aic agricultural industries confederation

Fertiliser Statistics 2009 Report

As agriculture comes under increasing pressure to improve economic and environmental performance, the spotlight is on fertiliser production and usage. The industry has already become involved in a range of initiatives, such as Tried & Tested, and more recently the Campaign for the Farmed Environment.

Sound statistical data becomes ever more important as the fertiliser sector, and the farming industry it serves, seek to both understand trends in fertiliser usage and benchmark agronomic practice. This leaflet, which reports some key aspects of fertiliser use, provides some of the necessary data that will inform the collaborative actions being taken along the supply chain from fertiliser production to use on farm.

Each year, the British Survey of Fertiliser Practice (BSFP) reports a detailed survey of on-farm fertiliser, lime and manure practice. AIC is pleased to be part of BSFP Authority and to extract information for use in this leaflet.

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

Growing season: 5-yrs ago	2003/04	2004/05	2005/06	2006/07	**2007/08**	1 year % change 2007-08	5 year % change 2004-08	crop area as % of total 2007/08
Wheat	1990	1867	1836	1830	**2080**	+ 13.7	+ 4.5	17.5
Barley	1007	938	881	898	**1032**	+ 14.9	+ 2.5	8.7
Total cereals	3130	2919	2864	2885	**3274**	+ 13.5	+ 4.6	27.5
Potatoes	148	137	140	140	**144**	+ 2.9	- 2.7	1.2
Sugar beet	154	148	130	125	**120**	- 4.0	- 22.1	1.0
Oilseeds	528	564	604	687	**614**	- 10.6	+ 16.3	5.2
Peas/beans (dry)	242	239	231	161	**148**	- 8.1	- 38.8	1.2
Other crops (excl. grass)	387	429	448	441	**439**	- 0.5	+ 13.4	3.7
Industrial crops on set-aside	60	77	0	0	**0**			
Grass, < 5 yrs old	1246	1193	1137	1176	**1141**	- 3.0	- 8.4	9.6
Grass, 5 yrs old >	5620	5711	5967	5965	**6036**	+ 1.2	+ 7.4	50.7
Total UK area*	**11515**	**11417**	**11521**	**11580**	**11916**	**+ 2.9**	**+ 3.5**	**100.0**
Set-aside (total) + fallow	588	699	663	605	**195**	- 67.8	- 66.8	

* 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.

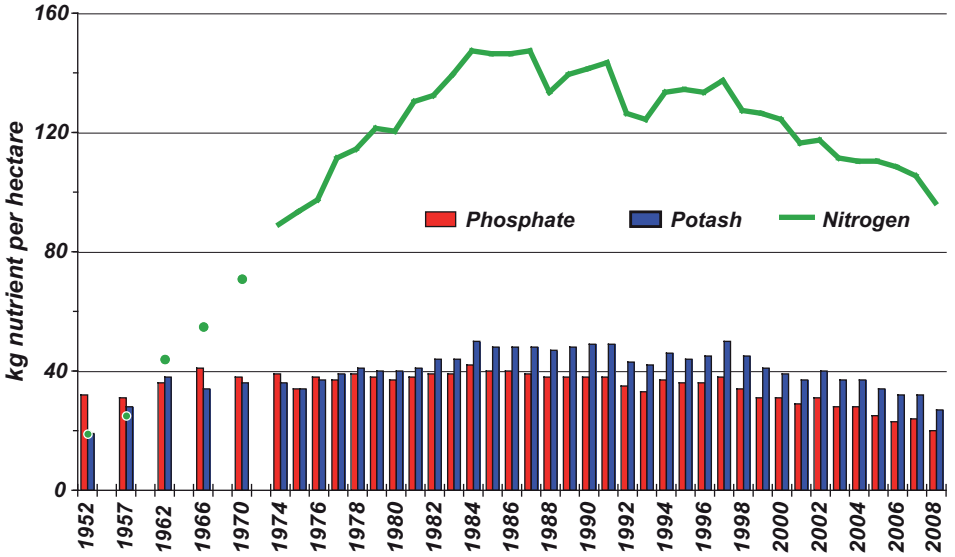
Table 2: Overall rates of fertiliser usage, Great Britain

			kg/ha				
			2003/04	2004/05	2005/06	2006/07	2007/08
Arable	Total Nitrogen		152	150	147	148	144
	Compound N	N	20	20	18	15	16
	Straight N		132	130	129	133	128
	Total Phosphate	P_2O_5	41	40	35	34	31
	Total Potash	K_2O	55	54	49	47	43
Grass	Total Nitrogen		77	74	72	65	55
	Compound N	N	50	47	44	39	32
	Straight N		27	27	28	26	23
	Total Phosphate	P_2O_5	17	16	16	14	10
	Total Potash	K_2O	22	20	21	18	13
Arable & Grass	Total Nitrogen		110	109	107	105	96
	Compound N	N	37	35	33	28	24
	Straight N		73	74	74	77	72
	Total Phosphate	P_2O_5	28	27	25	24	20
	Total Potash	K_2O	37	35	34	32	27

