THE BRITISH SURVEY OF

Fertiliser Practice

FERTILISER USE ON FARM CROPS
FOR CROP YEAR 2022

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National Statistics Status:

National Statistics status means that our statistics meet the highest standards of trustworthiness, quality and public value, and it is our responsibility to maintain compliance with these standards.

The continued designation of these statistics as National Statistics was confirmed in 2012 following a full assessment by the UK Statistics Authority against the Code of Practice for Statistics.

Since the last review of these statistics in 2012, we have continued to comply with the Code of Practice for Statistics, and have made improvements including:

- Incremental improvements to the sample selection to optimise coverage for key survey data items.
- Improvements to the wording of questions in light of feedback from interviewers
- Flexible use of the survey platform to collect additional data to meet needs of data users (the modular questions)

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.

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Results from the British Survey of Fertiliser Practice are published here:
https://www.gov.uk/government/collections/fertiliser-usage

FOREWORD

The British Survey of Fertiliser Practice (BSFP) provides information on fertiliser and manure use on the major crops and grass grown in mainland Britain.

The 2022 Survey was funded by the Department for Environment, Food and Rural Affairs (Defra) and the Scottish Government. The Survey has the full support of the Farmers' Unions in England, Scotland, and Wales.

The Survey is carried out annually and is based upon returns from a sample of farms. In 2022, the Survey was co-ordinated by Kynetec, who were responsible for the survey design, data collection, statistical analysis and quality control monitoring.

Data uses

The information in this publication is widely used by the UK government, international organisations, industry and researchers. It contains data on trends in usage and application rates of nitrogen, phosphate, potash, sulphur, organic manures, and lime on agricultural crops and grassland in Great Britain.

The Survey data provide important evidence to assess greenhouse gas emissions from agriculture. These aid in informing the ammonia and greenhouse gas inventories and for the development of possible mitigation measures. They are also used for developing and assessing the impact of policy on water quality and the environment. The data have additionally been used for indicators on nutrient balances, other indicators relating to environmental impacts and other cross cutting work, looking at links between fertiliser use, productivity (benchmarking) and economic performance. Industry and government use the data to monitor best practice.

Information on all of these topics are available from the GOV.UK website, with publications on greenhouse gas emissions, agriculture and climate change, NVZs and soil nutrient balances of particular relevance.

Other information

Defra also run other surveys which may be of relevance to fertiliser use and related practices through its Farm Practices Survey for England, which is available on the Defra website.

The following shorthand has been used in many of the data tables in this report, in accordance with best practice from the Office of National Statistics:

- The shorthand [c] is used where a data point, if displayed, might disclose confidential information. Data based on responses from fewer than five farms have been suppressed.
- The shorthand [x] is used where data are **not available**. In most cases this is where some data displayed in a table were not collected in every year of the survey.
- The shorthand [z] is used where data are **not applicable**.
- The shorthand [p] is used where data are **provisional**.

Data revisions

See Appendix 3, App 3.2.6 for details of revisions made in 2022.

July 2023

ACKNOWLEDGEMENTS

The sponsors gratefully acknowledge the co-operation of all farmers taking part in the 2022 British Survey of Fertiliser Practice.

We wish to thank all those involved for their assistance and support in the design, conduct and analysis of the Survey.

The agronomic interpretation of the Survey results benefited from advice from Chris Dawson (Chris Dawson and Associates), agronomic consultant to the Agricultural Industries Confederation (AIC).

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EXECUTIVE SUMMARY

The British Survey of Fertiliser Practice (BSFP) is an annual, nationally representative interview survey based on the selection of a random stratified sample of farms from mainland Britain. The main purpose of the Survey is to estimate average application rates of nitrogen, phosphate and potash used for agricultural crops and grassland. The data provide important evidence to assess greenhouse gas emissions from agriculture and for developing possible mitigation measures. Information is also collected on applications of sulphur fertilisers, organic manures, and lime. The main findings from the 2022 Survey on the use of the nutrients nitrogen, phosphate, potash, and sulphur in Great Britain are summarised below (Table ES1).

Table ES1 Nutrient dressing cover, current and five-year mean overall application rates for all crops and grass, Great Britain 2021 vs 2022

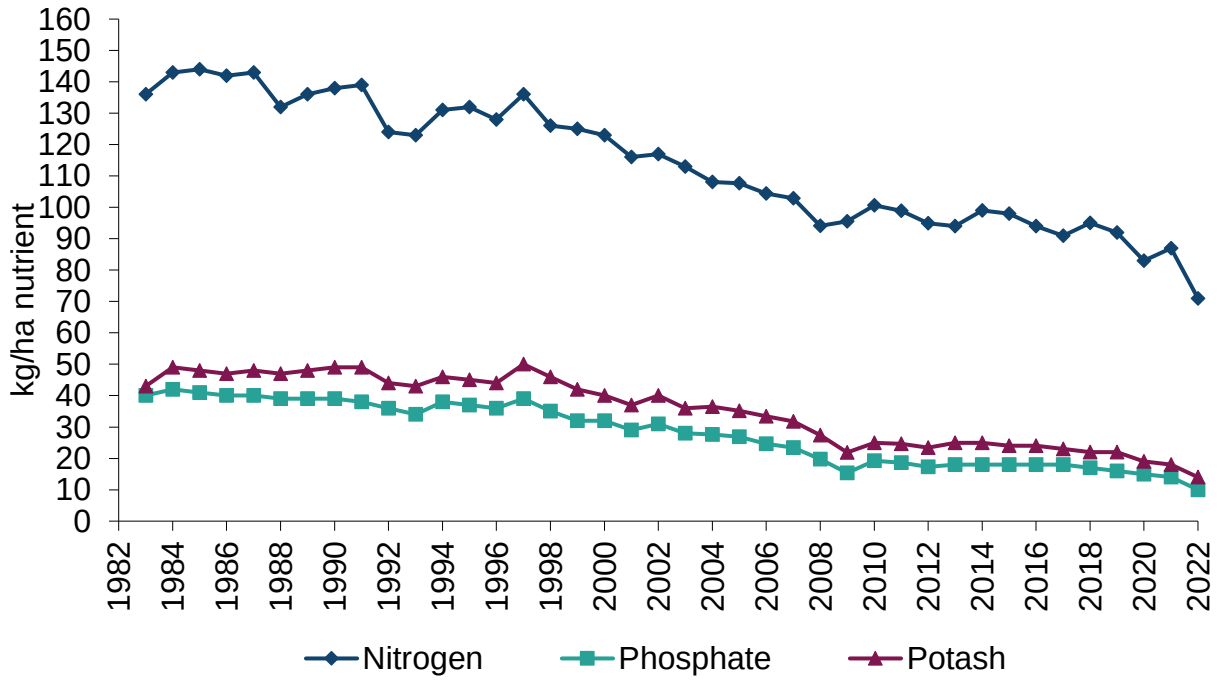
	All crops			All grass			All crops and grass		
	2021	2022	+/- 21/22	2021	2022	+/- 21/22	2021	2022	+/- 21/22
Total Nitrogen - N									
Overall application rate (kg/ha)	130	118	-12	51	34	-17	87	71	-16
Mean overall application rate, 2018-2022 (kg/ha)	z	130	z	z	50	z	z	86	z
Crop area receiving dressing (%)	89	87	-2	59	42	-17	72	62	-10
Average field rate (kg/ha)	147	136	-11	87	80	-8	120	115	-5
Total Phosphate - P_2O_5									
Overall application rate (kg/ha)	22	17	-5	7	4	-3	14	10	-4
Mean overall application rate, 2018-2022 (kg/ha)	z	23	z	z	7	z	z	14	z
Crop area receiving dressing (%)	41	35	-6	37	22	-15	39	28	-11
Average field rate (kg/ha)	53	49	-4	20	18	-2	36	36	0
Total Potash - K_2O									
Overall application rate (kg/ha)	28	24	-4	11	6	-5	18	14	-4
Mean overall application rate, 2018-2022 (kg/ha)	z	24	z	z	10	z	z	19	z
Crop area receiving dressing (%)	43	37	-6	39	22	-17	41	29	-12
Average field rate (kg/ha)	64	63	-1	28	25	-3	45	47	+2
Total Sulphur - SO_3									
Overall application rate (kg/ha)	30	27	-3	5	3	-2	16	4	-12
Mean overall application rate, 2018-2022 (kg/ha)	z	32	z	z	4	z	z	16	z
Crop area receiving dressing (%)	60	54	-6	16	11	-5	35	30	-5
Average field rate (kg/ha)	51	50	-1	32	32	0	46	46	0

Cropping patterns can influence fertiliser rates and dressing covers observed. In 2022 there was minimal (-0.3%) change in the total area of crops planted. The area planted to winter barley increased by 7% and winter oilseed rape by 19%. Spring cropping areas were back on the previous season, most notably spring barley (-10%). Despite this increase in the winter oilseed rape area, the 2022 area represents a 35% reduction since 2017. The weather, which can impact cropping patterns, is discussed in Appendix 3.

Key findings: Executive Summary

Average field rates, dressing cover percentages and overall application rates all decreased in 2022 for nitrogen, phosphate, and potash on both the cropping and grass categories. This is thought to be largely attributable to price, which recorded sharp increases during 2021 and 2022 due to supply restrictions. The temporary closure of one of the main UK ammonium nitrate manufacturers in September 2021 caused initial supply concerns in the domestic market. This was further compounded by the invasion of Ukraine by Russia, in February 2022. Supply in the UK fertiliser market mirrored other nations globally and became increasingly tight. The timing of the resulting price increase is thought to have been more problematic for livestock producers than arable farmers (i.e. livestock producers will often purchase coming into the spring months, while many arable producers purchase in the summer preceding the harvest year).

Figure ES1 Overall application rate (kg/ha) on all crops and grass, Great Britain 1983 - 2022



Nitrogen: Executive Summary

- Nitrogen usually has a large immediate effect on crop growth, yield and quality. Most agricultural soils in Great Britain contain too little naturally occurring plant-available nitrogen to meet the needs of a crop, so supplementary nitrogen applications must be made each year.

- The 16 kg/ha decrease in total nitrogen use on all crops and grassland in 2022 resulted from a 12 kg/ha decrease in the overall application rate on crops to 118 kg/ha and a 17 kg/ha decrease on grass to 34 kg/ha.

- Mineral fertiliser nitrogen levels applied to grassland have been consistently lower than on crops. Whereas overall application rates of nitrogen on crops have remained relatively constant, since 2000 the overall application rates on grass have seen a significant decline. However, this trend changed after 2009 and the overall nitrogen rate on grassland remained relatively steady for about a decade. The decline in cattle numbers, due to a lessening of stocking density, is thought to have contributed to this reduction in the nitrogen rate on grassland, possibly in conjunction with some improvement in manure use efficiency. The 2022 overall nitrogen rate on grassland is the lowest ever recorded by this survey. Please refer to table AA1.1

- In 2022 the overall application rates of total nitrogen decreased on winter wheat, winter barley, spring barley, oilseed rape and sugar beet. Average field rates all decreased for these crops, with the 170 kg/ha recorded for winter wheat being the lowest ever observed.

Phosphate and potash: Executive Summary

- Phosphate and potash are applied in fertilisers and manures, particularly to replace the quantities removed in harvested crops. Most British soils can hold large quantities of these nutrients for crop uptake over several years. Consequently, the timing of maintenance application tends to be less time critical compared to nitrogen or sulphur.

- Overall application rates of phosphate and potash applied to crops are normally about three times those used on grassland. However, there is greater use of applied manures on grassland (52% dressing cover for grass <5 years old, 37% for grass of 5 years or more) than on crops (28% cover) and grazed grassland also receives manure as it is grazed.

- Overall phosphate usage on crops declined gradually between 1984 and 1996. Thereafter the decline in rates became more marked until 2009, after which there was some recovery and relative stability until 2018, when a 3 kg/ha decrease to 27 kg/ha was recorded. Overall phosphate rates on crops have declined every year since to a figure of 17 kg/ha in 2022. The overall application rate of phosphate on grassland was highest in 1983, at 28 kg/ha, and remained relatively stable between 1984 and 1998. Overall application rates have declined more rapidly between 1999 and 2009, but remained relatively stable, with a further, sizeable drop in 2022 to 4 kg/ha.

- Overall potash application rates on crops declined slightly between 1983 and 1997, with the rates in the 60-68 kg/ha range. Like phosphate, overall application rates reduced at a greater rate after this time, dropping to their lowest levels of 33 kg/ha in 2009 when fertiliser prices were high. Between 2014 and 2018 overall potash application rates were reasonably stable in the range 35-40 kg/ha, but declined again in 2022 by 4 kg/ha to 24 kg/ha.

- Whilst the pattern of use of potash on grassland has been more variable, this has also shown a net decline between 1983 and 2008. Overall potash rates were relatively stable at 31-33 kg/ha during the mid-late 1980s but, since then, tended to decline. In 2022 the overall potash rate on grass decreased by 5 kg/ha to 6 kg/ha.

- It is of note that in Scotland, the phosphate and potash application rates on cropped land have largely been maintained, relative to the decline seen in England & Wales. Although there has been a reduction in dressing covers and overall application rates since 2004, they were relatively stable again on cropping by 2010. In 2022, the overall phosphate rate on crops decreased by 6 kg/ha to 38 kg/ha and potash 9 kg/ha to 49 kg/ha.

Sulphur: Executive Summary

- Sulphur is an essential plant nutrient and is a component of most proteins as well as activating certain enzyme systems. In the past, sulphur demand was satisfied through atmospheric deposition, but this contribution is now hardly significant. Therefore, there is a need for sulphur application to crops and grass; with crops such as oilseed rape being particularly sensitive to sulphur deficiency. Elemental sulphur can also be used as a soil acidifier for potatoes which can offer some protection against common scab (*Streptomyces scabiei)* although sulphur as a nutrient is usually applied in the sulphate form.

- The Survey has collected detailed information on sulphur (SO_3) fertiliser use since 1993, when only 3-6% of the cereal crop areas and 8% of the oilseed rape area received a sulphur application. By 1997, these proportions had increased markedly to 13-14% for cereals and 30% for oilseed rape. Dressing covers for sulphur generally remained static until 2002, and then increased steadily to 2007. Dressing covers reduced in 2008 and 2009 for all cereals except winter barley. In 2022, sulphur dressing covers in cereals were in the 46%-67% range, lower than in 2021.

- The 80% dressing cover for winter oilseed rape was 1 percentage point higher than observed in 2021 and is only just below the five year average of 81%.

- In 2022, 30% of all crops and grass received a dressing of sulphur; this figure was 54% for crops. On crops the overall application rate for sulphur was 27 kg/ha, 5 kg/ha below the five-year average between 2018-2022 of 32 kg/ha. Applications on grass decreased in 2022 at 3 kg/ha and dressing cover decreased by 4 percentage points to 11% of grass receiving a sulphur dressing in 2022.

Organic manures: Executive Summary

- Historically, the Survey has focussed on the application of manufactured fertilisers although in recent years (since 2007) it has also collected information on the use of organic manures. The nutrient levels in organic manures vary according to the type of manure but provide a valuable recycled source of nitrogen, phosphate, potash and sulphur. Where organic manures are used, applications of manufactured fertiliser can usually be reduced.

- In 2022, around 67% of farms used organic manures on at least one field on the farm. Cattle manure from beef and dairy farms is by far the largest volume of manure type generated in Great Britain. In 2022, 59% of cattle manure and 90% of cattle slurry applications were made to grassland, reflecting the practice of utilising the manure on the farm on which it is produced.

- Fields of winter-sown crops mainly receive a manure dressing in August and September, prior to drilling, whereas spring-sown and grass fields are dressed predominantly in spring and summer.

SECTION A

COMMENTARY ON FERTILISER USE IN GREAT BRITAIN

This commentary refers to rates of application in mainland Britain of fertilisers containing nitrogen (N), phosphate (P_2O_5), potash (K_2O) and sulphur (SO_3) on crops and grassland (excluding rough grazing). Section A1 of the report covers the five-year period 2018-22. Comments on longer term trends are made in Section A2.

The estimates of overall application rates from the Survey relate to usage on farms during the 2022 growing season; they form a basis for estimating quantities of fertiliser used in Great Britain. The overall application rate considers both the average field rate and the proportion of the crop area treated, giving an overview of the crop as a whole. The estimates of average field rates provide a better indication than overall application rates of actual usage levels and also of any annual variation in fertiliser practice on farms. The definitions of the terms used are set out below.

Definitions:

Average field rate = fertiliser nutrient application rate over the sown area that received some dressing of that nutrient (kg/ha)

Dressing cover = proportion of the sown area that has received any application of the nutrient or a manure (%)

Overall application rate = fertiliser nutrient application rate over the sown area of all fields, irrespective of whether they received dressing of that nutrient or not (kg/ha).

For full details on definitions used throughout this report, along with details on the History of the report, Survey methodology and Background information, refer to Appendix 3.

The statistics on the pattern of fertiliser practice reported for Great Britain largely reflect practices in England & Wales due to its greater area of total crops and grassland: about 9.2 million hectares in England & Wales and about 1.7 million hectares in Scotland. In what is otherwise a commentary on Britain as a whole, remarks on the separate regions are only made to highlight particular trends of interest. Readers interested in more detailed recent trends for individual crops in England & Wales or in Scotland can refer to tables presented in Appendix 3.

A summary of data from earlier years is available in Chalmers 2001[2] and historic data for the key data series are also available at https://www.gov.uk/government/collections/fertiliser-usage.

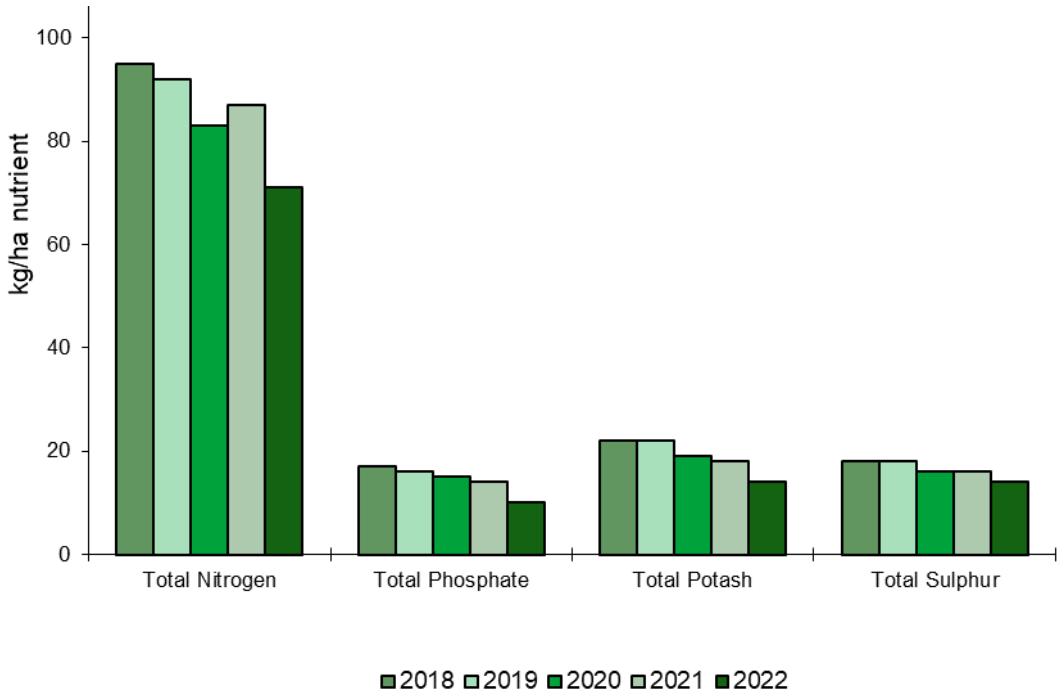
[2] Chalmers A. G. (2001) A Review of fertiliser, lime and organic manure use on farm crops in Great Britain from 1983 to 1997. *Soil Use and Management* **17**, 254-262.

A1 2022 Results for Great Britain and changes in recent years

A1.1 Overview of fertiliser use on all crops and grass

Overall application rates of total nitrogen, phosphate, potash and sulphur in Great Britain over the last five years are illustrated in Figure A1.1. The 2022, overall application rate of nitrogen for all crops and grass is 71 kg/ha, a decrease of 16 kg/ha from 2021. Overall application rates for phosphate, potash and sulphur in 2022 were 10 kg/ha, 14 kg/ha and 14 kg/ha, respectively. Application rates for straight and compound nitrogen applied on crops and grassland are also presented in Table A1.1.

Figure A1.1 Overall application rate (kg/ha) on all crops and grass, Great Britain 2018 – 2022



A1.1.1 Nitrogen

Overview of nitrogen use on all crops and grassland

Table A1.1 Overall nitrogen use (kg/ha), Great Britain 2018 – 2022

Total nitrogen

	cropping	grass	all crops and grass
2018	142	57	95
2019	137	54	92
2020	121	53	83
2021	130	51	87
2022	118	34	71

Straight nitrogen

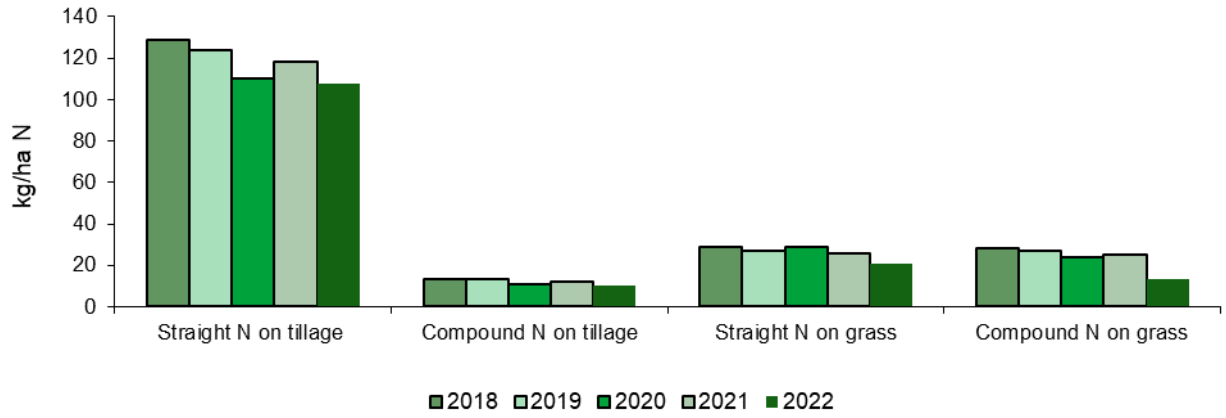
	cropping	grass	all crops and grass
2018	129	29	74
2019	124	27	71
2020	110	29	65
2021	118	26	68
2022	108	21	59

Compound nitrogen

	cropping	grass	all crops and grass
2018	13	28	21
2019	13	27	20
2020	11	24	18
2021	12	25	19
2022	10	13	12

Overall, the 16 kg/ha decrease in the rate of nitrogen for all crops and grass in 2022 (Figure A1.1) was caused by a 12 kg/ha decrease on crops and a 17 kg/ha decrease on grass. When compared with 2021, the rate of straight N decreased by 10 kg/ha for crops and by 5 kg/ha for grass (Figure A1.2). The rate of compound N decreased by 2 kg/ha on crops and 12 kg/ha on grass. The mean rates of use of total N, straight N and compound N on all crops and grass over the five-year period (2018-2022) are 86 kg/ha, 67 kg/ha and 18 kg/ha, respectively.

Figure A1.2 Overall straight and compound nitrogen use (kg/ha), Great Britain 2018 – 2022



Overview of Nitrogen use on crops: Section A1.1.1

Straight N continues to be the main source of nitrogen on crops, with the proportion of cropping area receiving a straight nitrogen dressing at 80% in 2022. This was a decrease of 2 percentage points from 2021. The average field rate of straight N on crops decreased by 11 kg/ha to 134 kg/ha. This resulted in a 10 kg/ha decrease in the overall application rate of straight N on crops which was 108 kg/ha in 2022.

There are a several reasons for the dominance of straight nitrogen over the use of nitrogen in compound fertilisers, with the principal one being the large area of winter-sown crops. As is shown in Appendix Table AA3.3.1, about 58% of the cropping area was sown to winter cereals and winter oilseed rape in 2022. These crops can receive most of any necessary dressings of phosphate and potash in the seedbed or during the autumn and winter, leaving just the nitrogen (and sulphur) to be applied, usually as more than one dressing, during the busy spring period of active crop growth. The need for precise timing of nitrogen applications has also contributed to a separation of nitrogen applications from those of phosphate and potash for spring-sown crops, especially spring cereals and sugar beet. Thus, a continuing increase in

the use of straight nitrogen now applies to most spring-sown crops for agronomic and environmental reasons, as well as for the optimisation of logistics and the efficient use of time in the spring. The exception is maincrop potatoes where compound nitrogen accounted for 62% of dressing cover in 2022.

In the context of this report and elsewhere, straight nitrogen includes nitrogen plus sulphur fertiliser products. The term “straight nitrogen” denotes a nitrogen-containing product without any associated phosphate or potash.

Overview of Nitrogen use on Grassland: Section A1.1.1

In 2022, the overall application rate for nitrogen on grass decreased by 17 kg to 34 kg/ha (Table A1.1). The proportion of grass receiving a dressing of straight N decreased by 5 percentage points to 23% in 2022 and the average field rate decreased by 4 kg/ha to 91 kg/ha in 2022. The crop area dressed with compound N decreased by 15 percentage points to 22% and the average field rate declined by 8 kg/ha to 58 kg/ha. Overall, this resulted in a 12 kg/ha decrease to 13 kg/ha in the overall application rate of compound N on grass in 2022.

A1.1.2 Phosphate, Potash and Sulphur use

Overview of Phosphate use: Section A1.1.2

Table A1.2a shows overall phosphate applications for the past five years. Compared with 2021, the overall application rate on crops decreased to 17 kg/ha. This resulted from a 6 percentage point decrease in dressing cover to 35% and a decreased average field rate of 49 kg/ha of phosphate on crops in 2022. For grassland, whilst the overall application rate decreased to 4 kg/ha, the dressing cover decreased by 15 percentage points to 22% and the average field rate decreased 2 kg/ha to 18 kg/ha. The five year means for overall phosphate application rates for crops and grass were 23 kg/ha and 7 kg/ha, respectively.

Table A1.2a Overall phosphate and potash use (kg/ha), Great Britain 2018 – 2022

Total phosphate

	cropping	grass	all crops and grass
2018	27	8	17
2019	26	8	16
2020	24	8	15
2021	22	7	14
2022	17	4	10

Total potash

	cropping	grass	all crops and grass
2018	35	12	22
2019	34	11	22
2020	29	11	19
2021	28	11	18
2022	24	6	14

Overview of Potash use: Section A1.1.2

On crops, the decline in the overall potash rate was caused by a 1 kg/ha reduction in the average field rate to 63 kg/ha alongside a 6 percentage point decrease in dressing cover to 37% in 2022. On grassland, dressing cover decreased by 17 percentage points to 22% and overall application rate decreased 5 kg/ha to 6 kg/ha in 2022. The average field rate decreased by 3 kg/ha to 25 kg/ha. The five year means for overall potash rates for crops and grass were 30 kg/ha and 10 kg/ha, respectively.

Overview of Sulphur use: Section A1.1.2

Table A1.2b shows overall sulphur (SO_3) applications for the past five years. In 2022, the overall application rate of sulphur on crops decreased by 3 kg/ha to 27 kg/ha. The proportion of the cropping area receiving a sulphur dressing decreased by 6 percentage points to 54% and the average field rate decreased by 1 kg/ha to 50 kg/ha. The overall application rate of sulphur on grass decreased by 2 kg/ha to 3 kg/ha in 2022. The low overall application rate of sulphur on grass is caused by a combination of lower dressing cover percentages and lower average field rates on grass than on crops.

Table A1.2b Overall sulphur use (kg/ha SO_3), Great Britain 2018 – 2022

	cropping	grass	all crops and grass
2018	35	4	18
2019	35	5	18
2020	31	5	16
2021	30	5	16
2022	27	3	14

A1.2 FERTILISER USE ON MAJOR CROPS

Overall application rates and average field rates of fertiliser application for major crops in Great Britain over the past five years are summarised in Tables A1.3a and A1.3b. Dressing cover percentages for the same period are shown in Table A1.4. More detailed statistics for 2022 are presented in Appendix 2. Longer term trends in overall application rates of nitrogen, phosphate, and potash since 1983 are summarised in Section A2.

Small apparent changes in fertiliser use on individual crops should be treated with caution as these estimates are based on a smaller number of farms and fields than the aggregate estimates for all crops.

Table A1.3a Overall application rate (kg/ha) on major crops, Great Britain 2018–2022

TOTAL NITROGEN	winter wheat	spring barley	winter barley	maincrop potatoes [1]	oilseed rape [3]	sugar beet
2018	186	101	143	143	188	82
2019	185	95	143	150	180	74
2020	177	99	139	118	168	69
2021	186	98	140	125	167	67
2022	167	92	129	162	152	59

STRAIGHT NITROGEN	winter wheat	spring barley	winter barley	maincrop potatoes [1]	oilseed rape [3]	sugar beet
2018	179	74	137	42	179	73
2019	178	70	135	81	170	69
2020	172	80	131	27	158	58
2021	179	74	131	35	157	58
2022	163	70	122	80	147	53

COMPOUND NITROGEN	winter wheat	spring barley	winter barley	maincrop potatoes [1]	oilseed rape [3]	sugar beet
2018	7	27	6	101	9	9
2019	8	25	9	69	10	6
2020	5	19	8	91	9	11
2021	7	24	9	89	9	8
2022	5	22	7	82	5	6

TOTAL PHOSPHATE	winter wheat	spring barley	winter barley	maincrop potatoes [1]	oilseed rape [3]	sugar beet
2018	26	31	27	101	27	18
2019	24	30	27	89	29	17
2020	24	25	26	91	27	22
2021	20	28	24	80	23	19
2022	15	23	16	92	17	14

TOTAL POTASH	winter wheat	spring barley	winter barley	maincrop potatoes [1]	oilseed rape [3]	sugar beet
2018	31	42	34	208	27	44
2019	31	39	37	164	27	50
2020	29	29	38	159	26	44
2021	25	34	31	153	26	44
2022	19	33	24	189	15	35

TOTAL SULPHUR	winter wheat	spring barley	winter barley	maincrop potatoes [1,2]	oilseed rape [3]	sugar beet
2018	41	25	34		61	25
2019	42	24	38		63	31
2020	42	24	36		64	33
2021	38	22	36		59	23
2022	36	16	33		53	17

[1] Figures for maincrop potatoes include second earlies.
[2] Sulphur rates on potatoes are not shown as some growers apply additional sulphur to acidify the soil for this crop.
These applications cannot be separated from those intended as a fertiliser nutrient.
[3] Single crop grouping for the combined winter and spring oilseed rape areas.

Table A1.3b Average field rates (kg/ha) on major crops, Great Britain 2018 – 2022

TOTAL NITROGEN	winter wheat	spring barley	winter barley	maincrop potatoes[1]	oilseed rape[3]	sugar beet
2018	189	104	146	144	190	83
2019	187	97	145	153	181	78
2020	179	102	141	130	169	71
2021	188	102	143	132	168	74
2022	170	97	135	171	155	66

STRAIGHT NITROGEN	winter wheat	spring barley	winter barley	maincrop potatoes[1]	oilseed rape[3]	sugar beet
2018	185	96	143	99	182	78
2019	183	87	141	147	173	80
2020	176	94	137	94	161	66
2021	184	91	140	89	160	71
2022	169	84	132	152	154	65

COMPOUND NITROGEN	winter wheat	spring barley	winter barley	maincrop potatoes[1]	oilseed rape[3]	sugar beet
2018	60	56	50	116	37	49
2019	62	50	55	107	34	31
2020	45	53	43	105	34	30
2021	55	51	56	115	42	28
2022	60	52	60	132	40	36

TOTAL PHOSPHATE	winter wheat	spring barley	winter barley	maincrop potatoes[1]	oilseed rape[3]	sugar beet
2018	60	50	61	114	57	41
2019	57	48	53	112	57	47
2020	55	47	50	107	54	42
2021	54	49	52	104	55	41
2022	50	44	46	112	49	36

TOTAL POTASH	winter wheat	spring barley	winter barley	maincrop potatoes[1]	oilseed rape[3]	sugar beet
2018	70	66	74	218	65	79
2019	67	61	68	185	61	88
2020	63	59	67	175	60	75
2021	62	61	62	170	64	64
2022	57	58	59	214	51	64

TOTAL SULPHUR	winter wheat	spring barley	winter barley	maincrop potatoes[1,2]	oilseed rape[3]	sugar beet
2018	56	45	50		77	39
2019	59	41	55		77	49
2020	57	43	47		77	47
2021	52	40	51		75	32
2022	53	36	49		67	30

[1] Figures for maincrop potatoes include second earlies.
[2] Sulphur rates on potatoes are not shown as some growers apply additional sulphur to acidify the soil for this crop. These applications cannot be separated from those intended as a fertiliser nutrient.
[3] Single crop grouping for the combined winter and spring oilseed rape areas.

Table A1.4 Dressing cover (% area) on major crops, Great Britain 2018 – 2022

TOTAL NITROGEN	winter wheat	spring barley	winter barley	maincrop potatoes[1]	oilseed rape[2]	sugar beet
2018	98	97	98	100	99	98
2019	99	98	99	98	99	95
2020	99	98	98	91	99	98
2021	99	96	98	94	99	91
2022	98	95	96	95	98	90

STRAIGHT NITROGEN	winter wheat	spring barley	winter barley	maincrop potatoes[1]	oilseed rape[2]	sugar beet
2018	97	77	95	43	98	93
2019	97	80	96	55	98	87
2020	98	85	95	29	99	88
2021	98	81	94	39	98	82
2022	96	83	92	53	96	82

COMPOUND NITROGEN	winter wheat	spring barley	winter barley	maincrop potatoes[1]	oilseed rape[2]	sugar beet
2018	11	47	12	87	25	18
2019	12	50	16	64	29	18
2020	11	36	19	86	27	37
2021	12	47	16	78	22	30
2022	8	42	12	62	13	17

TOTAL PHOSPHATE	winter wheat	spring barley	winter barley	maincrop potatoes[1]	oilseed rape[2]	sugar beet
2018	42	63	44	88	47	43
2019	42	63	50	79	52	37
2020	44	52	52	85	50	52
2021	37	58	46	77	42	46
2022	30	52	36	82	34	39

TOTAL POTASH	winter wheat	spring barley	winter barley	maincrop potatoes[1]	oilseed rape[2]	sugar beet
2018	44	64	46	95	41	56
2019	46	64	54	88	44	57
2020	46	50	57	91	43	59
2021	40	56	51	90	41	68
2022	33	56	41	88	30	55

TOTAL SULPHUR	winter wheat	spring barley	winter barley	maincrop potatoes[1]	oilseed rape[2]	sugar beet
2018	73	56	67	27	80	63
2019	72	59	70	32	82	63
2020	73	54	76	14	83	69
2021	73	55	71	36	79	70
2022	67	46	67	23	80	55

[1] Figures for maincrop potatoes include second earlies.
[2] Single crop grouping for the combined winter and spring oilseed rape areas.

A1.2.1 Nitrogen use on Major Crops

In 2022, overall application rates of total nitrogen (Table A1.3a) decreased on all the major crops except potatoes, where the data are more variable. The overall application rate decreased to the greatest extent on winter wheat to 167 kg/ha. Average field rates (Table A1.3b) also all decreased except on potatoes. For all the major arable crops dressing cover decreased slightly in 2022, but remained above 95%. For maincrop potatoes and sugar beet dressing covers were lower, but these tend to be more variable (Table A1.4).

Nitrogen use on Winter wheat: Section A1.2.1

The field cropping information collected in the Survey enables separate estimates to be made of nitrogen fertiliser use on milling and non-milling (seed/feed) categories of winter wheat (Table A1.5). The difference between the rates applied to milling and non-milling wheats reflect differences in crop husbandry and nitrogen management practices.

Table A1.5 Average field application rates (kg/ha) of nitrogen on cereals by market use, Great Britain 2018 – 2022

Total nitrogen

	winter wheat		spring barley		winter barley	
	milling	non-milling	malting	non-malting	malting	non-malting
2018	207	180	108	99	126	152
2019	201	179	100	94	129	149
2020	194	169	102	101	126	146
2021	202	180	101	104	128	146
2022	184	163	98	95	116	138

Nitrogen fertiliser requirements for winter wheat depend on the intended market end use (grain N levels), as well as upon soil type and the residual soil nitrogen fertility from previous cropping and manure practice. Milling varieties are often grown as a second wheat and often receive extra nitrogen, either as a solid dressing or as late foliar urea spray, which is applied to improve the chances of achieving an adequate grain protein content for a milling premium. High yielding feed crops, rather than potentially lower yielding varieties of milling wheat, are often grown as a first winter wheat after a break crop, such as oilseed rape. This is to exploit the potential yield and residual soil nitrogen benefits from the crop rotation, and to avoid any risk of lower grain protein due to a high yield diluting the grain nitrogen concentration for a first wheat in the rotation. The average field application rate on milling wheat decreased by 18 kg/ha to 184 kg/ha, and the rate on non-milling wheat decreased by 17 kg/ha to 163 kg/ha compared with 2021. The non-milling crop continues to dominate the wheat crop area (Table A1.6) with 66% of the crop in 2022 (5-year mean: 64%).

Table A1.6 Percentage distribution (% crop area) of cereal crop areas by market use, Great Britain 2018 – 2022, as estimated from the Survey

	winter wheat		spring barley		winter barley	
	milling	non-milling	malting	non-malting	malting	non-malting
2018	34	66	57	43	21	79
2019	36	64	60	40	18	82
2020	41	59	51	49	23	77
2021	36	64	58	42	18	82
2022	34	66	57	43	14	86

Nitrogen use on Spring barley: Section A1.2.1

Overall use of total nitrogen on spring barley decreased by 6 kg/ha to 92 kg/ha, which is well under the five-year mean (2018-2022) of 97 kg/ha. The rate of straight N decreased by 4 kg/ha to 70 kg/ha whilst the overall application rate of compound N decreased by 2 kg/ha compared with 2021 to 22 kg/ha. The average field rate for straight N decreased by 7 kg/ha and the rate for compound N increased by 1 kg/ha compared with 2021. The percentage of the spring barley area receiving a dressing of straight N increased by 2 percentage points to 83%, and dressing cover with compound N decreased by 5 percentage points to 42% (Table A1.4).

Further analysis of the data by crop type (Table A1.5) shows the average field rate of nitrogen applied to spring malting barley decreased by 3 kg/ha to 98 kg/ha, while that for spring non-malting barley decreased by 9 kg/ha to 95 kg/ha. In the case of the spring malting crop the five-year mean is 102 kg/ha, whilst for non-malting crops the mean is 99 kg/ha.

Estimated nitrogen rates on spring barley crops have been consistently a little higher on malting than non-malting crops. This slightly higher use of nitrogen on malting than non-malting crops may seem anomalous, since lower rates of nitrogen are recommended for malting barley, under the same conditions of soil type and nitrogen fertility level, than for the feed varieties of barley. This recommendation is made to avoid the risk of high grain nitrogen content, which could adversely affect subsequent malt quality. However, malting crops are normally grown on soils with low nitrogen fertility and the average field rates of nitrogen reported for malting varieties in Table A1.5 are in the range recommended for mineral soil types with low nitrogen residues (70 - 120 kg/ha)[3]. Feed crops on the other hand are often grown within mixed rotations, which tend to have a higher soil nitrogen fertility, with consequently less need for nitrogen fertiliser.

