THE BRITISH SURVEY OF

Fertiliser Practice

FERTILISER USE ON FARM CROPS
FOR CROP YEAR 2023

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Since the last review of these statistics in 2013, 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)

 Further statistical analyses of the survey results are also available. For details and other enquiries please contact:

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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 2023 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 2023, 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 AA3.2.6 for details of revisions made in this edition.

July 2024

ACKNOWLEDGEMENTS

The sponsors gratefully acknowledge the co-operation of all farmers taking part in the 2023 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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CONTENTS

APPENDICES

LIST OF TABLES AND FIGURES

Appendices tables

Figures

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 2023 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 2022 vs 2023.

	All crops			All grass			All crops and grass		
	2022	2023	+/- 22/23	2022	2023	+/- 22/23	2022	2023	+/- 22/23
Total Nitrogen - N									
Overall application rate (kg/ha)	118	125	7	34	38	4	71	77	6
Mean overall application rate, 2019-2023 (kg/ha)	130	126	-4	50	46	-4	86	82	-4
Crop area receiving dressing(%)	87%	88%	1pp	42%	44%	2pp	62%	63%	1pp
Average field rate (kg/ha)	136	142	6	80	88	8	115	121	6
Total Phosphate - P_2O_5									
Overall application rate (kg/ha)	17	17	0	4	4	0	10	10	0
Mean overall application rate, 2019-2023 (kg/ha)	23	21	-2	7	6	-1	14	13	-1
Crop area receiving dressing (%)	35%	35%	0pp	22%	22%	0pp	28%	28%	0pp
Average field rate (kg/ha)	49	48	-1	18	20	2	36	36	0
Total Potash - K_2O									
Overall application rate (kg/ha)	24	23	-1	6	6	0	14	14	0
Mean overall application rate, 2019-2023(kg/ha)	24	23	-1	10	9	-1	19	17	-2
Crop area receiving dressing (%)	37%	39%	2pp	22%	24%	2pp	29%	31%	2pp
Average field rate (kg/ha)	63	58	-5	25	26	1	47	45	-2
Total Sulphur - SO_3									
Overall application rate (kg/ha)	27	28	1	3	5	2	14	15	1
Mean overall application rate, 2019-2023(kg/ha)	32	30	-2	4	5	1	16	16	0
Crop area receiving dressing (%)	54%	55%	1pp	11%	12%	1pp	30%	32%	2pp
Average field rate (kg/ha)	50	51	1	32	37	5	46	48	2

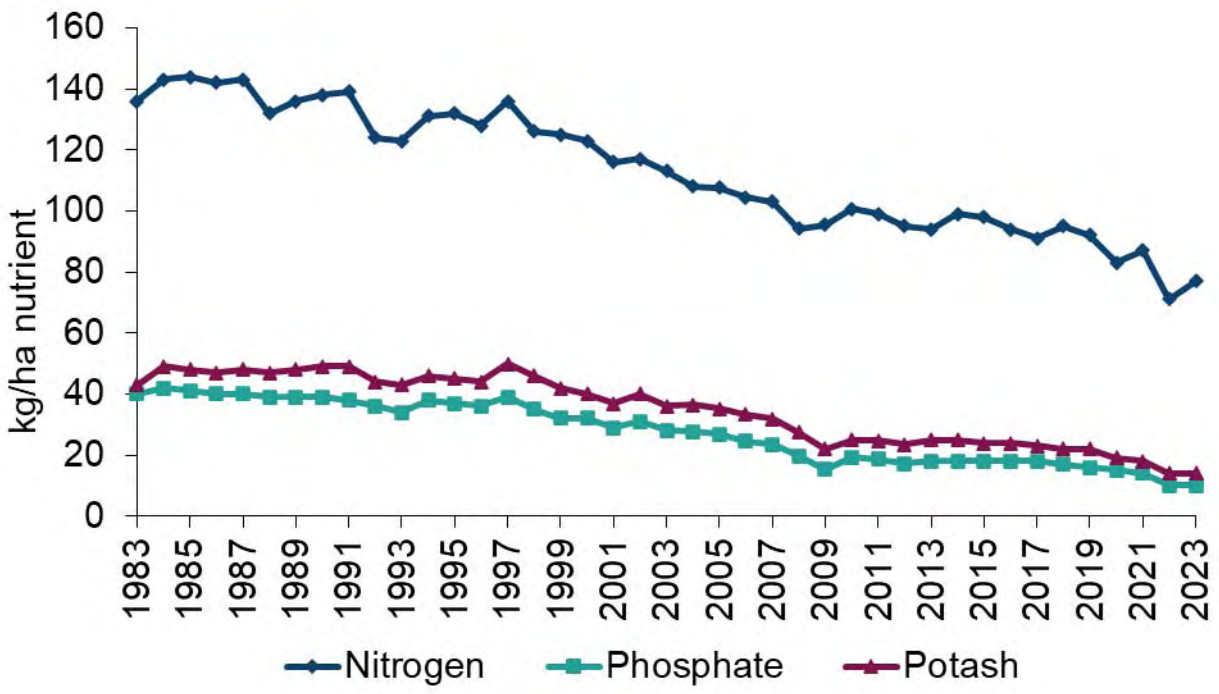
Note: pp denotes ‘percentage point’.

Cropping patterns can influence fertiliser rates and dressing covers observed. In 2023 there was minimal (-0.2%) change in the total area of crops planted. The area planted to wheat decreased by almost 5% and the area of winter barley increased by 5% and winter oilseed rape by 8%. Spring cropping areas were up on the previous season, most notably spring barley (+1.5%) and maize (+7%). Despite this increase in the winter oilseed rape area, the 2023 area represents a 35% reduction since 2018. The weather, which can impact cropping patterns, is discussed in Appendix 3.

Key findings: Executive Summary

Average field rates for nitrogen increased on both the cropping and grass categories, recovering somewhat from the low levels observed in 2022 which were thought to be attributable largely to price and the invasion of Ukraine by Russia. Average field rates for phosphate, potash and sulphur did not recover and changes to dressing cover percentages were small for all nutrients on both crops and grass. The only exception to this was a 5 kg/ha increase to the average field rate of sulphur applications made to grass.

Figure ES1 Overall application rate (kg/ha) of major nutrients on all crops and grass, Great Britain 1983 – 2023.



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 6 kg/ha increase in total nitrogen use on all crops and grassland in 2023 resulted from a 7 kg/ha increase in the overall application rate on crops to 125 kg/ha and a 4 kg/ha increase on grass to 38 kg/ha.
- Mineral fertiliser nitrogen levels applied to grassland have been consistently lower than on crops. Overall application rates of nitrogen on crops remained relatively constant for several decades before lower levels observed in the last few years. Overall application rates on grass declined significantly from 2000-09 then remained steady until much lower levels

observed in the last couple of years. 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. In addition, the impact of higher fertiliser price following the 2022 invasion of Ukraine are still being witnessed in reduced application rates. The 2023 overall nitrogen rate on grassland is the second lowest ever recorded by this survey, 2022 being the lowest. Please refer to table AA1.1

- In 2023 the overall application rates of total nitrogen increased on winter wheat, winter barley, spring barley, oilseed rape and sugar beet. Average field rates all increased for these crops, with the 176 kg/ha recorded for winter wheat being the second lowest ever observed. Please refer to tables A1.3a and A1.3b.

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 (57% dressing cover for grass <5 years old, 32% for grass of 5 years or more) than on crops (27% cover) and grazed grassland also receives manure as it is grazed. Please refer to Appendix 2, table GB1.1.
- 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. This rate was unchanged in 2023. Please refer to table AA1.3.
- 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 2023 by 1 kg/ha to 23 kg/ha. Please refer to table AA1.4.
- 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 2023 the overall potash rate on grass was unchanged at 6 kg/ha. Please refer to table AA1.4.
- 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 2023, the overall phosphate rate on crops was unchanged in Scotland at 38 kg/ha and potash increased 2 kg/ha to 51 kg/ha. Please refer to tables AA1.3 and AA1.4.

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 2023, sulphur dressing covers in cereals were in the 50%-68% range, similar to 2022. Please refer to table A1.8.
- The 72% dressing cover for winter oilseed rape was 8 percentage points lower than observed in 2022 and is below the five-year average of 79%. Please refer to table A1.8.
- In 2023, 32% of all crops and grass received a dressing of sulphur; this figure was 55% for crops. On crops the overall application rate for sulphur was 28 kg/ha, 2 kg/ha below the five-year average between 2019-2023 of 30 kg/ha. Applications on grass increased in 2023 at 5 kg/ha and dressing cover increased by 1 percentage point to 12% of grass receiving a sulphur dressing in 2023. Please refer to tables AA1.5 and AA1.6.

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 2023, around 64% 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 2023, 58% of cattle manure and 89% of cattle slurry applications were made to grassland, reflecting the practice of utilising the manure on the farm on which it was produced. Please refer to table B1.1a and B2.3a.
- 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 2019-23. 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 2023 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, please 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 9.1 million hectares in England & Wales and about 1.9 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.

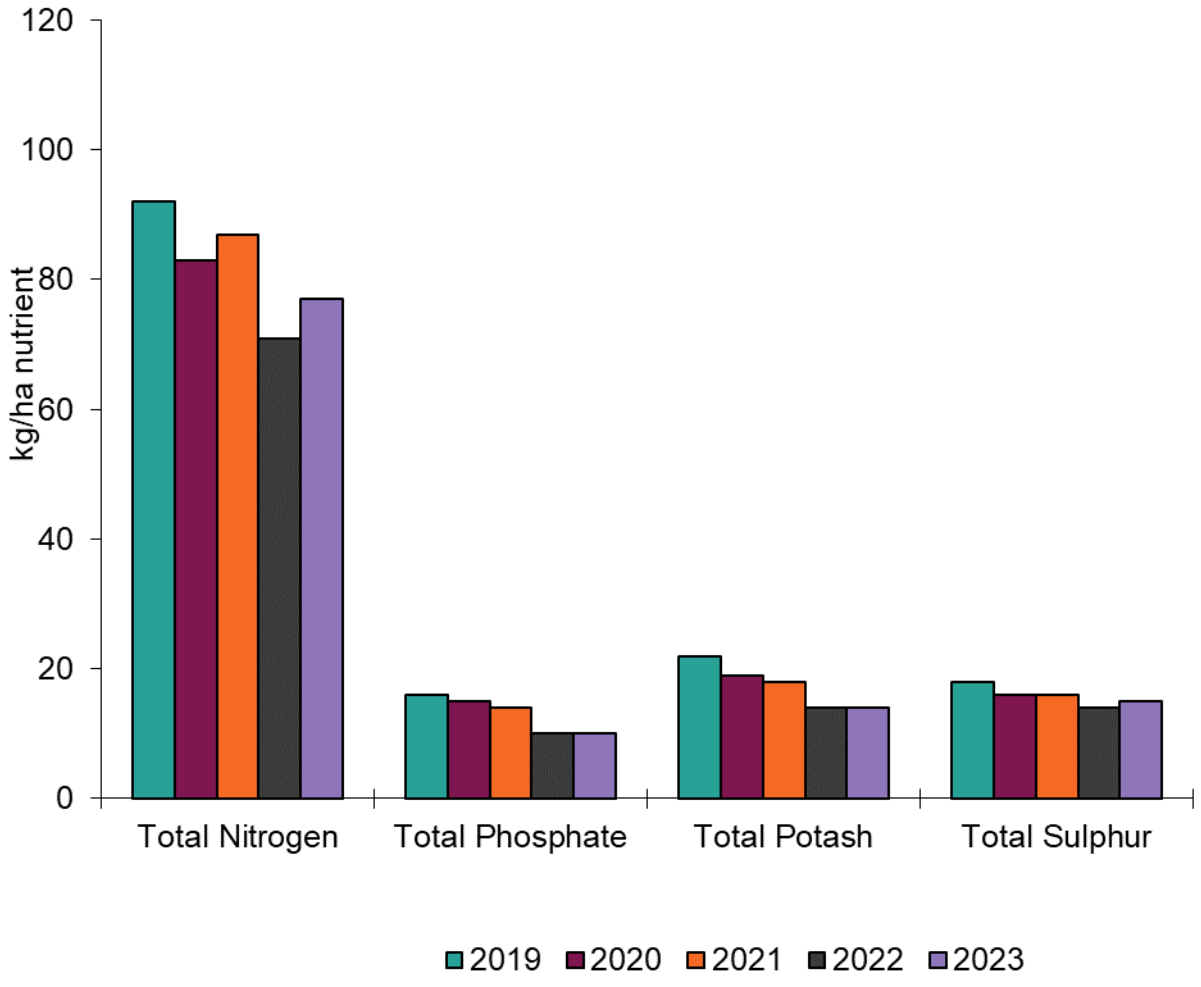
[2] Chalmers A. G. (2001) A Review of fertiliser, lime and organic manure use on farm crops in Great Britain from 1983 to 1997. *Soil Use and Management* **17**, 254-262.

A1 2023 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 2023, overall application rate of nitrogen for all crops and grass is 77 kg/ha, an increase of 6 kg/ha from 2022. Overall application rates for phosphate, potash and sulphur in 2023 were 10 kg/ha, 14 kg/ha and 15 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 2019 – 2023



A1.1.1 Nitrogen

Overview of nitrogen use on all crops and grassland

Table A1.1 Overall application rate of nitrogen (kg/ha), Great Britain 2019 – 2023

Total nitrogen

	Crops	Grass	All crops and grass
2019	137	54	92
2020	121	53	83
2021	130	51	87
2022	118	34	71
2023	125	38	77

Straight nitrogen

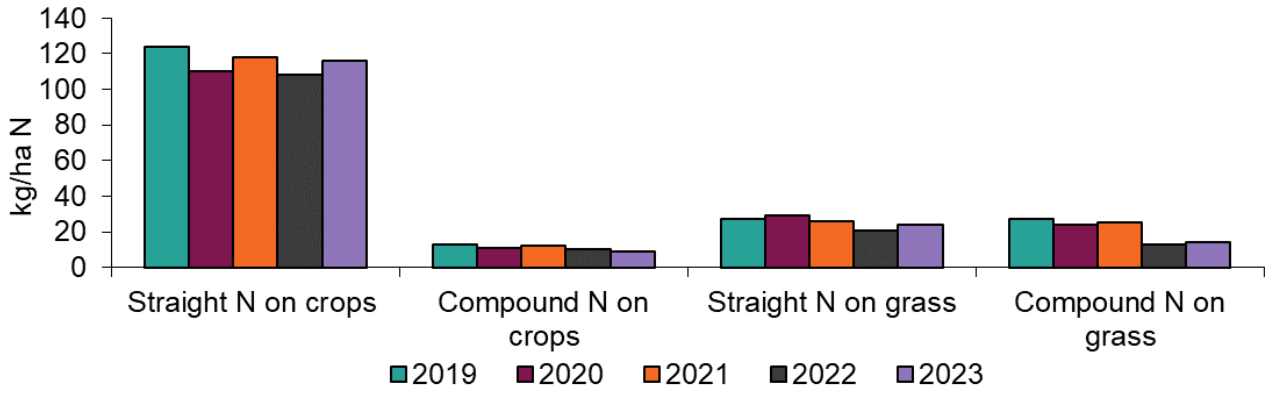
	Crops	Grass	All crops and grass
2019	124	27	71
2020	110	29	65
2021	118	26	68
2022	108	21	59
2023	116	24	65

Compound nitrogen

	Crops	Grass	All crops and grass
2019	13	27	20
2020	11	24	18
2021	12	25	19
2022	10	13	12
2023	9	14	12

Overall, the 6 kg/ha increase in the rate of nitrogen for all crops and grass in 2023 (Figure A1.1) was caused by a 7 kg/ha increase on crops and a 4 kg/ha increase on grass. When compared with 2022, the rate of straight N increased by 8 kg/ha for crops and by 4 kg/ha for grass (Figure A1.2). The rate of compound N decreased by 1 kg/ha on crops and increased by 1 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 (2019-2023) were 82 kg/ha, 66 kg/ha and 16 kg/ha, respectively.

Figure A1.2 Overall straight and compound nitrogen use (kg/ha), Great Britain 2019 – 2023



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 82% in 2023. This was an increase of 2 percentage points from 2022. The average field rate of straight N on crops increased by 8 kg/ha to 142 kg/ha. This resulted in an 8 kg/ha increase in the overall application rate of straight N on crops which was 116 kg/ha in 2023.

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 57% of the cropping area was sown to winter cereals and winter oilseed rape in 2023. 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 82% of dressing cover in 2023.

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 2023, the overall application rate for nitrogen on grass increased by 4 kg to 38 kg/ha (Table A1.1). The proportion of grass receiving a dressing of straight N increased by 1 percentage point to 24% in 2023 and the average field rate increased by 10 kg/ha to 101 kg/ha in 2023. The grass area dressed with compound N increased by 1 percentage points to 23% and the average field rate increased by 4 kg/ha to 62 kg/ha. Overall, this resulted in a 1 kg/ha increase to 14 kg/ha in the overall application rate of compound N on grass in 2023.

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 2022, the overall application rate on crops was unchanged at 17 kg/ha. This resulted from an unchanged dressing cover at 35% and a decreased average field rate of 48 kg/ha of phosphate on crops in 2023. For grassland too, the overall application rate was unchanged at 4 kg/ha and the dressing cover remained at 22%. The average field rate increased 2 kg/ha to 20 kg/ha. The five year means for overall phosphate application rates for crops and grass were 21 kg/ha and 6 kg/ha, respectively.

Table A1.2a Overall application rate of phosphate and potash (kg/ha), Great Britain 2019 – 2023

Total phosphate

	Crops	Grass	All crops and grass
2019	26	8	16
2020	24	8	15
2021	22	7	14
2022	17	4	10
2023	17	4	10

Total potash

	Crops	Grass	All crops and grass
2019	34	11	22
2020	29	11	19
2021	28	11	18
2022	24	6	14
2023	23	6	14

Overview of Potash use: Section A1.1.2

On crops, the decline in the overall potash rate was caused by a 5 kg/ha reduction in the average field rate to 58 kg/ha alongside a 2 percentage point increase in dressing cover to 39% in 2023. On grassland, dressing cover increased by 2 percentage points to 24% and overall application rate was unchanged at 6 kg/ha in 2023. The average field rate increased by 1 kg/ha to 26 kg/ha. The five year means for overall potash rates for crops and grass were 28 kg/ha and 9 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 2023, the overall application rate of sulphur on crops increased by 1 kg/ha to 28 kg/ha. The proportion of the cropping area receiving a sulphur dressing increased by 1 percentage point to 55% and the average field rate increased by 1 kg/ha to 51 kg/ha. The overall application rate of sulphur on grass increased by 2 kg/ha to 5 kg/ha in 2023. 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 application rate of sulphur (kg/ha SO_3), Great Britain 2019 – 2023

	Crops	Grass	All crops and grass
2019	35	5	18
2020	31	5	16
2021	30	5	16
2022	27	3	14
2023	28	5	15

A1.2 FERTILISER USE ON MAJOR CROPS IN 2023

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 2023 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 2019–2023

Total nitrogen	Winter wheat	Spring barley	Winter barley	Maincrop potatoes[1]	Oilseed rape[3]	Sugar beet
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
2023	174	95	137	143	164	67
Straight nitrogen	**Winter wheat**	**Spring barley**	**Winter barley**	**Maincrop potatoes[1]**	**Oilseed rape[3]**	**Sugar beet**
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
2023	170	74	131	69	159	61
Compound nitrogen	**Winter wheat**	**Spring barley**	**Winter barley**	**Maincrop potatoes[1]**	**Oilseed rape[3]**	**Sugar beet**
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
2023	4	21	6	73	4	6
Total phosphate	**Winter wheat**	**Spring barley**	**Winter barley**	**Maincrop potatoes[1]**	**Oilseed rape[3]**	**Sugar beet**
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
2023	15	24	17	92	17	21
Total potash	**Winter wheat**	**Spring barley**	**Winter barley**	**Maincrop potatoes[1]**	**Oilseed rape[3]**	**Sugar beet**
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
2023	20	32	27	158	20	39
Total sulphur	**Winter wheat**	**Spring barley**	**Winter barley**	**Maincrop potatoes[1,2]**	**Oilseed rape[3]**	**Sugar beet**
2019	42	24	38	[z]	63	31
2020	42	24	36	[z]	64	33
2021	38	22	36	[z]	59	23
2022	36	16	33	[z]	53	17
2023	36	20	33	[z]	51	22

[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 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 2019 – 2023

Total nitrogen	Winter wheat	Spring barley	Winter barley	Maincrop potatoes[1]	Oilseed rape[3]	Sugar beet
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
2023	176	100	140	149	164	77
Straight nitrogen	**Winter wheat**	**Spring barley**	**Winter barley**	**Maincrop potatoes[1]**	**Oilseed rape[3]**	**Sugar beet**
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
2023	175	92	136	135	162	75
Compound nitrogen	**Winter wheat**	**Spring barley**	**Winter barley**	**Maincrop potatoes[1]**	**Oilseed rape[3]**	**Sugar beet**
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
2023	50	50	51	90	45	63
Total phosphate	**Winter wheat**	**Spring barley**	**Winter barley**	**Maincrop potatoes[1]**	**Oilseed rape[3]**	**Sugar beet**
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
2023	46	45	46	102	55	46
Total potash	**Winter wheat**	**Spring barley**	**Winter barley**	**Maincrop potatoes[1]**	**Oilseed rape[3]**	**Sugar beet**
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
2023	53	56	61	185	59	63
Total sulphur	**Winter wheat**	**Spring barley**	**Winter barley**	**Maincrop potatoes[1,2]**	**Oilseed rape[3]**	**Sugar beet**
2019	59	41	55	[z]	77	49
2020	57	43	47	[z]	77	47
2021	52	40	51	[z]	75	32
2022	53	36	49	[z]	67	30
2023	54	40	49	[z]	71	37

[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 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 2019 – 2023

Total nitrogen	Winter wheat	Spring barley	Winter barley	Maincrop potatoes[1]	Oilseed rape[2]	Sugar beet
	% area	% area	% area	% area	% area	% area
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
2023	99	96	98	96	100	87
Straight nitrogen	Winter wheat	Spring barley	Winter barley	Maincrop potatoes[1]	Oilseed rape[2]	Sugar beet
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
2023	97	80	97	52	98	81
Compound nitrogen	Winter wheat	Spring barley	Winter barley	Maincrop potatoes[1]	Oilseed rape[2]	Sugar beet
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
2023	7	42	11	82	10	9
Total phosphate	Winter wheat	Spring barley	Winter barley	Maincrop potatoes[1]	Oilseed rape[2]	Sugar beet
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
2023	31	52	36	90	31	45
Total potash	Winter wheat	Spring barley	Winter barley	Maincrop potatoes[1]	Oilseed rape[2]	Sugar beet
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
2023	37	58	44	85	34	61
Total sulphur	Winter wheat	Spring barley	Winter barley	Maincrop potatoes[1]	Oilseed rape[2]	Sugar beet
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
2023	67	50	68	42	72	59

[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 2023, overall application rates of total nitrogen (Table A1.3a) increased on all the major crops except potatoes, where the data are more variable. The overall application rate increased to the greatest extent on winter barley to 137 kg/ha. Average field rates (Table A1.3b) also all increased except on potatoes. For all the major arable crops dressing cover increased slightly in 2023. For maincrop potatoes and sugar beet dressing covers were lower, but these tend to be more variable (Table A1.4) due to the fewer fields of these crops in the survey.

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 rates (kg/ha) of total nitrogen on cereals by market use, Great Britain 2019 – 2023

	Winter wheat (kg N/ha)		Spring barley (kg N/ha)		Winter barley (kg N/ha)	
	milling	non-milling	malting	non-malting	malting	non-malting
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
2023	187	170	100	99	125	144

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 increased by 3 kg/ha to 187 kg/ha, and the rate on non-milling wheat increased by 7 kg/ha to 170 kg/ha compared with 2022. The non-milling crop continues to dominate the wheat crop area (Table A1.6) with 64% of the crop in 2023 (5-year mean: 63%).

Table A1.6 Percentage distribution (% crop area) of cereal crop areas by market use, Great Britain 2019 – 2023, as estimated from the Survey

	Winter wheat		Spring barley		Winter barley	
	milling	non-milling	malting	non-malting	malting	non-malting
	% area	% area	% area	% area	% area	% area
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
2023	36	64	58	42	19	81

Nitrogen use on Spring barley: Section A1.2.1

Overall use of total nitrogen on spring barley increased by 3 kg/ha to 95 kg/ha, which was just under the five-year mean (2019-2023) of 96 kg/ha. The rate of straight N increased by 4 kg/ha to 74 kg/ha whilst the overall application rate of compound N decreased by 1 kg/ha compared with 2022 to 21 kg/ha. The average field rate for straight N increased by 8 kg/ha and the rate for compound N decreased by 2 kg/ha compared with 2022. The percentage of the spring barley area receiving a dressing of straight N decreased by 3 percentage points to 80%, and dressing cover with compound N was unchanged at 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 increased by 2 kg/ha to 100 kg/ha, while that for spring non-malting barley increased by 4 kg/ha to 99 kg/ha. In the case of the spring malting crop the five-year mean is 100 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 2019-23 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 2023, overall total N rate increased by 8 kg/ha to 137 kg/ha. The rate of straight N, which was used on 97% of the winter barley crop area, increased to 131 kg/ha in 2023, just above the five year (2019-23) mean of 130 kg/ha. The compound N overall application rate decreased by 1 kg/ha to 6 kg/ha, 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 increased by 9 kg/ha compared to 2022 to 125 kg/ha, the same as the five-year mean. For winter non-malting crops, the average field rate increased to 144 kg/ha (Table A1.5), just below the five-year average of 145 kg/ha.

The higher application rates of nitrogen (five-year mean of +20 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,

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

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 19% in 2023, 5 percentage points higher than 2022, with the five-year mean calculated as 18%. (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 2023, the overall application rate of nitrogen decreased by 19 kg to 143 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 2023, the nitrogen average field on winter oilseed rape increased to 165 kg/ha, with a five-year mean of 169 kg/ha (Table A1.7). The crop area dressed with straight N increased by 2 percentage points (to 98%), and decreased by 3 percentage points for compound N (to 10%) (Table A1.4).

Table A1.7 Average field rates of nitrogen (kg/ha) on winter oilseed rape, Great Britain 2019 – 2023

	Winter oilseed rape
2019	182
2020	172
2021	168
2022	156
2023	165

Nitrogen use on Sugar beet: Section A1.2.1

The overall application rate of nitrogen on sugar beet increased by 8 kg/ha in 2023 to 67 kg/ha, the same as the five-year mean (67 kg/ha). Use of straight N, by far the most widely used form of nitrogen in this crop (five-year mean: 84% of the dressed area), increased to 61 kg/ha (Table A1.3a, A1.4). The average field rate of straight N increased to 75 kg/ha, 4 kg/ha above the five-year mean of 71 kg/ha.

A1.2.2 Phosphate and Potash use on major crops

Phosphate: Section A1.2.2

In 2023, the overall application rate of phosphate was either unchanged or increased for all the major crops. (Table A1.3a). Average field rate changes were small and variable on cereal crops, whereas oilseed rape and sugar beet recorded 6 and 10 kg/ha increases respectively. (Table A1.3b). In 2023, the overall phosphate rate on crops was unchanged at 17 kg/ha (Table A1.2a), below the 2019-23 five-year average (21 kg/ha).

Potash: Section A1.2.2

Overall, potash use on crops decreased in 2023 by 1 kg/ha to 23 kg/ha, below the 2019-2023 five-year average of 28 kg/ha (Table A1.2a). This decline was due to a reduction in average field rate from 63 kg/ha to 58 kg/ha. Dressing covers increased for all the major crops except potatoes, which reduced to 85%. (Table A1.4). Average field rates of potash mainly decreased, except for winter barley which increased by 2 kg/ha and oilseed rape which increased by 8 kg/ha over 2023. (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%. Between 2010 to 2020, sulphur dressing covers on winter cereals and sugar beet grew significantly, peaking in 2020. Since then they have been slightly drawing back. In 2023, sulphur dressing cover increased slightly overall, but with a decrease of 8 percentage points observed on oilseed rape. (Table A1.8). The average field rates for crops were generally higher than in 2022, with winter barley being the exception.

Table A1.8 Dressing cover (% area) and average field rate (kg/ha SO_3) of sulphur on cereals and oilseed rape, Great Britain 2019 – 2023

Dressing cover (%)

	Winter wheat	Winter barley	Spring barley	Oilseed rape	All crops
	% area	% area	% area	% area	% area
2019	72	70	59	82	62
2020	73	76	54	83	59
2021	73	71	55	79	60
2022	67	67	46	80	54
2023	67	68	50	72	55

Average field rate (kg/ha SO_3)

	Winter wheat	Winter barley	Spring barley	Oilseed rape	All crops
2019	59	55	41	77	56
2020	57	47	43	77	53
2021	52	51	40	75	51
2022	53	49	36	67	50
2023	54	49	40	71	51

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, those in England & Wales exceed those recorded in Scotland. Spring barley is an example of this trend, with this possibly due to the manure which is more commonly applied to this crop in Scotland being assumed to satisfy the sulphur demand. In 2023, 45% of Scottish spring barley received manure compared with 26% 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, 2019 – 2023

		Winter wheat	Winter barley	Spring barley	Oilseed rape	All crops	All crops and grass
		% area	% area	% area	% area	% area	% area
England &	2019	72	70	60	82	63	36
Wales	2020	73	75	53	83	58	34
	2021	73	71	56	79	60	36
	2022	67	68	47	79	55	30
	2023	66	69	50	72	56	32
Scotland[1]	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
	2023	74	59	50	78	53	29

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

A1.3 FERTILISER USE ON GRASSLAND 2019 - 2023

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 2019 – 2023

	Straight nitrogen	Compound nitrogen	Total nitrogen	Total phosphate	Total potash	Total sulphur
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
2023	24	14	38	4	6	5

In 2023, dressing cover for total nitrogen on grass increased by 2 percentage points to 44% (Table A1.11). The long-term trend had been for declining dressing cover for total nitrogen but 2023 saw a small recovery from the low level reported in 2022. In 2023, like 2022 grass dressing covers of straight and compound N were at a similar, albeit low level. The average field rate for compound N was 62 kg/ha while for straight N it was 101 kg/ha. In 2023, 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 field rate (kg/ha) of fertiliser on grassland, Great Britain 2019 – 2023

Dressing cover (%)

	Straight nitrogen %	Compound nitrogen %	Total nitrogen %	Total phosphate %	Total potash %	Total sulphur %
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
2023	24	23	44	22	24	12

Average field rate (kg/ha)

	Straight nitrogen	Compound nitrogen	Total nitrogen	Total phosphate	Total potash	Total sulphur
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
2023	101	62	88	20	26	37

The proportion of the grass area receiving a straight nitrogen dressing increased slightly in 2023 to 24% and the compound N dressing cover was at 23% in 2023 (Table A1.11). The dressing covers of phosphate and potash on grass were 22% and 24% respectively. The five-year means for 2019-2023 were 31% and 32%, respectively. The sulphur dressing cover increased by 1 percentage point from 2022 to 12% in 2023.

