Department for Environment Food & Rural Affairs

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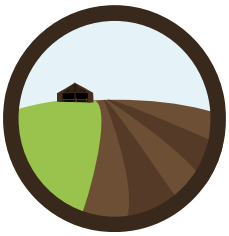
Greenhouse gas mitigation practices - England
Farm Practices Survey 2019

This release contains the results from the February 2019 Farm Practices Survey which focused on practices relating to greenhouse gas mitigation. The key results for 2019 are given below.

Nutrient management (Section 1)



58%
of holdings have a nutrient management plan.

Anaerobic digestion (Section 2)

5.2%
of farmers process waste by anaerobic digestion.

Emissions (Section 3)

61%
of farmers are currently taking action to reduce GHG emissions from their farm.

Fertiliser, manure and slurry spreaders (Section 4)

78%
of holdings spread manure or slurry on grass or arable land.

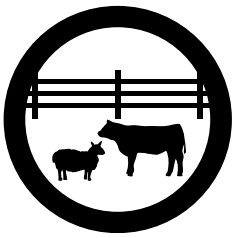
Manure and slurry storage (Section 5)

64%
of livestock farmers store solid manure in temporary heaps in fields.

Farm health planning and biosecurity (Section 6)

73%
of livestock farmers have a Farm Health Plan.

Grassland and grazing (Section 7)



75%
of livestock holdings sow some or all of their temporary grassland with a clover mix.

Livestock feeding regimes and breeding practices (Section 8)

71%
of holdings with livestock use a ration formulation programme or nutritional advice.

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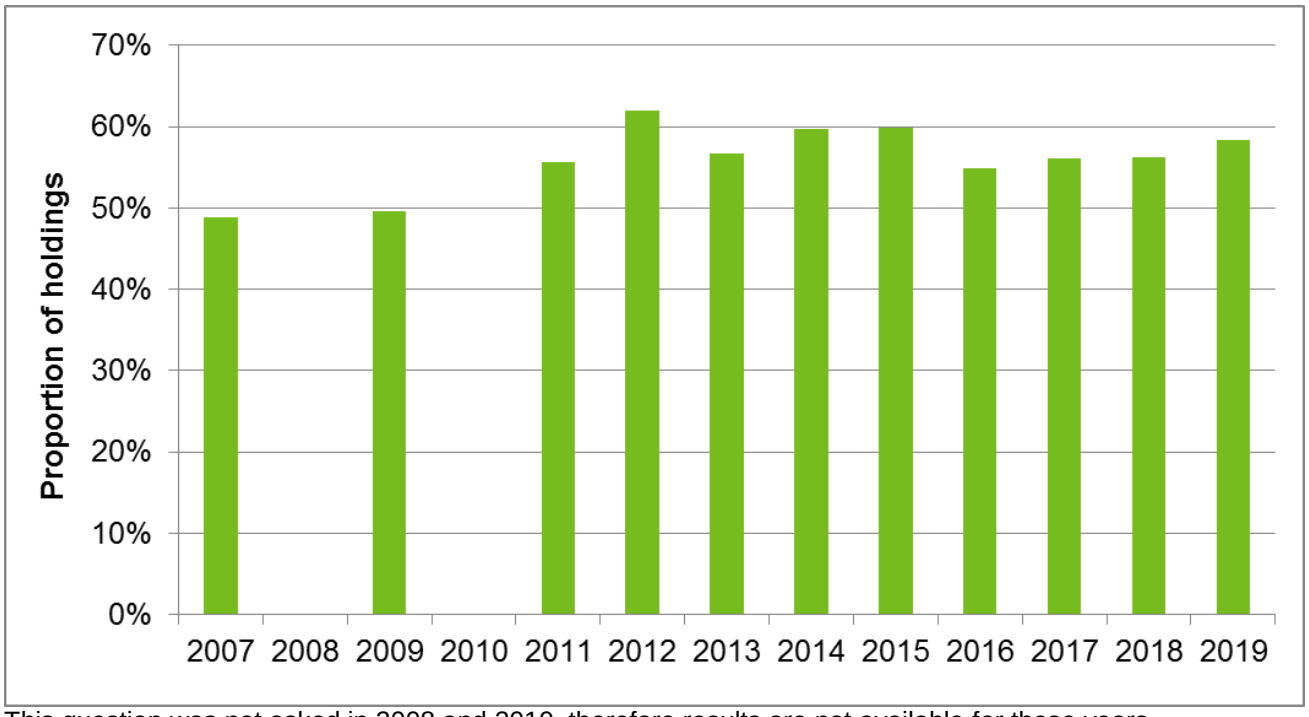
Section 1. Nutrient management

Effective nutrient management provides sufficient nutrients to meet the growth requirements of crops and grassland whilst managing environmental impacts; it can help minimise GHG emissions, reduce the incidence of diffuse water pollution and increase productivity by reducing input costs. Here we consider how farmers manage the application of fertilisers and manures, the use of nutrient management plans and how nutrient requirements are calculated and monitored.

Key findings

- In 2019, 58% of holdings had a nutrient management plan which is a slight increase from 2018. These holdings accounted for 73% of the farmed area covered by this survey.
- The largest proportion of nutrient management plans were created by farmers themselves either with the help of a professional (43%) or without advice (25%). The remaining 32% were created by an adviser or contractor.
- In 2019, 70% of farmers have a programme of soil testing for nutrient indices and 74% for pH. Of these holdings, almost all were tested on at least some of their fields every five years.
- Some 64% of holdings have a manure management plan for their farm, similar to 63% in 2018
- 38% of farmers keep track of soil organic matter and 73% of farmers know the soil types for each field on their farm.

Figure 1.1: Proportion of holdings with a nutrient management plan: 2007 – 2019

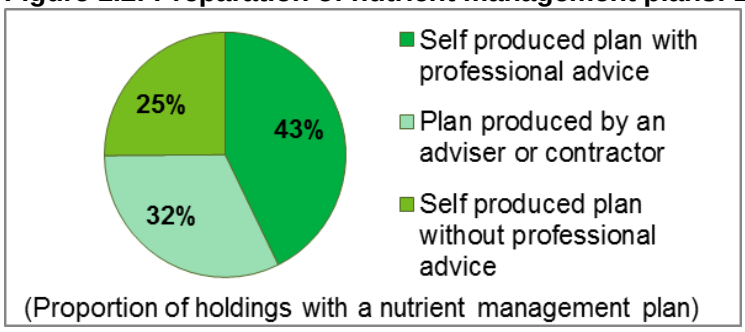


This question was not asked in 2008 and 2010, therefore results are not available for these years.

The proportion of farms with a nutrient management plan (NMP) was 58% in 2019, a slight increase from 2018 (Figure 1.1). In 2019, those holdings with nutrient management plans accounted for 73% of the farmed area covered by this survey.

Around 11% of holdings (accounting for 6% of the farmed area) indicated that a NMP is not applicable. This figure varied by farm type with 27% of pig/poultry farms, 16% of lowland grazing livestock farms and 18% of LFA grazing livestock farms indicating that a NMP was not applicable compared to 4% of cereal farms, 7% of other general cropping farms and 2% of dairy farms.

Figure 1.2: Preparation of nutrient management plans: 2019

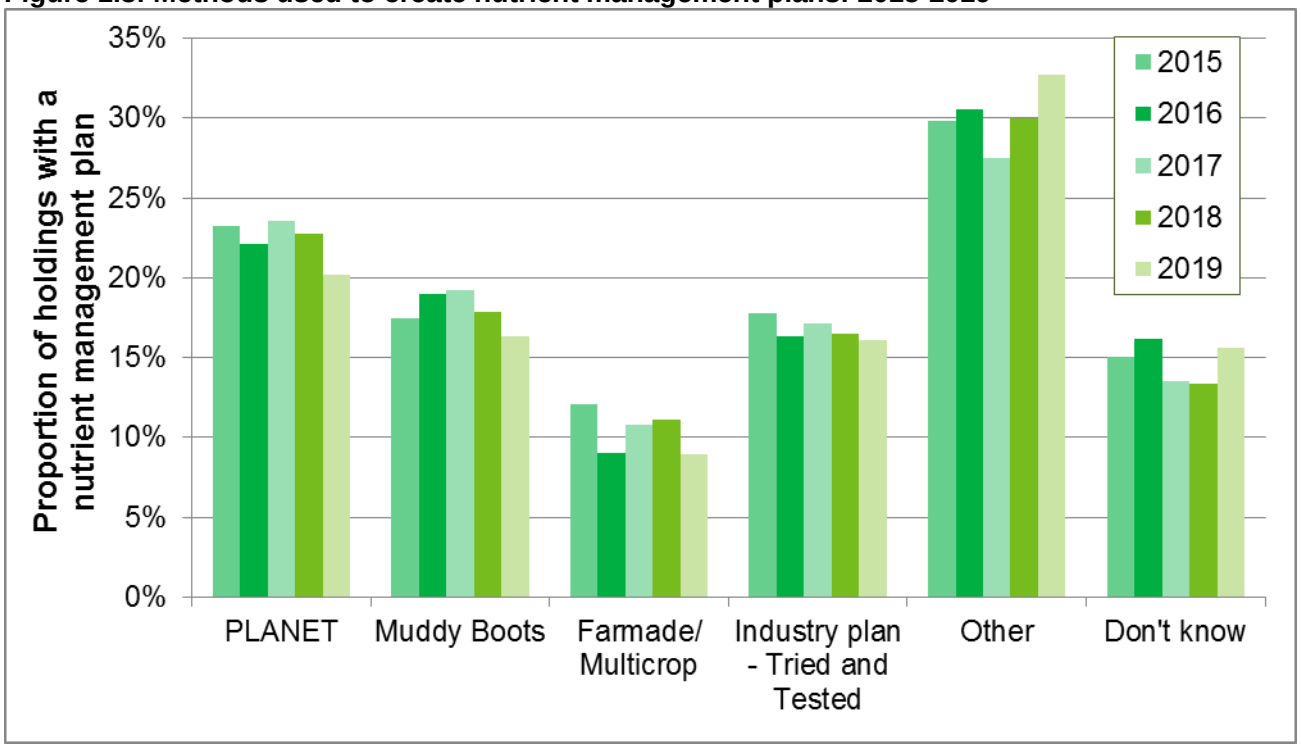


(Proportion of holdings with a nutrient management plan)

In 2019, 25% of those with a nutrient management plan completed the plan on their own without advice, whilst a further 43% created it themselves with the help of an adviser (Figure 1.2). The remaining 32% had the plan produced by a contractor or adviser.

Of those that sought professional advice, the majority (84%) did so from fertiliser advisers or agronomists (Table 1.3). Most of those with a nutrient management plan update it every year (76%) and almost all (94%) refer to it at least once each year (Tables 1.4 and 1.5).

Figure 1.3: Methods used to create nutrient management plans: 2015-2019



PLANET, Muddy Boots, Farmade/Multicrop and Tried & Tested are methods for creating nutrient management plans. PLANET has remained the most popular of these four methods (Figure 1.3), although in each of the last five years the largest proportion of farmers (33% in 2019) have used other methods not listed on the survey form to create their plans (Table 1.6). 'Defra recommendations (RB209)' was the most commonly reported source of nutrient recommendations for plans (Table 1.7).

The percentage of farmers undertaking some form of nutrient testing on soil has remained similar between 2009 and 2019. Results for the past three years can be found in table 1.8. Approximately 64% of farms have a manure management plan in 2019, showing little change over the past 4

years. The majority of farmers (87%) use nutrient recommendations for manure management plans from Defra recommendations (RB209, CoGAP).

Soil Monitoring looks at the use of soil organic matter and whether this is being recorded. Organic matter helps to retain nutrients and water in soil. Benefits include reduced compaction and surface crusting, plus improved water infiltration into the soil.

In 2019, 38% of farmers kept track of soil organic matter on their farm. Of those not keeping track 39% provided the main reason as not important enough to test for (Table 1.13 and 1.14).