The proportion of spring barley grown for malting has fluctuated during the last five years (Table A1.6). The mean for the period 2018-22 is 57%, with the lowest proportion recorded in 2020 at 51%.

Nitrogen use on Winter barley: Section A1.2.1

In the period 2002-08 the total nitrogen overall application rate on winter barley decreased from year to year, down to 132 kg/ha in 2008. This rate then increased albeit with some fluctuations to 2017, but in 2018 the rate decreased by 6 kg/ha to 143 kg/ha. In 2022, overall total N rate decreased by 11 kg/ha to 129 kg/ha. The rate of straight N, which was used on 92% of the winter barley crop area, decreased to 122 kg/ha in 2022, lower than the five year (2018-22) mean of 131 kg/ha. The compound N overall application rate decreased by 2 kg/ha to just below the five year mean of 8 kg/ha.

As with the spring sown crop, nitrogen requirements for winter barley depend on a range of agronomic factors, such as the intended market for the grain. Average field rates of nitrogen on winter malting crops decreased by 12 kg/ha compared to 2021 to 116 kg/ha, below the five-year mean of 125 kg/ha. For winter non-malting crops, the average field rate decreased to 138 kg/ha (Table A1.5), again below the five-year average of 146 kg/ha.

[3] Anon. (2018). Nutrient Management Guide (RB209). Agriculture and Horticulture Development Board (AHDB). https://ahdb.org.uk/nutrient-management-guide-rb209

The higher application rates of nitrogen (five-year mean of +21 kg/ha) on non-malting, compared to malting winter barley crops, reflect typical agronomic practice, and the gap between malting and non-malting crops was comparable with previous years. The majority of winter barley crops (both feed and malting) are grown in England in arable rotations, usually after a previous cereal crop, when the soil nitrogen fertility status is low. Higher nitrogen rates are recommended for feed crops. The proportion of winter barley area grown for malting was 14% in 2022, 4 percentage points lower than 2021, with the five-year mean calculated as 19%. (Table A1.6).

Nitrogen use on Maincrop potatoes: Section A1.2.1

Total nitrogen use on maincrop potatoes has fluctuated over the last five years. Part of the reason for recent apparent fluctuations in the estimates of nutrient application rates may be because proportionally fewer fields of potatoes are covered by the Survey in comparison to other crops. This is because fields of potatoes on respondents' farms may be let out and grown by a third party, so it is not possible to record information in the Survey. Furthermore, fields of potatoes grown by a respondent, but not on the farm being surveyed, are not captured in the Survey.

In 2022, the overall application rate of nitrogen increased by 37 kg to 162 kg/ha, which is above the five-year mean of 140 kg/ha (Table A1.3a).

Nitrogen use on Oilseed rape: Section A1.2.1

In 2022, overall total nitrogen and average field rate use on oilseed rape, as a combined category for both the autumn and spring sown crop, decreased to 152 kg/ha and to 155 kg/ha respectively; five-year means of 171 kg/ha and 173 kg/ha respectively (Table A1.3a, A1.3b). The crop area dressed with straight N decreased by 2 percentage points (to 96%), and decreased by 9% for compound N (to 13%) (Table A1.4). A more detailed breakdown of the data for oilseed rape (Table A1.7) shows that the average field rate of nitrogen on winter oilseed rape decreased by 12 kg/ha to 156 kg/ha.

Table A1.7 Average field application rates of nitrogen (kg/ha) on winter oilseed rape, Great Britain 2018 – 2022

	winter oilseed rape
2018	191
2019	182
2020	172
2021	168
2022	156

Nitrogen use on Sugar beet: Section A1.2.1

The overall nitrogen use on sugar beet decreased by 8 kg/ha in 2022 to 59 kg/ha, considerably below the five-year mean (70 kg/ha). Use of straight N, by far the most widely used form of nitrogen in this crop (five-year mean: 86% of the dressed area), decreased to 53 kg/ha (Table A1.3a, A1.4). The average field rate of straight N decreased to 65 kg/ha, or 7 kg/ha below the five-year mean of 72 kg/ha, whereas the average rate of the less used compound N increased by 8 kg/ha to 36 kg/ha (Table A1.3b).

A1.2.2 Phosphate and Potash use on Major Crops

Phosphate: Section A1.2.2

In 2022, the overall application rate of phosphate decreased for all the major crops except potatoes, which increased by 12 kg/ha to 92 kg/ha. (Table A1.3a). Average field rates decreased by 4-6 kg/ha on all crops except potatoes. (Table A1.3b). In 2022, the overall phosphate rate on crops declined a further 5 kg/ha to 17 kg/ha (Table A1.2a), below the 2018-22 five-year average (23 kg/ha).

Potash: Section A1.2.2

Overall, potash use on crops decreased in 2022 by 4 kg/ha to 24 kg/ha, below the 2018-2022 five-year average of 30 kg/ha (Table A1.2a). This decline was due to reductions in dressing cover from 43% to 37% and in the average field rate from 64 kg/ha to 63 kg/ha. The overall application rate of potash declined on all the major crops except potatoes. (Table A1.3a). Dressing covers decreased for all the major crops except spring barley, which was unchanged at 56%. (Table A1.4). Average field rates of potash mainly decreased, except for sugar beet which was unchanged and potatoes where it increased over 2021. (Table A1.3b).

A1.2.3 Sulphur use on Major Crops

The Survey has collected detailed information on sulphur fertiliser use since 1993, when only 3-6% of the cereal crop area and 8% of the oilseed rape area received an application of sulphur. By 1997, the proportions of these crop areas which were treated with sulphur had increased markedly to 13-14% for cereals and 30% for oilseed rape. Dressing covers for sulphur then generally remained fairly static until 2002 when the areas increased steadily until 2007. 2008 saw reductions in dressing covers for cereals to 35%-43%, a pattern that continued in 2009, except in winter barley where sulphur dressing cover increased to 45%. In 2022, sulphur dressing cover decreased overall, but with an increase of 1 percentage point observed on oilseed rape. (Table A1.8). The average field rates for crops were generally lower than in 2021, with winter wheat being the exception.

Table A1.8 Dressing cover (% area) and average application rate (kg/ha SO_3) of sulphur on cereals and oilseed rape, Great Britain 2018 – 2022

Dressing cover (%)

	winter wheat	winter barley	spring barley	oilseed rape	all cropping
2018	73	67	56	80	62
2019	72	70	59	82	62
2020	73	76	54	83	59
2021	73	71	55	79	60
2022	67	67	46	80	54

Average field rate (kg/ha SO_3)

	winter wheat	winter barley	spring barley	oilseed rape	all cropping
2018	56	50	45	77	57
2019	59	55	41	77	56
2020	57	47	43	77	53
2021	52	51	40	75	51
2022	53	49	36	67	50

Table A1.9 shows the proportion of major crops receiving a sulphur dressing in England & Wales compared with Scotland. Historically, a higher proportion of cereal and oilseed rape crops were treated with sulphur in Scotland than in England & Wales. This may have been due to the greater awareness of the risk of sulphur deficiency in Scotland due to historically extremely low levels of atmospheric sulphur deposition, compared to most other areas of Britain. Dressing covers are now much more closely aligned, and in some cases exceed those recorded in Scotland. Spring barley is an example of this trend, with this possibly being due to the manure which is more commonly applied to this crop in Scotland being assumed to satisfy the sulphur demand. In 2022, 44% of Scottish spring barley received manure compared with 47% in England and Wales.

Table A1.9 Dressing cover (% area) of sulphur on cereals, oilseed rape, all cropping and all crops and grass by region, 2018 – 2022

		winter wheat	winter barley	spring barley	oilseed rape	all cropping	all crops and grass
England & Wales	2018	72	66	58	79	62	35
	2019	72	70	60	82	63	36
	2020	73	75	53	83	58	34
	2021	73	71	56	79	60	36
	2022	67	68	47	79	55	30
Scotland [1]	2018	79	80	53	88	58	28
	2019	69	71	57	73	58	33
	2020	79	83	60	78	60	34
	2021	74	69	53	79	55	33
	2022	66	61	44	85	49	27

[1] Greater variability in the Scottish data may be due to smaller sample sizes.

A1.3 FERTILISER USE ON GRASSLAND. 2018 - 2022

Overall fertiliser usage on grassland in Great Britain in the last five years, as previously shown (Tables A1.1 and A1.2), is summarised again in Table A1.10. The corresponding estimates of dressing cover and average field rates for each nutrient are shown in Table A1.11.

Table A1.10 Overall application rate (kg/ha) on grassland, Great Britain 2018 – 2022

	straight nitrogen	compound nitrogen	total nitrogen	total phosphate	total potash	total sulphur
2018	29	28	57	8	12	4
2019	27	27	54	8	11	5
2020	29	24	53	8	11	5
2021	26	25	51	7	11	5
2022	21	13	34	4	6	3

In 2022, dressing cover for total nitrogen on grass decreased by 17 percentage points to 42% (Table A1.11). The long-term trend had been for declining dressing cover for total nitrogen but 2022 saw this fall below previous low levels reported in 2019 and 2020. In 2022 it was unusual to see grass dressing covers of straight and compound N at a similar, albeit low level. The average field rate for compound N was 58 kg/ha while for straight N it was 91 kg/ha. In 2022, the overall application rates for phosphate and potash were 4 kg/ha and 6 kg/ha, respectively (Table A1.10).

Table A1.11 Dressing cover (%) and average application rate (kg/ha) of fertiliser on grassland, Great Britain 2018 – 2022

Dressing cover (%)

	straight nitrogen	compound nitrogen	total nitrogen	total phosphate	total potash	total sulphur
2018	27	39	59	38	40	12
2019	27	38	58	37	39	14
2020	27	36	56	35	37	15
2021	28	37	59	37	39	16
2022	23	22	42	22	22	11

Average field rate (kg/ha)

	straight nitrogen	compound nitrogen	total nitrogen	total phosphate	total potash	total sulphur
2018	106	72	96	22	29	37
2019	103	70	93	21	29	33
2020	108	67	96	22	31	33
2021	95	66	87	20	28	32
2022	91	58	80	18	25	32

The proportion of the grass area receiving a straight nitrogen dressing decreased in 2022 to 23% and the compound N dressing cover was at 22% in 2022 (Table A1.11). The dressing cover of phosphate and potash on grass both decreased to 22%. The five-year means are also 34% and 35%, respectively. The sulphur dressing cover decreased to a 5 year low of 11%.

In 2022, the average field rates for phosphate on grass decreased by 2 kg/ha to 18 kg/ha and for potash by 3 kg/ha to 25 kg/ha. The sulphur average field rate was unchanged at 32 kg/ha, just below the five-year average of 33 kg/ha.

A1.3.1 Nitrogen use on Grassland

Cutting and grazing management: Section A1.3.1

Fertiliser requirements for grassland vary according to the type of livestock enterprise, intensity of production and the associated cutting and grazing regimes used for sward management. Fertiliser use on dairy, other livestock, and mixed farms in Great Britain in 2022 are presented in Appendix 2. The Survey estimates of annual distributions of the total grassland area between grazing and cutting management regimes since 2018 are summarised in Table A1.12. These should not be taken as authoritative national estimates of grassland utilisation, as the Survey is designed to estimate fertiliser application rates, not to derive accurate crop areas, although these may still be the best available estimates of grassland utilisation by area.

Table A1.12 Grassland utilisation (% of grass area), Great Britain 2018 – 2022

	grazed[1]	silage[2]	hay[2]
2018	93	31	10
2019	93	31	10
2020	94	30	9
2021	95	30	10
2022	94	28	12

Note: [1]. May also be cut,
[2]. May also be grazed.

Nearly all grassland is grazed at some stage during the season (Table A1.12) and the proportion in 2022 is the same as the five-year mean of 94%.

Nitrogen usage for the different cutting and grazing categories is presented in Table A1.13. The differences in average field rates for nitrogen illustrate the influence of grassland management practice on fertiliser inputs with rates being lowest generally in grass cut for hay, higher in grass which is grazed and higher still in grass cut for silage.

Table A1.13 Nitrogen application rates (kg/ha) by grassland utilisation, Great Britain 2018 – 2022

Total nitrogen

	overall application rate		
	grazed[1]	silage[1]	hay[2]
2018	53	104	50
2019	50	100	44
2020	50	102	39
2021	48	96	43
2022	31	73	29

	average field rate		
	grazed	silage	hay
2018	91	126	79
2019	89	118	76
2020	91	124	75
2021	83	114	73
2022	76	99	67

Straight nitrogen

	overall application rate		
	grazed	silage	hay
2018	25	55	18
2019	24	51	19
2020	26	60	20
2021	24	52	18
2022	19	46	16

	average field rate		
	grazed	silage	hay
2018	100	125	84
2019	97	117	82
2020	102	128	94
2021	91	109	81
2022	86	108	74

Compound nitrogen

	overall application rate		
	grazed	silage	hay
2018	28	48	33
2019	26	49	25
2020	24	42	19
2021	24	43	24
2022	12	27	13

	average field rate		
	grazed	silage	hay
2018	71	95	72
2019	69	88	65
2020	65	82	58
2021	64	86	60
2022	57	70	52

Note: [1]. May also be cut,
[2]. May also be grazed.

In 2022, the overall total nitrogen rates decreased by 17 kg/ha to 31 kg/ha for grazed grass and by 23 kg/ha for silage grass. The overall nitrogen rate on grass for hay decreased by 14 kg/ha to 29 kg/ha. Rates reported on grass cut for hay need to be treated with caution due to the relatively small numbers of grass fields being managed this way (Table A1.13).

The average field rates of straight nitrogen decreased for all categories of grass. The five-year means for overall straight nitrogen rate are 24, 53 and 18 kg/ha for grazed grass, silage, and hay, respectively. Compound nitrogen average field rates all reduced in 2022. The five-year means for the overall compound nitrogen rates are 23, 42 and 23 kg/ha for grazed grass, silage, and hay, respectively.

The fall in nitrogen use over the long term on grassland until 2008 is likely to be related in part to decreases in ruminant livestock numbers which may have reduced herbage production requirements. Since then, the rate of nitrogen application to grassland had remained relatively constant, but the 2022 overall nitrogen rate of 34 kg/ha was considerably lower than the 55 kg/ha reported in 2008.

A1.3.2 Phosphate and Potash use on Grassland

As for nitrogen, phosphate and potash requirements for grassland depend on the system of sward management with overall application and field rates for both phosphate and potash being higher in grass cut for silage.

Table A1.14 Phosphate and potash use (kg/ha) by grassland utilisation, Great Britain 2018 – 2022

Total phosphate

	overall application rate			average field rate		
	grazed [1]	silage [2]	hay [2]	grazed [1]	silage [2]	hay [2]
2018	8	14	11	22	28	23
2019	8	14	9	21	26	23
2020	8	13	8	21	28	22
2021	7	12	8	20	26	19
2022	4	8	5	18	21	21

Total potash

	overall application rate			average field rate		
	grazed [1]	silage [2]	hay [2]	grazed [1]	silage [2]	hay [2]
2018	11	23	14	28	41	31
2019	11	22	10	28	39	25
2020	11	23	9	29	43	26
2021	10	22	12	26	40	27
2022	5	12	8	24	30	29

Note: [1]. May also be cut,
[2]. May also be grazed.

In 2022, the overall phosphate rate decreased by 3-4 kg/ha for grazed, silage and hay grass. The corresponding five-year means for grazed grass, silage and hay were 7, 12 and 8 kg/ha, respectively. The average field rate for grazed grass decreased by 2 kg/ha, decreased by 5 kg/ha for silage and increased by 2 kg/ha on grass cut for hay in 2022.

Overall potash rates in 2022 decreased on all categories of grass. The average field rate of potash decreased by 2 kg/ha on grazed and by 10 kg/ha on silage grass but increased slightly on grass cut for hay.

A1.3.3 Sulphur use on Grassland

In 2022, 11% of the total grassland area received a sulphur dressing (mean 14% for 2018-22 period). Of this, a higher proportion of grassland cut for silage is treated with sulphur compared to grazed grass or grass cut for hay (Table A1.15). Estimated dressing covers have fluctuated in the past five years, with 4 percentage point decreases for grazed grass and silage grass and a 6 percentage point reduction in hay grass in 2022.

The significant proportion of heavier textured soil types which occur in the main grassland farming areas, together with assumed inputs of sulphur from manure applications to grass fields, are among possible influences on the consistently low level of sulphur fertiliser use on grassland.

Table A1.15 Sulphur use on grassland, Great Britain 2018 – 2022

Dressing cover (%)

	grazed[1]	silage[2]	hay[2]	all grass	all cropping	all crops and grass
2018	11	19	12	12	62	34
2019	14	25	16	14	62	36
2020	15	27	14	15	59	34
2021	15	25	17	16	60	35
2022	11	21	11	11	54	30

Average application rate per year (kg/ha SO_3)

	grazed[1]	silage[2]	hay[2]	all grass	all cropping	all crops and grass
2018	37	41	29	37	57	53
2019	33	37	30	33	56	51
2020	32	38	28	33	53	48
2021	32	38	37	32	51	46
2022	30	36	39	32	50	46

Note: [1]. May also be cut,
[2]. May also be grazed.

Estimated average field rates of sulphur application peaked for grazed and silage grass in 2007 at 45 kg/ha and 47 kg/ha, respectively and for hay in 2008 at 47 kg/ha. In 2022, compared to 2021 values, average field rates decreased for grazed and silage grass and a 2 kg/ha increase was observed for hay. The five-year means are 33, 38 and 33 kg/ha SO_3 for grazed, silage and hay grassland, respectively (Table A1.15). Note that the average application rates in Table A1.15 are annual totals, not rates per cut.

A2 LONGER TERM TRENDS IN FERTILISER USE FOR GREAT BRITAIN

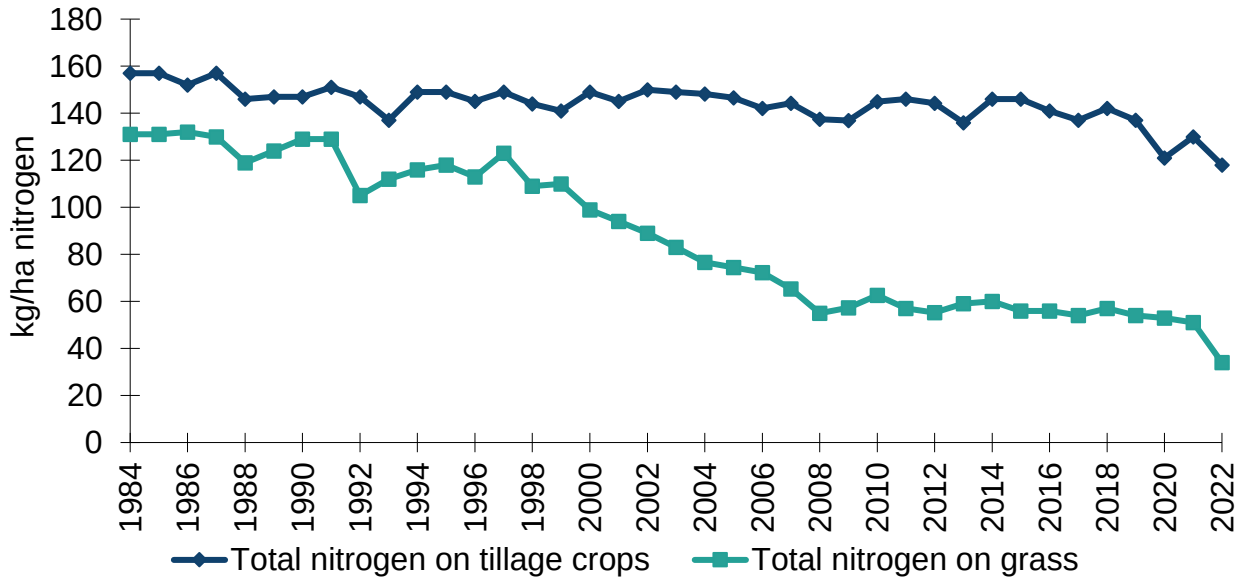
A2.1 LONGER TERM TRENDS IN NITROGEN USE, FROM 1983

The BSFP commenced as an integrated British Survey in 1992. Before then, the annual Survey of Fertiliser Practice had been completed separately for England & Wales and for Scotland. Some survey statistics from those earlier surveys have since been collated to report an aggregated series for nutrient use in Great Britain since 1983, when the Survey in Scotland started. All the longer-term data represented in the figures within this section can be found in Appendix 1.

The aggregated data for Great Britain follow a similar pattern to that observed for England & Wales because a large proportion of both the cropping and grassland areas in Britain are in England & Wales. Overall total nitrogen rates for cropping and grassland in England & Wales since 1972 and in Scotland and Great Britain since 1983 are summarised in Table AA1.1. The data for Great Britain are presented graphically in Figure A2.1. Overall, nitrogen use has been consistently higher on crops than on grassland ever since the British Survey started.

Apart from a dip in 1992-93 due to major changes in the CAP, the overall application rate of total nitrogen on cropping land stayed within the range 140-150 kg/ha, with some wider fluctuations caused by factors such as changes in the crop mix and area or changes in nitrogen applications to specific crops (see Figure A2.3). The estimates for the last four years have fallen outside of this range, with the overall application rate of nitrogen on crops for Great Britain being 118 kg/ha in 2022. This rate has fallen below that of 121 kg/ha in 2020, a rate which was related to the weather and subsequent cropping patterns for that year.

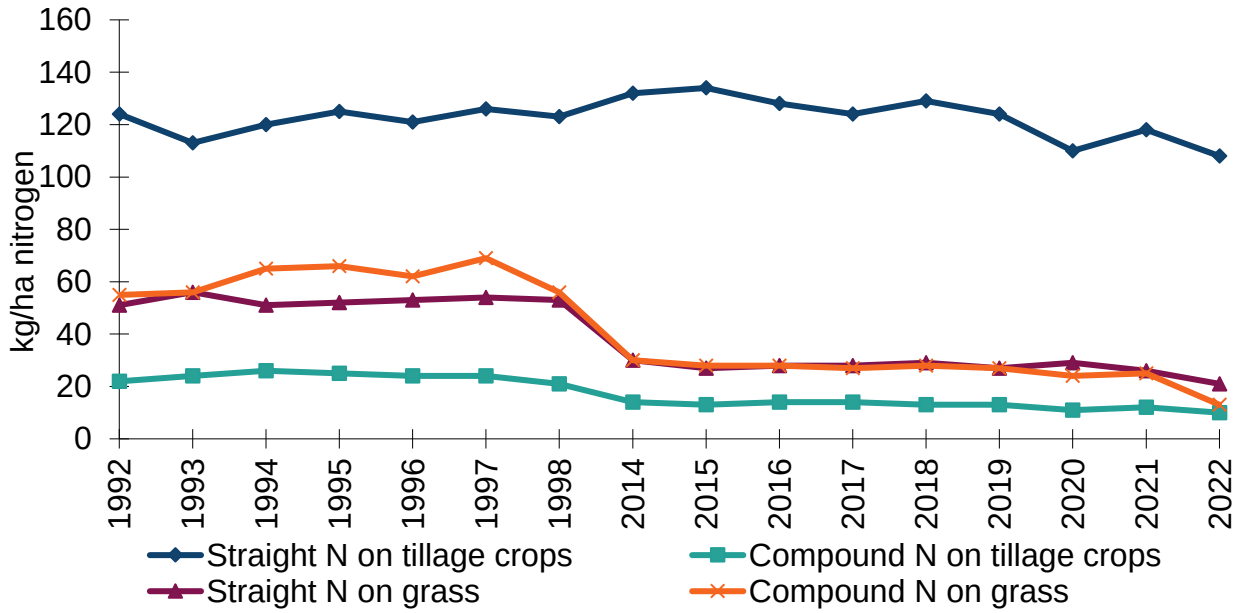
Figure A2.1 Overall application rates (kg/ha) of total nitrogen on crops and grassland, Great Britain 1984 – 2022



Nitrogen levels applied to grassland have always been lower than those on crops. From 1983 until 1999, the difference was fairly constant, averaging 27 kg/ha. Since 2000, the overall applications made to grass fell consistently relative to those made to crops. If the result from the 2020 survey is excluded, where the replacement of winter cereals and rape by spring barley (see Appendix 3, Table AA3.3.1) resulted in an overall nitrogen rate difference of 68 kg/ha, during the last five years the average difference in overall nitrogen rate has remained relatively constant at 83 kg/ha.

Data on straight and compound nitrogen for Great Britain are not available for the period 1983-91 when the Survey in Scotland was separate from the one in England & Wales. Figure A2.2 shows the overall application rates of straight and compound nitrogen on crops and grassland. Most of the total nitrogen fertiliser used on crops each year has been applied in straight form. On grassland, since 2009, the overall application rates of straight and compound nitrogen were similar, but with a greater decrease in compound N rate observed in 2022.

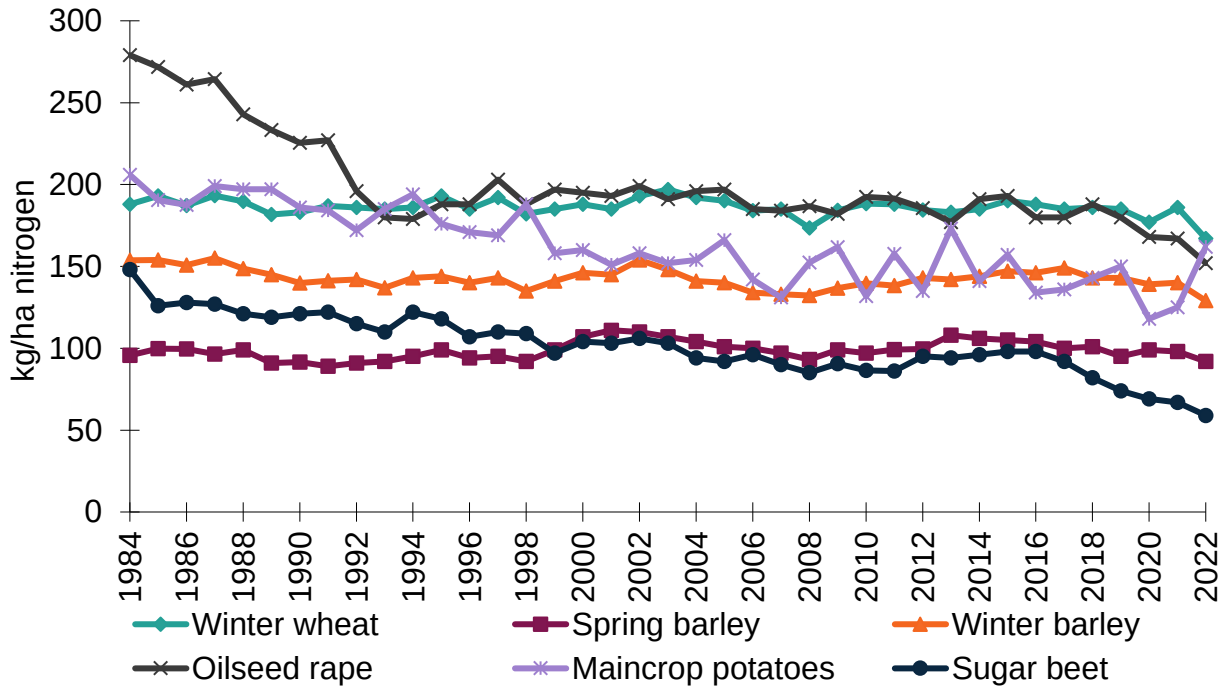
Figure A2.2 Overall application rates (kg/ha) of straight and compound nitrogen on crops and grassland, Great Britain 1992 – 2022



A2.1.1 Longer term trends in nitrogen use on major crops

Overall application rates of total nitrogen on the main arable crops in Great Britain since 1984 are shown in Figure A2.3.

Figure A2.3 Overall application rates (kg/ha) of total nitrogen on major arable crops, Great Britain 1984 – 2022



A2.1.2 Longer term trends in autumn and winter applications of nitrogen fertiliser

The BSFP is able to monitor the extent to which recommended agronomic advice is adopted. By analysing the timing of fertiliser applications, it is possible to assess the extent to which autumn and winter nitrogen is applied. The standard advice is that autumn nitrogen is not required for winter cereals, as economic yield benefits are rare and such applications are vulnerable to leaching loss. The Great Britain values have remained below 10% of the crop area treated for both winter cereal crops since 2003, with the dressing cover being 5% or below for both in 2021. The area receiving autumn nitrogen is too low for data relating to average field application to be used. Autumn nitrogen at 30 kg/ha is recommended for winter oilseed rape, unless the soil has a high nitrogen fertility, as the crop normally requires more nitrogen than winter cereals during the autumn growth period. Data relating to this commentary can be found in Appendix Table AA1.2.

A2.2 LONGER TERM TRENDS IN PHOSPHATE, POTASH AND SULPHUR USE, from 1983

Historic annual overall application rates of phosphate, potash and sulphur on crops and on grassland in Great Britain are illustrated in Figure A2.4a and A2.4b, using the data presented in Appendix Tables AA1.3, AA1.4 and AA1.5.

Figure A2.4a Overall application rates (kg/ha) phosphate and potash on crops and grassland, Great Britain 1984 – 2022

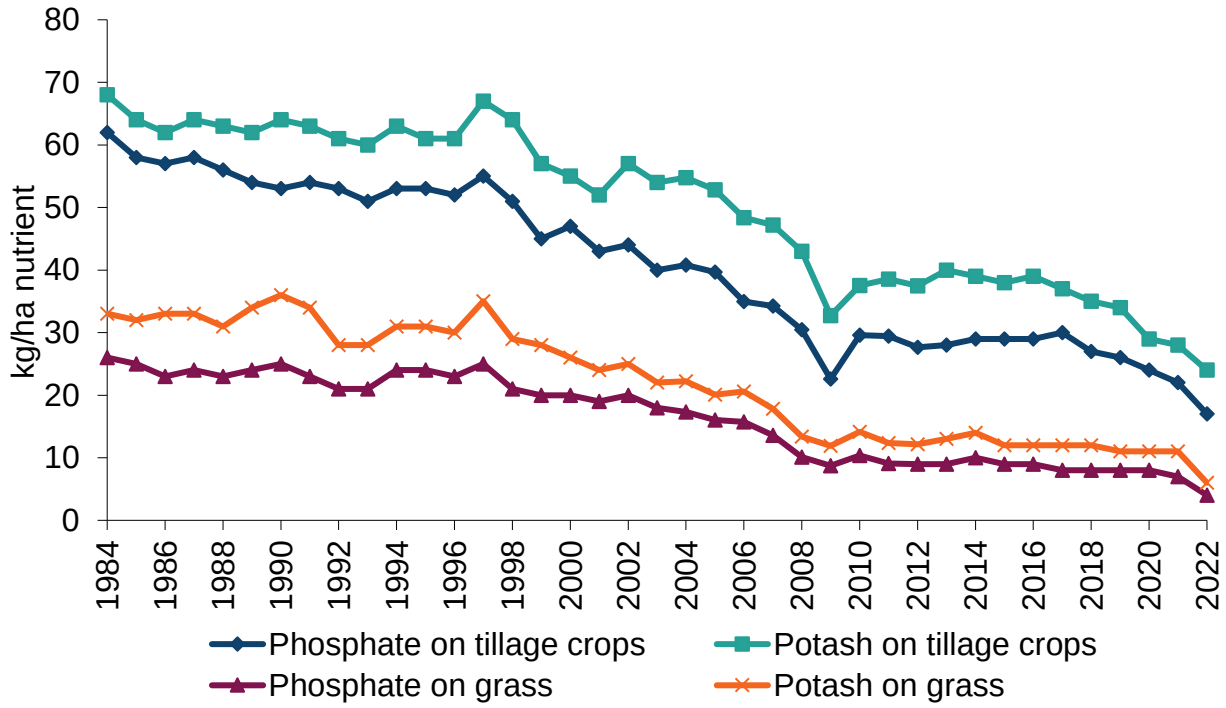
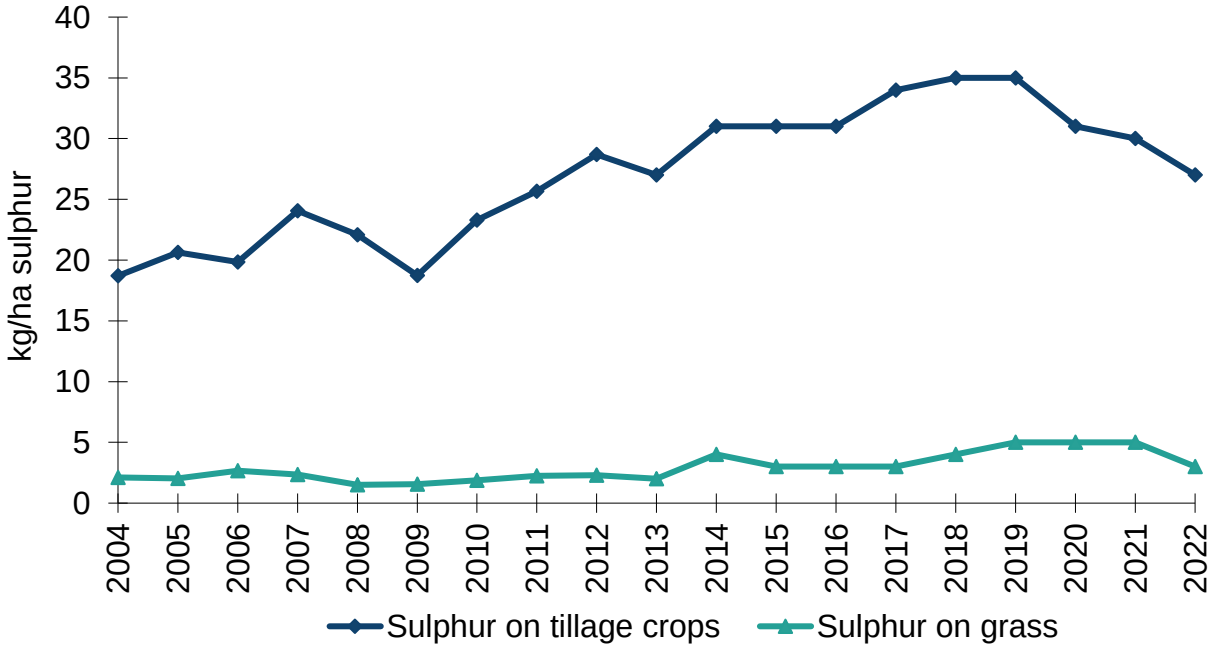


Figure A2.4b Overall application rates (kg/ha) of sulphur (SO_3) on crops and grassland, Great Britain 2004 – 2022



Overall phosphate use on crops declined gradually between 1984 and 1996, from 62 kg/ha to 52 kg/ha. Thereafter the decline in rates became more marked to 2010, with the dip in use in 2009 being caused by a major price increase for the nutrient at that time. The data suggest that, since 2010, overall application rates of phosphate and potash have remained relatively constant, although decreases of 5 kg/ha (to 17 kg/ha) and 4 kg/ha (to 24 kg/ha), respectively were recorded in 2022. Overall phosphate rates on crops have been consistently higher than those recorded on grass.

The overall application rate of phosphate on grassland was highest in 1983, at 28 kg/ha, and then application remained relatively stable at 21-26 kg/ha between 1984 and 1998. Overall application rates have declined more rapidly in the period between 1999 and 2009, where the rates were 20 kg/ha and 9 kg/ha, respectively. Since then, until 2021, the overall application rates have remained stable at 7-10 kg/ha.

Overall potash use on crops declined slightly between 1983 and 1997, with the rates in the 60-68 kg/ha range. Like phosphate, overall application rates reduced at a greater rate after this time to 33 kg/ha in 2009. The potash rate in 2009 was the lowest since 1983 and again was thought to be a reaction to the price of the nutrient. Since then, the overall application rates of potash on crops have gradually declined to 24 kg/ha in 2022.

Compared to crops, the pattern of overall potash application on grassland has been more variable. A net decline was shown between 1983 and 2009; since then the rate has remained within the range of 11-14 kg/ha.

Overall sulphur application on crops has increased steadily since 2004 but decreased by 3 kg/ha to 27 kg/ha in 2022. On grassland the use of sulphur is much lower, but it too has increased, albeit it at a much lower rate. In 2004 the overall application rate was 2 kg/ha and in 2022 this was 3 kg/ha.

Overall application rates of phosphate and potash applied to crops are approximately three times those used on grassland. However, there is greater use of applied manures on grassland (37% cover) than on crops (28% cover) and grazed grassland also receives manure as it is grazed. Annual overall application rates of sulphur on crops and on grassland in Great Britain since 2004 are illustrated in Figure A2.4b.

On crops, the phosphate dressing cover has declined in all countries since 2004. However, the decline in England and Wales has been much higher (40 percentage point reduction) in comparison to Scotland, where the reduction was 10 percentage points for the period. Despite this, long-term trend dressing covers have been relatively stable in the last 5 years. On grass, phosphate dressing covers have also declined since 2004, but these too have stabilised in more recent years.

Potash dressing covers follow a similar pattern to phosphate, with a marked decline on crops in England and Wales since 2004, followed by stabilisation during the last 10 years.

Sulphur dressing covers have increased since 2004 on crops in all countries. At the start of the period, they were generally higher in Scotland than in England and Wales. In the last five years sulphur dressing covers have plateaued, although in 2021 and 2022 they were slightly higher in England and Wales than Scotland. Dressing covers on grass are lower than those observed on crops. They have increased since 2004, and in the last five years have tended to be higher in Scotland (mean 18 kg/ha) than in England and Wales (mean 12 kg/ha).

The data pertaining to dressing coverage of phosphate, potash and sulphur, on both crops and grassland, can be found in Appendix table App 1.3.

A2.2.1 Longer term trends in phosphate, potash and sulphur use on major crops

Overall application rates of phosphate and potash on the main arable crops in Great Britain since 1983 are shown in Figure A2.5.

Phosphate use on the main combinable crops has shown a gradual net decline since 1983. (Figure A2.5(a)). The year 2009 saw more marked decreases in overall application rates due to a spike in fertiliser prices (-10 kg/ha for winter wheat and -13 kg/ha for winter barley). In 2010 overall phosphate rates recovered and there was a period of relative stability between 2010 and 2017, but since then there appears to have been a resumption in the decline. Overall phosphate use has also declined steadily on potatoes and sugar beet.

Potash use on the main combinable crops was relatively stable from 1983 to about the turn of the century. It then went through a period of decline to 2009, followed by relative stability between 2010 and 2017, before a return to apparent decline thereafter. Overall potash rates were declining steadily on potatoes and sugar beet. However, potash rates on potatoes noted an increase in 2022.

Overall application rates of sulphur (SO_3) on the main combinable crops have increased steadily since reporting of sulphur data began in 1983 (Figure A2.5c). However, these increases plateaued during the 2010s, with 2022 recording a second subsequent year of declining application rates. This downward movement is a reflection of a decrease in the dressing cover of sulphur on these and other crops rather than decreases in the average rates which have been relatively constant and close to the recommended rate for many years (Tables A1.4 and A1.5).