In 2023, the average field rates for phosphate on grass increased by 2 kg/ha to 20 kg/ha and for potash by 1 kg/ha to 26 kg/ha. The sulphur average field rate was increased by 5 kg/ha to 37 kg/ha, 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 2023 are presented in Appendix 2. The Survey estimates of annual distributions of the total grassland area between grazing and cutting management regimes since 2019 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 2019 – 2023

	Grazed[1] % area	Silage[2] % area	Hay[2] % area
2019	93	31	10
2020	94	30	9
2021	95	30	10
2022	94	28	12
2023	94	28	11

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 2023 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 2019 – 2023

Total nitrogen (kg N/ha)

	Overall application rate				Average field rate		
	Grazed[1]	Silage[2]	Hay[2]		Grazed[1]	Silage[2]	Hay[2]
2019	50	100	44	2019	89	118	76
2020	50	102	39	2020	91	124	75
2021	48	96	43	2021	83	114	73
2022	31	73	29	2022	76	99	67
2023	34	81	35	2023	82	108	76

Straight nitrogen (kg N/ha)

	Overall application rate				Average field rate		
	Grazed[1]	Silage[2]	Hay[2]		Grazed[1]	Silage[2]	Hay[2]
2019	24	51	19	2019	97	117	82
2020	26	60	20	2020	102	128	94
2021	24	52	18	2021	91	109	81
2022	19	46	16	2022	86	108	74
2023	21	53	23	2023	93	112	84

Compound nitrogen (kg N/ha)

	Overall application rate				Average field rate		
	Grazed[1]	Silage[2]	Hay[2]		Grazed[1]	Silage[2]	Hay[2]
2019	26	49	25	2019	69	88	65
2020	24	42	19	2020	65	82	58
2021	24	43	24	2021	64	86	60
2022	12	27	13	2022	57	70	52
2023	14	28	12	2023	61	76	55

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

In 2023, the overall total nitrogen rates increased by 3 kg/ha to 34 kg/ha for grazed grass and by 8 kg/ha for silage grass. The overall nitrogen rate on grass for hay increased by 6 kg/ha to 35 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 increased for all categories of grass. The five-year means for overall straight nitrogen rate are 23, 52 and 19 kg/ha for grazed grass, silage, and hay, respectively. Compound nitrogen average field rates all increased in 2023. The five-year means for the overall compound nitrogen rates are 20, 38 and 19 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 2023 overall nitrogen rate of 38 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 2019 – 2023

Total phosphate (kg P_2O_5/ha)

	Overall application rate				Average field rate		
	Grazed[1]	Silage[2]	Hay[2]		Grazed[1]	Silage[2]	Hay[2]
2019	8	14	9	2019	21	26	23
2020	8	13	8	2020	21	28	22
2021	7	12	8	2021	20	26	19
2022	4	8	5	2022	18	21	21
2023	4	8	5	2023	19	22	21

Total potash (kg K_2O/ha)

	Overall application rate				Average field rate		
	Grazed[1]	Silage[2]	Hay[2]		Grazed[1]	Silage[2]	Hay[2]
2019	11	22	10	2019	28	39	25
2020	11	23	9	2020	29	43	26
2021	10	22	12	2021	26	40	27
2022	5	12	8	2022	24	30	29
2023	6	13	8	2023	26	33	32

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

In 2023, the overall phosphate rates were unchanged for grazed, silage and hay grass. The corresponding five-year means for grazed grass, silage and hay were 6, 11 and 7 kg/ha, respectively. The average field rate increased by 1kg/ha for both grazed and silage grass, and was unchanged on grass cut for hay in 2023.

Overall potash rates increased very slightly in 2023, but not on grass cut for hay, which was unchanged from 2022. The average field rate of potash increased by 2 kg/ha on grazed and by 3 kg/ha on silage and hay grass.

A1.3.3 Sulphur use on Grassland

In 2023, 12% of the total grassland area received a sulphur dressing (five-year mean 14% for 2019-23 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 1-2 percentage point increases for grazed grass and silage grass and a 5 percentage point increase in hay grass in 2023.

The significant proportion of heavier textured soil types which occur in the main grassland 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 2019 – 2023

Dressing cover (%)

	Grazed[1]	Silage[2]	Hay[2]	All grass	All crops	All crops and grass
	%	%	%	%	%	%
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
2023	12	23	16	12	55	32

Average field rate per year (kg/ha SO_3)

	Grazed[1]	Silage[2]	Hay[2]	All grass	All crops	All crops and grass
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
2023	34	42	34	37	51	48

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. The average field rate for grazed grass fell back during the 2010's, averaging between 29-35 kg/ha, although 2018 was a notable exception at 37 kg/ha. Silage grass average field rates observed a similar trend, averaging between 23-42 kg/ha over the period. In 2023, compared to 2022 values, average field rates increased for grazed and silage grass and a 5 kg/ha decrease was observed for hay. The five-year means are 32, 38 and 34 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

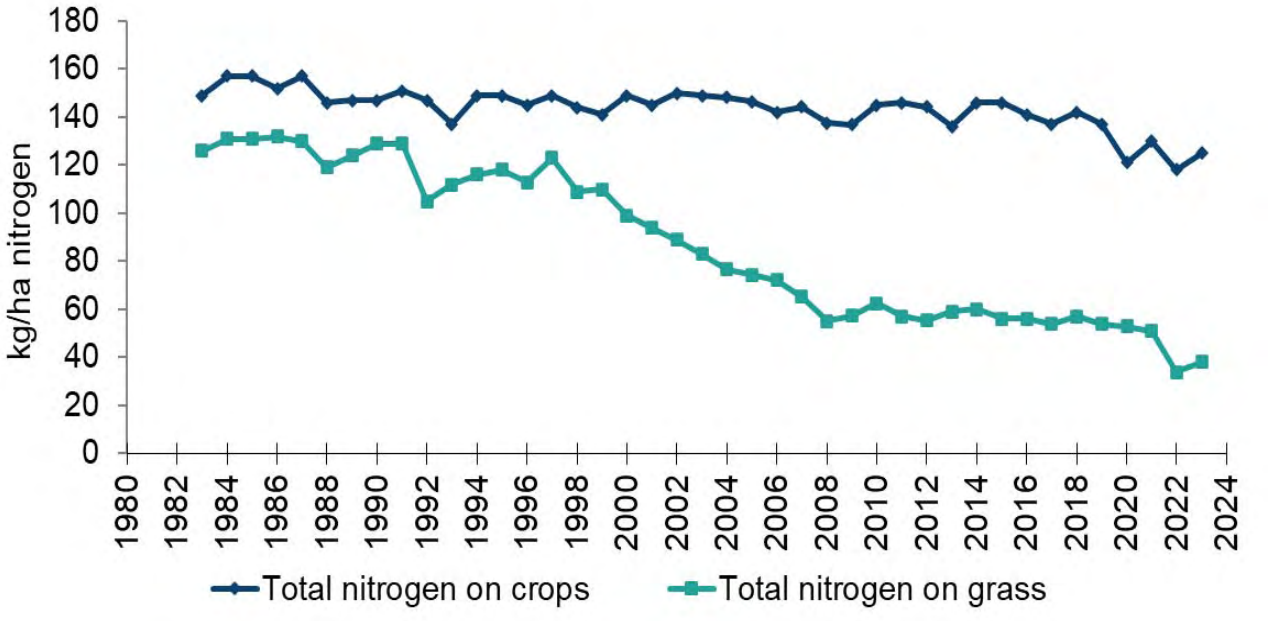
A2.1 LONGER TERM TRENDS IN NITROGEN USE, FROM 1983

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 five years have fallen outside this range, with the overall application rate of nitrogen on crops for Great Britain being 125 kg/ha in 2023. This rate has recovered from the notable low observed in 2022, which was significantly driven by strong fertiliser prices.

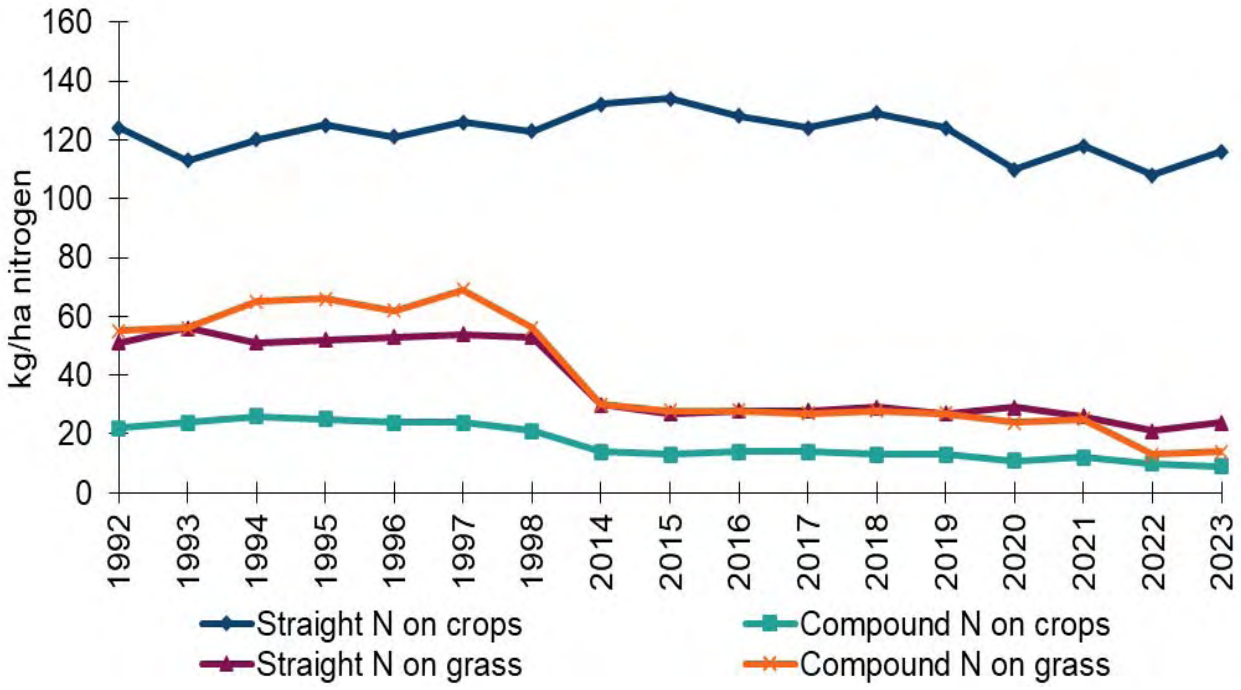
Figure A2.1 Overall application rates (kg/ha) of total nitrogen on crops and grassland, Great Britain 1983 – 2023.



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.

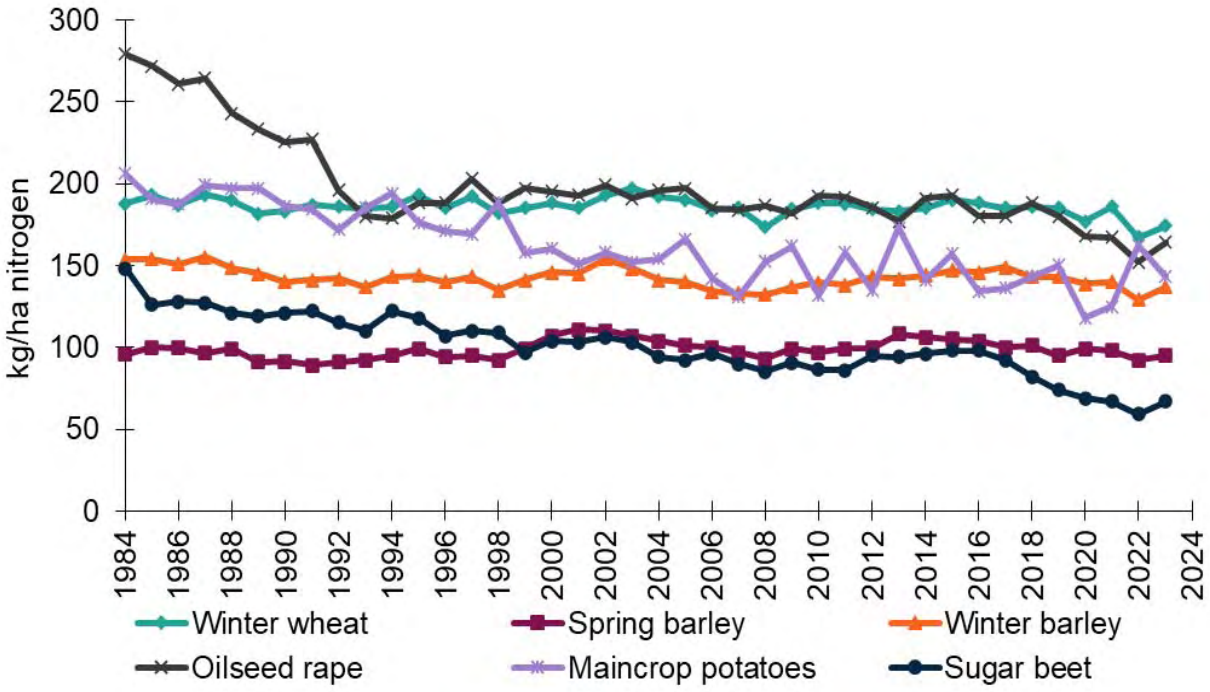
Figure A2.2 Overall application rates (kg/ha) of straight and compound nitrogen on crops and grassland, Great Britain 1992 – 2023



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 – 2023



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

The BSFP can 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 since 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 – 2023

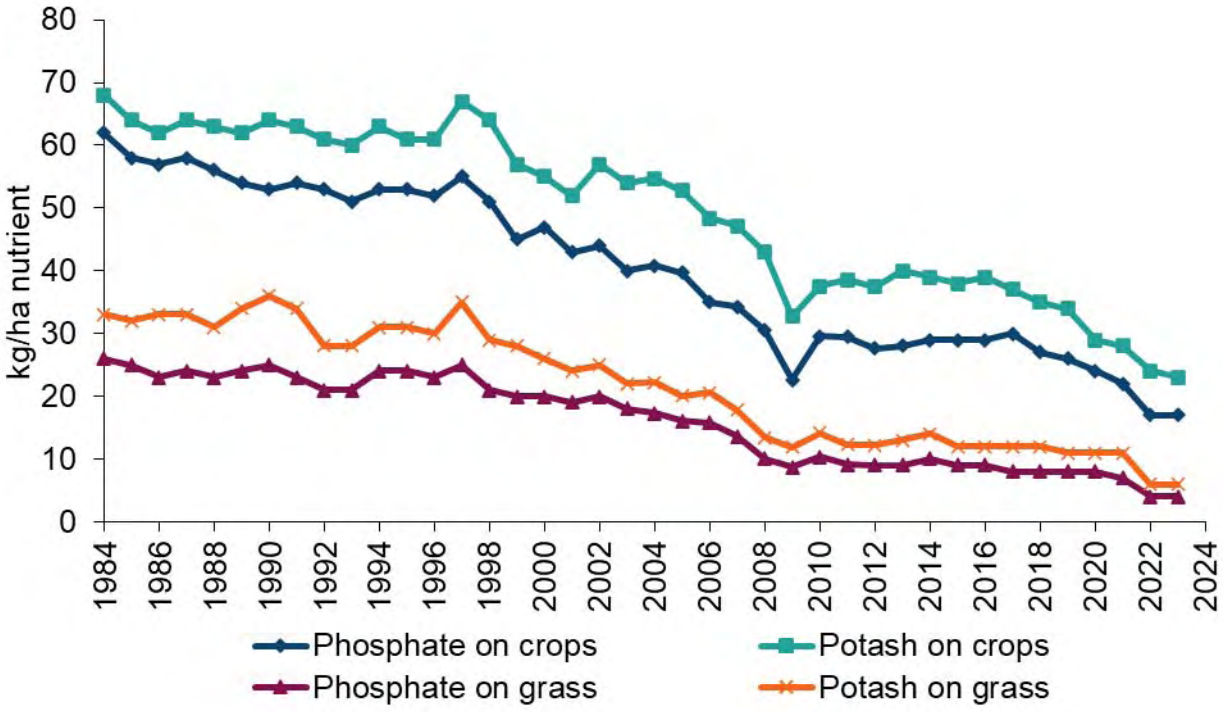
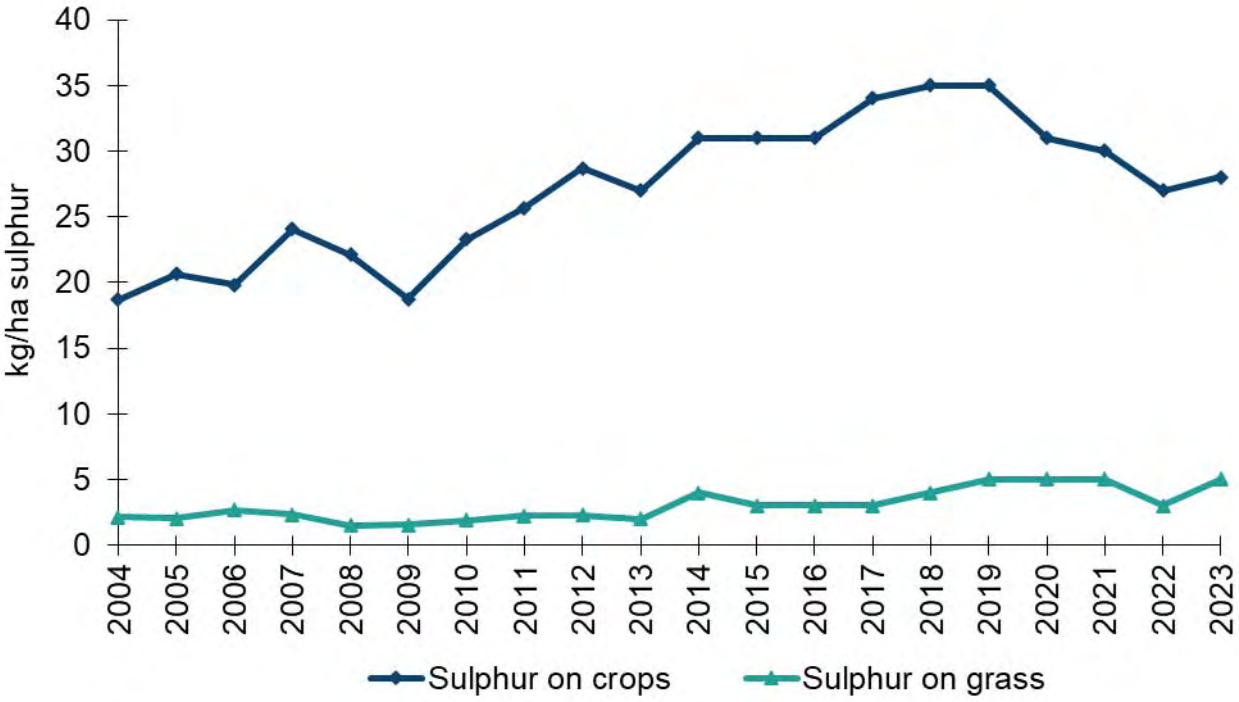


Figure A2.4b Overall application rates (kg/ha) of sulphur (SO_3) on crops and grassland, Great Britain 2004 – 2023



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, and rates of 17 kg/ha 23 kg/ha respectively, were recorded in 2023. 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, but in 2023 like 2022 are below that level.

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 23 kg/ha in 2023.

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 6-14 kg/ha.

Overall sulphur application on crops has increased steadily since 2004 and increased by 1 kg/ha to 28 kg/ha in 2023. 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 2023 this was 5 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 (36% cover) than on crops (27% 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 GB countries since 2004. However, the decline in England and Wales has been much higher (32 percentage point reduction) in comparison to Scotland, where the reduction was 17 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 GB 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, 2022 and 2023 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 19%) than in England and Wales (mean 13%).

The data pertaining to dressing coverage of phosphate, potash and sulphur, on both crops and grassland, can be found in Appendix table AA1.3.

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 reflects 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 – 2023

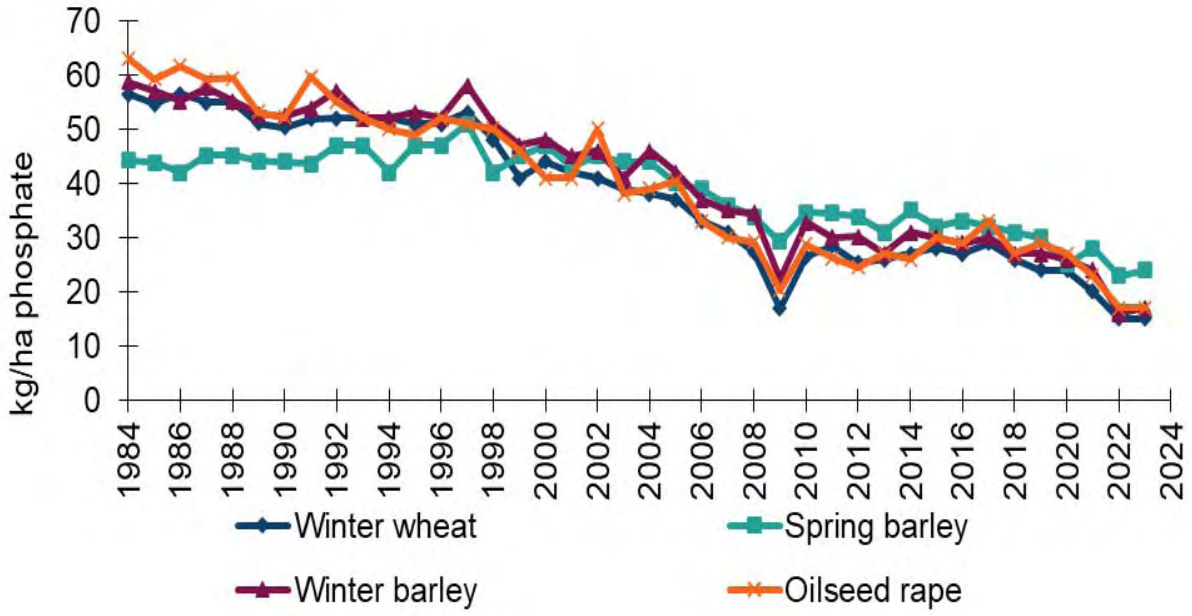


Figure A2.5b Overall application rates (kg/ha) of potash, on major arable crops, Great Britain 1984 – 2023

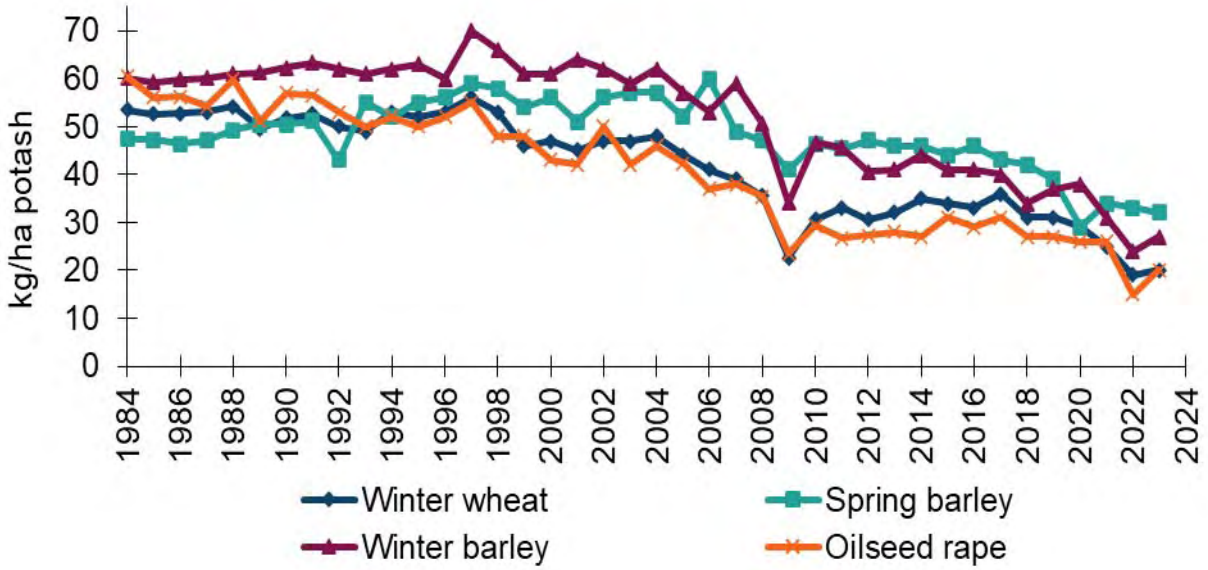


Figure A2.5c Overall application rates (kg/ha) of sulphur (SO_3) on major arable crops, Great Britain 1993 – 2023

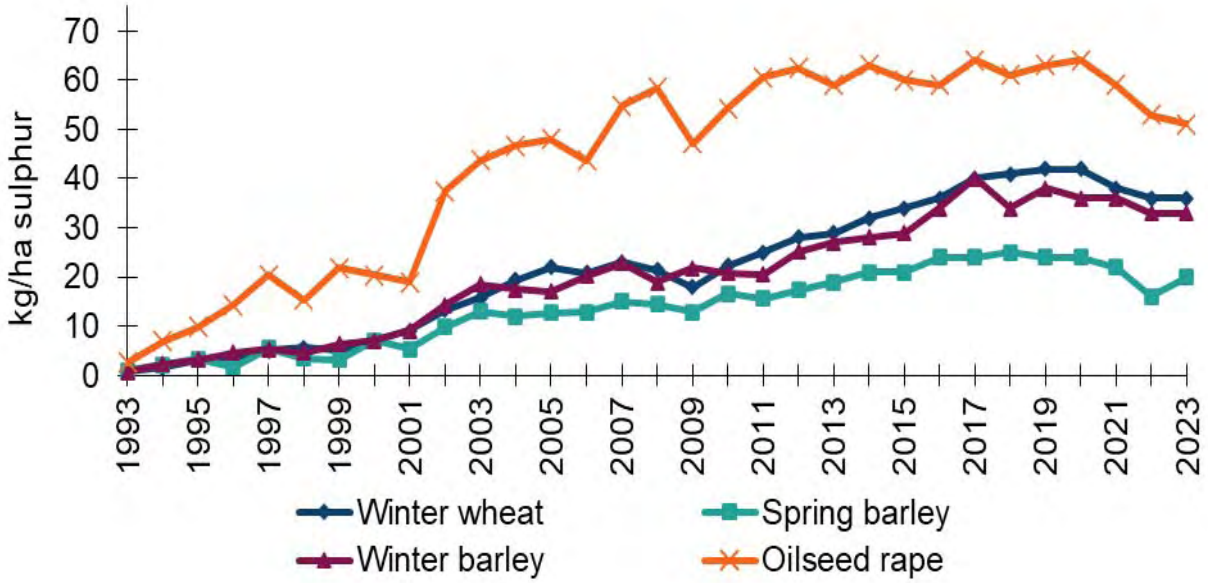
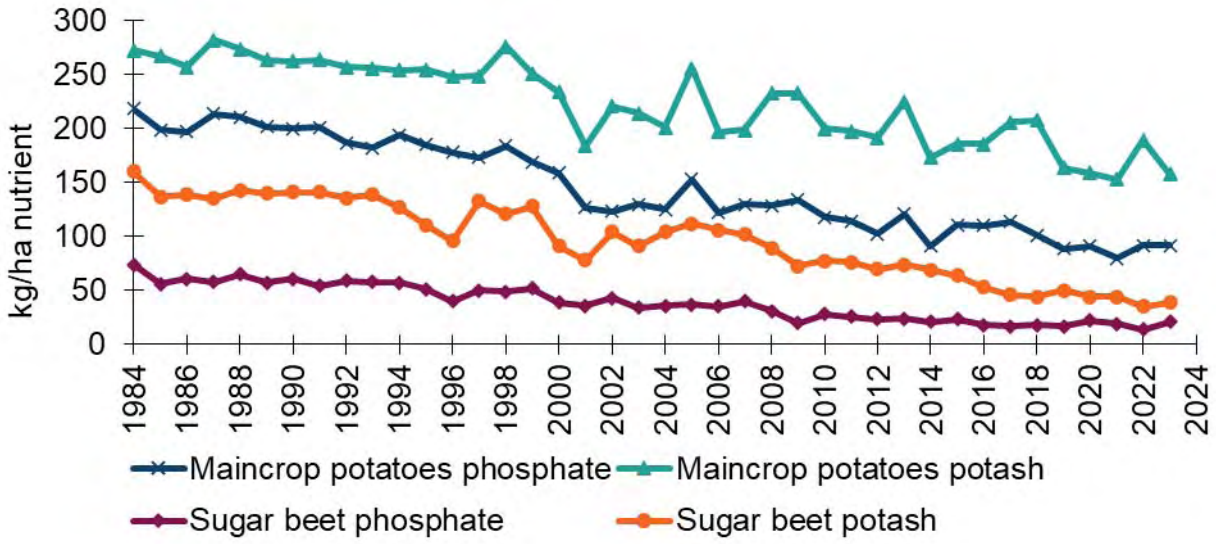


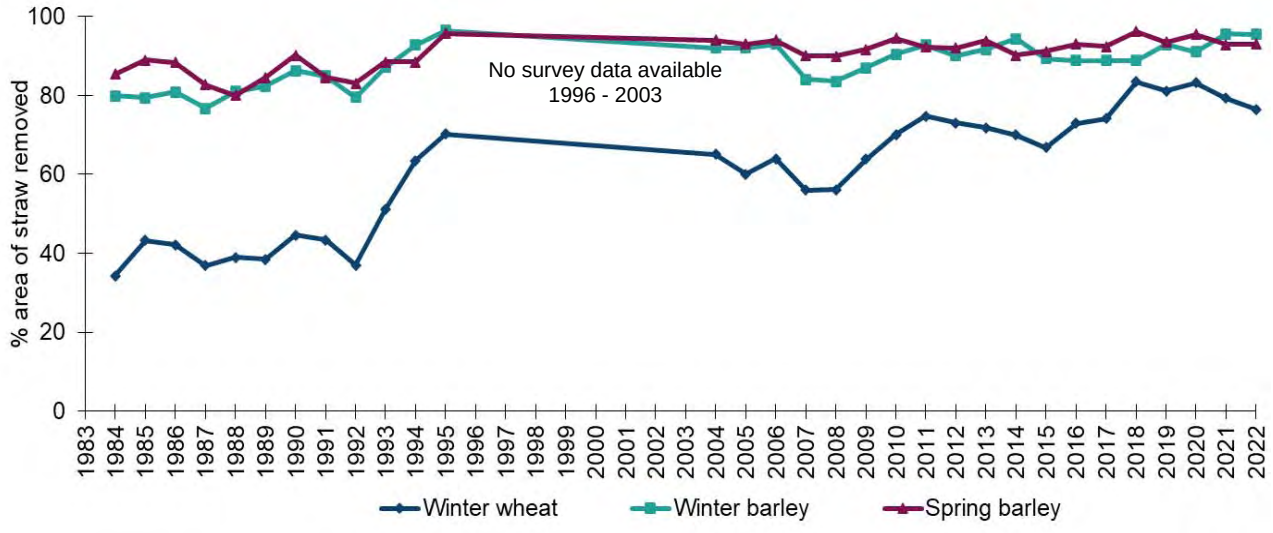
Figure A2.5d Overall application rates (kg/ha) of phosphate and potash on sugar beet and potatoes, Great Britain 1984 – 2023



A2.3 LONGER TERM TRENDS IN STRAW REMOVAL, FROM 1984

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 – 2022



Data collected as part of the 2023 Survey related to the fate of the straw from the 2022 harvest so is reported against 2022. In 2022, 77% 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.