Figure 1.4: Reasons preventing monitoring soil organic matter: 2018 - 2019

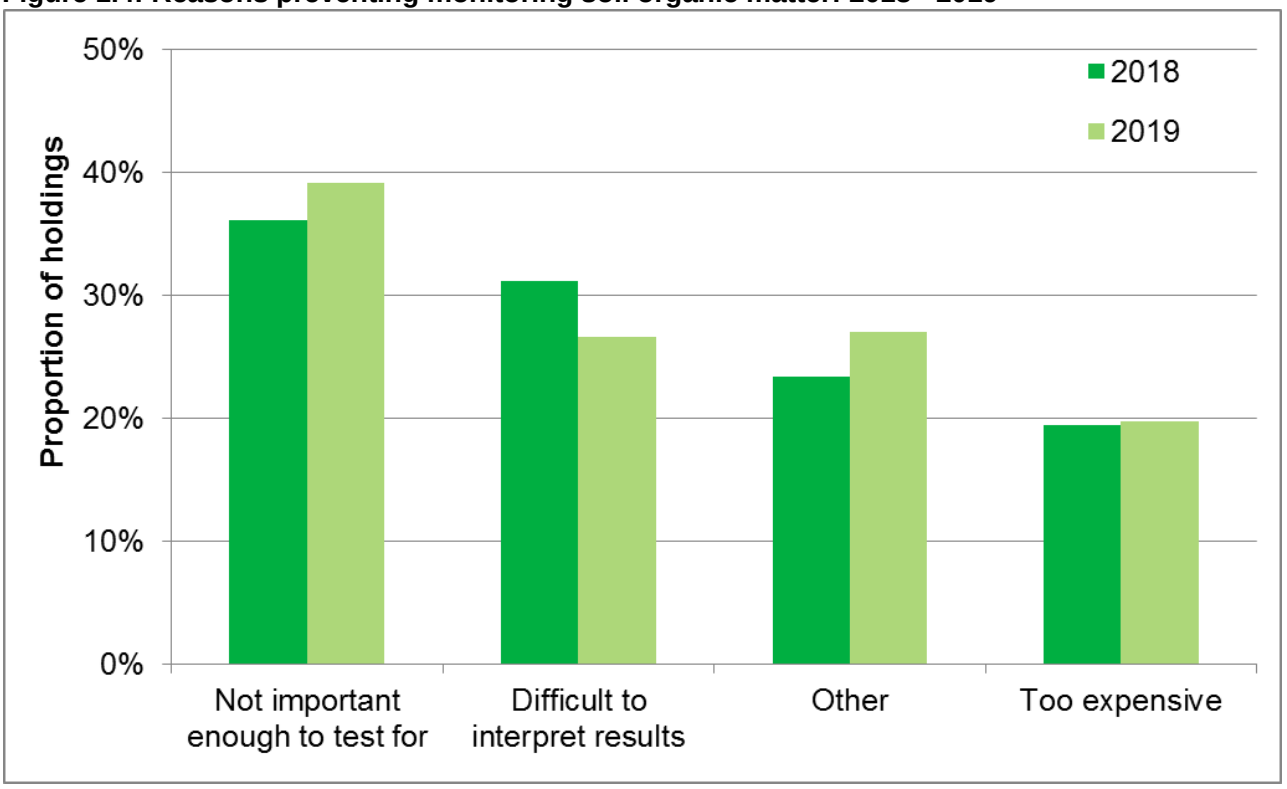


Table 1.1: Uptake of nutrient management plans: 2015 – 2019 (proportion of holdings and farmed area)

	2015		2016		2017		2018		2019	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI	%	95% CI
% of holdings										
Yes	60	*±2*	55	*±2*	56	*±2*	56	*±2*	58	*±2*
No	29	*±2*	32	*±2*	34	*±2*	32	*±2*	31	*±2*
Not applicable	11	*±1*	13	*±2*	10	*±1*	12	*±2*	11	*±2*
% of farmed area										
Yes	76	*±2*	72	*±2*	75	*±2*	74	*±2*	73	*±2*
No	19	*±2*	20	*±2*	21	*±2*	20	*±2*	20	*±2*
Not applicable	6	*±1*	8	*±2*	4	*±1*	6	*±1*	6	*±2*

Based on 2 635 responses in 2015, 2 206 in 2016, 2 304 in 2017, 2 412 in 2018 and 2 176 in 2019 from holdings with a nutrient management plan.

Table 1.2: Use of advisers/professional advice to create nutrient management plans: 2016 – 2019 (proportion of farmers with nutrient management plans)

	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Self-produced plan without professional advice	23	*±2*	24	*±2*	24	*±2*	25	*±2*
Self-produced plan with professional advice	46	*±3*	44	*±3*	43	*±3*	43	*±3*
Plan produced by an adviser or contractor	31	*±3*	32	*±3*	33	*±3*	32	*±3*

Based on 1 432 responses in 2016, 1 486 in 2017, 1 563 in 2018 and 1 445 in 2019 from holdings with a nutrient management plan.

Table 1.3: Use of advisers and contractors for completion of nutrient management plans: 2019

	Those who sought an adviser's help to create the plan themselves [(a)]		Those whose plan was created by an adviser or contractor[(b)]	
Type of adviser	% of holdings	95% CI	% of holdings	95% CI
Fertiliser adviser / agronomist	84	*±3*	84	*±4*
Animal nutritionist	8	*±2*	2	*±1*
FWAG [(c)]	3	*±1*	2	*±1*
Other	10	*±3*	13	*±3*

(a) Based on 647 responses from those who created the nutrient management plan themselves with advice.
(b) Based on 454 responses from those whose nutrient management plan was created by an adviser or contractor.
(c) FWAG: Farming and Wildlife Advisory Group.

Table 1.4: Frequency with which the nutrient management plan is updated: 2016 – 2019

	2016		2017		2018		2019	
Frequency of update	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Every year	77	*±2*	75	*±2*	74	*±2*	76	*±2*
Every 2 years	9	*±2*	12	*±2*	12	*±2*	11	*±2*
Every 3 years or longer	14	*±2*	13	*±2*	14	*±2*	13	*±2*

Based on 1 430 responses in 2016, 1 485 in 2017, 1 564 in 2018 and 1 444 in 2019 from holdings with a nutrient management plan.

Table 1.5: Frequency with which the nutrient management plan is referred to in a year: 2016 – 2019

Frequency of use per year	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
More than 10 times	8	*±1*	8	*±1*	8	*±1*	8	*±1*
5 to 10 times	16	*±2*	17	*±2*	20	*±2*	17	*±2*
Less than 5 times	70	*±3*	68	*±3*	67	*±3*	68	*±3*
Never	7	*±2*	7	*±1*	5	*±1*	6	*±1*

Based on 1 428 responses in 2016, 1 485 in 2017, 1 564 in 2018 and 1 441 in 2019 from holdings with a nutrient management plan.

Table 1.6: Methods used to create nutrient management plans: 2016 – 2019

Method	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
PLANET	22	*±2*	24	*±2*	23	*±2*	20	*±2*
Muddy Boots	19	*±2*	19	*±2*	18	*±2*	16	*±2*
Farmade / Multicrop	9	*±1*	11	*±2*	11	*±2*	9	*±2*
Industry plan – 'Tried and Tested'	16	*±2*	17	*±2*	16	*±2*	16	*±2*
Other	31	*±3*	27	*±2*	30	*±3*	33	*±3*
Don't know	16	*±2*	14	*±2*	13	*±2*	16	*±2*

Based on 1 421 responses in 2016, 1 485 in 2017, 1 559 in 2018 and 1 438 in 2019 from holdings with a nutrient management plan.

Table 1.7: Sources of nutrient recommendations for nutrient management plans: 2016 – 2019

Source	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Defra recommendations / manual (RB209)	65	*±3*	65	*±3*	67	*±3*	66	*±3*
An adviser's or industry note	36	*±3*	35	*±3*	35	*±3*	32	*±3*
Personal experience	40	*±3*	41	*±3*	40	*±3*	41	*±3*
Other	3	*±1*	4	*±1*	3	*±1*	3	*±1*
Don't know	4	*±1*	4	*±1*	3	*±1*	3	*±1*

Based on 1 430 responses in 2016, 1 485 in 2017, 1 563 in 2018 and 1 442 in 2019 from holdings with a nutrient management plan.

Table 1.8: Nutrient testing of soil: 2017 – 2019

		2017		2018		2019	
		Proportion	95% CI	Proportion	95% CI	Proportion	95% CI
Testing the nutrient content (indices) of soil	% of holdings	69	±2	69	±2	70	±2
	% of farmed area	83	±2	83	±2	82	±2
Testing the pH of soil	% of holdings	73	±2	73	±2	74	±2
	% of farmed area	86	±2	86	±2	84	±2

Based on responses from holdings considering the questions applicable. Minimum numbers of responses used: 2 195 in 2017, 2 280 in 2018 and 2 052 in 2019.

Table 1.9: Nutrient testing of soil by proportion of fields: 2019

		All fields		Some fields		None of the fields	
		Proportion	95% CI	Proportion	95% CI	Proportion	95% CI
Testing the nutrient content (indices) of soil at least every 5 years	% of holdings	59	±3	41	±3	0.3	±0.3
	% of farmed area	67	±3	33	±3	0.2	±0.2
Testing the pH of soil at least every 5 years	% of holdings	57	±3	43	±3	0.2	±0.2
	% of farmed area	63	±3	37	±3	0.1	±0.2

Based on responses from holdings with a programme of soil testing for either nutrient indices or pH. Minimum numbers of responses used: 1 580 in 2019.

Table 1.10: Nutrient testing of manure: 2018 - 2019

Methods of testing/assessing/calculating nutrient content of manure	2018		2019	
	% of holdings	95% CI	% of holdings	95% CI
Sampling and lab analysis	13	±1	14	±2
Sampling and on-farm testing	4	±1	3	±1
Based on published tables	33	±2	32	±2
No testing done	51	±2	52	±2

Based on 1 934 responses in 2018 and 1 781 in 2019 from holdings without a manure management plan.

Table 1.11: Uptake of manure management plans: 2016 – 2019

	2016		2017		2018		2019	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
% of holdings	62	*±2*	62	*±2*	63	*±2*	64	*±2*
% of farmed area	77	*±3*	78	*±2*	78	*±2*	77	*±3*

Based on 1 871 responses in 2016, 2 032 in 2017, 2 091 in 2018 and 1 901 in 2019 from holdings for which the question was applicable.

Table 1.12: Source of nutrient recommendations for manure management plans: 2016 – 2019

	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Defra recommendations / manual (RB209), CoGAP	91	*±2*	90	*±2*	89	*±2*	87	*±2*
Other	11	*±2*	11	*±2*	12	*±2*	14	*±2*

Based on 1 320 responses in 2016, 1 445 in 2017, 1 466 in 2018 and 1 368 in 2019 from holdings with a manure management plan.

Table 1.13: Soil organic matter and awareness of soil types: 2018 - 2019

Methods of testing/assessing/calculating nutrient content of manure	**2018**		**2019**	
	% of holdings	95% CI	% of holdings	95% CI
Holdings keeping track of soil organic matter	35	*±3*	38	*±3*
Holdings who know the soil type[(a)] for each field on the farm	74	*±3*	73	*±3*

Based on no less than 1 582 responses in 2018 and 1 581 in 2019.
(a) as described in Appendix 1 of Defra Recommendations/Manual (RB209)

Table 1.14: Reasons preventing farmers keeping track of soil organic matter: 2018 - 2019

Methods of testing/assessing/calculating nutrient content of manure	**2018**		**2019**	
	% of holdings	95% CI	% of holdings	95% CI
Too expensive	19	*±3*	20	*±3*
Not important enough to test for	36	*±3*	39	*±3*
Difficult to interpret results	31	*±3*	27	*±3*
Other	23	*±3*	27	*±3*

Based on 1 072 responses in 2018 and 950 in 2019 from holdings that do not keep track of soil organic matter

Section 2. Anaerobic digestion

Anaerobic digestion is a natural process in which plant and animal materials are broken down by micro-organisms in the absence of oxygen, producing a biogas that can be used to generate electricity and heat. The process allows more efficient capture and treatment of the nutrients and greenhouse gas emissions from animal slurries and manures than can be achieved by spreading directly onto land. The remaining digestate is rich in nutrients and can be used as fertiliser. This section looks at the proportion of farmers who are currently processing any waste or crop feedstocks in this way.

Key findings

- In 2019, 5.2% of farmers said they process waste by anaerobic digestion, a small decline from 5.4% in 2018.
- The proportion of farms processing waste by anaerobic digestion varied across farm types with 7.6% of other crops farms doing so, followed by 7.1% of pig and poultry farms.
- Slurries were the most common material type being processed, with 3.1% of farmers choosing this option. Crops were the next most popular option processed by 2.9% of farmers.

The majority of farms do not currently process slurries, crops or other feedstocks by anaerobic digestion, with just 5.2% of holdings doing so in 2019 (Table 2.1). Prior to 2015, the number of farmers processing by anaerobic digestion had remained stable at approximately 1.5% or below.

Table 2.1: Proportion of holdings processing waste by anaerobic digestion: 2015 – 2019

				% of holdings		95% CI
Waste type	2015	2016	2017	2018	2019	2019
Slurries	2.4	2.6	2.9	2.9	3.1	± *0.8*
Crops	3.2	3.0	3.9	3.6	2.9	± *0.7*
Other feedstocks from the holding	0.8	0.5	0.9	0.7	1.0	± *0.4*
Other feedstocks from outside the holding	0.5	0.7	0.9	0.9	1.3	± *0.6*
Any of the above	5.0	4.7	5.5	5.4	5.2	± *1.0*

Based on 2 641 in 2015 from holdings who had heard of anaerobic digestion and, 2 235 in 2016, 2 311 in 2017, 2 413 in 2018 and 2 187 in 2019 from all holdings.