Figure A2.5a Overall application rates (kg/ha) of phosphate on major arable crops, Great Britain 1984 – 2022

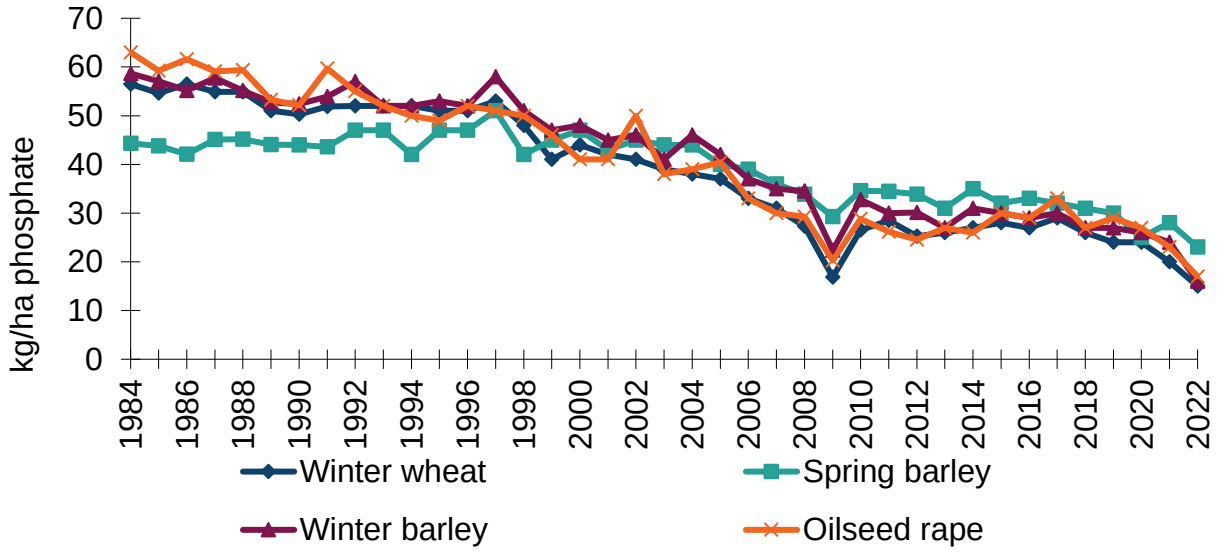


Figure A2.5b Overall application rates (kg/ha) of potash, on major arable crops, Great Britain 1984 – 2022

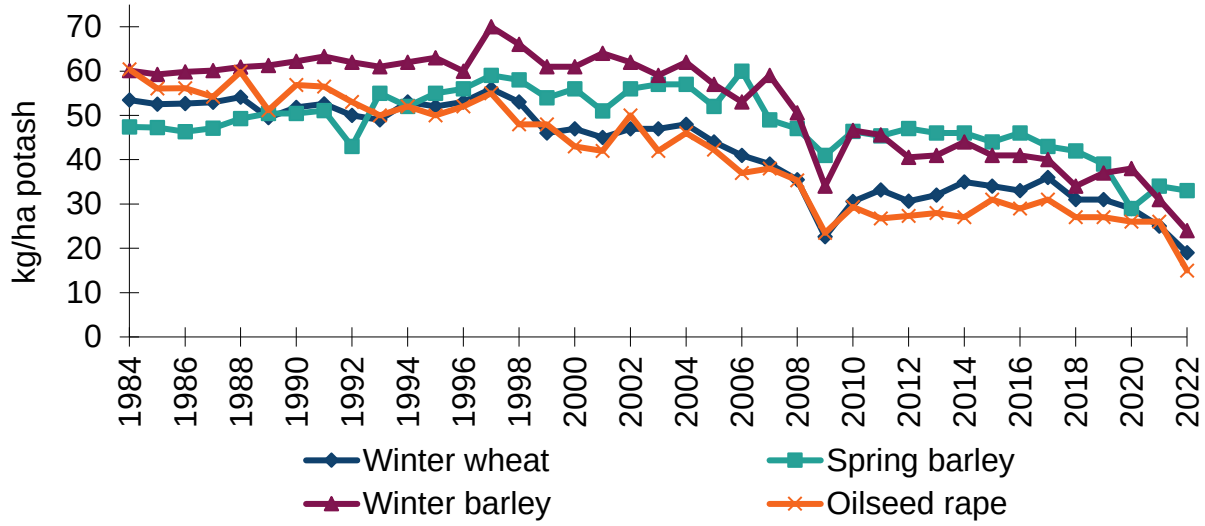


Figure A2.5c Overall application rates (kg/ha) of sulphur (SO_3) on major arable crops, Great Britain 1993 – 2022

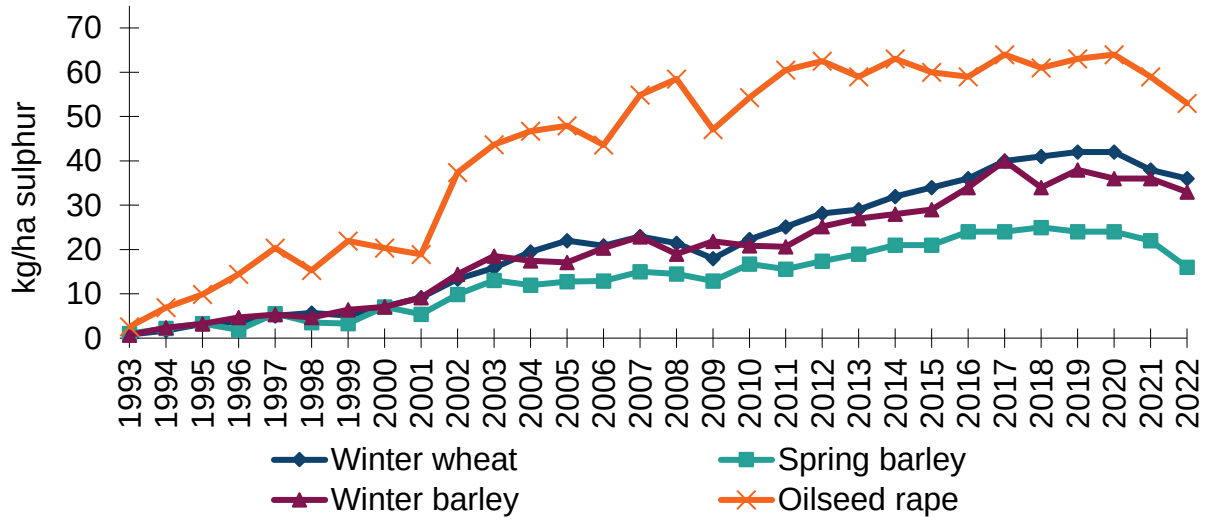
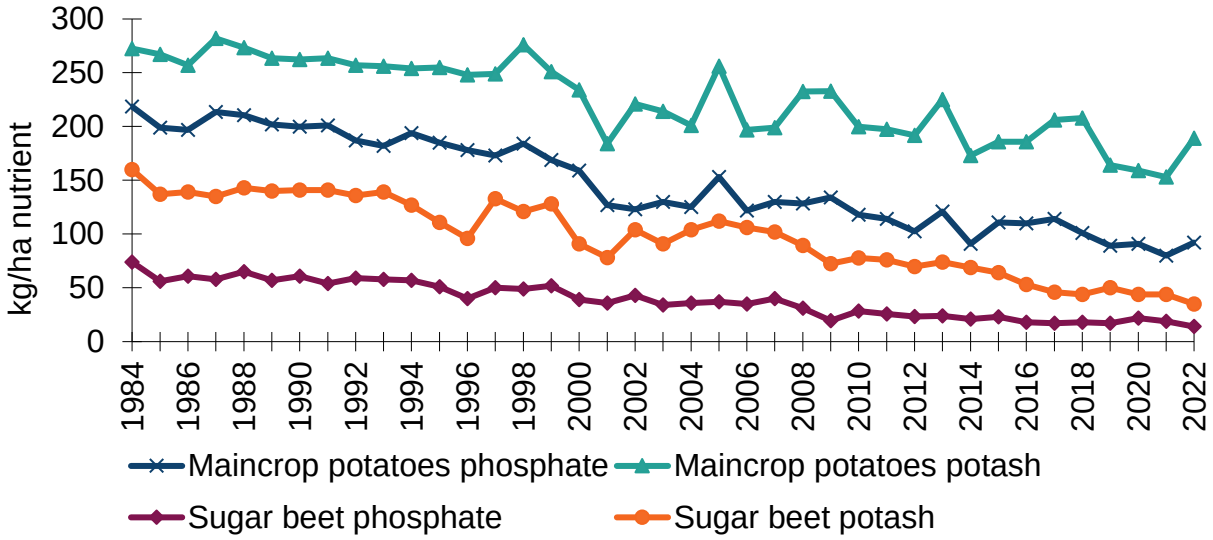


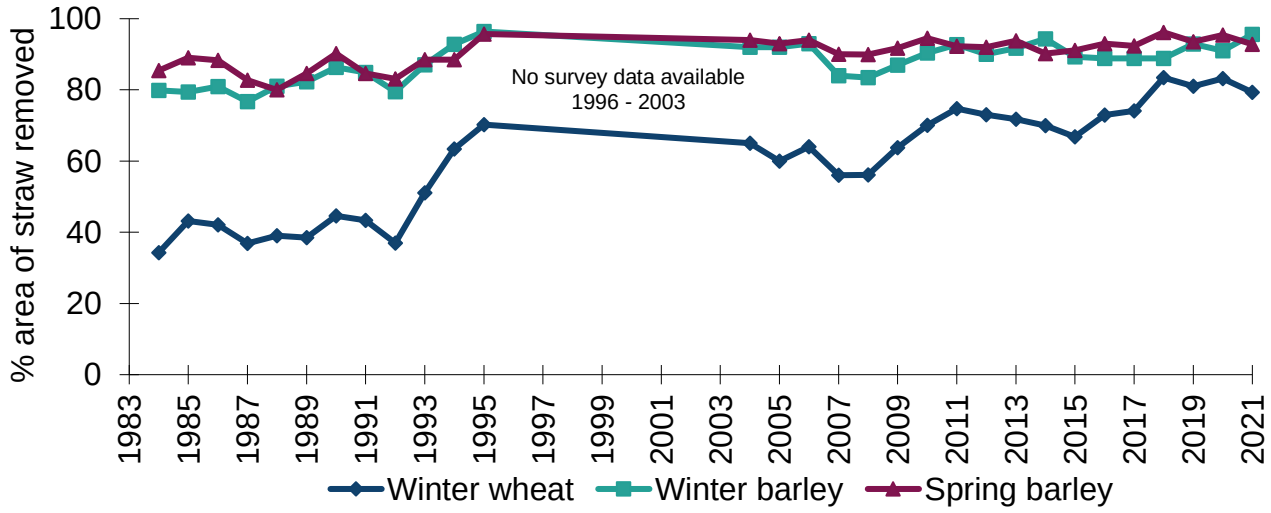
Figure A2.5d Overall application rates (kg/ha) of phosphate and potash on sugar beet and potatoes, Great Britain 1984 – 2022



A2.3 LONGER TERM TRENDS IN STRAW REMOVAL, FROM 1983

Estimates of the percentage of straw removed from wheat and barley fields are shown in Figure A2.6. Wheat and barley straw contain a significant quantity of nutrients, especially potash. The removal of straw from the field after harvest also removes these nutrients, which would otherwise be returned to the soil when the straw is incorporated. These straws contain on average 1.2-1.5 kg P_2O_5 (phosphate) per tonne, and 9.5-12.5 kg K_2O (potash) per tonne, and it is estimated that for every tonne of cereal grain harvested, 0.5 tonnes of straw can be baled and removed from the field. Thus, the removal of wheat or barley straw will increase the removal of phosphate by about 10% more than if the grain alone were removed, while the amount of potash removed would be approximately doubled.

Figure A2.6 Percentage of straw removed from wheat and barley fields, England & Wales crop years 1984 – 1995, Great Britain crop years 2004 – 2021



Data collected as part of the 2022 Survey related to the fate of the straw from the 2021 harvest so is reported against 2021. In 2021, 79% of the winter wheat straw was removed from the fields, with the percentages for winter and spring barley higher still at 96% and 93% respectively.

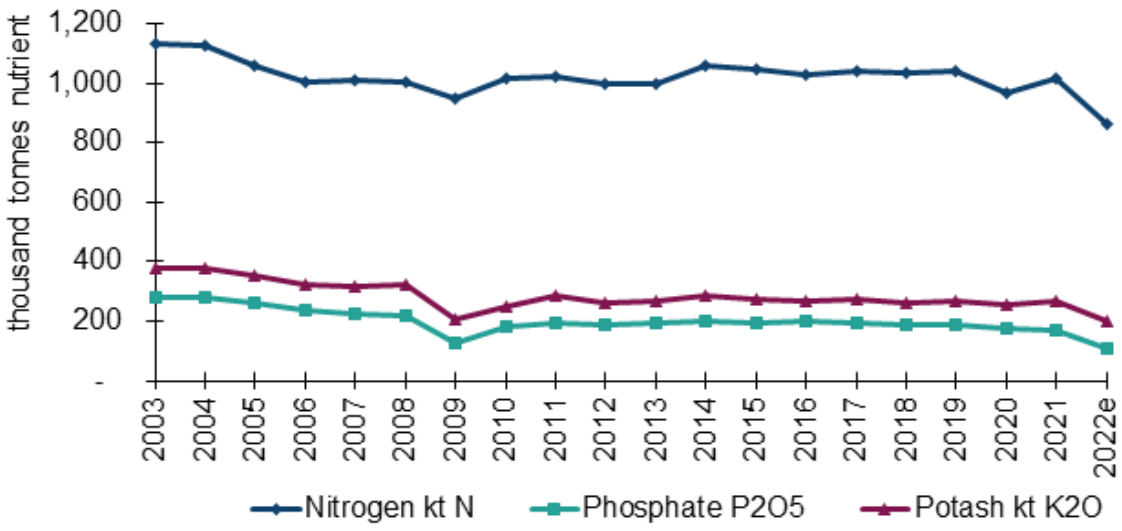
Data for the period 1984-95 were sourced from MAFF/Defra straw disposal surveys, those for the period 2004-21 from this Survey. No data are available for the period 1996-2003. The straw burning ban was introduced in 1993. This resulted in a significant increase in the percentage of straw removed, which was up to 70% and 96% for wheat and barley respectively by the 1995 harvest.

A2.4 TOTAL QUANTITIES OF NITROGEN, PHOSPHATE AND POTASH USED IN THE UK, FROM 1966

Estimates of quantities of nitrogen, phosphate and potash used in the UK since 2003 are illustrated in Figure A2.7. Longer term data, since 1966, can be located in Appendix table AA1.7. These data are based on BSFP findings and trade and sales data. They are compiled by the AIC in conjunction with Defra using the methodology described in Appendix 3.2.5. Users should note that these figures relate also to the whole of the UK, whereas the other figures presented in this report relate just to Great Britain.

Total mineral nitrogen consumption in the UK increased from 590 thousand tonnes in 1966 up to 1,674 thousand tonnes in 1987 before declining gradually to 1,001 thousand tonnes in 2008. The drop in 2009 was related to high fertiliser prices. Between 2010 and 2019 nitrogen use has remained relatively stable. The reduction in nitrogen use observed in 2020 was related to weather and cropping factors. From the peak in 1987, UK nitrogen use since has fallen by approximately 40%. Estimated nitrogen use in 2022 fell a further 15% on the year earlier, to 862 thousand tonnes. This is the lowest level since 1970, driven predominantly by supply shortage and price increases as a result of the conflict in Ukraine. This further exacerbated supply challenges that had resulted from one of the UK's main fertiliser manufacturers closing a production site in September 2021 for a period.

Figure A2.7 Quantities of major nutrients used, United Kingdom 2003 – 2022



Phosphate use in the UK has fallen since the mid-1980s but since 2007 this decline slowed. The low use of 129 thousand tonnes in 2009 was price related. Between 2010 and 2019 total phosphate use was more stable, between 184–201 thousand tonnes. Results for 2020 and 2021 appeared to show a further reduction of this nutrient, (174 thousand tonnes of phosphate was used in 2020). At this level of usage volumes are only 40% of the annual average used between 1966 and 1995. This reduction further accelerated in 2022, to an estimated 110 thousand tonnes. Increased pricing and supply challenges helped drive this movement.

Potash use in the UK was highest in the mid-1980s through to 1999, after which there has been a more sustained decline. Potash use in 2022 recorded an increased decline, following a decade of reasonable stability, to 197 thousand tonnes. Global price increase and reduction in supply, largely driven by the war in Ukraine, was a key driver of this decrease.

SECTION B

Use of organic manures – Great Britain, 2022

Introduction

Whilst the BSFP has focussed historically on the application of manufactured fertilisers, in the last 15 years it has also collected increasingly detailed information on the use of organic manures. In previous years, farmers were asked where their manure applications fell within pre-specified 'high', 'medium' and 'low' ranges. From 2007, and to better quantify the organic manure data, farmers were asked to provide a specific rate of application which could then be weighted in the same way as the manufactured fertiliser data to deliver a national picture of organic manure usage. However, users should note that the underlying sample design is constructed to measure manufactured fertiliser usage and may not represent the population of farmers using organic manures as robustly.

In this chapter, data on slurries has been collected in cubic metres (m^3) and data on solid manures has been collected in tonnes. For the purpose of analysis and presentation, one cubic metre of slurry has been assumed to have the mass of one tonne.

B1 FARMS HANDLING ORGANIC MANURES

Organic manures applied to agricultural land may be produced on farm by livestock as slurries, farmyard manure (FYM) and poultry manures, or imported from other sources such as treated sewage sludges (also called bio-solids) and some industrial 'wastes' such as compost, paper waste or brewery effluent.

Table B1.1a Numbers and percentage (%) of farms using each type of manure in Great Britain, 2022

	none	cattle FYM	cattle slurry	pig FYM	pig slurry	layer manure	broiler/ turkey litter	other FYM	other farm	bio-solids	other non-farm	total with manure
Farms in sample	383	690	249	32	15	33	52	46	6	54	64	934
Farms in population ('000)	29.1	44.7	14.5	1.3	0.4	1.8	2.5	4.3	0.3	2.2	4.0	59.0
Farms in population %	33%	51%	17%	1%	0%	2%	3%	5%	0%	3%	5%	67%
Volume (Mt; Mm^3)	n/a	35.3	43.3	2.2	1.8	0.4	0.8	0.9	0.5	3.6	7.7	96.3
Volume %	n/a	37%	45%	2%	2%	0%	1%	1%	1%	4%	8%	100%

Note: some farmers may use more than one type of manure. Mt; Mm^3 are Million tonnes and Million cubic metres.

Of the 1,317 farms in the 2022 Survey, 934 used organic manures on at least one field on the farm, representing 67% of the Survey population. The details are shown in Table B1.1a.

Table B1.1b Percentage (%) of farms using each type of manure in Great Britain, 2016 – 2022

	none	cattle FYM	cattle slurry	pig FYM	pig slurry	layer manure	broiler/ turkey litter	other FYM	other
2016	35.0	51.0	16.0	2.0	1.0	2.0	2.0	6.0	4.0
2017	37.0	47.0	16.0	2.0	1.0	1.0	1.0	5.0	4.0
2018	32.0	50.7	17.0	1.7	0.4	1.3	1.5	6.7	4.2
2019	33.0	50.4	17.3	1.8	0.4	1.3	2.1	6.3	4.5
2020	35.0	49.0	16.4	2.0	0.4	0.8	2.4	5.7	4.8
2021	35.1	49.0	17.6	1.3	0.8	0.8	2.6	5.6	4.4
2022	33.1	50.9	16.5	1.4	0.5	2.0	2.8	4.9	7.2

Cattle manure from beef and dairy farms is by far the largest volume of manure type generated in Great Britain. The percentage of farms using cattle FYM and cattle slurry has been reasonably consistent over the last 5 years with use in 2022 being 51% and 17% of farms, respectively. The "other" manure type includes biosolids and other non farm manures. This type of manure was used on a greater percentage of farms in 2022 than had been observed in previous years.

Table B1.1c Dressing cover (%) of organic manure in Great Britain, 2013 – 2022

	winter wheat	spring barley	winter oilseed rape	sugar beet	maize	all cropping	grass under 5 years	grass 5 years & over	all grass	all crops and grass
	%	%	%	%	%	%	%	%	%	%
2013	17	26	18	56	77	23	47	35	37	31
2014	16	29	15	46	86	22	49	29	32	28
2015	21	26	17	54	89	23	53	29	33	29
2016	19	31	20	41	95	23	48	31	34	29
2017	22	31	18	46	82	25	46	31	34	30
2018	25	30	24	46	88	27	52	33	37	32
2019	24	29	23	38	85	26	48	34	36	42
2020	24	27	24	36	85	25	51	32	35	31
2021	23	31	32	35	79	26	55	34	37	32
2022	24	35	31	34	85	28	52	35	37	33

Dressing cover of organic manure on crops has averaged 26% in the five-year period 2018-2022. The proportion of grass receiving a dressing of manure is higher for both categories, at 35% of grass 5 years and over and 52% on grass under 5 years old in 2022.

Not all the manure generated by a farm is necessarily retained for use by that farm and excess manure/slurry can be exported for use elsewhere. Up to the 2013 Survey, the report included data on the quantities of manure which were imported onto farm or exported from farms and the number of farms involved. However these were all consistently very low and led to the conclusion

that this activity was too small to be of significance or to provide robust data and collection of these data was discontinued (see 2013 BSFP report, Tables D1.2, D1.3a&b)[4].

The number and percentage of farms using each type of slurry application method in Great Britain are shown in Table B1.2. This table takes account of all applications whether they are made by the farmers themselves or contractors. These data serve as a guide only and are calculated as an expression of the number of farms adopting a proportion of each application method, where slurry was applied. The data do not account for the proportion of each farm's total cultivatable area receiving slurry, or any variation in the rate at which slurry may have been applied using different application methods. It remains the case that broadcast application remains the most widespread method, but an increase of band spread application, notably for pig slurry, has also been observed.

Table B1.2 Number and percentage (%) of cropping farms using each type of application method by slurry type, Great Britain 2022

	farms in sample	farms in population	percentage of cropping farms						
			broadcast	band spread	shallow injection	deep injection	rain gun	rotating boom	non-broadcast
Cattle slurry	249	14,528	76	23	3	2	1	0	29
Pig slurry	15	402	47	53	11	0	5	0	64
Grand Total	263	14,905	75	24	3	2	1	0	30

Note: some farms may apply both types of slurry. Grass fields have been excluded from this table.

Whilst some of these application methods (e.g. shallow injection or deep injection) apply slurry below the surface of the field, the majority require secondary cultivation to incorporate the manure/slurry into the soil. Assessment of how often organic manures are incorporated into the soil is complicated by the fact that some farmers make more than one application or apply more than one type of manure and may incorporate each of these differently. As manure on grass fields is seldom incorporated (unless they are destined for re-seeding), grass fields have been excluded from the incorporation analysis.

Table B1.3 gives estimates of the volume and area of manure/slurry incorporation on cropping fields by manure type and immediacy of incorporation. Farmyard manure is the most extensively incorporated at 94% of the volume with 89% of it incorporated within a week of spreading on cropping fields. Cattle slurry makes up 96% of all slurry volume (Table B2.3a) and 90% of cattle slurry was applied to grassland. Of the balance, the majority of cattle slurry applied to cropping fields is applied to spring-sown crops (Table B2.4). Data on pig slurry need to be treated with caution due to the relatively low number of farms using manure of this type.

[4] https://www.gov.uk/government/collections/fertiliser-usage

Table B1.3 Percentage (%) of organic manure incorporated (volume and area) on cropping fields by incorporation time and manure/slurry type, Great Britain 2022

	incorporation time after spreading										total	
	not incorporated		Within 6 hours		between 6 and 24 hours		between 1 and 7 days		more than 1 week		applied area	volume applied
	% area	% vol	% area	% vol	% area	% vol	% area	% vol	% area	% vol	'000 ha	'Mt; Mm^3
FYM	7	6	10	12	40	43	29	29	13	11	742	17.0
Cattle slurry	32	32	23	24	20	22	16	12	10	9	144	4.2
Pig slurry	66	87	2	2	2	2	28	6	3	3	55	1.7
Poultry FYM	5	6	30	23	28	29	15	16	22	26	140	0.8
Other	20	21	31	33	14	11	23	20	11	14	330	8.0
Total	**15**	**18**	**18**	**19**	**29**	**29**	**25**	**23**	**13**	**11**	**1,411**	**31.7**

Farmers were asked to indicate what proportion of their livestock manures had been spread by a contractor (Table B1.4a). The percentage of farmers using a contractor to spread at least some of their FYM was 33% in 2022. Where contractors were used, they applied between 84% and 90% of the manure on average.

Table B1.4a Use of contractors (%) to spread manure/slurry in current season, Great Britain 2022

	% of farms using a contractor	% volume applied by contractor	average % of contractor-applied manure, where contractor is used
FYM	37	28	86
Cattle slurry	26	19	84
Other	59	52	90
Total	**33**	**28**	**87**

Use of contractors to spread manures is fairly consistent over the 5-year period 2018-2022, with an average of 30% of farms (Table B1.4b) spreading an average amount of 89%.

Table B1.4b Use of contractors to spread manure/slurry, Great Britain 2018 – 2022

	% of farms using a contractor	% volume applied by contractor	average % of contractor-applied manure, where contractor is used
2018	30	30	90
2019	30	29	90
2020	27	27	90
2021	29	28	88
2022	33	28	87

Historical note: Over four seasons between 2015 and 2019, excluding 2017, the Survey collected data on the periods of storage, and the months of establishment and spreading of manure stored in field heaps. The results seen from these data were considered to be sufficiently indicative of the timings and use of outdoor manure storage that they provided adequate information without the need for continuing collection of these data. The results are available in the relevant previous editions of the Survey[5]

B2 USE OF ORGANIC MANURES

Recent and current fertiliser recommendations are consistent in their advice to farmers to take note of the nutrient contributions from manures when calculating fertiliser input requirements. When making comparisons of the data presented in this report several factors should be considered:

- the extent to which individual farmers have accounted for the nutrients in the manures cannot be judged from these data,
- the data presented for 'with/without' manure are not a paired comparison of otherwise identical fields,
- fields which have not received manures may be on farms which have no manure and are thus managed in a different way,
- in grassland systems, fields which have not received manures may be managed differently (e.g. grazed only) compared with manured fields which may be cut more than once as well as grazed,
- for crops, the overall fertiliser rate means that some fields are included which have received no fertiliser. For the 'with manure' data, it may indicate that the manure was judged to supply all the fertiliser required,
- for grassland, the average fertiliser rate has been used to avoid distorting the data by inclusion of 'unmanaged' grass, which receives no fertiliser, although this has the effect of excluding any fields on which no fertiliser was applied because the manure was considered sufficient, thus obscuring a substitution effect,
- the dataset of fields where manures are used includes fields which may have received only a very small amount of manure (see section B3). On those fields receiving large dressings, there may be a greater adjustment in mineral fertiliser,
- where reductions in phosphate and potash fertiliser have not been made, this may indicate a desire to build up soil reserves of these nutrients.

The proportion of the sown area, of all crops, including grassland, receiving each of the main types of manure is shown in Table B2.1a, with cattle FYM and cattle slurry being the most extensively applied manures.

[5] https://www.gov.uk/government/collections/fertiliser-usage

Table B2.1a Percentage (%) of sown area receiving each organic manure type, Great Britain 2018 – 2022

	cattle FYM	cattle slurry	pig FYM	pig slurry	layer manure	broiler/ turkey litter	other FYM	other farm manure	bio-solids	other non-farm
	%	%	%	%	%	%	%	%	%	%
2018	17.3	8.9	0.6	0.2	0.6	0.7	1.4	0.1	1.2	1.3
2019	16.8	8.6	0.9	0.1	0.7	1.0	1.3	0.1	1.2	1.3
2020	15.4	8.3	0.7	0.2	0.6	0.9	1.1	0.1	1.6	1.3
2021	16.4	9.3	0.7	0.5	0.4	1.0	1.1	0.1	1.3	1.4
2022	17.1	8.6	0.7	0.4	0.7	1.3	0.8	0.1	1.6	2.2

Note: some areas may receive more than one type of manure.

The percentage of the sown area receiving an application of cattle FYM in 2022 was 17.1%, which is slightly above the five-year average (16.6%).

Table B2.1b Percentage (%) distribution of each organic manure type on manured sown area, Great Britain 2018 – 2022

	cattle FYM	cattle slurry	pig FYM	pig slurry	layer manure	broiler/ turkey litter	other FYM	other farm manure	bio-solids	other non-farm
	%	%	%	%	%	%	%	%	%	%
2018	57.4	29.6	2.1	0.6	2.0	2.2	4.6	0.4	4.0	4.3
2019	56.9	29.2	2.9	0.4	2.3	3.5	4.4	0.2	4.1	4.5
2020	55.1	29.7	2.5	0.6	2.0	3.1	3.9	0.2	5.6	4.5
2021	54.5	31.1	2.3	1.7	1.2	3.5	3.8	0.5	4.5	4.6
2022	54.5	27.4	2.4	1.4	2.1	4.2	2.6	0.3	5.1	7.2

Note: some areas may receive more than one type of manure.

The levels of nutrient in organic manures vary according to which type of manure is being applied as well as factors such as the size, age, gender, and market for the animals being farmed. Furthermore, the concentration of nutrients is dependent on the proportion of bedding, the length of time that the manure has been stored and, in the case of slurries particularly, diluting factors such as rainwater or dirty water which affect the proportion of dry matter. The BSFP does not ask detailed questions on the animals producing manures or the nutrient analysis of any organic applications made, but it is possible to use typical values for different manure types to estimate the likely nutrient levels delivered. Details of these values are given in Table B2.2.

Table B2.2 Typical dry matter % and nutrient content of different organic manure types[6]

manure type	dry matter (%)	total N (kg/t; kg/m^3)	total P_2O_5 (kg/t; kg/m^3)	total K_2O (kg/t; kg/m^3)
Cattle FYM	25.0	6.0	3.2	9.4
Pig FYM	25.0	7.0	6.0	8.0
Sheep FYM	25.0	7.0	3.2	8.0
Duck FYM	25.0	6.5	5.5	7.5
Layer hen manure	40.0	19.0	12.0	15.0
Poultry litter	60.0	28.0	17.0	21.0
Cattle slurry	6.0	2.6	1.2	2.5
Pig slurry	4.0	3.6	1.5	2.2
Biosolids: Digested cake	25.0	11.0	11.0	0.6
Biosolids: Thermally dried	95.0	40.0	55.0	2.0
Biosolids: Lime stabilised	25.0	8.5	7.0	0.8
Biosolids: Composted	40.0	11.0	10.0	3.0
Compost-green	60.0	7.5	3.0	6.8
Compost-green/food	60.0	11.0	4.9	8.0

In Table B2.3, crops receiving manure applications have been classified as either “winter-sown”, “spring-sown” or “grass” and their average treated areas and manure application rates shown.

[6]Anon. (2018). Nutrient Management Guide (RB209). Agriculture and Horticulture Development Board (AHDB). https://ahdb.org.uk/nutrient-management-guide-rb209

Table B2.3a Treated areas and average manure field application rates to winter-sown and spring-sown crops and grassland by manure type, Great Britain 2022

	cattle FYM	cattle slurry	pig FYM	pig slurry	layer manure	broiler/ turkey litter	other FYM	other farm manure	bio-solids	other non-farm
Winter sown										
Treated area (%)	10.0	2.0	1.8	1.4	1.5	2.3	0.3	-	3.3	3.4
Treated area ('000 ha)	278.0	54.9	48.7	38.0	40.5	64.8	7.2	-	91.6	94.2
Avg manure rate (t; m^3/ha)	22	29	24	32	6	5	18	-	20	25
Volume (Mt; Mm^3)	6.1	1.6	1.2	1.2	0.3	0.4	0.1	-	1.9	2.3
Fields in sample	314	48	30	23	22	48	5	3	62	59
Spring sown										
Treated area (%)	22.2	5.4	2.0	1.1	0.7	1.4	0.6	-	3.4	5.0
Treated area ('000ha)	365.4	88.7	32.9	17.3	11.3	23.4	9.4	-	56.3	82.5
Avg manure rate (t; m^3/ha)	23	29	29	26	7	6	16	-	22	28
Volume (Mt; Mm^3)	8.5	2.6	1.0	0.5	0.1	0.1	0.1	-	1.2	2.3
Fields in sample	417	95	27	11	14	33	13	3	26	46
Grass										
Treated area (%)	25.8	26.3	-	0.0	0.5	1.2	1.5	0.1	0.6	1.2
Treated area ('000ha)	1,466	1,498	-	2.7	26.1	68.6	87.5	7.4	36.9	69.7
Avg manure rate (t; m^3/ha)	14	26	-	33	4	5	7	47	13	26
Volume (Mt; Mm^3)	20.6	39.1	-	0.1	0.1	0.3	0.6	0.3	0.5	1.8
Fields in sample	799	503	0	9	21	26	45	7	15	32

Note: This table excludes crops that cannot be classified as either winter- or spring-sown, such as permanent crops.

The majority of cattle manure and slurry applications were made to grassland, reflecting the practice of utilising the manure within the farm on which it is produced. Conversely, whilst non-farm manures such as biosolids appear to be favoured on winter-sown cropping land it is notable that a proportion was applied to spring-sown crops and an increasing volume on grass in 2022. Overall, the profiles of the % treated area and average manure rates are broadly similar to those reported for 2021.

Table B2.3b Cattle FYM treated areas and average manure field application rates to winter-sown and spring-sown crops and grassland by farm type, Great Britain 2022

cattle FYM	cereals	dairy	general cropping	mixed	other livestock	all farm types
Winter sown crops						
Share of treated area (%)	26.1	10.8	21.0	26.9	15.2	100.0
Treated area (kha)	72	30	59	75	42	278
Avg manure rate (t; m^3/ha)	21	21	20	24	22	22
Volume (Mt; Mm^3)	1.6	0.6	1.2	1.8	0.9	6.1
Fields in sample	72	53	41	90	58	314
Spring sown crops						
Share of treated area (%)	16.2	22.0	14.6	22.0	24.4	100.0
Treated area (kha)	59	80	53	81	89	366
Avg manure rate (t; m^3/ha)	20	25	22	23	25	23
Volume (Mt; Mm^3)	1.2	2.0	1.2	1.9	2.2	8.5
Fields in sample	41	113	52	75	133	417
Grass						
Share of treated area (%)	1.4	14.4	5.8	5.9	72.0	100.0
Treated area (kha)	20	211	85	87	1,056	1,466
Avg manure rate (t; m^3/ha)	17	16	14	20	13	14
Volume (Mt; Mm^3)	0.3	3.3	1.2	1.7	14.0	20.6
Fields in sample	20	111	26	52	584	799

Note: Only cattle FYM was applied in sufficient volume to warrant reporting by farm type. The treated area percentages may not add to 100% in “All farm types” as pig and poultry farms have been excluded.

Table B2.3b shows a breakdown of the cattle FYM applications by robust farm type. Mixed farms have the most extensive treatments of cattle FYM on winter sown crops at 26.9% of the treated area. On grass 72.0% of the area treated with cattle FYM is on ‘Other Livestock’ robust classification farms. The time of year when manure was applied is shown in Table B2.4 as a proportion of fields receiving manure applications. Once again, the crops have been classified as either “winter sown”, “spring sown” or “grass”. This segmentation highlights the prevalence of applications in August and September for winter-sown crops (prior to drilling), or between February and April for spring-sown and grass fields, with treatments in the summer months (May to July) also important for the latter. When comparing percentage values of different manures, it is important to recognise the very different quantities involved, as indicated by the percentages of treated areas at the foot of the table.

Table B2.4 Percentage (%) of each organic manure type applied by sowing season and timing, Great Britain 2022

	cattle FYM	cattle slurry	pig FYM	pig slurry	layer manure	broiler/ turkey litter	other FYM	other farm manure	bio-solids	other non-farm
	%	%	%	%	%	%	%	%	%	%
Winter sown crops										
August	2.0	0.7	13.5	3.0	6.9	14.0	0.0	0.0	14.6	5.2
September	8.0	1.6	24.4	10.2	35.3	15.3	2.0	0.0	24.3	8.6
October	2.0	0.3	5.5	5.8	3.9	3.1	5.9	0.0	8.5	4.6
Winter (Nov, Dec, Jan)	0.2	0.3	0.2	8.1	0.0	0.0	0.0	0.0	0.0	0.0
Spring (Feb, Mar, Apr)	1.2	0.9	0.0	32.9	0.0	4.5	0.0	14.3	3.0	15.4
Summer (May, Jun, Jul)	0.1	0.0	16.0	4.3	5.9	4.5	0.0	0.0	0.4	2.8
Spring sown crops										
August	0.1	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.4
September	0.5	0.4	0.0	0.0	0.0	0.0	0.3	0.0	0.2	1.2
October	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.9
Winter (Nov, Dec, Jan)	1.9	0.2	9.3	5.3	0.0	0.0	0.0	0.0	0.0	0.0
Spring (Feb, Mar, Apr)	13.9	4.1	31.0	17.3	14.5	12.6	9.2	20.1	29.7	26.4
Summer (May, Jun, Jul)	0.7	0.9	0.0	8.1	0.0	2.1	0.8	0.0	0.7	3.4
Grass										
August	3.9	7.9	0.0	0.0	2.3	4.1	4.3	0.0	5.0	3.2
September	4.6	1.3	0.0	0.0	0.0	0.0	12.2	0.0	0.6	0.0
October	4.8	2.2	0.0	0.0	0.0	4.1	12.9	0.0	0.0	1.2
Winter (Nov, Dec, Jan)	5.7	5.5	0.0	1.7	0.0	1.9	8.8	0.0	0.4	0.0
Spring (Feb, Mar, Apr)	36.7	43.1	0.0	2.2	18.8	19.1	24.5	56.3	8.4	19.0
Summer (May, Jun, Jul)	13.3	30.6	0.0	1.0	12.3	14.6	19.1	9.3	3.6	5.8
Total	100	100	100	100	100	100	100	100	100	100
% of total treated area	46.6	33.2	1.8	1.3	1.8	3.6	2.1	0.3	4.1	5.4

Figure B2.1 Percentage (%) of treated GB areas receiving manure by manure type (3 year average 2020-2022) (an indication of relative quantities)

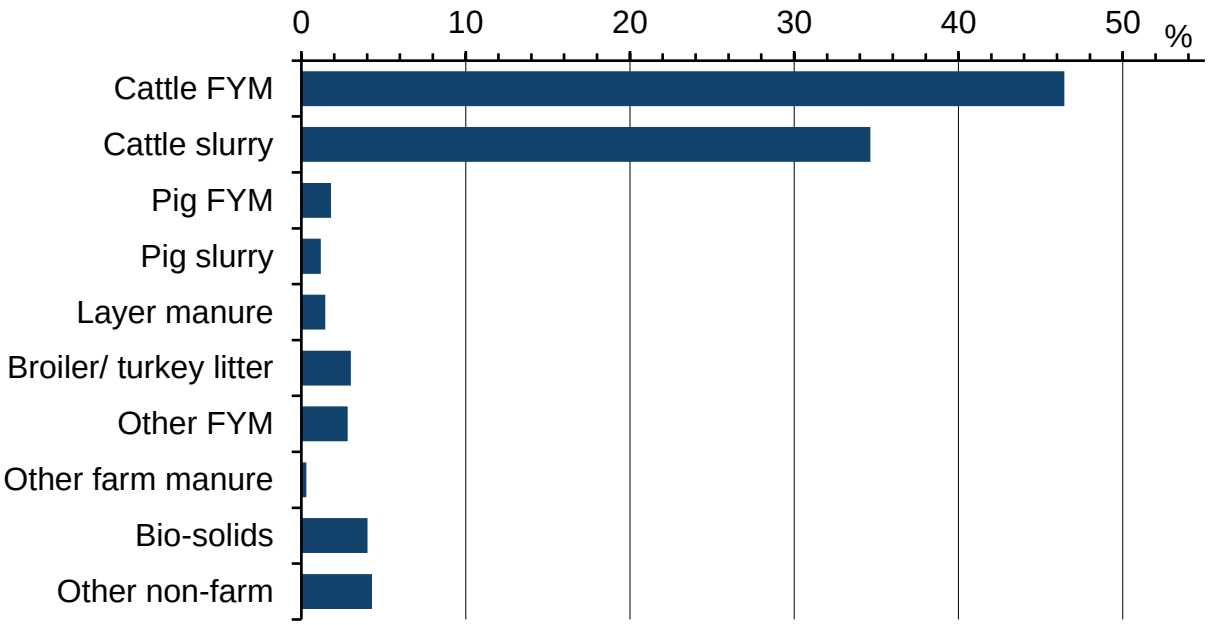


Figure B2.1 shows that cattle FYM and slurry form the overwhelming majority of British area of crops and grass receiving organic manures.