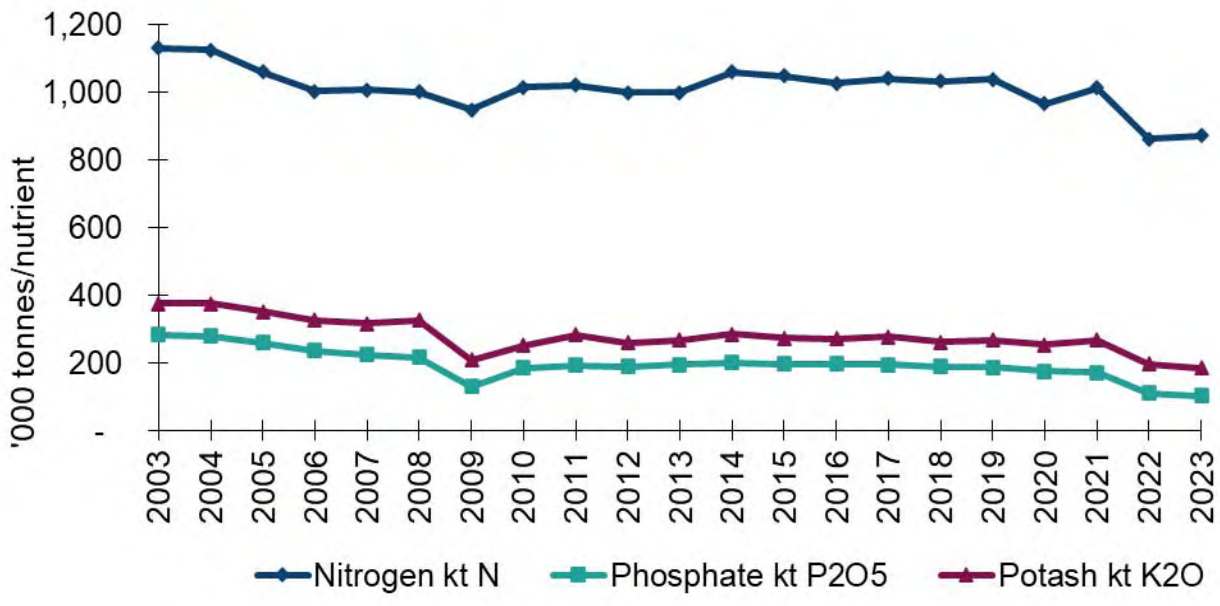
Data for the period 1984-95 were sourced from MAFF/Defra straw disposal surveys, those for the period 2004-21 from this Survey. No data are available for the period 1996-2003. The straw burning ban was introduced in 1993. This resulted in a significant increase in the percentage of straw removed, up to 63% and 93% for wheat and barley respectively, for the 1994 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 nitrogen use 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 2023 increased slightly on the previous year, to 871 thousand tonnes. 2022 was the lowest level seen 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 – 2023



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 2023, to an estimated 102 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. This reduced further in 2023 to 184 thousand tonnes. Global price increases and reduction in supply, largely driven by the war in Ukraine, were key drivers of this decrease.

SECTION B
USE OF ORGANIC MANURES – GREAT BRITAIN, 2023

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 have been collected in cubic metres (m^3) and data on solid manures have 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 applying each type of manure in Great Britain, 2023

	Count of farms in survey	% of farms in population	Total manure quantity (Mt; Mm^3)*	% of total quantity of all manure
No manure	408	36%	[z]	[z]
Any form of manure	894	64%	97	100%
Farm manure types				
Cattle FYM	651	47%	34	35%
Cattle slurry	249	17%	46	47%
Pig FYM	35	1%	1	1%
Pig slurry	10	0%	1	1%
Layer manure	27	1%	0	0%
Broiler/ turkey litter	33	2%	1	1%
Digestate, farm**	7	0%	0	0%
Other farm manure	55	5%	5	5%
Non-farm manure type				
Bio-solids	39	1%	3	3%
Digestate, imported***	46	2%	4	4%
Compost	18	1%	1	1%
Other non-farm	4	[c]	[c]	[c]

Notes: some farmers may use more than one type of manure.
* Mt (million tonnes) relates to solid manures; Mm^3 (million cubic metres) to liquid manures.
** digestate, farm, refers to digestate produced on the farm.
*** digestate, imported, refers to digestate imported onto the farm.

Of the 1,302 farms in the 2023 Survey, 894 used organic manures on at least one field on the farm, representing 64% of the Survey population. The details are shown in Table B1.1a.

Table B1.1b Percentage (%) of farms applying each type of manure in Great Britain, 2019 – 2023

Manure type being applied	2019	2020	2021	2022	2023
	% farms	% farms	% farms	% farms	% farms
No manure	33.0	35.0	35.1	33.1	36.4
Cattle FYM	50.4	49.0	49.0	50.9	47.1
Cattle slurry	17.3	16.4	17.6	16.5	16.7
Pig FYM	1.8	2.0	1.3	1.4	1.4
Pig slurry	0.4	0.4	0.8	0.5	0.3
Layer manure	1.3	0.8	0.8	2.0	1.2
Broiler/ Turkey litter	2.1	2.4	2.6	2.8	2.0
Other farm manure	6.3	5.7	5.6	4.9	4.8
Digestate	[x]	[x]	[x]	[x]	2.4
Biosolids	2.2	2.1	1.5	2.5	1.5
Compost	[x]	[x]	[x]	[x]	0.7
Other non-farm manure	4.5	4.8	4.4	7.2	0.2

Notes: Prior to 2023, ‘Digestate’, ‘Biosolids’ and ‘Compost’ were in ‘Other non-farm manure’.
Prior to 2023, ‘Other FYM’ was reported separately from ‘Other farm manure’.

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 was reasonably consistent over the last 5 years with use in 2023 being 47% and 17% of farms, respectively. Digestate was presented as a category for the first time in 2023 and was used by just over 2% of farms.

Table B1.1c Dressing cover of organic manure in Great Britain, 2014 – 2023

	Winter wheat	Spring barley	Winter oilseed rape	Sugar beet	Maize	All crops	Grass under 5 years	Grass 5 years & over	All grass	All crops and grass
	%	%	%	%	%	%	%	%	%	%
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
2023	22	33	28	23	87	27	57	32	36	32

Dressing cover of organic manure on crops averaged 26% in the five-year period 2019-2023. The proportion of both categories of grass receiving a dressing of manure was higher than crops in 2023 at 32% on grass 5 years and over and 57% on grass under 5 years old. This was consistently higher than ‘all crops over the five years displayed in table B1.1c.

Not all the manure generated by a farm is necessarily retained for use on 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 resulting in collection of these data being discontinued (see 2013 BSFP report, Tables D1.2, D1.3a&b)[4].

The percentage of farms that used 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 represent the number of farms rather than volume or area. Broadcast application remains the most widespread method, but an increase of band spread application, notably for pig slurry, has also been observed. This has increased 5 percentage points from the 2022 Survey and 42 percentage points from the 2021 Survey.

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

Table B1.2a Application methods used by farms applying slurry to cropped fields, Great Britain 2023. Percentages represent number of farms.

Application method* on cropped fields	On farms applying cattle slurry	On farms applying pig slurry	On farms applying any slurry
Broadcast	69%	33%	67%
Band spread	26%	58%	28%
Shallow injected	3%	18%	5%
Deep injected	0%	0%	0%
Other surface application**	1%	0%	1%
Non-broadcast	31%	76%	33%
Number of farms in sample*	73	10	82

Notes: Grass fields have been excluded from this table.
* Farms may use more than one application method and may apply more than one slurry type.
** Other surface application methods include by rain gun and by rotating boom.

Table B1.2b Application methods used by farms applying slurry to grassland, Great Britain 2023. Percentages represent number of farms.

Application method* on grass-land	On farms applying cattle slurry	On farms applying pig slurry	On farms applying any slurry
Broadcast	72%	[c]	72%
Band spread	28%	[c]	28%
Shallow injected	4%	[c]	4%
Deep injected	1%	[c]	1%
Other surface application**	0%	[c]	0%
Non-broadcast	32%	[c]	32%
Number of farms in sample*	231	2	233

Notes: Cropped (non-grass) fields have been excluded from this table
* Farms may use more than one application method and may apply more than one slurry type.
** Other surface application methods include by rain gun and by rotating boom.

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 by injection or 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 95% of the volume applied, with 82% of it incorporated within a week of spreading on cropping fields.

Table B1.3 Percentage (%) of organic manure incorporated (area and quantity) on cropping fields by incorporation time and manure/slurry type, Great Britain 2023

Manure type	Incorporation time after spreading					Total applied
	Not incorporated	Within 6 hours	Between 6 and 24 hours	Between 1 and 7 days	More than 1 week	area and quantity
By area	% of area	% of area	% of area	% of area	% of area	'000 ha
FYM	7%	8%	40%	29%	16%	739
Cattle slurry	31%	25%	12%	18%	14%	162
Pig slurry	37%	37%	13%	8%	5%	29
Poultry FYM	7%	22%	38%	19%	13%	111
Biosolids	9%	72%	11%	3%	5%	115
Digestate	35%	11%	26%	7%	21%	161
Other	30%	25%	16%	14%	15%	72
Total	15%	18%	31%	21%	15%	1,389
By quantity	% of quantity	% of quantity	% of quantity	% of quantity	% of quantity	Mt; Mm^3
FYM	5%	10%	45%	27%	13%	15.7
Cattle slurry	30%	23%	14%	17%	16%	4.9
Pig slurry	47%	29%	13%	8%	3%	0.9
Poultry FYM	6%	21%	34%	20%	18%	0.7
Biosolids	8%	76%	9%	4%	3%	2.5
Digestate	31%	14%	23%	8%	24%	3.9
Other	35%	18%	11%	1%	34%	3.4
Total	17%	19%	30%	18%	16%	32.1

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 27% in 2023. Where contractors were used, they applied between 81% and 97% of the manure on average.

Table B1.4a Use of contractors (%) on farms applying manure to spread manures or slurry in current season, by main manure type, Great Britain 2023

Manure type	% of farms using a contractor for each manure type	% of each manure applied by contractor	% of each manure applied by contractor, where contractor is used
	%	%	%
FYM	36	29	81
Cattle slurry	20	17	92
Other	51	30	97
Total	27	25	86

Use of contractors to spread manures was fairly consistent over the five-year period 2019-2023. An average of 29% of farms (Table B1.4b) used a contractor and they spread an average of 88% of the manure spread on those farms.

Table B1.4b Use of contractors (%) on farms applying manure to spread manures or slurry, Great Britain 2010 – 2023

	% of farms using a contractor	% of available manure applied by contractor	Average % of manure applied by contractor, where contractor is used
2010	29	27	84
2011	28	29	86
2012	32	32	84
2013	30	30	88
2014	36	39	87
2015	34	33	89
2016	34	32	83
2017	33	30	92
2018	30	30	90
2019	30	29	90
2020	27	27	90
2021	29	28	88
2022	33	28	87
2023	27	25	86

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,

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

- 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 application rate for manufactured fertiliser is likely, by definition, to include some fields which have received no manufactured fertiliser. For the corresponding 'with manure' data, it may indicate that the manure applied was judged to supply all the nutrients required,
- for grassland, the average field rate for manufactured fertiliser has been used to avoid distorting the data by inclusion of 'unmanaged' grass, which receives no manufactured fertiliser. However, this has the effect of excluding any managed fields on which no manufactured fertiliser was applied because the manure was considered sufficient, thus obscuring any 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 despite an application of manure, this may indicate a desire to build up low soil reserves of these nutrients.

The proportion of the sown area, of all crops plus 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.

Table B2.1a Percentage (%) of sown area (all crops and grass) that received each organic manure type, Great Britain 2019 – 2023

Manure type	2019 %	2020 %	2021 %	2022 %	2023 %
Cattle FYM	16.8	15.4	16.4	17.1	15.9
Cattle slurry	8.6	8.3	9.3	8.6	9.0
Pig FYM	0.9	0.7	0.7	0.7	0.6
Pig slurry	0.1	0.2	0.5	0.4	0.2
Layer manure	0.7	0.6	0.4	0.7	0.4
Broiler/turkey litter	1.0	0.9	1.0	1.3	0.8
Other farm manure	1.4	1.2	1.3	0.9	1.0
All digestate	[x]	[x]	[x]	[x]	1.5
Bio-solids	1.2	1.6	1.3	1.6	1.1
Other non-farm	1.3	1.3	1.4	2.2	0.5

Note: some areas may have received more than one type of manure in a single year.

The percentage of the sown area that received an application of cattle FYM in 2023 was 15.9%, which is slightly below the five-year average (16.3%).

Table B2.1b Percentage (%) of manured land that received each specific manure type, Great Britain 2019 – 2023

Manure type	2019 %	2020 %	2021 %	2022 %	2023 %
Cattle FYM	56.9	55.1	54.5	54.5	55.0
Cattle slurry	29.2	29.7	31.1	27.4	31.0
Pig FYM	2.9	2.5	2.3	2.4	1.9
Pig slurry	0.4	0.6	1.7	1.4	0.9
Layer manure	2.3	2.0	1.2	2.1	1.4
Broiler/ turkey litter	3.5	3.1	3.5	4.2	2.9
Other farm manure	4.6	4.2	4.3	2.9	3.3
All digestate	[x]	[x]	[x]	[x]	5.2
Bio-solids	4.1	5.6	4.5	5.1	3.9
Other non-farm	4.5	4.5	4.6	7.2	1.7

Note: some areas may have received more than one type of manure in a single year.

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 that produced it. Furthermore, the concentration of nutrients is dependent on the proportion of incorporated 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 related nutrient content in the fresh weight of common organic manure types [6]

Manure type (RB209 categories)	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
Digestate, food-based, whole	4.1%	4.8	1.1	2.4
Digestate, farm-sourced, whole	5.5%	3.6	1.7	4.4
Compost, green	60.0%	7.5	3.0	6.8
Compost, green/food	60.0%	11.0	4.9	8.0

In Tables B2.3a and B2.3b, 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 field rates of manure applied to winter-sown and spring-sown crops and to grassland, by manure type, Great Britain 2023

	Manure type									
	Cattle FYM	Cattle slurry	Pig FYM	Pig slurry	Layer manure	Broiler/ turkey litter	Other farm manure	All digest-ate	Bio-solids	Other non-farm
Winter sown										
% total area with manure*	9.8%	2.7%	1.4%	0.6%	0.9%	2.1%	0.4%	3.6%	2.2%	1.1%
Total treated area ('000 ha)	282	77	41	19	27	60	12	104	64	31
Average field rate (t; m^3/ha)	19	28	16	32	5	7	20	24	20	24
Quantity (Mt; Mm^3)**	5.5	2.1	0.7	0.6	0.1	0.4	0.2	2.5	1.3	0.7
Fields in survey	316	53	36	14	19	39	10	57	47	24
Spring sown										
% total area with manure*	23.4%	5.3%	1.1%	0.7%	0.7%	0.8%	2.0%	2.8%	3.2%	1.0%
Total treated area ('000 ha)	374	85	17	11	11	13	32	45	51	16
Average field rate (t; m^3/ha)	23	33	25	29	7	7	72	27	24	30
Quantity (Mt; Mm^3)**	8.6	2.8	0.4	0.3	0.1	0.1	2.3	1.2	1.2	0.5
Fields in survey	364	79	21	11	12	18	17	31	19	16
Grass										
% total area with manure*	25.0%	28.0%	[c]	[c]	0.2%	0.4%	1.5%	0.7%	0.2%	0.2%
Total treated area ('000 ha)	1,418	1,587	[c]	[c]	9	22	87	42	14	10
Average field rate (t; m^3/ha)	14	26	[c]	[c]	6	4	27	18	26	29
Quantity (Mt; Mm^3)**	19.6	41.0	[c]	[c]	0.1	0.1	2.3	0.7	0.4	0.3
Fields in survey	686	480	4	4	12	14	54	27	10	6

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

* Some fields may receive more than one type of manure

** Mt (million tonnes) relates to solid manures; Mm^3 (million cubic metres) to liquid manures.

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. Cattle slurry makes up 84% of all slurry volume (Table B2.3a) and 89% 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. 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 increased volume on grass in 2023. Overall, the 2023 profiles of the % treated area and average manure rates were broadly similar to those reported for 2022. The exception to this is the rate of 'Other farm manure' applied to spring sown crops which was attributable to dirty water (washings from yards, parlours, housing).

Table B2.3b Summary of land treated with cattle FYM, by broad crop group and farm type, Great Britain 2023

	BSFP robust type category*					
Land treated with cattle FYM	Cereals	Dairy	General cropping	Mixed	Other grazing livestock	All farm types***
Winter sown crops						
% of total treated area	26.9%	10.6%	16.4%	32.3%	12.1%	98.3%
Total treated area ('000 ha)	76	30	46	91	34	282
Average field rate (t/ha)	18	21	22	20	19	19
Quantity (Mt)**	1.3	0.6	1.0	1.8	0.6	5.5
Fields in survey	70	50	26	118	46	316
Spring sown crops						
% of total treated area	18.4%	22.3%	12.6%	26.8%	19.6%	99.7%
Total treated area ('000 ha)	69	83	47	100	73	374
Average field rate (t/ha)	23	27	22	21	22	23
Quantity (Mt)**	1.6	2.2	1.0	2.1	1.6	8.6
Fields in survey	37	84	46	94	100	364
Grass						
% of total treated area	1.2%	14.8%	3.9%	8.3%	71.7%	99.9%
Total treated area ('000 ha)	17	210	56	118	1,017	1,418
Average field rate (t/ha)	14	14	15	15	14	14
Quantity (Mt)**	0.3	3.0	0.9	1.7	13.8	19.6
Fields in survey	11	86	26	51	512	686

Notes: Only cattle FYM was applied in sufficient volume to warrant reporting by farm type.
* For Robust Groups see Appendix 5.
** Mt = million tonnes.
*** Percent of total treated areas may not sum to 100% because possible applications to Pig and Poultry Robust Groups are not included.

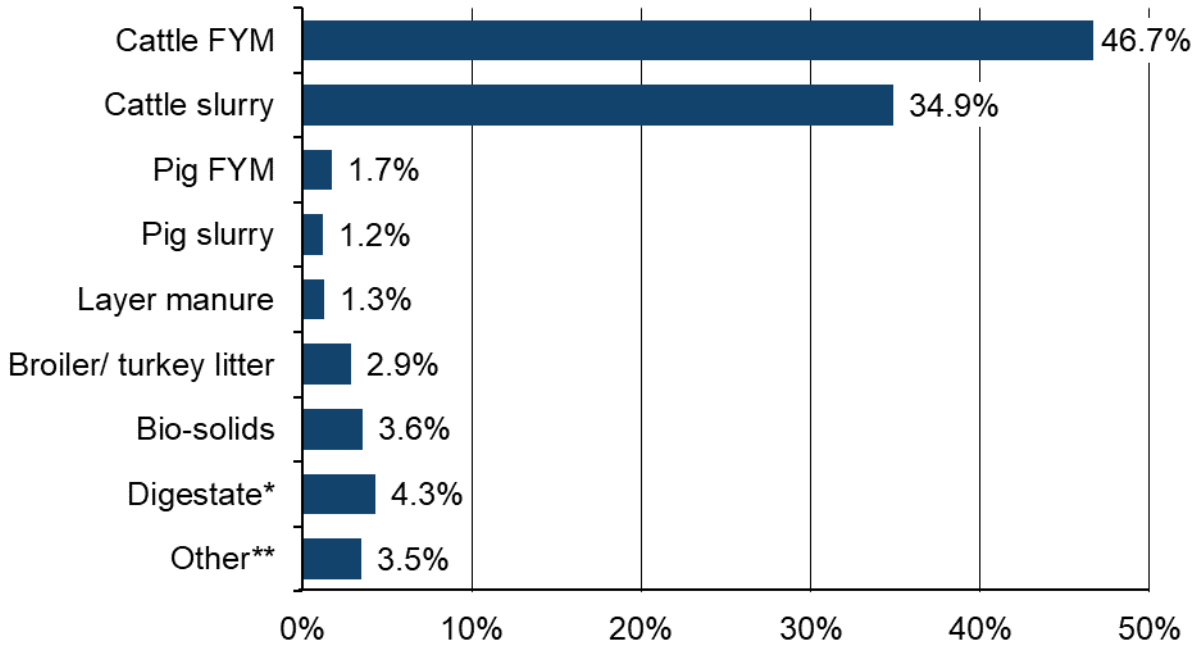
Table B2.3b shows a breakdown of the cattle FYM applications by farm type. Mixed farms account for the largest proportion of winter sown crop area treated with cattle FYM at 32.3%. For grass 71.7% of the area treated with cattle FYM was on 'Other Livestock' robust classification farms.

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 importance of different periods through the year for organic manure applications. Whilst there are variations between manure types, the applications that, in general made the biggest contributions to the overall manure type totals, were early autumn applications on winter-sown crops and spring and summer applications on both spring-sown crops and grass. 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 by broad crop group and application timing, Great Britain 2023

Crop group	Manure type									
Application timing	Cattle FYM	Cattle slurry	Pig FYM	Pig slurry	Layer manure	Broiler/ turkey litter	Other farm manure	All digest-ate	Bio-solids	Other non-farm
	%	%	%	%	%	%	%	%	%	%
Winter sown crops										
August	1.6	0.5	13.7	12.9	18.3	16.8	2.3	8.6	24.9	10.9
September	10.4	2.0	32.3	26.2	24.9	34.1	6.8	18.9	21.6	35.1
October	1.7	0.4	15.3	0.0	0.0	4.5	0.5	1.4	0.6	5.3
Nov. to Jan.	0.1	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb. to April	0.3	1.4	1.2	12.8	13.6	4.3	0.0	21.8	1.6	2.4
May to July	0.0	0.4	0.0	2.2	0.0	3.6	0.0	3.1	0.0	0.0
Spring sown crops										
August	0.0	0.2	1.2	0.0	0.0	0.3	0.8	0.0	0.5	6.6
September	0.7	0.1	1.5	0.0	0.0	0.0	0.0	0.4	0.0	1.9
October	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.0	3.0
Nov. to Jan.	1.5	0.1	0.0	9.2	0.0	2.1	0.7	0.0	0.0	0.0
Feb. to April	14.2	3.4	23.6	25.8	20.9	9.6	12.8	16.4	38.6	13.9
May to July	1.9	1.4	0.0	8.0	3.3	1.6	10.1	7.0	1.2	2.8
Grass										
August	5.7	6.3	4.9	0.0	0.0	0.3	10.9	0.0	0.0	0.0
September	3.7	2.2	0.0	0.0	0.0	0.0	3.7	0.0	0.5	5.8
October	5.9	1.8	0.0	0.0	0.0	0.0	2.4	2.3	0.0	9.5
Nov. to Jan.	6.1	3.2	0.0	0.0	0.0	0.0	5.1	0.2	0.3	0.0
Feb. to April	33.6	42.6	4.9	0.2	10.6	13.4	24.2	10.8	9.0	0.9
May to July	12.3	34.0	0.8	2.8	8.5	9.3	19.6	8.5	1.2	1.9
Total	100	100	100	100	100	100	100	100	100	100
Relative quantity of each manure, by its proportional cover of total manured area.										
	47.3	35.6	1.5	0.6	1.1	2.2	3.0	4.3	3.0	1.3

Figure B2.1 Percentage (%) of treated GB areas receiving manure by manure type (3 year average 2021-2023)



Note: *No three year average is available for digestate as it is a new reporting category for 2023.
**No direct three year average is available for other farm manure and other non-farm manure due to a change in categorisation due to digestate being extracted from both and represented as a single category.

Figure B2.1 indicates the relative areas receiving different types of organic manure used in Great Britain. Cattle FYM and slurry supply the overwhelming majority of the area of British crops and grass receiving organic manures.

Figure B2.2a Typical timings and applications of cattle FYM on GB winter and spring sown crops & grass (3 year average 2021-2023)

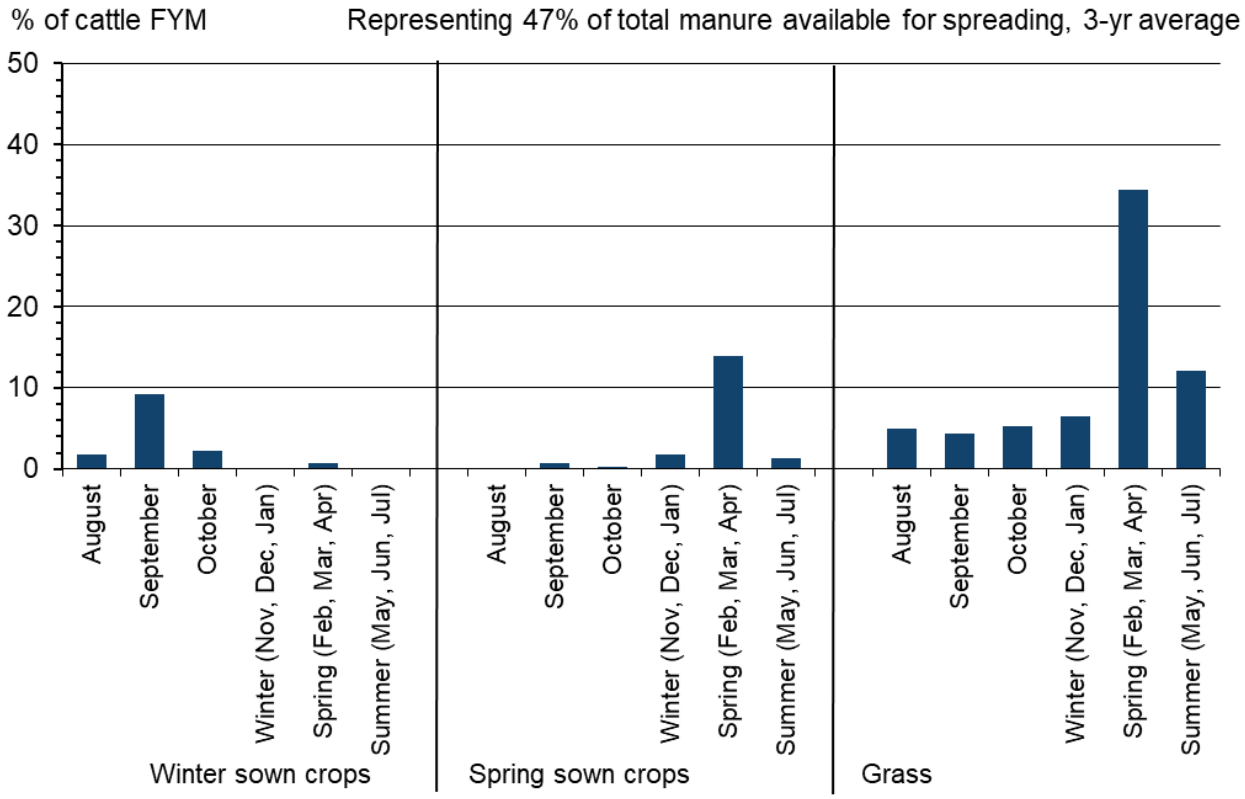


Figure B2.2b Typical timings and applications of cattle slurry on GB winter and spring sown crops & grass (3 year average 2021-2023)

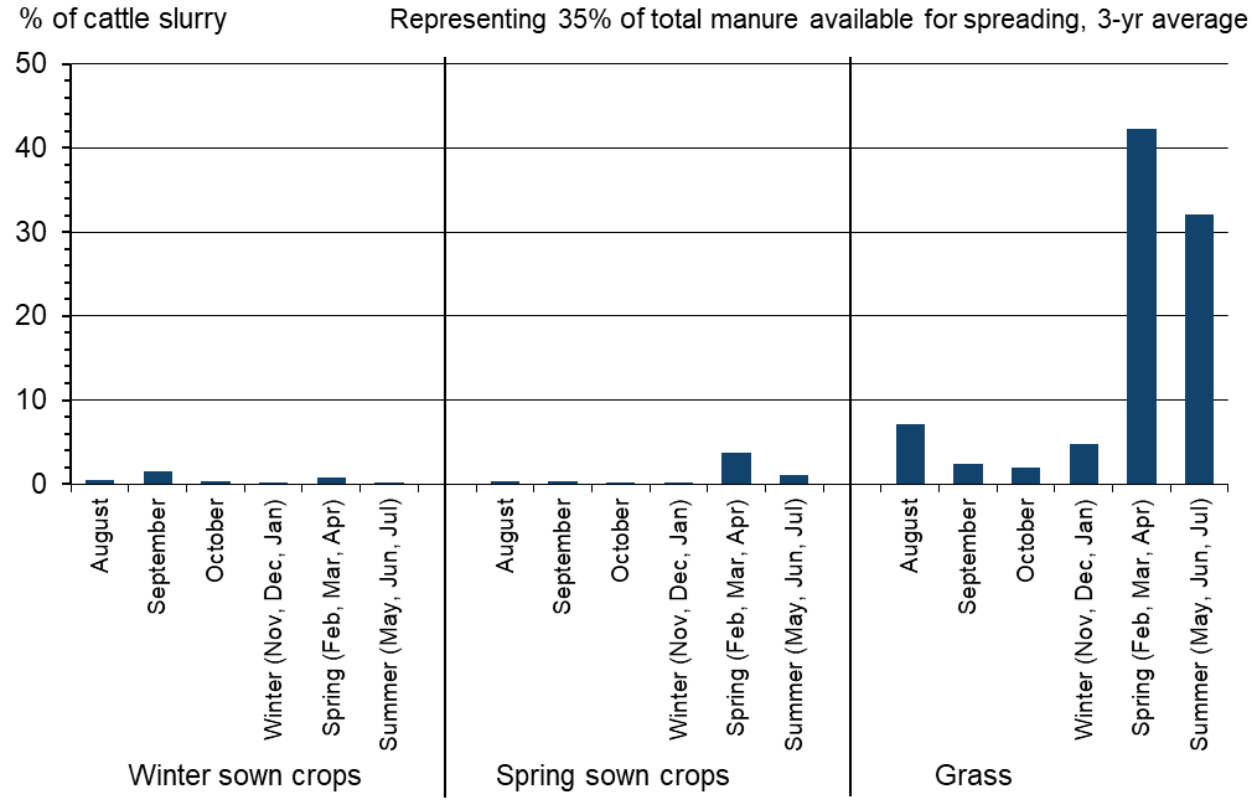


Figure B2.2c Typical timings and applications of pig FYM on GB winter and spring sown crops & grass (3 year average 2021-2023)