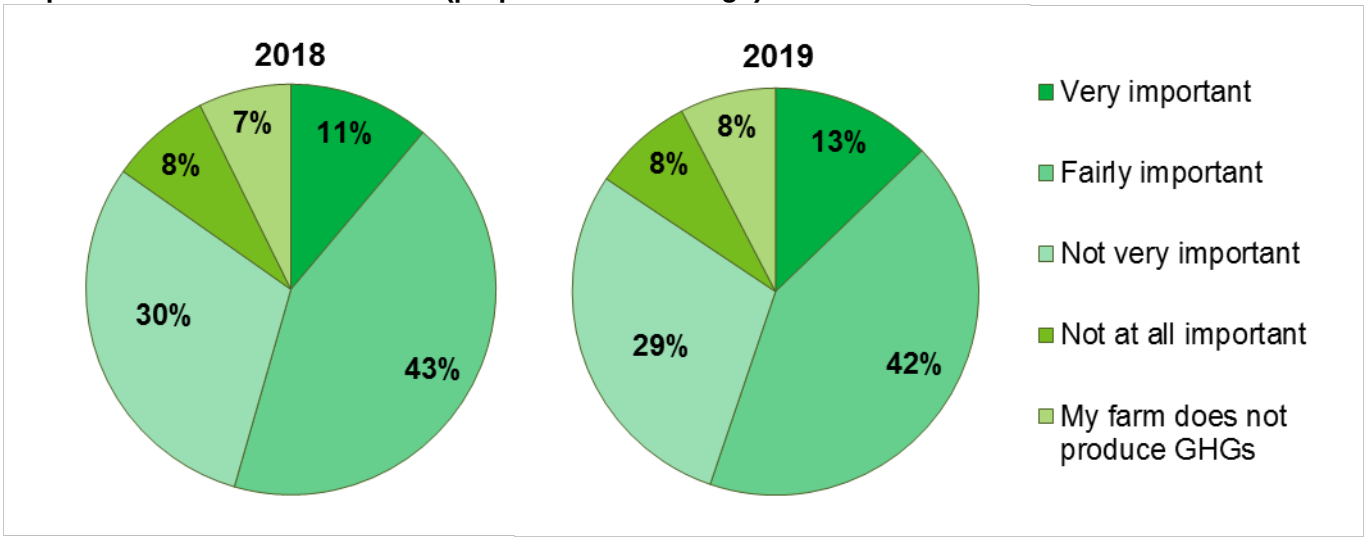
Section 3. Emissions

This section looks at the importance farmers place on greenhouse gas (GHG) emissions when making decisions about their farms. It also focuses on the actions that farmers are currently taking to reduce emissions and their motivations for doing so. In contrast we also look at the reasons that prevent farmers from taking action.

Key findings

- The proportion of farmers considering greenhouse gases (GHG) to be either fairly or very important when taking decisions about their land, crops and livestock is 55% in 2019
- In 2019, 61% of farmers reported that they were currently taking action to reduce greenhouse gas emissions from their farm.
- The most common actions taken to reduce GHG emissions on farms were recycling of waste materials from the farm (89%), improving energy efficiency (75%) and improving nitrogen fertiliser application accuracy (72%).
- The most common motivation for taking any action was that it was considered to be good business practice to do so. This has been the case for the past seven years.
- For those not taking action to reduce GHG emissions, the most common reasons given were that it was not necessary because the farm did not produce many emissions and were unsure what to do as there are too many conflicting views on the issue.

Figure 3.1: Importance placed on GHGs by farmers when taking decisions about their land, crops and livestock: 2018 – 2019 (proportion of holdings)

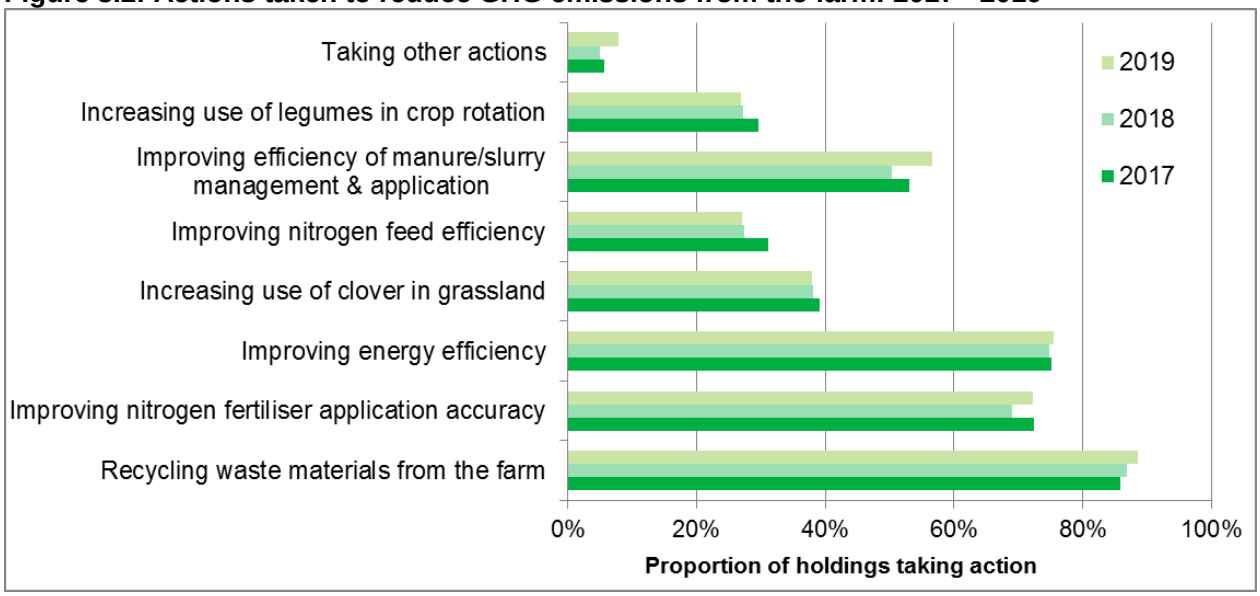


The proportion of farmers considering greenhouse gases to be either fairly or very important when taking decisions about their land, crops and livestock is 55% in 2019, similar to 2018 (Figure 3.1). There were 8% of farms where greenhouse gases were considered to be “not at all important” and another 8% that believed that their farm did not produce any GHGs.

In 2019, 61% of farmers said that they were currently taking action to reduce GHG emissions from their farm. Of those taking action (Figure 3.2 and Table 3.3) the three most common actions are recycling waste materials from the farm (89%), improving energy efficiency (75%) and improving nitrogen fertiliser application accuracy (72%). The largest change in actions seen between 2013 when these questions were first asked and 2019 was an increase in the number of farmers

improving efficiency of their manure & slurry management and application. This has risen steadily from 28% of holdings in 2013 to 57% in 2019.

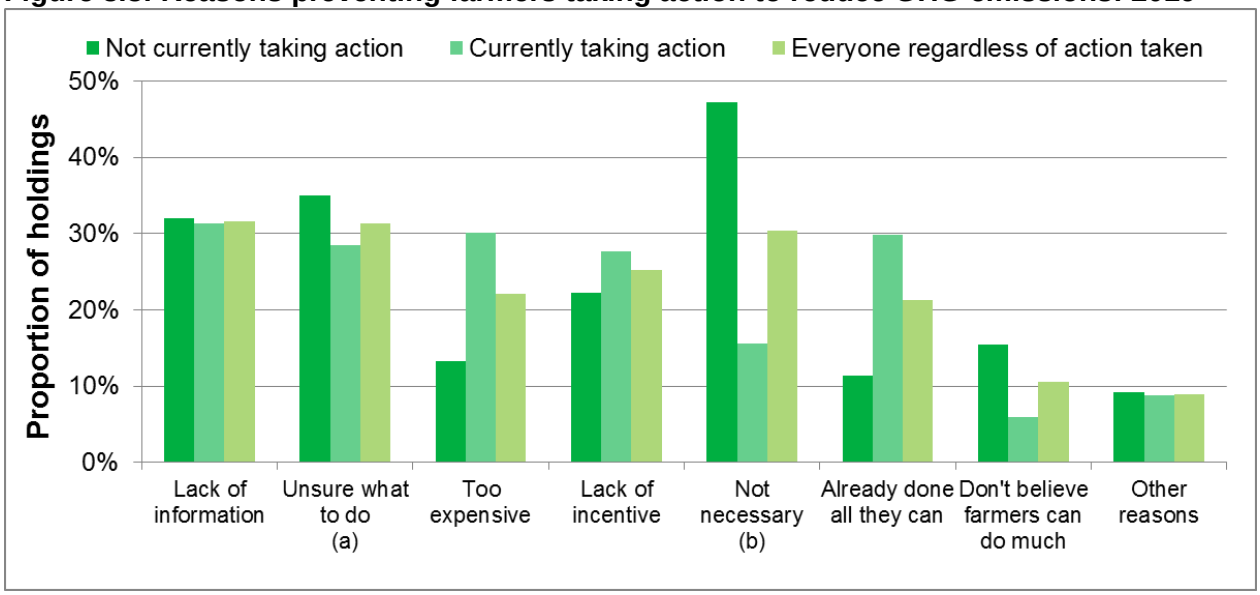
Figure 3.2: Actions taken to reduce GHG emissions from the farm: 2017 - 2019[(a)]



(a) Figures relate only to those holdings currently taking action to reduce GHG emissions from their farm.

For those farmers currently taking action to reduce their farm's GHG emissions the most common motivation for doing so was that it was considered to be good business practice (selected by 84% of holdings) followed by concern for the environment (selected by 71%) (Table 3.4).

Figure 3.3: Reasons preventing farmers taking action to reduce GHG emissions: 2019



(a) Unsure what to do - too many conflicting views on the issue
(b) Not necessary - don't believe farm produces many emissions

The reasons that prevent people from taking action to reduce GHG emissions vary depending on whether farmers were currently taking action or not (Figure 3.3). For those not currently taking action, the most commonly quoted reasons were that farmers did not think it was necessary to do so as the farm did not produce many emissions (47%) and unsure what to do as too many conflicting views on the issue (35%). For those who were already taking action the most commonly quoted reason was lack of information (31%), followed by farmers had already done all they can (30%) and expense (30%).

Table 3.1: Importance placed on GHGs by farmers when taking decisions about their land, crops and livestock: 2017 - 2019

	% of holdings			95% CI
	2017	2018	2019	2019
Very important	9	11	13	*±2*
Fairly important	39	43	42	*±2*
Not very important	33	30	29	*±2*
Not at all important	9	8	8	*±1*
Do not believe farm produces GHGs	9	7	8	*±1*

Based on responses from 2 301 holdings in 2017, 2 395 in 2018 and 2 169 in 2019.

Table 3.2: Belief that reducing GHG emissions from the farm will contribute to improving the overall profitability: 2017 - 2019

	% of holdings			95% CI
	2017	2018	2019	2019
Strongly agree	4	4	4	*±1*
Agree	37	44	37	*±2*
Disagree	51	45	49	*±2*
Strongly disagree	8	7	9	*±1*

Based on responses from 2 299 holdings in 2017, 2 391 in 2018 and 2 163 in 2019.

Table 3.3: Actions being taken to reduce GHG emissions from farms: 2017 - 2019

	% of holdings			95% CI
	2017	2018	2019	2019
Taking action[(a)]	56	58	61	*±2*
Of those taking action, the actions were[(b)]:				
Recycling of waste materials from the farm (e.g. tyres, plastics)	86	87	89	*±2*
Improving nitrogen fertiliser application accuracy	72	69	72	*±3*
Improving energy efficiency (e.g. reducing electricity use, using reduced tillage)	75	75	75	*±3*
Increasing use of clover in grassland	39	38	38	*±3*
Improving nitrogen feed efficiency, livestock diets	31	27	27	*±2*
Improving efficiency in manure and slurry management and application	53	50	57	*±3*
Increasing use of legumes in arable rotation	30	27	27	*±2*
Other actions	6	5	8	*±2*

(a) Based on responses from 2 273 holdings in 2017, 2 364 in 2018 and 2 157 in 2019.
(b) Based on responses from 1 389 holdings in 2017, 1 485 in 2018 and 1 413 in 2019 who are taking action to reduce GHG emissions.

Table 3.4: Main motivations for those taking action to reduce GHG emissions: 2017 - 2019

Motivations	% of holdings			95% CI
	2017	2018	2019	2019
Consider it good business practice	84	83	84	*±2*
Concern for the environment	64	68	71	*±3*
To improve profitability	52	53	55	*±3*
Regulation	41	44	41	*±3*
To meet market demands	20	20	19	*±2*
Other motivation	3	3	3	*±1*

Based on 1 388 responses in 2017, 1 485 in 2018 and 1 408 in 2019 from holdings who are taking action to reduce GHG emissions.

