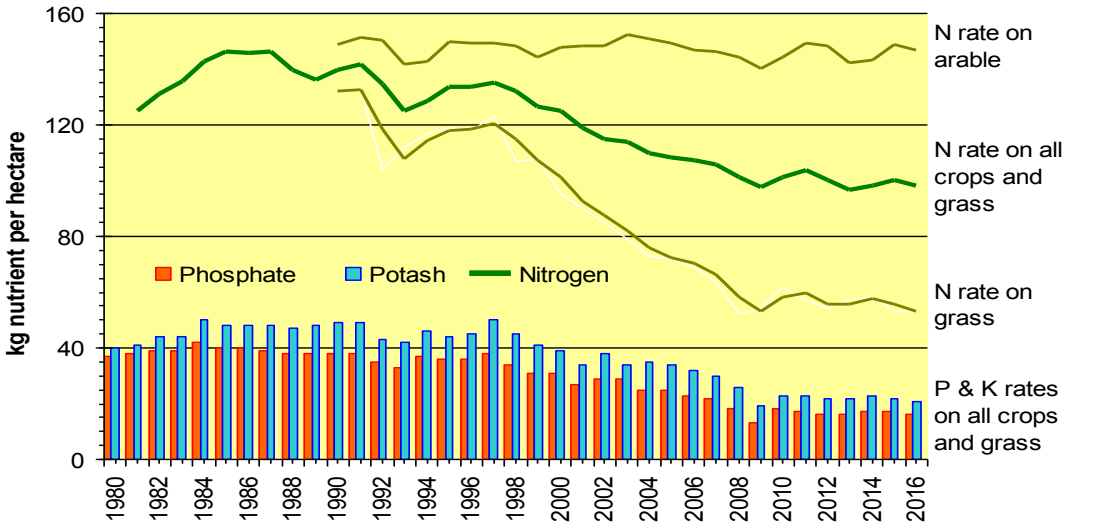
FertiliserStatistics2017

Each year AIC gathers together data to provide insight into agricultural practices and crop nutrient usage for policy makers and the industry.

Fertiliser Statistics 2017 (2016 harvest year) utilises data gathered from: industry via AIC Members; government sources (BSFP, Defra Statistics) and AHDB.

The British Survey of Fertiliser Practice (BSFP), funded jointly by Defra and Scottish Government with technical assistance from AIC, is an independent annual report of fertiliser application rates providing data for farmers, environmentalists, regulators and the industry. It provides information on fertiliser and lime use as well as organic manure application. Statistics, compiled from AIC fertiliser sector Members, provide a primary data source of UK fertiliser usage. Together, these data provide a robust picture of UK farming practice and fertiliser consumption.

Figure 1: Trends in overall nutrient application rates in England and Wales



Source: British Survey of Fertiliser Practice

Changes over the past 65 years in overall application rates of the major nutrients nitrogen (N), phosphate (P_2O_5) and potash (K_2O) to all crops and grass in England and Wales are shown in Figure 1. From 1945 until the mid-1980s application rates of all three nutrients increased significantly, responding to improvements in agronomic knowledge and the yield potentials of new crop and grass varieties. From then until about 2010 overall rates generally declined for several reasons including improving manure use, changes in ruminant stock numbers, plateauing of yields and economic pressure. However, as the chart shows, the rate of nitrogen application was maintained on arable crops, being closely related to the achievement of optimum economic yields, whereas the N rate on grassland fell due in part to reduced stock numbers and an increasing demand for purchased feeds for higher-yielding dairy cows. Since 2010 it appears that application rates of all three nutrients have remained relatively constant; this seems to apply to both arable and grassland sectors.