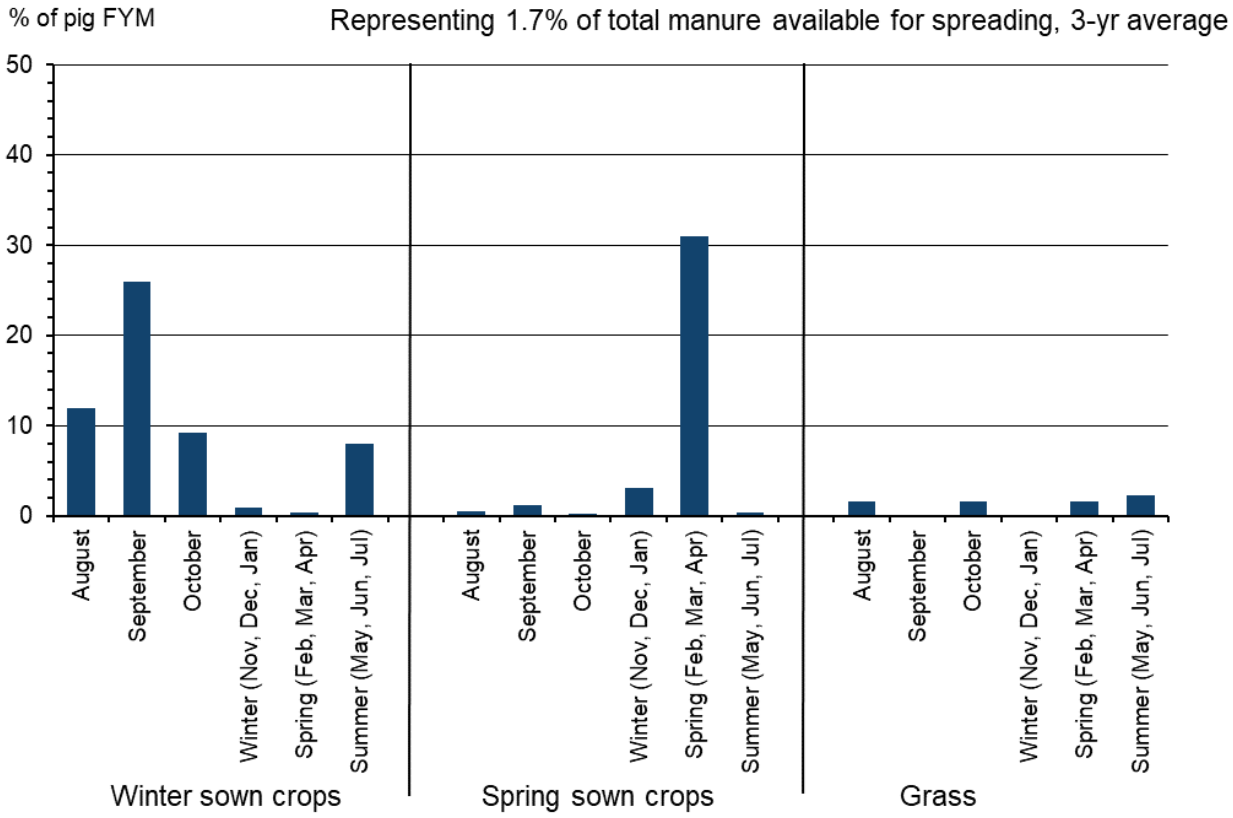


Figure B2.2d Typical timings and applications of pig slurry on GB winter and spring sown crops & grass (3 year average 2021-2023)

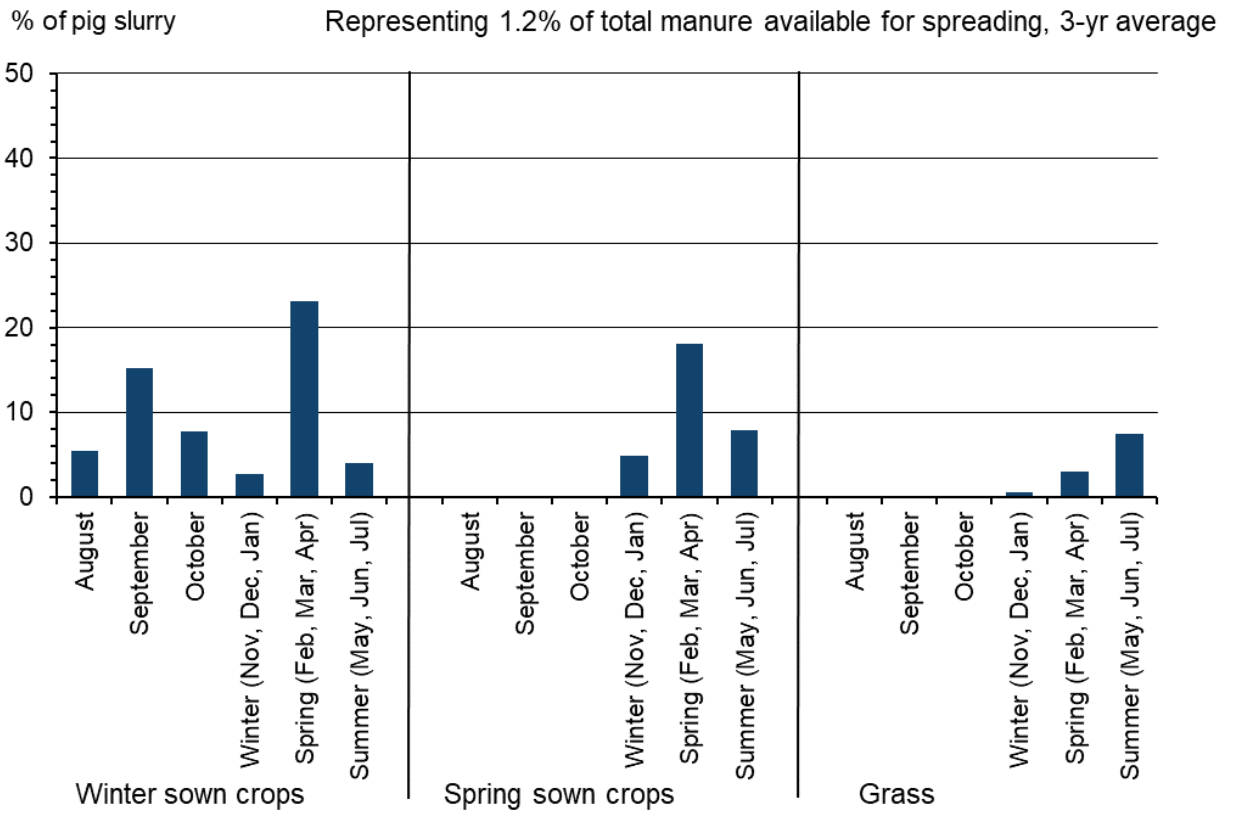


Figure B2.2e Typical timings and applications of layer manure on GB winter and spring sown crops & grass (3 year average 2021-2023)

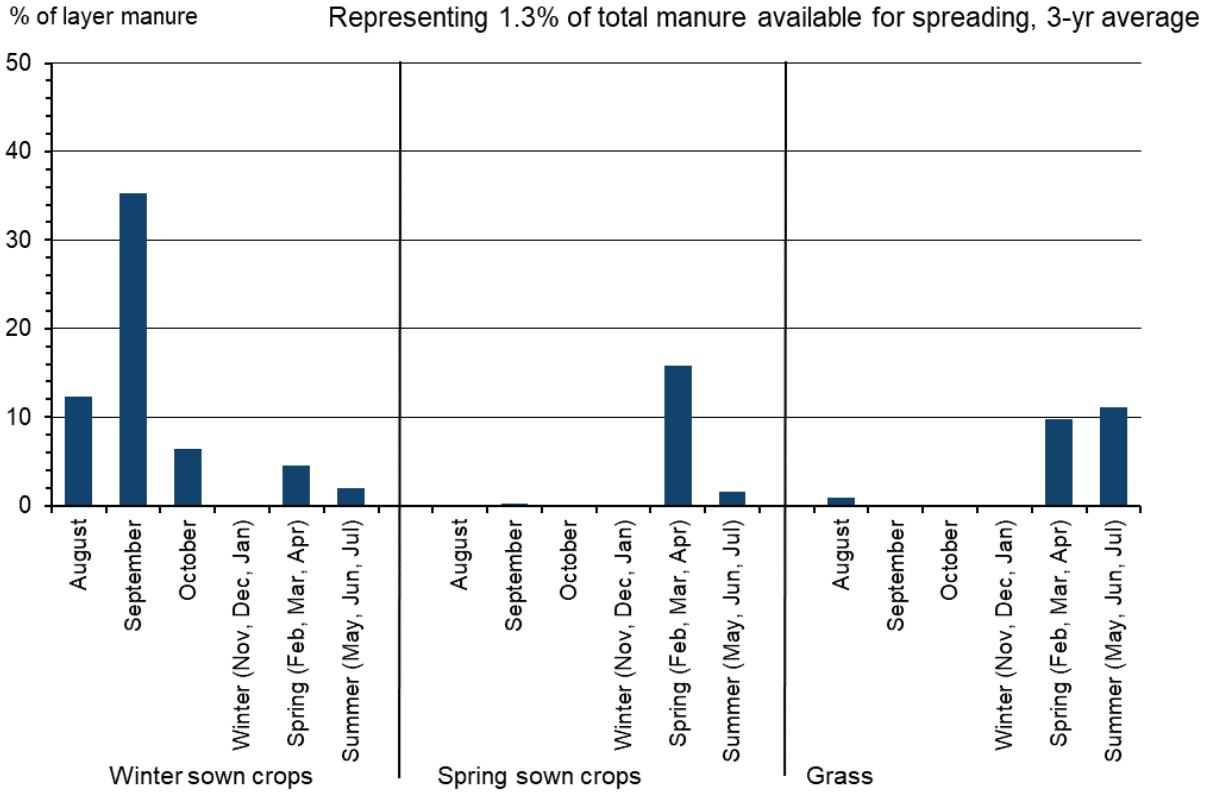


Figure B2.2f Typical timings and applications of poultry litter on GB winter and spring sown crops & grass (3 year average 2021-2023)

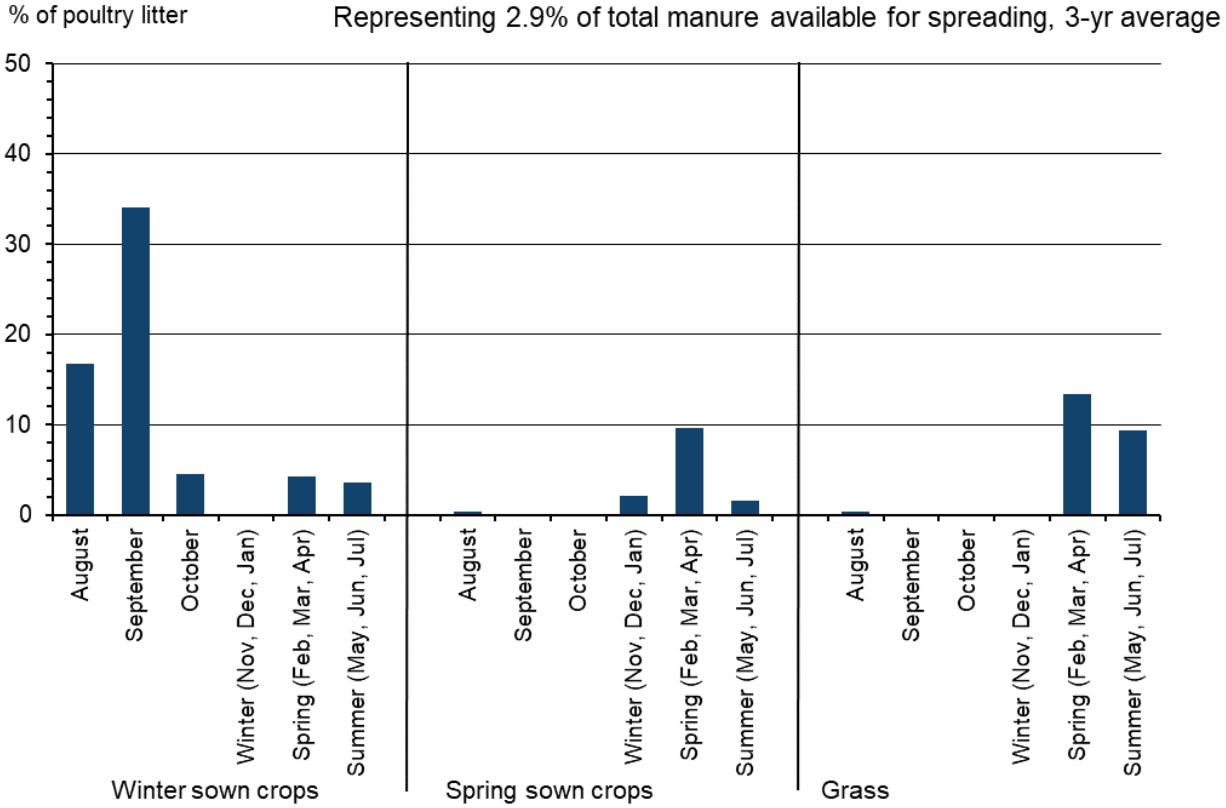


Figure B2.2g Typical timings and applications of biosolids on GB winter and spring sown crops & grass (3 year average 2021-2023)

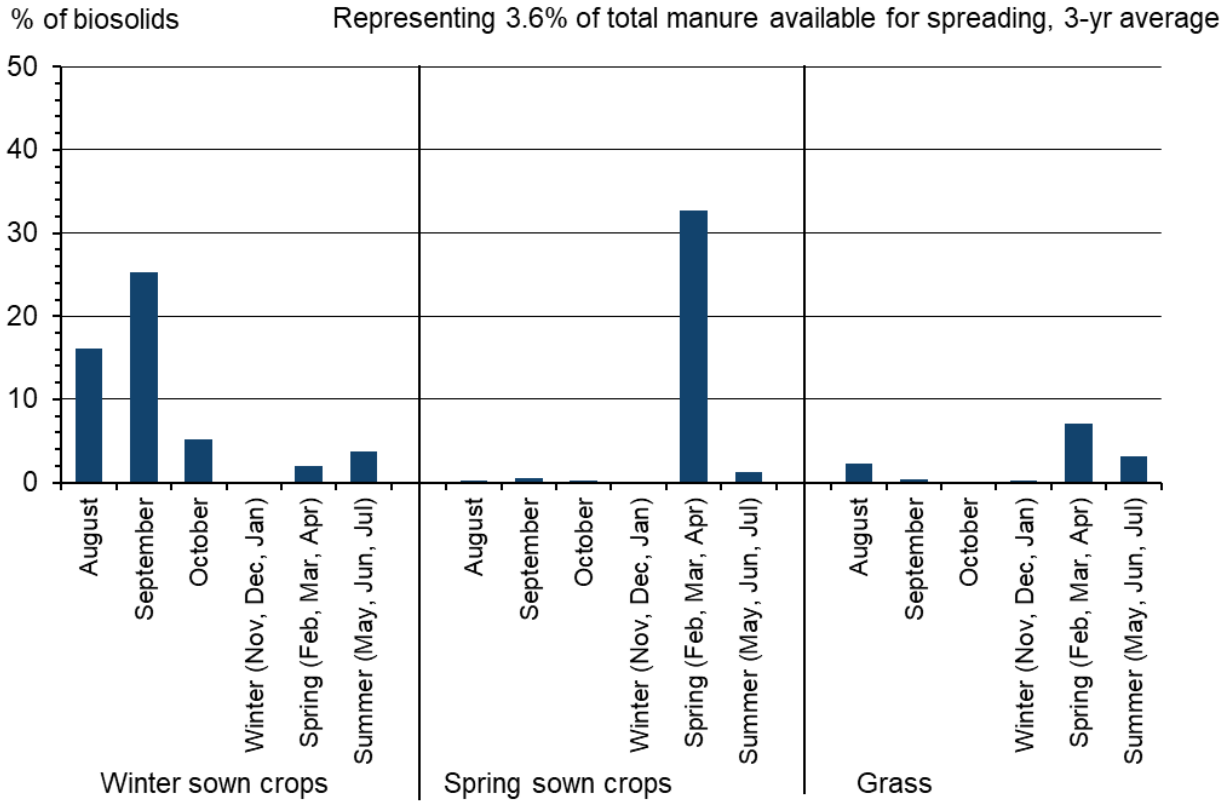
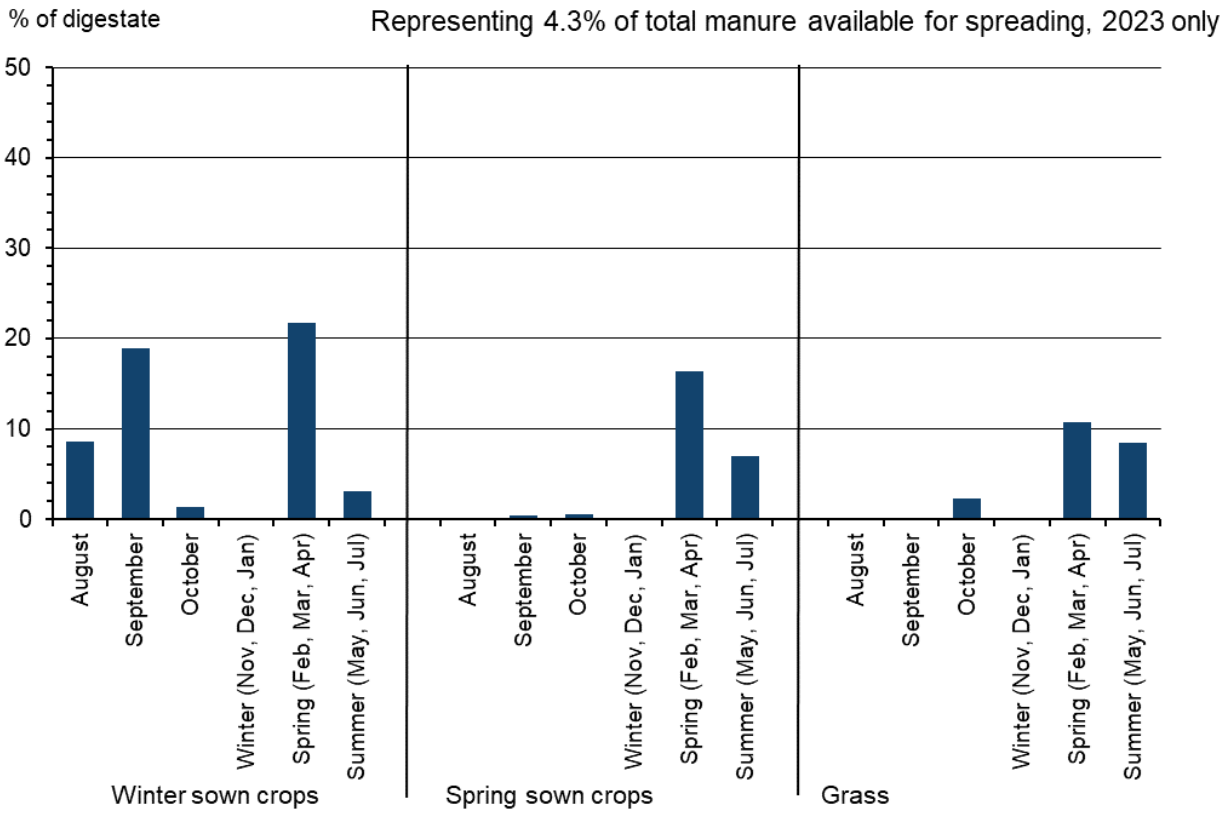


Figure B2.2h Typical timings and applications of digestate on GB winter and spring sown crops & grass (2023)



Figures B2.2a-g are derived from the three-year average of the 2021 to 2023 GB data presented in Table B2.4. Figure B2.2h is derived from 2023 GB data only, not having been collected separately in previous seasons. 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.

B3 Fertiliser value of organic manures

Organic manures are valuable sources of the major plant nutrients nitrogen, phosphate, and potash and, can theoretically allow applications of manufactured fertiliser to be reduced where organic manures are applied[7]. While the actual nutrient content of organic manure is rarely known, standard default values are shown in Table B2.2.

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, and showing the relevant number of fields in the Survey, 2023

	Nitrogen		Phosphate		Potash		Fields in survey	
Dressing cover (%)	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
	%	%	%	%	%	%		
Winter wheat	97	100	23	34	30	40	323	847
Spring barley	96	98	53	54	54	61	204	370
Winter barley	94	100	31	38	35	47	111	317
Potatoes, maincrop	95	97	75	97	95	82	16	24
Sugar beet	93	85	28	50	29	71	21	48
Winter oilseed rape	99	100	9	39	20	38	89	214

	Nitrogen		Phosphate		Potash		Fields in survey	
Average field rate (kg/ha)	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
Winter wheat	161	180	45	47	47	54	323	847
Spring barley	93	103	46	45	52	58	204	370
Winter barley	128	143	44	47	57	62	111	317
Potatoes, maincrop	129	156	97	104	187	185	16	24
Sugar beet	79	76	58	45	78	62	21	48
Winter oilseed rape	145	173	54	56	50	62	89	214

	Nitrogen		Phosphate		Potash		Fields in survey	
Overall application rate (kg/ha)	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
Winter wheat	157	180	10	16	14	21	323	847
Spring barley	89	101	24	24	28	35	204	370
Winter barley	121	143	14	18	20	29	111	317
Potatoes, maincrop	122	151	72	100	177	152	16	24
Sugar beet	73	65	16	22	23	44	21	48
Winter oilseed rape	143	172	5	22	10	24	89	214

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

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.

For all the major crops, except sugar beet, the overall application rate of nitrogen from manufactured mineral fertiliser was higher on fields where organic manures were not applied in 2023. The difference in overall nitrogen application rates, with and without manure, ranged from 12 kg/ha for spring barley, to 22 kg/ha for winter barley, 29 kg/ha for winter oilseed rape and 23 kg/ha for winter wheat. The data for potatoes and sugar 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 have been 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 2019 to 2023 are shown in Table B3.1b below. The application of lower rates on manured fields held true for nitrogen for all major combinable crops throughout the period. Overall application rates were lower for phosphate and potash on winter wheat in every year from 2019-2023. 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, 2019 – 2023

Nitrogen	2019		2020		2021		2022		2023	
(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	191	170	181	164	194	149	174	157	180
Spring barley	83	102	85	106	94	102	85	99	89	101
Winter barley	124	150	132	143	129	145	117	136	121	143
Potatoes, maincrop	159	146	123	122	115	131	175	159	122	151
Sugar beet	76	74	82	62	69	66	72	53	73	65
Winter oilseed rape	162	186	141	180	152	175	139	159	143	172
Phosphate	**2019**		**2020**		**2021**		**2022**		**2023**	
(kg/ha)	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
Winter wheat	12	28	20	26	13	22	9	17	10	16
Spring barley	27	32	22	26	26	30	19	26	24	24
Winter barley	20	29	24	27	19	26	14	18	14	18
Potatoes, maincrop	104	79	78	98	44	98	57	120	72	100
Sugar beet	12	21	21	23	14	21	10	17	16	22
Winter oilseed rape	15	34	13	32	6	31	7	21	5	22
Potash	**2019**		**2020**		**2021**		**2022**		**2023**	
(kg/ha)	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure	with manure	without manure
Winter wheat	20	34	24	31	17	28	12	21	14	21
Spring barley	38	40	26	31	33	36	25	38	28	35
Winter barley	30	39	36	39	29	32	24	25	20	29
Potatoes, maincrop	175	158	152	159	135	163	208	183	177	152
Sugar beet	45	53	25	56	26	53	21	42	23	44
Winter oilseed rape	12	31	17	29	10	34	7	19	10	24

Data for grassland are presented separately because grass is managed differently according to the amount of production required. Intensive milk production requires large volumes of grass and is likely to receive higher inputs of both manure and mineral fertilisers than grass for 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 farm type group, with number of fields, Great Britain 2023

	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
Cereals								
Grass under 5 years old *	105	123	8	38	8	50	11	77
Grass 5 years and over *	93	76	21	36	21	47	17	241
All grass	99	92	15	37	15	48	28	318
Dairy								
Grass under 5 years old	158	131	34	27	42	29	118	42
Grass 5 years and over	112	102	21	19	28	25	162	120
All grass	131	109	24	21	32	26	280	162
General cropping								
Grass under 5 years old *	159	83	19	46	95	63	18	39
Grass 5 years and over *	111	68	7	23	7	32	27	112
All grass	135	74	12	29	64	40	45	151
Mixed								
Grass under 5 years old *	120	106	23	30	39	48	36	125
Grass 5 years and over *	89	75	26	16	30	19	41	183
All grass	102	84	24	20	34	28	77	308
Other grazing livestock								
Grass under 5 years old	97	69	21	19	28	26	179	146
Grass 5 years and over	69	55	17	16	25	16	522	597
All grass	75	57	18	16	25	18	701	743
All farm types								
Grass under 5 years old	133	97	24	27	38	37	365	434
Grass 5 years and over	86	67	18	18	25	21	777	1,259
All grass	102	74	19	20	28	24	1,142	1,693

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

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

When looking at all farm types taken together, the rates of nitrogen fertiliser were mostly higher on fields where manures were also used. This therefore suggests a different relationship between manure and mineral fertiliser than on crops. Different grass fields can have very different productive potentials and thus where a high level of production is expected, and required, the field will receive a considerably higher nutrient input than low yielding fields. Thus both manure and mineral fertiliser will contribute to nutrient inputs to fields with high potential, noting that there is a limit to the permitted application rate of manure.

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 deposited naturally by livestock, but this is not measured as part of the Survey.

Table B3.3 Average field rates (kg/ha) of manufactured fertiliser application on dairy grassland with and without applications of organic manure, with numbers of fields, Great Britain 2019 – 2023

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
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
2023	106	87	21	27	42	37	17	16
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
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
2023	139	108	26	27	35	34	201	46
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
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
2023	121	111	25	21	33	26	231	154

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

Over the five-year period 2019-2023, mineral fertiliser application rates, whilst variable, were 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.

C1 Spreader checking

In 2023 67% of farms spread their own fertiliser compared with 74% of farms in 2019. Over the same five-year period the percentage of farms without a spreader has increased to 21% in 2023. Use of contractors has remained in the range of 10-13% of farms since 2019 (Table C1.1).

Table C1.1 Percentages (%) of farms that were without a solid fertiliser spreader, used a contractor to spread solid manufactured fertiliser or owned at least one fertiliser spreader. Great Britain 2019 – 2023

All respondents*	2019	2020	2021	2022	2023
	%	%	%	%	%
No spreader	13	16	15	19	21
Contractor applied	12	13	11	10	12
Spread fertiliser with own spreader(s)	74	71	74	71	67

* May add up to more than 100% because those with no spreader may use a contractor.

In 2023, of those farms who had at least one spreader, 52% indicated they check the accuracy of mineral fertiliser spreaders using catch trays on an annual basis (Table C1.2). Farmers checking more frequently than this comprise 7%, checking at each change of fertiliser. 16% of farmers never check their spreaders for accuracy and a further 3% of farmers considered that spreader accuracy did not need to be checked.

Table C1.2 Percentage (%) frequency of checking solid fertiliser spread patterns using catch trays on those farms with at least one fertiliser spreader, Great Britain 2019 – 2023

Respondents with fertiliser spreader(s)	2019	2020	2021	2022	2023
	%	%	%	%	%
At each change of fertiliser type	6	6	6	7	7
Less than once a year	18	22	22	17	22
Once a year	50	49	48	47	52
Never checked	19	17	20	25	16
Factory set & doesn't need checking	5	4	4	4	3
Other	1	2	0	0	0
Totals	100	100	100	100	100

Practices of checking are generally consistent over the five-year period 2019-2023, although the percentage of farms never checking their spreaders was below the five-year average of 19%.

C2 Record keeping

Table C2.1 Prevalence of record keeping methods, by farm type, Great Britain 2023. Only includes farms where each nutrient type was applied during the 2023 crop year.

BSFP robust group*	Record keeping method	Manufactured fertiliser records		Organic manure records	
		% farms	% area	% farms	% area
Cereals	Computer program	50	63	49	66
	Farm diary	37	38	42	44
	Farm notebook/pocketbook	10	10	10	7
	File record sheet (file in office)	23	19	24	16
	Other paper record	1	1	1	1
	No records kept	0	0	0	0
Dairy	Computer program	24	39	25	37
	Farm diary	55	51	49	47
	Farm notebook/pocketbook	19	16	19	14
	File record sheet (file in office)	20	21	24	25
	Other paper record	0	1	0	0
	No records kept	0	0	0	0
General cropping	Computer program	39	56	34	53
	Farm diary	47	41	50	45
	Farm notebook/pocketbook	16	12	18	14
	File record sheet (file in office)	30	28	29	30
	Other paper record	2	0	0	0
	No records kept	2	4	13	8
Mixed	Computer program	31	44	27	40
	Farm diary	50	46	52	48
	Farm notebook/pocketbook	7	10	5	10
	File record sheet (file in office)	32	28	34	29
	Other paper record	0	0	2	1
	No records kept	0	1	0	0
Other grazing livestock	Computer program	12	12	11	12
	Farm diary	59	63	61	63
	Farm notebook/pocketbook	22	17	18	15
	File record sheet (file in office)	16	18	18	20
	Other paper record	1	1	3	2
	No records kept	2	1	5	3
All farm types	Computer program	30	43	22	35
	Farm diary	50	48	54	53
	Farm notebook/pocketbook	16	13	15	13
	File record sheet (file in office)	22	21	23	22
	Other paper record	1	1	2	1
	No records kept	1	1	4	2

Notes: more than one method may be used.
* For BSFP Robust Group see Appendix 5

Farm diaries continued to be the most common method for recording both fertiliser and manure use (Table C2.1), when looking at 'All farm types' in 2023. Computers were used for recording fertiliser applications on 30% of farms that applied manufactured fertiliser, representing 43% in area terms. No records were kept on 1% of farms and this was the same when considered on an area basis. Computerised record keeping was less common for organic manures, occurring on 22% of relevant farms. The method of record keeping for 'all farm types' was broadly similar for both manufactured and organic fertilisers.

The approach to record keeping varied between different farm types. For manufactured fertilisers, use of computers was highest on 'cereals' farms at 50%, and lower at 24% on 'dairy' and 12% on 'other livestock' farms, where a higher proportion used farm diaries. Farms of all types except 'cereals' favoured diaries for recording applications of organic manures.

Table C2.2 Percentage (%) of farms using different record keeping methods, Great Britain 2019-23. Only includes farms where each nutrient type was applied during the crop year.