Table 3.5: Reasons preventing farmers from taking action to reduce GHG emissions from their farm: 2018 - 2019

	For those not taking action[(a)]			For those already taking action[(b)]			For all holdings[(c)]		
	% of holdings			% of holdings			% of holdings		
	2018	2019	95% CI	2018	2019	95% CI	2018	2019	95% CI
Lack of information	37	32	*±4*	30	31	*±3*	34	32	*±2*
Too expensive	12	13	*±3*	28	30	*±3*	20	22	*±2*
Lack of incentive	25	22	*±3*	25	28	*±3*	25	25	*±2*
Already done all they can	13	11	*±3*	34	30	*±3*	23	21	*±2*
Don't believe farmers can do much	18	15	*±3*	8	6	*±2*	13	10	*±2*
Not necessary – don't believe farm produces many emissions	44	47	*±4*	13	16	*±3*	28	30	*±2*
Unsure what to do - too many conflicting views on the issue	31	35	*±4*	25	28	*±3*	28	31	*±2*
Other reasons	6	9	*±2*	6	9	*±2*	6	9	*±2*

(a) Based on responses from 862 holdings in 2018 and 730 holdings in 2019 who are not taking action to reduce GHG emissions.
(b) Based on responses from 980 holdings in 2018 and 990 holdings in 2019 who are currently taking action to reduce GHG emissions.
(c) Based on responses from 1 849 holdings in 2018 and 1 728 holdings in 2019 regardless of whether or not they are taking action to reduce GHG emissions.

Section 4. Fertiliser, manure and slurry spreaders

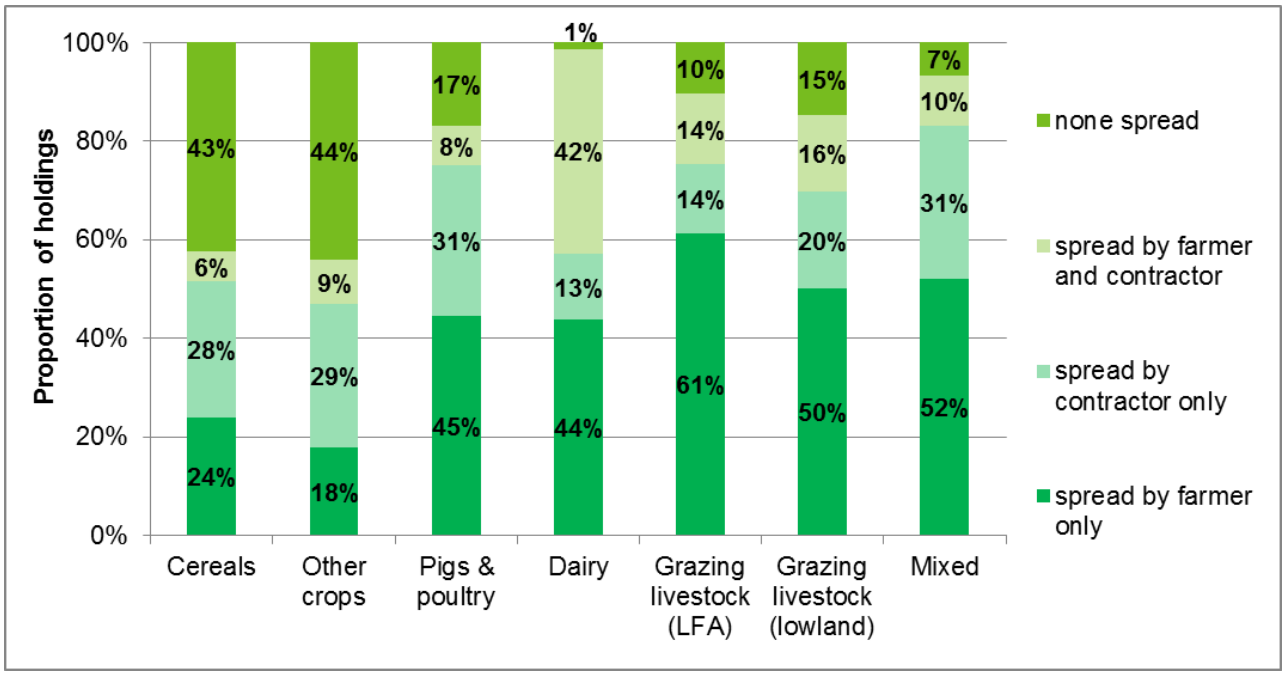
Calibrating fertiliser, manure and slurry spreaders can help to improve input efficiency and reduce GHG emissions. This section focuses specifically on farmers who spread manure, slurry and fertiliser.

More details on nitrogen fertiliser spreading practices are available in the British Survey of Fertiliser Practice at: https://www.gov.uk/government/collections/fertiliser-usage.

Key findings

- Just over three quarters of holdings (78%) spread manure or slurry on their grass or arable land in 2019 and 86% spread fertilisers.
- On 47% of holdings where the farmer spreads at least some manure or slurry themselves, the manure or slurry spreader is never calibrated.

Figure 4.1: Proportion of holdings spreading manure and slurry on grassland and arable land by farm type: 2019



In 2019, 78% of holdings spread manure or slurry on their grass and arable land. There was considerable variation between farm types. Almost all dairy farms spread manures or slurries and these farms are more likely to use contractors to spread at least some of the manure and slurry than other farm types. The majority (61%) of LFA grazing livestock farmers spread manure/slurry themselves only (Figure 4.1).

Fertiliser was spread either by the farmer or a contractor on 97% of cereal farms and 91% of other cropping farms and dairy farms. On all three of these farm types the largest proportion of holdings said the fertiliser was spread solely by the farmer, however cereal and other cropping farms were more likely to use a contractor than dairy farms (Figure 4.2).

Figure 4.2: Proportion of holdings spreading fertiliser on grassland and arable land by farm type: 2019

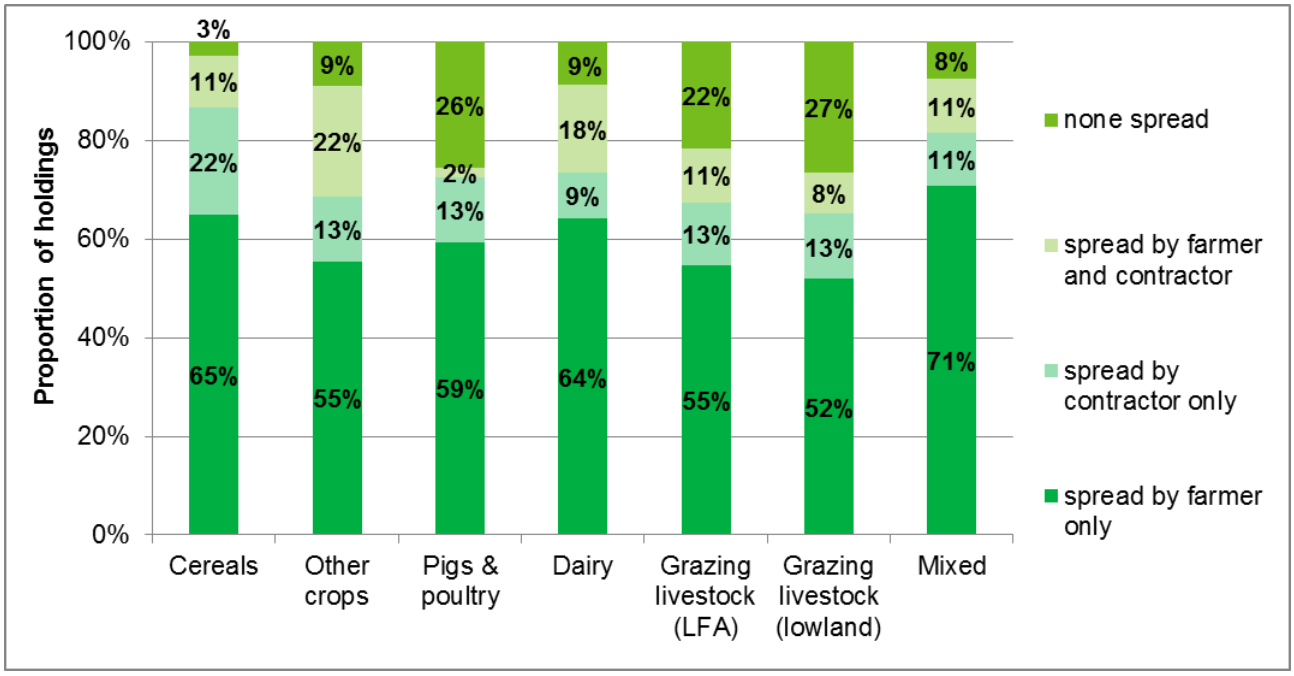


Table 4.1: Spreading of manure and slurry on grassland or arable land: 2017 - 2019

	2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Spread by farmer only	38	*±2*	37	*±2*	41	*±3*
Spread by farmer and also contractor	17	*±1*	17	*±2*	14	*±2*
Spread by contractor only	20	*±2*	22	*±2*	23	*±2*
None spread	24	*±2*	25	*±2*	22	*±2*
Based on 2 025 responses in 2017, 2 113 in 2018 and 1 887 in 2019						

Table 4.2: Spreading of fertiliser on grassland or arable land: 2017 - 2019

	2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Spread by farmer only	59	*±2*	57	*±2*	59	*±3*
Spread by farmer and also contractor	11	*±1*	13	*±2*	11	*±2*
Spread by contractor only	14	*±2*	15	*±2*	15	*±2*
None spread	15	*±2*	15	*±2*	14	*±2*
Based on 2 029 response in 2017, 2 121 in 2018 and 1 899 in 2019.						

Table 4.3: Frequency with which farmers calibrate their manure or slurry spreader(s): 2017 - 2019

Frequency of check	2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Never	54	*±3*	55	*±3*	47	*±4*
Whenever there is significant change in manure or slurry characteristics	17	*±2*	16	*±2*	22	*±3*
Whenever manure or slurry is tested	1	*±1*	1	*±1*	2	*±1*
Every year	18	*±2*	18	*±3*	19	*±3*
Less often than every year	7	*±2*	7	*±2*	7	*±2*
Other frequency	3	*±1*	3	*±1*	4	*±2*

Based on 1 002 responses in 2017, 980 in 2018 and 871 in 2019 on holdings where the farmer spreads some or all of the manure/slurry.

Note: **The results in sections 5 to 8 relate only to holdings with livestock.**

Section 5. Manure and slurry storage

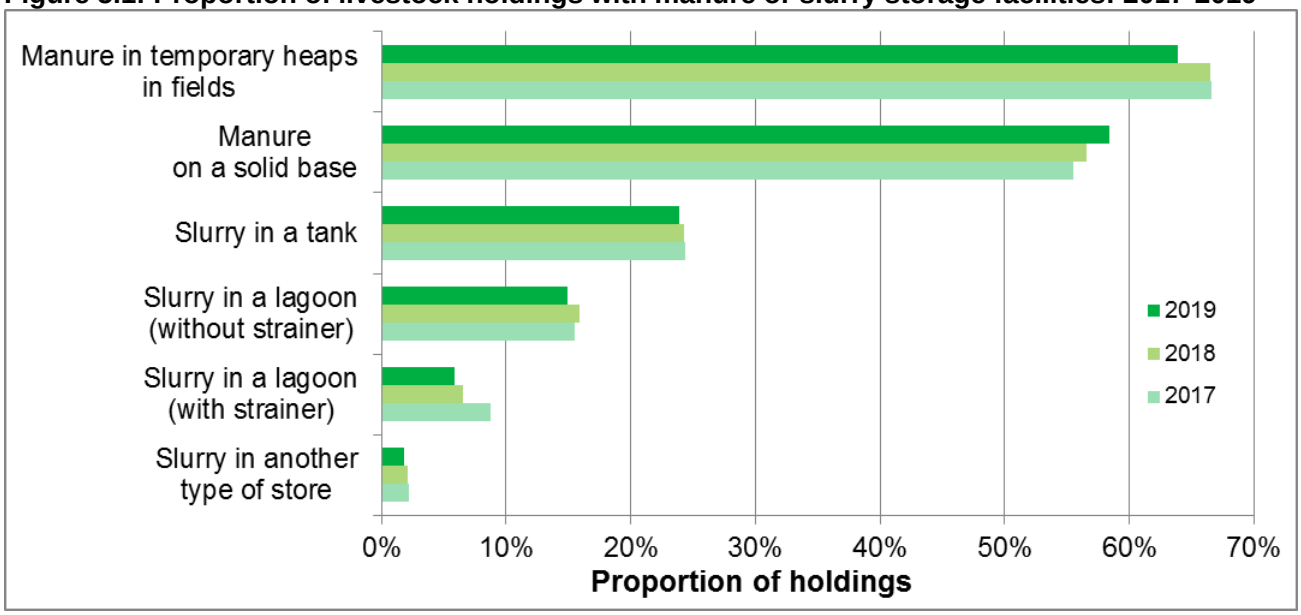
The system of manure and slurry management is relevant to the control of environmental risks to water and air. It prevents the loss of ammonia to the air, at the same time retaining the nitrogen for use as an organic fertiliser, reducing the need for manufactured nitrogen fertiliser inputs.

