The breeding structure of the British sheep industry 2021

Results of the 2020 survey of sheep breeds in Great Britain

GLOSSARY

AHDB	Agriculture and Horticulture Development Board
AI	Artificial insemination
BWMB	British Wool Marketing Board (previous name for British Wool)
BW	British Wool
EBLEX	English red meat levy board prior to the establishment of AHDB
EBV	Estimated breeding value – an assessment of breeding potential based on the animal and its progeny's performance data
Defra	Department for Environment, Food and Rural Affairs
HCC	Meat Promotion Wales (Hybu Cig Cymru)
MAFF	Predecessor of Department for Environment, Food and Rural Affairs (Defra)
QMS	Quality Meat Scotland – Scottish red meat levy board

Acronyms used for breed types

LWC	Longwool crossing breed, e.g. Border Leicester, Bluefaced Leicester. Sires often crossed onto hill ewes
HILL	Hill ewe, e.g. Scottish Blackface, Welsh Mountain, Swaledale
LWE	Longwool ewe breeds, e.g. Romney Marsh, Greyface Dartmoor, Merino
NC Mule	North Country Mule
SW	Shortwool ewe breeds, e.g. Lleyn, Poll Dorset, Easycare
TS	Terminal sire breeds, e.g. Texel, Suffolk, Charollais

CONTENTS

INTRODUCTION

The Sheep Breed Survey is so much more than a survey of sheep breeds. Successive surveys record what happened in the past, but they also explain how lamb production will change in the future. Changing breeding policies in both the lowland and hill sectors are identified, indicating how the productivity and efficiency of the national flock will change – along with its carbon footprint. Breed Survey data informs the debate for those seeking to market meat based on system/breed/region, aiding the marketing of lighter carcases and guiding the development of new meat products.

Evidence from the survey informs those creating policy and those commissioning and delivering research, particularly genetic research, enabling the prioritisation of breeding goals and identification of barriers to progress. Knowledge of the distribution of breeds helps to inform us about wider issues influencing sheep health and welfare, nutritional requirements and their environmental impact, shaping our knowledge exchange programmes and assessing their impact in the years that follow.

The British sheep industry is the only one to have documented 50 years of change in this way and our decision-making is better informed as a result.

The 2020 Sheep Breed Survey

The 2020 survey comes at an interesting time of high lamb prices and changes that arise from leaving the EU, which will undoubtedly influence both the way that lamb is marketed and the manner in which future agricultural support is delivered.

As we look back over 50 years, there are many people that have contributed to the formation of this body of data and deserve our acknowledgement. These include the funders, researchers and clerical staff who have conducted and analysed the surveys and the British sheep farmers who have responded to the questionnaires and freely provided their information. In the 2020 survey, we record our appreciation for the support provided by British Wool and the funding provided by AHDB, QMS and HCC, as well as contributions from Signet Breeding Services staff in collating the data.

In this, the sixth survey of its kind, I would also like to take the opportunity to thank Dr. Geoff Pollott from the Royal Veterinary College, whose knowledge, passion and enthusiasm has been the driving force behind this work, not just in this survey – but in the many that have proceeded it.

Samuel Boon
AHDB

EXECUTIVE SUMMARY

This report describes the breed structure of the British sheep industry at mating in 2020 and is based on data derived from a postal questionnaire sent to the 38,000 wool producers registered with British Wool in England, Scotland and Wales.

It is the sixth such survey carried out periodically between 1971 and 2020. Results show how the sheep breeding sector has changed over time and how producers have adopted several key technologies.

About a fifth of the questionnaires were returned. The useable forms represented 16% of sheep producers and 11% of the breeding ewes in Britain. The distribution of responses was compared with independent estimates of the distribution of flocks and breeding ewes across Great Britain. The survey sample was found to be similar to 'official' data, with the exception of a slight under-representation from Wales and from smaller flocks (0–49 breeding ewes).

Survey results were scaled up to national level using 2020 December Survey data for England, Scotland and Wales. The December Survey indicated there were 13 million ewes mated in 2020 – a similar number to that found in the previous survey in 2012.

Project results

- Crossbred ewes outnumbered purebred ewes, with 58% and 42% of ewes mated respectively; in 2012, it was 56% and 44% respectively, indicating a small reduction in purebred ewe numbers compared with 2012
- The main types of mule ewe (North Country, Welsh and Scottish) comprised about 19% of the national flock, but crossbreds of other types contributed significantly to the ewe population. An equally large group of Texel crossbreds were found, as well as numerous 'unspecified' crosses
- Over a quarter of all the rams used in Britain were Texel – a similar market share to 2012. Texel rams were found on nearly 22,000 farms. The Suffolk was the next most numerous ram breed

- The proportion of purebred rams used in the national flock has fallen from 93% to 83% in the last eight years, with both composite and crossbred rams increasing their market share
- The proportion of rams reported to have estimated breeding values (EBVs) varied across breeds, with 8–12% of the rams from the largest terminal sire breeds having EBVs, while less than 3% of the hill rams had them. Specific breeds are known to be engaged in considerably higher levels of performance recording and the under-reporting of recorded stock was observed
- The use of EBVs when buying rams was highest in the larger flocks and those producing finished lambs for the market. In each case, ~10% of producers always used EBVs when buying rams and ~40% sometimes used them
- The main reason for not using EBVs was due to a lack of access to the information
- There were 99 breeds recorded in the 2020 survey. New breeds were either imported foreign breeds or reimported British breeds (e.g. New Zealand Texel). A number of new composites were found based on combinations of existing breeds
- Certain breeds have notably increased in numbers in recent years: the Texel and its derivatives (recently due to their use in maternal lines), the Lleyn and the Easycare. Not surprisingly, many breeds are declining in number and several were not found in 2020, compared with previous surveys
    - The Lleyn breed has continued to dominate the non-hill sector, with about half a million ewes found in 2020. Half were mated pure and the rest to a variety of ram breeds. Lleyn rams were mated to 400,000 ewes
    - Wool-shedding breeds, such as the Easycare, Exlana and Wiltshire Horn, were found to be growing in number, with about a quarter of a million ewes mated in 2020
- The three main hill ewe breeds dominated the purebreeding sector, but all three were declining in number – with over 1,000 less Scottish Blackface flocks reported. The size and number of hill flocks producing recognised crossbreds (such as the mule or halfbred) was also in decline
- The traditional ‘stratified crossbreeding’ nature of the British sheep industry was still identifiable, but the ratio of stratified: non-stratified sheep has declined from 55:45% in 2012 to 51:49% in 2020. A second crossbreeding structure can be identified based on terminal sire breeds crossed to various lowland purebreds. The ‘new’ structure mimics its hill/upland counterpart but also contains a wide range of ‘various’ crossbreds as well
- When considering the genetic contribution of the different breed types to lamb output from the industry, the terminal sire breeds dominate the picture. They sired 58% of the lamb crop and contributed 41% of the genetic make-up of the lamb carcases produced in Britain
- Breed society membership occurred in about 25% of flocks surveyed and was highest among the small flocks
- The survey asked questions about flock management practices. Body condition scoring was used at least once a year in about three-quarters of flocks, but around 30% of respondents never weighed their lambs. The large majority of flocks did not take sward-height measurements to manage their grassland or use electronic identification to manage their flock beyond current legal requirements

BACKGROUND

Sheep numbers in the UK are monitored regularly through data collected as part of the Government's June and December farm surveys. However, these surveys do not make any reference to the breeds of sheep kept throughout the country.

Consequently, periodic Sheep Breed Surveys have been undertaken, using postal questionnaires sent directly to sheep keepers. These surveys have been carried out to coincide with mating in 1971, 1987, 1996, 2003 and 2012, with the subject of this report, in 2020, being the sixth such survey.

The original survey was instigated by the Scientific Study Group of the then newly formed Meat and Livestock Commission (MLC) to inform its R&D planning in the sheep industry. Subsequent surveys have been commissioned by MLC, MAFF, EBLEX and AHDB, HCC and QMS, since such organisations need to know the structure of the sheep breeding sector as part of their planning process for policy, animal health and technical strategies.

Since the original survey was set up by MLC, covering the areas of the UK within its jurisdiction (England, Scotland and Wales), subsequent surveys have used the same format. Hence, this is a report on the sheep breeding sector in Great Britain and care should be taken when quoting or comparing data involving the whole of the UK.

These surveys show how the sheep industry in Britain has evolved over the last 50 years, providing an insight into how British sheep breeders have responded to political, economic and technical change.

THE QUESTIONNAIRE

The 2020 survey form is shown in Appendix 1. It has five key sections, each dealing with a critical aspect of sheep production: ewe mating, rams available, ewe lambs not bred, lambs sold for both meat and breeding. Mating records are divided into three ewe age categories: ewe lambs, shearlings and mature ewes.

Over time, additional questions have been added to the survey to better understand the enterprises being surveyed. Answers to these questions provide a more detailed picture of the industry and inform our knowledge exchange programmes about the current rates of adoption of different technologies.

Answers were broken down by flock size and, in some cases, subgroups of the larger sheep farming systems. The subgroups used and their definitions, are provided below:

- **Breeding homebred replacements:** Flocks with over 125 ewes, where over 75% of the ewe flock were stated to be 'homebred'
- **Finisher:** Flocks finishing over 150 lambs, where over 75% of the lambs were sold as finished for slaughter
- **Store producer:** Flocks finishing over 150 lambs, where over 75% of the lambs were sold as store lambs
- **Hill flocks:** Flocks with over 125 ewes, where over 75% of the ewe flock was a hill breed

This questionnaire was sent to all sheep producers registered with British Wool (BW), which requires any producer with four or more ewes to register with them. Forms were sent to the 38,518 registered producers in Britain in the autumn of 2020. In addition, the form was available on the AHDB website and any other sheep breeders were encouraged to complete and submit it. This covered, for example, breeders keeping wool-shedding breeds who may not have been registered with BW.