Manufactured fertilisers*	2019	2020	2021	2022	2023
	% farms	% farms	% farms	% farms	% farms
Computer program	29	29	29	30	30
Farm diary	55	45	56	52	50
Farm notebook/pocketbook	17	15	15	16	16
File record sheet (file in office)	21	25	20	23	22
Other paper record	3	5	2	1	1
No records kept	4	3	3	2	1

Organic manures*	2019	2020	2021	2022	2023
	% farms	% farms	% farms	% farms	% farms
Computer program	20	20	20	20	22
Farm diary	61	53	58	56	54
Farm notebook/pocketbook	18	15	15	16	15
File record sheet (file in office)	19	24	20	22	23
Other paper record	3	5	3	1	2
No records kept	5	7	6	6	4

Note: * Columns may add up to more than 100% because more than one method may be used.

Recording methods for manufactured fertilisers show some variations across the five-year period 2019-2023, with farm diaries remaining the most widely used recording method. For organic manures, records of some type were kept on 93-96% of farms for the five-year period.

C3 Soil testing

Table C3.1 Soil testing for different variables: percentage (%) of cropping and grass area tested, Great Britain 2019 – 2023

	Crops 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
	%	%	%	%	%	%	%	%
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
2023	37	20	6	13	12	5	3	2

Note: * Soil sampling for Precision Farming purposes involves taking composite samples from different defined locations in the field, each for individual analysis, to help determine the pattern of nutrient and pH spatial variability within the field.

Table C3.1 shows the percentage of the cropping and grass area that was soil tested for the crop years 2019–2023. 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 33% of the cropping area and 8% of the grass area. All types of soil tests were more prevalent on crops than on grass, for all years 2019-23.

C4 Mitigation of ammonia losses

Table C4.1 shows the use of solid urea straight nitrogen, liquid urea ammonium nitrate (UAN), or both products, containing urease inhibitors, which reduce gaseous losses of ammonia (a known air pollutant). An ammonia emission inhibitor to mitigate losses of ammonia following the application of a urea-containing fertiliser will usually involve inhibition of the activity of the enzyme urease but can include emission control through physical encapsulation of the solid product or other technology.

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 2023, on a weighted area basis, 16% of urea /UAN fertilisers contained an inhibitor. In 2023, 20% of solid urea and 11% of UAN contained a urease inhibitor. Further analysis of the data was conducted retrospectively to determine separately the implementation of ammonia emission mitigation for 2020 to 2022.

Table C4.1 Use (% weighted area) of urea-containing nitrogen fertilisers which contain a urease inhibitor on cropping or grass fields, Great Britain 2019 – 2023

Urea (solid)	Product contains a urease inhibitor	Product does not contain a urease inhibitor	Don't know	Total
	% area	% area	% area	% area
2019	[z]	[z]	[z]	[z]
2020	10	68	22	100
2021	5	69	26	100
2022	8	83	9	100
2023	20	73	7	100

UAN (liquid)	Product contains a urease inhibitor	Product does not contain a urease inhibitor	Don't know	Total
	% area	% area	% area	% area
2019	[z]	[z]	[z]	[z]
2020	1	75	24	100
2021	1	70	29	100
2022	6	84	10	100
2023	11	83	6	100

Urea and UAN	Product contains a urease inhibitor	Product does not contain a urease inhibitor	Don't know	Total
	% area	% area	% area	% area
2019	6	70	24	100
2020	10	70	21	101
2021	12	65	22	99
2022	6	85	9	100
2023	16	77	7	100

Note: Due to rounding, totals may not sum to 100%.

C5 Professional qualifications

In 2016, 2018, 2021, 2022 and 2023 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 C5.1. The National Register of Sprayer Operators (NRoSO) qualifies the competence of the holder to operate a farm sprayer. BASIS qualifications demonstrate the competence of the holder to make good agrochemical recommendations. FACTS qualification assesses the competence of the holder to make fertiliser and manure recommendations.

Table C5.1 Professional qualifications held on respondent farms, Great Britain 2016, 2018, 2021, 2022 and 2023

Qualifications on farm	Respondents' professional qualifications held				
	2016	2018	2021	2022	2023
	% farms	% farms	% farms	% farms	% farms
NRoSO	22	20	19	23	22
BASIS	7	8	10	9	10
FACTS	3	4	6	5	5
Other	8	6	10	10	9
None of the above	68	69	64	63	64

Table C5.2 Percentage (%) of farms maintaining validity through Continuous Professional Development (CPD) of qualifications held, Great Britain 2016, 2018, 2021, 2022 and 2023

Qualifications	Kept up to date (CPD) where professional qualifications held				
	2016	2018	2021	2022	2023
	% farms	% farms	% farms	% farms	% farms
Yes, kept up to date					
NRoSO	93	89	88	93	93
BASIS	81	67	73	75	83
FACTS	93	77	80	86	96
No, did not keep up to date					
NRoSO	5	8	5	3	4
BASIS	15	29	18	22	17
FACTS	7	21	13	9	3
Don't know					
NRoSO	2	3	7	3	3
BASIS	4	4	10	4	1
FACTS	0	2	7	6	1

The NRoSO continued to be the most popular professional qualification held on respondent farms in 2023 (22% of farms). Of those with a NRoSO accreditation in 2023, 93% of farms kept this up to date with Continuous Professional Development (CPD), which was the same percentage reported in 2022. Between 2016 and 2023 there was a slight reduction in the proportion of farms on which no one held any of the qualifications listed.

C6 Sources of advice

Table C6.1 Percentage of farms (%) receiving different sources of professional advice, Great Britain 2016, 2018, 2021, 2022 and 2023

Professional advice sought	All farms				
	2016	2018	2021	2022	2023
	% farms	% farms	% farms	% farms	% farms
Crop protection agronomist	51	55	51	52	54
Fertiliser advisor	37	33	29	24	30
Feed Advisor	23	21	17	17	23
Veterinary surgeon	47	50	44	40	45
Countryside or wildlife advisor	16	17	15	14	14
Land agent	15	15	15	14	17
Business advisor	12	14	13	12	9
Water advisor	13	14	11	9	10
None of the above	19	17	20	22	15
Other	5	4	3	3	6
Total number of farms ('000)	**89.9**	**89.0**	**88.1**	**88.0**	**86.1**
Professional advice sought	Farms with crops				
	2016	2018	2021	2022	2023
	% farms	% farms	% farms	% farms	% farms
Crop protection agronomist	81	88	84	84	85
Fertiliser advisor	51	48	39	35	42
Feed Advisor	24	24	18	17	22
Veterinary surgeon	44	47	42	37	38
Countryside or wildlife advisor	20	21	18	15	15
Land agent	18	19	20	18	22
Business advisor	15	16	15	13	10
Water advisor	17	18	13	11	12
None of the above	8	5	6	8	5
Other	4	4	3	4	4
Total number of farms ('000)	**51.4**	**47.5**	**48.0**	**47.5**	**46.0**
Professional advice sought	Farms with grass				
	2016	2018	2021	2022	2023
	% farms	% farms	% farms	% farms	% farms
Crop protection agronomist	46	48	46	47	49
Fertiliser advisor	34	29	26	22	29
Feed Advisor	26	22	19	19	25
Veterinary surgeon	53	55	49	45	50
Countryside or wildlife advisor	15	16	13	14	14
Land agent	15	13	14	13	17
Business advisor	15	13	13	12	9
Water advisor	13	13	10	8	10
None of the above	21	18	22	24	16
Other	6	5	3	3	6
Total number of farms ('000)	**78.4**	**79.7**	**78.8**	**77.4**	**76.1**

Respondents were asked about the sources of professional advice that they use (Table C6.1). Users should note that some farms will have both crops and grass and will appear in both

categories. A crop protection agronomist was the most commonly used source, on 51-55% of farms across 2016, 2018, 2021, 2022 and 2023. This figure increased to 81-88% when farms with cropping were considered. On farms with grass (which will include farms which specialise in cropping), a veterinary surgeon was the most prevalent source of advice in all years except for 2022 where advice from a crop protection agronomist was slightly more popular. The proportion of farmers who stated that they did not use any of the listed advice sources was and 15% in 2023. Professional advice used on an area basis is presented in Table C6.2.

Table C6.2 Percentage of farmed area (%) on farms receiving different sources of professional advice, Great Britain 2016, 2018, 2021, 2022 and 2023

Professional advice source	Received advice - % of area				
All farms	2016	2018	2021	2022	2023
	% area	% area	% area	% area	% area
Crop protection agronomist	64	70	65	66	68
Fertiliser advisor	44	43	36	31	33
Feed Advisor	27	27	21	20	26
Veterinary surgeon	52	53	47	42	45
Countryside or wildlife advisor	22	24	19	18	16
Land agent	20	21	19	18	20
Business advisor	17	18	15	16	12
Water advisor	16	19	13	12	12
None of the above	11	10	11	13	8
Other	5	5	3	4	7
Total farm area (million ha)	**10.3**	**10.4**	**10.3**	**10.2**	**10.2**
Farms with crops	2016	2018	2021	2022	2023
	% area	% area	% area	% area	% area
Crop protection agronomist	90	94	90	90	91
Fertiliser advisor	57	56	47	40	43
Feed Advisor	18	21	13	12	15
Veterinary surgeon	37	38	31	25	26
Countryside or wildlife advisor	28	29	23	20	19
Land agent	25	27	22	21	22
Business advisor	17	22	15	16	13
Water advisor	20	23	14	13	13
None of the above	4	2	5	6	3
Other	3	2	3	4	3
Total farm area (million ha)	**4.6**	**4.6**	**4.6**	**4.5**	**4.5**
Farms with grass	2016	2018	2021	2022	2023
	% area	% area	% area	% area	% area
Crop protection agronomist	43	49	44	46	48
Fertiliser advisor	34	32	26	23	25
Feed Advisor	34	32	28	26	34
Veterinary surgeon	64	65	59	56	60
Countryside or wildlife advisor	17	19	16	16	14
Land agent	17	16	17	16	19
Business advisor	16	15	15	16	12
Water advisor	13	15	13	11	11
None of the above	17	15	17	19	12
Other	6	7	3	5	9
Total farm area (million ha)	**5.7**	**5.7**	**5.6**	**5.7**	**5.7**

C7 Nutrient management

Respondents were asked whether they had a nutrient management plan in place for the current season. Overall, 50% of farms indicated that they had, equating to 67% of area. On farms with crops this rose to 73% of farms, which represented 88% of area (Table C7.1).

Table C7.1 Farms with a nutrient management plan in place, by farms (%) and area (%), and by farm type, Great Britain 2023

Nutrient management plan in place	All farms		Farms with crops		Farms with grass	
	% farms	% area	% farms	% area	% farms	% area
Yes	50	67	73	88	46	50
No	50	33	27	12	54	50

Table C7.2 Methods and assistance used to prepare the nutrient management plan, by farms (%) and area (%), and by farm type, Great Britain 2023

Methods used to prepare a nutrient management plan*	All farms		Farms with crops		Farms with grass	
	% farms	% area	% farms	% area	% farms	% area
Nutrient Management Guide (RB209)	13	14	12	15	13	13
PLANET Software	6	1	7	8	6	4
MANNER Software	1	7	1	1	1	1
Tried and Tested	4	4	3	3	4	5
FACTS Qualified Advisor	23	27	27	32	22	21
Agronomist/Distributor	58	61	68	69	53	49
Self or farm employee	33	33	29	32	34	35
None of the above	0	0	0	0	0	0
Other	10	9	8	7	10	11
Don't know / No answer	1	1	1	0	1	1

Note: * Columns may add up to more than 100% because more than one method may be used.

Agronomists or input Distributors were the most commonly used source of assistance in the preparation of the nutrient management plan, used on 58% of farms in 2023. This was followed by 'self or farm employee' at 33% and FACTS qualified advisors at 23% of farms (Table C7.2).

Table C7.3 Potential influence of a payment of about £600 per annum for agreement to undertake the NUM1 Nutrient Management action within the Sustainable Farming Initiative (SFI), by farms (%) and area (%), and by farm type, England 2023

Interest in Incentive payment	All farms		Farms with crops		Farms with grass	
	% farms	% area	% farms	% area	% farms	% area
Yes	25	30	36	38	25	29
No	41	35	28	29	41	37
Don't know / No answer	34	34	36	32	34	34
Total	100	100	100	100	100	100

Respondents who did not have a nutrient management plan in place for the 2023 season were asked whether an incentive payment of about £600 per annum would encourage them to undertake the NUM1 Nutrient Management action within the Sustainable Farming Initiative (SFI). Results are just presented for England where the SFI applies. 25% of farms indicated that the incentive would encourage them, rising to 36% on farms with crops, representing 38% of area (Table C7.3).

Table C7.4 Method used to source a FACTS qualified advisor (FQA), by farms (%) and area (%), and by farm type, Great Britain 2023.

Methods used to source a FACTS qualified advisor (FQA)	All farms		Farms with crops		Farms with grass	
	% farms	% area	% farms	% area	% farms	% area
Fertiliser supplier or merchant	28	27	28	22	29	29
Fertiliser manufacturer	2	3	2	1	2	3
Local independent FQA	28	26	28	38	26	23
Animal feed supplier or manufacturer	0	0	0	0	0	1
Own farm FQA	5	6	10	16	5	4
Other	27	25	26	22	28	26
Don't Know / No answer	10	12	5	1	10	15
Total	100	100	100	100	100	100

When asked where they would go to find a FACTS qualified advisor (FQA) 28% indicated they would go to their fertiliser supplier or merchant and 28% indicated they would seek a local independent FQA (Table C7.4).

C8 Regenerative agriculture

Table C8.1 Prevalence of Regenerative Agriculture, split by farm type, Great Britain 2023

ReGen agriculture actions in place	All farms		Farms with crops		Farms with grass	
	% farms	% area	% farms	% area	% farms	% area
Yes	36	47	44	57	34	38
No	56	47	49	37	58	54
Don't know / No answer	8	7	7	5	8	8
Total	100	100	100	100	100	100

In 2023, respondents were asked whether they were taking any actions that they would class as Regenerative Agriculture. Across all farms, 36% indicated that they were taking such actions, rising to 44% of farms with crops (Table 8.1). Actions taken were at a lower percentage where grass was grown both on a farms and area basis (Table 8.1).

Table C8.2 Prevalence of specific Regenerative Agriculture aspects, split by farm type, Great Britain 2023

ReGen agriculture aspects introduced	All farms		Farms with crops		Farms with grass	
	% farms	% area	% farms	% area	% farms	% area
More no- or zero-tillage	14	15	13	16	15	13
More reduced tillage	30	38	40	49	26	25
Use of cover crops	27	39	38	52	25	25
Increased use of organic manures	31	33	32	31	31	35
Increased use of compost	4	5	4	5	4	5
Reduced manufactured fertiliser usage	58	56	55	55	60	58
Reduced agrochemical usage	32	28	31	28	33	27
Using more crops in the rotation	14	18	20	22	12	13
(Re)-Introducing live-stock onto the farm	7	10	8	10	7	9
Don't Know / No answer	5	3	1	0	5	5

Note: * Columns may add up to more than 100% because more than one action may be taken.

In 2023, the most common Regenerative Agriculture aspects introduced were ‘Reduced manufactured fertiliser usage’ (58% of farms where action was being taken), ‘reduced agrochemical’ (32% farms) and ’increased use of organic manures’ (31% of farms) (Table C8.2).

APPENDICES

Appendix 1: Longer term trends in fertiliser use – tables

Table AA1.1 Total overall nitrogen application rates (kg/ha), England & Wales 1972 - 2023 and Scotland and Great Britain 1983 – 2023

	Crops			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
2023	127	111	125	38	41	38	79	65	77

Note: Years are harvest not calendar years (e.g. 2023 refers to the 2022-23 crop year).

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 – 2023

	Winter wheat	Winter barley	Winter oilseed rape	
	Dressing cover	Dressing cover	Dressing cover	Application rate
	%	%	%	kg N/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
2023	3%	4%	19%	32

Table AA1.3 Overall phosphate application rates (kg/ha), England & Wales 1972 - 2023 and Scotland and Great Britain 1983 – 2023

	Crops			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
2023	14	38	17	4	7	4	8	18	10

Table AA1.4 Overall potash application rates (kg/ha), England & Wales 1972 - 2023 and Scotland and Great Britain 1983 – 2023

	Crops			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
2023	19	51	23	5	10	6	11	25	14

Table AA1.5 Overall sulphur (SO_3) application rates (kg/ha), Great Britain 2004 – 2023

	Crops			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
2023	29	25	28	4	5	5	16	12	15

Table AA1.6a Phosphate dressing covers (%), Great Britain 2004 – 2023

	Crops			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
2023	29	76	35	19	35	22	24	49	28

Table AA1.6b Potash dressing covers (%), Great Britain 2004 – 2023

	Crops			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
2023	33	77	39	20	38	24	26	52	31

Table AA1.6c Sulphur dressing covers (%), Great Britain 2004 – 2023

	Crops			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
2023	56	53	55	12	16	12	32	29	32

Table AA1.7 Quantities of major fertiliser nutrients used, UK 1966-2023 (50 years)

Harvest year	Nitrogen kt N				Phosphate kt P_2O_5				Potash kt K_2O			
	England & Wales	Scotland	N Ireland	UK	England & Wales	Scotland	N Ireland	UK	England & Wales	Scotland	N Ireland	UK
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
2022	687	118	57	862	73	32	5	110	131	55	11	197
2023[p]	692	114	65	871	67	29	6	102	122	51	11	184

Note: Years are harvest, not calendar, years (e.g. 2023 refers to the 2022-23 crop year).
Data for 2023[p] are provisional.

Appendix 2 - Tables

CONTENTS

GREAT BRITAIN TABLES 2023

ENGLAND AND WALES TABLES 2023

SCOTLAND TABLES 2023

Symbols used in the tables:

^{C} is used where data have been suppressed because they are from fewer than five farms.

^{X} is used where data are not available.

^{Z} is used where data are not applicable.

^{P} is used where data are provisional.

Table GB1.1 Total fertiliser use, Great Britain 2023

	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	84	26	23	47	21	136	34	30	33	114	9	7	16	34
Winter wheat	99	31	37	67	22	176	46	53	54	174	15	20	36	1,181
Spring barley	96	52	58	50	33	100	45	56	40	95	24	32	20	596
Winter barley	98	36	44	68	23	140	46	61	49	137	17	27	33	435
Oats	89	27	30	57	22	98	42	49	45	87	11	15	26	215
Rye/triticale/durum wheat	94	16	20	57	43	106	c	67	46	101	c	13	26	30
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	c	c	c	4
Potatoes (maincrop)	96	90	85	42	25	149	102	185	c	143	92	158	c	41
Sugar beet	87	45	61	59	23	77	46	63	37	67	21	39	22	69
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	c	1
Winter oilseed rape	100	31	33	72	28	165	56	60	71	165	17	20	52	302
Linseed	90	9	7	51	17	66	c	c	28	59	c	c	14	23
Forage maize	73	40	18	17	87	66	49	62	31	49	20	11	5	157
Rootcrops for stockfeed	88	66	71	24	67	85	71	74	54	75	47	53	13	50
Leafy forage crops	68	53	53	14	40	53	35	37	27	36	18	20	4	56
Arable silage/other fodder crops	48	18	21	20	60	101	21	39	42	49	4	8	9	108
Peas – human consumption	0	15	33	20	0	c	68	49	c	c	10	16	c	26
Peas – animal consumption	0	3	4	4	0	c	c	c	c	c	c	c	c	28
Beans – animal consumption	0	13	17	6	1	c	54	50	36	c	7	8	2	211
Vegetables (brassicae)	33	58	58	25	60	112	57	95	c	37	34	56	c	14
Vegetables (other)	66	49	43	33	15	101	59	101	66	67	29	43	22	27
Soft fruit	91	27	27	76	0	80	36	57	76	73	10	15	58	12
Top fruit	45	9	9	9	0	52	c	c	c	23	c	c	c	10
Other crops	38	13	12	14	21	73	55	101	44	28	7	12	6	42
All crops	88	35	39	55	27	142	48	58	51	125	17	23	28	3,672
Grass under 5 years old	74	30	34	25	57	119	25	38	47	88	8	13	12	871
Grass 5 years and over	37	21	22	10	32	76	18	23	31	28	4	5	3	2,194
All grass	44	22	24	12	36	88	20	26	37	38	4	6	5	3,065
All crops and grass	63	28	31	32	32	121	36	45	48	77	10	14	15	6,737

Source: British Survey of Fertiliser Practice, 2023.

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, 2023

	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	82	4	0	136	[c]	[c]	112	[c]	[c]	34
Winter wheat	97	9	15	175	49	52	170	4	8	1,181
Spring barley	80	4	10	92	48	53	74	2	6	596
Winter barley	97	11	18	136	48	64	131	5	11	435
Oats	85	6	10	94	72	64	80	4	6	215
Rye/triticale/durum wheat	94	5	8	103	[c]	[c]	97	[c]	[c]	30
Potatoes (seed or earlies)	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	4
Potatoes (maincrop)	52	9	38	135	[c]	188	69	[c]	72	41
Sugar beet	81	9	28	75	[c]	77	61	[c]	21	69
Spring oilseed rape	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	1
Winter oilseed rape	98	9	14	163	53	58	160	5	8	302
Linseed	90	5	4	63	[c]	[c]	57	[c]	[c]	23
Forage maize	56	2	9	67	[c]	76	38	[c]	7	157
Rootcrops for stockfeed	40	0	6	81	[c]	65	32	[c]	4	50
Leafy forage crops	26	0	0	48	[c]	[c]	12	[c]	[c]	56
Arable silage/other fodder crops	32	0	4	118	[c]	79	38	[c]	3	108
Peas – human consumption	0	6	24	[c]	[c]	33	[c]	[c]	8	26
Peas – animal consumption	0	2	3	[c]	[c]	[c]	[c]	[c]	[c]	28
Beans – animal consumption	0	4	9	[c]	65	50	[c]	3	4	211
Vegetables (brassicae)	31	0	0	[c]	[c]	[c]	[c]	[c]	[c]	14
Vegetables (other)	59	0	12	86	[c]	[c]	51	[c]	[c]	27
Soft fruit	87	0	0	69	[c]	[c]	60	[c]	[c]	12
Top fruit	45	0	1	48	[c]	[c]	22	[c]	[c]	10
Other crops	28	0	3	84	[c]	[c]	23	[c]	[c]	42
All crops	82	7	13	142	51	61	116	4	8	3,672
Grass under 5 years old	50	1	2	122	48	77	61	1	2	871
Grass 5 years and over	19	0	1	89	71	64	17	0	1	2,194
All grass	24	1	1	101	63	68	24	0	1	3,065
All crops and grass	50	3	7	131	52	61	65	2	4	6,737

Source: British Survey of Fertiliser Practice, 2023

Table GB1.3 Use of compound fertiliser, Great Britain, 2023

	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	5	23	23	0	c	31	30	c	c	7	7	c	34
Winter wheat	7	23	23	6	50	45	52	26	4	10	12	2	1181
Spring barley	42	49	48	16	50	45	56	30	21	22	27	5	596
Winter barley	11	25	27	7	51	46	56	27	6	12	15	2	435
Oats	16	20	20	6	41	33	42	19	6	7	8	1	215
Rye/triticale/durum wheat	9	11	12	8	c	c	c	c	c	c	c	c	30
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	c	c	4
Potatoes (maincrop)	82	82	61	13	90	100	139	c	73	82	86	c	41
Sugar beet	9	36	33	15	63	44	52	29	6	16	17	4	69
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	1
Winter oilseed rape	10	21	20	7	45	57	59	36	4	12	12	2	302
Linseed	7	4	3	3	c	c	c	c	c	c	c	c	23
Forage maize	40	40	9	3	27	47	47	26	11	19	4	1	157
Rootcrops for stockfeed	62	66	66	13	69	71	75	47	43	47	49	6	50
Leafy forage crops	47	53	53	13	50	35	37	28	23	18	20	4	56
Arable silage/other fodder crops	16	18	17	5	66	21	29	16	10	4	5	1	108
Peas – human consumption	0	9	9	4	c	c	c	c	c	c	c	c	26
Peas – animal consumption	0	1	1	0	c	c	c	c	c	c	c	c	28
Beans – animal consumption	0	9	9	1	c	49	47	27	c	4	4	0	211
Vegetables (brassicae)	29	58	58	0	c	57	95	c	c	34	56	c	14
Vegetables (other)	41	49	42	15	38	59	85	c	16	29	36	c	27
Soft fruit	26	27	27	21	49	36	57	c	13	10	15	c	12
Top fruit	9	9	8	0	c	c	c	c	c	c	c	c	10
Other crops	12	13	9	2	37	55	c	c	4	7	c	c	42
All crops	17	28	27	8	50	47	56	30	9	13	15	2	3672
Grass under 5 years old	31	29	32	9	84	24	35	30	26	7	11	3	871
Grass 5 years and over	21	20	21	4	55	17	20	20	11	3	4	1	2194
All grass	23	22	23	5	62	19	24	23	14	4	5	1	3065
All crops and grass	20	25	24	6	57	33	39	27	12	8	10	2	6737

Source: British Survey of Fertiliser Practice, 2023

Table GB1.4, Use of lime, Great Britain, 2023

	Crop area receiving dressing (%)						Average field rate (tonnes/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	8.6	c	c	c	2.3	11.0	4.5	c	c	c	0.2	3.6	6	34
Winter wheat	5.4	0.2	0.3	c	0.1	5.9	4.3	4.3	4.7	c	1.6	4.3	74	1,181
Spring barley	6.5	c	1.4	c	1.0	8.8	4.0	c	5.0	c	2.4	4.0	57	596
Winter barley	3.6	0.6	0.6	0.6	0.4	6.0	3.7	3.1	5.0	3.6	0.9	3.5	31	435
Oats	2.7	c	c	c	c	2.7	3.3	c	c	c	c	3.3	6	215
Rye/triticale/durum wheat	c	c	c	c	c	c	c	c	c	c	c	c	0	30
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	c	c	0	4
Potatoes (maincrop)	c	c	c	c	c	c	c	c	c	c	c	c	0	41
Sugar beet	23.8	5.2	c	18.2	c	47.2	4.8	2.8	c	5.4	c	4.8	27	69
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	0	1
Winter oilseed rape	6.0	0.5	0.1	1.2	0.1	8.0	3.5	2.7	2.5	4.3	5.0	3.6	24	302
Linseed	c	c	c	c	c	c	c	c	c	c	c	c	0	23
Forage maize	7.5	1.8	c	1.2	0.7	11.2	4.0	4.8	c	7.0	0.4	4.2	14	157
Rootcrops for stockfeed	5.6	1.6	c	c	2.3	9.5	4.9	2.0	c	c	0.4	3.3	8	50
Leafy forage crops	18.2	c	0.3	c	6.5	25.0	4.8	c	5.0	c	0.3	3.7	13	56
Arable silage/other fodder crops	6.7	c	c	c	6.2	12.9	5.0	c	c	c	3.7	4.4	8	108
Peas – human consumption	c	c	c	c	c	c	c	c	c	c	c	c	0	26
Peas – animal consumption	c	c	c	c	c	c	c	c	c	c	c	c	3	28
Beans – animal consumption	1.5	c	0.3	c	c	1.9	3.3	c	4.5	c	c	3.5	6	211
Vegetables (brassicae)	c	c	c	c	c	c	c	c	c	c	c	c	0	14
Vegetables (other)	c	c	c	c	c	c	c	c	c	c	c	c	2	27
Soft fruit	c	c	c	c	c	c	c	c	c	c	c	c	0	12
Top fruit	c	c	c	c	c	c	c	c	c	c	c	c	2	10
Other crops	c	c	c	c	c	c	c	c	c	c	c	c	1	42
All crops	5.5	0.4	0.4	0.6	0.5	7.5	4.1	3.5	4.9	5.2	2.0	4.1	282	3,672
Grass under 5 years old	5.9	0.2	0.4	0.2	0.9	7.6	4.5	3.6	3.6	5.0	1.7	4.1	78	871
Grass 5 years and over	2.9	0.2	0.1	c	0.5	3.7	3.2	4.3	3.8	c	1.9	3.1	99	2,194
All grass	3.4	0.2	0.2	0.0	0.6	4.3	3.6	4.2	3.7	5.0	1.9	3.4	177	3,065
All crops and grass	4.4	0.3	0.3	0.3	0.5	5.8	3.9	3.8	4.5	5.2	1.9	3.8	459	6,737

Source: British Survey of Fertiliser Practice 2023

Table GB2.1 Average fertiliser practice by grassland utilisation, Great Britain, 2023

	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	30	17	17	7	19	69	17	17	30	21	3	3	2	1,416
Grazed mown	65	33	37	21	65	95	22	34	38	62	7	12	8	1,411
All grazings	42	22	24	12	34	82	19	26	34	34	4	6	4	2,827
Cut for silage - grazed	74	37	42	23	70	99	22	33	40	74	8	14	9	1,021
Cut for silage - not grazed	82	21	24	24	82	149	22	29	56	122	5	7	13	150
All cut for silage	75	35	39	23	72	108	22	33	42	81	8	13	10	1,171
Cut for hay - grazed	44	23	25	15	51	67	19	30	29	29	4	7	4	438
Cut for hay - not grazed	60	21	22	19	24	115	31	45	55	68	7	10	11	65
All cut for hay	46	22	24	16	47	76	21	32	34	35	5	8	5	503
All mowings	67	31	35	21	65	103	22	34	41	69	7	12	9	1,617
All grass	44	22	24	12	36	88	20	26	37	38	4	6	5	3,065

Source: British Survey of Fertiliser Practice, 2023

Table GB3.0a Product use by month of application, Great Britain, 2023

Percents by row	Sep %	Oct %	Nov %	Dec %	Jan %	Feb %	Mar %	Apr %	May %	Jun %	Jul %	Aug %	Total product %
Straight N	0	0	0	0	0	9	29	37	16	5	2	1	100
Straight P	9	5	23	4	3	16	18	9	3	1	0	10	100
Straight K	3	5	14	1	1	18	28	20	7	1	1	1	100
Compounds	4	7	2	0	1	5	15	36	17	6	3	4	100
All fertilisers	2	2	1	0	0	9	25	36	16	5	3	2	100

Source: British Survey of Fertiliser Practice, 2023

Table GB3.0b Nutrient use by month of application, Great Britain, 2023

Percents by row	Sep %	Oct %	Nov %	Dec %	Jan %	Feb %	Mar %	Apr %	May %	Jun %	Jul %	Aug %	Total nutrient %
Nitrogen	0	0	0	0	0	8	28	38	17	5	3	1	100
Phosphate	7	11	6	1	1	9	14	30	12	3	2	5	100
Potash	5	9	7	0	1	10	18	30	11	3	2	3	100
Sulphur	1	1	1	0	0	17	34	30	11	3	2	1	100
Total	2	2	2	0	0	10	26	35	15	4	2	2	100

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 2023
'Nutrient' refers to the tonnage of each nutrient contained in the products used.
(e.g. 100kg of a 20:10:10 compound contains 20kg of N, 10kg of P_2O_5 and 10kg of K_2O, while 100kg of ammonium nitrate (straight N) contains typically 34.5kg of N)
Estimates of total nutrients are shown in Appendix 1, Table AA1.6

Source: British Survey of Fertiliser Practice, 2023

Table GB3.1, Product type as percentage of all product used by crop group, Great Britain, 2023