This section looks at the types of stores that livestock farmers have, whether or not they are covered, and whether the farmer has any plans to upgrade their current facilities. It also looks at whether the farmer has a slurry separator. Separating the suspended solids from slurry allows the two manure streams to be handled separately. The solid fraction can be stored on a concrete pad or in a field heap, while the liquid fraction can be stored and transported/pumped to fields for land application. Separation can reduce storage space and improve the efficiency with which nitrogen is applied to land which has the potential to reduce emissions.

Key findings

- Temporary heaps remains the most common form of storage for solid manure, with almost two thirds (64%) of the farmers having this kind of store.
- Almost a quarter of farmers (24%) store their slurry in a tank, whilst 15% store slurry in lagoons without a strainer.
- In 2019, 14% of livestock farmers with storage facilities intend to enlarge or upgrade their manure or slurry storage compared to 16% in 2018.

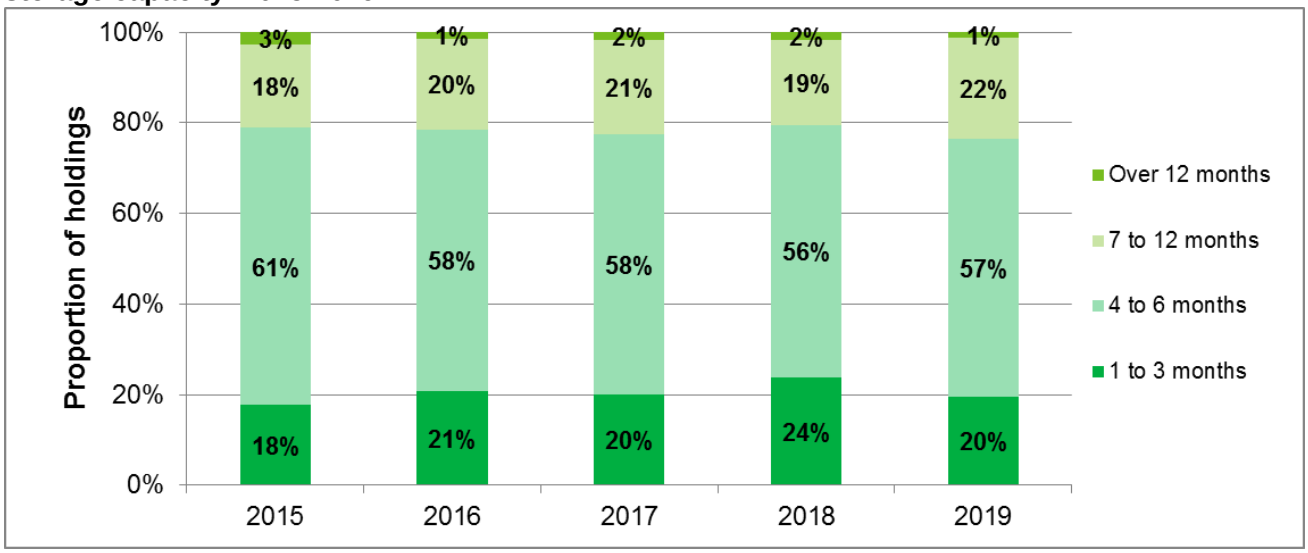
Figure 5.1: Proportion of livestock holdings with manure or slurry storage facilities: 2017-2019



The most common storage facility for solid manure continues to be temporary heaps in fields. The most common facilities for slurry storage are tanks (24% of farms) followed by lagoons without a strainer (15%). Slurry in a tank is far more likely to have a cover than any other type of store (Table 5.2).

In 2019, 14% of livestock farmers planned to make changes to their manure or slurry storage facilities. Of these, 22% planned to make the changes within the next year and a further 46% in the next 1 to 3 years (Table 5.3).

Figure 5.2: Proportion of holdings with storage facilities for slurry by number of months of storage capacity: 2015-2019



The proportion of holdings that have 6 months storage capacity or less for slurry has decreased slightly to 76%. Almost all of the remaining holdings had between 7 and 12 months capacity with only very few people having more than 12 months storage (Figure 5.2 and Table 5.4).

Table 5.1: Proportion of holdings with storage facilities for manure and/or slurry: 2016 – 2019 storage

Storage facility	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Solid manure stored in heaps on a solid base	52	*±3*	56	*±3*	57	*±3*	58	*±3*
Solid manure stored in temporary heaps in fields	67	*±3*	67	*±3*	67	*±3*	64	*±3*
Slurry in a tank	23	*±3*	24	*±3*	24	*±3*	24	*±3*
Slurry in a lagoon without strainer	14	*±2*	16	*±2*	16	*±2*	15	*±2*
Storage with strainer facility	6	*±1*	9	*±2*	7	*±1*	6	*±1*
Slurry in another type of store	2	*±1*	2	*±1*	2	*±1*	2	*±1*

Based on no fewer than 1 450 responses in 2016, 1 430 in 2017, 1 459 in 2018 and 1 352 in 2019 from livestock holdings.

Table 5.2: Proportion of holdings having storage facilities for manure and/or slurry where the store is covered: 2016 - 2019

Storage facility	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Solid manure stored in heaps on a solid base	17	*±3*	17	*±3*	16	*±3*	19	*±3*
Solid manure stored in temporary heaps in fields	1	*±1*	1	*±1*	1	*±0*	1	*±1*
Slurry in a tank	27	*±6*	25	*±6*	28	*±6*	30	*±6*
Slurry in a lagoon without strainer	3	*±2*	4	*±2*	5	*±3*	5	*±3*
Storage with strainer facility	8	*±6*	2	*±2*	3	*±3*	13	*±11*
Slurry in another type of store	4	*±4*	1	*±1*	4	*±4*	5	*±5*

Based on no fewer than 82 responses in 2016, 125 in 2017, 100 in 2018 and 86 in 2019 from livestock holdings that have the storage facilities in question.

Table 5.3: Proportion of holdings planning to enlarge, upgrade or reconstruct their manure and slurry storage facilities: 2016 - 2019

	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Holdings planning to make changes to their current facilities [(a)]	11	*±2*	13	*±2*	16	*±2*	14	*±2*
Of those planning to make changes, the changes will be made: [(b)]								
In 0 to 6 months	10	*±5*	10	*±4*	11	*±4*	9	*±4*
In 7 to 11 months	13	*±5*	9	*±4*	17	*±5*	13	*±5*
In 1 to less than 3 years	48	*±8*	50	*±7*	47	*±7*	46	*±7*
In 3 to less than 5 years	16	*±6*	18	*±6*	14	*±5*	19	*±6*
In 5 years or more	12	*±5*	13	*±5*	11	*±4*	12	*±5*

(a) Based on 1 446 responses in 2016, 1 431 in 2017, 1 423 in 2018 and 1 339 in 2019 from livestock holdings that have manure or slurry storage facilities.
(b) Based on 168 responses in 2016, 202 in 2017, 235 in 2018 and 216 in 2019 from livestock holdings that are planning to make changes.

Table 5.4: Proportion of holdings with slurry stores by storage capacity: 2016 - 2019

Storage capacity	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
1 to 3 months	21	*±4*	20	*±3*	24	*±4*	20	*±4*
4 to 6 months	58	*±4*	58	*±4*	56	*±4*	57	*±4*
7 to 12 months	20	*±4*	21	*±4*	19	*±3*	22	*±4*
Over 12 months	1	*±1*	2	*±1*	2	*±1*	1	*±1*

Based on 523 responses in 2016, 576 in 2017, 569 in 2018 and 518 in 2019 from livestock holdings that have slurry storage facilities.

Table 5.5: Proportion of holdings that have a slurry separator: 2016 - 2019

	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Holdings who have a slurry separator	8	*±2*	8	*±2*	7	*±2*	10	*±3*

Based on 552 responses in 2016, 577 in 2017, 578 in 2018 and 532 in 2019 from livestock holdings.

Section 6. Farm health planning and biosecurity

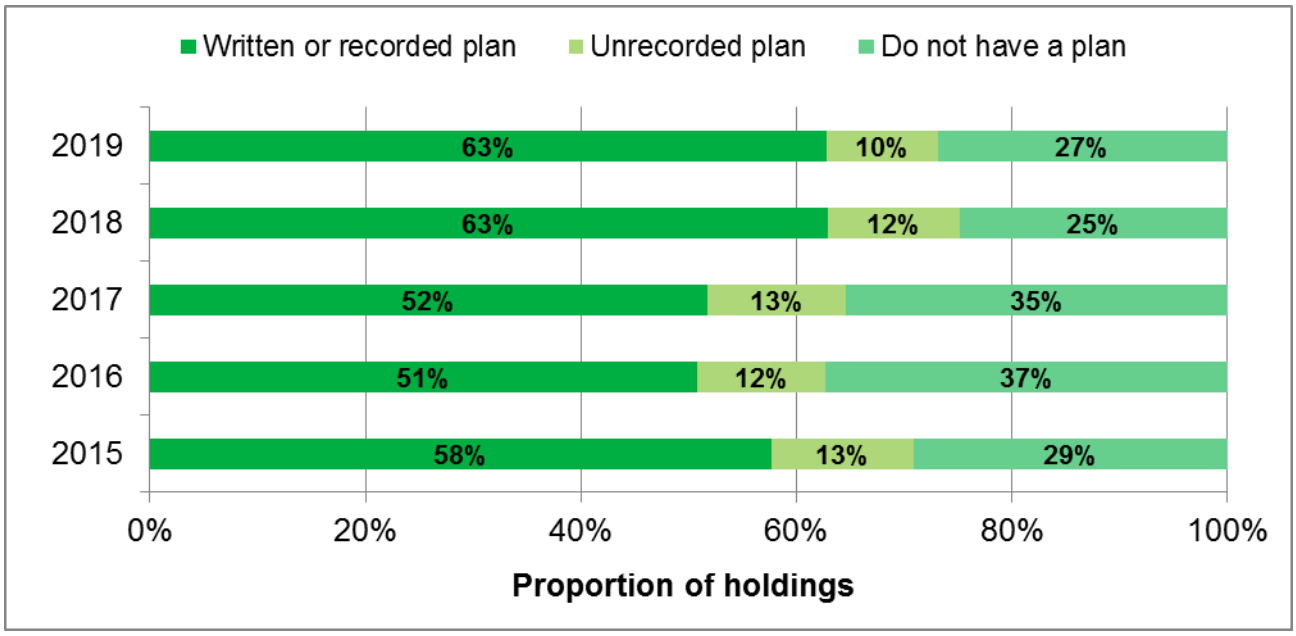
Farm health planning is a Defra initiative which benefits farmers by helping to prevent disease and improve the performance of their livestock. This can help to reduce GHG emissions over the course of an animal's lifetime by, for example, reaching finishing weights earlier and achieving higher feed conversion rates. Farm health planning is about farmers working closely with their vets or other advisers to set targets for their animals' health and welfare and take steps to measure, manage and monitor productivity.

Key findings

- The number of livestock farmers with a Farm Health Plan decreased to 73% in 2019, compared with 75% in 2018.
- In 2019, over half (55%) of farmers with a FHP used it on a routine basis to inform disease management decisions.
- The number of FHPs completed with the help of a vet or adviser has increased from 79% in 2018 to 84% in 2019.