Source: British Survey of Fertiliser Practice

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

The reduction in overall application rates in kg/ha of the three main fertiliser nutrients continues for the seventh successive year (Figure 1). Again the majority of the reduction in nitrogen use has occurred on grassland, with phosphate and potash rates continuing to decline in both the grassland and arable sectors (Table 2). This reduction is not reflected in the overall tonnage of nutrients used (Table 3), because the total fertilised area increased due to the removal of the requirement for set-aside (Table 1). However, while the increased arable area led to increased consumption of nitrogen and potash, deliveries of phosphate continue to decline. The modest overall annual 1.7% increase in nutrient consumption made little impact on the longer term 10-year reduction of almost 30%.



Source: British Survey of Fertiliser Practice

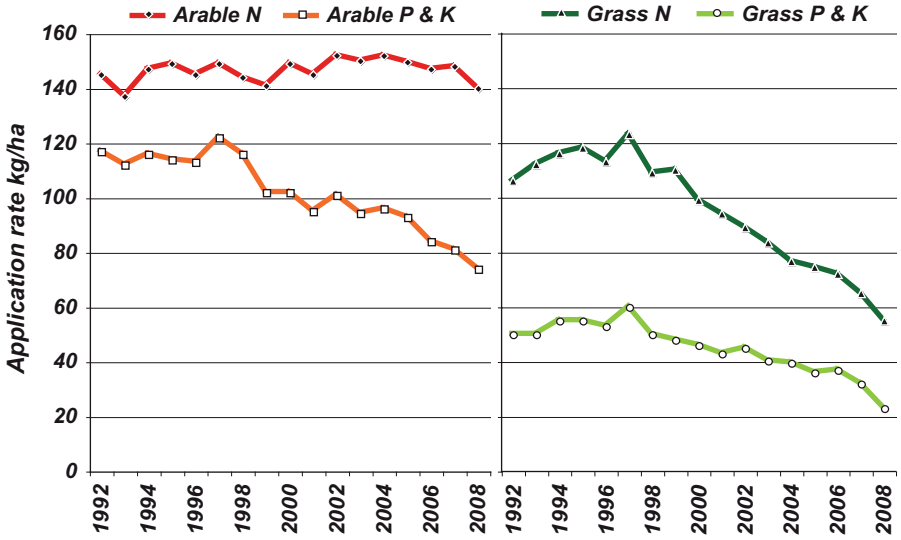
Table 3: UK consumption of fertiliser nutrients ('000 tonnes)

Growing season:	1997/98 10 yrs ago	2003/04	2004/05	2005/06	2006/07	2007/08	1 year % change 2007-08	10 year % change 1998-08
Nitrogen (N)	1375	1130	1061	1003	1008	1036	+ 2.8	- 24.7
Phosphate (P_2O_5)	383	278	259	235	224	215	- 4.0	- 43.9
Potash (K_2O)	487	376	352	325	317	325	+ 2.5	- 33.3
Total Plant Food	2245	1784	1672	1563	1549	1576	+ 1.7	- 29.8

Source: AIC Statistics

Figure 2: Nitrogen application rates on grass and arable areas in Britain in relation to P & K rates

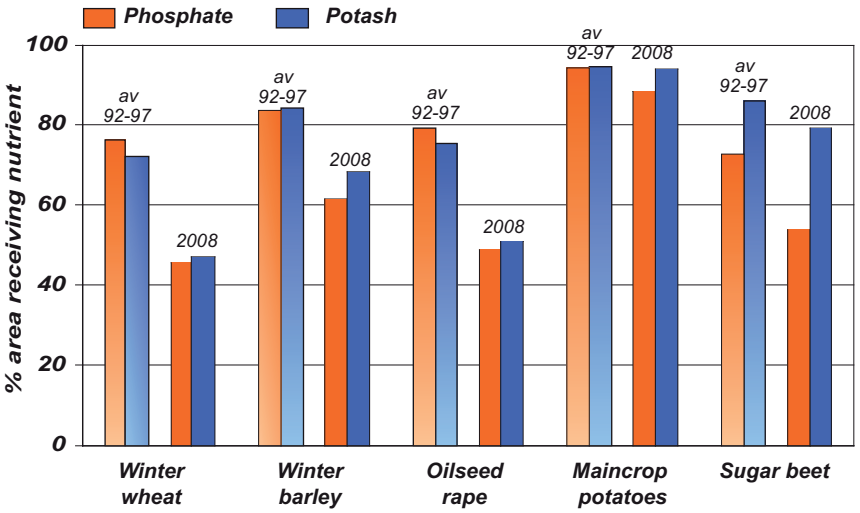
Figure 2 illustrates the significant difference between the trends in nutrient application rates on arable and grassland in Britain. It is clear that the decline in the rate of phosphate and potash use on grassland is matched by a reduction in nitrogen use, meaning that despite the reduction in nutrient input, the concept of balanced nutrition is being maintained. The same cannot be said for arable agriculture, where it is apparent from Figure 2 that despite nitrogen application rates being maintained, phosphate and potash inputs are declining. This may be a response to economic pressure, but such an input imbalance must inevitably lead to significant decline in arable soil fertility as well as in crop yield and quality.



