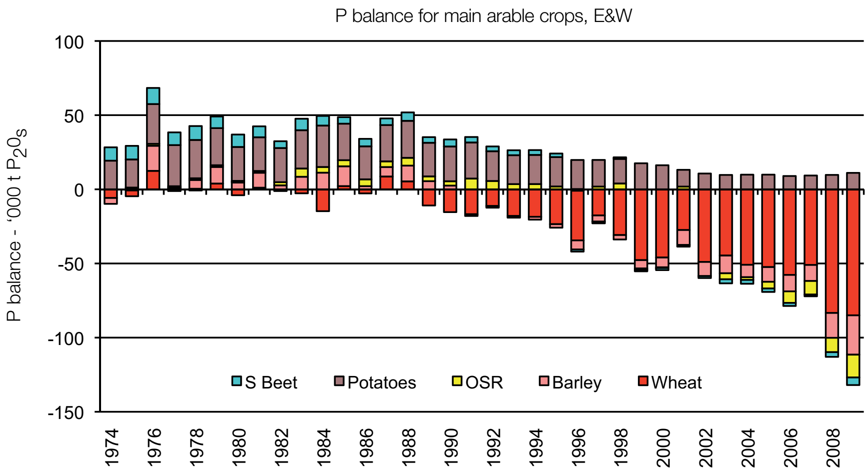
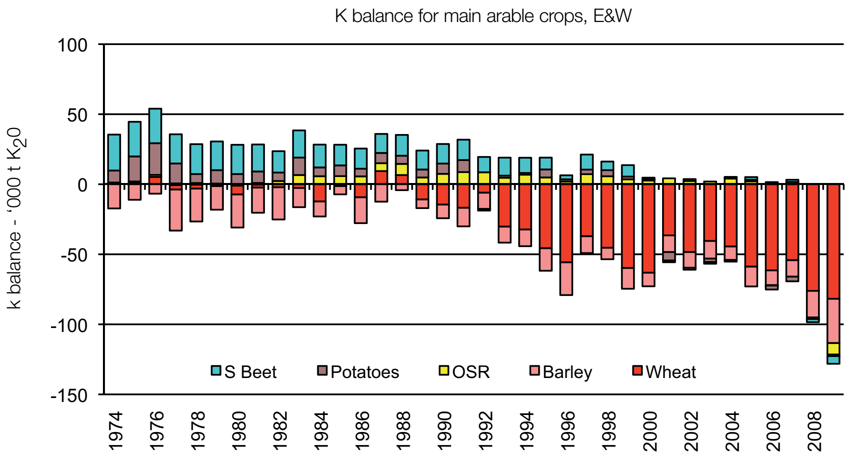