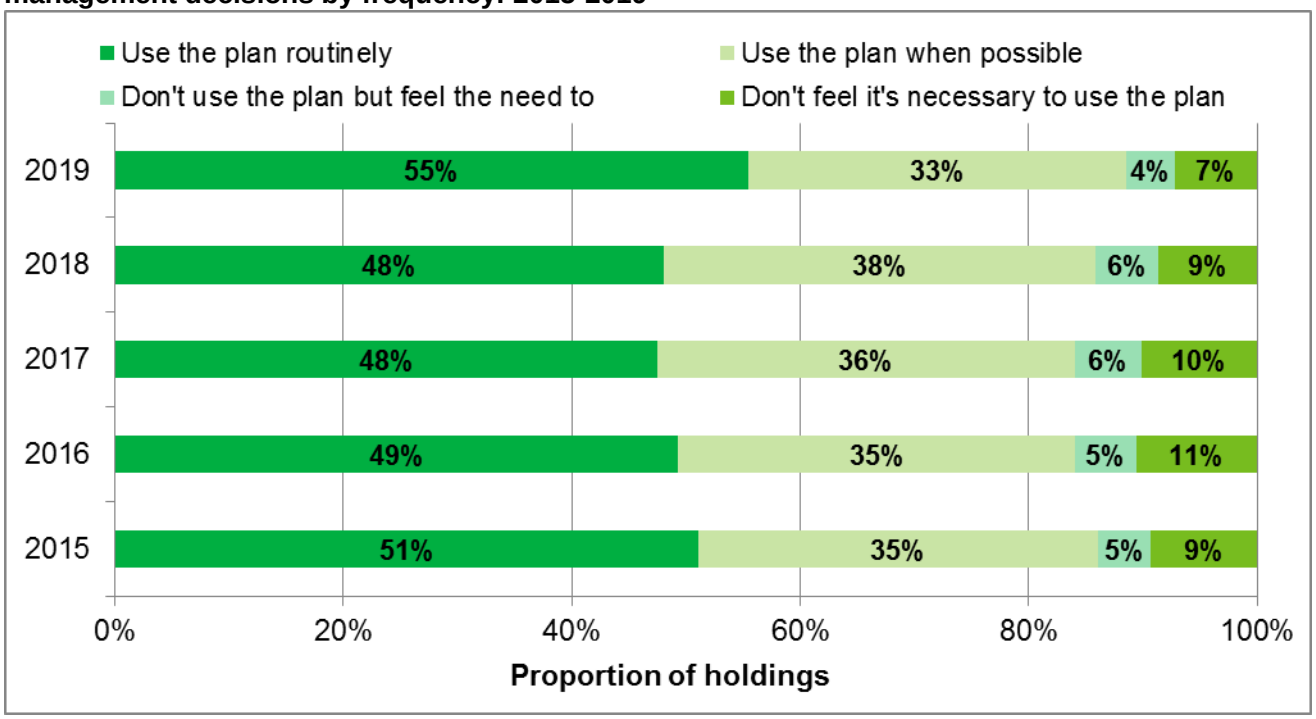
In 2019, 73% of livestock farms had a Farm Health Plan. This is a decrease when compared with 75% in 2018. The majority of livestock farmers have a written or recorded plan and this remained the same as in 2018 at 63%. Livestock farmers with a plan that was not recorded (10%) saw a decrease in 2019, from 12% in 2018 (Figure 6.1). Of those holdings with a FHP in 2019, 84% had created the plan with assistance from a vet or advisor (Table 6.2). The proportion using a vet or adviser has risen steadily from 60% in 2009 when we first asked the question.

Figure 6.1: Proportion of livestock holdings with a farm health plan: 2015 – 2019



Of those with a Farm Health Plan in 2019, 89% were using it either routinely or when they could to inform disease management decisions and a further 4% felt that they should be doing so. The remaining 7% did not feel it was necessary to use the plan (Figure 6.2).

Figure 6.2: Proportion of livestock holdings using their farm health plan to inform disease management decisions by frequency: 2015-2019



The number of livestock farmers who undertake training for animal health and welfare and disease management either routinely or when they can rose to 60% in 2019, compared with 58% in 2018. A further 10% said that although they did not undertake training they felt that they should and the remaining 30% did not feel training was necessary (Table 6.4).

Table 6.1: Proportion of livestock holdings with a farm health plan: 2015 - 2019

	% of holdings					95% CI
	2015	2016	2017	2018	2019	2019
Written or recorded plan	58	51	52	63	63	*±3*
Unrecorded plan	13	12	13	12	10	*±2*
No plan	29	37	35	25	27	*±3*

Based on 2 152 responses in 2015, 1 905 in 2016, 1 934 in 2017, 1 775 in 2018 and 1 601 in 2019 from livestock holdings.

Table 6.2: Proportion of holdings who completed their farm health plan with the assistance of a vet or adviser: 2015 – 2019

	% of holdings					95% CI
	2015	2016	2017	2018	2019	2019
Assistance from vet / adviser	72	74	75	79	84	*±2*

Based on 1 631 responses in 2015, 1 295 in 2016, 1 353 in 2017, 1 374 in 2018 and 1 248 in 2019 from holdings with livestock.

Table 6.3: Proportion of holdings using their farm health plan to inform disease management decisions by frequency of use: 2016 - 2019

Frequency of use	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Use plan routinely	49	*±3*	48	*±3*	48	*±3*	55	*±3*
Use plan when possible	35	*±3*	36	*±3*	38	*±3*	33	*±3*
Don't use plan but feel the need to	5	*±1*	6	*±1*	6	*±1*	4	*±1*
Don't feel it's necessary to use plan	11	*±2*	10	*±2*	9	*±2*	7	*±2*

Based on 1 305 responses in 2016, 1 353 in 2017, 1 391 in 2018 and 1 255 in 2019 from livestock holdings with a farm health plan.

Table 6.4: Proportion of holdings undertaking animal health and welfare and disease management training by frequency of training: 2016 - 2019

Frequency of training	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Undertake training routinely	13	*±2*	15	*±2*	17	*±2*	22	*±2*
Undertake training when possible	33	*±2*	33	*±2*	40	*±3*	38	*±3*
Don't undertake training but feel the need to	12	*±2*	14	*±2*	14	*±2*	10	*±2*
Don't feel training is necessary	41	*±2*	38	*±2*	29	*±2*	30	*±3*

Based on 1 867 responses in 2016, 1 929 in 2017, 1 723 in 2018 and 1 588 in 2019 from livestock holdings.

Section 7. Grassland and grazing

In some situations sowing temporary grassland with a clover mix or high sugar grasses can be a cost effective method of increasing production and improving environmental protection. For example, clover's nitrogen fixing properties (although not suitable for all soil types) can reduce the amount of nitrogen applied and improve grassland yields. High sugar grasses can help to improve the efficiency of animal production (for example, improved milk yields and faster live weight gain) which can in turn reduce GHG emissions.

Land and soil management mitigation methods can help to preserve good soil structure preventing erosion and compaction, both of which can lead to GHG emissions. Mitigation methods relating to this include keeping livestock away from water courses and reducing stocking rates when conditions are excessively wet.

Key findings

- In 2019, 75% of livestock holdings indicated that a proportion of their temporary grassland had been sown with a clover mix: 27% had sown all of their temporary grassland with a clover mix. This is a slight decrease from 2018.
- High sugar grasses were sown on 59% of livestock holdings with temporary grassland.
- The most common frequency for reseeding clover or high sugar grass swards in 2019 was 3 to 5 years.
- Approximately 75% of livestock farmers always take action to reduce stocking rates when fields are excessively wet.
- 61% of livestock farmers routinely try to keep livestock out of water courses.

Table 7.1: Proportion of livestock holdings that have sown their temporary grassland with a clover mix by proportion of grassland: 2016 - 2019

Proportion of temporary grassland (%)	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
100	29	±3	29	±3	29	±3	27	±3
81-99	4	±2	6	±2	6	±2	6	±2
61-80	7	±2	5	±2	5	±2	7	±2
41-60	8	±2	8	±2	8	±2	9	±2
21-40	8	±2	8	±2	9	±2	10	±2
1-20	18	±3	14	±2	16	±3	17	±3
0	26	±3	30	±3	26	±3	25	±3

Based on 813 responses in 2016, 928 in 2017, 871 in 2018 and 817 in 2019 from livestock holdings with temporary grass.

Table 7.2: Proportion of livestock holdings that have sown their temporary grassland with high sugar grasses by proportion of grassland: 2016 - 2019

Proportion of temporary grassland (%)	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
100	17	*±3*	21	*±3*	18	*±3*	19	*±3*
81-99	4	*±1*	5	*±1*	4	*±1*	6	*±2*
61-80	7	*±2*	7	*±2*	8	*±2*	7	*±2*
41-60	8	*±2*	9	*±2*	11	*±2*	10	*±2*
21-40	9	*±2*	8	*±2*	10	*±2*	9	*±2*
1-20	11	*±2*	12	*±2*	12	*±2*	9	*±2*
0	43	*±4*	39	*±3*	38	*±4*	41	*±4*

Based on 810 responses in 2016, 928 in 2017, 872 in 2018 and 814 in 2019 from livestock holdings with temporary grass.

Table 7.3: Proportion of holdings by the frequency with which holders reseed their clover sward: 2016 – 2019

Frequency of reseeding	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
1 to 12 months	2	*±1*	1	*±1*	1	*±1*	1	*±1*
1 to 2 years	4	*±2*	4	*±1*	5	*±2*	4	*±2*
2 to 3 years	6	*±2*	8	*±2*	11	*±3*	8	*±2*
3 to 5 years	31	*±4*	28	*±4*	34	*±4*	34	*±4*
5 to 10 years	20	*±4*	24	*±4*	22	*±4*	23	*±4*
10 years and over	2	*±1*	2	*±1*	1	*±1*	1	*±1*
Never/Do not reseed	35	*±4*	32	*±4*	26	*±4*	30	*±4*

Based on 560 responses in 2016, 641 in 2017, 607 in 2018 and 594 in 2019 from livestock holdings with temporary grass.

Table 7.4: Proportion of holdings by the frequency with which holders reseed their high sugar grass sward: 2016 – 2019

Frequency of reseeding	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
1 to 12 months	2	*±1*	2	*±1*	1	*±1*	1	*±1*
1 to 2 years	5	*±2*	3	*±1*	6	*±2*	6	*±2*
2 to 3 years	13	*±3*	14	*±3*	15	*±3*	12	*±3*
3 to 5 years	36	*±5*	29	*±4*	33	*±4*	35	*±5*
5 to 10 years	24	*±4*	25	*±4*	24	*±4*	27	*±4*
10 years and over	2	*±2*	2	*±1*	1	*±1*	1	*±1*
Never/ Do not reseed	17	*±4*	25	*±4*	20	*±4*	19	*±4*

Based on 428 responses in 2016, 574 in 2017, 539 in 2018 and 492 in 2019 from livestock holdings with temporary grass.

Table 7.5: Frequency with which livestock holdings take action to reduce stocking rates when fields are excessively wet: 2018 - 2019

Frequency	2018		2019	
	% of holdings	95% CI	% of holdings	95% CI
Always	70	*±3*	75	*±3*
Some of the time	28	*±3*	22	*±2*
Never	2	*±1*	3	*±1*

Based on 1 581 responses in 2018 and 1 439 in 2019 from holdings with livestock.

Table 7.6: Frequency with which livestock holdings take action to keep livestock out of water courses: 2018 - 2019

Frequency	2018		2019	
	% of holdings	95% CI	% of holdings	95% CI
Routinely	63	*±3*	61	*±3*
Some of the time	28	*±3*	29	*±3*
Never	9	*±2*	9	*±2*

Based on 1 441 responses in 2018 and 1 332 in 2019 from holdings with livestock.

Section 8. Livestock feeding regimes and breeding practices

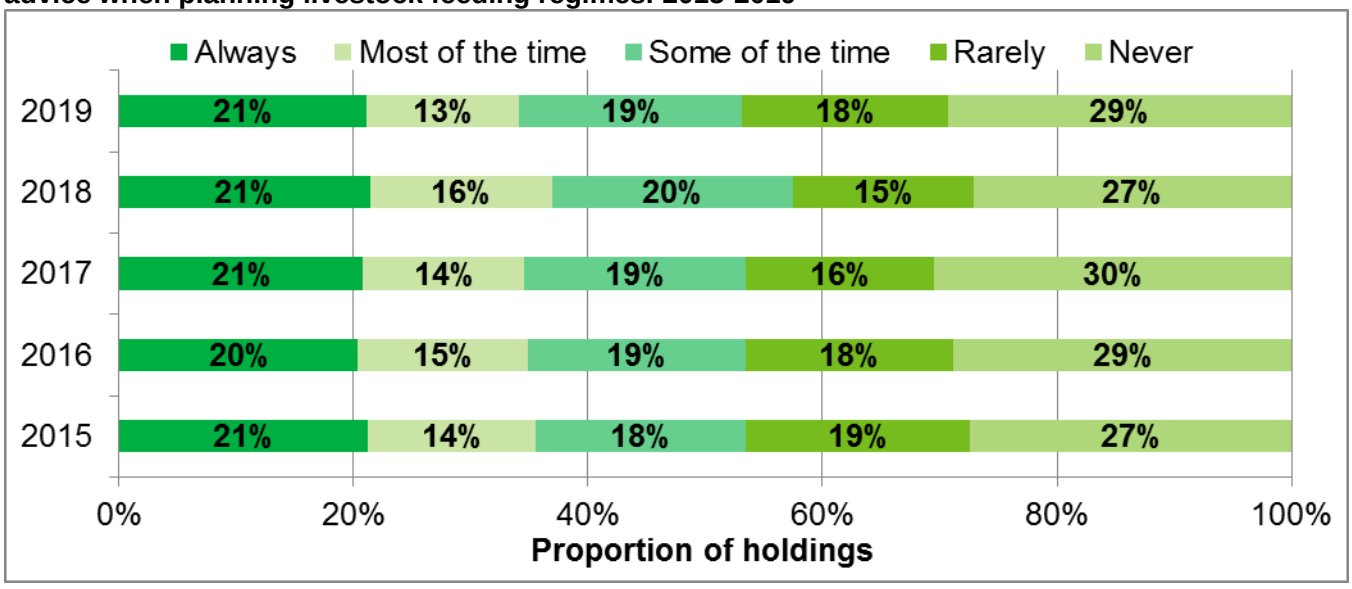
Cattle and sheep breeding practices are another area which can contribute to herd and flock productivity and efficiency which in turn can reduce GHG emissions. A Profitable Lifetime Index (PLI) is a scoring system to identify cattle with the best 'genetic merit' used when choosing bulls to breed with dairy cattle. The PLI uses a combination of attributes including life expectancy, health, fertility and milk production. Estimated Breeding Values (EBV) estimate the genetic worth of animals using desirable traits such as meat production. In addition to playing an important role in productivity and efficiency, livestock feeding practices such as intake and type of feed, can have an impact on GHG emissions.