Figures B2.2a-f are derived from the 3-year average of the GB data presented in Table B2.4 in 2020 to 2022. The proportions of each of these manure types spread onto the winter-sown and spring-sown crops and onto grassland crop groups are shown, together with the timings of applications. It is important to note that the actual quantities of each manure available for spreading varies very significantly between manure types as illustrated in Figure B2.1; the proportion of the total available manure represented by each type is shown on the individual Figure B2.2 charts. The representation of the patterns of spreading of each manure type in this way is designed to facilitate the interpretation of the data in Table B2.4.

Figure B2.2a Typical timings and applications of cattle FYM on GB winter and spring sown crops & grass (3 year average 2020-2022)

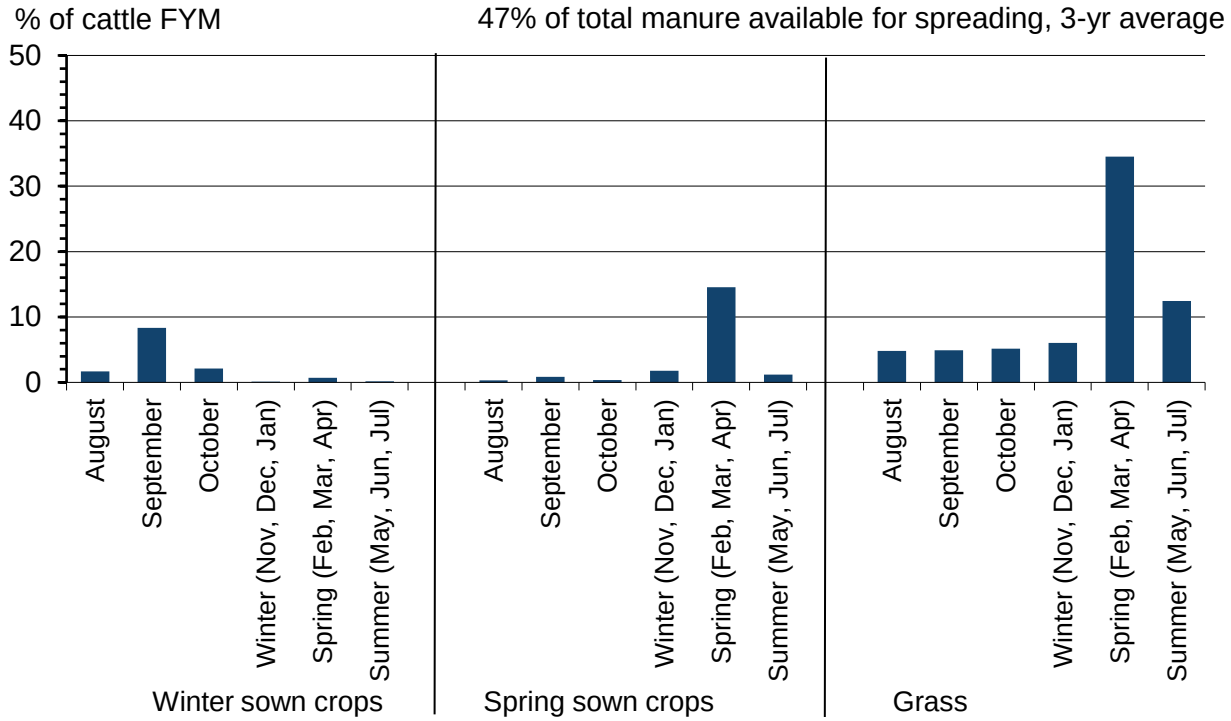


Figure B2.2b Typical timings and applications of cattle slurry on GB winter and spring sown crops & grass (3 year average 2020-2022)

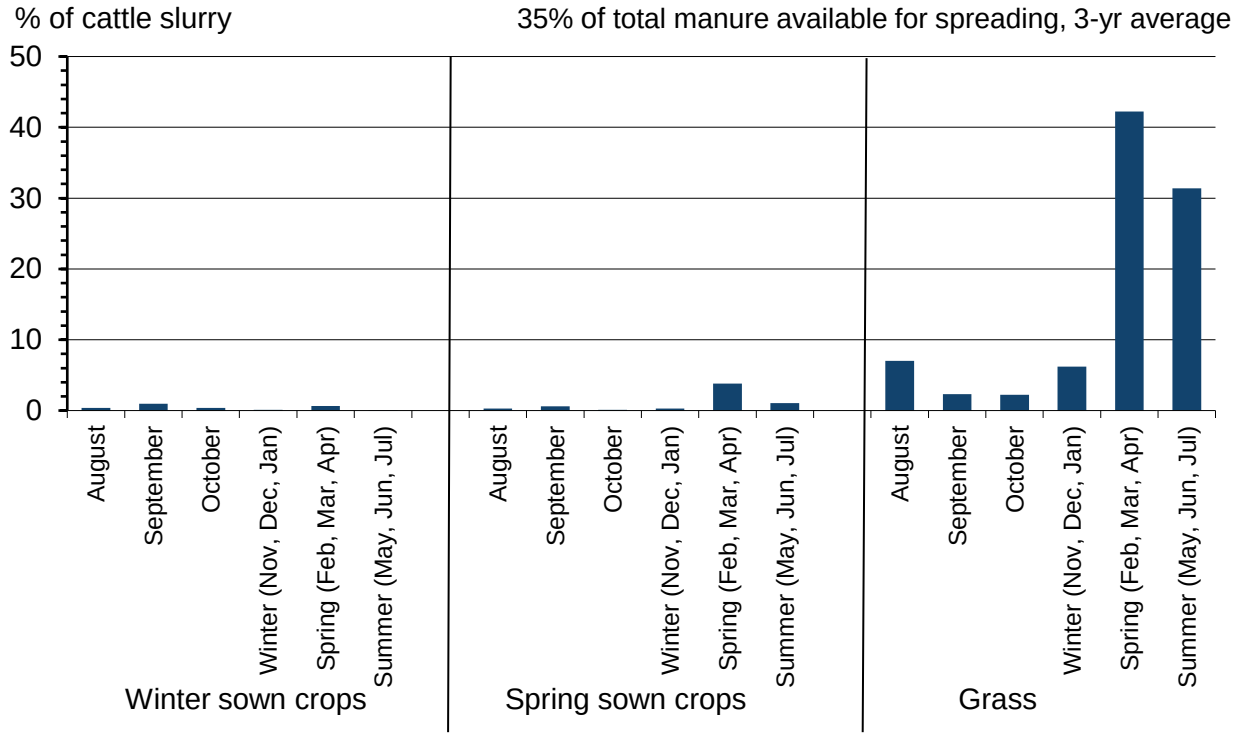


Figure B2.2c Typical timings and applications of pig FYM on GB winter and spring sown crops & grass (3 year average 2020-2022)

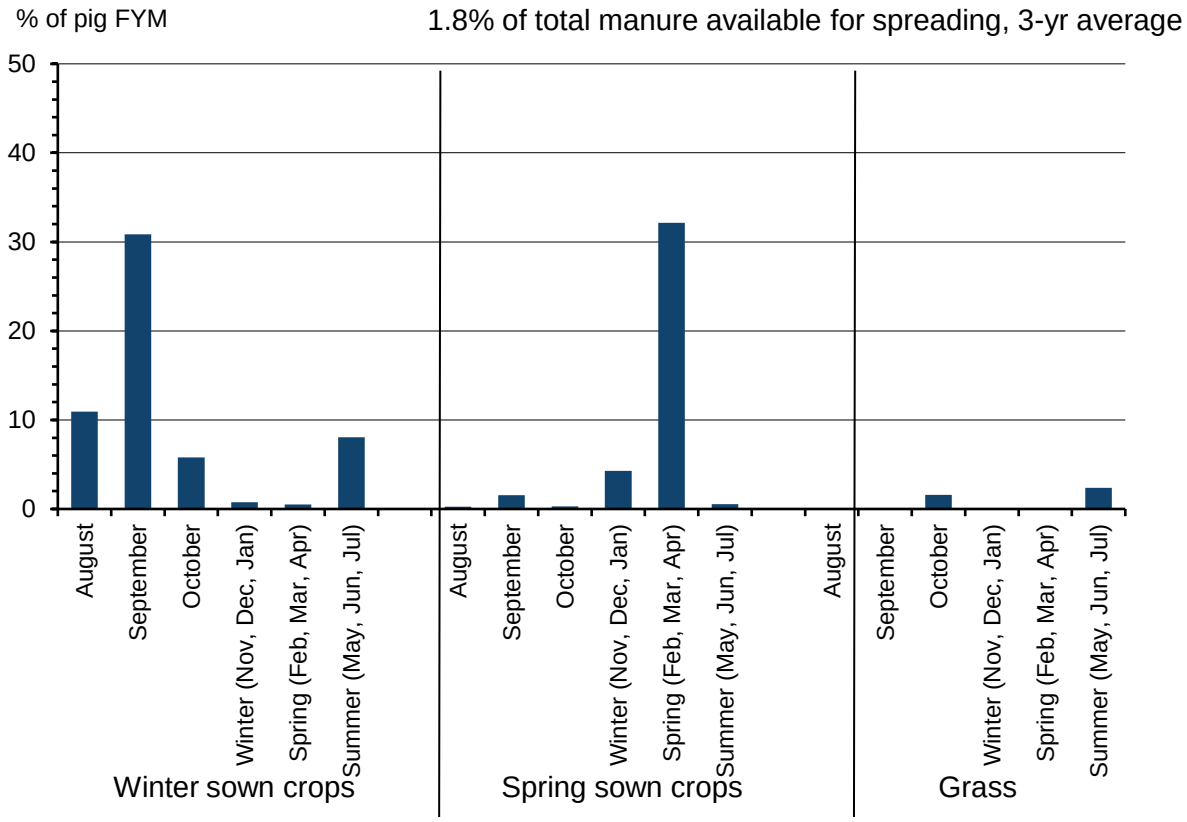


Figure B2.2d Typical timings and applications of pig slurry on GB winter and spring sown crops & grass (3 year average 2020-2022)

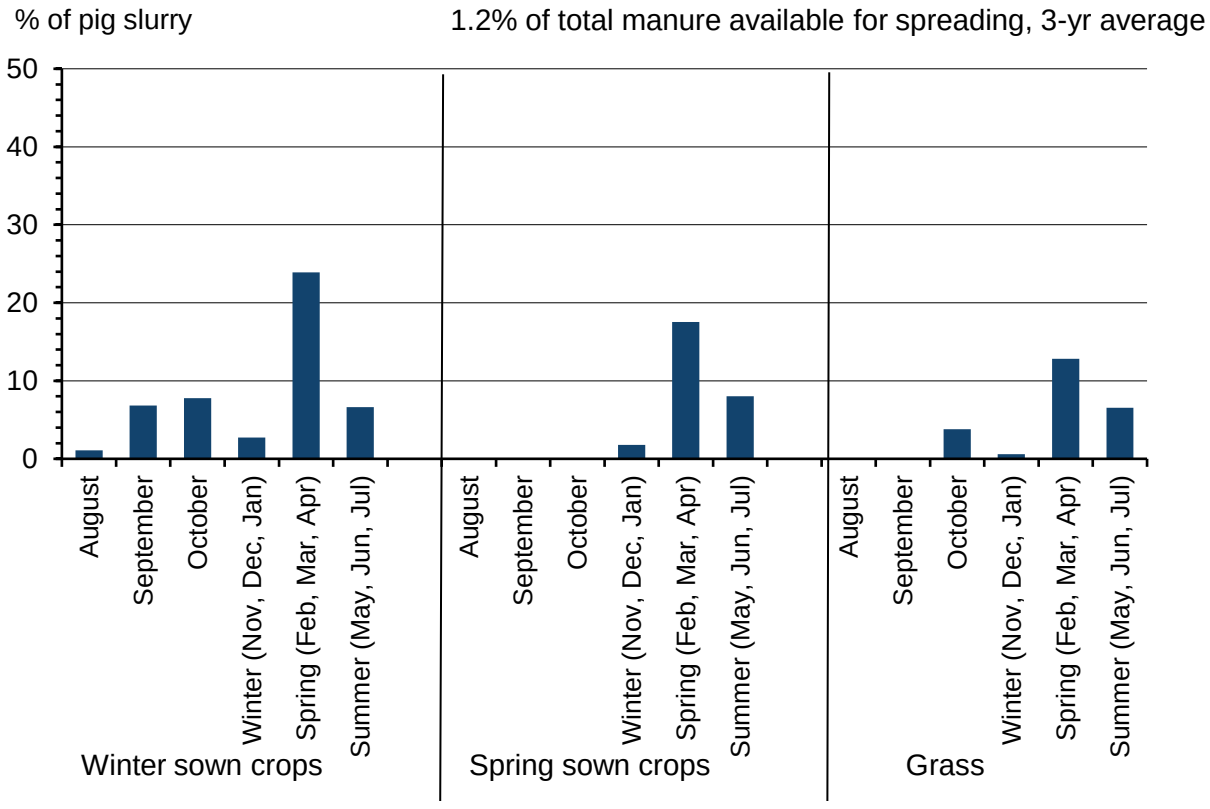


Figure B2.2e Typical timings and applications of layer manure on GB winter and spring sown crops & grass (3 year average 2020-2022)

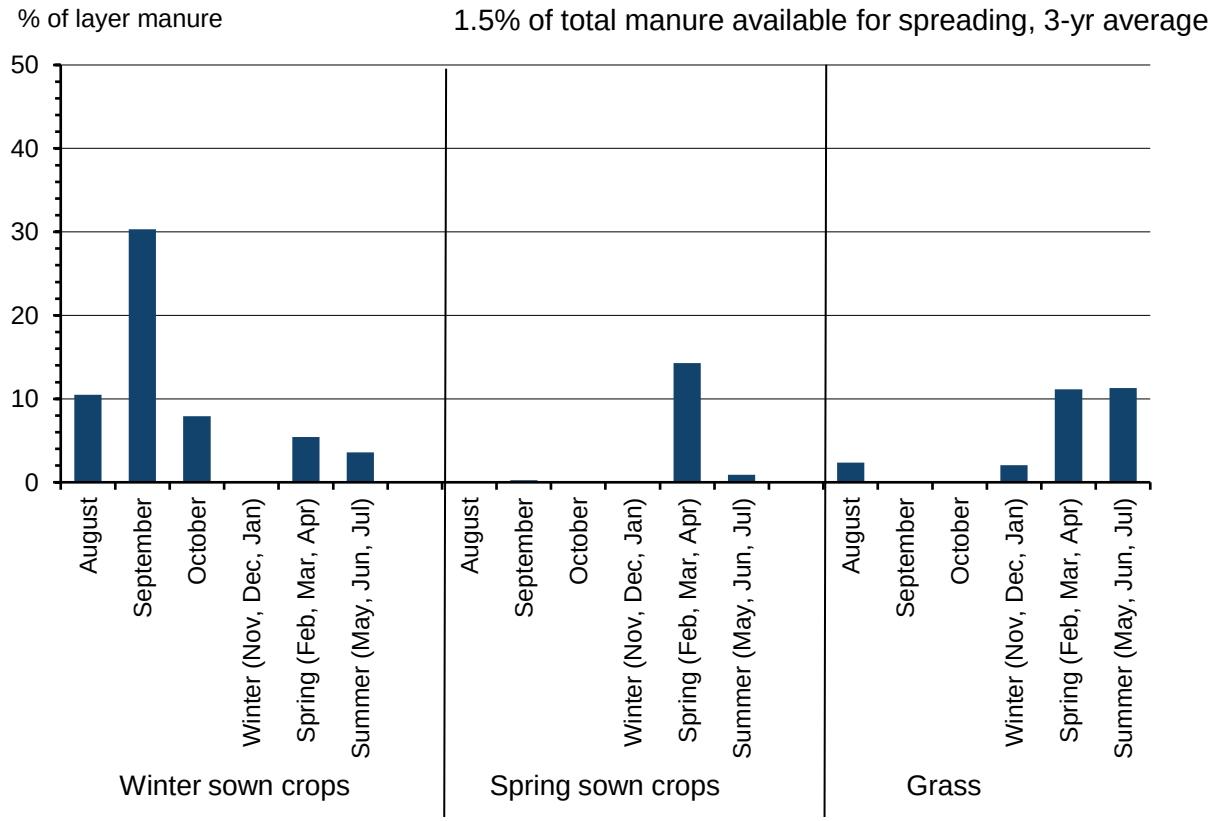
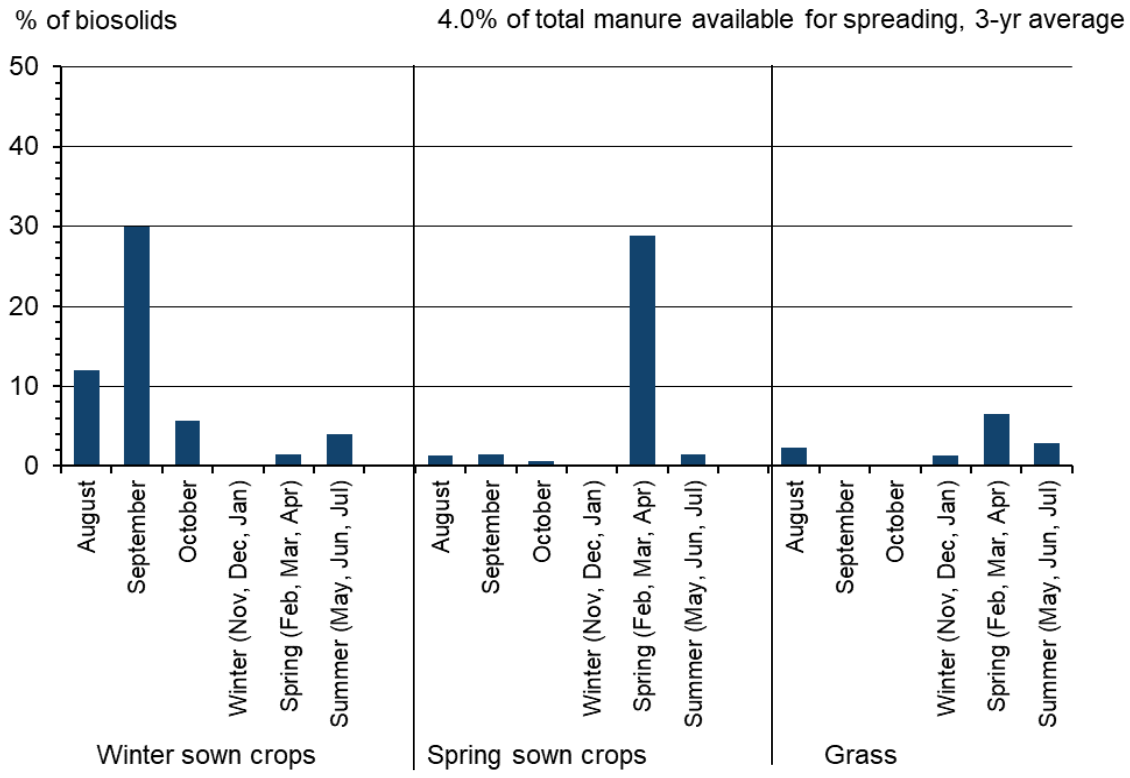


Figure B2.2f Typical timings and applications of biosolids on GB winter and spring sown crops & grass (3 year average 2020-2022)



B3 FERTILISER VALUE OF ORGANIC MANURES

Organic manures are valuable sources of the major plant nutrients nitrogen, phosphate, and potash and, where used, applications of manufactured fertiliser can theoretically be reduced[7].

Table B3.1a Dressing cover (%) and application rates (kg/ha) of manufactured fertiliser to crops in Great Britain, with and without applications of organic manure, 2022

dressing cover (%)	nitrogen		phosphate		potash		fields in survey	
	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
Winter wheat	96	100	19	33	24	37	315	857
Spring barley	96	98	48	56	50	62	233	383
Winter barley	96	97	35	37	39	42	129	319
Potatoes (maincrop)	97	97	83	84	93	88	21	28
Sugar beet	100	85	34	42	40	62	25	42
Winter oilseed rape	96	99	12	43	16	36	75	200

average field rate (kg/ha)	nitrogen		phosphate		potash		fields in survey	
	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
Winter wheat	155	175	47	50	52	58	315	857
Spring barley	89	101	40	47	51	61	233	383
Winter barley	121	139	41	47	60	58	129	319
Potatoes (maincrop)	181	163	68	143	223	208	21	28
Sugar beet	72	62	30	39	52	67	25	42
Winter oilseed rape	145	160	56	49	41	53	75	200

overall application rate (kg/ha)	nitrogen		phosphate		potash		fields in survey	
	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
Winter wheat	149	174	9	17	12	21	315	857
Spring barley	85	99	19	26	25	38	233	383
Winter barley	117	136	14	18	24	25	129	319
Potatoes (maincrop)	175	159	57	120	208	183	21	28
Sugar beet	72	53	10	17	21	42	25	42
Winter oilseed rape	139	159	7	21	7	19	75	200

In the Survey, farmers were not asked directly whether they had made an adjustment to fertiliser inputs because of manure use. However, an indication of possible adjustments has been derived by comparing fields that received manure with those that did not. Fields used in organic production systems, which use no mineral fertilisers, have been excluded from these comparisons, since they would distort the influence of manures on mineral application rates. Table B3.1a shows the dressing cover, average field rate and overall fertiliser rates for the main crops in Great Britain, with and without manure inputs.

[7] Anon. (2018). Nutrient Management Guide (RB209). Agriculture and Horticulture Development Board (AHDB). https://ahdb.org.uk/nutrient-management-guide-rb209

For all the major crops, except sugar beet and potatoes, the overall application rate of nitrogen from manufactured mineral fertiliser was higher on fields where organic manures were not applied in 2022. The difference in overall nitrogen application rates, with and without manure, ranged from 14 kg/ha for spring barley, to 19 kg/ha for winter barley, 20 kg/ha for winter oilseed rape and 25 kg/ha for winter wheat. The data for potatoes and beet should be treated with caution as these are derived from a small number of fields. The Survey does not collect reasons why manufactured fertiliser application rates may vary when used with or without organic manures. It is possible that certain fields are being managed to achieve a desired nutrient status and a strategy of this sort may require unusually high or low applications of specific nutrients. Where only a small number of fields are surveyed, such a strategy may exert an influential bias on the overall figures for a crop in the report.

Differences in overall application rates with and without manures for nitrogen, phosphate, and potash for the period 2018 to 2022 are shown in Table B3.1b below. The application of lower rates on manured fields holds true for nitrogen for all major combinable crops throughout the period. The lower rates are consistent for spring barley, winter barley and winter oilseed rape at 14% on average for the period, with winter wheat at 12% less on manured fields. Overall application rates for phosphate and potash in winter wheat show a similar relationship over the five-year period, respectively at 45% and 38% lower rates on manured fields. Other crops show greater variability between manured and unmanured field rates for the different nutrients which may in part be due to the smaller number of fields of each of these crops in the Survey causing higher statistical variability.

Table B3.1b Overall application rates (kg/ha) of manufactured fertiliser application to crops in Great Britain, with and without applications of organic manure, 2018 – 2022

Nitrogen	2018		2019		2020		2021		2022	
(kg/ha)	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
Winter wheat	170	193	170	191	170	181	164	194	149	174
Spring barley	94	106	83	102	85	106	94	102	85	99
Winter barley	125	149	124	150	132	143	129	145	117	136
Potatoes (maincrop)	141	145	159	146	123	122	115	131	175	159
Sugar beet	83	80	76	74	82	62	69	66	72	53
Winter oilseed rape	174	193	162	186	141	180	152	175	139	159
Phosphate	2018		2019		2020		2021		2022	
(kg/ha)	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
Winter wheat	14	30	12	28	20	26	13	22	9	17
Spring barley	32	32	27	32	22	26	26	30	19	26
Winter barley	20	29	20	29	24	27	19	26	14	18
Potatoes (maincrop)	81	110	104	79	78	98	44	98	57	120
Sugar beet	13	21	12	21	21	23	14	21	10	17
Winter oilseed rape	12	32	15	34	13	32	6	31	7	21
Potash	2018		2019		2020		2021		2022	
(kg/ha)	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
Winter wheat	19	35	20	34	24	31	17	28	12	21
Spring barley	46	42	38	40	26	31	33	36	25	38
Winter barley	25	37	30	39	36	39	29	32	24	25
Potatoes (maincrop)	212	207	175	158	152	159	135	163	208	183
Sugar beet	36	51	45	53	25	56	26	53	21	42
Winter oilseed rape	15	30	12	31	17	29	10	34	7	19

Data for grassland are presented separately because grass is managed differently according to the amount of production required. Thus, intensive milk production requires large volumes of grass and is likely to receive higher inputs of both manure and mineral fertilisers than beef or sheep systems. Table B3.2 shows the average field rate of fertiliser applied to grassland in different management systems (as defined by robust farm type groups) with and without applications of manure. Average field rates have been used for grassland because some grass fields receive no mineral fertiliser, not because of manure use, but because the amount of grass production required does not warrant fertiliser input.

Table B3.2 Average field rates (kg/ha) of manufactured fertiliser application on grassland with and without applications of organic manure by robust type group, Great Britain 2022

	nitrogen (kg/ha)		phosphate (kg/ha)		potash (kg/ha)		fields in sample	
	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
Cereals								
Grass under 5 years old *	78	91	[c]	31	[c]	36	17	67
Grass 5 years and over *	78	69	[c]	19	[c]	29	17	218
All grass	78	75	8	22	8	31	34	285
Dairy								
Grass under 5 years old	142	146	17	26	30	35	119	46
Grass 5 years and over	116	111	20	22	26	30	202	121
All grass	125	121	19	23	27	31	321	167
General cropping								
Grass under 5 years old *	153	106	[c]	31	[c]	60	9	48
Grass 5 years and over *	100	54	18	30	39	44	33	147
All grass	108	68	17	30	39	50	42	195
Mixed								
Grass under 5 years old *	99	106	19	29	31	47	42	113
Grass 5 years and over *	83	63	23	22	23	25	42	200
All grass	91	77	21	24	28	31	84	313
Other livestock								
Grass under 5 years old	79	69	26	22	35	28	162	144
Grass 5 years and over	62	49	16	13	20	17	601	606
All grass	65	52	18	15	23	19	763	750
All farm types								
Grass under 5 years old	111	97	22	26	32	38	357	419
Grass 5 years and over	84	60	17	17	22	22	907	1,305
All grass	91	68	18	19	24	25	1,264	1,724

* Estimates are based on a small number of observations and should therefore be treated with caution.

Note: The values in “All farm types” exceed the sum of the components in the table as it also includes pig and poultry farms.

As in the previous four years, when looking at all farm types taken together, the rates of nitrogen fertiliser were usually higher on fields where manures were also used. Mineral fertiliser rates were consistently higher on short term grass than permanent grassland. The data for certain robust groups, notably cereals, general cropping and mixed farms are derived from relatively few fields, so need to be treated with due caution.

As so many fields on dairy farms receive manure, a separate analysis was carried out to examine the influence of grass management (Table B3.3a). All grazing land also receives manure, it is just that it is not applied as a dressing in our context.

Table B3.3a Average field rates (kg/ha) of manufactured fertiliser application on dairy grassland with and without applications of organic manure, Great Britain 2022

	nitrogen (kg/ha)		phosphate (kg/ha)		potash (kg/ha)		fields in sample	
	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
All cut for hay	105	90	30	[c]	36	20	21	18
All cut for silage	135	135	19	23	30	35	222	43
All grazings	115	120	18	23	25	31	278	157

Application rates of nitrogen fertilisers are generally higher for grass to be cut for silage. Average field rates on grazed grass are higher on those fields receiving a dressing of manure.

Table B3.3b Average field rates (kg/ha) of manufactured fertiliser application on dairy grassland with and without applications of organic manure, Great Britain 2018 – 2022

all cut for hay	nitrogen (kg/ha)		phosphate (kg/ha)		potash (kg/ha)		fields in survey	
	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
2018	132	83	33	[c]	38	[c]	19	16
2019	117	83	[c]	20	[c]	24	16	15
2020	104	72	[c]	18	[c]	31	13	13
2021	112	81	38	15	33	20	24	12
2022	105	90	30	[c]	36	20	21	18
all cut for silage	**nitrogen (kg/ha)**		**phosphate (kg/ha)**		**potash (kg/ha)**		**fields in survey**	
	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
2018	153	135	26	20	46	37	201	45
2019	150	156	25	33	46	62	226	27
2020	171	181	27	36	51	57	203	38
2021	141	141	27	30	48	52	201	50
2022	135	135	19	23	30	35	222	43
all grazing	**nitrogen (kg/ha)**		**phosphate (kg/ha)**		**potash (kg/ha)**		**fields in survey**	
	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
2018	138	111	24	19	37	22	230	162
2019	136	120	24	19	42	29	257	126
2020	154	137	23	27	41	37	236	135
2021	130	117	24	24	39	32	252	136
2022	115	120	18	23	25	31	278	157

Over the 5-year period 2018-22, mineral fertiliser application rates, whilst variable, are higher for grass cut for silage than other grass management systems. Data for grass cut for hay should be treated with caution as the number of fields managed this way is low.

SECTION C

Farming practices

Farmers were asked a series of questions about the care taken in application of fertilisers and manures and in record keeping. The results are presented in this section.

In 2022, 47% of farmers who were using a spreader, indicated they check the accuracy of mineral fertiliser spreaders by using catch trays on an annual basis (Table C1.1). Farmers checking more frequently than this comprise 7%, checking at each change of fertiliser. 25% of farmers never check their spreaders for accuracy and a further 4% of farmers considered that spreader accuracy did not need to be checked.

Table C1.1 Frequency of solid fertiliser spread pattern checks using catch trays, percentage (%) of those farms with a spreader, Great Britain 2018 – 2022

	no spreader	contract applied	factory set & doesn't need checking	at each change of fertiliser type	less than once a year	once a year	never checked	other
2018	13	9	5	5	20	45	23	2
2019	13	12	5	6	18	50	19	1
2020	16	13	4	6	22	49	17	2
2021	15	11	4	6	22	48	20	0
2022	19	10	4	7	17	47	25	0

Practices of checking are generally consistent over the five-year period 2018-2022; contractors were used on 11% of GB farms on average over this time.

Table C1.2a Record keeping methods for fertiliser and manure applications on farms where each respective nutrient type was applied during the 2022 crop year, Great Britain 2022

	manufactured fertilisers				organic manures			
	farms	farms %	area (kha)	area %	farms	farms %	area (kha)	area %
Computer program	17,542	28	3,476	42	10,964	20	2,210	32
Farm diary	32,714	52	4,135	50	31,124	56	3,790	55
Farm notebook/ pocketbook	10,077	16	1,149	14	9,023	16	915	13
File record sheet (file in office)	14,143	23	1,762	21	12,389	22	1,462	21
Other paper record	756	1	72	1	543	1	62	1
No records kept	1,055	2	161	2	3,509	6	304	4

Note: more than one method may be used.

Farm diaries continue to be the most common method for recording both fertiliser and manure use (Table C1.2a). Computers were used for recording fertiliser applications on 28% of farms, representing 42% in area terms. No records were kept on 2% of farms and was the same when considered on an area basis. Computerised record keeping is less common for organic manures, occurring on 20% of relevant farms.

Table C1.2b Record keeping methods for fertiliser and manure applications on farms where each nutrient type was applied during the 2022 crop year, by farm type, Great Britain 2022

Cereals	manufactured fertilisers		organic manures	
	farms	farms %	farms	farms %
Computer program	8,583	55	3,618	49
Farm diary	6,483	42	3,248	44
Farm notebook/pocketbook	2,416	16	1,068	14
File record sheet (file in the office)	3,403	22	1,468	20
Other paper record	344	2	126	2
No records kept	-	0	195	3
Dairy	manufactured fertilisers		organic manures	
	farms	farms %	farms	farms %
Computer program	1,159	17	1,356	18
Farm diary	3,728	55	4,181	56
Farm notebook/pocketbook	1,171	17	1,171	16
File record sheet (file in the office)	1,541	23	1,813	24
Other paper record	-	0	-	0
No records kept	276	4	296	4
General cropping	manufactured fertilisers		organic manures	
	farms	farms %	farms	farms %
Computer program	3,503	35	1,702	24
Farm diary	4,442	45	3,240	46
Farm notebook/pocketbook	2,153	22	2,172	31
File record sheet (file in the office)	2,628	26	1,732	25
Other paper record	242	2	195	3
No records kept	24	0	24	0
Mixed	manufactured fertilisers		organic manures	
	farms	farms %	farms	farms %
Computer program	1,870	24	1,392	21
Farm diary	4,377	57	3,425	52
Farm notebook/pocketbook	909	12	991	15
File record sheet (file in the office)	1,767	23	2,129	32
Other paper record	76	1	76	1
No records kept	66	1	342	5
Other livestock	manufactured fertilisers		organic manures	
	farms	farms %	farms	farms %
Computer program	2,181	10	2,597	10
Farm diary	13,444	61	16,715	64
Farm notebook/pocketbook	3,376	15	3,569	14
File record sheet (file in the office)	4,712	21	5,207	20
Other paper record	93	0	147	1
No records kept	669	3	2,632	9
All farm types	manufactured fertilisers		organic manures	
	farms	farms %	farms	farms %
Computer program	17,542	28	10,964	20
Farm diary	32,714	52	31,124	56
Farm notebook/pocketbook	10,077	16	9,023	16
File record sheet (file in the office)	14,143	23	12,389	22
Other paper record	756	1	543	1
No records kept	1,055	2	3,509	6

Note: more than one method may be used.

Table C1.2b shows the approach to record keeping on different types of farms. For manufactured fertilisers, use of computers is highest on 'cereals' farms at 55%, and lower at 17% on 'dairy' and 10% on 'other livestock' farms, where a higher proportion use farm diaries. Farms of all types favour diaries for recording applications of organic manures. The method of record keeping for 'all farm types' is broadly similar for both manufactured and organic fertilisers.

Table C1.2c Record keeping methods percentage (%) of farms, for fertiliser and manure applications on farms where each respective nutrient type was applied in the crop year, Great Britain 2018-2022

	computer program	farm diary	farm notebook/ pocket-book	file record sheet (file in the office)	other paper record	no records kept
Manufactured fertilisers						
2018	25	54	18	18	5	2
2019	29	55	17	21	3	4
2020	29	45	15	25	5	3
2021	30	56	15	20	2	3
2022	28	52	16	23	1	2
Organic manures						
2018	18	60	17	16	5	6
2019	20	61	18	19	3	5
2020	20	53	15	24	5	7
2021	20	58	15	20	3	6
2022	20	56	16	22	1	6

Note: more than one method may be used.

Recording methods for manufactured fertilisers show some variations across the five-year period 2018-2022, with farm diaries remaining the most widely used recording method. For organic manures, records of some type were kept on 93-95% of farms for the five-year period.

Table C1.3 Soil testing percentage (%) of crops and grass area, Great Britain 2018 – 2022

	cropping area %				grass area %			
	standard P, K, Mg, pH	nitrogen	pH (lime only)	precision farming purposes	standard P, K, Mg, pH	nitrogen	pH (lime only)	precision farming purposes
2018	26	11	7	7	7	2	3	1
2019	29	15	8	7	7	2	4	2
2020	29	15	7	7	6	2	2	1
2021	32	15	6	10	7	1	3	1
2022	36	20	7	13	9	3	3	2

Table C1.3 shows the percentage of the cropping and grass area that was soil tested for the crop years 2018–2022. It is usual practice, especially for crop fields, to test a sub-set of them in any given year. Standard P, K, Mg, pH was the most commonly used soil test for the period, with an average of 30% of the cropping area and 7% of the grass area. All types of soil tests were more prevalent on crops than on grass.

Table C1.4 Use (% weighted area) of urea fertilisers containing a urease inhibitor on cropping or grass fields, Great Britain 2018 – 2022

	product contains a urease inhibitor	product does not contain a urease inhibitor	don't know*	total
2018	6	94	z	100
2019	6	70	24	100
2020	10	70	21	100
2021	12	65	24	100
2022	6	85	9	100

* 'Don't know' was not a response category in 2018.

Note: the percentages in each row may not add to 100 due to rounding.

Table C1.4 shows the use of liquid urea ammonium nitrate (UAN) or solid urea (straight nitrogen or nitrogen + sulphur) fertiliser products containing urease inhibitors, which reduce gaseous losses of ammonia (a known air pollutant). Interpretation of the table is not straightforward as the approach to the question was changed and made more specific in 2022. This had the effect of reducing the weighted area (%) attributed to the positive responses and the Don't Knows. In 2022, on a weighted area basis, 6% of UAN/urea fertilisers contained an inhibitor. However further analysis of the data is being conducted to determine separately the use of ammonia emission mitigation on solid urea and UAN.

In 2016, 2018, 2021 and 2022 farmers were asked about the professional qualifications they or other relevant people on the farm held and the extent to which they keep them up to date with Continuous Professional Development. The results are shown in Table C1.5a.

Table C1.5a Professional qualifications held (%) on respondent farms and Continuous Professional Development (%), Great Britain 2016, 2018, 2021 and 2022

qualification	respondents' professional qualifications held - % farms				kept up to date (CPD) where professional qualification held* - % farms											
					yes				no				don't know			
	2016	2018	2021	2022	2016	2018	2021	2022	2016	2018	2021	2022	2016	2018	2021	2022
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
NRoSO	22	20	19	23	93	89	88	93	5	8	5	3	2	3	7	3
BASIS	7	8	10	9	81	67	73	75	15	29	18	22	4	4	10	4
FACTS	3	4	6	5	93	77	80	86	7	21	13	9	0	2	7	6
DairyPro	1	1	1	0	z	z	z	z	z	z	z	z	z	z	z	z
Professional Pig Reg.	0	0	0	0	z	z	z	z	z	z	z	z	z	z	z	z
Other	8	6	10	10	z	z	z	z	z	z	z	z	z	z	z	z
None of the above	68	69	64	63	z	z	z	z	z	z	z	z	z	z	z	z

* This question was not relevant to those respondents who held DairyPro or Professional Pig Register qualifications.