Source: British Survey of Fertiliser Practice

Figure 3: Changes in application practice for phosphate and potash on some arable crops

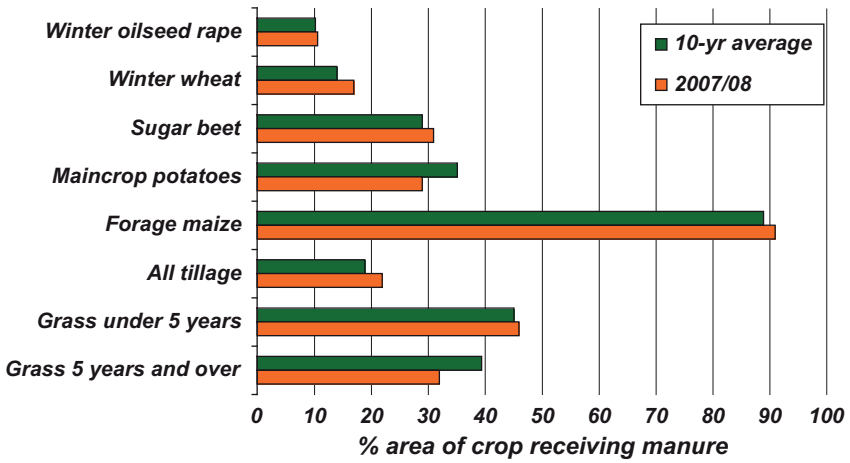
While Figure 2 illustrated a divergence between the application rates of nitrogen and of phosphate and potash on British arable cropping, in fact omission of P and K dressings does not apply equally to all arable crops (Figure 3). It appears that increased risk-taking with P and K is principally associated with combinable, rather than 'cash' crops. However, it may be as much related to the time of sowing. Most cereal and oilseed rape is winter-sown, thus P and K dressings are separate from N, while for spring-sown crops (as for grassland) all three nutrients are frequently applied together. Thus fertilisation of autumn-sown crops requires two decisions, whereas for spring-sown it may usually require only one. Whatever the reason, the recent practice of omitting an annual dressing of P and K on most of the arable area in Britain cannot continue indefinitely, if output is to be maintained.



Source: British Survey of Fertiliser Practice

Figure 4: Percent areas of major crops in Britain receiving organic manures, 10-yr average vs. current

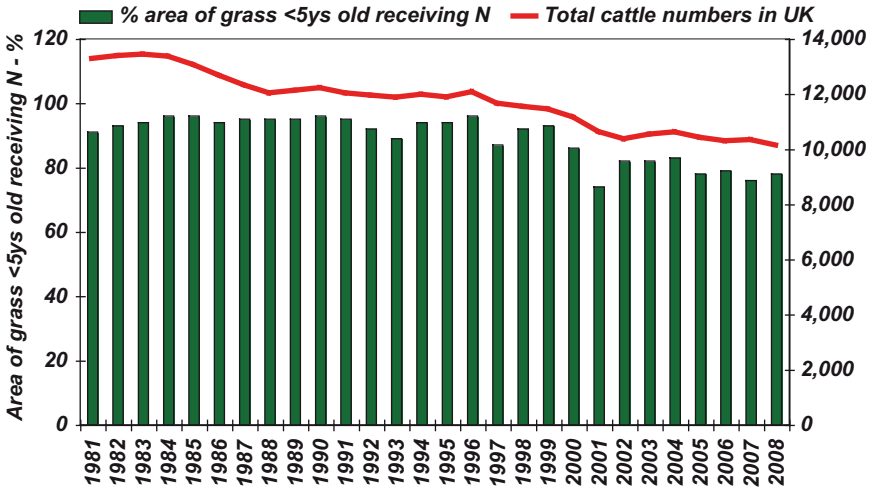
The areas of each of the main crop types receiving a dressing of manure in Britain continues to remain very constant, with little difference in the distribution pattern for 2007/08 compared with the 10-year average. Figure 4 provides overall data on the percent area of each crop estimated to be receiving a dressing of some kind of manure, but does not indicate rates of application. Rates would be expected to be relatively similar from year to year. The apparent increase in manure use on wheat may indicate increased use of top dressed liquid manure in spring. Data for crops covering a large area, such as wheat, are likely to be robust.