Key findings

- In 2019, 71% of livestock holdings used a ration formulation programme or nutritional advice. This has decreased slightly from 73% in 2018.
- Whole-crop silage and maize were the most common alternative forages (other than grazed or conserved grass) offered to cattle and sheep by 15% and 11% of farmers respectively.
- In 2019, 19% of holdings breeding dairy cows always used bulls with a high Profitable Lifetime Index (PLI).
- Bulls and rams with high Estimated Breeding Values (EBV) were always used by 19% of holdings breeding beef cattle and 10% of those breeding lambs in 2019.

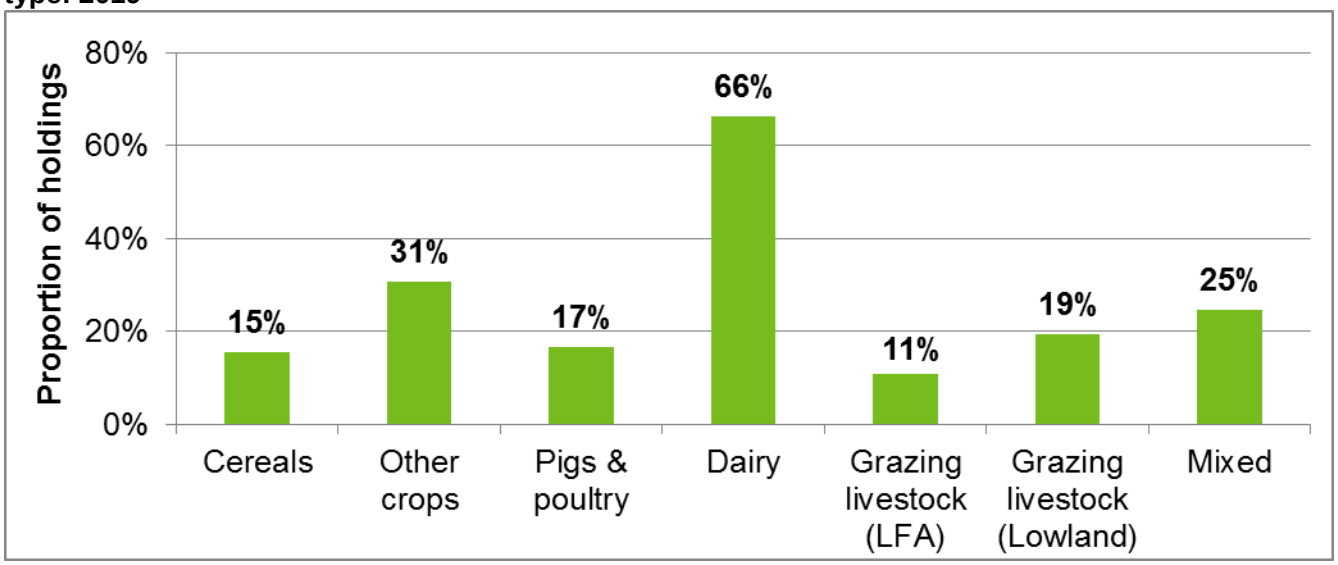
In 2019 over half (53%) of livestock holdings used a ration formulation programme or expert nutritional advice when planning the feeding regime of their cattle and sheep at least some of the time and a further 18% do so rarely (Figure 8.1).

Figure 8.1: Proportion of holdings using a ration formulation program or expert nutritional advice when planning livestock feeding regimes: 2015-2019



A quarter (25%) of farmers offered alternative forages (other than grazed or conserved grass) to their cattle and sheep in 2019. This figure varies depending on farm type and dairy farmers are most likely to offer their livestock alternative forages (Figure 8.2).

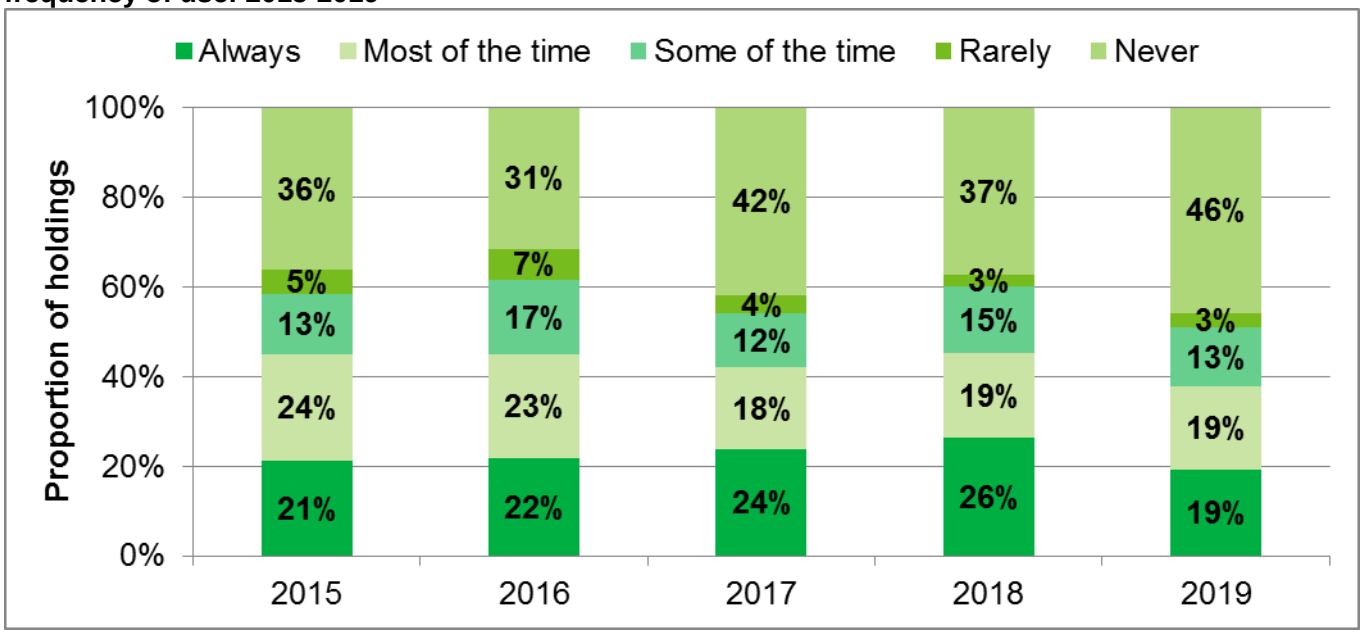
Figure 8.2: Proportion of holdings offering alternative forage crops to cattle and sheep by farm type: 2019[(a)]



(a) For holdings with cattle and/or sheep

The most common of these forage crops were whole-crop silage and maize which were offered by 15% and 11% of farmers respectively.

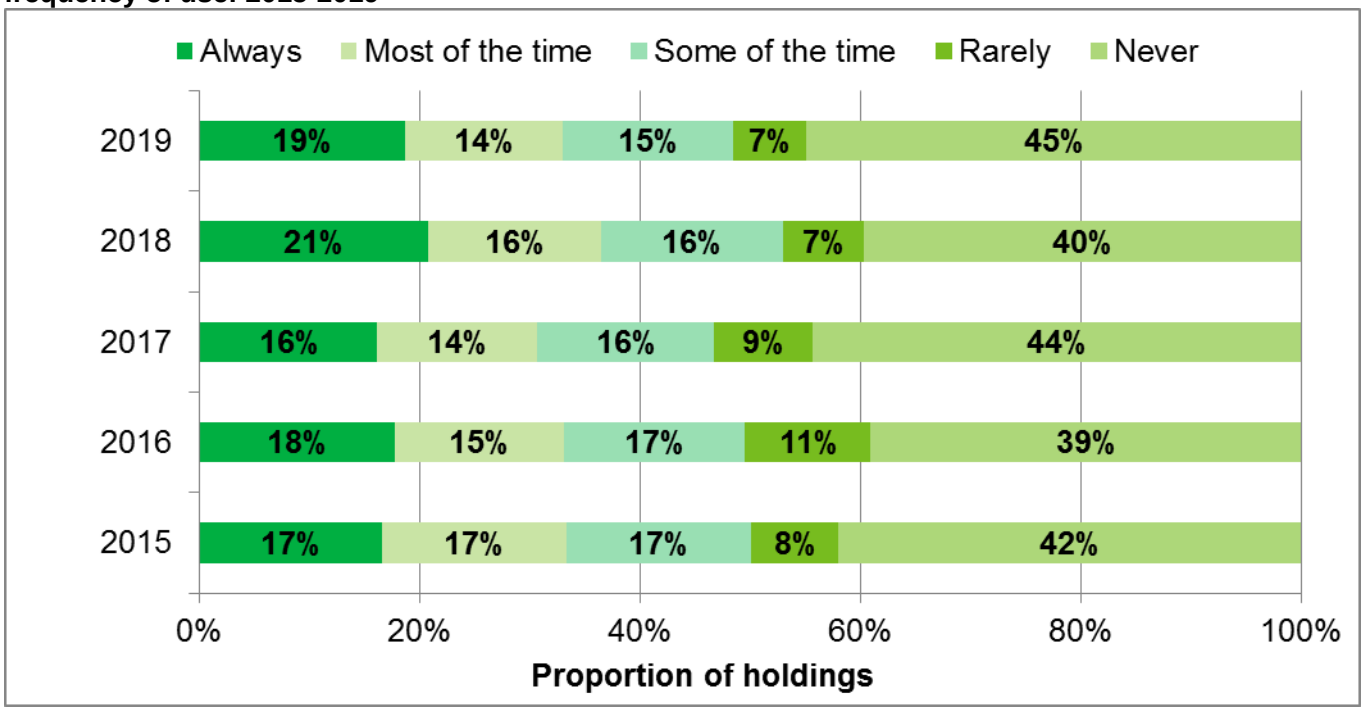
Figure 8.3: Proportion of holdings using bulls with a high PLI when breeding dairy cows by frequency of use: 2015-2019 [(a)]



(a) For holdings with dairy cattle

In 2019, 19% of livestock holdings always used bulls with a high Profitable Lifetime Index (PLI) when breeding dairy cows. This is the lowest proportion recorded since the questions were first asked in 2011.