The National Register of Sprayer Operators (NRoSO) continued to be the most popular professional qualification held on respondent farms in 2022 (23% of farms). Of those with a NRoSO accreditation, 93% of farms kept this up to date with Continuous Professional Development (CPD) and this was slightly higher than in 2021. Between 2018 and 2022 there was also a slight reduction in the proportion of farms on which no one held any of the qualifications listed.

Table C1.5b Professional advice sources received by percentage of farms, Great Britain 2016, 2018, 2021 and 2022

source of professional advice sought	received advice - % farms											
	all farms				farms with tillage				farms with grass			
	2016	2018	2021	2022	2016	2018	2021	2022	2016	2018	2021	2022
	%	%	%	%	%	%	%	%	%	%	%	%
Crop protection agronomist	51	55	51	52	81	88	84	84	46	48	46	47
Fertiliser advisor	37	33	29	24	51	48	39	35	34	29	26	22
Feed Advisor	23	21	17	17	24	24	18	17	26	22	19	19
Veterinary surgeon	47	50	44	40	44	47	42	37	53	55	49	45
Countryside / wildlife advisor	16	17	15	14	20	21	18	15	15	16	13	14
Land agent	15	15	15	14	18	19	20	18	15	13	14	13
Business advisor	12	14	13	12	15	16	15	13	12	13	13	12
Water advisor	13	14	11	9	17	18	13	11	13	13	10	8
None of the above	19	17	20	22	8	5	6	8	21	18	22	24
Other	5	4	3	3	4	4	3	4	6	5	3	3
Total number of farms ('000)	89.9	89.0	88.1	88.0	51.4	47.5	48.0	47.5	78.4	79.7	78.8	77.4

Respondents were asked about the sources of professional advice that they use (Table C1.5b). A crop protection agronomist was the most commonly used source, on 51-55% of farms across 2016, 2018, 2021 and 2022. This figure increased to 81-88% when farms with cropping were considered. On farms with grass, a veterinary surgeon was the most prevalent source of advice at 53% (2016), 55% (2018), 49% (2021) and 45% (2022). Some farms will have both crops and grass and will appear in both categories. The proportion of farmers who stated that they did not use any of the listed advice sources was 19% in 2016, 17% in 2018, 20% in 2021 and 22% in 2022. Professional advice used on an area basis is presented in Table C1.5c.

Table C1.5c Professional advice sources received by farm area, Great Britain 2016, 2018, 2021 and 2022

professional advice source	received advice - % area											
	all farms				farms with tillage				farms with grass			
	2016	2018	2021	2022	2016	2018	2021	2022	2016	2018	2021	2022
	%	%	%	%	%	%	%	%	%	%	%	%
Crop protection agronomist	64	70	65	66	90	94	90	90	43	49	44	46
Fertiliser advisor	44	43	36	31	57	56	47	40	34	32	26	23
Feed Advisor	27	27	21	20	18	21	13	12	34	32	28	26
Veterinary surgeon	52	53	47	42	37	38	31	25	64	65	59	56
Countryside/wildlife advisor	22	24	19	18	28	29	23	20	17	19	16	16
Land agent	20	21	19	18	25	27	22	21	17	16	17	16
Business advisor	17	18	15	16	17	22	15	16	16	15	15	16
Water advisor	16	19	13	12	20	23	14	13	13	15	13	11
None of the above	11	10	11	13	4	2	5	6	17	15	17	19
Other	5	5	3	4	3	2	3	4	6	7	3	5
Total farm area ('000 ha)	10,292	10,368	10,281	10,190	4,619	4,642	4,643	4,498	5,673	5,726	5,638	5,691

Respondents were asked whether the increased cost of fertiliser had impacted their decision making on fertiliser. 74% of respondents who used mineral fertilisers indicated that it had.

Table C1.6a Impact of increased cost of fertiliser on nutrient application rates, Great Britain 2022

impact on nutrient rates, % farms	all farms					farms with tillage					farms with grass				
	Lower %	Same %	Higher %	None Applied %	Don't Know %	Lower %	Same %	Higher %	None Applied %	Don't Know %	Lower %	Same %	Higher %	None Applied %	Don't Know %
Nitrogen	78	11	0	11	0	83	15	0	2	0	77	11	0	12	0
Phosphorus	53	17	1	24	5	52	24	0	21	2	56	16	1	23	5
Potash	53	18	1	24	5	51	25	0	21	2	55	16	1	24	5
Sulphur	46	18	1	25	9	49	25	2	19	6	47	16	2	26	9
impact on nutrient rates, % area															
	all farms					farms with tillage					farms with grass				
	Lower %	Same %	Higher %	None Applied %	Don't Know %	Lower %	Same %	Higher %	None Applied %	Don't Know %	Lower %	Same %	Higher %	None Applied %	Don't Know %
Nitrogen	81	12	0	6	0	84	15	0	1	0	82	10	0	7	0
Phosphorus	55	20	1	21	5	52	25	0	18	4	57	18	1	20	5
Potash	53	21	1	20	5	51	26	1	18	5	55	19	1	20	5
Sulphur	49	23	1	19	8	50	29	1	13	6	51	19	1	21	7

When asked how the increased price had impacted nutrient application rates 78% of farms had reduced nitrogen rates. (Table C1.6). Reduction of nitrogen rates was indicated on a higher proportion of farms with crops (83%) than on those farms with grass (77%). Reduction of other nutrients was indicated, but to a lesser extent. Results on a weighted area basis are presented in the bottom half of the table.

Table C1.6b Measures taken as a result of increased cost of fertiliser, Great Britain 2022

measures taken	all farms		farms with tillage crops		farms with grass	
	farms %	area %	farms %	area %	farms %	area %
Bought in manure to replace mineral fertiliser	11	12	13	14	11	12
Analysed the nutrient contents of any manure before using	6	8	8	9	7	9
Applied digestate or manure slurry as a top dressing	6	6	6	7	7	6
Increased the area of crops with a lower fertiliser requirement	6	9	9	12	5	7
Reduced the area of crops grown	5	4	6	5	5	5
Bought or introduced technology to improve efficient use of fertiliser	6	7	8	9	5	6
Commenced conversion to organic	1	2	1	1	1	2
Bought fertiliser at a different time of year	15	17	18	20	13	16
Given new consideration to green manures/cover crops	10	13	15	17	9	11
None of the above	58	54	49	47	60	56
No answer	0	0	0	0	0	0
Don't know	0	0	0	0	0	0
Total	**100**	**100**	**100**	**100**	**100**	**100**

When asked what measures had been taken as a result of the increased cost, 15% of farms had bought fertiliser at a different time of year, 11% had bought in manure and 10% had given new consideration to green manures or cover crops. When considering all farms 58% had taken none of the listed measures; this was 49% on farms with crops and 60% on farms with grass.

Table C1.6c Reasons why increased cost of fertiliser had not impacted decisions, Great Britain 2022

	all farms		farms with cropping		farms with grass	
	farms %	area %	farms %	area %	farms %	area %
Good grain price and yield	14	17	21	20	10	14
Rise wasn't significant when we bought	32	43	36	47	31	41
Already had stocks, didn't need to buy	21	23	26	24	20	23
None of the above	39	30	29	25	42	33
No answer	1	1	0	0	2	1
Don't know	1	0	1	0	1	0
Total	100	100	100	100	100	100

Respondents who felt that the increased cost had not impacted their fertiliser decisions (26%) were asked why not. 32% indicated that the price rise was not significant at the time when they bought their fertiliser, 21% had sufficient stock that they did not need to buy at the increased cost. Overall 39% of farms did not indicate any of the reasons listed, rising to 42% of farms with grass.

Appendices

APPENDIX 1 LONGER TERM TRENDS IN FERTILISER USE – DATA TABLES

Table AA1.1 Total overall nitrogen application rates (kg/ha), England & Wales 1972 - 2022 and Scotland and Great Britain 1983 – 2022

	Cropping			Grass			All crops and grass		
	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain
1972	91	x	x	83	x	x	x	x	x
1973	89	x	x	85	x	x	x	x	x
1974	85	x	x	91	x	x	89	x	x
1975	86	x	x	99	x	x	93	x	x
1976	96	x	x	98	x	x	97	x	x
1977	100	x	x	110	x	x	111	x	x
1978	105	x	x	113	x	x	114	x	x
1979	113	x	x	117	x	x	121	x	x
1980	121	x	x	119	x	x	120	x	x
1981	135	x	x	125	x	x	130	x	x
1982	141	x	x	123	x	x	132	x	x
1983	154	113	149	125	131	126	139	124	136
1984	162	121	157	132	127	131	147	125	143
1985	161	131	157	131	130	131	146	130	144
1986	156	119	152	135	120	132	146	120	142
1987	160	139	157	133	116	130	147	125	143
1988	149	125	146	116	132	119	133	129	132
1989	150	128	147	127	111	124	139	118	136
1990	149	131	147	132	116	129	141	122	138
1991	154	128	151	133	111	129	143	117	139
1992	147	125	145	104	111	106	126	116	125
1993	137	130	137	112	114	112	124	119	124
1994	149	128	147	117	112	116	133	118	130
1995	151	140	149	119	114	118	134	124	132
1996	148	122	145	118	100	115	133	108	128
1997	151	134	149	123	124	123	137	128	136
1998	146	131	144	107	119	109	127	124	126
1999	143	126	141	108	117	110	126	121	125
2000	154	135	149	95	110	99	124	118	123
2001	144	147	145	90	113	94	114	127	116
2002	153	143	150	85	105	89	116	119	117
2003	152	135	149	79	102	83	112	114	113
2004	150	133	148	73	93	77	108	107	108
2005	149	132	147	72	84	75	109	102	108
2006	145	119	142	69	86	72	106	98	104
2007	148	119	144	64	72	65	106	89	103
2008	141	109	137	52	66	55	97	81	94
2009	140	111	137	54	69	57	98	84	95
2010	149	113	145	62	64	63	105	80	101
2011	150	119	146	57	59	57	103	79	99
2012	147	121	144	54	60	55	98	79	95
2013	138	124	136	57	68	59	95	87	94
2014	149	127	146	58	67	60	101	87	99
2015	149	130	146	53	67	56	100	89	98
2016	145	118	141	53	69	56	96	86	94
2017	141	118	137	51	68	54	92	86	91
2018	145	118	142	54	67	57	97	85	95
2019	141	109	137	51	67	54	94	82	92
2020	123	109	121	53	56	53	85	73	83
2021	134	103	130	48	63	51	89	77	87
2022	121	101	118	32	42	34	73	63	71

Table AA1.2 Dressing cover (% area) of autumn or winter-applied (August to January) nitrogen on winter cereals and winter oilseed rape and average application rate (kg/ha) for winter oilseed rape, England & Wales 1990 – 1998 and Great Britain 1999 – 2022

	winter wheat	winter barley	winter oilseed rape	
	dressing cover	dressing cover	dressing cover	application rate
	%	%	%	kg/ha
England & Wales				
1990	10	16	45	42
1991	11	12	49	46
1992	8	10	50	44
1993	8	8	41	42
1994	12	16	44	39
1995	11	13	48	38
1996	11	12	51	37
1997	12	11	44	36
1998	7	12	34	38
Great Britain				
1999	6	10	35	43
2000	7	11	33	42
2001	7	14	43	43
2002	8	16	41	47
2003	5	9	42	39
2004	6	9	35	40
2005	4	9	42	40
2006	5	7	28	34
2007	3	5	27	41
2008	3	6	31	33
2009	2	3	26	31
2010	2	7	29	33
2011	2	3	35	29
2012	2	5	31	27
2013	2	4	32	28
2014	2	5	32	29
2015	2	3	38	32
2016	3	4	35	31
2017	3	3	42	30
2018	5	4	41	31
2019	3	5	36	28
2020	5	7	36	32
2021	3	5	29	33
2022	2	4	19	32

Table AA1.3 Overall phosphate application rates (kg/ha), England & Wales 1972 - 2022 and Scotland and Great Britain 1983 – 2022

	cropping			grass			all crops and grass		
	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain
1972	56	x	x	34	x	x	x	x	x
1973	54	x	x	34	x	x	x	x	x
1974	51	x	x	27	x	x	39	x	x
1975	46	x	x	27	x	x	34	x	x
1976	50	x	x	29	x	x	38	x	x
1977	51	x	x	26	x	x	37	x	x
1978	49	x	x	28	x	x	39	x	x
1979	49	x	x	27	x	x	38	x	x
1980	49	x	x	27	x	x	37	x	x
1981	51	x	x	25	x	x	38	x	x
1982	55	x	x	24	x	x	39	x	x
1983	54	63	55	26	36	28	39	47	40
1984	61	68	62	25	33	26	42	48	42
1985	56	70	58	24	30	25	40	46	41
1986	56	63	57	22	27	23	40	42	40
1987	56	71	58	23	28	24	39	45	40
1988	54	65	56	21	31	23	38	45	39
1989	52	67	54	23	31	24	38	45	39
1990	51	68	53	24	28	25	38	43	39
1991	53	65	54	23	24	23	38	40	38
1992	51	67	54	19	30	22	35	43	38
1993	49	65	52	19	28	21	33	41	35
1994	51	69	53	23	28	24	37	43	38
1995	50	68	53	22	31	24	36	45	37
1996	51	65	52	22	26	23	36	40	36
1997	53	69	55	24	32	25	38	46	39
1998	49	66	51	20	27	21	34	43	35
1999	43	64	45	19	27	20	31	42	32
2000	44	60	47	18	30	20	31	42	32
2001	40	60	43	16	29	19	27	41	29
2002	41	62	44	18	26	20	29	39	31
2003	37	61	40	16	26	18	26	39	28
2004	38	63	41	15	27	17	25	40	28
2005	37	56	40	15	22	16	25	35	27
2006	32	53	35	14	22	16	23	33	25
2007	32	53	34	12	19	14	22	32	23
2008	28	50	30	9	16	10	18	28	20
2009	19	49	23	7	15	9	13	27	15
2010	27	50	30	9	16	10	18	27	19
2011	27	50	29	8	14	9	17	25	19
2012	25	50	28	8	14	9	16	25	17
2013	25	51	28	8	14	9	16	27	18
2014	26	50	29	8	15	10	17	26	18
2015	26	51	29	8	13	9	17	27	18
2016	26	50	29	7	14	9	16	27	18
2017	26	54	30	7	16	8	15	29	18
2018	24	50	27	7	13	8	15	26	17
2019	23	44	26	7	13	8	15	24	16
2020	21	41	24	7	12	8	13	21	15
2021	19	44	22	6	12	7	12	23	14
2022	14	38	17	3	8	4	8	18	10

Table AA1.4 Overall potash application rates (kg/ha), England & Wales 1972 - 2022 and Scotland and Great Britain 1983 – 2022

	cropping			grass			all crops and grass		
	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain
1972	63	x	x	20	x	x	x	x	x
1973	60	x	x	22	x	x	x	x	x
1974	56	x	x	20	x	x	36	x	x
1975	51	x	x	21	x	x	34	x	x
1976	56	x	x	23	x	x	37	x	x
1977	56	x	x	23	x	x	39	x	x
1978	56	x	x	25	x	x	41	x	x
1979	53	x	x	27	x	x	40	x	x
1980	54	x	x	26	x	x	40	x	x
1981	56	x	x	26	x	x	41	x	x
1982	61	x	x	28	x	x	44	x	x
1983	60	62	60	28	36	29	44	46	43
1984	68	67	68	33	35	33	50	49	49
1985	63	67	64	32	34	32	48	47	48
1986	62	61	62	33	30	33	48	43	47
1987	63	70	64	33	31	33	48	47	48
1988	63	66	63	30	34	31	47	47	47
1989	60	73	62	34	36	34	48	51	48
1990	62	74	64	36	35	36	49	50	49
1991	62	72	63	35	31	34	49	47	49
1992	59	72	63	26	34	28	43	48	45
1993	58	72	60	27	34	29	42	47	43
1994	62	74	63	31	31	31	46	46	46
1995	59	72	61	30	34	31	44	48	45
1996	59	73	61	31	28	30	45	44	44
1997	66	74	67	35	36	35	50	50	50
1998	63	73	64	28	36	29	45	51	46
1999	55	71	57	27	32	28	41	48	42
2000	54	67	55	24	33	26	39	47	40
2001	48	72	52	23	33	24	34	49	37
2002	55	72	57	24	30	25	38	46	40
2003	51	73	54	20	31	22	34	46	36
2004	52	72	55	21	30	22	35	46	37
2005	51	65	53	19	26	20	34	40	35
2006	46	68	48	19	28	21	32	42	33
2007	44	69	47	17	23	18	30	40	32
2008	40	67	43	12	20	13	26	37	27
2009	29	64	33	10	20	12	19	35	22
2010	33	67	38	13	19	14	23	35	25
2011	35	65	39	11	16	12	23	32	25
2012	34	68	37	11	17	12	22	33	23
2013	36	68	40	11	19	13	22	36	25
2014	35	67	39	12	20	14	23	35	25
2015	33	65	38	11	17	12	22	34	24
2016	34	68	39	10	20	12	21	36	24
2017	31	71	37	9	21	12	20	39	23
2018	29	73	35	10	18	12	19	38	22
2019	30	60	34	9	20	11	19	34	22
2020	25	56	29	10	18	11	17	30	19
2021	23	58	28	9	18	11	16	31	18
2022	20	49	24	4	11	6	11	24	14

Table AA1.5 Overall sulphur (SO3) application rates (kg/ha), Great Britain 2004 – 2022

	cropping			grass			all crops and grass		
	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain
2004	19	18	19	2	2	2	10	8	9
2005	21	18	21	2	3	2	11	8	11
2006	20	18	20	2	4	3	11	9	11
2007	23	17	24	3	2	2	14	7	13
2008	23	16	22	1	2	2	12	7	11
2009	19	15	19	1	2	2	10	7	10
2010	24	18	23	2	3	2	13	8	12
2011	26	21	26	2	2	2	14	8	13
2012	29	25	29	2	3	2	15	10	14
2013	27	25	27	3	2	2	14	10	13
2014	31	28	31	4	3	4	17	11	16
2015	31	33	31	3	3	3	17	14	16
2016	32	24	31	3	4	3	17	11	16
2017	35	27	34	3	4	3	18	12	17
2018	36	30	35	5	4	4	19	13	18
2019	37	25	35	4	6	5	20	13	18
2020	31	29	31	5	6	5	17	14	16
2021	31	26	30	5	6	5	17	13	16
2022	28	21	27	3	4	3	15	10	14

Table AA1.6a Phosphate dressing covers (%), Great Britain 2004 – 2022

	cropping			grass			all crops and grass		
	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain
2004	61	93	65	55	77	59	58	83	61
2005	60	88	63	50	75	55	55	80	59
2006	52	89	57	52	75	56	52	79	57
2007	50	86	54	47	67	51	48	74	52
2008	46	88	52	37	61	42	42	71	47
2009	34	86	40	33	59	38	34	69	39
2010	45	87	50	37	64	43	41	71	46
2011	45	82	49	36	58	41	41	66	45
2012	42	87	47	37	57	41	39	67	44
2013	43	86	48	38	59	42	40	68	45
2014	44	85	49	36	61	41	40	69	45
2015	43	85	49	35	65	41	39	72	45
2016	44	85	49	32	63	38	37	70	43
2017	44	91	50	30	65	37	36	75	43
2018	41	87	48	33	57	38	37	68	42
2019	43	83	48	32	58	37	37	67	42
2020	40	85	46	31	53	35	35	63	40
2021	35	84	41	31	59	37	33	68	39
2022	29	76	35	18	37	22	23	51	28

Table AA1.6b Potash dressing covers (%), Great Britain 2004 – 2022

	cropping			grass			all crops and grass		
	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain
2004	63	93	67	56	75	59	59	82	63
2005	61	90	65	51	71	55	56	78	60
2006	56	91	60	52	71	56	54	78	58
2007	54	90	58	47	65	51	51	74	54
2008	50	90	55	38	61	42	44	71	48
2009	37	88	43	34	61	39	35	71	41
2010	44	89	50	39	63	44	42	72	47
2011	46	84	50	38	57	42	42	66	46
2012	42	90	47	38	58	42	40	68	44
2013	46	87	51	39	59	43	42	69	47
2014	45	86	50	37	63	43	41	70	46
2015	45	88	50	35	65	42	40	73	46
2016	44	83	50	33	64	39	38	72	44
2017	44	91	50	31	66	38	37	75	43
2018	41	88	47	35	59	40	38	69	43
2019	44	83	50	34	60	39	39	68	44
2020	39	84	44	33	54	37	35	64	40
2021	37	84	43	34	59	39	35	68	41
2022	31	76	37	19	37	22	25	51	29

Table AA1.6c Sulphur dressing covers (%), Great Britain 2004 – 2022

	cropping			grass			all crops and grass		
	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain	England & Wales	Scotland	Great Britain
2004	32	39	33	5	9	6	17	20	18
2005	35	36	35	5	9	6	19	19	19
2006	38	41	38	6	12	7	21	22	21
2007	42	36	42	5	6	5	24	17	23
2008	41	32	40	4	6	5	22	15	21
2009	35	36	35	5	7	5	20	17	20
2010	39	43	40	5	9	6	22	20	22
2011	42	42	42	6	7	6	24	19	23
2012	47	46	47	6	10	7	26	22	25
2013	47	41	47	8	8	8	26	19	25
2014	52	47	51	11	9	11	30	21	29
2015	53	48	52	9	12	10	31	25	30
2016	55	49	54	9	11	9	30	24	29
2017	58	53	57	9	12	10	32	27	31
2018	62	58	62	11	12	12	35	28	34
2019	63	58	62	13	20	14	36	33	36
2020	58	60	59	14	21	15	34	34	34
2021	60	55	60	14	22	16	36	33	35
2022	55	49	54	10	15	37	30	27	33

Table AA1.7 Quantities of major nutrients used, United Kingdom 1973-2022 (50 years).

	Nitrogen – kt N				Phosphate – kt P_2O_5				Potash – kt K_2O			
	England & Wales	Scotland	Northern Ireland	UK	England & Wales	Scotland	Northern Ireland	UK	England & Wales	Scotland	Northern Ireland	UK
1973	759	132	56	947	373	85	25	482	333	63	21	417
1974	784	139	57	980	357	72	21	449	347	55	19	421
1975	788	143	54	984	306	69	18	393	302	59	16	377
1976	851	144	65	1,059	315	69	19	404	322	59	17	398
1977	879	146	68	1,093	316	69	21	406	330	59	20	409
1978	924	156	75	1,155	316	72	22	410	328	64	20	412
1979	941	160	85	1,186	321	73	22	416	333	65	21	419
1980	1,031	156	81	1,268	342	75	24	440	361	65	22	447
1981	1,100	159	76	1,335	344	73	24	441	367	66	21	454
1982	1,180	160	76	1,416	357	65	24	446	394	67	22	483
1983	1,227	161	82	1,470	359	65	24	448	409	68	23	500
1984	1,316	183	89	1,588	391	69	28	488	457	73	29	559
1985	1,298	186	96	1,580	375	71	23	469	441	72	28	541
1986	1,297	176	99	1,572	341	65	28	434	415	66	29	510
1987	1,370	193	111	1,674	340	65	27	432	429	70	29	528
1988	1,251	180	94	1,525	341	70	24	435	419	76	29	524
1989	1,223	193	98	1,514	334	65	26	425	420	74	29	523
1990	1,275	194	113	1,582	323	63	28	414	409	73	33	515
1991	1,224	193	98	1,515	321	61	24	406	393	71	28	492
1992	1,105	166	94	1,365	295	55	21	371	351	64	26	441
1993	968	142	109	1,219	286	50	24	360	344	57	29	430
1994	986	133	129	1,248	312	51	28	391	361	59	38	458
1995	1,064	156	128	1,348	325	53	27	405	378	64	34	476
1996	1,048	157	128	1,333	302	62	30	394	370	65	36	471
1997	1,156	172	112	1,440	325	63	24	412	405	65	31	501
1998	1,111	158	106	1,375	308	56	19	383	397	64	26	487
1999	1,015	152	117	1,284	274	50	23	347	365	59	27	451
2000	1,005	150	113	1,268	237	59	21	317	322	61	26	409
2001	876	180	106	1,162	201	57	21	279	274	69	26	369
2002	915	187	95	1,197	209	55	19	283	297	70	24	391
2003	853	170	108	1,131	203	60	19	282	283	66	26	375
2004	875	150	100	1,125	205	57	16	278	288	65	22	375
2005	834	150	77	1,061	192	55	12	259	267	67	18	352
2006	780	153	70	1,003	173	51	11	235	243	66	16	325
2007	802	126	80	1,008	169	46	9	224	241	59	17	317
2008	800	127	74	1,001	160	49	6	215	244	68	13	325
2009	767	124	57	948	91	34	4	129	148	52	8	208
2010	813	127	76	1,016	134	44	6	184	182	57	12	251
2011	824	124	74	1,022	145	42	5	192	213	59	11	283
2012	809	125	66	1,000	140	43	5	188	193	56	10	259
2013	781	139	79	999	141	46	7	194	194	60	13	267
2014	838	151	71	1,060	146	48	7	201	206	65	13	284
2015	819	155	75	1,049	142	48	6	196	196	64	12	272
2016	801	155	71	1,026	139	51	7	197	188	69	13	270
2017	806	157	78	1,041	133	54	8	195	185	77	14	276
2018	804	147	82	1,033	131	48	9	188	174	72	16	262
2019	810	150	79	1,038	132	46	7	186	182	68	14	264
2020	757	131	79	967	127	39	8	174	177	63	14	253
2021	797	135	82	1,014	118	45	8	171	180	69	17	266
2022p	*687*	*118*	*57*	*862*	*73*	*32*	*5*	*110*	*131*	*55*	*11*	*197*

Note: Years are harvest (e.g. 2022 refers to the 2021/22 crop year) not calendar years. Data for 2022 are estimates.

APPENDIX 2 - TABLES

CONTENTS

GREAT BRITAIN TABLES 2022

ENGLAND AND WALES TABLES 2022

Note: 1. Row percentages may not sum to exactly to 100 due to rounding.
2. No estimates are shown for crops with fewer than 5 fields in the sample. Nevertheless, some estimates are based on very few fields in the sample and should be treated with great caution.
3. FYM refers to any form of organic manure or by-product applied.

SCOTLAND TABLES 2022

Table GB1.1 Total fertiliser use, Great Britain 2022

	Crop area receiving dressing (%)					Average field rate (kg/ha)				Overall application rate (kg/ha)				Fields in survey
	N	P_2O_5	K_2O	SO_3	FYM	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	
Spring wheat	88	34	18	39	9	107	42	34	57	93	14	6	22	46
Winter wheat	98	30	33	67	24	170	50	57	53	167	15	19	36	1,186
Spring barley	95	52	56	46	35	97	44	58	36	92	23	33	16	636
Winter barley	96	36	41	67	25	135	46	59	49	129	16	24	33	456
Oats	89	32	32	54	25	94	48	55	40	84	15	17	21	212
Rye/triticale/durum wheat	89	28	28	48	44	110	48	51	52	98	14	15	25	31
Potatoes (seed or earlies)	100	80	70	0	14	81	108	103	c	81	86	72	c	7
Potatoes (maincrop)	95	82	88	23	42	171	112	214	c	162	92	189	c	52
Sugar beet	90	39	55	55	34	66	36	64	30	59	14	35	17	67
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	c	2
Winter oilseed rape	98	33	30	80	31	156	50	51	67	153	17	15	53	275
Linseed	94	6	7	61	10	72	c	c	36	67	c	c	22	31
Forage maize	74	49	20	20	85	65	50	50	35	48	25	10	7	168
Rootcrops for stockfeed	85	60	61	18	69	66	59	68	35	56	35	42	6	53
Leafy forage crops	64	47	50	23	28	59	36	39	26	38	17	19	6	64
Arable silage/other fodder crops	49	25	14	23	60	89	51	38	34	43	13	6	8	95
Peas – human consumption	0	11	20	16	4	c	c	64	51	c	c	13	8	37
Peas – animal consumption	0	16	15	6	1	c	34	48	c	c	5	7	c	34
Beans – animal consumption	1	11	14	8	2	c	41	43	33	c	4	6	3	206
Vegetables (brassicae)	56	48	48	29	49	114	50	132	c	64	24	63	c	14
Vegetables (other)	73	26	48	20	10	70	53	146	39	51	14	70	8	50
Soft fruit	78	43	60	25	0	55	23	49	c	43	10	30	c	23
Top fruit	60	19	22	0	0	35	c	68	c	21	c	15	c	19
Other crops	40	7	11	23	19	85	c	58	46	34	c	7	11	51
All crops	87	35	37	54	28	136	49	63	50	118	17	24	27	3,815
Grass under 5 years old	71	33	35	23	52	104	24	35	38	74	8	12	9	822
Grass 5 years and over	37	20	20	9	35	71	17	22	28	26	3	4	2	2,358
All grass	42	22	22	11	37	80	18	25	32	34	4	6	3	3,180
All crops and grass	62	28	29	30	33	115	36	47	46	71	10	14	14	6,995

Source: British Survey of Fertiliser Practice, 2022.

N.B. Sulphur rates on potatoes are not shown as some growers apply additional sulphur to acidify the soil for this crop. These applications cannot be separated from those intended as a fertiliser nutrient.

Table GB1.2 Use of straight fertiliser, Great Britain, 2022

	Crop area receiving dressing (%)			Average field rate (kg/ha)			Overall application rate (kg/ha)			Fields in survey
	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	
Spring wheat	78	7	1	93	c	c	73	c	c	46
Winter wheat	96	8	13	169	48	61	163	4	8	1,186
Spring barley	83	3	8	84	41	59	70	1	5	636
Winter barley	92	9	15	132	46	66	122	4	10	456
Oats	82	7	9	92	46	51	75	3	5	212
Rye/triticale/durum wheat	89	12	12	110	c	c	98	c	c	31
Potatoes (seed or earlies)	35	0	0	c	c	c	c	c	c	7
Potatoes (maincrop)	53	23	51	152	83	211	80	19	108	52
Sugar beet	82	8	28	65	c	77	53	c	22	67
Spring oilseed rape	c	c	c	c	c	c	c	c	c	2
Winter oilseed rape	96	12	14	154	51	57	148	6	8	275
Linseed	94	0	2	71	c	c	66	c	c	31
Forage maize	45	3	6	76	42	71	34	1	4	168
Rootcrops for stockfeed	37	0	3	84	c	c	31	c	c	53
Leafy forage crops	36	2	2	37	c	c	13	c	c	64
Arable silage/other fodder crops	39	13	3	90	c	c	35	c	c	95
Peas – human consumption	0	3	11	c	c	36	c	c	4	37
Peas – animal consumption	0	13	12	c	26	c	c	3	c	34
Beans – animal consumption	1	5	9	c	31	36	c	2	3	206
Vegetables (brassicae)	55	3	7	109	c	c	60	c	c	14
Vegetables (other)	69	1	27	58	c	c	40	c	c	50
Soft fruit	74	0	15	40	c	c	30	c	c	23
Top fruit	59	0	3	34	c	c	20	c	c	19
Other crops	34	0	5	92	c	c	32	c	c	51
All crops	80	7	12	134	49	72	108	4	9	3,815
Grass under 5 years old	45	1	2	111	29	71	50	0	1	822
Grass 5 years and over	19	0	1	82	c	97	16	c	1	2,358
All grass	23	0	1	91	35	89	21	0	1	3,180
All crops and grass	48	3	6	123	49	74	59	2	4	6,995

Source: British Survey of Fertiliser Practice, 2022

Table GB1.3 Use of compound fertiliser, Great Britain, 2022

	Crop area receiving dressing (%)				Average field rate (kg/ha)				Overall application rate (kg/ha)				Fields in survey
	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	
Spring wheat	22	27	17	17	95	45	33	c	21	12	5	c	46
Winter wheat	8	22	21	5	60	50	51	32	5	11	11	2	1,186
Spring barley	42	49	49	17	52	45	57	31	22	22	28	5	636
Winter barley	12	27	26	9	60	45	52	31	7	12	14	3	456
Oats	15	25	23	9	57	49	55	23	9	12	13	2	212
Rye/triticale/durum wheat	0	16	16	0	c	c	c	c	c	c	c	c	31
Potatoes (seed or earlies)	80	80	70	0	80	108	103	c	63	86	72	c	7
Potatoes (maincrop)	62	59	54	8	132	123	151	55	82	73	81	5	52
Sugar beet	17	31	28	15	36	32	47	31	6	10	13	5	67
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	2
Winter oilseed rape	13	21	18	8	39	48	43	34	5	10	8	3	275
Linseed	5	6	6	5	c	c	c	c	c	c	c	c	31
Forage maize	45	47	14	4	30	50	41	26	14	23	6	1	168
Rootcrops for stockfeed	53	60	59	7	48	59	65	c	25	35	39	c	53
Leafy forage crops	44	45	48	17	57	35	37	34	25	16	18	6	64
Arable silage/other fodder crops	9	12	12	2	88	22	32	c	8	3	4	c	95
Peas – human consumption	0	9	9	5	c	c	c	c	c	c	c	c	37
Peas – animal consumption	0	3	3	0	c	c	c	c	c	c	c	c	34
Beans – animal consumption	0	6	6	1	c	50	54	c	c	3	3	c	206
Vegetables (brassicae)	12	45	45	0	c	51	124	c	c	23	55	c	14
Vegetables (other)	18	26	21	12	61	54	135	28	11	14	29	3	50
Soft fruit	46	43	46	22	29	23	37	c	13	10	17	c	23
Top fruit	5	19	19	0	c	c	c	c	c	c	c	c	19
Other crops	6	7	7	0	c	c	c	c	c	c	c	c	51
All crops	18	28	26	8	56	49	57	32	10	14	15	3	3,815
Grass under 5 years old	33	32	34	9	72	24	33	22	24	8	11	2	822
Grass 5 years and over	20	19	20	3	54	17	19	15	11	3	4	0	2,358
All grass	22	21	22	4	58	18	23	17	13	4	5	1	3,180
All crops and grass	20	24	24	6	57	34	39	26	12	8	9	2	6,995

Source: British Survey of Fertiliser Practice, 2022

Table GB1.4 Use of lime, Great Britain, 2022

	Crop area receiving dressing (%)						Average field rate (kg/ha)						Fields limed	Fields in survey
	Limestone (ground, screened)	Chalk	Magnesian limestone	Sugar beet lime	Other	All	Limestone (ground, screened)	Chalk	Magnesian limestone	Sugar beet lime	Other	All		
Spring wheat	c	c	c	c	c	c	c	c	c	c	c	c	4	46
Winter wheat	6.2	1.2	0.4	0.4	0.1	8.4	3.8	3.2	4.5	6.5	0.4	3.8	96	1,186
Spring barley	6.2	0.8	2.6	0.0	1.9	11.6	5.0	5.0	5.3	2.5	2.9	4.7	73	636
Winter barley	7.5	0.6	c	0.5	0.0	8.6	4.2	2.2	c	7.5	0.2	4.3	47	456
Oats	6.4	0.1	0.3	c	c	6.8	3.4	5.0	4.5	c	c	3.5	11	212
Rye/triticale/durum wheat	c	c	c	c	c	c	c	c	c	c	c	c	1	31
Potatoes (seed or earlies)	-	-	-	-	-	-	-	-	-	-	-	-	0	7
Potatoes (maincrop)	-	-	-	-	-	-	-	-	-	-	-	-	0	52
Sugar beet	34.4	2.7	c	8.6	1.3	47.1	6.1	3.6	c	5.5	0.2	5.7	25	67
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	1	2
Winter oilseed rape	4.4	0.3	0.4	0.4	0.5	6.0	4.1	0.5	3.5	5.0	2.5	3.8	22	275
Linseed	c	c	c	c	c	c	c	c	c	c	c	c	2	31
Forage maize	6.1	2.2	c	c	1.2	9.5	4.6	5.4	c	c	1.9	4.5	21	168
Rootcrops for stockfeed	15.0	0.2	c	5.7	1.5	22.3	5.3	5.0	c	9.0	1.9	6.0	16	53
Leafy forage crops	13.5	c	1.3	c	c	14.8	5.1	c	5.0	c	c	5.1	11	64
Arable silage/other fodder crops	11.8	0.4	c	c	1.9	14.0	5.0	2.5	c	c	1.2	4.5	14	95
Peas – human consumption	c	c	c	c	c	c	c	c	c	c	c	c	1	37
Peas – animal consumption	c	c	c	c	c	c	c	c	c	c	c	c	2	34
Beans – animal consumption	2.7	2.7	c	c	c	5.4	2.0	5.1	c	c	c	3.5	10	206
Vegetables (brassicae)	c	c	c	c	c	c	c	c	c	c	c	c	1	14
Vegetables (other)	2.8	4.1	c	c	0.1	7.1	7.0	6.3	c	c	0.5	6.5	5	50
Soft fruit	-	-	-	-	-	-	-	-	-	-	-	-	0	23
Top fruit	-	-	-	-	-	-	-	-	-	-	-	-	0	19
Other crops	c	c	c	c	c	c	c	c	c	c	c	c	3	51
All crops	6.4	1.1	0.7	0.4	0.6	9.2	4.3	3.9	5.0	6.2	2.2	4.3	366	3,815
Grass under 5 years old	6.8	0.5	0.4	c	0.6	8.3	4.0	4.3	4.7	c	0.5	3.8	84	822
Grass 5 years and over	3.1	0.1	0.2	c	0.2	3.6	4.2	7.2	3.3	c	1.8	4.1	124	2,358
All grass	3.7	0.2	0.2	c	0.3	4.3	4.1	5.9	3.7	c	1.3	4.0	208	3,180
All crops and grass	4.9	0.6	0.4	0.2	0.4	6.5	4.2	4.2	4.6	6.2	1.9	4.2	574	6,995

Source: British Survey of Fertiliser Practice 2022

Table GB2.1 Average fertiliser practice by grassland utilisation, Great Britain, 2022

	Crop area receiving dressing (%)					Average field rate (kg/ha)				Overall application rate (kg/ha)				Fields in survey
	N	P_2O_5	K_2O	SO_3	FYM	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	
Grazed not mown	29	14	15	7	22	61	15	17	25	17	2	3	2	1,449
Grazed mown	64	35	36	17	63	89	20	28	34	57	7	10	6	1,487
All grazings	41	21	22	11	36	76	18	24	30	31	4	5	3	2,936
Cut for silage - grazed	73	39	40	21	72	93	20	29	35	68	8	12	7	1,042
Cut for silage - not grazed	83	26	36	20	82	132	28	37	45	110	7	13	9	143
All cut for silage	74	37	40	21	73	99	21	30	36	73	8	12	7	1,185
Cut for hay - grazed	43	27	28	11	42	68	20	25	38	29	6	7	4	496
Cut for hay - not grazed	44	14	19	14	17	65	32	61	43	29	4	11	6	80
All cut for hay	43	25	26	11	38	67	21	29	39	29	5	8	4	576
All mowings	64	33	35	17	63	94	21	30	36	60	7	11	6	1,704
All grass	42	22	22	11	37	80	18	25	32	34	4	6	3	3,180

Source: British Survey of Fertiliser Practice, 2022

Table GB3.0a Product use by month of application, Great Britain, 2022

Percents by row	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Straight N	0	0	0	0	0	4	34	39	16	4	2	1
Straight P	7	15	18	0	0	3	29	25	1	0	0	3
Straight K	1	9	10	1	2	9	45	16	3	2	0	0
Compounds	4	7	1	0	0	2	24	36	14	5	3	3
All fertilisers	1	2	1	0	0	4	31	37	15	4	2	1

Source: British Survey of Fertiliser Practice, 2022

Table GB3.0b Nutrient use by month of application, Great Britain, 2022

Percents by row	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Nitrogen	0	0	0	0	0	3	31	40	17	4	2	1
Phosphate	6	13	6	1	0	3	26	31	9	2	2	3
Potash	4	9	5	1	1	5	32	28	8	3	2	1
Sulphur	0	1	1	0	0	8	49	27	10	3	1	1
Total	1	3	1	0	0	4	33	36	14	4	2	1

Note: 'All fertilisers' includes other straight fertilisers (e.g. trace elements).
'Product' refers to the total tonnage of the products used by the farmers in the survey year 2022.
'Nutrient' refers to the tonnage of each nutrient contained in the product used (e.g. 100 kg of a 20:10:10 compound contains 20 kg of N, 10 kg of P_2O_5 and 10 kg of K_2O, while 100 kg of ammonium nitrate (straight N) contains typically 34.5 kg of N).
Estimates of total nutrients are show in in Appendix 3, table AA 1.6.