Percents by column	Spring cereal	Winter cereal	Potatoes	Sugar beet	Oilseed rape	Other crops	All crops	Grass for grazing	Grass for hay	Grass for silage	Grass not specified	All grass	All crops and grass
	%	%	%	%	%	%	%	%	%	%	%	%	%
Ammonium Nitrate	32.2	40.2	5.0	25.7	34.3	24.5	36.0	28.6	29.0	30.4	9.6	30.0	34.5
Urea	9.7	16.9	1.0	8.9	17.1	7.1	14.5	11.4	8.6	11.9	4.3	11.3	13.8
Calcium Ammonium Nitrate (CAN)	3.3	2.1	0.0	6.5	2.4	1.1	2.3	2.5	2.2	2.5	0.0	2.2	2.3
Urea Ammonium Nitrate (UAN)	13.7	20.0	9.0	5.5	26.0	6.5	18.2	3.8	4.9	4.7	14.9	4.6	14.9
Foliar Urea	0.8	1.5	0.3	2.7	1.3	0.6	1.3	0.1	0.0	0.1	0.0	0.1	1.0
Other Straight N	0.7	1.2	0.0	0.3	1.5	1.0	1.1	1.0	0.4	1.0	0.0	1.2	1.1
Triple Superphosphate (TSP)	1.3	1.9	1.6	1.5	2.0	1.9	1.8	0.5	0.2	0.2	4.2	0.4	1.5
Other Straight P	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Muriate of Potash (MOP)	1.5	2.7	13.2	1.9	2.1	5.2	2.9	0.9	1.1	0.8	4.2	0.8	2.4
Other Straight K	1.4	1.3	4.8	10.0	1.4	2.1	1.6	0.6	0.8	0.6	0.0	0.5	1.4
PK	5.9	6.9	1.0	26.6	6.2	11.2	7.2	1.6	0.0	1.5	13.6	1.5	5.8
NK	1.7	0.6	1.7	0.0	0.8	1.8	0.9	3.7	5.6	4.2	0.0	3.5	1.5
Low N (<19% N)	16.1	2.3	62.2	2.7	3.1	26.8	7.8	3.6	4.8	2.7	19.6	3.5	6.8
High N (>=19% N)	11.4	2.3	0.3	4.0	1.1	9.0	4.1	41.7	42.1	39.3	29.6	40.3	12.8
Other	0.2	0.1	0.0	3.7	0.7	1.4	0.4	0.1	0.2	0.1	0.0	0.1	0.3

	Spring cereal	Winter cereal	Potatoes	Sugar beet	Oilseed rape	Other crops	All crops	Grass for grazing	Grass for hay	Grass for silage	Grass not specifird	All grass	All crops and grass
Total product ('000 tonnes)	375	1,380	44	41	237	101	2,178	661	84	459	3	784	2,963

Source: British Survey of Fertiliser Practice, 2023

Table GB3.2a, Use of product type by crop group, split by type of crop, Great Britain, 2023

Percents by row	Spring cereal	Winter cereal	Potatoes	Sugar beet	Oilseed rape	Other crops	% of fertiliser product on All crops
	%	%	%	%	%	%	%
Ammonium Nitrate	15.2	69.2	0.3	1.3	10.1	3.9	74.8
Urea	11.2	72.5	0.1	0.9	13.3	2.0	79.7
Calcium Ammonium Nitrate (CAN)	22.9	55.9	0.0	5.9	12.3	3.0	77.7
Urea Ammonium Nitrate (UAN)	11.5	70.4	1.7	0.3	13.9	2.2	89.9
Foliar Urea	11.1	75.7	0.1	3.4	8.8	0.9	99.8
Other Straight N	5.3	69.9	0.0	0.4	22.2	2.2	73.2
Triple Superphosphate (TSP)	10.9	64.5	2.7	3.1	12.5	6.4	87.5
Other Straight P	0.0	100.0	0.0	0.0	0.0	0.0	100.0
Muriate of Potash (MOP)	12.6	59.4	7.6	1.9	9.6	9.0	87.5
Other Straight K	16.8	45.7	7.0	17.1	7.3	6.1	90.3
PK	13.5	63.6	0.3	6.7	9.7	6.2	96.0
NK	16.3	51.2	10.5	0.0	12.3	9.6	29.9
Low N (<19% N)	49.0	15.2	16.0	0.6	4.9	14.3	87.9
High N (>=19% N)	51.0	32.3	0.4	2.2	2.8	11.3	20.8
Other	6.9	29.3	0.0	19.7	19.6	24.5	93.0
Total product	17.2	63.4	2.0	1.9	10.9	4.6	73.5

Source: British Survey of Fertiliser Practice, 2023

Table GB3.2b, Use of product type on grass, split by type of grass, Great Britain, 2023

Percents by row	Grass for grazing	Grass for hay	Grass for silage	Grass not specified	% of fertiliser product on All grass
	%	%	%	%	%
Ammonium Nitrate	78.0	10.5	64.3	0.1	25.2
Urea	87.4	5.3	59.1	0.0	20.3
Calcium Ammonium Nitrate (CAN)	97.3	8.6	65.4	0.0	22.3
Urea Ammonium Nitrate (UAN)	44.0	25.9	56.3	2.2	10.1
Foliar Urea	100.0	0.0	51.0	0.0	0.2
Other Straight N	90.9	1.9	33.8	0.0	26.8
Triple Superphosphate (TSP)	83.7	15.3	10.1	1.0	12.5
Other Straight P	0.0	0.0	0.0	0.0	0.0
Muriate of Potash (MOP)	88.3	33.0	51.2	0.7	12.5
Other Straight K	98.7	6.0	53.3	0.0	9.7
PK	88.6	0.0	73.4	10.8	4.0
NK	91.6	8.5	82.7	0.0	70.1
Low N (<19% N)	93.7	19.0	38.7	0.5	12.1
High N (>=19% N)	93.0	9.7	53.4	0.1	79.2
Other	100.0	12.9	87.1	0.0	7.0
Total product	84.2	10.8	58.5	0.3	26.5

Note: The same grass field can have multiple uses in the same crop year, therefore percentages may sum to >100%

Source: British Survey of Fertiliser Practice, 2023

Table GB3.2c, Total use of product, Great Britain, 2023

Percents by row	Percent on All crops	Percent on All grass	All crops and grass	Total product ('000 tonnes)
Ammonium Nitrate	74.8%	25.2%	100.0%	1,041
Urea	79.7%	20.3%	100.0%	406
Calcium Ammonium Nitrate (CAN)	77.7%	22.3%	100.0%	65
Urea Ammonium Nitrate (UAN)	89.9%	10.1%	100.0%	485
Foliar Urea	99.8%	0.2%	100.0%	45
Other Straight N	73.2%	26.8%	100.0%	29
Triple Superphosphate (TSP)	87.5%	12.5%	100.0%	41
Other Straight P	100.0%	0.0%	100.0%	0
Muriate of Potash (MOP)	87.5%	12.5%	100.0%	57
Other Straight K	90.3%	9.7%	100.0%	36
PK	96.0%	4.0%	100.0%	161
NK	29.9%	70.1%	100.0%	45
Low N (<19% N)	87.9%	12.1%	100.0%	173
High N (>=19% N)	20.8%	79.2%	100.0%	370
Other	93.0%	7.0%	100.0%	9
Total product	73.5%	26.5%	100.0%	2,963

Source: British Survey of Fertiliser Practice, 2023

Table GB3.3, Product use by month of application, Great Britain, 2023

Percents by row	Jan %	Feb %	Mar %	Apr %	May %	Jun %	Jul %	Aug %	Sep %	Oct %	Nov %	Dec %	Total product ('000 tonnes)
Ammonium Nitrate	0.0	5.8	25.9	38.1	19.9	5.1	3.4	1.3	0.3	0.1	0.0	0.0	1,041
Urea	0.0	14.3	37.6	33.4	9.8	2.1	2.1	0.5	0.2	0.0	0.0	0.0	406
Calcium Ammonium Nitrate (CAN)	0.0	4.8	30.6	37.2	22.1	3.9	0.9	0.0	0.6	0.0	0.0	0.0	65
Urea Ammonium Nitrate (UAN)	0.4	13.1	30.8	38.8	12.0	2.7	1.1	0.7	0.0	0.0	0.4	0.0	485
Foliar Urea	0.0	0.1	8.2	36.3	16.7	36.3	2.1	0.0	0.3	0.0	0.0	0.0	45
Other Straight N	0.4	23.3	31.4	29.3	12.3	1.4	0.0	0.0	0.8	1.0	0.0	0.0	29
Triple Superphosphate (TSP)	2.5	15.8	18.5	9.4	2.6	1.2	0.0	9.8	8.6	4.9	22.8	3.9	41
Other Straight P	0.0	37.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.6	0.0	0
Muriate of Potash (MOP)	1.1	18.4	24.7	15.0	7.9	1.5	0.2	1.3	3.6	6.0	19.3	0.8	57
Other Straight K	0.7	17.8	33.8	28.6	4.4	0.0	3.2	0.0	2.7	3.7	5.2	0.0	36
PK	1.7	11.9	12.0	8.8	2.4	0.4	1.8	6.4	14.6	33.8	5.5	0.7	161
NK	0.0	0.5	22.2	17.2	14.9	21.1	6.2	8.6	5.6	0.0	3.8	0.0	45
Low N (<19% N)	1.2	5.2	15.4	55.7	13.1	0.9	0.5	3.2	3.7	1.0	0.1	0.0	173
High N (>=19% N)	0.1	2.9	14.1	40.1	25.7	8.9	5.2	2.8	0.2	0.0	0.2	0.0	370
Other	3.3	17.4	27.2	12.2	5.1	4.1	0.0	13.2	0.0	2.4	15.2	0.0	9
Total product	0.3	8.6	25.3	35.8	15.7	4.7	2.6	1.8	1.5	2.2	1.3	0.1	2,963

Source: British Survey of Fertiliser Practice, 2023

Table GB4.1, Average fertiliser practice on cereal farms, Great Britain, 2023

	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	86	31	26	15	140	34	[c]	120	11	[c]	23
Winter wheat	99	32	36	16	181	47	52	180	15	19	639
Spring barley	98	41	47	22	105	46	58	102	19	27	223
Winter barley	99	37	46	10	144	49	59	142	18	27	186
Oats	95	22	26	14	97	43	47	92	10	12	108
Rye/triticale/durum wheat	96	12	13	52	96	[c]	[c]	92	[c]	[c]	20
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]	4
Sugar beet	75	40	36	12	83	48	70	63	19	26	23
Spring oilseed rape	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	1
Winter oilseed rape	100	31	31	27	161	57	60	160	18	19	182
Linseed	88	10	5	17	65	[c]	[c]	57	[c]	[c]	19
Forage maize	79	44	18	69	85	55	96	67	24	17	41
Rootcrops for stockfeed	100	75	75	77	146	91	129	146	68	97	9
Leafy forage crops	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	3
Arable silage/other fodder crops	65	17	22	48	123	[c]	[c]	80	[c]	[c]	20
Peas – human consumption	0	24	31	0	[c]	[c]	[c]	[c]	[c]	[c]	8
Peas – animal consumption	0	2	3	0	[c]	[c]	[c]	[c]	[c]	[c]	21
Beans – animal consumption	0	14	16	0	[c]	58	45	[c]	8	7	143
Vegetables (brassicae)	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	1
Vegetables (other)	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	2
Soft fruit	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	1
Top fruit	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	2
Other crops	57	16	7	5	89	[c]	[c]	51	[c]	[c]	18
All crops	90	32	35	18	152	49	56	136	15	20	1,698
Grass under 5 years old	67	31	32	21	119	31	40	80	10	13	92
Grass 5 years and over	34	16	16	8	79	33	43	27	5	7	269
All grass	42	19	19	11	93	32	42	39	6	8	361
All crops and grass	82	30	32	17	147	47	55	121	14	18	2,059

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

Source: British Survey of Fertiliser Practice, 2023

Table GB4.2, Average fertiliser practice on general cropping farms, Great Britain, 2023

	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	3
Winter wheat	97	34	42	21	166	48	56	161	16	24	201
Spring barley	94	65	72	20	103	48	59	96	31	42	129
Winter barley	99	31	36	17	132	47	59	131	14	21	74
Oats	85	36	32	26	108	47	50	91	17	16	32
Rye/triticale/durum wheat	c	c	c	c	c	c	c	c	c	c	3
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	2
Potatoes (maincrop)	95	89	83	26	153	104	179	145	93	149	34
Sugar beet	95	49	77	24	73	43	64	69	21	49	39
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	0
Winter oilseed rape	100	29	34	20	182	57	65	182	17	22	63
Linseed	c	c	c	c	c	c	c	c	c	c	3
Forage maize	72	32	17	89	51	c	c	37	c	c	14
Rootcrops for stockfeed	c	c	c	c	c	c	c	c	c	c	4
Leafy forage crops	94	29	29	35	c	c	c	c	c	c	5
Arable silage/other fodder crops	29	22	22	6	c	c	c	c	c	c	10
Peas – human consumption	0	15	44	0	c	c	c	c	c	c	13
Peas – animal consumption	c	c	c	c	c	c	c	c	c	c	3
Beans – animal consumption	0	15	22	0	c	33	43	c	5	10	23
Vegetables (brassicae)	35	48	48	56	c	c	c	c	c	c	11
Vegetables (other)	59	37	37	18	77	35	79	45	13	29	21
Soft fruit	92	25	25	0	81	c	c	74	c	c	9
Top fruit	45	9	8	0	52	c	c	23	c	c	8
Other crops	39	13	20	14	69	c	c	27	c	c	15
All crops	87	41	47	21	134	52	67	117	21	32	719
Grass under 5 years old	76	17	28	49	124	34	84	95	6	24	65
Grass 5 years and over	26	11	10	22	86	19	25	22	2	3	161
All grass	36	12	14	27	103	24	50	37	3	7	226
All crops and grass	72	32	37	23	129	49	65	93	16	24	945

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, 2023

Table GB4.3, Average fertiliser practice on dairy farms, Great Britain, 2023

	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	3
Winter wheat	95	23	39	50	157	48	39	149	11	15	77
Spring barley	70	35	35	77	79	32	42	55	11	15	32
Winter barley	86	23	25	67	123	37	43	105	9	11	27
Oats	77	29	29	86	76	c	c	59	c	c	8
Rye/triticale/durum wheat	c	c	c	c	c	c	c	c	c	c	1
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	0
Potatoes (maincrop)	c	c	c	c	c	c	c	c	c	c	0
Sugar beet	c	c	c	c	c	c	c	c	c	c	0
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	0
Winter oilseed rape	100	29	29	26	126	c	c	126	c	c	7
Linseed	c	c	c	c	c	c	c	c	c	c	0
Forage maize	74	45	12	97	58	50	48	43	22	6	57
Rootcrops for stockfeed	66	69	69	97	67	47	58	44	33	40	9
Leafy forage crops	c	c	c	c	c	c	c	c	c	c	3
Arable silage/other fodder crops	19	6	0	72	66	c	c	12	c	c	32
Peas – human consumption	c	c	c	c	c	c	c	c	c	c	0
Peas – animal consumption	c	c	c	c	c	c	c	c	c	c	0
Beans – animal consumption	7	0	0	7	c	c	c	c	c	c	6
Vegetables (brassicae)	c	c	c	c	c	c	c	c	c	c	0
Vegetables (other)	c	c	c	c	c	c	c	c	c	c	1
Soft fruit	c	c	c	c	c	c	c	c	c	c	0
Top fruit	c	c	c	c	c	c	c	c	c	c	0
Other crops	c	c	c	c	c	c	c	c	c	c	2
All crops	77	30	24	72	108	45	42	83	14	10	265
Grass under 5 years old	84	18	22	83	154	32	39	130	6	9	181
Grass 5 years and over	67	25	27	64	109	21	27	73	5	7	316
All grass	73	22	25	70	125	23	30	91	5	8	497
All crops and grass	74	24	25	70	122	29	32	90	7	8	762

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

Source: British Survey of Fertiliser Practice, 2023

Table GB4.4, Average fertiliser practice on other livestock farms, Great Britain, 2023

	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	3
Winter wheat	100	13	41	30	163	41	51	163	5	21	32
Spring barley	91	72	74	77	87	41	47	80	29	35	85
Winter barley	96	53	58	67	115	58	59	110	30	34	42
Oats	68	28	38	43	87	40	39	59	11	15	20
Rye/triticale/durum wheat	c	c	c	c	c	c	c	c	c	c	0
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	0
Potatoes (maincrop)	c	c	c	c	c	c	c	c	c	c	3
Sugar beet	c	c	c	c	c	c	c	c	c	c	0
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	0
Winter oilseed rape	c	c	c	c	c	c	c	c	c	c	2
Linseed	c	c	c	c	c	c	c	c	c	c	0
Forage maize	34	12	28	93	38	64	c	13	8	c	20
Rootcrops for stockfeed	93	62	74	67	60	47	53	56	29	39	19
Leafy forage crops	78	72	72	39	58	38	41	45	28	30	35
Arable silage/other fodder crops	59	24	29	85	89	35	59	53	8	17	30
Peas – human consumption	c	c	c	c	c	c	c	c	c	c	0
Peas – animal consumption	c	c	c	c	c	c	c	c	c	c	0
Beans – animal consumption	c	c	c	c	c	c	c	c	c	c	2
Vegetables (brassicae)	c	c	c	c	c	c	c	c	c	c	0
Vegetables (other)	c	c	c	c	c	c	c	c	c	c	1
Soft fruit	c	c	c	c	c	c	c	c	c	c	0
Top fruit	c	c	c	c	c	c	c	c	c	c	0
Other crops	c	c	c	c	c	c	c	c	c	c	2
All crops	81	47	55	66	102	43	52	83	20	29	296
Grass under 5 years old	72	46	48	59	86	21	27	62	9	13	354
Grass 5 years and over	33	22	23	31	62	16	20	20	4	5	1,189
All grass	37	24	26	34	67	17	22	24	4	6	1,543
All crops and grass	39	26	28	36	71	20	25	28	5	7	1,839

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, 2023

Table GB4.5, Average fertiliser practice on mixed farms, Great Britain, 2023

	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	98	31	40	42	177	43	55	174	13	22	214
Spring barley	99	60	66	54	92	45	54	91	27	35	118
Winter barley	98	43	52	33	151	40	66	148	17	34	97
Oats	74	34	43	31	97	36	58	72	12	25	43
Rye/triticale/durum wheat	87	0	13	16	138	c	c	119	c	c	6
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	0
Sugar beet	100	23	37	56	100	c	c	100	c	c	5
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	0
Winter oilseed rape	100	34	39	57	161	50	50	161	17	19	44
Linseed	c	c	c	c	c	c	c	c	c	c	1
Forage maize	93	48	35	89	73	53	72	68	25	25	24
Rootcrops for stockfeed	98	69	72	45	56	90	57	55	62	41	9
Leafy forage crops	47	40	40	27	65	44	48	30	18	19	10
Arable silage/other fodder crops	43	28	38	56	50	c	24	22	c	9	14
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	4
Beans – animal consumption	0	8	17	10	c	c	97	c	c	16	34
Vegetables (brassicae)	c	c	c	c	c	c	c	c	c	c	2
Vegetables (other)	c	c	c	c	c	c	c	c	c	c	2
Soft fruit	c	c	c	c	c	c	c	c	c	c	2
Top fruit	c	c	c	c	c	c	c	c	c	c	0
Other crops	23	15	0	72	c	c	c	c	c	c	5
All crops	89	39	46	44	136	45	57	122	18	26	642
Grass under 5 years old	64	27	29	35	110	28	46	71	8	13	171
Grass 5 years and over	42	18	19	18	78	18	20	32	3	4	244
All grass	47	20	21	22	88	22	29	42	4	6	415
All crops and grass	67	30	33	33	119	36	47	80	11	16	1,057

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

Source: British Survey of Fertiliser Practice, 2023

Table GB5.1, Average fertiliser practice on cropping and grassland by River Basin District, Great Britain, 2023

		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	
Scotland (other than in # Solway Tweed)	All crops	96	84	83	38	115	51	66	110	43	55	386
	All grass	50	38	42	34	72	20	24	36	8	10	344
	All crops and grass	68	56	58	35	96	38	48	65	22	28	730
Solway Tweed	All crops	76	43	52	40	148	43	63	113	18	33	163
	All grass	48	27	30	34	104	20	34	49	5	10	302
	All crops and grass	53	30	34	36	116	26	42	61	8	14	465
Northumbria	All crops	95	41	44	21	191	51	51	182	21	22	119
	All grass	19	14	15	21	74	24	27	14	3	4	167
	All crops and grass	45	23	25	21	158	40	41	71	9	10	286
Humber	All crops	89	27	33	26	164	46	71	146	12	23	732
	All grass	45	13	14	46	91	25	29	41	3	4	384
	All crops and grass	71	21	25	34	145	40	61	103	8	16	1,116
Anglian	All crops	89	29	33	11	146	51	51	129	15	17	878
	All grass	28	8	8	8	84	26	30	24	2	2	175
	All crops and grass	78	25	28	10	142	50	50	110	13	14	1,053
Thames	All crops	89	22	28	28	131	43	45	116	9	13	336
	All grass	30	3	4	10	93	37	36	28	1	1	161
	All crops and grass	70	16	20	22	125	42	45	88	7	9	497
South East	All crops	87	30	38	11	149	49	52	129	15	20	86
	All grass	24	8	8	22	83	41	52	20	3	4	67
	All crops and grass	56	19	23	16	135	47	52	75	9	12	153
South West	All crops	81	44	42	42	112	49	55	91	21	23	411
	All grass	39	18	18	38	83	20	23	32	3	4	522
	All crops and grass	50	24	24	39	96	34	37	48	8	9	933
Severn (in England)	All crops	82	19	25	46	144	45	54	117	9	14	361
	All grass	34	11	12	35	103	30	34	35	3	4	218
	All crops and grass	58	15	19	41	132	40	48	77	6	9	579
All Wales	All crops	95	40	44	63	108	43	60	103	17	27	111
	All grass	53	36	37	40	85	18	22	45	6	8	475
	All crops and grass	56	36	37	42	88	20	25	50	7	9	586
North West	All crops	89	46	48	35	146	35	59	130	16	28	61
	All grass	61	25	28	58	98	14	27	60	3	8	236
	All crops and grass	65	28	31	55	107	19	33	69	5	10	297
Not allocated to an RBD	All crops and grass	50	8	22	25	128	22	81	64	2	18	42

Note: the majority of the Dee River Basin District is included in the Wales data, with the area of the Dee RBD in England being too small to provide usable data. Therefore, English Dee data are incorporated with those few returns not allocated to a River Basin District and are not shown separately. See Appendix 6 for a map showing River Basin Districts in Great Britain.
Source: British Survey of Fertiliser Practice, 2023

Table EW1.1, Total fertiliser use, England & Wales, 2023

	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	83	23	19	50	22	139	38	32	33	116	9	6	16	32
Winter wheat	99	29	35	66	21	177	46	50	54	175	13	18	36	1,089
Spring barley	93	30	38	50	26	101	42	50	42	94	13	19	21	403
Winter barley	98	32	40	69	21	139	45	58	49	136	14	23	34	382
Oats	92	22	27	63	20	98	44	53	45	90	10	14	28	179
Rye/triticale/durum wheat	93	10	12	47	43	102	c	c	44	95	c	c	21	24
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	c	c	c	2
Potatoes (maincrop)	94	87	80	39	34	170	103	174	c	160	90	139	c	34
Sugar beet	87	45	61	59	23	77	46	63	37	67	21	39	22	69
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	c	1
Winter oilseed rape	100	28	30	72	30	163	55	59	71	163	15	18	51	264
Linseed	90	9	7	51	17	66	c	c	28	59	c	c	14	23
Forage maize	74	40	18	17	87	67	49	62	31	49	20	11	5	155
Rootcrops for stockfeed	86	60	66	26	74	88	55	73	55	76	33	48	14	44
Leafy forage crops	65	41	41	13	37	44	25	30	c	29	10	12	c	28
Arable silage/other fodder crops	47	17	19	18	55	96	22	42	42	45	4	8	7	89
Peas – human consumption	0	19	40	24	0	c	68	49	c	c	13	19	c	22
Peas – animal consumption	0	3	4	4	0	c	c	c	c	c	c	c	c	28
Beans – animal consumption	0	13	16	6	1	c	54	45	37	c	7	7	2	201
Vegetables (brassicae)	31	57	57	25	62	c	c	c	c	c	c	c	c	13
Vegetables (other)	52	52	43	30	21	139	62	92	c	73	32	39	c	22
Soft fruit	91	27	27	76	0	80	36	57	76	73	10	15	58	12
Top fruit	45	9	9	9	0	52	c	c	c	23	c	c	c	10
Other crops	40	14	13	15	22	73	55	101	44	29	8	13	7	38
All crops	88	29	33	56	25	145	48	56	52	127	14	19	29	3,164
Grass under 5 years old	74	23	27	25	59	123	26	38	50	90	6	10	12	704
Grass 5 years and over	36	19	19	9	32	77	18	22	32	28	3	4	3	1,828
All grass	42	19	20	12	36	90	20	26	38	38	4	5	4	2,532
All crops and grass	63	24	26	32	31	125	35	43	49	79	8	11	16	5,696

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 fertiliser nutrient.

Source: British Survey of Fertiliser Practice 2023

Table EW1.2, Use of straight fertiliser, England & Wales, 2023

	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	81	4	0	140	[c]	[c]	114	[c]	[c]	32
Winter wheat	98	8	15	176	47	50	172	4	7	1,089
Spring barley	87	5	14	98	45	50	86	2	7	403
Winter barley	97	11	18	137	45	61	133	5	11	382
Oats	90	6	11	95	68	64	86	4	7	179
Rye/triticale/durum wheat	92	7	7	103	[c]	[c]	94	[c]	[c]	24
Potatoes (seed or earlies)	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	2
Potatoes (maincrop)	58	4	31	145	[c]	168	85	[c]	52	34
Sugar beet	81	9	28	75	[c]	77	61	[c]	21	69
Spring oilseed rape	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	1
Winter oilseed rape	99	10	15	163	52	58	161	5	9	264
Linseed	90	5	4	63	[c]	[c]	57	[c]	[c]	23
Forage maize	57	2	10	67	[c]	76	38	[c]	7	155
Rootcrops for stockfeed	47	0	7	81	[c]	65	38	[c]	4	44
Leafy forage crops	33	0	0	48	[c]	[c]	16	[c]	[c]	28
Arable silage/other fodder crops	33	0	4	115	[c]	[c]	38	[c]	[c]	89
Peas – human consumption	0	8	29	[c]	[c]	33	[c]	[c]	9	22
Peas – animal consumption	0	2	3	[c]	[c]	[c]	[c]	[c]	[c]	28
Beans – animal consumption	0	5	8	[c]	65	39	[c]	3	3	201
Vegetables (brassicae)	29	0	0	[c]	[c]	[c]	[c]	[c]	[c]	13
Vegetables (other)	44	0	0	[c]	[c]	[c]	[c]	[c]	[c]	22
Soft fruit	87	0	0	69	[c]	[c]	60	[c]	[c]	12
Top fruit	45	0	1	48	[c]	[c]	22	[c]	[c]	10
Other crops	29	0	4	84	[c]	[c]	24	[c]	[c]	38
All crops	84	7	14	146	49	57	122	4	8	3,164
Grass under 5 years old	55	1	2	125	[c]	67	69	[c]	1	704
Grass 5 years and over	20	0	1	90	77	86	18	0	0	1,828
All grass	25	1	1	102	65	78	26	0	1	2,532
All crops and grass	53	4	7	135	50	58	71	2	4	5,696

Source: British Survey of Fertiliser Practice 2023

Table EW1.3, Use of compound fertiliser, England & Wales, 2023

	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	3	19	19	0	c	35	32	c	c	7	6	c	32
Winter wheat	6	21	21	5	48	45	50	23	3	9	10	1	1,089
Spring barley	16	25	23	6	51	42	50	30	8	11	12	2	403
Winter barley	8	21	23	5	49	44	54	25	4	9	13	1	382
Oats	11	16	16	6	42	35	44	17	5	6	7	1	179
Rye/triticale/durum wheat	1	4	5	0	c	c	c	c	c	c	c	c	24
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	c	c	2
Potatoes (maincrop)	84	84	60	17	90	100	144	c	75	83	86	c	34
Sugar beet	9	36	33	15	63	44	52	29	6	16	17	4	69
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	1
Winter oilseed rape	7	18	16	4	38	57	59	25	2	10	9	1	264
Linseed	7	4	3	3	c	c	c	c	c	c	c	c	23
Forage maize	40	40	9	3	27	47	47	26	11	19	4	1	155
Rootcrops for stockfeed	55	60	59	13	69	55	73	47	38	33	43	6	44
Leafy forage crops	32	41	41	12	41	25	30	c	13	10	12	c	28
Arable silage/other fodder crops	13	17	15	6	50	22	32	c	7	4	5	c	89
Peas – human consumption	0	11	11	4	c	c	c	c	c	c	c	c	22
Peas – animal consumption	0	1	1	0	c	c	c	c	c	c	c	c	28
Beans – animal consumption	0	9	9	1	c	49	47	c	c	4	4	c	201
Vegetables (brassicae)	27	57	57	0	c	c	c	c	c	c	c	c	13
Vegetables (other)	41	52	43	20	35	62	92	c	15	32	39	c	22
Soft fruit	26	27	27	21	49	36	57	c	13	10	15	c	12
Top fruit	9	9	8	0	c	c	c	c	c	c	c	c	10
Other crops	13	14	9	2	37	55	c	c	5	8	c	c	38
All crops	10	22	20	5	47	47	54	27	5	10	11	1	3,164
Grass under 5 years old	24	21	25	7	89	25	36	35	21	5	9	2	704
Grass 5 years and over	19	18	19	4	53	17	20	20	10	3	4	1	1,828
All grass	20	19	20	4	60	18	24	24	12	3	5	1	2,532
All crops and grass	15	20	20	5	56	33	38	26	9	7	7	1	5,696