Over 7,000 forms were returned and 6,231 provided useable data for these results – some 16% of forms sent out covering 11% of ewes in the country. Table 1 sets this response in the context of previous surveys and shows a reduced number of farms surveyed compared with the 2003 and 2012 questionnaires.

Table 1. **A summary of the number of forms sent out and returned from the 2020 Sheep Breed Survey compared with the four previous surveys**

	1987	1996	2003	2012	2020
Farms on BWMB/BW list	86,360	73,800	52,478	45,218	38,518
Number of forms sent out	8,636	7,380	33,548	42,215	38,518
Useable returned forms	2,430	1,872	8,236	9,510	6,231
% returned as useable	28	25	25	23	16
% of breeders responding	2.8	2.5	15.7	21.0	16.2
% of breeding ewes reported	3.2	2.82	15.3	16.4	11.1

THE SAMPLE

It is worth trying to assess how representative this sample of responding farms is when compared with the British sheep breeding sector as a whole. Data from the June and December Surveys that are collected by Defra provides an independent comparator for the data collected, with the Defra data reported here always referring to UK data minus that from Northern Ireland.

Tables 2 and 3 show various comparisons between the 2020 Breed Survey sample distributions and their equivalent results from Defra data. The general picture is that the sample of farms surveyed was reasonably representative of sheep flocks in Britain, with a slight under-representation in Wales and in the smaller flock categories.

Table 2. **A comparison between the Sheep Breed Survey and Defra June Survey data 2019* for the distribution of both flocks and breeding ewes by country/region of England (% of category)**

Country/region of England	Farms with breeding ewes		Breeding ewes	
	Defra	Survey	Defra	Survey
Wales	22	19	30	23
Scotland	20	20	21	21
South-West	15	17	11	13
North-West	9	8	9	9
North-East	4	4	6	8
Yorkshire/Humberside	8	8	7	7
South-East	6	6	4	5
Eastern	2	2	1	1
East Midlands	5	6	4	5
West Midlands	9	9	8	7

*NB. No comparable Defra data was available in 2020.

Table 3. **A comparison between the Sheep Breed Survey and Defra June Survey data 2019* for the distribution of both flocks and breeding ewes by flock size (% of category)**

Flock size (No. breeding ewes)	Number of farms		No. of breeding ewes	
	Defra	Survey	Defra	Survey
0–19	17	13	1	1
20–49	20	18	3	2
50–124	21	22	7	7
125–499	28	33	31	35
500–999	9	11	26	30
>1,000	5	4	33	25

*NB. No comparable Defra data was available in 2020.

INTERPRETING THE RESULTS

When reading this report, it is worth mentioning that the results are based on a sampling process and as such, are subject to uncertainty in their exactness; the larger the sample and category, the more exact are the estimates. Technically, one can attach what is referred to as a 'standard error' to each figure in this report. This has not been done for ease of reading, but, typically, for breed populations quoted at 1 million ewes, the real value lies within ±20,000, and for breed populations of 5,000 and 100,000, the ranges are ±1,500 and ±8,500 respectively. Equivalent figures for breed populations of rams of 25,000 and 1,000 would be ±1,750 and ±400 respectively. Consequently, care must be taken when interpreting these results not to put too much emphasis on the actual estimates of small populations.

Breed type terminology

Throughout this report, breeds are grouped together in certain summaries by breed type. These types are hill, longwool crossing, longwool ewe, shortwool ewe and terminal sire. This is both an arbitrary and historic classification, and sheep breeds would probably be grouped in a different way if the Breed Survey was being devised today. However, for the purposes of comparison with previous years, this report uses these groupings as follows:

Hill breeds

Hardy breeds maintained in the highest parts of Britain, largely bred pure but forming the upper level of the stratified crossbreeding structure. Typical, but not exclusively, breeds include Scottish Blackface, Welsh Mountain and Swaledale.

Longwool crossing breeds

Breeds kept in the uplands, but not exclusively, and used to cross with draft hill ewes in the second level of the stratified crossbreeding system to produce many recognised crossbreds. Examples include Border Leicester and Bluefaced Leicester.

Longwool ewe breeds

Other upland and longwool breeds, adapted to the harsher conditions of the hills and lowlands. Examples include Romney, Devon and Cornwall Longwool and Greyface Dartmoor.

Shortwool ewe breeds

Upland and lowland breeds mainly kept for their maternal characteristics. Examples include Poll Dorset, Lleyn and Dorset Horn.

Terminal sire breeds

Breeds historically used as the final crossing sire in the stratified crossbreeding structure and, as such, the sires of the majority of lamb meat produced in Britain. Examples include Texel, Suffolk, Charollais, Hampshire Down, Oxford Down and Southdown.

BREEDING EWE AND FLOCK NUMBERS

Since the last survey in 2012, there has been a reduction in flock numbers (Table 1) but a stabilisation in breeding ewe numbers. The Defra December Survey data in Table 4 shows the British breeding flock to have been 12.957 million ewes in 2020, compared with 13.064 million in 2012.

Flock numbers, as measured by the BWMB/BW registrations, have declined regularly, from over 86,000 in 1971 to 38,000 in 2020. Flock numbers are less than half that of 50 years ago (Figure 1), while the average flock size has risen from approximately 135 ewes in 1971 to approximately 350 in 2020.

Table 4. **Breeding sheep numbers from 1971 to 2020 from the Defra December Survey data (000)**

	1971	1987	1996	2003	2012	2020
Older ewes mated	11,952	17,375	16,860	14,377	NA	NA
Ewe lambs mated	**Unknown	1,763	1,194	812	NA	NA
Total ewes mated	**Unknown	19,138	18,054	15,189	13,064	12,957
Ewe lambs not mated	2,435*	2,103	2,528	2,476	NA	NA
Rams used	325	487	471	412	365**	364**

*All ewe lambs. **No longer available; Defra June Survey figure

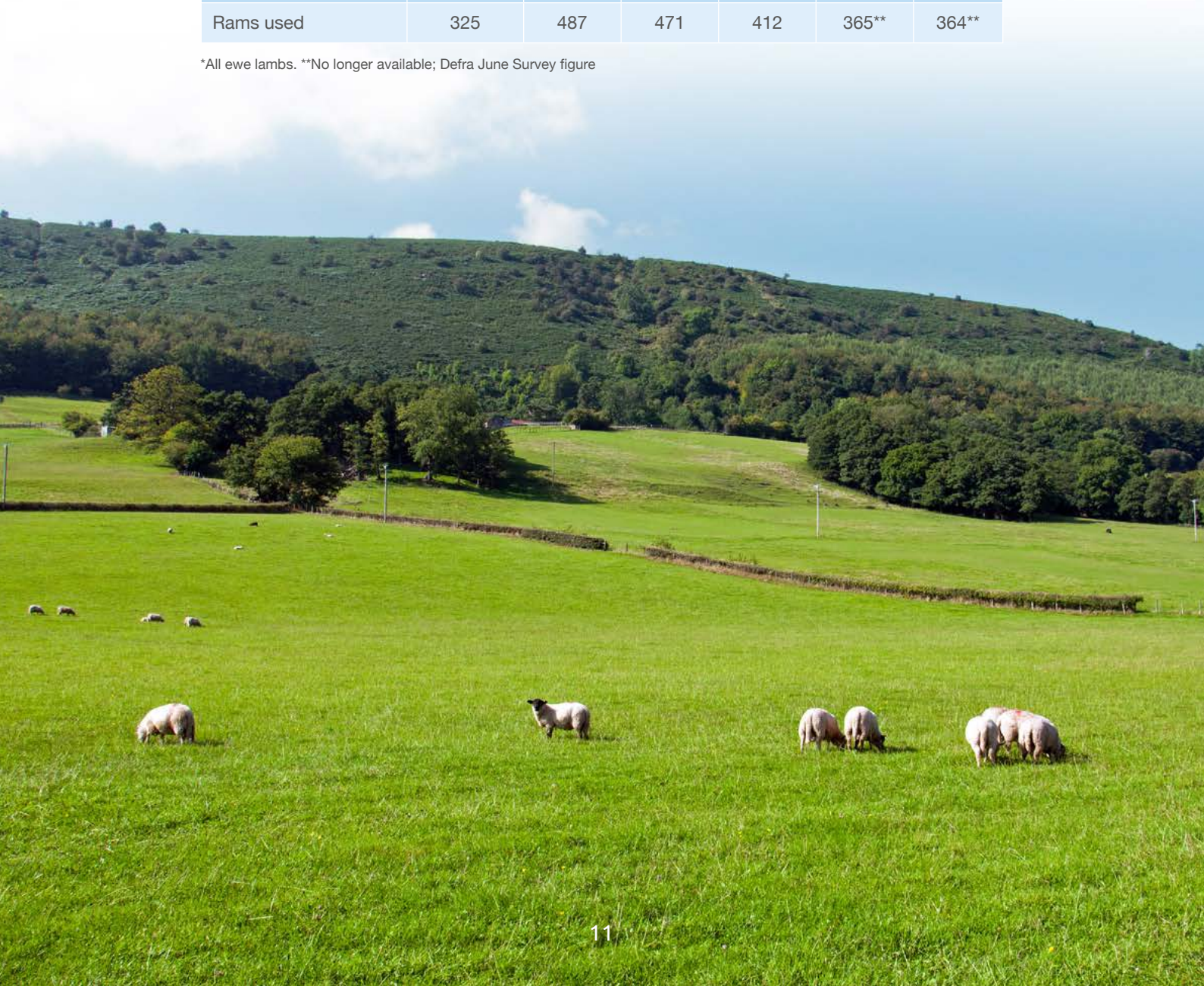
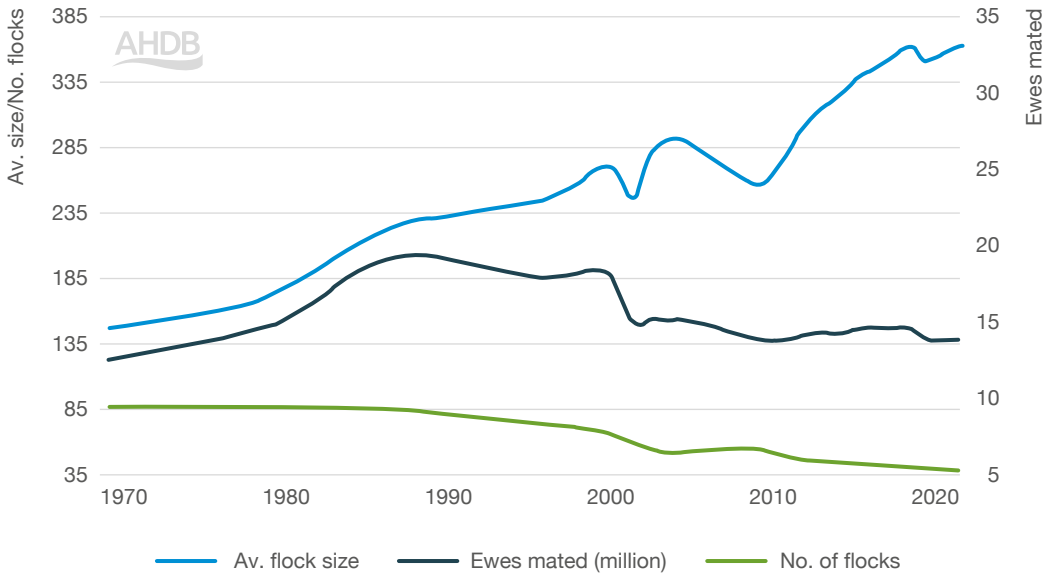