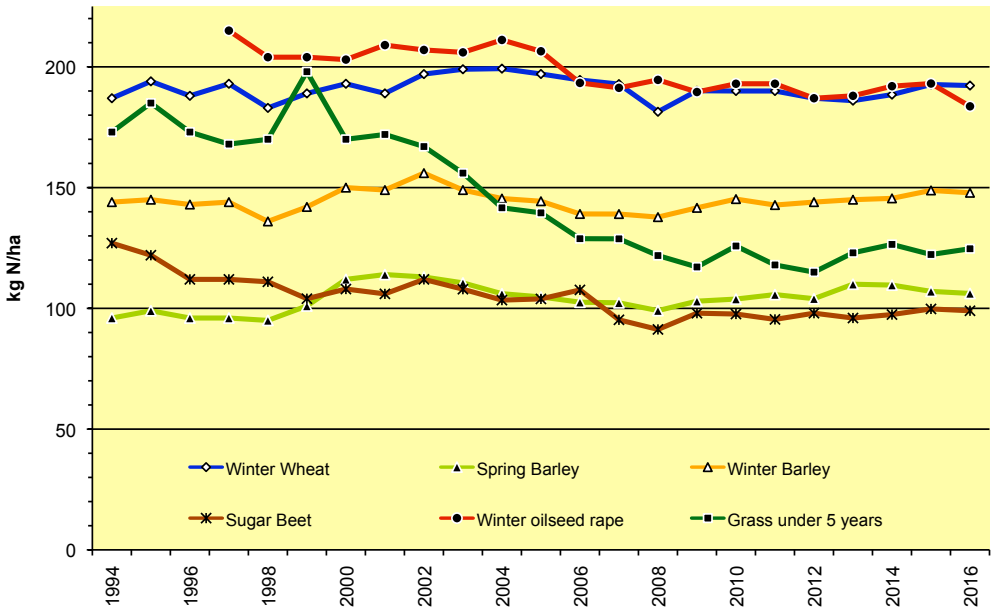
Table 1: Areas of main crops and managed grass in the UK ['000 ha]

Growing season:	**2011/12** 5 years ago	**2012/13**	**2013/14**	**2014/15**	**2015/16**	1 year % change 2015-16	5 year % change 2012-16	crop area as % of total 2015-16
Wheat	1992	1615	1936	1832	**1823**	- 0.5	- 8.5	15.3
Barley	1002	1213	1080	1101	**1122**	+ 1.9	+ 12.0	9.4
Total cereals	**3142**	**3028**	**3179**	**3064**	**3132**	**+ 1.0**	**- 0.3**	26.3
Potatoes	149	139	141	129	**139**	+ 7.8	- 6.7	1.2
Sugar beet	120	117	116	90	**86**	- 4.4	- 28.3	0.7
Oilseeds (inc. linseed)	785	750	690	667	**606**	- 9.1	- 22.8	5.1
Peas/beans (dry)	120	147	139	195	**228**	+ 7.0	+ 90.0	1.9
Other crops (excl. grass)	432	484	457	534	**476**	- 0.8	+ 10.2	4.0
Grass, < 5 yrs old	1357	1390	1396	1167	**1144**	- 2.0	- 15.7	9.6
Grass, 5 yrs old+	5799	5802	5824	6078	**6118**	+ 0.7	+ 5.5	51.3
Total UK area*	**11904**	**11857**	**11942**	**11924**	**11929**	**+ 0.0**	**+ 0.2**	**100.0**
Uncropped arable land	153	255	160	214	**262**	+ 22.4	+ 71.2	

**Area of potentially fertilised arable land and managed grass*

Source: Defra Statistics

Figure 2: Average nitrogen application rates on some major crops in Great Britain



Sources: British Survey of Fertiliser Practice

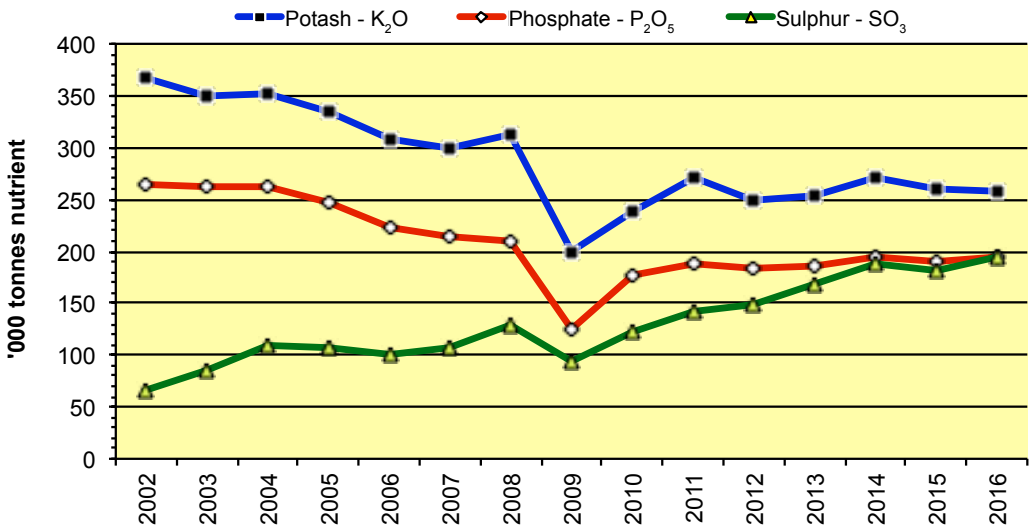
The average rates of application of mineral fertiliser nitrogen (N) for six GB crops are illustrated in Figure 2. These are the rates used when fertiliser is actually applied, and exclude any crop areas which do not receive a mineral N dressing. A significant range of rates is apparent, with these rates having remained relatively constant over recent seasons. Applications of manure influence nitrogen application rates: the three crops receiving the lower rates of mineral N, spring barley, sugar beet and grass < 5years old, received a manure dressing cover of, 31, 41 and 48% respectively. The higher nitrogen rate on winter cereals and oilseed rape is associated with only 19-21% of crop area receiving manure.