Source: British Survey of Fertiliser Practice, 2022

Table GB3.1 Product type as percentage of all product used by crop group, Great Britain, 2022

Percents by column	spring cereal	winter cereal	potato	sugar beet	oilseed rape	other tillage	all tillage	grass for grazing	grass for hay	grass for silage	grass not spec	all grass	all crops and grass
Ammonium nitrate	37.9	46.1	12.0	30.6	42.6	27.4	41.6	34.0	32.3	33.9	12.5	34.6	40.0
Urea	5.0	7.8	0.6	5.0	9.1	2.3	6.8	6.8	5.1	6.4	0.0	6.5	6.7
Calcium Ammonium Nitrate (CAN)	3.7	2.2	0.0	3.0	0.7	2.2	2.2	4.0	1.1	5.1	0.0	4.6	2.8
Urea Ammonium Nitrate (UAN)	12.2	21.2	6.4	9.6	25.9	8.9	18.6	3.4	4.8	3.6	0.0	3.4	15.1
Foliar urea	1.0	1.8	0.0	1.7	0.9	0.9	1.4	0.4	0.4	0.4	0.0	0.3	1.2
Other straight nitrogen	0.8	2.4	0.0	0.0	5.1	2.4	2.3	1.3	3.3	0.9	0.0	1.4	2.1
Triple superphosphate (TSP)	0.9	1.8	3.2	0.9	2.0	2.4	1.7	0.3	0.0	0.3	0.0	0.2	1.4
Other straight phosphate	0.0	0.0	2.2	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Muriate of Potash (MOP)	1.5	2.6	12.3	2.3	1.4	3.4	2.7	0.8	1.8	0.8	0.0	0.9	2.3
Other straight potash	0.7	0.9	4.7	17.5	1.2	3.1	1.4	0.2	0.0	0.1	0.0	0.2	1.2
Phosphate/potash binary - PK	6.3	7.7	0.0	17.6	4.0	13.2	7.4	1.7	0.4	1.3	0.0	1.6	6.1
Nitrogen/potash binary - NK	1.1	0.4	1.2	0.0	0.8	3.0	0.8	2.8	1.5	4.8	0.0	3.4	1.4
Low N (<19%N)	15.4	2.3	52.9	5.9	4.3	21.8	7.8	4.2	6.9	3.3	15.7	4.0	6.9
High N (>=19% N)	13.2	2.6	4.3	3.5	1.9	8.1	4.8	40.1	42.3	39.0	71.8	38.8	12.6
Other	0.3	0.2	0.3	2.5	0.2	0.6	0.3	0.1	0.1	0.1	0.0	0.1	0.2
Total product ('000 tonnes)	**383**	**1,348**	**87**	**30**	**201**	**106**	**2,155**	**605**	**76**	**414**	**1**	**693**	**2,848**

Source: British Survey of Fertiliser Practice, 2022

Table GB3.2 Use of product type by crop group, Great Britain, 2022

Percents by row	Distribution of product by crop						Percent used on crops	Distribution of product by grass use type*				Percent used on grass	Total product
	spring cereal	winter cereal	potatoes	sugar beet	oilseed rape	other cropping	all cropping	grass for grazing	grass for hay	grass for silage	grass not specified	all grass	('000 tonnes)
Ammonium nitrate	15.4	69.8	0.9	1.0	9.6	3.3	77.7	85.4	9.0	61.8	0.0	22.3	1,127
Urea	10.6	73.8	0.4	1.0	11.8	2.4	77.6	90.7	8.3	58.4	0.0	22.4	189
Calcium Ammonium Nitrate (CAN)	35.4	57.1	0.0	2.2	1.1	4.3	57.9	71.1	2.2	62.9	0.0	42.1	85
Urea Ammonium Nitrate (UAN)	10.1	71.4	1.7	0.5	13.1	3.2	96.3	79.1	17.6	63.8	0.0	3.7	468
Foliar urea	11.2	79.8	0.0	3.1	4.1	1.8	89.7	99.3	6.9	92.2	0.0	10.3	48
Other straight nitrogen	5.6	68.5	0.0	0.0	23.3	2.7	78.4	89.1	23.8	26.7	0.0	21.6	44
Triple superphosphate (TSP)	9.1	61.6	2.6	2.3	14.5	9.9	96.4	100.0	0.0	74.4	0.0	3.6	37
Other straight phosphate	0.0	0.0	97.8	0.0	0.0	2.2	100.0	0.0	0.0	0.0	0.0	0.0	7
Muriate of Potash (MOP)	11.7	53.3	17.0	1.2	6.5	10.3	89.4	73.2	33.0	45.9	0.0	10.6	59
Other straight potash	4.2	41.9	14.6	19.0	8.2	12.1	96.3	100.0	0.0	43.3	0.0	3.7	33
Phosphate/potash binary - PK	17.2	66.0	0.0	2.6	5.8	8.4	95.2	96.5	3.1	44.8	0.0	4.8	152
Nitrogen/potash binary - NK	28.8	43.3	8.0	0.0	8.1	11.7	45.8	74.9	3.0	86.4	0.0	54.2	34
Low N (<19%N)	43.4	13.8	25.3	1.1	3.7	12.7	91.1	87.4	18.3	48.0	0.9	8.9	194
High N (>=19% N)	52.9	32.6	3.8	1.3	3.0	6.5	23.5	91.8	13.2	57.5	0.4	76.5	365
Other	15.8	46.1	4.5	20.8	5.2	7.6	89.5	87.8	12.2	87.8	0.0	10.5	6
All fertilisers	**17.8**	**62.5**	**4.1**	**1.4**	**9.3**	**4.9**	**75.7**	**87.4**	**10.9**	**59.7**	**0.2**	**24.3**	**2,848**

Source: British Survey of Fertiliser Practice, 2022

* These grass row totals may sum to more than 100% because individual fields can have more than one type of grass use.

Table GB3.3 Product use by month of application, Great Britain, 2022

Percents by row	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total product ('000 tonnes)
Ammonium nitrate	0.0	2.5	32.0	40.8	16.7	4.4	2.6	0.8	0.1	0.0	0.0	0.0	1,127
Urea	0.0	7.0	39.1	36.0	15.3	1.7	0.5	0.5	0.0	0.0	0.0	0.0	189
Calcium Ammonium Nitrate (CAN)	0.0	4.4	24.1	36.3	22.5	6.1	3.2	3.0	0.4	0.1	0.0	0.0	85
Urea Ammonium Nitrate (UAN)	0.0	4.7	38.7	39.1	14.6	1.9	0.2	0.4	0.0	0.5	0.0	0.0	468
Foliar urea	0.2	0.4	12.7	29.7	21.9	29.2	4.1	1.0	0.8	0.0	0.0	0.0	48
Other straight nitrogen	3.6	17.1	39.4	31.7	6.2	2.0	0.0	0.0	0.0	0.0	0.0	0.0	44
Triple superphosphate (TSP)	0.0	3.1	32.9	10.1	0.9	0.7	0.0	3.0	8.0	17.7	20.5	3.2	37
Other straight phosphate	0.0	0.0	0.0	97.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7
Muriate of Potash (MOP)	0.3	11.5	38.4	20.8	2.3	0.4	0.1	0.0	1.4	8.5	13.9	2.3	59
Other straight potash	6.7	5.7	57.0	7.4	3.0	4.8	0.0	0.5	1.2	9.6	4.1	0.0	33
Phosphate/potash binary - PK	1.0	5.5	19.5	7.4	1.5	0.3	1.7	5.3	18.9	32.9	5.5	0.5	152
Nitrogen/potash binary - NK	0.0	0.0	22.3	23.6	25.2	15.6	8.9	0.6	0.0	0.0	3.8	0.0	34
Low N (<19%N)	0.0	3.6	31.2	49.9	9.5	1.0	0.5	1.8	1.3	0.7	0.5	0.0	194
High N (>=19% N)	0.0	0.6	21.9	41.0	21.1	7.8	4.9	2.1	0.3	0.3	0.1	0.0	365
Other	0.0	6.1	36.7	33.4	1.7	4.7	0.0	0.0	0.0	2.0	15.4	0.0	6
All fertilisers	**0.2**	**3.6**	**31.3**	**37.3**	**15.0**	**4.2**	**2.1**	**1.2**	**1.3**	**2.5**	**1.0**	**0.1**	**2,848**

Source: British Survey of Fertiliser Practice, 2022

Table GB4.1 Average fertiliser practice on cereal farms, Great Britain, 2022

	Crop area receiving dressing (%)				Average field rate (kg/ha)			Overall application rate (kg/ha)			Fields in survey
	N	P_2O_5	K_2O	FYM	N	P_2O_5	K_2O	N	P_2O_5	K_2O	
Spring wheat	97	26	17	12	99	25	c	96	7	c	27
Winter wheat	99	31	31	17	175	50	53	173	16	16	596
Spring barley	99	43	51	24	103	47	57	102	20	29	205
Winter barley	97	30	37	15	137	49	57	133	15	21	173
Oats	95	31	33	17	95	52	60	90	16	20	85
Rye/triticale/durum wheat	85	32	32	49	93	c	c	78	c	c	19
Potatoes (seed or earlies)	-	-	-	-	-	-	-	-	-	-	0
Potatoes (maincrop)	c	c	c	c	c	c	c	c	c	c	2
Sugar beet	97	43	32	23	64	53	70	62	23	22	19
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	1
Winter oilseed rape	98	33	30	26	156	51	52	154	17	16	162
Linseed	97	7	7	13	71	c	c	69	c	c	26
Forage maize	68	61	22	70	75	57	30	51	35	7	28
Rootcrops for stockfeed	58	45	45	100	93	c	c	54	c	c	6
Leafy forage crops	c	c	c	c	c	c	c	c	c	c	2
Arable silage/other fodder crops	78	61	32	30	85	54	c	66	33	c	16
Peas – human consumption	0	48	68	0	c	c	71	c	c	48	10
Peas – animal consumption	0	19	13	0	c	30	c	c	6	c	24
Beans – animal consumption	0	9	13	2	c	33	37	c	3	5	135
Vegetables (brassicae)	c	c	c	c	c	c	c	c	c	c	1
Vegetables (other)	77	41	30	13	84	50	160	65	21	48	14
Soft fruit	-	-	-	-	-	-	-	-	-	-	0
Top fruit	c	c	c	c	c	c	c	c	c	c	1
Other crops	61	2	9	6	104	c	c	63	c	c	20
All crops	88	32	33	18	146	49	55	128	16	18	1,572
Grass under 5 years old	66	22	23	38	85	24	28	56	5	6	89
Grass 5 years and over	29	11	11	7	70	18	26	20	2	3	251
All grass	36	13	13	13	76	20	27	27	3	4	340
All crops and grass	80	29	30	18	141	47	53	113	14	16	1,912

The data in this table apply to farms in the 'cereals' robust group, as detailed in Appendix 5

Source: British Survey of Fertiliser Practice, 2022

Table GB4.2 Average fertiliser practice on general cropping farms, Great Britain, 2022

	Crop area receiving dressing (%)				Average field rate (kg/ha)			Overall application rate (kg/ha)			Fields in survey
	N	P_2O_5	K_2O	FYM	N	P_2O_5	K_2O	N	P_2O_5	K_2O	
Spring wheat	75	45	16	0	124	61	c	93	28	c	12
Winter wheat	99	29	43	26	164	51	62	162	15	27	244
Spring barley	95	62	60	19	92	47	63	87	29	38	155
Winter barley	100	41	47	17	127	41	59	127	17	28	88
Oats	100	38	37	21	108	50	53	108	19	20	29
Rye/triticale/durum wheat	100	20	20	12	120	c	c	120	c	c	5
Potatoes (seed or earlies)	100	79	69	14	79	107	c	79	84	c	6
Potatoes (maincrop)	94	81	87	41	174	116	218	164	94	190	47
Sugar beet	93	36	63	37	66	27	56	61	10	35	40
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	1
Winter oilseed rape	97	28	28	39	153	42	43	149	12	12	62
Linseed	c	c	c	c	c	c	c	c	c	c	4
Forage maize	75	32	20	75	79	46	60	59	15	12	30
Rootcrops for stockfeed	87	28	28	56	72	c	c	63	c	c	6
Leafy forage crops	83	14	14	0	34	c	c	28	c	c	9
Arable silage/other fodder crops	56	3	3	54	c	c	c	c	c	c	6
Peas – human consumption	0	0	7	0	c	c	c	c	c	c	20
Peas – animal consumption	0	8	28	0	c	c	c	c	c	c	7
Beans – animal consumption	7	28	34	3	c	57	57	c	16	19	34
Vegetables (brassicae)	57	48	48	49	115	49	136	65	24	66	11
Vegetables (other)	69	19	63	8	57	57	142	40	11	89	32
Soft fruit	78	43	60	0	55	23	49	43	10	30	23
Top fruit	62	20	23	0	35	c	68	22	c	16	17
Other crops	39	11	16	11	70	c	c	27	c	c	22
All crops	88	40	47	24	127	55	80	112	22	37	910
Grass under 5 years old	60	29	31	29	114	31	59	69	9	18	57
Grass 5 years and over	31	12	12	27	65	26	43	20	3	5	202
All grass	35	14	14	27	76	27	47	26	4	7	259
All crops and grass	73	32	38	25	120	52	76	87	17	28	1,169

The data in this table apply to farms in the 'general cropping' and 'horticulture' robust groups, as detailed in Appendix 5

Source: British Survey of Fertiliser Practice, 2022

Table GB4.3 Average fertiliser practice on dairy farms, Great Britain, 2022

	Crop area receiving dressing (%)				Average field rate (kg/ha)			Overall application rate (kg/ha)			Fields in survey
	N	P_2O_5	K_2O	FYM	N	P_2O_5	K_2O	N	P_2O_5	K_2O	
Spring wheat	c	c	c	c	c	c	c	c	c	c	2
Winter wheat	96	21	22	48	148	41	50	142	8	11	75
Spring barley	75	36	36	78	74	32	34	55	11	12	40
Winter barley	83	29	33	57	127	32	66	106	9	22	37
Oats	73	21	36	71	65	c	c	48	c	c	15
Rye/triticale/durum wheat	-	-	-	-	-	-	-	-	-	-	0
Potatoes (seed or earlies)	-	-	-	-	-	-	-	-	-	-	0
Potatoes (maincrop)	-	-	-	-	-	-	-	-	-	-	0
Sugar beet	-	-	-	-	-	-	-	-	-	-	0
Spring oilseed rape	-	-	-	-	-	-	-	-	-	-	0
Winter oilseed rape	100	42	42	38	134	c	c	134	c	c	8
Linseed	-	-	-	-	-	-	-	-	-	-	0
Forage maize	78	62	19	96	53	43	57	41	27	11	67
Rootcrops for stockfeed	c	c	c	c	c	c	c	c	c	c	4
Leafy forage crops	c	c	c	c	c	c	c	c	c	c	4
Arable silage/other fodder crops	15	0	0	81	136	c	c	21	c	c	37
Peas – human consumption	-	-	-	-	-	-	-	-	-	-	0
Peas – animal consumption	c	c	c	c	c	c	c	c	c	c	1
Beans – animal consumption	0	0	0	9	c	c	c	c	c	c	7
Vegetables (brassicae)	-	-	-	-	-	-	-	-	-	-	0
Vegetables (other)	c	c	c	c	c	c	c	c	c	c	1
Soft fruit	-	-	-	-	-	-	-	-	-	-	0
Top fruit	-	-	-	-	-	-	-	-	-	-	0
Other crops	c	c	c	c	c	c	c	c	c	c	1
All crops	75	33	22	70	103	40	50	77	13	11	299
Grass under 5 years old	87	19	27	77	143	20	31	124	4	8	176
Grass 5 years and over	68	23	25	69	114	20	27	77	5	7	368
All grass	73	22	26	71	123	20	28	89	4	7	544
All crops and grass	73	24	25	71	119	26	32	87	6	8	843

The data in this table apply to farms in the 'dairy' robust group, as detailed in Appendix 5

Source: British Survey of Fertiliser Practice, 2022

Table GB4.4 Average fertiliser practice on other livestock farms, Great Britain, 2022

	Crop area receiving dressing (%)				Average field rate (kg/ha)			Overall application rate (kg/ha)			Fields in survey
	N	P_2O_5	K_2O	FYM	N	P_2O_5	K_2O	N	P_2O_5	K_2O	
Spring wheat	-	-	-	-	-	-	-	-	-	-	0
Winter wheat	96	11	25	53	136	42	50	131	5	13	46
Spring barley	86	59	62	79	79	38	48	68	22	30	113
Winter barley	96	41	45	60	126	44	65	121	18	29	50
Oats	73	38	38	55	71	25	34	52	10	13	26
Rye/triticale/durum wheat	c	c	c	c	c	c	c	c	c	c	3
Potatoes (seed or earlies)	-	-	-	-	-	-	-	-	-	-	0
Potatoes (maincrop)	c	c	c	c	c	c	c	c	c	c	2
Sugar beet	-	-	-	-	-	-	-	-	-	-	0
Spring oilseed rape	-	-	-	-	-	-	-	-	-	-	0
Winter oilseed rape	c	c	c	c	c	c	c	c	c	c	2
Linseed	-	-	-	-	-	-	-	-	-	-	0
Forage maize	59	25	17	100	30	55	c	18	13	c	23
Rootcrops for stockfeed	82	60	65	61	60	47	51	49	29	33	23
Leafy forage crops	72	57	62	38	69	41	40	50	23	25	40
Arable silage/other fodder crops	30	10	10	81	47	c	c	14	c	c	23
Peas – human consumption	c	c	c	c	c	c	c	c	c	c	2
Peas – animal consumption	-	-	-	-	-	-	-	-	-	-	0
Beans – animal consumption	c	c	c	c	c	c	c	c	c	c	4
Vegetables (brassicae)	c	c	c	c	c	c	c	c	c	c	2
Vegetables (other)	-	-	-	-	-	-	-	-	-	-	0
Soft fruit	-	-	-	-	-	-	-	-	-	-	0
Top fruit	-	-	-	-	-	-	-	-	-	-	0
Other crops	c	c	c	c	c	c	c	c	c	c	2
All crops	80	39	43	68	96	40	53	77	16	23	361
Grass under 5 years old	64	44	43	50	74	24	32	47	11	14	329
Grass 5 years and over	32	21	21	34	55	14	19	18	3	4	1,254
All grass	35	23	23	36	58	16	21	21	4	5	1,583
All crops and grass	38	24	25	38	63	19	24	24	4	6	1,944

The data in this table apply to farms in the 'LFA grazing livestock' and 'lowland grazing livestock' robust groups, as detailed in Appendix 5

Source: British Survey of Fertiliser Practice, 2022

Table GB4.5 Average fertiliser practice on mixed farms, Great Britain, 2022

	Crop area receiving dressing (%)				Average field rate (kg/ha)			Overall application rate (kg/ha)			Fields in survey
	N	P_2O_5	K_2O	FYM	N	P_2O_5	K_2O	N	P_2O_5	K_2O	
Spring wheat	100	48	48	0	103	c	c	103	c	c	5
Winter wheat	96	30	34	46	173	51	70	166	15	24	211
Spring barley	99	63	66	52	100	42	60	99	26	39	115
Winter barley	93	43	45	39	140	46	59	131	20	27	95
Oats	69	28	27	31	91	42	56	63	12	15	51
Rye/triticale/durum wheat	c	c	c	c	c	c	c	c	c	c	2
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	1
Potatoes (maincrop)	c	c	c	c	c	c	c	c	c	c	1
Sugar beet	55	53	64	37	75	c	c	42	c	c	6
Spring oilseed rape	-	-	-	-	-	-	-	-	-	-	0
Winter oilseed rape	97	37	30	40	162	58	60	157	21	18	36
Linseed	c	c	c	c	c	c	c	c	c	c	1
Forage maize	81	31	19	87	94	68	c	76	21	c	19
Rootcrops for stockfeed	100	85	85	73	69	55	69	69	47	58	14
Leafy forage crops	51	68	68	12	50	24	32	25	16	22	9
Arable silage/other fodder crops	53	11	11	58	109	c	c	57	c	c	12
Peas – human consumption	0	0	0	0	c	c	c	c	c	c	5
Peas – animal consumption	c	c	c	c	c	c	c	c	c	c	2
Beans – animal consumption	0	2	9	0	c	c	c	c	c	c	23
Vegetables (brassicae)	-	-	-	-	-	-	-	-	-	-	0
Vegetables (other)	c	c	c	c	c	c	c	c	c	c	3
Soft fruit	-	-	-	-	-	-	-	-	-	-	0
Top fruit	c	c	c	c	c	c	c	c	c	c	1
Other crops	4	0	0	74	c	c	c	c	c	c	6
All crops	88	39	42	45	138	46	64	121	18	27	618
Grass under 5 years old	70	35	37	37	103	25	40	72	9	15	162
Grass 5 years and over	38	20	20	17	67	23	24	25	5	5	257
All grass	46	24	24	22	81	23	30	37	6	7	419
All crops and grass	66	31	33	33	117	37	51	77	12	17	1,037

The data in this table apply to farms in the 'mixed' robust group, as detailed in Appendix 5

Source: British Survey of Fertiliser Practice, 2022

Table EW1.1 Total fertiliser use, England & Wales, 2022

	Crop area receiving dressing (%)					Average field rate (kg/ha)				Overall application rate (kg/ha)				Fields in survey
	N	P_2O_5	K_2O	SO_3	FYM	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	
Spring wheat	87	35	18	40	10	106	42	34	57	93	15	6	23	45
Winter wheat	98	28	32	67	24	172	49	55	53	169	13	18	36	1,093
Spring barley	94	29	34	47	31	96	40	50	38	90	11	17	18	442
Winter barley	96	31	37	68	23	135	46	58	48	130	14	21	33	404
Oats	93	30	30	57	21	94	51	54	40	88	15	16	23	174
Rye/triticale/durum wheat	88	33	33	53	38	122	48	51	52	107	16	17	28	28
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	c	c	c	4
Potatoes (maincrop)	94	80	87	21	41	172	112	214	c	162	90	186	c	47
Sugar beet	90	39	55	55	34	66	36	64	30	59	14	35	17	67
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	c	2
Winter oilseed rape	98	29	27	79	33	159	49	50	68	156	14	13	54	239
Linseed	94	6	7	61	10	72	c	c	36	67	c	c	22	31
Forage maize	74	50	20	20	85	65	50	50	35	48	25	10	7	167
Rootcrops for stockfeed	82	49	51	17	81	74	58	73	33	60	28	37	6	42
Leafy forage crops	52	35	40	21	27	48	31	33	22	25	11	13	5	40
Arable silage/other fodder crops	46	19	7	25	52	84	66	49	36	38	13	3	9	83
Peas – human consumption	0	14	25	20	5	c	c	64	51	c	c	16	10	30
Peas – animal consumption	0	16	15	6	1	c	34	48	c	c	5	7	c	34
Beans – animal consumption	1	10	14	8	2	c	41	43	34	c	4	6	3	203
Vegetables (brassicae)	55	46	46	30	50	114	51	133	c	63	24	61	c	13
Vegetables (other)	69	21	44	16	12	71	55	163	32	49	12	72	5	42
Soft fruit	78	43	60	25	0	55	23	49	c	43	10	30	c	23
Top fruit	60	19	22	0	0	35	c	68	c	21	c	15	c	19
Other crops	41	7	11	24	20	85	c	58	46	35	c	7	11	50
All crops	86	29	31	55	27	140	49	63	51	121	14	20	28	3,322
Grass under 5 years old	70	25	29	24	54	108	22	31	39	76	5	9	10	656
Grass 5 years and over	33	17	17	8	35	75	16	21	32	25	3	4	2	2,015
All grass	38	18	19	10	38	83	17	23	35	32	3	4	3	2,671
All crops and grass	60	23	25	30	33	121	36	46	48	73	8	11	15	5,993

Source: British Survey of Fertiliser Practice 2022.

Note: Sulphur rates on potatoes are not shown as some growers apply additional sulphur to acidify the soil for this crop. These applications cannot be separated from those intended as a nutrient.

Table EW1.2 Use of straight fertiliser, England & Wales, 2022

	Crop area receiving dressing (%)			Average field rate (kg/ha)			Overall application rate (kg/ha)			Fields in survey
	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	
Spring wheat	78	7	1	92	c	c	71	c	c	45
Winter wheat	96	8	14	171	46	60	165	4	8	1,093
Spring barley	85	4	10	94	35	57	80	1	5	442
Winter barley	93	9	16	134	46	66	124	4	11	404
Oats	87	7	9	93	46	50	81	3	5	174
Rye/triticale/durum wheat	88	14	14	122	c	c	107	c	c	28
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	4
Potatoes (maincrop)	55	24	50	156	80	210	85	19	105	47
Sugar beet	82	8	28	65	c	77	53	c	22	67
Spring oilseed rape	c	c	c	c	c	c	c	c	c	2
Winter oilseed rape	97	13	14	157	48	56	152	6	8	239
Linseed	94	0	2	71	c	c	66	c	c	31
Forage maize	46	3	6	76	42	71	35	1	4	167
Rootcrops for stockfeed	48	0	4	84	c	c	40	c	c	42
Leafy forage crops	22	3	3	c	c	c	c	c	c	40
Arable silage/other fodder crops	44	15	2	86	c	c	38	c	c	83
Peas – human consumption	0	3	13	c	c	36	c	c	5	30
Peas – animal consumption	0	13	12	c	26	c	c	3	c	34
Beans – animal consumption	1	5	9	c	31	36	c	2	3	203
Vegetables (brassicae)	54	0	3	109	c	c	58	c	c	13
Vegetables (other)	66	0	28	56	c	c	37	c	c	42
Soft fruit	74	0	15	40	c	c	30	c	c	23
Top fruit	59	0	3	34	c	c	20	c	c	19
Other crops	35	0	5	92	c	c	32	c	c	50
All crops	81	8	13	141	48	71	114	4	9	3,322
Grass under 5 years old	51	0	2	115	c	48	59	c	1	656
Grass 5 years and over	18	0	0	90	c	76	16	c	0	2,015
All grass	22	0	1	98	48	65	22	0	0	2,671
All crops and grass	49	4	6	130	48	71	64	2	4	5,993

Source: British Survey of Fertiliser Practice 2022

Table EW1.3 Use of compound fertiliser, England & Wales, 2022

	Crop area receiving dressing (%)				Average field rate (kg/ha)				Overall application rate (kg/ha)				Fields in survey
	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	
Spring wheat	22	27	17	18	95	45	33	c	21	12	6	c	45
Winter wheat	6	19	19	4	64	50	49	29	4	10	9	1	1,093
Spring barley	17	25	25	11	62	40	47	33	11	10	12	3	442
Winter barley	9	22	21	6	64	46	50	29	6	10	11	2	404
Oats	12	22	21	9	61	53	56	22	7	12	12	2	174
Rye/triticale/durum wheat	0	19	19	0	c	c	c	c	c	c	c	c	28
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	c	c	4
Potatoes (maincrop)	60	57	55	9	128	126	147	55	77	72	81	5	47
Sugar beet	17	31	28	15	36	32	47	31	6	10	13	5	67
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	2
Winter oilseed rape	8	17	13	5	42	49	42	30	4	8	6	2	239
Linseed	5	6	6	5	c	c	c	c	c	c	c	c	31
Forage maize	46	47	14	4	30	50	41	26	14	24	6	1	167
Rootcrops for stockfeed	40	49	48	4	50	58	69	c	20	28	33	c	42
Leafy forage crops	30	32	37	11	59	28	29	38	18	9	11	4	40
Arable silage/other fodder crops	2	4	4	2	c	27	55	c	c	1	2	c	83
Peas – human consumption	0	11	11	7	c	c	c	c	c	c	c	c	30
Peas – animal consumption	0	3	3	0	c	c	c	c	c	c	c	c	34
Beans – animal consumption	0	5	5	1	c	50	54	c	c	3	3	c	203
Vegetables (brassicae)	12	46	46	0	c	51	124	c	c	24	57	c	13
Vegetables (other)	19	21	16	12	64	55	164	30	12	12	27	4	42
Soft fruit	46	43	46	22	29	23	37	c	13	10	17	c	23
Top fruit	5	19	19	0	c	c	c	c	c	c	c	c	19
Other crops	6	7	7	0	c	c	c	c	c	c	c	c	50
All crops	12	21	19	6	60	50	54	31	7	11	11	2	3,322
Grass under 5 years old	26	24	27	8	64	21	29	18	17	5	8	1	656
Grass 5 years and over	17	17	17	3	52	16	19	16	9	3	3	0	2,015
All grass	18	18	18	3	54	17	21	17	10	3	4	1	2,671
All crops and grass	15	19	19	4	56	34	37	25	9	7	7	1	5,993

Source: British Survey of Fertiliser Practice 2022

Table EW1.4 Use of lime, England & Wales, 2022

	Crop area receiving dressing (%)						Average field rate (kg/ha)							
	Limestone (ground, screened)	Chalk	Magnesian limestone	Sugar beet lime	Other	All	Limestone (ground, screened)	Chalk	Magnesian limestone	Sugar beet lime	Other	All	Fields limed	Fields in survey
Spring wheat	c	c	c	c	c	c	c	c	c	c	c	c	4	45
Winter wheat	6.1	1.3	0.1	0.4	c	7.9	3.7	3.2	3.8	6.5	c	3.8	85	1,093
Spring barley	3.6	1.4	0.2	0.1	0.4	5.6	4.9	5.0	4.5	2.5	0.2	4.6	30	442
Winter barley	6.1	0.6	c	0.5	0.1	7.3	4.2	2.2	c	7.5	0.2	4.2	36	404
Oats	6.4	0.1	c	c	c	6.5	3.0	5.0	c	c	c	3.0	7	174
Rye/triticale/durum wheat	c	c	c	c	c	c	c	c	c	c	c	c	1	28
Potatoes (seed or earlies)	-	-	-	-	-	-	-	-	-	-	-	-	0	4
Potatoes (maincrop)	-	-	-	-	-	-	-	-	-	-	-	-	0	47
Sugar beet	34.4	2.7	c	8.6	1.3	47.1	6.1	3.6	c	5.5	0.2	5.7	25	67
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	1	2
Winter oilseed rape	4.0	0.3	0.2	0.4	c	4.9	3.7	0.5	5.0	5.0	c	3.7	16	239
Linseed	c	c	c	c	c	c	c	c	c	c	c	c	2	31
Forage maize	6.2	2.2	c	c	1.2	9.6	4.6	5.4	c	c	1.9	4.5	21	167
Rootcrops for stockfeed	19.5	0.3	c	7.4	1.9	29.1	5.3	5.0	c	9.0	1.9	6.0	16	42
Leafy forage crops	14.8	c	c	c	c	14.8	5.4	c	c	c	c	5.4	6	40
Arable silage/other fodder crops	3.8	0.4	c	c	2.4	6.6	5.1	2.5	c	c	1.2	3.6	12	83
Peas – human consumption	c	c	c	c	c	c	c	c	c	c	c	c	1	30
Peas – animal consumption	c	c	c	c	c	c	c	c	c	c	c	c	2	34
Beans – animal consumption	2.7	2.7	c	c	c	5.4	2.0	5.1	c	c	c	3.5	10	203
Vegetables (brassicae)	c	c	c	c	c	c	c	c	c	c	c	c	1	13
Vegetables (other)	3.2	4.6	c	c	0.1	8.0	7.0	6.3	c	c	0.5	6.5	5	42
Soft fruit	-	-	-	-	-	-	-	-	-	-	-	-	0	23
Top fruit	-	-	-	-	-	-	-	-	-	-	-	-	0	19
Other crops	c	c	c	c	c	c	c	c	c	c	c	c	3	50
All crops	5.8	1.2	0.1	0.5	0.2	7.8	4.1	3.9	4.3	6.2	0.8	4.1	284	3,322
Grass under 5 years old	3.7	0.6	0.1	c	0.4	4.9	4.1	4.3	3.5	c	0.8	3.9	64	656
Grass 5 years and over	2.6	0.1	0.2	c	0.1	3.0	4.5	7.2	3.3	c	1.2	4.4	94	2,015
All grass	2.7	0.2	0.2	c	0.2	3.3	4.5	5.9	3.3	c	1.1	4.3	158	2,671
All crops and grass	4.1	0.7	0.2	0.2	0.2	5.3	4.3	4.2	3.5	6.2	0.9	4.2	442	5,993

Source: British Survey of Fertiliser Practice, 2022

Table EW1.5 Percentage of crop area by field application rate – Nitrogen, England & Wales, 2022

	kg/ha																		
Percents by row	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	Fields in survey
Spring wheat	13	8	0	20	13	8	20	4	14	-	-	-	-	-	-	-	-	-	45
Winter wheat	2	0	1	2	6	9	13	20	17	16	7	5	2	-	-	-	-	-	1,093
Spring barley	6	2	8	15	21	29	15	3	-	-	-	-	-	-	-	-	-	-	442
Winter barley	4	0	2	8	10	15	22	23	12	3	2	-	-	-	-	-	-	-	404
Oats	7	2	11	13	22	28	14	3	-	-	-	-	-	-	-	-	-	-	174
Rye/triticale/durum wheat	12	0	0	9	19	13	23	24	-	-	-	-	-	-	-	-	-	-	28
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	-	-	-	4
Potatoes (maincrop)	6	0	1	2	13	21	14	9	2	2	0	19	0	8	2	-	-	-	47
Sugar beet	10	12	25	19	12	17	4	1	-	-	-	-	-	-	-	-	-	-	67
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	c	-	-	-	-	-	2
Winter oilseed rape	2	1	2	2	6	18	12	19	12	13	9	2	1	-	-	-	-	-	239
Linseed	6	2	14	39	24	14	-	-	-	-	-	-	-	-	-	-	-	-	31
Forage maize	26	18	17	11	9	11	5	0	1	2	-	-	-	-	-	-	-	-	167
Rootcrops for stockfeed	18	14	10	17	26	6	2	7	-	-	-	-	-	-	-	-	-	-	42
Leafy forage crops	48	2	30	8	12	-	-	-	-	-	-	-	-	-	-	-	-	-	40
Arable silage/other fodder crops	54	2	8	16	7	2	3	3	5	-	-	-	-	-	-	-	-	-	83
Peas – human consumption	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
Peas – animal consumption	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34
Beans – animal consumption	99	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	203
Vegetables (brassicae)	45	0	0	1	19	13	22	-	-	-	-	-	-	-	-	-	-	-	13
Vegetables (other)	31	3	45	0	0	0	10	7	5	-	-	-	-	-	-	-	-	-	42
Soft fruit	22	33	6	2	22	15	1	-	-	-	-	-	-	-	-	-	-	-	23
Top fruit	40	46	6	0	4	0	0	0	0	4	-	-	-	-	-	-	-	-	19
Other crops	59	0	15	4	1	11	7	2	-	-	-	-	-	-	-	-	-	-	50
All crops	14	2	4	6	9	13	12	13	10	8	4	2	1	-	-	-	-	-	3,322
Grass under 5 years old	30	4	12	13	11	6	7	5	3	3	1	3	1	-	-	-	-	-	656
Grass 5 years and over	67	4	10	7	4	3	2	1	1	-	-	-	-	-	-	-	-	-	2,015
All grass	62	4	10	8	5	3	3	2	1	1	0	1	-	-	-	-	-	-	2,671
All crops and grass	40	3	7	7	7	8	7	7	5	4	2	2	1	-	-	-	-	-	5,993

Source: British Survey of Fertiliser Practice, 2022

Table EW1.6 Percentage of crop by field application rate – Phosphate, England & Wales, 2022

Percents by row	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Spring wheat	65	13	8	3	10	-	-	-	-	-	-	-	-	-	-	-	-	-	45
Winter wheat	72	4	12	8	2	1	-	-	-	-	-	-	-	-	-	-	-	-	1,093
Spring barley	71	8	12	8	1	-	-	-	-	-	-	-	-	-	-	-	-	-	442
Winter barley	69	6	13	8	3	-	-	-	-	-	-	-	-	-	-	-	-	-	404
Oats	70	5	10	9	2	3	-	-	-	-	-	-	-	-	-	-	-	-	174
Rye/triticale/durum wheat	67	13	3	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	c	c	c	-	-	-	-	-	4
Potatoes (maincrop)	20	4	13	21	9	2	7	14	0	0	0	0	11	-	-	-	-	-	47
Sugar beet	61	12	20	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67
Spring oilseed rape	c	c	c	c	c	c	c	-	-	-	-	-	-	-	-	-	-	-	2
Winter oilseed rape	71	4	15	5	3	1	1	-	-	-	-	-	-	-	-	-	-	-	239
Linseed	94	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	31
Forage maize	50	9	12	21	8	1	-	-	-	-	-	-	-	-	-	-	-	-	167
Rootcrops for stockfeed	51	6	14	7	22	-	-	-	-	-	-	-	-	-	-	-	-	-	42
Leafy forage crops	65	17	10	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40
Arable silage/other fodder crops	81	2	4	1	13	-	-	-	-	-	-	-	-	-	-	-	-	-	83
Peas – human consumption	86	0	10	0	0	4	-	-	-	-	-	-	-	-	-	-	-	-	30
Peas – animal consumption	84	7	6	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	34
Beans – animal consumption	90	3	2	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	203
Vegetables (brassicae)	54	3	29	3	11	-	-	-	-	-	-	-	-	-	-	-	-	-	13
Vegetables (other)	79	2	6	10	3	-	-	-	-	-	-	-	-	-	-	-	-	-	42
Soft fruit	57	21	22	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	23
Top fruit	81	1	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
Other crops	93	6	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50
All crops	71	6	12	8	3	1	-	-	-	-	-	-	-	-	-	-	-	-	3,322
Grass under 5 years old	75	16	6	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	656
Grass 5 years and over	83	14	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,015
All grass	82	14	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,671
All crops and grass	77	10	7	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	5,993