Figure 1. **The change in flock numbers, ewe numbers and average flock size between 1971 and 2020 (Defra and British Wool data)**



While the number of breeding ewes in 2012 and 2020 is similar, this value masks a change in the number of ewes found in the constituent countries of Britain. Table 5 summarises these changes over the intervening years.

During the last eight-year period, there has been a reduction in ewe numbers in Wales of 4.3%, with both England and Scotland showing a small rise (~0.65%).

Data in this report is often presented as both absolute numbers and percentages of the 'national flock'. As ewe (and ram) numbers were similar in Britain between 2012 and 2020, changes in breed numbers will reflect the relative popularity of breeds in the two surveys. This may not apply to comparisons with surveys before 2012, as the size of the national flock has changed over time, and thus care must be taken in making such comparisons.

Table 5. **The percentage change in breeding ewe numbers between successive years in Britain and its three constituent countries, 2012 to 2020 (%; Defra December Survey data)**

	2012	2013	2014	2015	2016	2017	2018	2019	2020	Overall
England	0.4	2.7	-0.7	4.1	-0.2	1.4	-7.2	0.5	0.4	0.6
Wales	-1.6	7.0	3.4	-5.9	4.1	-3.7	-3.7	-3.3	-1.6	-4.3
Scotland	0.6	-1.1	5.4	-0.9	-3.2	0.9	-2.1	0.5	1.4	0.7
Britain	-0.2	3.1	1.9	-0.1	0.4	-0.3	-5.0	-0.7	0.0	-0.8

Over the years, the proportion of purebred ewes retained for breeding has reduced and the number of crossbred ewes has increased (Table 6). In 2020, 42% of breeding ewes were purebred, while the remaining 58% were crossbred.

Table 6. **Proportion and number of crossbred and purebred ewes in the national flock between 1971 and 2020**

	Purebred (%)	Crossbred (%)	No. purebred ewes mated (000)	No. crossbred ewes mated (000)
All ewes mated	42	58	5,474	7,483
Ewe lambs mated	31	69	295*	657*
Ewe lambs not mated	49	51	1,237*	1,288*
All ewes mated (2012)	44	56	5,804	7,260
All ewes mated (2003)	50	50	7,596	7,596
All ewes mated (1996)	54	46	9,749	8,305
All ewes mated (1987)	53	47	10,143	8,995
All ewes mated (1971)	68	32	8,617	4,055

*Estimated from Defra data, plus Breed Survey results.

As part of the additional questions in the 2020 Sheep Breed Survey, breeders were asked: What are you planning to do with your breeding ewe numbers next year? The results are summarised in Table 7.

While 71% of respondents said that their flocks would stay the same size, nearly twice as many flocks planned to increase ewe numbers compared with those planning to reduce them. Larger flocks were more likely to be planning to increase ewe numbers than smaller flocks.

A similar distribution of answers was seen in the farming-system subgroups. Within the hill sector, for example, 80% of flocks said they would be maintaining ewe numbers, 5% decreasing them and 15% would be increasing them.

Table 7. **Planned changes in flock size (% of respondents)**

Flock size	Increase	Maintain	Decrease
1–49	18	69	13
50–124	19	73	9
125–499	20	72	8
500–999	20	74	6
>1,000	21	73	5
Not known	9	68	24
Total	19	71	10

CROSSBRED EWE POPULATIONS

Traditional crossbreeding systems

The British sheep breeding sector is dominated by the use of crossbred ewes, which attempt to combine the recognised characteristics of purebreeds into suitable combinations for finished lamb production. Historically, this has been carried out in a systematic way, using longwool crossing sires on draft hill ewes to produce recognised crossbred ewe types. Specifically, using Bluefaced Leicester (BFL) rams to produce 'mule' types and Border Leicester rams to produce 'halfbred' types, or the Greyface, in the case of Scottish Blackface ewes. Teeswater rams mated to Swaledale ewes create the Masham.

Table 8 shows that the use of this type of crossbred ewe is still important, with the various mule types outnumbering the halfbred types by 2.4 million to 68,000 – down from 2.7 million and 176,000, respectively, in 2012. In the case of the 'classical' crossbred ewe types, there has been an overall decline, with the mule crossbreds dominating the use of this type of ewe. However, Table 8 also shows that the use of the Bluefaced Leicester crosses from other breeds has been increasing, from 106,000 to 170,000 between 2012 and 2020. Further analysis of these crosses revealed that the Cheviot Mule (BFL x Cheviot) accounted for ~100,000 of these, the Exmoor Mule (BFL x Exmoor Horn) ~50,000 and BFL x Texel ~10,000. So, breeders have been innovating within the 'mule type' approach to produce further combinations of genes which might suit their systems.

Overall, there has been a decline in longwool cross hill ewe numbers from ~3 million in 2012 to 2.7 million in 2020. Given the rise in crossbred ewe numbers noted in Table 6 the question is what has been replacing the traditional crossbred ewe types?

New approaches to crossbreeding

As well as the traditional crossbred ewe (resulting from a hill/longwool mating), there are three additional groups of crossbred ewe recorded in Table 8.

These are:

- Crossbred hill ewes that don't have a longwool sire
- Terminal sire crosses out of a mule/halfbred ewe (a three-way cross) or other breeds
- Other crossbreds not defined in these groupings

The use of hill ewes sired by other hill breeds or with terminal sire breeds has seen a decline in recent years, with numbers falling from 204,000 ewes mated in 2012 to 122,000 in 2020. About 2.87 million ewes sired by terminal ire breeds from a range of breeds and crosses were mated in 2020 – an increase from 2.51 million mated in 2012.

Breeders clearly want to innovate outside the traditional crossbreeding strategies. Overall, they used a further 1.79 million ewes of other crosses in 2020 – an increase from 1.51 million in 2012. These are broken down by sire breed type in Table 8 and show a large number of composite and shortwool ewe type sires. Crossbred hill ewes remain a small contributor to the national picture.

Table 8. **Estimated size of crossbred ewe populations in 2020 and 2012**

Crossbred ewe type		2020			2012	
		No. of ewes mated (000)	All ewes* (000)	% of national flock	No. of ewes mated (000)	% of national flock
Longwool crossing sire x Hill	Mule unspec. (inc. NC Mule)	1,868	2,154	14.4	1,636	12.5
	Welsh Mule	343	390	2.6	576	4.4
	Scotch Mule	236	282	1.8	469	3.6
	Greyface	43	47	0.3	91	0.7
	Welsh Halfbred	8	13	0.1	41	0.3
	Scottish Halfbred	17	19	0.1	44	0.3
	Masham	16	18	0.1	34	0.3
	Bluefaced Leicester crosses	170	202	1.3	106	0.8
	Border Leicester crosses	2	2	<0.1	10	<0.1
	Other LWC x Hill	<0.1	<0.1	<0.1	3	<0.1
F[1] Hill breed crosses	Hill x Hill	78	92	0.6	116	0.9
	Texel x Hill	25	39	0.2	61	0.5
	Suffolk x Hill	19	20	0.1	27	0.2
Terminal sire crosses	Suffolk x (LWC x Hill)	285	350	2.2	342	2.6
	Texel x (LWC x Hill)	388	449	3.0	247	1.9
	Charollais x (LWC x Hill)	8	8	0.1	9	0.1
	Other Texel crosses	1,523	1,829	11.8	1,236	9.5
	Other Suffolk crosses	562	652	4.3	584	4.5
	Other Charollais crosses	108	130	0.8	87	0.7
All other crosses (sired by:)	Composite	436		3.3		
	Hill breed	263		2.0		
	Terminal sire breed	55		0.4		
	Longwool crossing sire breed	8		<0.1		
	Shortwool ewe breed	347		2.7		
	Longwool ewe breed	111		0.8		
	Unspecified or 3+-way	564		4.4		
	Total	1,785	2,076	13.8	1,511	11.6

*The 'All ewes' category includes the ewes mated plus ewe lambs not mated. **LWC = Longwool crossing sires – primarily the Bluefaced Leicester and Border Leicester breeds.

THE MATING OF CROSSBRED EWES

The previous section highlighted the breakdown of crossbred ewe numbers by type, but it is important to consider to which sire breeds these crossbred ewes are mated.

Table 9 shows the major ram breeds used to mate these crossbred ewes. Not surprisingly, given that the major product from the British sheep industry is lamb meat, the terminal sire breeds are used extensively to mate with the crossbred ewes.