Table 2: Overall rates of fertiliser usage, Great Britain

			kg/ha				
			2011/12	2012/13	2013/14	2014/15	2015/16
Arable	**Total Nitrogen**	**N**	**144**	**137**	**146**	**146**	**142**
	Compound N		13	16	14	13	14
	Straight N		131	121	132	133	128
	Total Phosphate	**P_2O_5**	**28**	**28**	**29**	**29**	**29**
	Total Potash	**K_2O**	**37**	**40**	**39**	**38**	**39**
Grass	**Total Nitrogen**	**N**	**56**	**59**	**60**	**56**	**56**
	Compound N		31	31	30	28	28
	Straight N		25	28	30	28	28
	Total Phosphate	**P_2O_5**	**9**	**9**	**10**	**9**	**9**
	Total Potash	**K_2O**	**12**	**13**	**14**	**12**	**12**
Arable & Grass	**Total Nitrogen**	**N**	**95**	**94**	**99**	**98**	**94**
	Compound N		23	24	23	21	21
	Straight N		72	70	76	77	73
	Total Phosphate	**P_2O_5**	**17**	**18**	**18**	**18**	**18**
	Total Potash	**K_2O**	**23**	**25**	**25**	**24**	**24**

Source: British Survey of Fertiliser Practice

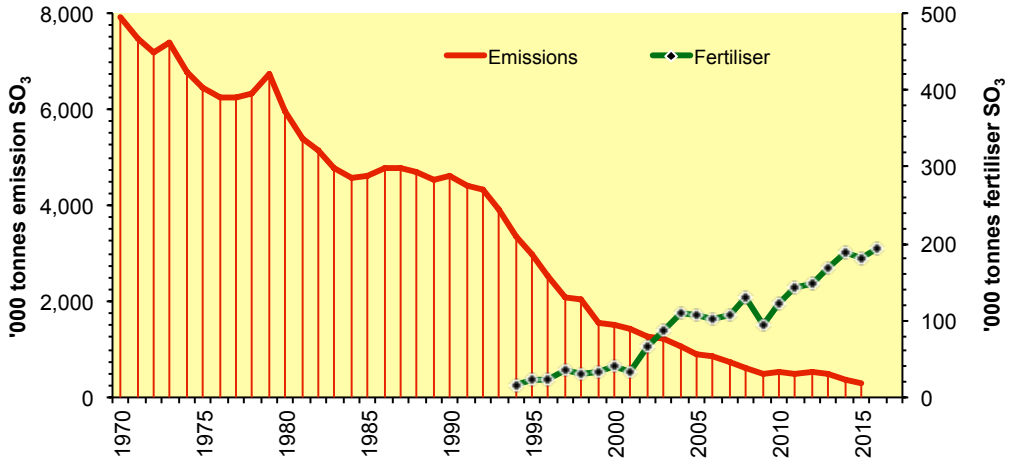
Figure 3: Consumption of mineral phosphate, potash and sulphur in Great Britain



Sources: AIC Statistics and British Survey of Fertiliser Practice

Although recently steady, trends in the quantities of phosphate and potash fertilisers consumed in Great Britain (Figure 3) match the pattern of application rates illustrated for England and Wales in Figure 1. However, fertiliser sulphur use shows a different recent trend, associated with the almost complete removal of the deposition of atmospheric sulphur which had been significant during the industrial revolution. The relationship between the recent decline in the deposition of atmospheric sulphur and use of fertiliser sulphur to supply this essential plant and animal nutrient is shown in Figure 3a.