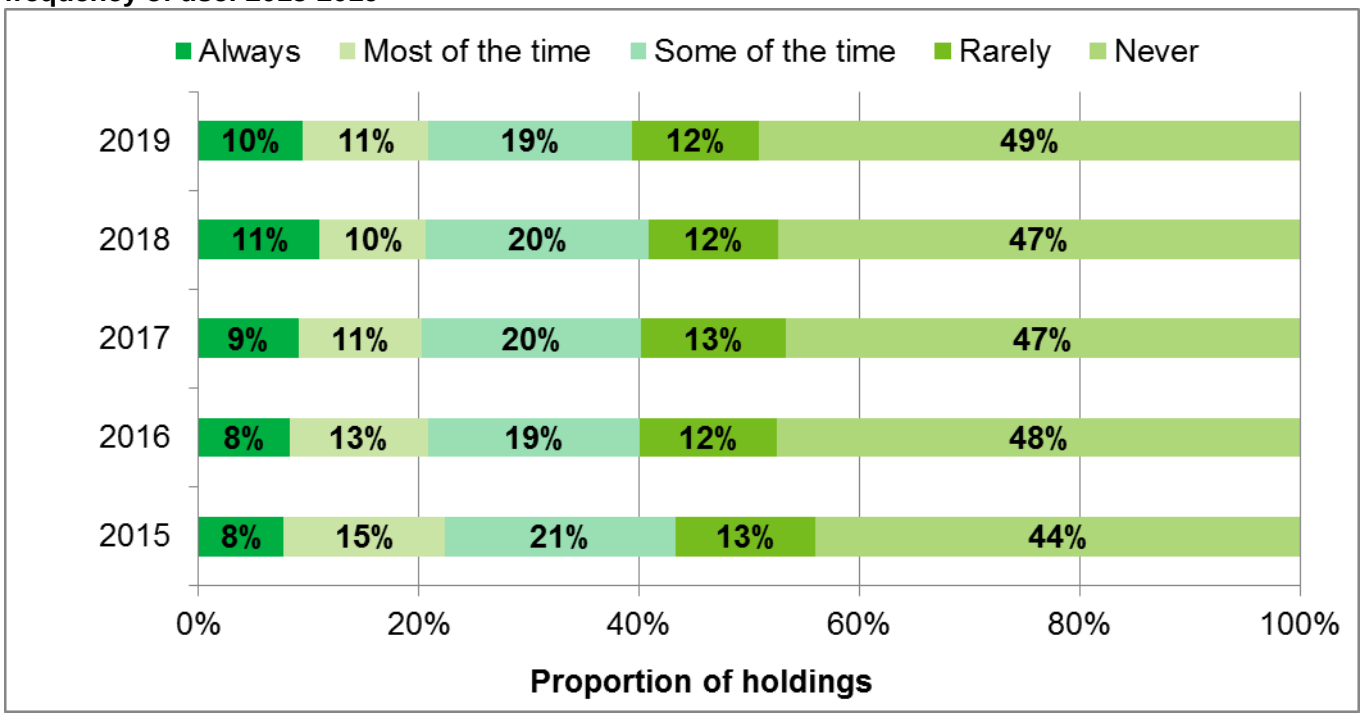
Figure 8.4: Proportion of holdings using bulls with high EBVs when breeding beef cattle by frequency of use: 2015-2019



(a) For holdings with beef cattle

Estimated Breeding Values (EBV) estimate the genetic worth of animals using desirable traits such as meat production. Just under half (48%) of holdings used bulls with a high EBV at least some of the time when breeding beef cattle in 2019 (Figure 8.4). The equivalent proportion of holdings using rams with a high EBV at least some of the time when breeding lambs was 39% (Figure 8.5).

Figure 8.5: Proportion of holdings using rams with high EBVs when breeding lambs by frequency of use: 2015-2019



(a) For holdings with lambs

In addition to the proportion of holdings using bulls and rams with high EBVs (Table 8.4 and 8.5) the proportion of beef cattle and lambs that this figure relates to has also been calculated (Tables 8.6 and 8.7). By using responses from the 2017 June survey we are able to give an indication of

the proportion of animals that are covered by this practice. In 2019, the holdings using bulls and rams with high EBVs at least some of the time accounted for 57% of beef cattle and 51% of lambs at June 2017.

Table 8.1: Proportion of holdings using a ration formulation programme when planning cattle and sheep feeding regimes by frequency of use: 2016 - 2019

Frequency of use	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Always	20	*±2*	21	*±2*	21	*±2*	21	*±2*
Most of the time	15	*±2*	14	*±2*	16	*±2*	13	*±2*
Some of the time	19	*±2*	19	*±2*	20	*±2*	19	*±2*
Rarely	18	*±2*	16	*±2*	15	*±2*	18	*±2*
Never	29	*±3*	30	*±3*	27	*±3*	29	*±3*

Based on 1 470 responses in 2016, 1 566 in 2017, 1 566 in 2018 and 1 435 in 2019 from holdings with cattle or sheep.

Table 8.2: Proportion of holdings offering alternative forages to cattle and sheep: 2018 - 2019

Alternative forage crop	2018		2019	
	% of holdings	95% CI	% of holdings	95% CI
Whole-crop silage	13	*± 2*	15	*± 2*
Maize	11	*±1*	11	*±1*
Red clover	6	*±1*	6	*±1*
Lucerne	2	*±1*	2	*±1*
Triticale	1	*±0*	1	*±1*
Any of the above	25	*±2*	25	*±2*
None of these	75	*±2*	75	*±2*

Based on 1 533 responses in 2018 and 1 403 in 2019 from holdings with cattle and sheep.

Table 8.3: Proportion of holdings using bulls with a high Profitable Lifetime Index (PLI) when breeding dairy cows by frequency of use: 2016 - 2019

Frequency of use	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Always	22	*±4*	24	*±3*	26	*±4*	19	*±3*
Most of the time	23	*±4*	18	*±3*	19	*±3*	19	*±3*
Some of the time	17	*±3*	12	*±3*	15	*±3*	13	*±3*
Rarely	7	*±2*	4	*±2*	3	*±1*	3	*±1*
Never	31	*±5*	42	*±4*	37	*±4*	46	*±4*

Based on 458 responses in 2016, 543 in 2017, 520 in 2018 and 543 in 2019 from holdings with cattle or sheep.

Table 8.4: Proportion of holdings using bulls with a high Estimated Breeding Value (EBV) when breeding beef cattle by frequency of use: 2016 - 2019

Frequency of use	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Always	18	±3	16	±2	21	±3	19	±3
Most of the time	15	±3	14	±2	16	±2	14	±2
Some of the time	17	±3	16	±2	16	±2	15	±2
Rarely	11	±2	9	±2	7	±2	7	±2
Never	39	±4	44	±3	40	±3	45	±3

Based on 707 in 2016, 1 005 in 2017, 983 in 2018 and 1 031 in 2019 from holdings with beef cattle.

Table 8.5: Proportion of holdings using rams with a high Estimated Breeding Value (EBV) when breeding lambs by frequency of use: 2016 - 2019

Frequency of use	2016		2017		2018		2019	
	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI	% of holdings	95% CI
Always	8	±2	9	±2	11	±2	10	±2
Most of the time	13	±3	11	±2	10	±2	11	±2
Some of the time	19	±3	20	±3	20	±3	19	±3
Rarely	12	±3	13	±3	12	±2	12	±3
Never	48	±4	47	±4	47	±4	49	±4

Based on 700 in 2016, 761 in 2017, 756 in 2018 and 769 in 2019 from holdings with lambs.

Table 8.6: Proportion of beef cattle on holdings using bulls with a high Estimated Breeding Value (EBV) by frequency of use: 2016 - 2019

Frequency of use	2016		2017		2018		2019	
	% of beef cattle	95% CI	% of beef cattle	95% CI	% of beef cattle	95% CI	% of beef cattle	95% CI
Always	25	±6	19	±4	24	±4	25	±4
Most of the time	19	±4	19	±3	17	±3	15	±3
Some of the time	18	±4	17	±3	20	±4	17	±3
Rarely	10	±3	10	±2	8	±2	6	±2
Never	29	±4	36	±4	32	±4	37	±4

Based on 707 in 2016, 1 005 in 2017, 983 in 2018 and 1 031 in 2019 from holdings with beef cattle.

Table 8.7: Proportion of lambs on holdings using rams with a high Estimated Breeding Value (EBV) by frequency of use: 2016 - 2019

Frequency of use	2016		2017		2018		2019	
	% of lambs	95% CI	% of lambs	95% CI	% of lambs	95% CI	% of lambs	95% CI
Always	11	±4	12	±3	15	±5	12	±4
Most of the time	17	±4	14	±3	14	±4	15	±4
Some of the time	22	±4	23	±4	23	±4	24	±4
Rarely	14	±4	15	±3	12	±4	10	±3
Never	36	±5	37	±4	37	±5	39	±5

Based on 700 responses in 2016, 761 in 2017, 756 in 2018 and 769 in 2019 from holdings with lambs.

Survey methodology

Survey content
The Farm Practices Survey (FPS) – Greenhouse Gas Mitigation edition is usually run annually and collects information on a diverse range of topics usually related to the impact of farming practices on the environment. Each year, stakeholders are invited to request new questions to help inform policy decisions and provide evidence on progress towards agricultural and environmental sustainability.

This release includes the results from the FPS run in February 2019. The survey largely focused on practices relating to greenhouse gas mitigation, similar in content to FPS surveys run in February over the previous nine years. Topics covered include nutrient and manure management, anaerobic digestion, emissions, fertiliser, manure and slurry spreaders and storage, farm health planning, grassland and grazing and livestock breeding and feeding practices. Where comparisons with earlier years are possible, the results are displayed alongside those from previous years.

The results provided in this release are based on questions sent to approximately 6,000 holdings in England. These holdings were targeted by farm type and size to ensure a representative sample. The survey was voluntary and the response rate was approximately 40%. Thank you to all of the farmers who completed a survey form.

Thresholds were applied to ensure that very small holdings with little agricultural activity were not included in the survey. To be included in the main sample, holdings had to have at least 50 cattle, 100 sheep, 100 pigs, 1,000 poultry or 20 hectares of arable crops or orchards. Therefore, all results given in this statistical release reflect just over 60.5 thousand holdings that exceed these thresholds out of the total English population of almost 106 thousand commercial holdings.

A breakdown of the number of holdings within the population and the sample are shown below.

Farm type	Number of eligible holdings in England	Number of holdings sampled	Response rate %
Cereals	15 864	1 334	42
Other crops	5 830	828	39
Pigs & poultry	3 652	507	27
Dairy	5 910	887	38
Grazing livestock (less favoured areas)	8 318	736	37
Grazing livestock (lowland)	15 422	1 189	36
Mixed	5 551	571	38
All farms	**60 547**	**6 052**	**38**

Data analysis
Results have been analysed using a standard methodology for stratified random surveys to produce national estimates. With this method, all of the data are weighted according to the inverse sampling fraction.

Accuracy and reliability of the results
We show 95% confidence intervals against the results. These show the range of values that may apply to the figures. They mean that we are 95% confident that this range contains the true value. They are calculated as the standard errors (se) multiplied by 1.96 to give the 95% confidence interval (95% CI). The standard errors only give an indication of the sampling error. They do not reflect any other sources of survey errors, such as non-response bias.

Definitions
Where reference is made to the *type of farm* in this document, this refers to the 'robust type', which is a standardised farm classification system. *Farm sizes* are based on the estimated labour requirements for the holding, rather than its land area. The farm size bands used within the detailed results tables which accompany this publication are shown in the table below. Standard Labour Requirement (SLR) is defined as the theoretical number of workers required each year to run a holding, based on its cropping and livestock activities.

Farm size	Definition
Small	Less than 2 SLR
Medium	2 to less than 3 SLR
Large	3 or more SLR

Availability of results
This release contains headline results for each section. The full breakdown of results, by region, farm type and farm size can be found at:
https://www.gov.uk/government/collections/farm-practices-survey.

Other Defra statistical notices can be viewed on the Defra website at:
https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/about/statistics.

Data uses
The Farm Practices survey is used to investigate the impact of farming on the environment and to provide up-to-date agri-environment information on current issues to help inform policy decisions. The survey has a wide customer base both internal and external to Defra including Natural England, English Heritage, ADAS, the Environment Agency and the NFU.

Data from the Farm Practices Survey are used in Defra's greenhouse gas (GHG) indicator framework. The framework, initially developed as part of the 2012 review of progress in reducing GHG emissions from English agriculture[1], consists of ten key indicators covering farmer attitudes and knowledge, the uptake of mitigation methods and the GHG emission intensity of production[2] in key agricultural sectors. Information from the survey also feeds into the Defra publication, Agricultural Statistics and Climate Change which provides background context to the current understanding of agriculture and GHG emissions.

In partnership with the Devolved Administrations, the Government invested over £12 million, over a four and a half year period, on the development of an improved GHG inventory to strengthen understanding of on farm emissions. Information from the Farm Practices Survey fed into this project which should enable greater precision in reporting GHG emissions from the sector, so that, going forward, changes made to farming practices to reduce GHG emissions will be properly recognised in the inventory.

Additional information
For more information on how the data was collected you can view the questions asked on our survey form in Annex I over the page.

[1] https://www.gov.uk/government/publications/2012-review-of-progress-in-reducing-greenhouse-gas-emissions-from-english-agriculture
[2] GHG produced per tonne of crop or litre of milk or kilogramme of meat produced.

National Statistics Status

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

The continued designation of these statistics as National Statistics was confirmed in 2014 following a full assessment by the UK Statistics Authority against the Code of Practice for Statistics.

Since the last review of these statistics in 2014, we have continued to comply with the Code of Practice for Statistics, and have made improvements including:

- Improvements to the commentary to aid user interpretation
- Providing a helpful summary of the ways in which the results are used by government and other users

Feedback

We welcome feedback and any thoughts to improve the publication further. Please send any feedback to: farming-statistics@defra.gov.uk. Suggested questions to help you structure your feedback are below but all feedback is welcome:

- How relevant is the current content of the publication to your needs as a user?
- What purpose do you require the data for?
- Which data do you find most useful?
- Is there any content that you did not find useful?
- Do you have any suggestions for further development of this release; including additional content, presentation and any other thoughts?