Table 9. **The mating of crossbred ewes in 2020**

Crossbred ewe type	Ram breed	Number of farms (000)	Number of ewes (000)
Longwool x Hill	Texel	7.2	1,273
	Suffolk	2.9	579
	Other TS	2.4	345
	Others	3.6	501
Total		16.1	2,698
Hill x Hill	Terminal sires	0.2	23.5
	Others	0.5	53
Total		0.7	76.5
Terminal sire (TS) x Hill	Terminal sires	0.4	34
	Others	0.3	15
Total		0.7	49
TS x (Longwool x Hill)	Texel	2.1	359
	Suffolk	0.5	60
	Other TS	1.1	139
	Others	1.2	133
Total		4.9	691
Other TS crosses	Texel	8.8	1,081
	Suffolk	2.1	191
	Other TS	3.7	277
	Others	6.3	670
Total		20.9	2,219
Other crosses	Texel	3.0	379
	Suffolk	0.9	92
	Other TS	1.8	193
	Others	5.3	801
Total		11.0	1,465

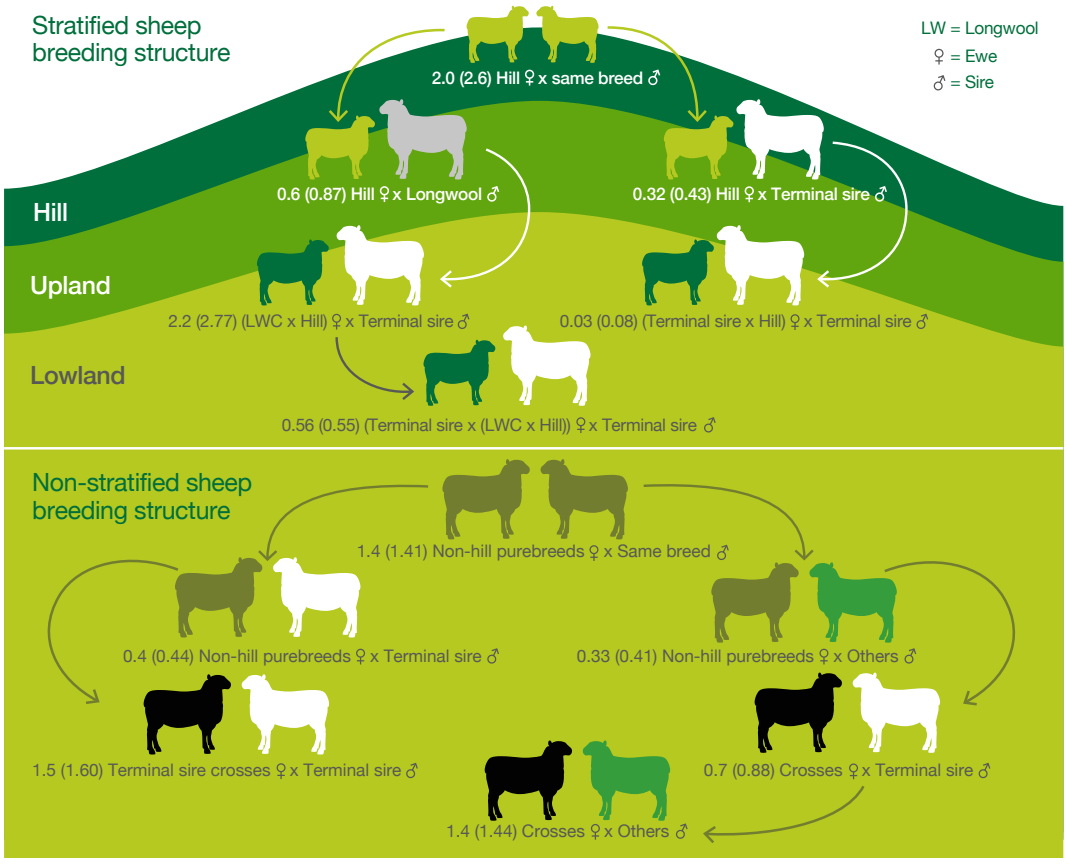
GENE FLOW WITHIN THE NATIONAL FLOCK

Traditionally, the British sheep breeding structure has been described as a stratified crossbreeding structure. The 'strata' are the hills, uplands and lowlands of Britain, with the hill breeds assumed to be in the hills, the longwool crossing occurring in the uplands and lamb production occurring in the lowlands. This highly stylised view is not always borne out by reality, but it serves as a useful model, which is expanded in Figure 2.

The top half of Figure 2 highlights that there is still some basis to this stratified crossbreeding idea, but nearly all of the ewe numbers in this sector were lower in 2020 than 2012, with the exception of the terminal sire x hill ewes mated to terminal sire breeds. Ewe numbers in the lower half of Figure 2 remained similar to those found in 2012, with 5.73 million ewes, compared with 6.02 million in the stratified sector. As a result, the ratio of stratified to non-stratified sheep changed to 51%:49% in 2020, from 55%:45% in 2012.

Looking at Figure 2, it may be sensible to talk about two stratified crossbreeding structures in Britain; the top half being based on ill breeds and the bottom half based on the lowland/upland purebreeds. In the case of the lower sector, the crossing sires are mainly terminal sire breeds which are used to produce crossbreds for use as the mothers of the final lamb crop. Comparing the hill and lowland stratified crossbreeding sectors shows an additional group of ewes in the lowland sector based on a variety of crosses, as highlighted in Table 8.

Figure 2. **Crossbreeding pattern of the major ewe types (million), with 2012 figures shown in brackets**



THE LAMB CROP

Although lamb meat is the main product from the British sheep industry, breeding flocks sell lambs as a variety of 'products'. These are summarised in Table 10, which shows how the 15.5 million lambs produced in 2020 were sold or used for breeding.

The large majority (64%) were sold directly from the farm as finished lambs or were on hand at the end of the year. Table 11 shows the distribution of these sales throughout the year. Early lamb sales represent a small proportion of the lambs produced, with lamb sales picking up through the summer months and into the autumn. The pattern of lamb sales in England and Wales is somewhat similar, with that in Scotland being about a month behind.

Table 10. **Lamb sales/retained by country and type (000 head)**

Country	Finished lambs sold*	Store lambs sold	Ewe lambs mated	Ewe lambs not mated	Ewe lambs sold	Ram lambs sold	Total
England	4,992	973	414	1,036	243	20	7,678
Scotland	1,789	678	172	575	86	15	3,316
Wales	3,102	311	273	685	125	11	4,508
Total	9,883	1,962	859	2,296	454	46	15,502
% of total	64	13	6	15	3	<1	

*Plus on hand at the end of the year.

Table 11. **The distribution of finished lamb sales by country and month of sale (000 head)**

	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	On Hand	Total
England	43	77	281	622	778	700	681	529	372	270	1,040	5,393
Scotland	8	4	20	106	194	286	319	246	144	92	402	1,821
Wales	10	46	214	419	473	405	419	419	294	214	459	3,372
Total	61	127	515	1,147	1,445	1,391	1,419	1,194	810	576	1,901	10,586
% of total	1	1	5	11	14	13	13	11	8	5	18	

Changing lambing dates

Looking to the future, breeders were asked: Are you planning to change your lambing period in the next three years?

There didn't appear to be any great plan to change lambing dates. Over 87% of producers said they had no plans to move their lambing date, 3% suggested they may move their lambing date earlier and 2% would go later, while another 8% were undecided. This may reflect the limited options that sheep farmers face in their ability or willingness to change lambing dates or the relatively high returns currently being seen throughout the year, with less seasonal price volatility compared with previous seasons.

Measuring meat production

A key farm activity associated with lamb production is weighing lambs so that farmers can monitor when they are ready for sale. Producers were asked: When do you weigh lambs?

Nearly half of the smallest flocks in the survey don't ever weigh their lambs (Table 12). This is perhaps understandable given the cost of weighing equipment for a small enterprise. However, ~20% of the larger flocks never weigh their lambs either. When looking solely at hill flocks, the number of farmers that don't ever weigh their lambs rises to 38%. Among the subgroup of 'finishers', 11% don't weigh their lambs, compared with 50% of the 'store producers'.

Table 12. **The number of weighing events each year (% of flocks in each size group)**

Flock size	Never	1	2	3	4
1–49	47	41	8	2	2
50–124	30	55	9	3	3
125–499	22	62	9	4	2
500–999	16	63	10	7	5
>1,000	19	59	10	7	5
Not known	63	32	3	2	1
All flocks	31	54	9	4	3

The majority of weighing took place when lambs were sold, indicating that these measurements were used to assess the value and readiness of sale lambs, as opposed to the collection and analysis of weight records to assess and adjust management practices or aid selection decisions (Table 13).

Table 13. **The main times when lambs were weighed (numbers of respondents)**

Flock size grouping	Total number of flocks that weighed lambs	At 8 weeks	At weaning	For selling	When retaining ewe lambs
1–49	850	186	218	643	90
50–124	801	127	172	683	87
125–499	1,385	201	236	1,233	152
500–999	503	83	115	457	66
>1,000	182	27	47	168	30
Not known	58	10	13	43	6
Total	3,779	634	801	3,227	431
	Proportion of flocks weighing at a given event	*17%*	*21%*	*85%*	*11%*

BREED CONTRIBUTIONS TO LAMB PRODUCTION

The British sheep industry has a complex breeding structure, but it is worth considering, how much does each breed group contribute to production?

Table 14 shows the proportion of the national lamb crop born to the major purebred and crossbred ewe groups. Not surprisingly, the majority of lambs are born to crossbred mothers – about 66%. This estimate is based on the number of ewes mated and an appropriate lambing percentage for each ewe type.