Source: British Survey of Fertiliser Practice

Figure 5: Changes in cattle numbers and fertilised productive grass

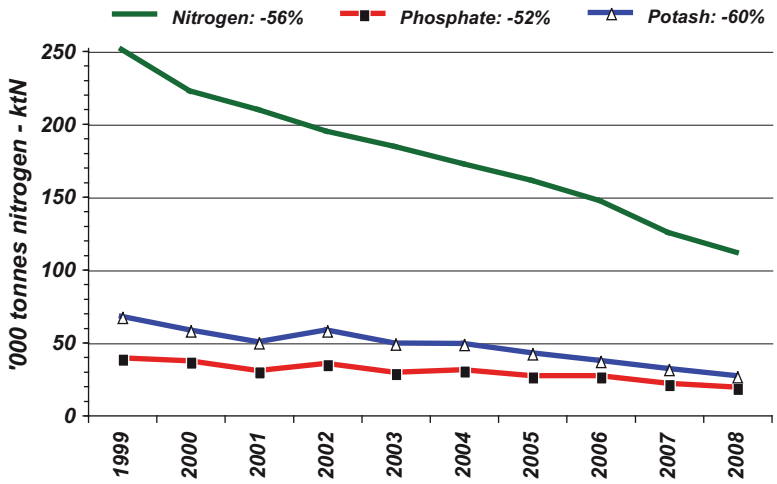
The reduction in the application rate of fertilisers on grassland has already been mentioned. Figure 5 illustrates the declining number of cattle in the UK and the percentage reduction in the area of young grass which receives an annual nitrogen dressing. In addition, the total area of grassland less than 5-years old has been reducing – a 40% decline between 1981 and 2007. The overall N application rate has fallen from 190 to 123kg N/ha over the same period. The cumulative effect is a decline of about 70% in the quantity of N applied to this responsive grass crop over the period



Source: British Survey of Fertiliser Practice and Defra Statistics

Figure 6: Trend in use of mineral fertilisers on dairy farms

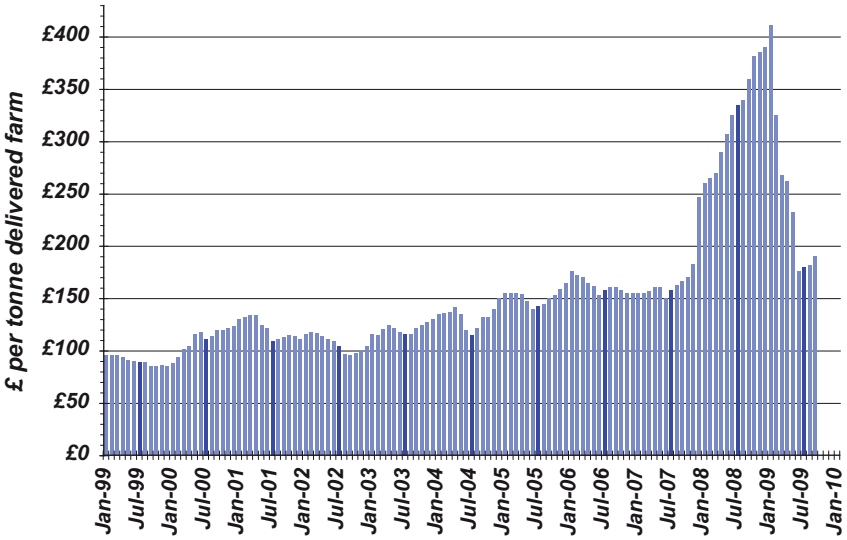
The decline in mineral fertiliser use on young grass discussed above is further illustrated in Figure 6, which shows the 10-year trend in the estimated total tonnage of N, P and K used on British dairy farms. Several factors contribute to the 50-60% reduction in nutrient use including declining dairy cow numbers, controls on stocking densities, economic changes and improved efficiency in using organic manures.



Source: British Survey of Fertiliser Practice and Defra Statistics

Figure 7: 10-year changes in the on-farm price of nitrogen fertiliser

Recently there have been considerable price changes globally for major fertiliser nutrients. Figure 7 illustrates some estimates of the on-farm price of UK-sourced ammonium nitrate straight N fertiliser over the past 10 years. The significant spike of 2008 can be clearly seen, but more recent estimates indicate that the price has returned to a level which is in line with the longer term trend. The price of nitrogen fertiliser is very closely related to that of natural gas – the most efficient feedstock and energy source for ammonia production.



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. The Survey shows generally good practice in Britain with mineral fertilisers being used closely in line with accepted recommendations.

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