Source: British Survey of Fertiliser Practice 2023

Table EW1.4, Use of lime, England & Wales, 2023

	Crop area receiving dressing (%)						Average field rate (tonnes/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	9.1%	c	c	c	2.5%	11.5%	4.5	c	c	c	0.2	3.6	6	32
Winter wheat	5.1%	0.2%	0.1%	c	0.1%	5.5%	4.3	4.3	5.0	c	1.6	4.2	61	1,089
Spring barley	1.6%	c	0.1%	c	0.9%	2.6%	4.6	c	5.0	c	1.1	3.5	20	403
Winter barley	2.8%	0.7%	0.1%	0.7%	0.5%	4.8%	3.9	3.1	5.0	3.6	0.9	3.5	22	382
Oats	c	c	c	c	c	c	c	c	c	c	c	c	3	179
Rye/triticale/durum wheat	c	c	c	c	c	c	c	c	c	c	c	c	0	24
Potatoes (seed or earlies)	c	c	c	c	c	c	c	c	c	c	c	c	0	2
Potatoes (maincrop)	c	c	c	c	c	c	c	c	c	c	c	c	0	34
Sugar beet	23.8%	5.2%	c	18.2%	c	47.2%	4.8	2.8	c	5.4	c	4.8	27	69
Spring oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	0	1
Winter oilseed rape	6.1%	0.6%	c	1.3%	0.1%	8.1%	3.7	2.7	c	4.3	5.0	3.7	21	264
Linseed	c	c	c	c	c	c	c	c	c	c	c	c	0	23
Forage maize	7.6%	1.8%	c	1.2%	0.7%	11.3%	4.0	4.8	c	7.0	0.4	4.2	14	155
Rootcrops for stockfeed	6.7%	1.8%	c	c	2.8%	11.3%	4.9	2.0	c	c	0.4	3.3	8	44
Leafy forage crops	24.5%	c	c	c	10.8%	35.3%	4.9	c	c	c	0.3	3.5	10	28
Arable silage/other fodder crops	0.4%	c	c	c	8.3%	8.8%	4.3	c	c	c	3.7	3.8	5	89
Peas – human consumption	c	c	c	c	c	c	c	c	c	c	c	c	0	22
Peas – animal consumption	c	c	c	c	c	c	c	c	c	c	c	c	3	28
Beans – animal consumption	1.4%	c	0.4%	c	c	1.8%	3.0	c	4.5	c	c	3.3	5	201
Vegetables (brassicae)	c	c	c	c	c	c	c	c	c	c	c	c	0	13
Vegetables (other)	c	c	c	c	c	c	c	c	c	c	c	c	2	22
Soft fruit	c	c	c	c	c	c	c	c	c	c	c	c	0	12
Top fruit	c	c	c	c	c	c	c	c	c	c	c	c	2	10
Other crops	c	c	c	c	c	c	c	c	c	c	c	c	1	38
All crops	4.6%	0.4%	0.1%	0.7%	0.5%	6.4%	4.2	3.5	4.9	5.2	1.7	4.1	210	3,164
Grass under 5 years old	3.7%	0.3%	0.4%	0.3%	0.8%	5.4%	4.0	3.6	2.8	5.0	1.2	3.6	59	704
Grass 5 years and over	2.5%	0.2%	0.1%	c	0.5%	3.3%	3.4	4.3	0.8	c	2.2	3.3	67	1,828
All grass	2.7%	0.2%	0.1%	0.0%	0.5%	3.6%	3.6	4.2	1.8	5.0	2.0	3.3	126	2,532
All crops and grass	3.6%	0.3%	0.1%	0.4%	0.5%	4.9%	3.9	3.8	3.0	5.2	1.8	3.8	336	5,696

Source: British Survey of Fertiliser Practice, 2023

Table EW1.5, Percentage of crop area by field application rate – Nitrogen, England & Wales, 2023

Percents by row		kg/ha 0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	Fields in survey
Spring wheat	%	17	0	7	9	13	10	3	9	18	14	-	-	-	-	-	-	-	-	32
Winter wheat	%	1	0	0	4	4	8	12	19	16	19	7	5	2	1	-	-	-	-	1,089
Spring barley	%	7	2	10	12	18	28	16	5	2	-	-	-	-	-	-	-	-	-	403
Winter barley	%	2	0	2	2	14	18	22	21	12	5	1	-	-	-	-	-	-	-	382
Oats	%	8	0	5	16	27	26	10	6	-	-	-	-	-	-	-	-	-	-	179
Rye/triticale/durum wheat	%	7	0	2	34	15	14	12	17	-	-	-	-	-	-	-	-	-	-	24
Potatoes (seed or earlies)	%	c	c	c	c	c	c	c	c	c	c	c	c	c	-	-	-	-	-	2
Potatoes (maincrop)	%	6	0	4	7	15	6	5	12	17	3	8	0	18	-	-	-	-	-	34
Sugar beet	%	13	6	21	23	12	21	1	1	3	-	-	-	-	-	-	-	-	-	69
Spring oilseed rape	%	c	c	c	c	c	c	c	c	c	c	c	-	-	-	-	-	-	-	1
Winter oilseed rape	%	0	0	1	4	5	14	12	17	19	15	12	-	-	-	-	-	-	-	264
Linseed	%	10	0	32	15	41	2	-	-	-	-	-	-	-	-	-	-	-	-	23
Forage maize	%	26	15	14	19	9	9	3	1	1	0	2	-	-	-	-	-	-	-	155
Rootcrops for stockfeed	%	14	1	25	18	15	8	3	6	0	9	-	-	-	-	-	-	-	-	44
Leafy forage crops	%	35	1	40	21	4	-	-	-	-	-	-	-	-	-	-	-	-	-	28
Arable silage/other fodder crops	%	53	4	4	5	6	18	5	3	1	-	-	-	-	-	-	-	-	-	89
Peas – human consumption	%	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
Peas – animal consumption	%	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28
Beans – animal consumption	%	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	201
Vegetables (brassicae)	%	69	0	0	2	4	25	-	-	-	-	-	-	-	-	-	-	-	-	13
Vegetables (other)	%	48	5	6	0	3	0	0	27	0	11	-	-	-	-	-	-	-	-	22
Soft fruit	%	9	22	0	0	47	0	21	0	0	1	-	-	-	-	-	-	-	-	12
Top fruit	%	55	0	30	9	0	0	5	-	-	-	-	-	-	-	-	-	-	-	10
Other crops	%	60	4	14	5	3	9	1	3	-	-	-	-	-	-	-	-	-	-	38
All crops	%	12	1	4	7	9	13	11	13	10	10	4	2	1	-	-	-	-	-	3,164
Grass under 5 years old	%	26	2	11	13	10	6	8	7	3	3	2	4	2	0	0	2	-	-	704
Grass 5 years and over	%	64	2	11	9	5	3	2	2	1	1	-	-	-	-	-	-	-	-	1,828
All grass	%	58	2	11	10	5	4	3	2	1	1	1	1	-	-	-	-	-	-	2,532
All crops and grass	%	37	2	8	9	7	8	7	7	6	5	2	1	1	-	-	-	-	-	5,696

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table EW1.6, Percentage of crop by field application rate – Phosphate, England & Wales, 2023

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	%	77	0	17	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	32
Winter wheat	%	71	4	15	7	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1,089
Spring barley	%	70	6	14	7	1	1	-	-	-	-	-	-	-	-	-	-	-	-	403
Winter barley	%	68	6	14	8	2	-	-	-	-	-	-	-	-	-	-	-	-	-	382
Oats	%	78	6	9	5	2	1	-	-	-	-	-	-	-	-	-	-	-	-	179
Rye/triticale/durum wheat	%	90	0	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24
Potatoes (seed or earlies)	%	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	-	-	-	-	-	-	-	-	-	-	2
Potatoes (maincrop)	%	13	0	14	11	21	21	2	11	-	-	-	-	-	-	-	-	-	-	34
Sugar beet	%	55	18	16	3	3	2	0	3	-	-	-	-	-	-	-	-	-	-	69
Spring oilseed rape	%	[c]	[c]	[c]	[c]	[c]	[c]	-	-	-	-	-	-	-	-	-	-	-	-	1
Winter oilseed rape	%	72	3	13	6	3	2	-	-	-	-	-	-	-	-	-	-	-	-	264
Linseed	%	91	0	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23
Forage maize	%	60	6	14	15	4	2	-	-	-	-	-	-	-	-	-	-	-	-	155
Rootcrops for stockfeed	%	40	10	23	15	5	1	-	-	-	-	-	-	-	-	-	-	-	-	44
Leafy forage crops	%	59	29	6	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	28
Arable silage/other fodder crops	%	83	12	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	89
Peas – human consumption	%	81	6	4	0	0	8	-	-	-	-	-	-	-	-	-	-	-	-	22
Peas – animal consumption	%	97	0	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28
Beans – animal consumption	%	87	1	6	4	2	1	-	-	-	-	-	-	-	-	-	-	-	-	201
Vegetables (brassicae)	%	43	0	30	2	25	-	-	-	-	-	-	-	-	-	-	-	-	-	13
Vegetables (other)	%	48	23	10	0	3	-	17	-	-	-	-	-	-	-	-	-	-	-	22
Soft fruit	%	73	4	22	0	0	1	-	-	-	-	-	-	-	-	-	-	-	-	12
Top fruit	%	91	8	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
Other crops	%	86	1	7	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38
All crops	%	71	5	13	7	2	1	-	-	-	-	-	-	-	-	-	-	-	-	3,164
Grass under 5 years old	%	77	14	7	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	704
Grass 5 years and over	%	81	14	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,828
All grass	%	81	14	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,532
All crops and grass	%	76	10	8	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	5,696

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table EW1.7 Percentage of crop area by field application rate – Potash, England & Wales, 2023

Percents by row		kg/ha 0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	Fields in survey
Spring wheat	%	81	0	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32
Winter wheat	%	65	8	12	10	4	1	-	-	-	-	-	-	-	-	-	-	-	-	1,089
Spring barley	%	62	6	13	12	3	3	-	-	-	-	-	-	-	-	-	-	-	-	403
Winter barley	%	60	6	10	12	7	2	1	1	-	-	-	-	-	-	-	-	-	-	382
Oats	%	73	9	6	7	3	1	1	1	-	-	-	-	-	-	-	-	-	-	179
Rye/triticale/durum wheat	%	88	0	1	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24
Potatoes (seed or earlies)	%	c	c	c	c	c	c	c	c	c	c	c	c	c	c	-	-	-	-	2
Potatoes (maincrop)	%	20	0	10	0	2	9	16	8	7	1	9	2	10	5	-	-	-	-	34
Sugar beet	%	39	19	10	16	2	8	0	4	1	1	-	-	-	-	-	-	-	-	69
Spring oilseed rape	%	c	c	c	c	c	c	c	c	-	-	-	-	-	-	-	-	-	-	1
Winter oilseed rape	%	70	4	8	10	3	3	1	1	-	-	-	-	-	-	-	-	-	-	264
Linseed	%	93	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23
Forage maize	%	82	4	5	2	2	3	1	-	-	-	-	-	-	-	-	-	-	-	155
Rootcrops for stockfeed	%	34	8	22	18	6	4	2	0	0	1	6	-	-	-	-	-	-	-	44
Leafy forage crops	%	59	28	8	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	28
Arable silage/other fodder crops	%	81	7	7	3	0	0	0	2	-	-	-	-	-	-	-	-	-	-	89
Peas – human consumption	%	60	17	6	10	2	6	-	-	-	-	-	-	-	-	-	-	-	-	22
Peas – animal consumption	%	96	0	2	0	2	-	-	-	-	-	-	-	-	-	-	-	-	-	28
Beans – animal consumption	%	84	4	6	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	201
Vegetables (brassicae)	%	43	0	30	2	0	0	0	0	25	-	-	-	-	-	-	-	-	-	13
Vegetables (other)	%	57	0	23	0	3	0	0	17	-	-	-	-	-	-	-	-	-	-	22
Soft fruit	%	73	4	0	22	0	0	0	0	1	-	-	-	-	-	-	-	-	-	12
Top fruit	%	91	0	0	8	1	-	-	-	-	-	-	-	-	-	-	-	-	-	10
Other crops	%	87	0	7	3	0	0	0	0	0	1	0	0	0	2	-	-	-	-	38
All crops	%	67	7	10	9	3	2	1	-	-	-	-	-	-	-	-	-	-	-	3,164
Grass under 5 years old	%	73	12	8	4	0	1	1	-	-	-	-	-	-	-	-	-	-	-	704
Grass 5 years and over	%	81	13	5	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1,828
All grass	%	80	13	5	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2,532
All crops and grass	%	74	10	8	5	2	1	0	-	-	-	-	-	-	-	-	-	-	-	5,696

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed.

Table EW1.8, Percentage of crop area by field application rate – Sulphur England & Wales, 2023

Percents by row		kg/ha 0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	Fields in survey
Spring wheat	%	50	27	13	8	1	-	-	-	-	-	-	-	-	-	-	-	-	-	32
Winter wheat	%	34	9	27	18	5	3	2	1	-	-	-	-	-	-	-	-	-	-	1,089
Spring barley	%	50	14	21	11	2	1	1	-	-	-	-	-	-	-	-	-	-	-	403
Winter barley	%	31	7	30	24	5	1	1	-	-	-	-	-	-	-	-	-	-	-	382
Oats	%	37	13	28	16	3	1	1	-	-	-	-	-	-	-	-	-	-	-	179
Rye/triticale/durum wheat	%	53	7	29	4	7	-	-	-	-	-	-	-	-	-	-	-	-	-	24
Potatoes (seed or earlies)	%	c	c	c	c	c	c	c	-	-	-	-	-	-	-	-	-	-	-	2
Potatoes (maincrop)	%	61	9	7	10	11	0	3	-	-	-	-	-	-	-	-	-	-	-	34
Sugar beet	%	41	36	9	6	6	2	-	-	-	-	-	-	-	-	-	-	-	-	69
Spring oilseed rape	%	c	c	c	c	c	c	c	c	-	-	-	-	-	-	-	-	-	-	1
Winter oilseed rape	%	28	4	17	20	17	9	3	1	-	-	-	-	-	-	-	-	-	-	264
Linseed	%	49	26	21	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23
Forage maize	%	83	8	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	155
Rootcrops for stockfeed	%	74	5	2	16	0	1	1	-	-	-	-	-	-	-	-	-	-	-	44
Leafy forage crops	%	87	9	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28
Arable silage/other fodder crops	%	82	8	2	5	3	-	-	-	-	-	-	-	-	-	-	-	-	-	89
Peas – human consumption	%	76	17	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
Peas – animal consumption	%	96	1	0	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28
Beans – animal consumption	%	94	1	4	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	201
Vegetables (brassicae)	%	75	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
Vegetables (other)	%	70	0	0	2	27	-	-	-	-	-	-	-	-	-	-	-	-	-	22
Soft fruit	%	24	1	7	0	68	-	-	-	-	-	-	-	-	-	-	-	-	-	12
Top fruit	%	91	0	0	8	1	-	-	-	-	-	-	-	-	-	-	-	-	-	10
Other crops	%	85	4	7	2	0	0	0	0	1	-	-	-	-	-	-	-	-	-	38
All crops	%	44	10	22	15	5	2	2	-	-	-	-	-	-	-	-	-	-	-	3,164
Grass under 5 years old	%	75	7	7	4	3	2	-	-	-	-	-	-	-	-	-	-	-	-	704
Grass 5 years and over	%	91	5	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,828
All grass	%	88	5	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2,532
All crops and grass	%	68	7	12	7	3	1	1	-	-	-	-	-	-	-	-	-	-	-	5,696

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table EW2.1, Average fertiliser practice by grassland utilisation, England & Wales, 2023

	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	28	14	14	6	19	72	17	18	33	20	2	2	2	1,129
Grazed mown	63	29	32	20	64	90	21	31	36	57	6	10	7	1,171
All grazings	40	19	20	11	34	82	19	25	35	33	4	5	4	2,300
Cut for silage - grazed	74	33	37	23	70	95	21	31	38	70	7	11	9	819
Cut for silage - not grazed	84	22	25	25	85	148	22	29	56	123	5	7	14	148
All cut for silage	76	31	34	23	73	106	21	30	41	80	7	10	10	967
Cut for hay - grazed	44	21	23	14	50	65	19	28	30	28	4	6	4	400
Cut for hay - not grazed	60	21	22	19	24	115	31	45	55	68	7	10	11	65
All cut for hay	46	21	23	15	46	75	21	30	35	35	4	7	5	465
All mowings	66	28	31	20	65	101	22	31	41	66	6	10	8	1,375
All grass	42	19	20	12	36	90	20	26	38	38	4	5	4	2,532

Source: British Survey of Fertiliser Practice, 2023

Table EW2.2, Percentage of grass area by field application rate – Nitrogen, England & Wales, 2023

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	%	72	2	10	7	2	2	1	1	1	1	-	-	-	-	-	-	-	-	1,129
Grazed mown	%	37	3	13	14	12	5	7	4	2	1	1	1	1	-	-	-	-	-	1,171
All grazings	%	60	2	11	10	5	3	3	2	1	1	-	-	-	-	-	-	-	-	2,300
Cut for silage – grazed	%	26	2	14	17	14	6	9	5	2	1	1	1	1	-	-	-	-	-	819
Cut for silage – not grazed	%	16	5	4	12	6	13	5	10	6	4	5	6	1	1	0	5	-	-	148
All cut for silage	%	24	3	12	16	12	8	9	6	3	2	2	2	1	0	0	1	-	-	967
Cut for hay – grazed	%	56	3	13	10	11	3	1	1	0	1	-	-	-	-	-	-	-	-	400
Cut for hay – not grazed	%	40	0	2	19	16	4	0	11	0	0	0	8	-	-	-	-	-	-	65
All cut for hay	%	54	3	12	12	12	3	1	3	0	1	0	1	-	-	-	-	-	-	465
All mowings	%	34	3	11	14	11	6	6	4	2	1	1	2	1	0	0	1	-	-	1,375
All grass	%	58	2	11	10	5	4	3	2	1	1	1	1	-	-	-	-	-	-	2,532

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table EW2.3. Percentage of grass area by field application rate – Phosphate, England & Wales, 2023

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	%	86	11	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,129
Grazed mown	%	71	20	7	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,171
All grazings	%	81	14	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,300
Cut for silage - grazed	%	67	23	8	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	819
Cut for silage - not grazed	%	78	14	7	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	148
All cut for silage	%	69	22	7	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	967
Cut for hay - grazed	%	79	14	6	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400
Cut for hay - not grazed	%	79	7	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65
All cut for hay	%	79	13	7	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	465
All mowings	%	72	18	7	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,375
All grass	%	81	14	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,532

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table EW2.4, Percentage of grass area by field application rate – Potash, England & Wales, 2023

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	%	86	11	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,129
Grazed mown	%	68	17	10	2	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1,171
All grazings	%	80	13	5	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2,300
Cut for silage - grazed	%	63	20	12	3	1	1	1	-	-	-	-	-	-	-	-	-	-	-	819
Cut for silage - not grazed	%	75	15	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	148
All cut for silage	%	66	19	11	3	1	1	1	-	-	-	-	-	-	-	-	-	-	-	967
Cut for hay - grazed	%	77	14	6	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	400
Cut for hay - not grazed	%	78	3	8	9	1	-	-	-	-	-	-	-	-	-	-	-	-	-	65
All cut for hay	%	77	12	7	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	465
All mowings	%	69	16	10	3	1	1	1	-	-	-	-	-	-	-	-	-	-	-	1,375
All grass	%	80	13	5	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2,532

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table EW2.5, Percentage of grass area by field application rate – Sulphur, England & Wales, 2023

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	%	94	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,129
Grazed mown	%	80	9	6	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	1,171
All grazings	%	89	5	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2,300
Cut for silage - grazed	%	77	10	6	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	819
Cut for silage - not grazed	%	75	6	12	2	0	3	0	1	1	-	-	-	-	-	-	-	-	-	148
All cut for silage	%	77	9	7	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	967
Cut for hay - grazed	%	86	8	4	1	0	1	-	-	-	-	-	-	-	-	-	-	-	-	400
Cut for hay - not grazed	%	81	2	8	0	8	0	1	-	-	-	-	-	-	-	-	-	-	-	65
All cut for hay	%	85	7	5	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	465
All mowings	%	80	8	7	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	1,375
All grass	%	88	5	4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2,532

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table EW3.0a, Product use by month of application, England & Wales, 2023

Percents by row		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total product
Straight N	%	0	0	0	0	0	10	31	37	14	4	3	1	100
Straight P	%	8	6	27	0	3	17	16	10	2	0	0	11	100
Straight K	%	3	6	17	1	1	20	27	19	5	0	0	1	100
Compounds	%	5	11	2	0	1	6	18	27	16	6	3	5	100
All fertilisers	%	1	2	2	0	0	10	28	34	14	5	3	2	100

Source: British Survey of Fertiliser Practice, 2023

Table EW3.0b, Nutrient use by month of application, England & Wales, 2023

Percents by row		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total nutrient
Nitrogen	%	0	0	0	0	0	9	30	37	15	5	3	1	100
Phosphate	%	7	14	8	0	2	12	17	20	11	2	2	6	100
Potash	%	6	12	10	0	1	13	20	20	9	3	2	3	100
Sulphur	%	1	1	1	0	1	19	36	28	9	3	1	1	100
Total	%	1	2	2	0	0	11	29	33	13	4	2	2	100

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 2023
'Nutrient' refers to the tonnage of each nutrient contained in the products used.
(e.g. 100kg of a 20:10:10 compound contains 20kg of N, 10kg of P_2O_5 and 10kg of K_2O, while 100kg of ammonium nitrate (straight N) contains typically 34.5kg of N)
Estimates of total nutrients are shown in Appendix 1, Table AA1.6

Source: British Survey of Fertiliser Practice, 2023

Table EW3.1, Product type as a percentage of all product used by crop group, England & Wales, 2023

Percents by column	Spring cereal %	Winter cereal %	Potatoes %	Sugar beet %	Oilseed rape %	Other crops %	All crops %	Grass for grazing %	Grass for hay %	Grass for silage %	Grass not spec %	All grass %	All crops and grass %
Ammonium Nitrate	37.7	41.5	5.8	25.7	36.5	28.3	38.4	32.9	31.3	34.4	10.3	33.8	37.3
Urea	13.2	17.4	1.2	8.9	17.6	6.5	15.6	12.8	9.4	12.8	4.6	12.5	14.9
Calcium Ammonium Nitrate (CAN)	1.9	1.5	0.0	6.5	1.3	1.3	1.6	2.5	2.6	2.4	0.0	2.2	1.7
Urea Ammonium Nitrate (UAN)	16.9	20.1	10.4	5.5	25.2	6.0	18.8	4.2	5.6	5.1	16.0	5.2	15.7
Foliar Urea	1.2	1.7	0.3	2.7	1.5	0.7	1.5	0.1	0.0	0.1	0.0	0.1	1.2
Other Straight N	1.1	1.2	0.0	0.3	1.7	1.1	1.2	0.8	0.4	1.1	0.0	1.0	1.2
Triple Superphosphate (TSP)	1.6	1.9	1.4	1.5	1.9	2.2	1.9	0.5	0.3	0.2	4.5	0.4	1.5
Other Straight P	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Muriate of Potash (MOP)	1.9	2.8	12.6	1.9	2.3	4.7	2.9	0.6	0.8	0.5	4.5	0.6	2.4
Other Straight K	1.9	1.4	4.9	10.0	1.6	2.4	1.8	0.6	0.9	0.6	0.0	0.5	1.5
PK	8.2	6.4	1.3	26.6	6.5	12.6	7.4	1.6	0.0	1.7	7.3	1.5	6.0
NK	1.0	0.6	2.1	0.0	0.2	2.2	0.7	4.1	6.0	4.5	0.0	3.8	1.4
Low N (<19% N)	3.8	1.5	60.0	2.7	1.8	23.4	4.7	2.9	5.4	2.0	21.0	2.9	4.3
High N (>=19% N)	9.3	1.8	0.0	4.0	1.0	6.9	3.0	36.2	37.1	34.6	31.8	35.4	10.5
Other	0.3	0.2	0.0	3.7	0.8	1.6	0.4	0.1	0.2	0.1	0.0	0.1	0.4

	Spring cereal	Winter cereal	Potatoes	Sugar beet	Oilseed rape	Other crops	All crops	Grass for grazing	Grass for hay	Grass for silage	Grass not spec	All grass	All crops and grass
Total product ('000 tonnes)	224	1,265	33	41	212	88	1,863	487	79	358	2	609	2,472

Source: British Survey of Fertiliser Practice, 2023

Table EW3.2a, Use of product type on crops, split by type of crop, England & Wales, 2023

Percents by row		Spring cereal	Winter cereal	Potatoes	Sugar beet	Oilseed rape	Other crops	% of fertiliser product on All crops
Ammonium Nitrate	%	12.3	71.4	0.3	1.4	10.4	4.2	75.7
Urea	%	9.8	73.7	0.1	1.0	13.4	2.0	81.5
Calcium Ammonium Nitrate (CAN)	%	12.1	61.5	0.0	9.0	12.8	4.6	76.5
Urea Ammonium Nitrate (UAN)	%	10.0	72.9	1.7	0.3	13.6	1.5	89.5
Foliar Urea	%	11.1	75.7	0.1	3.4	8.7	0.9	99.8
Other Straight N	%	5.3	69.4	0.0	0.4	22.5	2.3	80.9
Triple Superphosphate (TSP)	%	10.1	64.2	1.5	3.6	13.1	7.4	86.9
Other Straight P	%	0.0	100.0	0.0	0.0	0.0	0.0	100.0
Muriate of Potash (MOP)	%	12.4	61.0	4.8	2.3	10.7	8.8	91.3
Other Straight K	%	15.9	47.7	4.3	18.2	7.8	6.2	96.3
PK	%	13.2	62.7	0.3	7.5	9.6	6.7	96.5
NK	%	10.6	61.6	13.4	0.0	2.0	12.3	27.0
Low N (<19% N)	%	15.2	21.2	27.7	1.4	7.1	27.3	81.6
High N (>=19% N)	%	37.7	40.0	0.0	4.4	3.6	14.4	16.8
Other	%	6.9	29.3	0.0	19.7	19.6	24.5	93.0
Total product	%	12.0	67.9	1.8	2.2	11.4	4.7	75.4

Source: British Survey of Fertiliser Practice, 2023

Table EW3.2b, Use of product type on grass, split by type of grass, England & Wales, 2023

Percents by row		Grass for grazing	Grass for hay	Grass for silage	Grass not specified	% of fertiliser product on All grass (a)
Ammonium Nitrate	%	75.6	11.9	64.6	0.1	24.3
Urea	%	84.7	6.3	55.8	0.0	18.5
Calcium Ammonium Nitrate (CAN)	%	96.2	12.3	68.4	0.0	23.5
Urea Ammonium Nitrate (UAN)	%	39.7	27.9	54.7	2.3	10.5
Foliar Urea	%	100.0	0.0	51.0	0.0	0.2
Other Straight N	%	85.6	3.0	34.1	0.0	19.1
Triple Superphosphate (TSP)	%	82.0	17.0	9.3	1.1	13.1
Other Straight P	%	0.0	0.0	0.0	0.0	0.0
Muriate of Potash (MOP)	%	79.2	50.7	26.3	1.3	8.7
Other Straight K	%	96.2	17.9	76.9	0.0	3.7
PK	%	87.7	0.0	81.0	11.5	3.5
NK	%	90.6	9.0	83.3	0.0	73.0
Low N (<19% N)	%	90.9	27.2	31.6	0.7	18.4
High N (>=19% N)	%	89.3	12.2	53.5	0.2	83.2
Other	%	100.0	12.9	87.1	0.0	7.0
Total product	%	80.0	12.9	58.8	0.4	24.6

Note: (a) The same grass field can have multiple uses in the same crop year, therefore percentages may sum to >100

Source: British Survey of Fertiliser Practice, 2023

Table EW3.2c, Total product use, split by type of crop, England & Wales, 2023

Percents by row	All crops	All grass	All crops and grass	Total product ('000 tonnes)
Ammonium Nitrate	75.7%	24.3%	100.0%	941
Urea	81.5%	18.5%	100.0%	367
Calcium Ammonium Nitrate (CAN)	76.5%	23.5%	100.0%	43
Urea Ammonium Nitrate (UAN)	89.5%	10.5%	100.0%	433
Foliar Urea	99.8%	0.2%	100.0%	45
Other Straight N	80.9%	19.1%	100.0%	26
Triple Superphosphate (TSP)	86.9%	13.1%	100.0%	35
Other Straight P	100.0%	0.0%	100.0%	0
Muriate of Potash (MOP)	91.3%	8.7%	100.0%	46
Other Straight K	96.3%	3.7%	100.0%	32
PK	96.5%	3.5%	100.0%	144
NK	27.0%	73.0%	100.0%	39
Low N (<19% N)	81.6%	18.4%	100.0%	80
High N (>=19% N)	16.8%	83.2%	100.0%	232
Other	93.0%	7.0%	100.0%	9
Total product	75.4%	24.6%	100.0%	2,472

Source: British Survey of Fertiliser Practice, 2023

Table EW3.3, Product use by month of application, England & Wales, 2023

Percents by row	Jan %	Feb %	Mar %	Apr %	May %	Jun %	Jul %	Aug %	Sep %	Oct %	Nov %	Dec %	Total product ('000 tonnes)
Ammonium Nitrate	0.0	6.2	27.4	38.3	17.7	4.9	3.7	1.4	0.3	0.1	0.0	0.0	941
Urea	0.0	15.4	39.2	33.3	7.5	1.9	2.0	0.5	0.2	0.0	0.0	0.0	367
Calcium Ammonium Nitrate (CAN)	0.0	6.9	31.9	43.8	12.3	3.0	1.1	0.0	0.9	0.0	0.0	0.0	43
Urea Ammonium Nitrate (UAN)	0.4	13.1	32.9	38.3	10.6	2.8	1.0	0.4	0.1	0.0	0.5	0.0	433
Foliar Urea	0.0	0.1	8.2	36.3	16.6	36.3	2.1	0.0	0.3	0.0	0.0	0.0	45
Other Straight N	0.5	26.2	34.7	31.7	4.1	1.0	0.0	0.0	0.9	1.1	0.0	0.0	26
Triple Superphosphate (TSP)	2.9	17.2	16.4	9.7	2.2	0.0	0.0	11.3	8.2	5.7	26.3	0.0	35
Other Straight P	0.0	37.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.6	0.0	0
Muriate of Potash (MOP)	1.4	19.7	19.9	16.0	4.9	0.0	0.0	1.5	4.4	7.4	23.8	1.0	46
Other Straight K	0.8	20.1	37.0	24.1	4.9	0.0	0.0	0.0	3.0	4.2	5.9	0.0	32
PK	1.9	13.2	12.3	5.3	2.1	0.4	2.0	6.5	12.9	36.4	6.2	0.7	144
NK	0.0	0.6	18.0	17.5	12.6	24.0	6.6	9.9	6.4	0.0	4.4	0.0	39
Low N (<19% N)	2.4	10.5	25.5	38.7	11.6	0.7	0.8	4.7	4.3	0.6	0.2	0.0	80
High N (>=19% N)	0.1	2.0	17.5	37.7	26.6	7.6	4.3	3.6	0.3	0.0	0.3	0.0	232
Other	3.3	17.4	27.2	12.2	5.1	4.1	0.0	13.2	0.0	2.4	15.2	0.0	9
Total product	0.4	9.6	27.7	34.2	13.7	4.5	2.6	1.9	1.4	2.5	1.5	0.1	2,472

Source: British Survey of Fertiliser Practice, 2023

Table EW4.1a, Average fertiliser practice on cropping and grassland by GOR region, England & Wales, 2023

		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 crops	83	34	36	54	112	29	49	93	10	18	74
	All grass	60	25	28	52	101	15	30	61	4	9	300
	All crops and grass	62	26	29	52	103	17	32	64	4	9	374
North East	All crops	94	45	47	20	190	52	54	179	23	25	143
	All grass	22	17	18	22	73	22	27	16	4	5	198
	All crops and grass	45	26	27	21	152	39	42	69	10	11	341
Eastern	All crops	90	29	33	11	144	50	53	130	15	17	607
	All grass	21	5	5	5	101	15	22	21	1	1	103
	All crops and grass	79	25	29	10	142	49	52	113	12	15	710
Yorkshire	All crops	92	37	44	25	167	49	75	153	18	33	528
and the	All grass	39	15	17	46	82	25	30	32	4	5	264
Humber	All crops and grass	70	28	33	33	148	44	66	103	12	22	792
West	All crops	87	15	19	52	148	41	58	128	6	11	279
Midlands	All grass	40	9	11	44	104	30	31	41	3	3	182
	All crops and grass	63	12	15	48	134	37	49	84	4	7	461
East	All crops	85	20	24	16	157	47	49	133	9	12	469
Midlands	All grass	44	12	12	29	86	29	29	37	3	3	167
	All crops and grass	72	17	20	20	143	43	46	103	8	9	636
South West	All crops	80	35	40	38	119	49	50	96	17	20	617
	All grass	37	16	16	36	85	20	24	32	3	4	638
	All crops and grass	52	23	24	37	103	36	39	54	8	9	1,255
South East	All crops	88	27	32	24	138	43	51	121	11	16	336
	All grass	29	5	6	16	87	37	42	26	2	3	205
	All crops and grass	65	18	22	21	129	43	50	83	8	11	541
Wales	All crops	95	40	44	63	108	43	60	103	17	27	111
	All grass	53	36	37	40	85	18	22	45	6	8	475
	All crops and grass	56	36	37	42	88	20	25	50	7	9	586

Note: See Appendix 4 for a list of GOR regions.