Table 14. **Estimated proportion of the slaughter lamb crop born to different ewe types in 2020 and 2012**

Ewe type	2020 % of lamb crop	2012 % of lamb crop
Hill	18.2	21.9
Longwool crossing	0.5	0.2
Longwool ewes	2.7	2.2
Shortwool ewes	6.7	5.6
Terminal sires	5.0	4.4
Total purebred dams	**33.1**	**34.3**
Longwool crossing x Hill	24.4	27.5
Hill x Hill	0.5	1.2
Hill x other	1.9	1.6
TS x (Longwool crossing x Hill)	6.2	7.2
TS x Hill	0.4	0.7
Other TS crosses	20.1	18.5
Other crosses	13.3	9.0
Total crossbred dams	**66.8**	**65.7**

The longwool x hill ewes produce nearly a quarter of all lambs born in Britain. Hill ewes, due to their large numbers in the extensive mountainous areas of Britain, produced 18% of the lamb crop and a further 5% of lambs were born to pure terminal sire ewes. Ewes that are terminal sire crosses now produce nearly a quarter of the lamb crop.

Breed contribution based on carcase weight

Because different types of lamb are sold at different weights, their overall contribution to the national kill will also vary. Table 15 shows the genetic contribution of the five major breed types to various measures of production.

Table 15. **The proportional genetic contribution of the different breed types to different measures of output from the British sheep industry (%)**

Breed type	Dams of lambs	Sires of lambs	Lambs slaughtered	Lamb carcase meat
Hill	31	9	21	18
Longwool crossing	16	3	9	10
Longwool ewe	16	14	14	14
Shortwool ewes	19	15	16	16
Terminal sires	18	58	40	41

Because of their own productivity and also their contribution to the various mule/halfbred and other crossbred ewe types, hill ewes contribute the greatest proportion of genes as mothers of lambs (31%). The remaining four breed types all contribute a similar amount as the dams of lambs, between 16% and 19%.

The position is totally different when considering the breed types' influence on the sires of lambs. In this case, the terminal sire breeds contribute 58% of the genes as sires of lambs. Longwool and shortwool ewe breeds contribute about 15% each, with hill breeds and longwool crossing types having a small effect in this category. This is not surprising since they are mainly involved with female production and characteristics.

The genetic contribution of the different breed types to both the number of lambs slaughtered and the carcase meat produced from them is similar. Terminal sire breeds contributed about 40% of the genes to both characteristics. Longwool crossing breeds had the lowest contribution at 9–10%.

PUREBRED EWE POPULATIONS

The breeding structure described in this report would not be sustainable without the continual production of purebred animals.

In Table 16, the purebred ewe breed populations are described, as determined by the number of ewes mated in 2020, compared with the situation found in 2012.

The most numerous breeds were the three major hill breeds – Welsh Mountain, Scottish Blackface and Swaledale – along with the various Cheviot types, which it was difficult to separate because of the way the forms were completed. The three largest hill breeds have all contracted since 2012, with Scottish Blackface numbers reducing most dramatically, from 1.1 million ewes mated in 2012 to just over 700,000 ewes in 2020.

Two 'lowland' ewe breeds are notable by their large numbers, namely the Lleyn and the various Romney types, which increased by a significant amount between 2012 and 2020. Also notable is the Texel, which had the fifth highest ewe population despite it being a terminal sire breed.

Also of note in Table 16 is the Easycare, a composite which has grown in popularity in recent years, and also the New Zealand Romney, which is a reimport of genetic material once exported from Britain.

Table 16. **The main purebreeds of ewe kept in Britain in 2020 and 2012**

Crossbred ewe type	2020				2012	
	Breed type*	No. of ewes mated (000)	All ewes* (000)	% of national flock	No. of ewes mated (000)	% of national flock
Welsh Mountain	H	801	976	6.2	966	7.4
Scottish Blackface	H	722	902	5.6	1,125	8.6
Swaledale	H	614	755	4.7	721	5.5
Lleyn	SE	503	593	3.9	474	3.6
Texel	TS	335	426	2.6	304	2.3
North Country Cheviot	H	308	390	2.4	294	2.3
Romney	LWE	240	270	1.9	251	1.9
Cheviot unspec.	H	223	284	1.7	227	1.7
Easycare	SE	167	190	1.3	101	0.8
Suffolk	TS	127	151	1.0	130	1.0
Beulah	H	118	139	0.9	144	1.1
New Zealand Romney	LWE	114	137	0.9	86	0.7
Hardy Speckled Face	H	108	132	0.8	134	1.0
South Country Cheviot	H	95	120	0.7	83	0.6
Polled Dorset	SE	92	115	0.7	75	0.6
Herdwick	H	60	75	0.5	56	0.4
Charollais	TS	59	71	0.5	56	0.4
South Welsh Mountain	H	34	41	0.3	36	0.3
Brecon Hill Cheviot	H	27	37	0.2	62	0.5

*H = hill, TS = terminal sire, SE = shortwool ewe, LWE = longwool ewe

The Sheep Breed Surveys carried out over the last 50 years have demonstrated that sheep populations are dynamic, with new breeds being introduced from abroad or constructed as composites from existing genetic resources. Breed numbers change due to market demands or fashion. Consequently, there is likely to be an ever-changing number of small breeds. These are highlighted in Table 17 as breeds with less than 15,000 ewes. It should be said that because of the methods used in this survey, small breed populations are subject to proportionately greater sampling ranges than the larger breeds.

New breeds, not found in the 2012 Sheep Breed Survey, are represented in Table 17 by New Zealand Texel, Dutch Spotted, Red Fox and Black Leicester Longwool. The latter three breeds clearly have strong aesthetic appeal, with the creation of new colour varieties having been a growing theme in recent surveys, with the wider recognition of breeds/strains like the coloured Ryeland and Blue Texel and the recording of black strains in a number of other breeds.

Table 17. **Breeds with less than 15,000 ewes**

Balwen	Dorset Horn	Oxford Down
Berrichon du Cher	Dutch Spotted	Portland
Black Leicester Longwool	Dutch Texel	Radnor
Bleu de Maine	Galway	Red Fox
Blue Texel	Gotland	Rouge de l'Ouest
Border Leicester	Greyface Dartmoor	Roussin
Boreray	Hampshire Down	Ryeland
British Icelandic	Hartline	Shropshire
British Milksheep	Ile de France	Soay
Cambridge	Kerry Hill	Southdown
Castlemilk Moorit	Leicester Longwool	Teeswater
Charmoise	Lincoln Longwool	Valais Blacknose
Clun Forest	Manx Loaghtan	Vendeen
Coloured Ryeland	Meatlinc	Wensleydale
Cotswold	New Zealand Suffolk	Whiteface Dartmoor
Derbyshire Gritstone	New Zealand Texel	Whitefaced Woodland
Devon and Cornwall Longwool	Norfolk Horn	Wiltshire Horn
Devon Closewool	North Ronaldsay	
Dorper	Ouessant	

Table 17 shows several imported breeds which don't appear to have taken off in larger numbers in Britain, including the Berrichon du Cher, Bleu de Maine, Charmoise, Dorper, Galway, Gotland, Ile de France, Rouge de l'Ouest and Vendeen. Table 17 also includes a number of composite breeds which have failed to have a big impact, such as British Milksheep, Cambridge and Hartline. Table 17 also includes some once extensively used British breeds which are now considerably less numerous, including the Clun Forest, Kerry Hill, Cotswold, Oxford Down and Teeswater.

RAM POPULATIONS

Although rams are said to be 'half the flock', this refers to their genetic contribution and not the numbers that need to be kept.

The rise of the crossbred ram

In 2020, about 83% of the rams used were purebred, compared with 93% in 2012 – this is a major change, reflecting both the use of crossbred rams (often the progeny of purebred parents) and the rise of named composites. An analysis of the 17% of rams used that were crossbred shows half contained Texel genes from some source, with a further 11% being from modern composites. (Data for crossbred rams shown in Table 34.)

Purebred ram numbers in Great Britain

The Texel breed dominated the rams recorded, with nearly 100,000 rams being used – more than a quarter of all rams – on nearly 9,000 farms. The other two major terminal sire breeds, the Suffolk and Charollais, were found on about 3,500 farms each. Although the number of Bluefaced Leicester rams used fell slightly in 2020 compared with 2012, more of them were used in 2020 than the two major hill breeds, the Scottish Blackface and Welsh Mountain.

Table 18. **A summary of the main breeds of rams used at mating 2020 and 2012**

Breed	2020							2012	
	No. rams (000)	No. flocks (00)	Rams/ flock	% of rams	% rams homebred	% AI rams	% EBV rams	No. rams (000)	% of rams
Texel	99	87.2	4	27.2	17.0	1.9	8.6	99	27.1
Suffolk	32	35.6	3	8.7	18.4	1.1	12.0	47	12.8
Charollais	26	33.4	3	7.1	12.6	1.9	12.2	32	8.8
Bluefaced Leicester	20	17.4	4	5.4	33.8	0.6	2.8	22	5.9
Scottish Blackface	15	8.8	7	4.3	36.1	2.4	1.7	24	6.6
Welsh Mountain	13	7.9	6	3.5	25.6	0.6	2.6	19	5.1
Beltex	12	15.2	3	3.4	21.6	2.7	4.0	9	2.4
Lleyn	11	13.4	3	3.0	20.4	1.0	28.9	13	3.4
North Country Chev.	8	6.9	5	2.3	35.0	2.2	2.5	7	2.0
Cheviot unspec.	7	8.5	3	2.0	21.1	0.4	0.6	10	2.7
Swaledale	7	5.0	5	1.9	21.7	0.3	1.3	10	2.7
Poll Dorset	4	4.3	3	1.0	25.2	4.1	31.0	2	0.6
South Country Chev.	3	0.6	19	0.8	58.4	0.0	1.3	2	0.6
Easycare	3	2.2	5	0.7	23.0	4.7	10.8	2	0.7
Blue Texel	3	5.4	2	0.7	21.6	2.1	7.1	<1	0.1
Hampshire Down	2	4.3	2	0.7	20.8	0.4	39.0	2	0.6
Southdown	2	3.0	3	0.5	35.9	0.0	18.4	2	0.5
Herdwick	2	2.6	3	0.5	30.6	0.0	0.0	2	0.5
Leicester unspec.	2	1.5	5	0.5	29.5	3.8	0.5	2.4	0.7
Romney	2	1.2	6	0.5	6.9	0.5	51.5	3.0	0.8

Ram use across the national flock

The pattern of ram usage across the national breeding flock is shown in Table 19. Not surprisingly, it follows a similar pattern to ram numbers in Table 18. Texel rams were mated to over 3 million ewes – about a quarter of ewes in the country.