Source: British Survey of Fertiliser Practice, 2022

Table EW1.7 Percentage of crop area by field application rate – Potash, England & Wales, 2022

	kg/ha																		Fields in survey
Percents by row	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Spring wheat	82	9	5	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45
Winter wheat	68	5	10	10	4	2	-	-	-	-	-	-	-	-	-	-	-	-	1,093
Spring barley	66	5	13	12	3	2	-	-	-	-	-	-	-	-	-	-	-	-	442
Winter barley	63	6	10	11	7	2	1	-	-	-	-	-	-	-	-	-	-	-	404
Oats	70	9	7	6	2	6	-	-	-	-	-	-	-	-	-	-	-	-	174
Rye/triticale/durum wheat	67	13	3	7	7	3	-	-	-	-	-	-	-	-	-	-	-	-	28
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	-	4
Potatoes (maincrop)	13	0	0	3	17	2	5	0	3	8	2	21	19	5	0	0	3	-	47
Sugar beet	45	6	18	15	5	9	1	2	-	-	-	-	-	-	-	-	-	-	67
Spring oilseed rape	c	c	c	c	c	c	-	-	-	-	-	-	-	-	-	-	-	-	2
Winter oilseed rape	73	7	8	6	2	3	-	-	-	-	-	-	-	-	-	-	-	-	239
Linseed	93	5	1	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	31
Forage maize	80	8	2	5	2	3	0	1	-	-	-	-	-	-	-	-	-	-	167
Rootcrops for stockfeed	49	0	19	11	6	6	10	1	-	-	-	-	-	-	-	-	-	-	42
Leafy forage crops	60	15	17	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	40
Arable silage/other fodder crops	93	2	2	1	0	2	-	-	-	-	-	-	-	-	-	-	-	-	83
Peas – human consumption	75	9	0	0	11	4	-	-	-	-	-	-	-	-	-	-	-	-	30
Peas – animal consumption	85	2	1	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34
Beans – animal consumption	86	6	2	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	203
Vegetables (brassicae)	54	0	10	3	0	3	0	18	11	-	-	-	-	-	-	-	-	-	13
Vegetables (other)	56	3	0	1	0	0	0	22	10	9	-	-	-	-	-	-	-	-	42
Soft fruit	40	21	0	22	15	2	1	-	-	-	-	-	-	-	-	-	-	-	23
Top fruit	78	0	15	1	3	0	0	0	4	-	-	-	-	-	-	-	-	-	19
Other crops	89	1	3	5	0	0	2	-	-	-	-	-	-	-	-	-	-	-	50
All crops	69	6	9	9	4	2	1	-	-	-	-	-	-	-	-	-	-	-	3,322
Grass under 5 years old	71	16	8	4	1	0	1	-	-	-	-	-	-	-	-	-	-	-	656
Grass 5 years and over	83	13	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,015
All grass	81	13	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,671
All crops and grass	75	10	6	5	2	1	-	-	-	-	-	-	-	-	-	-	-	-	5,993

Source: British Survey of Fertiliser Practice, 2022

Table EW1.8 Percentage of crop area by field application rate – Sulphur England & Wales, 2022

Percents by row	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Spring wheat	60	0	24	6	3	7	-	-	-	-	-	-	-	-	-	-	-	-	45
Winter wheat	33	10	26	21	7	2	0	1	-	-	-	-	-	-	-	-	-	-	1,093
Spring barley	53	16	19	8	3	-	-	-	-	-	-	-	-	-	-	-	-	-	442
Winter barley	32	15	27	19	3	3	0	1	-	-	-	-	-	-	-	-	-	-	404
Oats	43	17	26	8	6	-	-	-	-	-	-	-	-	-	-	-	-	-	174
Rye/triticale/durum wheat	47	4	27	14	5	3	-	-	-	-	-	-	-	-	-	-	-	-	28
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	-	-	-	-	-	-	-	-	4
Potatoes (maincrop)	79	9	1	5	3	0	0	0	2	1	-	-	-	-	-	-	-	-	47
Sugar beet	45	31	13	9	0	1	-	-	-	-	-	-	-	-	-	-	-	-	67
Spring oilseed rape	c	c	c	c	c	c	c	c	-	-	-	-	-	-	-	-	-	-	2
Winter oilseed rape	21	7	18	22	22	5	3	1	-	-	-	-	-	-	-	-	-	-	239
Linseed	39	24	27	0	0	10	-	-	-	-	-	-	-	-	-	-	-	-	31
Forage maize	80	8	8	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	167
Rootcrops for stockfeed	83	9	6	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	42
Leafy forage crops	79	12	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40
Arable silage/other fodder crops	75	12	8	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	83
Peas – human consumption	80	4	2	10	4	-	-	-	-	-	-	-	-	-	-	-	-	-	30
Peas – animal consumption	94	0	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34
Beans – animal consumption	92	4	1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	203
Vegetables (brassicae)	70	11	0	0	0	19	-	-	-	-	-	-	-	-	-	-	-	-	13
Vegetables (other)	84	2	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42
Soft fruit	75	0	3	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23
Top fruit	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
Other crops	76	8	12	1	0	0	2	0	1	-	-	-	-	-	-	-	-	-	50
All crops	45	11	20	14	6	2	0	1	-	-	-	-	-	-	-	-	-	-	3,322
Grass under 5 years old	76	10	7	4	2	1	-	-	-	-	-	-	-	-	-	-	-	-	656
Grass 5 years and over	92	4	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2,015
All grass	90	5	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2,671
All crops and grass	70	8	11	7	3	1	-	-	-	-	-	-	-	-	-	-	-	-	5,993

Source: British Survey of Fertiliser Practice, 2022

Table EW2.1 Average fertiliser practice by grassland utilisation, England & Wales, 2022

	Crop area receiving dressing (%)					Average field rate (kg/ha)				Overall application rate (kg/ha)				Fields in survey
	N	P_2O_5	K_2O	SO_3	FYM	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	
Grazed not mown	23	11	11	5	23	64	13	15	29	15	1	2	2	1,190
Grazed mown	59	29	31	16	62	90	18	24	36	53	5	7	6	1,243
All grazings	36	17	18	9	36	79	16	21	33	28	3	4	3	2,433
Cut for silage - grazed	69	33	34	21	71	95	18	25	37	66	6	9	8	843
Cut for silage - not grazed	84	26	36	20	82	133	27	37	45	112	7	13	9	139
All cut for silage	72	32	35	21	73	102	19	27	38	73	6	9	8	982
Cut for hay - grazed	41	25	25	10	42	66	19	21	42	27	5	5	4	450
Cut for hay - not grazed	44	14	19	14	17	65	32	61	43	29	4	11	6	80
All cut for hay	41	23	24	10	37	66	21	27	42	27	5	6	4	530
All mowings	61	28	31	17	61	95	20	27	38	58	5	8	6	1,456
All grass	38	18	19	10	38	83	17	23	35	32	3	4	3	2,671

Source: British Survey of Fertiliser Practice, 2022

Table EW2.2 Percentage of grass area by field application rate – Nitrogen, England & Wales, 2022

	kg/ha																		Fields in survey
Percents by row	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Grazed not mown	77	3	9	5	2	1	1	-	-	-	-	-	-	-	-	-	-	-	1,190
Grazed mown	41	4	12	13	10	5	4	5	2	1	1	1	-	-	-	-	-	-	1,243
All grazings	64	4	10	8	5	3	2	2	1	0	0	1	-	-	-	-	-	-	2,433
Cut for silage – grazed	31	5	13	16	12	6	5	7	2	1	1	2	-	-	-	-	-	-	843
Cut for silage – not grazed	16	2	13	8	9	11	13	4	8	6	2	2	2	2	0	0	0	2	139
All cut for silage	28	4	13	14	12	6	6	6	3	2	1	2	1	-	-	-	-	-	982
Cut for hay – grazed	59	4	11	10	9	4	1	0	1	-	-	-	-	-	-	-	-	-	450
Cut for hay – not grazed	56	5	14	8	14	1	3	-	-	-	-	-	-	-	-	-	-	-	80
All cut for hay	59	4	12	10	10	3	1	0	1	-	-	-	-	-	-	-	-	-	530
All mowings	39	4	12	12	10	6	5	5	3	1	1	1	-	-	-	-	-	-	1,456
All grass	62	4	10	8	5	3	3	2	1	1	0	1	-	-	-	-	-	-	2,671

Source: British Survey of Fertiliser Practice, 2022

Table EW2.3 Percentage of grass area by field application rate – Phosphate, England & Wales, 2022

	kg/ha																		Fields in survey
Percents by row	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Grazed not mown	89	10	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,190
Grazed mown	71	22	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,243
All grazings	83	14	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,433
Cut for silage - grazed	67	26	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	843
Cut for silage - not grazed	74	12	10	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	139
All cut for silage	68	24	6	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	982
Cut for hay - grazed	75	17	7	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	450
Cut for hay - not grazed	86	9	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80
All cut for hay	77	15	6	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	530
All mowings	72	21	6	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,456
All grass	82	14	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,671

Source: British Survey of Fertiliser Practice, 2022

Table EW2.4 Percentage of grass area by field application rate – Potash, England & Wales, 2022

	kg/ha																		Fields in survey
Percents by row	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Grazed not mown	89	10	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,190
Grazed mown	69	19	7	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1,243
All grazings	82	13	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,433
Cut for silage - grazed	66	22	8	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	843
Cut for silage - not grazed	64	17	11	5	0	0	3	-	-	-	-	-	-	-	-	-	-	-	139
All cut for silage	65	21	8	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	982
Cut for hay - grazed	75	16	7	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	450
Cut for hay - not grazed	81	9	0	0	1	8	-	-	-	-	-	-	-	-	-	-	-	-	80
All cut for hay	76	15	6	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	530
All mowings	69	18	7	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1,456
All grass	81	13	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,671

Source: British Survey of Fertiliser Practice, 2022

Table EW2.5 Percentage of grass area by field application rate – Sulphur, England & Wales, 2022

	kg/ha																		Fields in survey
Percents by row	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Grazed not mown	95	3	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1,190
Grazed mown	84	8	5	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1,243
All grazings	91	5	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2,433
Cut for silage - grazed	79	9	6	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	843
Cut for silage - not grazed	80	5	7	6	2	0	0	0	1	-	-	-	-	-	-	-	-	-	139
All cut for silage	79	9	6	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	982
Cut for hay - grazed	90	5	2	0	2	1	-	-	-	-	-	-	-	-	-	-	-	-	450
Cut for hay - not grazed	86	8	2	1	1	1	0	0	1	-	-	-	-	-	-	-	-	-	80
All cut for hay	90	6	2	0	2	1	-	-	-	-	-	-	-	-	-	-	-	-	530
All mowings	83	7	5	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1,456
All grass	90	5	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2,671

Source: British Survey of Fertiliser Practice, 2022

Table EW3.0a Percentage product use by month of application, England & Wales, 2022

Percents by row	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Straight nitrogen (N)	0	0	0	0	0	4	35	39	15	4	2	1
Straight phosphate (P_2O_5)	7	16	20	0	0	3	23	27	1	0	0	2
Straight potash (K_2O)	1	10	12	2	3	7	45	16	2	2	0	0
Compounds	5	9	2	0	0	3	24	32	13	5	3	3
All fertilisers	1	3	1	0	0	4	33	37	14	4	2	1

Source: British Survey of Fertiliser Practice, 2022

Table EW3.0b Percentage nutrient use by month of application, England & Wales, 2022

Percents by row	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Nitrogen (N)	0	0	0	0	0	3	33	40	15	4	2	1
Phosphate (P_2O_5)	6	17	8	1	0	4	24	26	8	2	2	3
Potash (K_2O)	4	12	8	1	1	6	32	23	8	3	2	1
Sulphur (SO_3)	0	1	1	0	0	9	52	25	8	3	1	0
Total	1	3	2	0	0	4	35	35	13	4	2	1

Note: 'All fertilisers' includes other straight fertilisers (e.g. trace elements).
'Product' refers to the total tonnage of the products used by the farmers in the survey year 2022.
'Nutrient' refers to the tonnage of each nutrient contained in the product used (e.g. 100 kg of a 20:10:10 compound contains 20 kg of N, 10 kg of P_2O_5 and 10 kg of K_2O, while 100 kg of ammonium nitrate (straight N) contains typically 34.5 kg of N).
Estimates of total nutrients are show in in Appendix 3, table AA 1.6.

Source: British Survey of Fertiliser Practice, 2022

Table EW3.1, Product type as a percentage of all product used by crop group, England & Wales, 2022

Percents by column	spring cereal	winter cereal	potatoes	sugar beet	oilseed rape	other cropping	all cropping	grass for grazing	grass for hay	grass for silage	grass not specified	all grass	all crops and grass
Ammonium nitrate	44.5	47.2	13.4	30.6	42.9	28.3	43.6	39.6	37.1	38.5	12.5	39.5	42.7
Urea	6.8	8.0	0.7	5.0	9.7	2.3	7.3	7.9	5.4	7.2	0.0	7.3	7.3
Calcium Ammonium Nitrate (CAN)	2.0	1.7	0.0	3.0	0.7	2.4	1.7	4.0	1.1	5.6	0.0	4.8	2.3
Urea Ammonium Nitrate (UAN)	16.2	21.7	7.5	9.6	27.3	9.2	20.0	3.0	4.5	3.6	0.0	3.1	16.4
Foliar urea	1.5	1.9	0.0	1.7	1.0	1.0	1.6	0.5	0.4	0.5	0.0	0.4	1.4
Other straight nitrogen	1.1	2.6	0.0	0.0	5.7	2.7	2.6	1.5	2.9	1.1	0.0	1.6	2.4
Triple superphosphate (TSP)	1.1	1.8	3.1	0.9	1.8	2.5	1.8	0.2	0.0	0.3	0.0	0.2	1.4
Other straight phosphate	0.0	0.0	2.6	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Muriate of Potash (MOP)	1.7	2.7	14.3	2.3	1.4	3.4	2.8	0.6	1.5	0.6	0.0	0.7	2.4
Other straight potash	0.9	1.0	3.8	17.5	1.4	3.5	1.6	0.3	0.0	0.2	0.0	0.2	1.3
Phosphate/potash binary - PK	8.0	7.1	0.0	17.6	3.5	14.4	7.4	1.8	0.4	1.2	0.0	1.5	6.1
Nitrogen/potash binary - NK	0.7	0.5	1.4	0.0	0.1	3.4	0.7	2.9	1.4	5.2	0.0	3.6	1.3
Low N (<19%N)	3.6	1.4	49.7	5.9	2.4	19.7	4.8	2.5	5.3	2.0	15.7	2.4	4.3
High N (>=19% N)	11.5	2.2	3.1	3.5	1.9	6.1	3.7	35.2	39.8	33.9	71.8	34.5	10.3
Other	0.5	0.2	0.3	2.5	0.2	0.7	0.3	0.1	0.2	0.1	0.0	0.1	0.3
Total product ('000 tonnes)	**222**	**1,253**	**79**	**30**	**183**	**96**	**1,862**	**425**	**65**	**317**	**1**	**512**	**2,374**

Source: British Survey of Fertiliser Practice, 2022

Table EW3.2 Use of product type by crop group, England & Wales, 2022

Percents by row	distribution of product by crop						percent used on crops	distribution of product by grass use type*				percent used on grass	total product
	spring cereal	winter cereal	potatoes	sugar beet	oilseed rape	other cropping	all cropping	grass for grazing	grass for hay	grass for silage	grass not specified	all grass	('000 tonnes)
Ammonium nitrate	12.1	72.7	1.0	1.1	9.7	3.5	78.5	83.2	10.0	63.6	0.0	21.5	1,010
Urea	10.0	74.5	0.4	1.0	11.7	2.4	79.4	89.2	8.5	60.3	0.0	20.6	176
Calcium Ammonium Nitrate (CAN)	12.0	75.6	0.0	3.7	1.3	7.3	53.1	59.5	3.0	74.2	0.0	46.9	54
Urea Ammonium Nitrate (UAN)	9.0	72.2	1.8	0.5	13.2	3.1	97.7	63.7	25.8	72.0	0.0	2.3	430
Foliar urea	11.2	79.8	0.0	3.1	4.1	1.8	89.7	99.3	6.9	92.2	0.0	10.3	48
Other straight nitrogen	5.3	69.2	0.0	0.0	22.8	2.7	80.7	87.3	21.1	28.8	0.0	19.3	42
Triple superphosphate (TSP)	7.8	62.6	2.2	2.6	14.1	10.7	97.9	100.0	0.0	100.0	0.0	2.1	32
Other straight phosphate	0.0	0.0	97.8	0.0	0.0	2.2	100.0	0.0	0.0	0.0	0.0	0.0	7
Muriate of Potash (MOP)	9.5	53.7	18.4	1.3	6.4	10.6	94.5	40.9	58.9	34.8	0.0	5.5	51
Other straight potash	3.6	44.8	9.4	20.4	8.8	12.9	96.1	100.0	0.0	43.3	0.0	3.9	31
Phosphate/potash binary - PK	15.9	66.2	0.0	3.0	5.8	9.2	95.4	100.0	3.7	40.9	0.0	4.6	132
Nitrogen/potash binary - NK	16.2	56.0	10.4	0.0	2.3	15.1	45.0	68.6	3.0	90.5	0.0	55.0	27
Low N (<19%N)	8.7	17.1	45.9	2.3	4.0	22.0	91.1	75.2	28.4	44.5	1.7	8.9	96
High N (>=19% N)	46.2	41.1	1.9	2.0	4.1	4.8	23.8	87.0	16.8	58.2	0.6	76.2	230
Other	15.8	46.1	4.5	20.8	5.2	7.6	89.5	87.8	12.2	87.8	0.0	10.5	6
Total product	**11.9**	**67.3**	**4.2**	**1.6**	**9.8**	**5.2**	**78.4**	**83.1**	**12.6**	**62.0**	**0.3**	**21.6**	**2,374**

Source: British Survey of Fertiliser Practice, 2022.

* These grass row totals may sum to more than 100% because individual fields can have more than one type of grass use.

Table EW3.3 Product use by month of application, England & Wales, 2022

Percents by row	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total product ('000 tonnes)
Ammonium nitrate	0.0	2.5	33.7	41.1	14.9	4.4	2.5	0.7	0.1	0.0	0.0	0.0	1,010
Urea	0.0	7.5	40.0	35.7	14.1	1.8	0.3	0.5	0.0	0.0	0.0	0.0	176
Calcium Ammonium Nitrate (CAN)	0.0	6.9	27.0	33.2	17.3	8.0	2.1	4.6	0.6	0.2	0.0	0.0	54
Urea Ammonium Nitrate (UAN)	0.0	4.9	40.0	38.1	14.4	1.7	0.0	0.3	0.0	0.5	0.0	0.0	430
Foliar urea	0.2	0.4	12.7	29.7	21.9	29.2	4.1	1.0	0.8	0.0	0.0	0.0	48
Other straight nitrogen	3.7	17.8	38.2	32.4	5.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0	42
Triple superphosphate (TSP)	0.0	3.5	27.3	10.6	1.0	0.7	0.0	2.8	8.4	18.6	23.3	3.6	32
Other straight phosphate	0.0	0.0	0.0	97.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7
Muriate of Potash (MOP)	0.4	7.9	38.7	20.5	2.0	0.4	0.2	0.0	1.6	9.7	16.0	2.6	51
Other straight potash	7.2	6.0	54.4	7.7	3.2	5.1	0.0	0.5	1.3	10.3	4.4	0.0	31
Phosphate/potash binary - PK	0.7	6.4	19.6	6.3	1.4	0.1	1.9	5.5	17.9	33.4	6.2	0.5	132
Nitrogen/potash binary - NK	0.0	0.0	20.7	23.4	25.6	15.1	10.3	0.0	0.0	0.0	4.8	0.0	27
Low N (<19%N)	0.0	7.2	28.1	45.8	12.5	1.5	0.7	2.0	0.0	0.9	1.1	0.0	96
High N (>=19% N)	0.0	0.5	24.9	42.0	18.9	7.2	4.0	1.9	0.4	0.1	0.1	0.0	230
Other	0.0	6.1	36.7	33.4	1.7	4.7	0.0	0.0	0.0	2.0	15.4	0.0	6
Total product	0.2	4.0	33.0	36.6	13.8	4.1	1.9	1.2	1.3	2.6	1.2	0.1	2,374

Source: British Survey of Fertiliser Practice, 2022

Table EW4.1a Average fertiliser practice on cropping and grassland by region, England & Wales, 2022

		Crop area receiving dressing (%)				Average field rate (kg/ha)			Overall application rate (kg/ha)			Fields in survey
		N	P_2O_5	K_2O	FYM	N	P_2O_5	K_2O	N	P_2O_5	K_2O	
North West	All cropping	90	25	35	40	132	96	132	118	24	46	102
	All grass	47	20	25	52	94	17	24	44	3	6	343
	All crops and grass	53	21	26	50	104	31	46	56	7	12	445
North East	All cropping	96	48	44	16	178	43	49	171	21	22	84
	All grass	20	15	15	19	68	20	24	13	3	4	169
	All crops and grass	35	22	21	19	129	31	35	45	7	7	253
Eastern	All cropping	90	31	31	12	139	44	57	125	14	18	664
	All grass	24	6	6	4	67	25	29	16	1	2	95
	All crops and grass	81	28	28	11	137	44	56	110	12	16	759
Yorkshire and the Humber	All cropping	92	32	39	27	151	50	67	138	16	26	638
	All grass	45	23	23	42	68	15	22	30	3	5	353
	All crops and grass	72	28	32	33	129	38	53	93	11	17	991
West Midlands	All cropping	88	13	16	46	146	44	78	128	6	13	336
	All grass	39	11	11	43	99	25	36	39	3	4	210
	All crops and grass	61	12	13	44	130	34	60	80	4	8	546
East Midlands	All cropping	82	24	26	20	148	55	62	121	13	16	476
	All grass	40	18	18	31	69	17	19	28	3	3	155
	All crops and grass	70	23	24	23	135	46	52	94	10	12	631
South West	All cropping	79	35	38	47	115	47	50	91	16	19	569
	All grass	36	15	16	39	87	15	23	31	2	4	669
	All crops and grass	50	22	23	42	101	32	37	50	7	9	1,238
South East	All cropping	86	26	29	23	141	47	53	121	12	15	321
	All grass	25	10	10	16	87	33	40	22	3	4	179
	All crops and grass	63	20	22	20	133	44	51	83	9	11	500
Wales	All cropping	68	54	49	54	110	61	101	75	33	50	132
	All grass	42	25	26	41	78	16	18	33	4	5	498
	All crops and grass	44	27	28	42	82	24	31	37	6	9	630

Source: British Survey of Fertiliser Practice, 2022

Table EW4.1b Average fertiliser practice on crops and grassland by BSFP region, England & Wales, 2022

		Crop area receiving dressing (%)				Average field rate (kg/ha)			Overall application rate (kg/ha)			Fields in survey
		N	P_2O_5	K_2O	FYM	N	P_2O_5	K_2O	N	P_2O_5	K_2O	
Wessex	All cropping	73	29	35	45	116	46	47	85	13	16	326
	All grass	27	7	7	31	87	12	19	24	1	1	272
	All crops and grass	47	17	19	37	107	38	41	50	6	8	598
Anglia	All cropping	90	31	31	12	139	44	57	125	14	18	664
	All grass	24	6	6	4	67	25	29	16	1	2	95
	All crops and grass	81	28	28	11	137	44	56	110	12	16	759
Northern	All cropping	93	34	33	24	147	92	127	137	31	42	120
	All grass	37	19	22	43	83	17	21	31	3	5	408
	All crops and grass	44	21	24	40	101	33	40	45	7	10	528
North East	All cropping	92	33	39	26	151	48	65	139	16	25	665
	All grass	44	24	24	40	68	15	22	29	4	5	395
	All crops and grass	71	29	33	32	128	36	51	91	11	17	1,060
North Mercia	All cropping	87	16	24	56	156	38	81	135	6	20	197
	All grass	48	16	17	50	111	24	40	54	4	7	192
	All crops and grass	61	16	19	52	132	28	57	80	4	11	389
South Mercia	All cropping	90	18	19	39	136	45	71	122	8	14	209
	All grass	28	2	3	24	81	13	21	23	0	1	100
	All crops and grass	63	11	12	32	125	43	65	79	5	8	309
East Midlands	All cropping	82	24	26	20	148	55	62	121	13	16	476
	All grass	40	18	18	31	69	17	19	28	3	3	155
	All crops and grass	70	23	24	23	135	46	52	94	10	12	631
South East	All cropping	86	26	29	23	141	47	53	121	12	15	321
	All grass	25	10	10	16	87	33	40	22	3	4	179
	All crops and grass	63	20	22	20	133	44	51	83	9	11	500
South West	All cropping	87	46	45	53	110	49	58	96	23	26	212
	All grass	43	22	23	48	87	15	24	37	3	6	377
	All crops and grass	51	27	28	49	94	26	35	48	7	10	589
Wales	All cropping	68	54	49	54	110	61	101	75	33	50	132
	All grass	42	25	26	41	78	16	18	33	4	5	498
	All crops and grass	44	27	28	42	82	24	31	37	6	9	630

Source: British Survey of Fertiliser Practice, 2022

Table SC1.1 Total fertiliser use, Scotland, 2022

	Crop area receiving dressing (%)					Average field rate (kg/ha)				Overall application rate (kg/ha)				Fields in survey
	N	P_2O_5	K_2O	SO_3	FYM	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	
Winter wheat	95	60	57	66	30	144	55	73	50	137	33	42	32	93
Spring barley	98	88	90	44	42	97	47	62	33	95	41	56	15	194
Winter barley	93	79	75	61	45	132	46	64	55	123	36	48	33	52
Oats	66	45	43	37	47	91	39	57	37	60	17	24	14	38
Potatoes	100	100	86	30	57	129	132	174	[c]	129	132	151	[c]	8
Winter oilseed rape	100	71	63	85	15	124	54	54	61	124	38	34	52	36
Other crops	66	43	44	18	44	74	40	49	37	49	17	22	7	72
All cropping	93	76	76	49	39	109	49	65	43	101	38	49	21	493
Grass under 5 years old	73	54	51	20	46	95	27	40	34	69	14	21	7	166
Grass 5 years and over	55	32	33	14	33	62	19	24	20	34	6	8	3	343
All grass	59	37	37	15	36	71	21	29	24	42	8	11	4	509
All crops and grass	71	51	51	27	37	88	36	48	36	63	18	24	10	1,002

Source: British Survey of Fertiliser Practice, 2022

Table SC1.2 Use of straight fertiliser, Scotland, 2022

	Crop area receiving dressing (%)			Average field rate (kg/ha)			Overall application rate (kg/ha)			Fields in survey
	N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	
Winter wheat	95	9	11	131	73	79	124	7	9	93
Spring barley	80	2	5	69	c	68	55	c	3	194
Winter barley	91	9	8	114	c	c	104	c	c	52
Oats	53	6	9	84	c	c	45	c	c	38
Potatoes	17	9	39	c	c	c	c	c	c	8
Winter oilseed rape	87	11	10	118	c	c	103	c	c	36
Other crops	38	3	4	67	c	c	25	c	c	72
All cropping	78	4	7	89	67	83	70	3	6	493
Grass under 5 years old	31	3	1	92	c	c	28	c	c	166
Grass 5 years and over	25	0	1	58	c	127	15	c	2	343
All grass	26	1	1	66	c	134	18	c	2	509
All crops and grass	45	2	3	81	57	97	36	1	3	1,002

Source: British Survey of Fertiliser Practice, 2022

Table SC1.3 Use of compound fertiliser, Scotland, 2022

	Crop area receiving dressing (%)				Average field rate (kg/ha)				Overall application rate (kg/ha)				Fields in survey
	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	
Winter wheat	26	54	50	25	47	50	67	39	12	27	33	10	93
Spring barley	81	87	86	27	49	46	62	30	40	40	53	8	194
Winter barley	37	73	71	31	51	44	60	36	19	32	43	11	52
Oats	31	39	37	11	49	38	53	24	15	15	19	3	38
Potatoes	91	91	47	0	131	132	134	[c]	120	120	63	[c]	8
Winter oilseed rape	58	63	58	35	36	46	47	39	21	29	27	14	36
Other crops	35	40	40	9	66	40	45	28	23	16	18	3	72
All cropping	61	73	70	25	51	48	62	33	31	35	43	8	493
Grass under 5 years old	50	51	50	12	82	27	37	29	41	14	19	3	166
Grass 5 years and over	33	32	32	4	59	19	20	11	19	6	6	0	343
All grass	37	36	36	6	66	21	25	19	24	8	9	1	509
All crops and grass	45	49	48	13	59	35	44	28	27	17	21	4	1,002

Source: British Survey of Fertiliser Practice, 2022

Table SC1.4 Use of lime, Scotland, 2022

	Crop area receiving dressing (%)						Average field rate (kg/ha)						Fields limed	Fields in survey
	Limestone (ground, screened)	Chalk	Magnesian limestone	Sugar beet lime	Other	All	Limestone (ground, screened)	Chalk	Magnesian limestone	Sugar beet lime	Other	All		
Winter wheat	7.9	c	6.3	c	2.1	16.3	4.8	c	4.5	c	0.4	4.1	11	93
Spring barley	10.3	c	6.3	c	4.2	20.8	5.1	c	5.3	c	3.3	4.8	43	194
Winter barley	21.3	c	c	c	c	21.3	4.4	c	c	c	c	4.4	11	52
Oats	c	c	c	c	c	c	c	c	c	c	c	c	4	38
Potatoes	-	-	-	-	-	-	-	-	-	-	-	-	0	8
Winter oilseed rape	8.5	c	2.7	c	4.9	16.0	5.9	c	2.5	c	2.5	4.3	6	36
Other crops	15.1	c	0.6	c	c	15.7	5.0	c	5.0	c	c	5.0	7	72
All cropping	10.6	c	4.9	c	3.0	18.5	5.0	c	5.0	c	2.9	4.7	82	493
Grass under 5 years old	14.6	c	1.3	c	1.2	17.0	3.9	c	5.0	c	0.3	3.7	20	166
Grass 5 years and over	5.6	c	c	c	0.5	6.0	3.5	c	c	c	2.7	3.4	30	343
All grass	7.6	c	0.3	c	0.6	8.5	3.7	c	5.0	c	1.7	3.6	50	509
All crops and grass	8.6	c	1.9	c	1.4	12.0	4.2	c	5.0	c	2.5	4.2	132	1,002

Source: British Survey of Fertiliser Practice, 2022

Table SC1.5 Percentage of crop area by field application rate – Nitrogen, Scotland, 2022

Percents by row	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Winter wheat	5	0	8	7	12	12	7	9	28	10	2	0	1	-	-	-	-	-	93
Spring barley	2	1	12	13	21	30	12	7	2	-	-	-	-	-	-	-	-	-	194
Winter barley	7	0	18	1	4	14	8	26	19	4	-	-	-	-	-	-	-	-	52
Oats	34	4	4	18	10	19	7	0	4	-	-	-	-	-	-	-	-	-	38
Potatoes	0	0	0	28	14	0	12	7	39	-	-	-	-	-	-	-	-	-	8
Winter oilseed rape	0	5	11	16	13	6	5	14	15	10	3	3	-	-	-	-	-	-	36
Other crops	34	8	18	7	5	19	7	0	3	-	-	-	-	-	-	-	-	-	72
All cropping	7	2	11	11	16	23	10	8	9	3	1	-	-	-	-	-	-	-	493
Grass under 5 years old	27	4	16	9	12	6	15	2	3	4	2	-	-	-	-	-	-	-	166
Grass 5 years and over	45	6	19	15	8	4	2	1	-	-	-	-	-	-	-	-	-	-	343
All grass	41	5	18	14	9	5	4	1	1	1	-	-	-	-	-	-	-	-	509
All crops and grass	29	4	16	13	11	11	6	4	4	2	-	-	-	-	-	-	-	-	1,002

Source: British Survey of Fertiliser Practice, 2022

Table SC1.6 Percentage of crop area by field application rate – Phosphate, Scotland 2022

Percents by row	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Winter wheat	40	4	26	20	7	5	-	-	-	-	-	-	-	-	-	-	-	-	93
Spring barley	12	12	35	34	7	-	-	-	-	-	-	-	-	-	-	-	-	-	194
Winter barley	21	12	27	36	4	-	-	-	-	-	-	-	-	-	-	-	-	-	52
Oats	55	18	17	5	5	-	-	-	-	-	-	-	-	-	-	-	-	-	38
Potatoes	0	0	0	30	0	0	29	21	20	-	-	-	-	-	-	-	-	-	8
Winter oilseed rape	29	13	19	23	11	2	2	-	-	-	-	-	-	-	-	-	-	-	36
Other crops	57	18	12	5	8	-	-	-	-	-	-	-	-	-	-	-	-	-	72
All cropping	24	11	29	28	7	1	1	-	-	-	-	-	-	-	-	-	-	-	493
Grass under 5 years old	46	30	16	7	1	-	-	-	-	-	-	-	-	-	-	-	-	-	166
Grass 5 years and over	68	25	6	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	343
All grass	63	26	8	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	509
All crops and grass	49	21	15	11	3	1	-	-	-	-	-	-	-	-	-	-	-	-	1,002

Source: British Survey of Fertiliser Practice, 2022

Table SC1.7 Percentage of crop area by field application rate – Potash, Scotland, 2022

Percents by row	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Winter wheat	43	3	7	26	10	5	4	2	-	-	-	-	-	-	-	-	-	-	93
Spring barley	10	4	23	29	30	5	-	-	-	-	-	-	-	-	-	-	-	-	194
Winter barley	25	2	23	25	18	4	2	-	-	-	-	-	-	-	-	-	-	-	52
Oats	57	8	8	16	9	2	-	-	-	-	-	-	-	-	-	-	-	-	38
Potatoes	14	0	28	0	0	0	5	0	0	15	7	0	30	-	-	-	-	-	8
Winter oilseed rape	37	8	19	21	11	4	-	-	-	-	-	-	-	-	-	-	-	-	36
Other crops	56	16	10	3	12	2	-	-	-	-	-	-	-	-	-	-	-	-	72
All cropping	24	5	18	25	22	4	1	-	-	-	-	-	-	-	-	-	-	-	493
Grass under 5 years old	49	22	14	8	4	1	1	0	1	-	-	-	-	-	-	-	-	-	166
Grass 5 years and over	67	23	7	2	0	1	-	-	-	-	-	-	-	-	-	-	-	-	343
All grass	63	23	8	3	1	1	0	0	1	-	-	-	-	-	-	-	-	-	509
All crops and grass	49	16	12	11	8	2	1	-	-	-	-	-	-	-	-	-	-	-	1,002

Source: British Survey of Fertiliser Practice, 2022

Table SC1.8 Percentage of crop area by field application rate – Sulphur, Scotland, 2022

Percents by row	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Winter wheat	34	10	22	29	5	1	-	-	-	-	-	-	-	-	-	-	-	-	93
Spring barley	56	19	16	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	194
Winter barley	39	8	14	21	16	1	-	-	-	-	-	-	-	-	-	-	-	-	52
Oats	63	7	23	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38
Potatoes	70	0	0	0	0	0	0	30	-	-	-	-	-	-	-	-	-	-	8
Winter oilseed rape	15	7	29	29	8	7	6	-	-	-	-	-	-	-	-	-	-	-	36
Other crops	82	6	8	0	3	-	-	-	-	-	-	-	-	-	-	-	-	-	72
All cropping	51	14	17	12	4	1	-	-	-	-	-	-	-	-	-	-	-	-	493
Grass under 5 years old	80	7	7	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	166
Grass 5 years and over	86	11	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	343
All grass	85	10	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	509
All crops and grass	73	11	9	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1,002

Source: British Survey of Fertiliser Practice, 2022

Table SC2.1 Average fertiliser practice by grassland utilisation, Scotland, 2022

	Crop area receiving dressing (%)					Average field rate (kg/ha)				Overall application rate (kg/ha)				Fields in survey
	N	P_2O_5	K_2O	SO_3	FYM	N	P_2O_5	K_2O	SO_3	N	P_2O_5	K_2O	SO_3	
Grazed not mown	48	27	27	13	19	55	17	21	20	27	5	5	3	259
Grazed mown	81	58	58	21	71	88	25	37	29	71	14	21	6	244
All grazings	59	37	37	16	36	71	21	29	24	42	8	11	4	503
Cut for silage - grazed	83	59	58	21	74	90	25	36	30	74	15	21	6	199
Cut for silage [c] not grazed	c	c	c	c	c	c	c	c	c	c	c	c	c	4
All cut for silage	82	58	58	21	74	90	25	37	30	74	15	21	6	203
Cut for hay [c] grazed	67	54	56	22	47	78	25	41	20	52	14	23	5	46
Cut for hay [c] not grazed	-	-	-	-	-	-	-	-	-	-	-	-	-	0
All cut for hay	67	54	56	22	47	78	25	41	20	52	14	23	5	46
All mowings	80	58	58	21	71	88	25	37	29	71	15	21	6	248
All grass	59	37	37	15	36	71	21	29	24	42	8	11	4	509

Source: British Survey of Fertiliser Practice, 2022

Table SC2.2 Percentage of grass area by field application rate – Nitrogen, Scotland 2022

Percents by row	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Grazed not mown	52	6	19	14	4	2	3	0	0	1	-	-	-	-	-	-	-	-	259
Grazed mown	19	4	15	14	19	10	8	3	3	2	1	1	-	-	-	-	-	-	244
All grazings	41	5	18	14	9	5	5	1	1	1	-	-	-	-	-	-	-	-	503
Cut for silage - grazed	17	5	18	11	20	9	9	3	3	2	1	1	-	-	-	-	-	-	199
Cut for silage - not grazed	c	c	c	c	c	c	c	c	c	c	c	c	-	-	-	-	-	-	4
All cut for silage	18	4	17	11	20	9	9	3	3	2	1	1	-	-	-	-	-	-	203
Cut for hay - grazed	33	0	1	32	13	18	3	-	-	-	-	-	-	-	-	-	-	-	46
Cut for hay - not grazed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
All cut for hay	33	0	1	32	13	18	3	-	-	-	-	-	-	-	-	-	-	-	46
All mowings	20	4	15	14	19	10	8	3	3	2	1	1	-	-	-	-	-	-	248
All grass	41	5	18	14	9	5	4	1	1	1	-	-	-	-	-	-	-	-	509

Table SC2.3 Percentage of grass area by field application rate – Phosphate, Scotland, 2022

Percents by row	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Grazed not mown	73	22	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	259
Grazed mown	42	35	17	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	244
All grazings	63	26	8	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	503
Cut for silage - grazed	41	36	16	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	199
Cut for silage - not grazed	c	c	c	c	c	c	-	-	-	-	-	-	-	-	-	-	-	-	4
All cut for silage	42	36	16	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	203
Cut for hay - grazed	46	30	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46
Cut for hay - not grazed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
All cut for hay	46	30	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46
All mowings	42	35	17	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	248
All grass	63	26	8	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	509

Source: British Survey of Fertiliser Practice, 2022

Table SC2.4 Percentage of grass area by field application rate – Potash, Scotland 2022

Percents by row	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Grazed not mown	73	20	5	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	259
Grazed mown	42	28	15	9	2	1	1	0	2	-	-	-	-	-	-	-	-	-	244
All grazings	63	23	8	3	1	1	0	0	1	-	-	-	-	-	-	-	-	-	503
Cut for silage - grazed	42	29	15	9	2	1	1	0	2	-	-	-	-	-	-	-	-	-	199
Cut for silage - not grazed	c	c	c	c	c	c	c	c	c	-	-	-	-	-	-	-	-	-	4
All cut for silage	42	28	15	9	2	1	1	0	2	-	-	-	-	-	-	-	-	-	203
Cut for hay - grazed	44	23	18	9	4	0	0	0	2	-	-	-	-	-	-	-	-	-	46
Cut for hay - not grazed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
All cut for hay	44	23	18	9	4	0	0	0	2	-	-	-	-	-	-	-	-	-	46
All mowings	42	28	15	9	3	1	1	0	2	-	-	-	-	-	-	-	-	-	248
All grass	63	23	8	3	1	1	0	0	1	-	-	-	-	-	-	-	-	-	509

Table SC2.5 Percentage of grass area by field application rate – Sulphur, Scotland, 2022

Percents by row	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Grazed not mown	87	10	2	0	1	-	-	-	-	-	-	-	-	-	-	-	-	-	259
Grazed mown	79	9	8	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	244
All grazings	84	10	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	503
Cut for silage - grazed	79	8	9	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	199
Cut for silage - not grazed	c	c	c	c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
All cut for silage	79	8	9	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	203
Cut for hay - grazed	78	17	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46
Cut for hay - not grazed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
All cut for hay	78	17	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	46
All mowings	79	9	8	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	248
All grass	85	10	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	509

Source: British Survey of Fertiliser Practice, 2022

Table SC3.0a Percentage product use by month of application, Scotland, 2022

Percents by row	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Straight nitrogen (N)	0	0	0	0	0	2	20	41	29	4	3	1
Straight phosphate (P_2O_5)	5	11	0	0	0	0	73	6	0	1	0	4
Straight potash (K_2O)	0	0	0	0	0	28	49	18	3	1	0	0
Compounds	3	3	0	0	0	0	24	43	16	5	4	2
All fertilisers	2	2	0	0	0	2	23	41	21	4	3	2

Table SC3.0b Percentage nutrient use by month of application, Scotland, 2022

Percents by row	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Nitrogen (N)	0	0	0	0	0	2	20	42	26	5	4	2
Phosphate (P_2O_5)	6	5	0	0	0	0	29	42	10	3	2	2
Potash (K_2O)	4	4	0	0	0	4	31	40	10	3	2	1
Sulphur (SO_3)	1	1	0	0	0	2	33	36	20	3	3	1
Total	2	2	0	0	0	2	25	41	19	4	3	2

Note: 'All fertilisers' includes other straight fertilisers (e.g. trace elements).
'Product' refers to the total tonnage of the products used by the farmers in the survey year 2022.
'Nutrient' refers to the tonnage of each nutrient contained in the product used (e.g. 100 kg of a 20:10:10 compound contains 20 kg of N, 10 kg of P_2O_5 and 10 kg of K_2O, while 100 kg of ammonium nitrate (straight N) contains typically 34.5 kg of N).
Estimates of total nutrients are show in in Appendix 3, table AA 1.6.