Figure 3a: Trends in atmospheric sulphur deposition and use of sulphur fertilisers in Great Britain



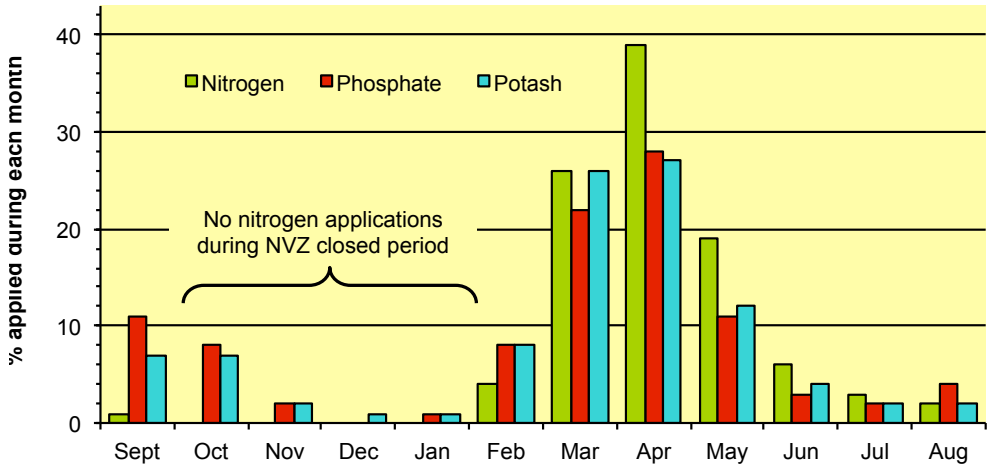
Sources: National Atmospheric Emissions Inventory and AIC Statistics

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

Growing season:	**2005/06** 10 yrs ago	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	1 year % change 2015-16	10 year % change 2006-16
Nitrogen (N)	1003	1000	998	1060	1049	1026	- 2.2	+ 2.3
Phosphate (P_2O_5)	235	188	194	201	196	197	+ 0.5	- 16.2
Potash (K_2O)	325	259	267	284	272	270	- 0.7	- 16.9
Sulphur (SO_3)	101	158	176	195	188	201	**+ 6.9**	**+ 99.0**
Total Plant Food	**1664**	**1605**	**1635**	**1740**	**1705**	**1694**	**- 0.6**	**+ 1.8**

Sources: AIC Statistics

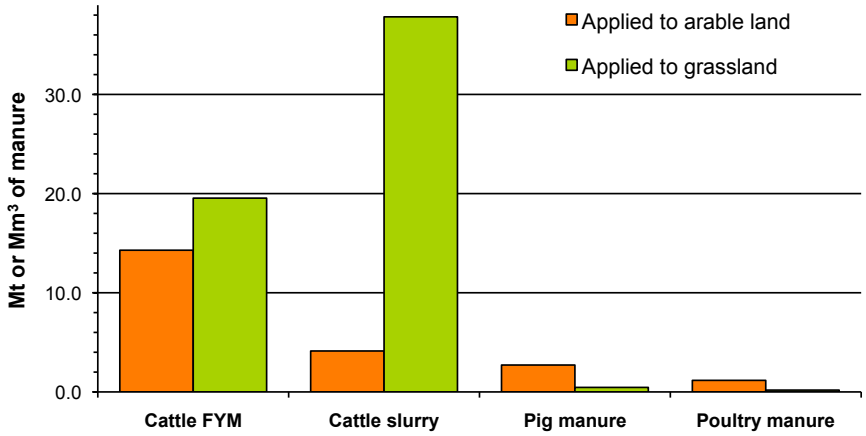
Figure 4: Time of application of fertiliser nutrients in Great Britain, 2015/16



Source: British Survey of Fertiliser Practice

The British Survey of Fertiliser Practice provides detailed information not only on the quantities of different nutrients and manures used on farm in Great Britain, but also their times of application. Figure 4 shows that the majority of fertiliser nutrients are applied during the spring growing period when crop demand is at its greatest. Some of the phosphate and potash is applied when sowing autumn-drilled crops as recommended, while virtually all nitrogen is applied during the high-demand spring period, when the crop is likely to recover it from the soil most efficiently. The nitrogen which can be seen to be used during summer is that applied to grassland. The Figure confirms that mineral nitrogen fertiliser is not applied by farmers during autumn and winter, when its use-efficiency would be low and when it is prohibited by NVZ regulations.