Table 19. **Ram breed use in 2020 and 2012 on both purebred and crossbred ewes**

Ram breeds	2020		2012	
	Ewes mated (000)	% of ewes mated to breed	Ewes mated (000)	% of ewes mated to breed
Texel	3,329	26	3,519	27
Suffolk	1,089	8	1,672	13
Charollais	916	7	1,203	9
Bluefaced Leicester	649	5	923	7
Welsh Mountain	519	4	724	6
Scotch Blackface	491	4	796	6
Lleyn	401	3	500	4
Beltex	376	3	289	2
Swaledale	284	2	367	3
North Country Cheviot	267	2	269	2
Cheviot unspec.	241	2	267	2
Romney	222	2	124	1
Texel cross	219	2	105	1
Aberfield	176	1	8	<1
Texel x Beltex	150	1	86	1
Easycare	145	1	122	1

UNDERSTANDING THE IMPACT OF RECORDED RAMS

Table 18 also summarises the use of rams with estimated breeding values (EBVs) – an objective measure of their genetic merit for specific traits deemed important to the breed. There was wide variation in the use of EBVs by breed, ranging in the larger breeds from those with relatively high levels of recording, e.g. 29% (Lleyn), 31% (Poll Dorset) and 39% (Hampshire Down), to very low numbers in some of the hill breeds. Given the impact of the Texel breed on the industry, the reduction in the proportion of Texel rams with EBVs from 12% (2012) to 8.6% (2020) should be noted, with small reductions also noted for Suffolk and Charollais.

The survey also shows that sheep producers clearly underestimate the availability of EBVs. The following breeds are 100% performance recorded, yet the proportion recorded as having EBVs was: Abermax (88%), Primera (77%), Highlander (75%), Aberfield (66%) and Meatlinc (55%). In each case, these rams all had breeding values, but this was not recognised or understood by the producer.

Within the terminal sire breeds, recent estimates for the number of breed society registered rams that were bred in Signet-recorded flocks was ~25% for Suffolk, ~40% for Charollais and ~45% for Hampshire Down. Values that, for the first two breeds, at least, far exceeded the proportion of rams deemed to have EBVs in this survey.

The use of EBVs in ram selection

Producers were asked: Do you intentionally use estimated breeding values (EBVs) for selecting breeding stock? The question asked specifically about 'intentional' use, as many rams will have breeding values of some description available at the point of sale, even if the data is not published.

This question sought to find out if breeders were deliberately using this data to aid ram selection decisions, with ~10% of the larger flocks responding that they always use EBVs and ~45% sometimes using this information (Table 20).

Table 20. **The number and percentage of farms using estimated breeding values (EBVs), by flock size**

Flock size	Responded	Always	Sometimes	Never	Always	Sometimes	Never
1–49	1,485	96	399	990	6%	27%	67%
50–124	1,089	80	364	645	7%	33%	59%
125–499	1,703	149	644	910	9%	38%	53%
500–999	585	62	251	272	11%	43%	46%
>1,000	224	30	102	92	13%	46%	41%
Not known	157	9	26	122	6%	17%	78%
All flocks	5,243	426	1,786	3,031	8%	34%	58%

While this may seem low, the figures have to be set against a backdrop of information availability. Until recently, there were very low proportions of hill rams in the UK with breeding values and likewise, large numbers of Bluefaced Leicester rams are purchased each year, yet the proportion of the Bluefaced Leicester breed that is recorded remains relatively low. These two factors alone probably help to explain why nearly two-thirds of hill producers don't use EBVs (Table 21).

The fact that over half of the 'finisher' flocks use EBVs at least sometimes reflects the wider availability of recorded terminal sire rams and the relatively fast payback achieved in selecting sires on the basis of their genetics for carcase merit, as opposed to selecting those rams with the best genes to enhance daughter performance.

The underutilisation of breeding values in smaller flocks may in part be due to their interest in non-performance-recorded breeds (including rare and minority breeds), where the data isn't available. For smaller flocks, the return on investment when buying a ram will be lower, which may limit their investment in rams from performance-recorded sources and it is noted that many smaller flocks hired/borrowed rams when they needed them.

Table 21. **The number and percentage of producers using estimated breeding values (EBVs) in different farming systems**

Flock size	Responded	Always	Sometimes	Never	Always	Sometimes	Never
Replacements	1,194	140	446	608	12%	37%	51%
Finisher	1,459	142	613	704	10%	42%	48%
Store	292	19	109	164	7%	37%	56%
Hill	342	16	108	218	5%	32%	64%

Why don't producers use estimated breeding values?

Out of the 3,031 producers that said they never used EBVs, 921 gave at least one reason why they didn't use this information when buying rams, resulting in 964 responses that could be categorised (Table 22).

A lack of access to EBVs in breeds or crossbreeds, where levels of recording are low, or at sales where information was not shared, was a major factor limiting the use of EBVs. While it is understandable that EBVs may have less value for small flocks or for producers that don't breed a lamb crop, it is a concern that producers still don't trust the data and believe they can do a better job solely through visual inspection (although a visual inspection for soundness is still important). It is interesting that few breeders base their decision on first-hand experience, with only ~1% deciding they had not worked on their farm.

Table 22. **Reasons that sheep producers don't use EBVs to buy rams (Analysed by AHDB, 2021)**

Reason	Number	Proportion (%)
EBVs not available to me	191	19.8
Not necessary/Do not need them*	187	19.4
Small flock, so not worth it	125	13.0
Visual. Rams selected on appearance	118	12.2
Don't trust the information	106	11.0
Little or no knowledge of EBVs	90	9.3
Trust the breeder more than EBVs	45	4.7
Price of rams too high for recorded rams	34	3.5
Would do in the future	31	3.2
Conservation breeds (No EBVs)	24	2.5
Didn't work on my farm	13	1.3
Total	964	

*This group included producers that do not breed sheep (keeping stores or running ewe lambs), those who consider their enterprise not to be commercial, as well as those who simply think EBVs are not needed.

Sourcing breeding rams

Table 18 shows that a relatively small percentage of rams are homebred, so breeders were asked: What is the main way that you purchase breeding rams? Their responses are summarised in Table 23.

While a large number of the smaller flocks bought rams directly from breeders, a high percentage of the larger flocks purchased their rams from auctions, at least some of the time. This was a particularly strong feature within the hill sector, where only 13% of breeders bought directly from breeders.

These buying preferences must be considered when developing knowledge exchange programmes which aim to influence the health status or genetic merit of rams entering the national flock.

Table 23. **Numbers and proportions of breeders buying their rams from different sources**

		Number responded	Directly from breeders	From auctions	Both	Directly from breeders	From auctions	Both
Flock size	1–49	1,459	742	384	333	51%	26%	23%
	50–124	1,122	380	421	321	34%	38%	29%
	125–499	1,759	463	746	550	26%	42%	31%
	500–999	592	153	242	197	26%	41%	33%
	>1,000	227	77	68	82	34%	30%	36%
	Not known	100	45	26	29	45%	26%	29%
	All flocks	5,259	1,860	1,887	1,512	35%	36%	29%
Flock type	Replacements	1,226	294	539	393	24%	44%	32%
	Finisher	1,487	433	588	466	29%	40%	31%
	Store	300	62	141	97	21%	47%	32%
	Hill	357	45	202	110	13%	57%	31%

PUREBREEDING POPULATIONS

Although previous tables have summarised the number of purebred ewes and rams found in Britain in 2020, many of them are mated to other breeds. In this section, the ewes and rams mated to their own breed are summarised (Table 24).

Not surprisingly, the main hill breeds contain the largest purebreeding populations, with the Welsh Mountain and Scottish Blackface comprising over 400,000 ewes from over 1,200 flocks each, followed by the Swaledale at a quarter of million ewes found in about 780 flocks. In all three cases, these hill breeds have seen a significant decline in numbers over the last eight years, with the greatest change observed in the Scottish Blackface.

Table 24. **The purebreeding sector of the British sheep industry in 2020 and 2012**

Crossbred ewe type	2020				2012	
	No. of flocks (00)	No. of ewes (000)	Av. flock size	% ewes homebred	No. of flocks (00)	No. of ewes (000)
Welsh Mountain	12.1	472	268	91	17.8	644
Scottish Blackface	13.4	461	237	95	24.9	750
Swaledale	7.8	270	239	97	10.8	335
Lleyn	13.4	260	133	81	17.1	273
Texel	28.4	245	59	74	33.4	213
North Country Cheviot	9.8	221	156	89	10.9	213
Romney	3.5	163	325	80	3.42	99
Cheviot unspec.	8.2	131	111	78	10.1	143
Easycare	3.0	116	265	65	2.6	79
South Country Cheviot	0.8	93	740	100	1.0	72
New Zealand Romney	1.2	90	530	86	0.8	64
Poll Dorset	5.6	70	85	77	4.7	53
Suffolk	10.5	55	36	70	14.2	64
Hardy Speckle	2.0	52	176	99	2.6	80
Beulah Speckled Face	2.4	50	147	89	3.2	60
Charollais	6.4	46	50	90	7.7	41
Herdwick	4.2	42	68	80	3.3	43
Dorset unspec.	2.8	37	89	51	2.4	18
Exlana	0.7	28	279	91	0.2	14
Bluefaced Leicester	6.0	25	29	84	7.2	15
Brecknock Hill Cheviot	0.5	20	272	83	1.3	42
Lonk	0.9	19	151	41	0.6	20
South Welsh Mountain	0.4	19	301	100	0.5	25
Beltex	3.8	18	32	81	3.1	10

The Lleyn and Texel breeds have the next largest purebreeding populations, with about 250,000 ewes each. However, the differing use of the two breeds is reflected in the number of flocks and the average flock size; Lleyns were found on fewer farms than

the Texel but in flocks of over 130 ewes on average – more than twice that of the Texel. This reflects the use of the Lleyn as a maternal breed, while the Texel's main role is to produce rams for crossing.