Source: British Survey of Fertiliser Practice, 2023

Table EW4.1b, average fertiliser practice on crops and grassland by BSFP region, England & Wales, 2023

		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 crops	76	23	36	39	121	48	43	92	11	15	322
#	All grass	28	10	11	29	94	15	20	26	2	2	253
	All crops and grass	49	16	22	33	113	36	37	55	6	8	575
Anglia	All crops	90	29	33	11	144	50	53	130	15	17	607
	All grass	21	5	5	5	101	15	22	21	1	1	103
	All crops and grass	79	25	29	10	142	49	52	113	12	15	710
Northern	All crops	88	38	42	33	174	48	53	153	18	22	138
	All grass	46	25	26	41	82	16	21	38	4	6	401
	All crops and grass	52	26	28	40	102	22	28	53	6	8	539
North East	All crops	92	38	44	23	169	50	73	156	19	32	574
	All grass	39	18	19	43	81	25	29	31	4	6	305
	All crops and grass	70	30	34	32	148	43	62	104	13	21	879
North	All crops	88	24	27	58	147	38	46	130	9	12	149
Mercia	All grass	53	10	16	52	128	25	56	68	3	9	169
	All crops and grass	64	15	19	54	136	32	52	87	5	10	318
South	All crops	85	17	21	41	139	42	57	119	7	12	210
Mercia	All grass	26	4	4	27	95	20	22	25	1	1	92
	All crops and grass	62	12	15	35	132	39	53	82	5	8	302
East	All crops	85	20	24	16	157	47	49	133	9	12	469
Midlands	All grass	44	12	12	29	86	29	29	37	3	3	167
	All crops and grass	72	17	20	20	143	43	46	103	8	9	636
South East	All crops	88	27	32	24	138	43	51	121	11	16	336
	All grass	29	5	6	16	87	37	42	26	2	3	205
	All crops and grass	65	18	22	21	129	43	50	83	8	11	541
South West	All crops	89	61	50	42	111	50	63	99	31	32	248
	All grass	45	21	21	42	81	22	25	37	5	5	362
	All crops and grass	55	30	28	42	92	35	41	51	11	11	610
Wales	All crops	95	40	44	63	108	43	60	103	17	27	111
	All grass	53	36	37	40	85	18	22	45	6	8	475
	All crops and grass	56	36	37	42	88	20	25	50	7	9	586

Note: See Appendix 4 for a list of BSFP regions.

Source: British Survey of Fertiliser Practice, 2023

Table SC1.1, Total fertiliser use, Scotland, 2023

	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	96	69	69	74	25	171	52	74	57	165	36	52	42	92
Spring barley	99	90	92	50	45	98	47	60	37	98	42	55	19	193
Winter barley	95	78	76	59	39	152	53	72	49	144	41	54	29	53
Oats	71	50	43	29	30	94	37	37	41	67	18	16	12	36
Potatoes	100	100	100	45	12	90	114	188	[c]	90	114	188	[c]	9
Winter oilseed rape	97	59	64	78	17	181	59	62	72	176	35	40	56	38
Other crops	58	37	43	27	43	90	48	60	44	52	18	26	12	87
All crops	92	76	77	53	38	120	50	66	46	111	38	51	25	508
Grass under 5 years old	74	57	59	26	51	106	24	37	37	78	14	22	10	167
Grass 5 years and over	43	30	33	13	29	74	18	24	31	32	5	8	4	366
All grass	49	35	38	16	33	83	20	27	33	41	7	10	5	533
All crops and grass	64	49	52	29	35	102	36	48	42	65	18	25	12	1,041

Source: British Survey of Fertiliser Practice, 2023

Table SC1.2 Use of straight fertiliser, Scotland, 2023

	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	96	11	17	156	73	85	149	8	15	92
Spring barley	68	2	4	80	63	76	54	1	3	193
Winter barley	93	15	18	129	66	89	120	10	16	53
Oats	58	7	0	88	c	c	51	c	c	36
Potatoes	27	20	51	c	c	c	c	c	c	9
Winter oilseed rape	92	7	8	165	c	c	152	c	c	38
Other crops	35	0	10	91	c	88	32	c	8	87
All crops	71	5	9	110	71	99	78	4	9	508
Grass under 5 years old	32	0	4	107	c	92	35	c	4	167
Grass 5 years and over	17	0	4	84	c	50	14	c	2	366
All grass	20	0	4	91	c	58	18	c	2	533
All crops and grass	38	2	6	103	69	81	39	1	4	1,041

Source: British Survey of Fertiliser Practice, 2023

Table SC1.3, Use of compound fertiliser, Scotland, 2023

	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	28	57	59	24	58	48	63	35	16	27	37	8	92
Spring barley	86	88	88	32	50	46	59	30	43	41	52	10	193
Winter barley	43	63	63	20	55	50	60	33	24	31	38	7	53
Oats	40	43	43	6	39	28	37	[c]	16	12	16	[c]	36
Potatoes	80	80	71	3	85	121	109	[c]	68	96	78	[c]	9
Winter oilseed rape	44	52	58	31	56	58	61	50	24	30	35	16	38
Other crops	34	36	36	9	60	49	48	50	20	18	18	4	87
All crops	62	71	71	25	53	49	59	34	33	34	42	8	508
Grass under 5 years old	57	56	57	15	78	24	32	21	44	13	18	3	167
Grass 5 years and over	29	29	29	5	61	18	20	18	18	5	6	1	366
All grass	34	34	35	7	66	20	24	19	23	7	8	1	533
All crops and grass	44	47	47	13	59	35	43	29	26	16	20	4	1,041

Source: British Survey of Fertiliser Practice, 2023

Table SC1.4, Use of lime, Scotland, 2023

	Crop area receiving dressing						Average field rate (tonnes/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
Winter wheat	9.3%	c	3.8%	c	c	13.1%	4.5	c	4.7	c	c	4.6	13	92
Spring barley	14.6%	c	3.4%	c	1.1%	19.1%	3.9	c	5.0	c	4.1	4.1	37	193
Winter barley	11.3%	c	4.6%	c	c	16.0%	3.1	c	5.0	c	c	3.7	9	53
Oats	c	c	c	c	c	c	c	c	c	c	c	c	3	36
Potatoes	c	c	c	c	c	c	c	c	c	c	c	c	0	9
Winter oilseed rape	c	c	c	c	c	c	c	c	c	c	c	c	3	38
Other crops	10.1%	c	0.1%	c	c	10.2%	5.0	c	5.0	c	c	5.0	7	87
All crops	11.6%	c	2.9%	c	0.6%	15.0%	4.0	c	4.9	c	4.1	4.2	72	508
Grass under 5 years old	13.7%	c	0.7%	c	1.2%	15.5%	4.9	c	5.0	c	3.0	4.8	19	167
Grass 5 years and over	4.5%	c	0.4%	c	0.6%	5.5%	2.8	c	5.8	c	0.9	2.8	32	366
All grass	6.3%	c	0.4%	c	0.7%	7.4%	3.7	c	5.6	c	1.6	3.6	51	533
All crops and grass	8.1%	c	1.3%	c	0.6%	10.1%	3.8	c	5.0	c	2.4	3.9	123	1,041

Source: British Survey of Fertiliser Practice, 2023

Table SC1.5, Percentage of crop area by field application rate – Nitrogen, Scotland, 2023

	kg/ha																	
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	Fields in survey
Percents by row	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Winter wheat	4	0	0	8	7	4	8	13	17	30	9	1	-	-	-	-	-	-	92
Spring barley	1	2	8	16	21	28	17	8	-	-	-	-	-	-	-	-	-	-	193
Winter barley	5	0	3	2	3	10	16	29	28	2	1	-	-	-	-	-	-	-	53
Oats	29	1	14	10	14	13	13	6	-	-	-	-	-	-	-	-	-	-	36
Potatoes	0	0	22	22	29	0	14	0	13	-	-	-	-	-	-	-	-	-	9
Winter oilseed rape	3	0	2	0	7	1	20	8	22	10	17	3	2	4	-	-	-	-	38
Other crops	42	0	14	13	6	7	9	9	-	-	-	-	-	-	-	-	-	-	87
All crops	8	1	7	12	14	18	14	10	7	6	3	-	-	-	-	-	-	-	508
Grass under 5 years old	26	5	14	11	11	7	5	13	1	3	0	1	3	-	-	-	-	-	167
Grass 5 years and over	57	3	11	12	7	5	2	1	0	1	-	-	-	-	-	-	-	-	366
All grass	51	3	12	12	8	5	3	3	1	1	0	0	1	-	-	-	-	-	533
All crops and grass	36	2	10	12	10	10	7	6	3	3	1	0	1	-	-	-	-	-	1,041

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table SC1.6, Percentage of crop area by field application rate – Phosphate, Scotland 2023

	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Percents by row	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Winter wheat	31	10	21	31	5	1	-	-	-	-	-	-	-	-	-	-	-	-	92
Spring barley	10	12	41	31	6	-	-	-	-	-	-	-	-	-	-	-	-	-	193
Winter barley	22	13	23	34	2	6	-	-	-	-	-	-	-	-	-	-	-	-	53
Oats	50	20	20	3	7	-	-	-	-	-	-	-	-	-	-	-	-	-	36
Potatoes	0	22	7	0	23	0	14	0	13	12	9	-	-	-	-	-	-	-	9
Winter oilseed rape	41	4	9	33	13	-	-	-	-	-	-	-	-	-	-	-	-	-	38
Other crops	63	13	6	10	5	0	0	2	-	-	-	-	-	-	-	-	-	-	87
All crops	24	12	29	27	6	1	-	-	-	-	-	-	-	-	-	-	-	-	508
Grass under 5 years old	43	35	14	6	2	-	-	-	-	-	-	-	-	-	-	-	-	-	167
Grass 5 years and over	70	23	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	366
All grass	65	25	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	533
All crops and grass	51	21	15	11	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1,041

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table SC1.7, Percentage of crop area by field application rate – Potash, Scotland, 2023

	kg/ha																		Fields in survey
	0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	
Percents by row	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Winter wheat	31	8	11	12	27	5	4	2	-	-	-	-	-	-	-	-	-	-	92
Spring barley	8	8	19	34	27	3	-	-	-	-	-	-	-	-	-	-	-	-	193
Winter barley	24	2	14	26	22	6	3	3	-	-	-	-	-	-	-	-	-	-	53
Oats	57	15	15	11	2	-	-	-	-	-	-	-	-	-	-	-	-	-	36
Potatoes	0	0	12	7	0	0	24	20	0	14	0	13	0	0	0	0	0	9	9
Winter oilseed rape	36	0	14	39	11	-	-	-	-	-	-	-	-	-	-	-	-	-	38
Other crops	57	12	7	8	10	1	6	-	-	-	-	-	-	-	-	-	-	-	87
All crops	23	8	15	25	22	3	2	1	-	-	-	-	-	-	-	-	-	-	508
Grass under 5 years old	41	27	18	6	6	1	1	-	-	-	-	-	-	-	-	-	-	-	167
Grass 5 years and over	67	23	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	366
All grass	62	24	9	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	533
All crops and grass	48	18	11	11	9	1	1	1	-	-	-	-	-	-	-	-	-	-	1,041

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table SC1.8, Percentage of crop area by field application rate – Sulphur, Scotland, 2023

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	26	7	27	20	16	1	3	-	-	-	-	-	-	-	-	-	-	-	92
Spring barley	50	15	27	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	193
Winter barley	41	4	34	12	9	-	-	-	-	-	-	-	-	-	-	-	-	-	53
Oats	71	3	20	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	36
Potatoes	55	0	20	3	22	-	-	-	-	-	-	-	-	-	-	-	-	-	9
Winter oilseed rape	22	13	10	13	23	11	7	-	-	-	-	-	-	-	-	-	-	-	38
Other crops	73	2	19	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	87
All crops	47	10	25	10	5	1	1	-	-	-	-	-	-	-	-	-	-	-	508
Grass under 5 years old	74	11	10	3	1	0	1	-	-	-	-	-	-	-	-	-	-	-	167
Grass 5 years and over	87	7	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	366
All grass	84	8	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	533
All crops and grass	71	9	12	5	2	1	1	-	-	-	-	-	-	-	-	-	-	-	1,041

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table SC2.1, Average fertiliser practice by grassland utilisation, Scotland, 2023

	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	39	28	29	12	18	58	16	17	23	23	5	5	3	287
Grazed mown	73	51	59	25	69	112	25	40	43	81	13	23	11	240
All grazings	49	35	38	16	34	82	20	27	33	41	7	11	5	527
Cut for silage - grazed	75	52	61	25	70	113	25	39	46	85	13	24	11	202
Cut for silage - not grazed	c	c	c	c	c	c	c	c	c	c	c	c	c	2
All cut for silage	74	51	59	24	68	114	25	39	46	85	13	23	11	204
Cut for hay - grazed	44	42	46	31	56	95	18	48	25	42	8	22	8	38
Cut for hay - not grazed	c	c	c	c	c	c	c	c	c	c	c	c	c	0
All cut for hay	44	42	46	31	56	95	18	48	25	42	8	22	8	38
All mowings	72	50	58	25	67	113	25	40	43	81	12	23	11	242
All grass	49	35	38	16	33	83	20	27	33	41	7	10	5	533

Source: British Survey of Fertiliser Practice, 2023

Table SC2.2, Percentage of grass area by field application rate – Nitrogen, Scotland 2023

	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
Grazed not mown	61	3	13	14	5	2	1	1	-	-	-	-	-	-	-	-	-	-	287
Grazed mown	27	3	8	8	14	13	7	10	2	4	0	0	3	-	-	-	-	-	240
All grazings	51	3	12	12	8	5	3	4	1	1	0	0	1	-	-	-	-	-	527
Cut for silage - grazed	25	3	9	8	14	12	8	11	2	5	0	0	3	-	-	-	-	-	202
Cut for silage - not grazed	c	c	c	c	c	c	c	c	c	c	c	c	c	-	-	-	-	-	2
All cut for silage	26	3	9	8	14	12	7	11	2	4	0	1	3	-	-	-	-	-	204
Cut for hay - grazed	56	3	0	6	11	16	6	1	-	-	-	-	-	-	-	-	-	-	38
Cut for hay - not grazed	c	c	c	c	c	c	c	c	-	-	-	-	-	-	-	-	-	-	0
All cut for hay	56	3	0	6	11	16	6	1	-	-	-	-	-	-	-	-	-	-	38
All mowings	28	3	8	8	14	12	7	10	2	4	0	1	3	-	-	-	-	-	242
All grass	51	3	12	12	8	5	3	3	1	1	0	0	1	-	-	-	-	-	533

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table SC2.3, Percentage of grass area by field application rate – Phosphate, Scotland, 2023

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	72	23	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	287
Grazed mown	49	31	15	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	240
All grazings	65	26	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	527
Cut for silage - grazed	48	30	15	6	1	-	-	-	-	-	-	-	-	-	-	-	-	-	202
Cut for silage - not grazed	[c]	[c]	[c]	[c]	[c]	-	-	-	-	-	-	-	-	-	-	-	-	-	2
All cut for silage	49	29	15	6	1	-	-	-	-	-	-	-	-	-	-	-	-	-	204
Cut for hay - grazed	58	34	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38
Cut for hay - not grazed	[c]	[c]	[c]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
All cut for hay	58	34	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38
All mowings	50	30	14	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	242
All grass	65	25	7	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	533

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table SC2.4, Percentage of grass area by field application rate – Potash, Scotland 2023

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	71	24	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	287
Grazed mown	41	23	21	8	4	1	1	2	-	-	-	-	-	-	-	-	-	-	240
All grazings	62	24	9	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	527
Cut for silage - grazed	39	24	22	7	4	1	1	1	-	-	-	-	-	-	-	-	-	-	202
Cut for silage - not grazed	c	c	c	c	c	c	c	c	-	-	-	-	-	-	-	-	-	-	2
All cut for silage	41	23	22	7	4	1	1	1	-	-	-	-	-	-	-	-	-	-	204
Cut for hay - grazed	54	17	8	15	3	0	0	4	-	-	-	-	-	-	-	-	-	-	38
Cut for hay - not grazed	c	c	c	c	c	-	-	-	-	-	-	-	-	-	-	-	-	-	0
All cut for hay	54	17	8	15	3	0	0	4	-	-	-	-	-	-	-	-	-	-	38
All mowings	42	23	20	7	4	1	1	2	-	-	-	-	-	-	-	-	-	-	242
All grass	62	24	9	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	533

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table SC2.5, Percentage of grass area by field application rate – Sulphur, Scotland, 2023

Percents by row	kg/ha 0	<25	25-	50-	75-	100-	125-	150-	175-	200-	225-	250-	275-	300-	325-	350-	375-	400+	Fields in survey
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Grazed not mown	88	8	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	287
Grazed mown	75	9	10	4	0	1	2	-	-	-	-	-	-	-	-	-	-	-	240
All grazings	84	8	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	527
Cut for silage - grazed	75	8	9	4	0	1	2	-	-	-	-	-	-	-	-	-	-	-	202
Cut for silage - not grazed	c	c	c	c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
All cut for silage	76	8	8	4	0	1	2	-	-	-	-	-	-	-	-	-	-	-	204
Cut for hay - grazed	69	10	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38
Cut for hay - not grazed	c	c	c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
All cut for hay	69	10	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38
All mowings	75	8	9	4	0	1	1	-	-	-	-	-	-	-	-	-	-	-	242
All grass	84	8	5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	533

Source: British Survey of Fertiliser Practice, 2023. Note: The symbol '-' in a cell represents zero application after the highest rate, for visual clarity in interpreting the data displayed

Table SC3.0a, Product use by month of application, Scotland, 2023

Percents by row		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total product
Straight N	%	0	0	0	0	0	5	15	36	36	5	2	1	100
Straight P	%	11	0	0	29	0	7	32	8	5	9	0	0	100
Straight K	%	0	0	0	0	0	9	36	25	15	6	9	0	100
Compounds	%	3	1	0	0	0	3	9	53	19	6	4	2	100
All fertilisers	%	2	1	0	0	0	4	13	44	26	6	3	1	100

Source: British Survey of Fertiliser Practice, 2023

Table SC3.0b, Nutrient use by month of application, Scotland, 2023

Percents by row		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Total nutrient
Nitrogen	%	0	0	0	0	0	4	13	42	31	7	3	1	100
Phosphate	%	7	2	0	2	0	2	9	54	14	4	2	2	100
Potash	%	4	2	0	0	0	4	14	52	16	4	2	2	100
Sulphur	%	1	0	0	0	0	4	20	42	24	4	5	1	100
Total	%	2	1	0	0	0	4	13	46	24	6	3	1	100

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 2023
'Nutrient' refers to the tonnage of each nutrient contained in the products used.
(e.g. 100kg of a 20:10:10 compound contains 20kg of N, 10kg of P_2O_5 and 10kg of K_2O, while 100kg of ammonium nitrate (straight N) contains typically 34.5kg of N)
Estimates of total nutrients are shown in Appendix 1, Table AA1.6

Source: British Survey of Fertiliser Practice, 2023

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 AA2 describes this methodology, detailing measures undertaken to avoid bias and unreliability. National changes in relative cropping areas are discussed in Section AA3.

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. The British Survey of Fertiliser Practice only includes holdings with a total area of equal to, or more than, 20 hectares under crops and grass (excluding rough grazing). Section App 3.2.1.1 illustrates more information regarding minor holdings.

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 AA3.7 paragraph 9 for more details.

In 2023, the target sample size was 1,500 farms. This sample size has been designed 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 2023, 78% of the panel had responded in the previous year. The profile of the Survey panel in terms of farm size was 78%>200ha, 82% 100-200ha, 79% 50-100ha and 68% >20-50ha.

For the 2023 BSFP the achieved sample size was 1,302 holdings, a 1.0% decrease on the sample size from the 2022 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 2023 Survey, England & Wales

	Farm holdings population in 2023	Total crops and grass in 2023 (%)	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	16,297	6.2%	0.47%	76	79	0.48%
51-100 ha	13,412	11.0%	1.01%	136	125	0.93%
101-200 ha	9,837	15.6%	1.96%	192	179	1.82%
200+ ha	4,689	19.3%	5.07%	238	236	5.03%
Total livestock & mixed	44,235	52.1%	1.45%	643	619	1.40%
Crops						
(Robust types: cereals, general cropping)						
Crops & grass area						
20-50 ha	7,145	2.7%	0.46%	33	47	0.66%
51-100 ha	6,323	5.2%	1.01%	64	41	0.65%
101-200 ha	5,690	9.3%	2.02%	115	113	1.99%
200+ ha	6,012	29.2%	5.99%	360	244	4.06%
Total crops	25,170	46.4%	2.27%	572	445	1.77%
Horticulture						
(Robust type: horticulture)						
Crops & grass area						
20-50 ha	623	0.2%	0.87%	5	3	0.48%
51-100 ha	372	0.3%	1.90%	7	2	0.54%
101-200 ha	209	0.3%	3.82%	8	3	1.44%
200+ ha	122	0.6%	11.91%	15	7	5.74%
Total horticulture	1,326	1.5%	2.64%	35	15	1.13%
Total for England & Wales	70,731	100%		1,250	1,079	1.53%

[1] The notional sampling fraction is found by expressing the target sample size as a percentage of the farm holdings in population in 2023.

[2] The achieved sampling fraction is found by expressing the achieved sample size as a percentage of the farm holdings in population in 2023.

Table AA3.2 Derivation of the stratified random sample for the 2023 Survey, Scotland

	Farm holdings population in 2023	Total crops and grass in 2023 (%)	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	6	0.82%
51-100 ha	907	3.8%	1.04%	9	12	1.32%
101-200 ha	944	7.7%	2.04%	19	14	1.48%
200+ ha	619	12.4%	5.02%	31	27	4.36%
Total cereals/general	3,203	25.3%	1.98%	63	59	1.84%
Livestock and mixed						
(Robust types: specialist pigs, specialist poultry, dairy, cattle & sheep [LFA & lowland], mixed)						
Crops & grass area						
20-50 ha	4,285	8.0%	0.47%	20	17	0.40%
51-100 ha	3,474	14.3%	1.03%	36	32	0.92%
101-200 ha	2,915	23.1%	1.98%	58	47	1.61%
200+ ha	1,524	29.3%	4.80%	73	68	4.46%
Total livestock & mixed	12,198	74.7%	1.53%	187	164	1.34%
Total Scotland	15,401	100%		250	223	1.45%

[1] The notional sampling fraction is found by expressing the target sample size as a percentage of the farm holdings in population in 2023.

[2] The achieved sampling fraction is found by expressing the achieved sample size as a percentage of the farm holdings in population in 2023.

AA3.2.1.1 Information on minor holdings

Holdings with only 20 hectares or less 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. Table AA3.2.1 illustrates the scale of minor holdings in England and Scotland (2020-2022 average), enabling an understanding of the scale of minor holdings that are excluded from the survey, and therefore not represented by the statistics in this report.

Table AA3.2.1 Holdings below and above the BSFP minimum threshold, 2020-2022 average, England and Scotland[1]

	Below BSFP threshold (≥ 20 ha)	Above BSFP threshold (≥ 20 ha)	All agricultural holdings in England & Scotland	Share on holdings below BSFP threshold
Number of holdings	85,317	75,969	161,286	53%
Total crop area (ha)	51,531	4,648,775	4,700,306	1%
Total grass area (excl. rough grazing) (ha)	399,439	4,848,032	5,247,471	8%
Total crops and grass area (ha)	450,970	9,496,806	9,947,777	7%

[1] Data for Wales could not be obtained.
Source: Defra June Survey of Agriculture and Horticulture and ScotGov.

Minor holdings account for 53% of all agricultural holdings but only 1% of crop area and 8% of grassland in England and Scotland.

AA3.2.2 Data collection

Data collection was done between July 2023 and March 2024. 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 AA3.5.

AA3.2.3 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.

AA3.2.4 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 AA3.2.1 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 2023. 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 crops 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 9.1 million hectares in England and Wales and about 1.9 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 AA3.2.7 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.

AA3.2.5 Methodology for estimates of total UK fertiliser use.

Estimated quantities of nitrogen, phosphate and potash fertiliser consumed annually in the UK since 1974 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.

AA3.2.6 Revisions

The figures presented in this report are finalised.

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

AA3.2.7 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 2022 to autumn 2023, corresponding to the 2023 crop year and 2023 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. 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 AA3.2.1 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 2023. 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.

AA3.2.8 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 a form available to plants. The chemical composition can vary greatly, and they tend to be slower acting and less predictable in their action.

Nitrogen 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.

AA3.3 General trends and issues

AA3.3.1 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 2022 and 2023 and illustrates percentage changes in relative cropping areas over the past five years. In Great Britain in 2023, 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, 2022 – 2023

	June 2022 areas	June 2023 areas	% change since 2022	% change since 2018	2023 crop areas as % of total cropping area
	'000s ha	'000s ha	%	%	%
Crops					
Wheat	1,801	1,712	-4.9	-4.4	38.4
Barley – winter	425	446	4.9	14.9	10.0
– spring	659	669	1.5	-10.6	15.0
Total cereals[1]	**3,125**	**3,056**	**-2.2**	**-2.9**	**68.6**
Oilseed rape – total	363	390	7.4	-34.9	8.8
– winter	357	386	8.1	-34.8	8.7
– spring	6	4	-33.3	-42.9	0.1
Sugar beet	91	99	8.8	-14.7	2.2
Potatoes[2]	123	112	-8.9	-18.8	2.5
Linseed	28	21	-25.0	-16.0	0.5
Peas/beans[3]	268	274	2.2	37.7	6.1
Maize/other fodder	304	326	7.2	7.2	7.3
Vegetables	105	99	-5.7	-14.7	2.2
Total crops[4]	**4,463**	**4,456**	**-0.2**	**-4.8**	**100**
Bare fallow[5]	265	311	17.4	15.2	
Grassland					
Less than 5 years old	1,087	1,117	2.8	8.7	17.2
5 years and older	5,350	5,395	0.8	-2.8	82.8
Total grass[6]	**6,437**	**6,512**	**1.2**	**-0.8**	**100**
Total crops and grass[7]	**10,899**	**10,968**	**0.6**	**-2.5**	

[1] Including minor cereals (oats, rye, triticale, mixed corn).
[2] Early + maincrop potatoes.
[3] Harvested dry for animal consumption and, for dried 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 2022 and 2023 crop years, the area sown to cereals remains largely consistent. There was a 5% reduction in the wheat area and increases in the winter and spring barley areas. The oilseed rape area increased despite the continued difficulty in managing pests in this crop. Sugar Beet increased, Potato area decreased and Bare fallow increased between the 2022 and 2023 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.

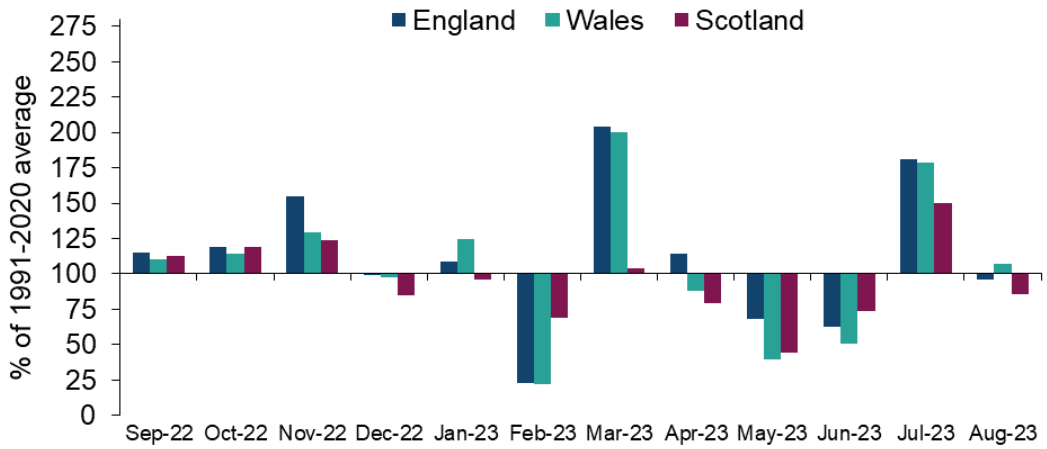
Autumn 2022 was warmer than average. The weather was unsettled for most of the time, with rainfall above average following a dry spring and summer. September began fine and warm, but the weather soon became much more unsettled, and from mid-month cooler. November was mild throughout with frosts fewer than normal. November was also a wet month with a few places having double average rainfall.

The winter overall was marginally milder and somewhat drier than average. The mild weather continued until mid-January after which temperatures dropped. Rainfall was well below average in February with only 45% of the average, the driest February since 1993.

Spring saw temperatures slightly above average in many areas with an alternation between colder and milder spells of weather with a notable cold spell in early March. Many areas of the southern half of the country had more than double their average March rainfall. The overall UK total was 155% of average.

Overall, this was a warm and rather wet summer. Most of the fine weather, warm, dry with high pressure established occurred during June. In contrast July and August were mainly unsettled. July in particular was very cool, dull and wet. A succession of low pressure systems brought more than twice the normal rainfall to some areas. Whilst August was an improvement with temperature, rainfall and sunshine near average the weather remained mixed. August included two named storms, Antoni and Betty bringing unseasonably wet and windy weather.[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]
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.

Appendix 6

APP 6.1 RIVER BASIN DISTRICTS, GREAT BRITAIN.