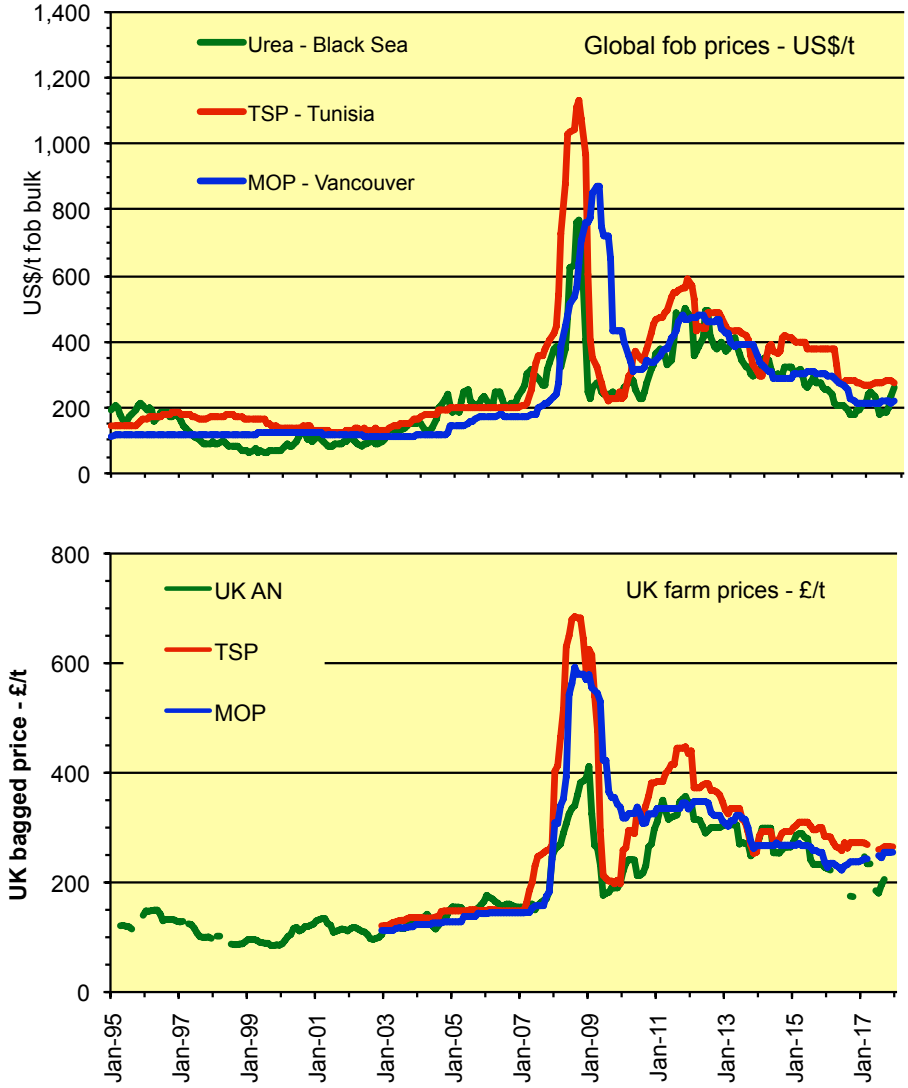
Figure 5: Average quantities of different farm manures applied to arable or grassland in Great Britain



Source: British Survey of Fertiliser Practice

It is apparent from Figure 5 that cattle manures constitute by far the greatest proportion of farm manures available for spreading – in the region of 90%. Figure 5 represents the average data from the last five years for the manures which were spread to grass or arable land. Manures deposited by grazing animals, including outdoor pigs (which now occupy about 10,000 ha in the UK), are not included in these quantities. It can be seen that most cattle slurry is spread onto grassland, while solid cattle manure (FYM) provides the majority of manure which is applied to about 23% of arable land. Most pig and poultry manure which is spread is applied to arable land, with most pig and poultry enterprises being located in predominantly arable areas.

Figure 6: Some global fob fertiliser product prices compared with the UK on-farm price



Sources: Internet and AHDB

The upper chart in Figure 6 illustrates changes in the global bulk prices of some fertiliser products, (fob ports of origin). The lower chart shows the best estimates of UK on-farm prices of some bagged fertiliser products. It is apparent that global prices have a primary influence on UK farm prices. The upper chart gives data in US$/tonne and the lower in £/t; some of the discrepancies are explained by the fluctuating US$/UK£ exchange rate, UK prices also including delivery and bagging.

AIC, Confederation House,
East of England Showground,
Peterborough PE2 6XE
T: 01733 385230 F: 01733 385270
www.agindustries.org.uk

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