Notable in Table 24 are the Easycare, Exlana and New Zealand Romney, which are relatively new self-replacing maternal breeds/composites in Britain but which were estimated to have some of the largest purebreeding populations in Britain.

Mating decisions within the national flock

The complete mating picture of purebred ewes is shown in Table 25 by breed type, in order to compare the relative size of the various crossings. Naturally, hill ewes dominate here, both in overall numbers and also in the proportion mated pure – about two-thirds. The next most important group of hill ewe matings is with the longwool crossing breeds to produce the well-known traditional crossbred types of ewe. More details of these matings are given in Table 26.

Interestingly, the longwool crossing purebreds are the smallest grouping shown in Table 25, with about 48,000 ewes bred pure. However, as discussed above, this small group of animals has a disproportionately large effect on the output from the British sheep industry.

Table 25. **A summary of the mating of purebred ewes in 2020 by the number of flocks and ewes mated**

Ewe breed type	Ram breed type	Flocks (000)	Ewes (000)
Hill ewes	Bred pure	8.2	2,026
	Other hill	0.8	105
	Longwool crossing	3.0	635
	Terminal sire	3.4	320
	Other	2.3	343
	Total		3,429
Longwool crossing	Bred pure	1.0	48
	Terminal sire	0.3	5
	Others	0.2	12
	Total		65
Longwool ewe	Bred pure	1.1	277
	Terminal sire	0.5	60
	Others	0.4	46
	Total		383
Shortwool ewe	Bred pure	4.7	577
	Terminal Sire	2.5	184
	Others	1.6	184
	Total		945
Terminal sire	Bred pure	6.7	450
	Other terminal sire	2.3	113
	Others	1.7	87
	Total		650

The production of traditional crossbreds shown in Table 26 highlights the declining numbers of these types of crosses compared with 2012. The Bluefaced Leicester x Swaledale (North Country Mule) was the most numerous cross in this group – down by a third since 2012. Scottish Blackface and Welsh Mountain crosses with the Bluefaced Leicester were the next most numerous crosses found, followed by the combined Cheviot ewes.

The other noticeable feature of Table 26 is the very small group of ewes mated to Border Leicester rams, certainly many fewer than mated to the Bluefaced Leicesters.

Table 26. **Details of flocks producing recognised crossbreeds of ewe in 2020 and 2012**

Hill breed		2020				2012	
		No. of flocks (00)	No. of ewes (000)	Av. flock size	% ewes homebred	No. of flocks (000)	No. of ewes (000)
Bluefaced Leicester crosses	Swaledale	0.8	243	210	63	1.3	349
	Scottish Blackface	0.7	135	136	50	1.1	233
	Welsh Mountain	0.3	55	138	61	0.5	95
	Beulah Speckled Face	0.1	31	149	67	0.3	55
	All Cheviot	0.3	43	97	39	0.2	38
	Hardy Speckled Face	0.1	17	125	77	0.1	12
Border Leicester crosses	All Cheviot	0.1	7	73	7	1.1	14
	Welsh Mountain	<0.1	11	399	24	0.7	6
	Scottish Blackface	<0.1	2	52	34	31	4

Engagement with sheep breeding societies

Breeders were asked whether they register lambs with a breed society. Their responses are summarised in Table 27. Nearly a third of the smallest flocks were actively registering sheep with a breed society. This indirectly shows the importance of small flocks to breed societies. For producers with small flocks, breed society membership enables them to add value and interest to their stock and, in many cases, the enterprise may be considered a hobby, in which society membership provides an additional social function.

Table 27. **Summary of the answers to the question about breed society membership by flock size**

Flock size	Number of flocks	Yes	No	Didn't answer	Yes (%)	Number selling rams but not a society member	Proportion selling non-society rams
1–49	1,758	547	1,154	57	31	156	9%
50–124	1,262	255	957	50	20	107	8%
125–499	1,924	304	1,511	109	16	146	8%
500–999	636	131	470	35	21	72	11%
>1,000	242	58	172	12	24	30	12%

The overall level of breed society membership appears high across the survey, with between a fifth and a quarter of flocks registering sheep with at least one breed society. Among the larger commercial flocks, a quarter of the breeders were registering sheep with a breed society. Around 10% of replies were from farmers that were not members of a breed society but who still sell (unregistered) rams. It was notable that a number of larger flocks fall into this category, perhaps because of the high costs associated with birth notifying large numbers of lambs to a breed society.

BREEDING TRENDS

Throughout the years, the Sheep Breed Survey has added some hard data to the trends noted in the sheep industry, for example, the changing balance between purebred and crossbred ewes and the importation of breeds from Europe.

Recent surveys have highlighted the rise of the Texel as a terminal sire and the increase in use of the Lleyn on the maternal side. This report of the 2020 Sheep Breed Survey continues the investigation of the ever-changing make-up of the British sheep breeding sector by discussing the declining hill sector, the evolving role of the Texel, the continuing rise of the Lleyn, the resurgence in composites and the adoption of wool-shedding breeds.

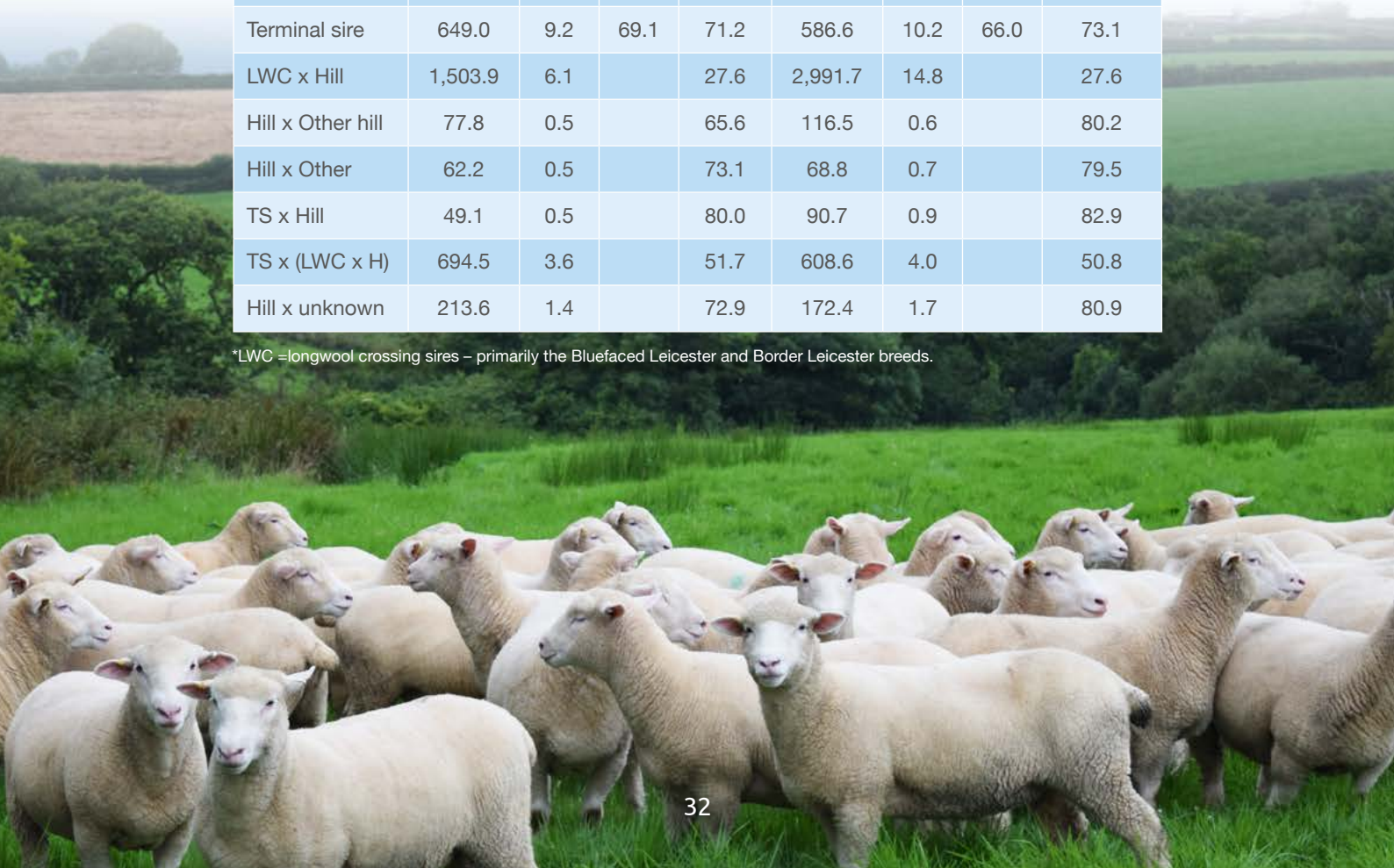
The declining hill sector

For decades, the pool of hill breed genetic resources kept in the highest stratum of the country's sheep breeding structure has acted as the basis for many of the crossbreds used in the industry. As noted throughout this report, these breeds appear to have reduced numbers in 2020, as summarised in Tables 28 for ewe populations and 29 for ram populations.