Source: British Survey of Fertiliser Practice, 2022

APPENDIX 3 – REPORT HISTORY, DEFINITIONS AND METHODOLOGY

App 3.1 INTRODUCTION AND STRUCTURE OF THE REPORT

The British Survey of Fertiliser Practice (BSFP) is the primary source of data on organic and inorganic fertiliser use in Great Britain. The results from the Survey are used by the British fertiliser industry, by Government and by the wider agricultural and environmental community. It is essential that the claims made from the Survey are underpinned by an effective methodology. Section App 2 describes this methodology, detailing measures undertaken to avoid bias and unreliability. National changes in relative cropping areas are discussed in Section App 3.

Section A provides a commentary of recent changes in survey data and longer-term trends. It includes estimates of total fertiliser use which are given in Table AA3.7. These data are derived from BSFP findings, confidential trade and sales data and HMRC import/export statistics. Appendix 2 presents the main tables of results from the Survey, grouped by geographic coverage. They include major crop groups, grassland, product types and farm types plus information on timing of applications. Figures for estimates of 'total', 'straight' and 'compound' nutrient rates are presented in separate tables. Section B provides an analysis of the application of organic manures and manufactured fertilisers. Section C contains more general information on farm practices such as spreader checking, record keeping and soil testing. Datasets for key data series are available via the Fertiliser usage section of the GOV.UK website.

App 3.1.1 History

The Survey has been in existence, in various forms, since 1942 for England & Wales. It was extended to Scotland in 1983. Historical data from 1942 to 1997 have been summarised in several reviews spanning this period.[8, 9, 10, 11] Since 1992 the Survey has reported amalgamated data for Great Britain, in addition to the results for England & Wales and for Scotland. Weighted results for the major combinable crops and grassland were also recalculated from the national surveys to provide additional data for these crops for Great Britain from 1983.

The current methods of survey design and implementation are the result of adaptation of the original design from Rothamsted Experimental Station, undertaken by Edinburgh Data Library at the University of Edinburgh between 1992 and 1998. From 1999 until 2003 design and analysis was undertaken by the Rural Business Unit at the University of Cambridge and from 2004 by Kynetec (formerly GfK Kynetec), who also retained responsibility for conducting the fieldwork. Under Government rules, the contract for the Survey was retendered in 2018 and Kynetec were awarded the contract again.

[8] Yates, F. and Boyd, D.A. (1965). Two decades of Surveys of Fertiliser Practice. *Outlook on Agriculture* **5**, 203-210.

[9] Church, B.M. and Lewis, D.A. (1977). Fertiliser use on farm crops, England and Wales: Information from the Survey of Fertiliser Practice, 1942-1976. *Outlook on Agriculture* **9**, 186-193.

[10] Chalmers, A.G., Kershaw, C.D. and Leech, P.K. (1990). Fertiliser use on farm crops in Great Britain: Results from the Survey of Fertiliser Practice, 1969-1988. *Outlook on Agriculture* **19**, 269-278.

[11] Chalmers, A.G., Renwick, A.W., Johnston, A.E. and Dawson, C.J. (1999). Design, development and use of a national survey of fertiliser applications. *Proceedings International Fertiliser Society* **437**.

App 3.2 SURVEY METHODOLOGY

App 3.2.1 Sample

This Survey is based on a sample of holdings in order to reduce burdens and manage resources. The Survey sample is selected from the population of agricultural holdings compiled by Defra and Devolved Administrations using the June Survey of Agriculture and Horticulture (large sample surveys conducted annually at national level which record information on farm size, cropping, stocking and employment, to be referred to as the 'June Agricultural Survey'). In each year, two samples are extracted from the June Agricultural Survey, one for England & Wales and one for Scotland. Holdings with less than 20 hectares allotted to crops and grass (in total) are excluded from the BSFP sample. These smaller farms account for a significant proportion of the number of holdings but a much smaller proportion of the area of crops and grass. Using the 20 hectare threshold reduces the number of farms which need to be sampled so reducing burdens and costs without significant adverse impact on the survey coverage and hence the quality of the data.

In England & Wales, farms are classified into one of three types, cropping, livestock and horticulture. Farms are then further classified into four size groups. In Scotland, a similar number of size groups are used but farms are classified into only two types, 'mainly cropping' and 'mainly livestock'.

These higher-level farm types are based on groupings of the standard UK farm classifications (called 'robust' types). Farms with a robust type of 'Other' (robust type 10) are not included in the sample. See App 3.7 paragraph 9 for more details.

In 2022, the target sample size was 1,500 farms. This sample size has been designed in order to achieve a statistically representative sample at the national level. The number of farms to be sampled is allocated to each of the farm type and size combinations (strata) in proportion to the total area of crops and grass recorded in the June Agricultural Survey (using the latest available data). The exception to this is for horticultural farms in England and Wales, which are sampled at a higher rate to ensure sufficient numbers for a robust estimate to be made. See Tables AA3.1 and AA3.2 for the number of farms selected.

Where possible, three reserve farms are selected for each farm in the main sample. The reserves will be the geographically nearest holdings (using the County/Parish/Holding (CPH) number) of the same farm type and size group as the farm they are matched to. The Survey is voluntary. Each farm in the main sample is contacted; if for whatever reason a farm is not able to take part in the Survey, the first reserve for that farm is then contacted. If this farm also declines, then the second and if necessary, the third reserve is contacted. If all four farms decline, then no farm is recruited into the Survey for that particular sampling unit.

To help improve the Survey response and to reduce the year-on-year variability, a core of respondents completes the Survey each year. This approach was introduced in 2000, when approximately one third of the sample agreed to stay in the Survey for a number of years. Between 2006 and 2007 a review of the panel structure was undertaken to ensure that the proportion of respondents who had participated on the panel for five consecutive years or more constituted no more than 20% of the total sample. In 2022, 78% of the panel had responded in the previous year. The profile of the Survey panel in terms of farm size was 80%>200 ha, 76% 100-200 ha, 79% 50-100 ha and 76% >20-50 ha.

For the 2022 BSFP the achieved sample size was 1,317 holdings, a 0.5% increase on the sample size from the 2021 survey. It should be noted that the underlying sample design is constructed to measure manufactured fertiliser usage and may not wholly represent the population of farmers using organic manures, so some of these data, especially where sample sizes are small, need to be treated with appropriate caution.

The sample responses are raised to be representative of the national population by using the inverse of the achieved sampling fraction (i.e. the number of holdings in the population is divided by the achieved sample size in each strata) as the weight. The validity of the derived weights is assessed by calculating a weighted crop area for the most extensively grown crops by this method and comparing this to the latest available crop area estimates from the June Agricultural Survey.

Table AA3.1 Derivation of the stratified random sample for the 2022 Survey, England & Wales

England & Wales	Farm holdings population in 2022	Total crops and grass in 2022 %	Notional sampling fraction[1] %	Target sample size	Achieved sample size	Achieved sample fraction[2] %
Livestock and mixed						
(Robust types: specialist pigs, specialist poultry, dairy, cattle and sheep (LFA & lowland), mixed)						
Crops & grass area						
20-50 ha	16,376	6.2	0.46	76	81	0.49
51-100 ha	13,664	11.2	1.01	138	121	0.89
101-200 ha	9,797	15.4	1.94	190	184	1.88
200+ ha	4,866	20.3	5.13	250	242	4.97
Total livestock & mixed	44,703	53.0	1.46	654	628	1.40
Crops						
(Robust types: cereals, general cropping)						
Crops & grass area						
20-50 ha	8,366	3.1	0.46	39	43	0.51
51-100 ha	6,417	5.2	1.00	64	51	0.79
101-200 ha	5,741	9.3	1.99	115	103	1.79
200+ ha	5,864	27.9	5.86	344	243	4.14
Total crops	26,388	45.5	2.13	561	440	1.67
Horticulture						
(Robust type: horticulture)						
Crops & grass area						
20-50 ha	671	0.2	0.85	6	8	1.19
51-100 ha	440	0.4	1.86	8	5	1.14
101-200 ha	244	0.4	3.67	9	5	2.05
200+ ha	114	0.5	10.67	12	9	7.89
Total horticulture	1,469	1.5	2.38	35	27	1.84
Total for England & Wales	72,560	100		1,250	1,095	1.51

[1] The notional sampling fraction is found by expressing the target sample size as a percentage of the farm holdings in population in 2022.
[2] The achieved sampling fraction is found by expressing the achieved sample size as a percentage of the farm holdings in population in 2022.

Table AA3.2 Derivation of the stratified random sample for the 2022 Survey, Scotland

Scotland	Farm holdings population in 2022	Total crops and grass in 2022 %	Notional sampling fraction[1] %	Target sample size	Achieved sample size	Achieved sample fraction[2] %
Cereal/general						
(Robust types: cereals, general cropping, horticulture)						
Crops & grass area						
20-50 ha	733	1.4	0.48	4	3	0.41
51-100 ha	907	3.8	1.04	9	9	0.99
101-200 ha	944	7.7	2.04	19	20	2.12
200+ ha	619	12.4	5.02	31	26	4.20
Total cereals/general	3,203	25.3	1.98	63	58	1.81
Livestock and mixed						
(Robust types: specialist pigs, specialist poultry, dairy, cattle and sheep (LFA & lowland), mixed)						
Crops & grass area						
20-50 ha	4,285	8.0	0.47	20	18	0.42
51-100 ha	3,474	14.3	1.03	36	36	1.04
101-200 ha	2,915	23.1	1.98	58	44	1.51
200+ ha	1,524	29.3	4.80	73	66	4.33
Total livestock & mixed	12,198	74.7	1.53	187	164	1.34
Total Scotland	15,401	100		250	222	1.44

[1] The notional sampling fraction is found by expressing the target sample size as a percentage of the farm holdings in population in 2022.
[2] The achieved sampling fraction is found by expressing the achieved sample size as a percentage of the farm holdings in population in 2022.

App 3.2.2 Data collection

Data collection was done between August 2022 and February 2023. In addition to collecting information on the fertiliser use on each field, the recorder collected general information on the holding and the use of lime and organic manures and slurries.

Estimated quantities of nitrogen, phosphate and potash fertiliser consumed annually in the UK since 1966 are shown in Table AA1.7. These data are based on BSFP findings, HMRC import/export statistics and confidential trade and sales data which are contributed by Agricultural Industries Confederation (AIC) industry members who represent approximately 90% of the market. They are compiled by the AIC in conjunction with Defra. Further information is provided in Section App 3.5.

App 3.2.3 Data quality assurance

Experienced and knowledgeable field staff are used to collect the required information. They make use of information from a variety of different records kept by farmers. Farm diaries are the most common method used on farm. Further information is provided in Section C. At data entry, any omitted responses, figures outside pre-agreed limits or other discrepancies are flagged for checking and followed up, often by contacting the survey respondent. Total crop areas reported under this Survey are checked against information held in the June Agricultural Survey. Additionally, 10% of interviews undertaken will be subject to a call back by an independent reviewer to check responses to individual questions as part of data quality assurance arrangements. The aggregated figures are checked for consistency and trend analysis against historic data and are subject to independent expert peer review.

App 3.2.4 Accuracy and reliability of the information

The use of sampling in this Survey means that there will be certain limitations associated with the data. The sampling methodology used is described more fully in Section App 3.2.1 but essentially uses a random stratified sampling strategy approach, with an element of a core panel, to obtain a representative sample. A response rate of 46% was achieved in 2022. Sampling errors arise because even with careful selection, the sample cannot be exactly representative of all the population. The size of the sampling error will depend on the size of the sample (the larger the sample the smaller the error) but also on the variance of the data. An indication of the extent to which the sample result deviates from the population can be obtained from measuring the standard error associated with the data.

The standard errors are relatively small for the grouped 'all cropping and 'all crops and grass', and for the main arable crops of wheat, oilseed rape and barley. The standard errors are higher for sugar beet and potatoes where sample sizes (crop area, number of respondents) are smaller.

Figures reported for some of the smaller crops, where the sample size is relatively low, need to be treated with appropriate caution. Sample size information is provided in the tables in Appendix 2 and help to provide an indication of reliability. For crops where the sample size is relatively small it is advisable to use data from several years and to assess trends over a longer period rather than just considering year on year changes.

For potatoes in particular, part of the reason for apparent fluctuations in estimates of nutrient application rates may be because fewer numbers of fields of potatoes are covered by the Survey than would be expected from a sample survey. This is because fields of potatoes on respondent's farms may be let out and grown by a third party, so it is not possible to record information in the Survey. Furthermore, fields of potatoes grown by a respondent, but not on their own farm, are not captured in the Survey.

The statistics on the pattern of fertiliser practice reported for Great Britain largely reflect practice in England and Wales due to its greater area of total crops and grassland: about 9.2 million hectares in England and Wales and about 1.7 million hectares in Scotland. The estimates of the average field rates provide a better indication than overall application rates of actual usage levels and also of any annual variation in fertiliser practice on farms. The overall application rate considers both the average field rate and the proportion of the crop area treated, giving an overview of the crop in total. The definitions of the terms used are set out in Section App 3.2.7 of this report.

Additionally, the Survey design has been constructed to measure use of manufactured fertilisers, thus may not be wholly representative of manure use. Some of these data, especially where sample sizes are small, need to be treated with caution.

App 3.2.5 Methodology for estimates of total UK fertiliser use

Estimated quantities of nitrogen, phosphate and potash fertiliser consumed annually in the UK since 1966 are shown in Table A2.7. These data are based on BSFP findings, HMRC import data and confidential trade and sales data which are contributed by AIC industry members who represent approximately 90% of the market. They are compiled by the AIC with input and peer review by an expert group convened by the AIC and in liaison with Defra.

It would be possible to use BSFP data alone to estimate total fertiliser use by taking the average rate for each individual crop and multiplying by the June crop area estimate and summing these to give an overall usage. However, the relatively low coverage of the BSFP survey for some crops, means that the alternative approach of combining BSFP data with trade and sales data provides more robust total usage estimates than using BSFP data alone. This method also considers use on small farms (<20 ha) and use in Northern Ireland.

The AIC survey their relevant members (16 businesses) monthly to collect information on fertiliser deliveries. The BSFP fertiliser statistics published and used in the industry and agricultural sector are by fertiliser year (growing season, July to June), not by calendar year. They are available at the AIC website.

Individual returns are quality assured by trend analysis against historic data and also against the aggregate trend. Any omitted data or anomalous figures outside trend or other pre-defined limits are checked and followed up, usually by contacting the survey respondent.

The AIC also purchase monthly HMRC trade statistics on imports and exports of fertilisers; these data are actively used and scrutinised, and where appropriate challenged by the trade. Twice a year, in December and June, and on an annual basis, aggregated figures for total fertiliser deliveries for the main types of fertiliser are calculated, together with nutrient contents. These are assessed with the import and export figures to derive the base total fertiliser usage figures. The N:P:K ratio from the BSFP Survey is compared with the AIC derived figures to confirm the nutrient quantities relative to each other. Further small adjustments may be made based on other confidential information on stocks or non-fertiliser use of imported urea.

These AIC usage figures are compared to usage figures derived from BSFP and June Agricultural Survey crop area figures and the relationship between the ratios of N, P and K from both sets of data are checked and compared. Any inconsistencies or anomalies identified in the data are identified and followed up and any necessary corrections are made to ensure comparability and consistency across all data.

Each year the AIC figures are reviewed, and quality assured for credibility and consistency across sources by a group of experts contributing knowledge on production, use and trade. The final agreed aggregated total UK usage figures are subject to independent peer review and checked for consistency and trend analysis, considering known agronomic and market factors.

The total fertiliser use is then split by country. The figures for Northern Ireland are taken from their fertiliser survey and the remaining GB figures are split between England plus Wales and Scotland by applying the proportions derived from the BSFP data. The NI Survey provides data by quarter, amalgamated by calendar year.

App 3.2.6 Revisions

The figures presented in this report are finalised.

The percentage of FACTS qualifications kept up to date with CPD in 2016 in Table C1.5a was corrected. The change was from 1% to 93%.

We will provide information on any further revisions we make to the report or the datasets if any inaccuracies or errors occur.

App 3.2.7 Definitions of terms

1. For the purpose of the Survey, the term **Great Britain** (or **Britain**) is defined to cover England (including the Isle of Wight), Wales (including Anglesey) and mainland Scotland.

2. The **survey year** (which is the same as the **crop year**) ran from autumn 2021 to autumn 2022, corresponding to the 2022 crop year and 2022 harvest. The recording period for fertiliser applications made during this growing season varied for different crop and grass groups.

3. For the purposes of this Survey, a **field** is defined as any single area of land measuring more than 0.2 ha (half an acre) which had a uniform cropping and fertiliser history from autumn 2021. For data collection and processing purposes, separate fields with identical cropping and fertiliser management on the same farm are blocked together as one 'field', to represent the total combined area of those fields. Areas within the same natural boundary receiving different treatments (crops and fertilisers) were recorded separately. Agricultural land which had been set-aside under the Basic Payment Scheme was recorded, but was not included in analyses unless it was used to grow an industrial crop. Fallow land other than set-aside has always been collected by the Survey, but is not included in the calculations of this report.

4. In the report, **Crops** are defined as all crops except grass, glasshouse crops and uncropped land designated as 'set-aside' under the Basic Payment Scheme. **Grass** refers to all forms of grassland which may be grazed, conserved, or grown for seed production; rough grazing is excluded.

5. The abbreviation **N** is used for nitrogen, **P_2O_5** for phosphate, **K_2O** for potash, **SO_3** for sulphur, and **FYM (Farm Yard Manure)** for all types of organic manure e.g., slurries and solid manures. The phrase **total use** includes both straight (single nutrient) and compound (multi nutrient) products. Fertiliser products containing nitrogen and sulphur only are classified with straight nitrogen. Rates are expressed in terms of the equivalent nutrient content, taking into account the nutrient content in the product used. The nutrient content of the common fertiliser products including the dry matter content and nutrient content of various organic manures used are given in the Nutrient Management Guide (RB209) which is available at https://ahdb.org.uk/nutrient-management-guide-rb209.

6. The **average field rate** is a measure of the fertiliser nutrient application rate over the sown area of fields that received some dressing of that nutrient. Average field rate is measured in kilograms of nutrient per hectare (kg/ha).

7. **Dressing cover** is the proportion of the sown area that has received any application of the nutrient or a manure and is expressed as a percentage.

8. The **overall application rate** is a measure of the fertiliser nutrient application rate over the sown area of all fields, irrespective of whether they received dressing of that nutrient or not. Overall application rate is measured in kilograms of nutrient per hectare (kg/ha). The overall application rate is calculated by multiplying the average field rate by the percent dressing cover. The overall application rate is always less than or equal to the average field rate due to the inclusion of any area that has not received an application of the nutrient in the calculation of the overall application rate.

9. **Sown area** is the area of a field that has been planted with a crop or grass. It excludes headlands, field margins, buffer strips and other agri-environment features.

10. **Robust groups**. The UK farm type system, aggregates a wide range of defined farm types into ten 'robust' types:
    (1) Cereals
    (2) General Cropping
    (3) Horticulture
    (4) Specialist Pigs
    (5) Specialist Poultry
    (6) Dairy
    (7) Cattle and Sheep (LFA)
    (8) Cattle and Sheep (lowland)
    (9) Mixed
    (10) Other

    Individual farms are allocated a particular farm type according to the SGMs (Standard Gross Margins) applied to the farm's activity as recorded by the June Agricultural Survey. SGMs are a set of coefficients which estimate a £ value for one hectare of each crop or one head of livestock.

    Prior to 2004, the UK agricultural departments amalgamated the robust types 'Specialist Pigs' and 'Specialist Poultry' as the single robust type 'Pigs and Poultry'. 2006 was the first year that the BSFP adopted the revised classification following analysis that showed this would not lead to under-representation of either of these farm types through marginalisation. The composition of 'robust' types is presented in greater detail in Appendix 5. The sampling framework outlined in Section App 3.2.1 can be related to robust types as set out below. Revisions to the definitions of farm types can be found at the following link:
    https://www.gov.uk/structure-of-the-agricultural-industry-survey-notes-and-guidance

    Data presented in Appendix 2 tables GB4.1 to GB4.5 are derived from the robust types shown below.

Table number	Robust group in table title	Robust type name	Robust number
GB4.1	cereal farms	Cereals	1
GB4.2	general cropping	General cropping and horticulture	2, 3
GB4.3	dairy farms	Dairy	6
GB4.4	other livestock	LFA and lowland grazing livestock	7, 8
GB4.5	mixed farms	Mixed	9

    These robust type groupings are also used in tables B2.3b, B3.2 and C1.2b. Due to the small number of specialist pigs and poultry farms interviewed in the Survey, data collected from these robust types have not been presented in any of the tables listed above.

11. Regional analysis of the Survey data for England was classified in two ways in 2022. Appendix 2, Table EW4.1a is based on the **Government Office Regions** (GORs) in common with other Defra surveys. Appendix 2, Table EW4.1b is based on the former

MAFF (Ministry of Agriculture, Fisheries and Food) administrative regions, which were revised in 1996 to take account of changes to county boundaries and nomenclature resulting from the introduction of Unitary Local Authorities between April 1995 and April 1998. These revised regions, termed **BSFP regions**, have been the basis for regional analysis within the Survey historically and are detailed in Appendix 4.

App 3.2.8 Types of fertiliser

Of the 16 essential plant nutrients, the four key ones required in relatively large amounts for crops to achieve their optimal yield potential are nitrogen, phosphorus, potassium, and sulphur. Where nutrients are not available in sufficient quantity in the soil, fertiliser products are applied to supply the nutrient needs of the plant. Plant roots take up the nutrients dissolved in the water in the soil. The nutrients must be in the correct chemical form so that they are in a suitable water-soluble form for plants to be able to use them.

There are two broad types of fertiliser. Manufactured fertilisers tend to be relatively concentrated and supply essential nutrients in a mineral form which usually are immediately available for plant use. The other type is organic fertilisers which can be plant- or animal-based, such as manure, slurry, compost, or poultry litter. Organic fertilisers are in their natural form or have undergone minimal processing. They are usually less concentrated than manufactured fertilisers, and often the nutrients they contain may need further breaking down in the soil by bacteria and other soil organisms before they are in the mineral form available to plants. The chemical composition can vary greatly, and they tend to be slower acting and less predictable in their action.

Nitrogen (N) is important for building DNA and proteins in plants. It encourages growth of stems and leaves by promoting protein and chlorophyll. Provided there are adequate supplies of water and other nutrients, nitrogen usually has a large effect on crop growth, yield and quality. Whatever the source, to be usable in the soil by plants, it must be in the form of inorganic ammonium or nitrate ions. The main forms of inorganic nitrogen fertilisers are ammonium nitrate, urea, ammonium phosphates, and ammonium sulphate.

Phosphorus is essential for photosynthesis and respiration. It promotes early root formation and growth and enhances seed and fruit production. It is also important for energy production and storage. In the context of fertilisers, it is measured and defined as P_2O_5. Phosphate fertilisers include ammonium phosphate and superphosphate. The majority of phosphorus in most soil is in essentially insoluble forms, and unavailable to plants. Phosphorus is very immobile in soil, and the forms that are created and their availability, are dependent on factors such as the soil pH, temperature, and moisture. Plant roots take up nearly all phosphorus as either the primary or secondary orthophosphate anion ($H_2PO_4^-$ or HPO_4^{-2}, respectively). Generally, the maximum availability of phosphorus occurs in soils within a pH range of 6.0-7.0.

Potassium contributes to many plant functions apart from managing the water status, including shoot and root tip growth, cell extension, photosynthesis and the reduction of drought and disease stress. It is used in the process of building and transporting starches, sugars, and proteins, so is important for grain and fruit yield. Potassium chloride (commonly called muriate of potash) is the most common form of potassium fertiliser used in agriculture. Other forms include potassium sulphate, potassium magnesium sulphate and potassium nitrate. In the context of fertilisers, it is measured and defined in this Report as K_2O. It is usually taken up from the soil in greater quantities than the other main fertilisers. Crops

which are harvested green such as grass and green vegetables will remove relatively large quantities of potassium from the soil.

Sulphur is an essential plant nutrient. It is a component of most proteins and it activates certain enzyme systems. In the past sulphur demand was satisfied through atmospheric deposition. With the significant decline of sulphur from the atmosphere, there is a need for sulphur application to crops and grass and it is often applied together with nitrogen fertilisers. Crops such as oilseed rape are particularly sensitive to sulphur deficiency and consequently require a relatively high input of sulphur. It is measured and defined in this Report as SO_3.

More details are provided in the Nutrient Management Guide (RB209), published by the Agriculture and Horticulture Development Board (AHDB) at:
https://ahdb.org.uk/nutrient-management-guide-rb209.

App 3.3 GENERAL TRENDS AND ISSUES

App 3.3.1 Crop areas and weather conditions

Annual changes in relative cropping areas, as well as any changes in fertiliser practice for individual crops, may affect nutrient application rates when aggregated across the main crop groupings. Table AA4.3.1 provides a summary of June Agricultural Survey estimates for areas of individual major crops, crop groupings and total crops and grassland categories in 2021 and 2022 and illustrates percentage changes in relative cropping areas over the past five years. In Great Britain in 2022, 10.9 million hectares were used for either crops or grassland (excluding rough grazing). Of this, 41% (4.5 million hectares) was crops, with the remaining 59% (6.4 million hectares) being grassland.

The crop areas in Table AA4.3.1 refer to the only the sown area of fields, as do the results of the BSFP. Field margins, buffer strips and other agri-environment features are included in ‘Bare fallow’ in Table AA3.3.1.

Table AA3.3.1 Cropping and grassland areas ('000 ha) in Great Britain, 2021 – 2022

	June 2021 '000s ha	June 2022' 000s ha	% change since 2021	% change since 2017	2022 crop areas as % of total cropping area
			%	%	%
Crops					
Wheat	1,783	1,801	1.0	1.0	40.3
Barley – winter	397	425	7.1	2.2	9.5
– spring	732	659	-10.0	-10.9	14.8
Total cereals[1]	**3,180**	**3,125**	**-1.7**	**-0.8**	**70.0**
Oilseed rape – total	306	363	18.6	-35.4	8.1
– winter	299	357	19.4	-35.0	8.0
– spring	7	6	-14.3	-25.0	0.1
Sugar beet	95	91	-4.2	-18.0	2.0
Potatoes[2]	133	123	-7.5	-12.8	2.8
Linseed	41	28	-31.7	7.7	0.6
Peas/beans[3]	248	268	8.1	3.5	6.0
Maize/other fodder	316	304	-3.8	11.4	6.8
Vegetables	111	105	-5.4	-30.5	2.4
Total crops[4]	**4,468**	**4,463**	**-0.1**	**-2.1**	**100**
Bare fallow[5]	264	265	0.4	10.9	
Grassland					
Less than 5 years old	1,079	1,087	0.7	8.7	16.9
5 years and older	5,390	5,350	-0.7	-2.3	83.1
Total grass[6]	**6,469**	**6,437**	**-0.5**	**-0.6**	**100**
Total crops and grass[7]	**10,937**	**10,899**	**-0.3**	**-1.2**	

[1] Including minor cereals (oats, rye, triticale, mixed corn).
[2] Early + maincrop potatoes.
[3] Harvested dry for animal consumption or, for peas, human consumption.
[4] Including other crops, but not fruit, protected cropping, ornamentals or bare fallow.
[5] Historically including set-aside.
[6] Managed grassland, excluding rough grazing.
[7] Total cropping + total grassland.
Source: Annual Defra/Scottish Government/Welsh Assembly Government (WAG) June Agricultural Survey data.

Comparing the 2021 and 2022 crop years, the area sown to cereals remains largely consistent. There was a 10% reduction in the spring barley area and increases in the winter barley and winter wheat areas. The oilseed rape area increased despite the continued difficulty in managing pests in this crop. Sugar beet and potato areas decreased slightly, but bare fallow was consistent between the 2021 and 2022 crop years.

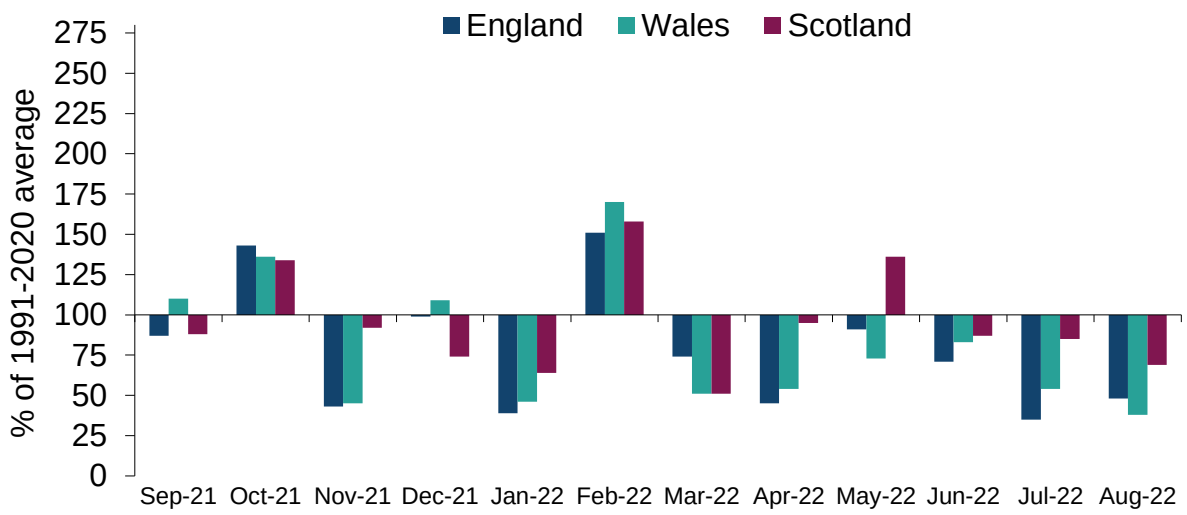
Unusual seasonal weather conditions can influence fertiliser usage in some years. For example:

- A very wet (or very dry) autumn might delay the establishment of winter sown crops or alter the ratio of winter to spring sown crops, with their different fertiliser requirements.
- Prolonged wet weather can increase leached losses of some nutrients, particularly nitrogen and sulphur. Weather conditions also affect other aspects of soil chemistry and nutrient availability.
- Adverse weather conditions can disrupt planned activities, such as fertiliser spreading.
- Growing conditions determine plant growth and can therefore affect nutrient requirements.

Autumn 2021 was warmer than average and in most areas drier than average. September rainfall totals were below average in many areas, October was wetter with a return to drier conditions in November. The winter was milder than average with a mixture of settled spells and wetter weather. January was particularly dry, but February was very wet. As the winter progressed conditions were increasingly unsettled with the influence of six named storms across the winter as a whole.

The spring of 2022 was warmer than average, and the weather settled for much of the time. Rainfall totals for March and April were below normal in many places. May was very wet in parts of Scotland, but it was still drier than average in England and Wales. The summer as a whole was warmer than average, with hot spells in each month and a record temperature of 40.3 degrees C recorded in Lincolnshire in July. Settled weather meant that there was little rain in both July and August.[12]

Figure AA3.3.1 Monthly rainfall as a percentage of the long-term average[13]



[12] https://www.metoffice.gov.uk/research/climate/maps-and-data/summaries/index
[13] https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-temperature-rainfall-and-sunshine-anomaly-graphs

APPENDIX 4

App 4.1 ENGLISH COUNTIES WITHIN BSFP AND DEFRA REGIONS

List of English counties indicating the BSFP and Government Office Regions (GOR) within which they fall.

	County	BSFP REGION	GOR
1	Bedfordshire	Anglia	Eastern
2	Berkshire	South-East	South East
3	Buckinghamshire	South-East	South East
4	Cleveland	North-East	North East
5	Cambridgeshire	Anglia	Eastern
6	Cheshire	North Mercia	North West
7	Cornwall	South-West	South West
8	Cumbria	Northern	North West
9	Derbyshire	East Midlands	East Midlands
10	Devon	South-West	South West
11	Dorset	Wessex	South West
12	Durham	North-East	North East
13	Essex	Anglia	Eastern
14	Gloucestershire	South Mercia	South West
15	Hampshire	South-East	South East
16	Isle of Wight	South-East	South East
17	Hereford & Worcester	South Mercia	West Midlands
18	Hertfordshire	Anglia	Eastern
20	Kent	South-East	South East
21	Lancashire	Northern	North West
22	Leicestershire	East Midlands	East Midlands
24	Lincolnshire	Eastern	East Midlands
25	Merseyside	North Mercia	North West
26/27	Greater London(E)	South-East	London
28	Norfolk	Anglia	Eastern
29	Northamptonshire	East Midlands	East Midlands
30	Tyne and Wear	Northern	North East
31	Northumberland	Northern	North East
32	Nottinghamshire	East Midlands	East Midlands
33	Oxfordshire	South-East	South East
34	N Somerset and S Gloucestershire	Wessex	South West
35	Shropshire	North Mercia	West Midlands
36	Somerset	Wessex	South West
37	Staffordshire	North Mercia	West Midlands
38	Suffolk	Anglia	Eastern
39	Isles of Scilly		
40	Surrey	South-East	South East
41	East Sussex	South-East	South East
42	West Sussex	South-East	South East
43	Warwickshire	South Mercia	West Midlands
44	Greater Manchester	North Mercia	North West
45	Wiltshire	Wessex	South West
46	West Midlands	South Mercia	West Midlands
47	South Yorkshire	North-East	Yorkshire and the Humber
48	North Yorkshire (Northallerton)	North-East	Yorkshire and the Humber
49	West Yorkshire	North-East	Yorkshire and the Humber
50	North Yorkshire (Beverley)	North-East	Yorkshire and the Humber
51	East Riding of Yorks. and North Lincs	North-East	Yorkshire and the Humber

APPENDIX 5

App 5.1 UK FARM CLASSIFICATION SYSTEM

UK farm classification system (Revised 2004): composition of robust, main and other types by constituent EC type.

	Robust types		Main types	Constituent EC types
1	Cereals	1	Cereals	[1312]
2	General Cropping	2	General Cropping	[1412], 142, 143, [1443], 602, 603, 604, [6052]
3	Horticulture	3	Specialist fruit	3211
		4	Specialist glass	2012, 2022, 2032
		5	Specialist Hardy Nursery Stock	[3401]
		6	Other horticulture	2011, 2013, 2021, 2023, 2031,2033, 2034, 311, 312, 313, 314, [3402], 601, 6061, 6062
4	Specialist Pigs	7	Specialist pigs	5011, 5012, 5013
5	Specialist Poultry	8	Specialist poultry	5021, 5022, 5023
6	Dairy	9	Dairy (LFA)	411, 412 (LFA)
		10	Dairy (lowland)	411, 412 (non-LFA)
7	LFA Grazing Livestock	11	Specialist sheep (SDA)	441 (SDA)
		12	Specialist beef (SDA)	421,422 (SDA)
		13	Mixed Grazing Livestock (SDA)	431, 432, 442, 443, [4443], [4444] (SDA)
		14	Various Grazing Livestock (DA)	421, 422, 431, 432, 441, 442, 443, [4443], [4444] (DA)
8	Lowland Grazing Livestock [2]	15	Various Grazing Livestock (lowland)	421, 422, 431, 432, 441, 442, 443, [4443], [4444] (non-LFA)
9	Mixed	16	Cropping and dairy	811, 812
		17	Cropping, cattle and sheep	[8132], [8142]
		18	Cropping, pigs and poultry	821
		19	Cropping and mixed livestock	822, 8232
		20	Mixed livestock	5031, 5032, 711, [7122], 721, 722, 723
10	Other [3]	21	Specialist set-aside	[1311]
		22	Specialist grass and forage	[1411], [1444], [4442], [6051], [7121], [8131], [8141]
		23	Specialist horses	[4441]
		24	Non-classifiable holdings: fallow	[91]
		25	Non-classifiable holdings: other	[92]

[1] 2004 EC Typology described in Commission Decision 85/377/EEC as amended by Commission Decisions 94/376/EC, 96/393/EC and 99/725/EC with minor modifications to adapt it to United Kingdom conditions. These minor modifications are indicated by the EC farm type number being shown in square brackets. Definitions for these modified EC farm types are available from the Defra contact shown at the front of this publication. EC types 132, 133, 1441, 1442, 3212, 3213, 322, 323, 330, and 8231 have not been allocated in the classification, since these types of production do not occur in the United Kingdom at a significant level.

[2] Definitions of LFA (Less Favoured Area), lowland, SDA (Severely Disadvantaged Area), and DA (Disadvantaged Area) farms are available on request from the Defra contact shown at the front of this publication.

[3] Not included in the British Survey of Fertiliser Practice.