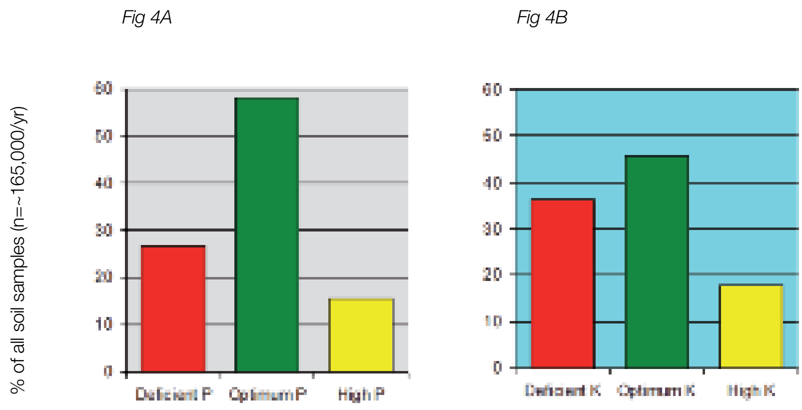
Fig 3B



Source: British Survey of Fertiliser Practice

Figure 4: Soil phosphorus and potassium reserves from soil analysis

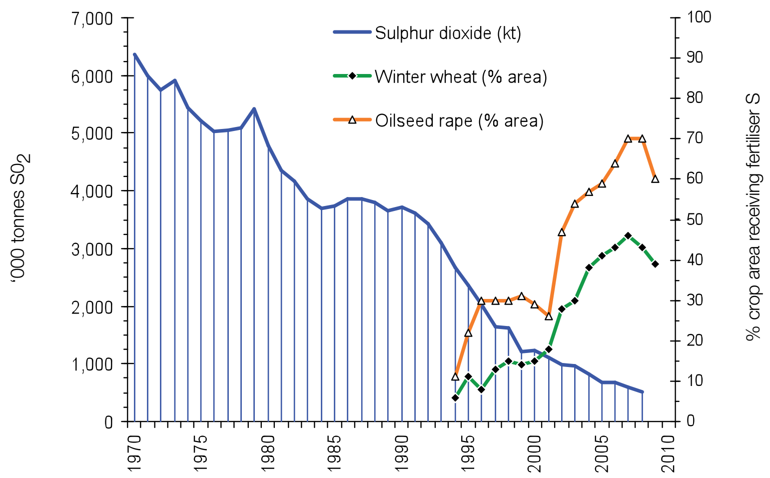
Laboratories analysing agricultural soils in the UK have recently formed the Professional Agricultural Analysis Group, and they now provide an annual overview of their confidentially amalgamated results for soil phosphorus (P) and potassium (K) analysis, as well as for magnesium and pH. Over the past two seasons an average of 165,000 soil samples have been analysed and the overall results are illustrated in Figure 4. 58% of the P samples and 45% of the K have an optimal nutrient reserve status, but more than a quarter of the samples showed a phosphorus deficiency (Figure 4A) and more than a third were deficient in potassium. (Figure 4B) Crops grown on these soils are unlikely to perform to their full potential, with both yield and quality potentially being compromised.



Source: PAAG

Figure 5: Reduction in sulphur deposition and increase in sulphur fertiliser use

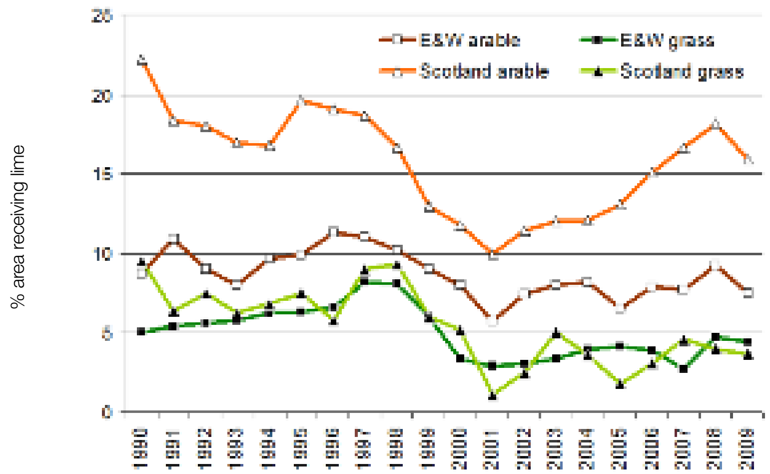
The reduction in atmospheric pollution by sulphur dioxide (SO_2) is shown in Figure 5a. This has resulted in a potential deficiency of sulphur (S) which can affect both crop and animal performance. Sulphur is an essential constituent of proteins and the figure shows the areas of winter wheat and oilseed rape receiving S fertiliser. The apparent reductions in areas receiving S fertiliser in the past year or two and in the proportion of N fertilisers which include S may be the result of economic pressure or perhaps a shortage of suitable sulphur-containing fertiliser products. It is expected that the overall requirement for S by these and other crops, including grass, will continue to grow and that the dressed areas will increase.



Source: UK Emission Statistics and BSFP

Figure 6: Applications of lime in England & Wales and in Scotland on arable and grassland

Figure 6 shows the estimates of the areas of arable and grassland in England & Wales and Scotland which received a dressing of lime. The lower percent area of arable land in England & Wales which is limed, relative to Scotland, is no doubt the result of the large areas of calcareous soils in England.
If lime is applied on a five-year cycle, then theoretically an annual dressing cover of 20% would indicate that all the relevant land receives lime. Grassland is normally managed at a lower pH than arable land, but the current level of liming of grassland may not be sufficient to maintain efficient productivity and good sward composition.



Source: British Survey of Fertiliser Practice

This summary uses Government data on land use, statistics and The British Survey of Fertiliser Practice (BSFP). The Survey, funded jointly by Defra and the Scottish Executive, Environment and Rural Affairs Department, is an independent annual report of fertiliser application rates providing data for farmers and environmentalists, regulators and the industry. It also provides information on lime use and organic manure application.

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