Table 28. **A comparison of ewe numbers from purebred types and hill crosses in 2012 and 2020**

Breed type or cross	2020				2012			
	No. ewes mated (000)	No. flocks (000)	% mated pure	% home-bred	No. ewes mated (000)	No. flocks (000)	% mated pure	% homebred
Hill	3,431.6	13.2	59.0	79.2	4,085.3	16.9	62.5	80.1
LWC	65.6	1.4	74.0	81.2	29.3	1.4	82.0	75.5
Longwool ewe	382.4	1.7	72.4	78.4	306.2	1.4	65.2	76.4
Shortwool ewe	945.7	7.0	61.0	74.3	796.6	7.2	64.5	79.5
Terminal sire	649.0	9.2	69.1	71.2	586.6	10.2	66.0	73.1
LWC x Hill	1,503.9	6.1		27.6	2,991.7	14.8		27.6
Hill x Other hill	77.8	0.5		65.6	116.5	0.6		80.2
Hill x Other	62.2	0.5		73.1	68.8	0.7		79.5
TS x Hill	49.1	0.5		80.0	90.7	0.9		82.9
TS x (LWC x H)	694.5	3.6		51.7	608.6	4.0		50.8
Hill x unknown	213.6	1.4		72.9	172.4	1.7		80.9

*LWC =longwool crossing sires – primarily the Bluefaced Leicester and Border Leicester breeds.



Hill ewe numbers fell from just over 4 million in 2012 to about 3.4 million in 2020. In addition, the various longwool x hill ewe numbers almost halved, from about 3 million in 2012 to 1.5 million in 2012. Most of the other crosses involving hill genetics shown in Table 28 also declined in 2020 – the exceptions being the terminal sire cross (longwool x hill) ewes, which increased by about 90,000, and the hill x unknown, which increased by about 40,000. All other purebred ewe groups shown in Table 28 registered an increase in numbers in 2020 compared with 2012. The number of flocks keeping hill ewes also declined in 2020, from about 17,000 in 2012 to just over 13,000.

A similar picture emerges from the hill ram population shown in Table 29. Numbers fell from 85,000 in 2012 to 68,000 in 2020 – a drop in proportion of all rams from 23% to 18.7%.

Table 29. **A comparison of ram numbers from the various breed types in 2012 and 2020**

Breed type	2012				2012			
	No. rams (000)	No. farms (000)	% homebred	% of all rams	No. rams (000)	No. farms (000)	% homebred	% of all rams
Hill	68.2	10.3	30.8	18.7	85.0	13.2	30.2	23.3
Longwool crossing sire	24.4	4.1	32.4	6.7	26.7	5.3	30.6	7.3
Longwool ewe	5.4	1.1	23.1	1.5	5.5	1.2	27.6	1.5
Shortwool ewe	27.0	6.9	23.5	7.4	24.7	7.5	25.5	6.8
Terminal sire	188.1	36.0	18.1	51.7	200.1	44.3	17.2	54.8
Crossbred	51.3	10.6	21.1	14.1	23.2	6.0	27.2	6.3

The number of farms using hill rams also dropped, from 13,000 to 10,000. The other breed types differed from the picture found with ewes. Most numbers remained similar over the last eight years, with a small drop in terminal sire ram numbers.

The grouping of hill breeds into one type may mask the differing fortunes of specific hill breeds. The individual breed statistics were given in Table 16 and show that the decline in hill numbers is reflected in all major hill breeds. The drop in numbers between 2012 and 2020 was ~165,000 for the Welsh Mountain, 400,000 for the Scottish Blackface and 100,000 for the Swaledale. The decline in ram numbers reflected that of the ewes (Table 18), with Scottish Blackface ram numbers down by 9,000, Welsh Mountain by 6,000 and Swaledale by 3,000.

A changing role for the Texel?

In earlier reports, the importation of the Texel as a maternal breed in the 1970s and its widespread adoption as the major terminal sire breed in Britain were highlighted. The role of the Texel has continued to evolve, such that it is now a major player on the maternal side of many crossbreds.

Table 30 summarises the various uses of the Texel over the 50 years since the first Sheep Breed Survey was carried out. Not surprisingly, no Texels were found in 1971, but the rise in purebred Texel numbers has been constant over the course of the six surveys. Table 30 compares these changes with that of the Suffolk breed, once the dominant terminal sire breed in Britain.

Table 30. **The change in Texel and Suffolk breed numbers, 1971 to 2020**

		1971	1987	1996	2003	2012	2020
Purebred ewe numbers (000)	Suffolk	179	429	371	230	130	127
	Texel	0	97	201	326	304	335
% of national ewe flock	Suffolk	1.5	2.4	2.1	1.5	1.0	1.0
	Texel	0	0.5	1.1	2.2	2.3	2.6
Ram numbers (000)	Suffolk	NA	210	145	94	47	32
	Texel	0	23	79	100	99	99
No. of ewes mated to: (000)	Suffolk	NA	8,266	5,522	3,393	1,672	1,089
	Texel	0	865	2,932	3,614	3,519	3,329
% of ewes mated to:	Suffolk	NA	46	31	22	13	8
	Texel	0	5	16	23	27	26
% of national ram flock	Suffolk	NA	46	31	23	13	9
	Texel	0	5	17	24	27	27
F^1 Hill crosses (000)	Suffolk x Hill	154	182	115	81	27	19
	Texel x Hill	0	25	28	92	61	25
Other crosses (000)	Suffolk x (Longwool x Hill)	550	603	495	590	342	285
	Texel x (Longwool x Hill)	0	32	220	307	247	388
	Suffolk crosses	237	1027	670	699	584	562
	Texel crosses	0	199	506	720	1,236	1,523

Although the Texel is well known as a terminal sire breed, Table 30 highlights the expanding role for the Texel on the maternal side of crosses. Perhaps the standout statistic from Table 30 is the number of other Texel-cross ewes in Britain, which appear to have increased at about 30,000 ewes a year since the start of these surveys, to 1.5 million ewes in 2020.

The continued rise of the Lleyn

The Lleyn breed was developed on the Lleyn peninsula, in Wales, during the nineteenth century. It seems a reasonable question to ask why such a local breed has become a focus during several recent Sheep Breed Surveys. Whereas a breed like the Texel has flourished because of its direct effect on the carcases of the lambs it sires, the Lleyn phenomenon' is based on its ability as a mother.

The Lleyn breed combines a relatively small body size with a relatively high lambing percentage; these are two major components of profitability in lowland and upland sheep systems. By using a suitable terminal sire on these ewes, lambs of marketable quality may be produced. These ideas are borne out in Table 31, which shows the composition of the ewe population utilising Lleyn genes.

Table 31. **The number of ewes mated containing Lleyn genes**

Lleyn Ewe type	Number of ewes mated (000)	Number homebred (000)	Homebred (%)
Pure Lleyn	503	410	82
Lleyn x other purebeed	119	100	84
Llyen x Texel	33	29	87
Texel x Lleyn	28	22	77
Lleyn x Other, 3-way cross	20	20	100
Hill x Lleyn	14	13	94
Lleyn x Charollais	12	12	99
Lleyn x Hill	11	10	94
(LWC x Hill) x Lleyn	10	9	94
Lleyn x (LWC x Hill)	10	8	81
Shortwool ewe x Lleyn	9	8	88
Other 3-way cross, x Lleyn	8	7	89
Lleyn x Shortwool ewe	6	6	97
Lleyn x Longwool ewe	6	<1	5
Backcross (sire)	5	5	100
Suffolk x Lleyn	5	5	100
Lleyn x Longwool sire	4	4	100
Terminal sire x Lleyn	3	3	100
Charollais x Lleyn	2	2	100
Lleyn x Suffolk	2	1	86
Longwool ewe x Lleyn	<1	<1	81
Longwool sire x Lleyn	<1	0	0
Total	809	675	

The majority of ewes containing Lleyn genes were purebred at over half a million ewes. The remaining 300,000 crossbred ewes were derived from a wide range of breeds, the offspring of both Lleyn ram and Lleyn ewe matings.

The ever-changing composites

The original Sheep Breed Survey carried out in 1971 did not record any composites in the data that was produced. Ever since, there have been a number of such types appearing in the various surveys. Earlier surveys noted the ABRO Damline, Cambridge, Colbred, Improver, British Milksheep, Meatlinc, Hartline, INRA 401, Dorper, Easycare and Meatline being developed at some time over the intervening years. This is not an exhaustive list since, by its very nature, the survey favours larger rather than smaller populations. Many of these composites have now disappeared or were found in very low numbers in the 2020 survey. However, highly visible new composites are a feature of the 2020 dataset.

Table 32 estimates the number of farms, and ewes mated, from various composite types.

Composite breeding lines in the ascendancy

The more established composites (Hartline, Cambridge, British Milksheep) were found in quite small numbers compared with the newer types such as the Easycare and Exlana. A number of Innovis-produced types were also found in the survey, including the Aberfield, Highlander, Aberdale, Primera, Aberblack, Abertex and Abermax. Easycare sheep have been a feature of the last three surveys, rising from ~13,000 ewes in the 2003 survey to 167,000 in 2020. Given the past history of composites in the British sheep industry, it will be interesting to see their situation in future surveys.

Table 32. **The number of farms and composite ewes mated in 2020**

Composite	Number of farms (00)	Number of ewes (000)	Homebred (%)
Easycare	4	167	61
Aberfield	3	128	66
Highlander	2	62	77
Exlana	1	30	86
Aberdale	<1	21	77
Primera	<1	5	100
Hartline	<1	5	89
Texdale	<1	3	100
Meatlinc	<1	3	100
British Milksheep	<1	2	100
Aberblack	<1	1	100
Abertex	<1	1	25
Millenium Blue	<1	1	67
Abermax	<1	<1	100
Cambridge	<1	<1	100
New Zealand SufTex	<1	<1	100

The use of composite rams is summarised in Table 33 and shows the most widely mated composites being used on about 150,000–180,000 ewes. Not surprisingly, given that many are developed by breeding companies, the majority of these rams were not homebred. British Milksheep, Exlana and Easycare had the greatest proportions of homebred rams, each of which are maternal breeding lines where the retention of male and female replacements will be more common.

Table 33. **The number of farms and composite rams used in 2020**

Composite	Number of farms (00)	Number of rams (000)	Homebred (%)	No. ewes mated by rams (000)
Aberfield	7.7	3.7	5	176
Easycare	3.9	2.7	23	145
Abermax	3.5	1.9	7	108
Primera	3.3	1.4	19	90
Meatlinc	2.5	1.2	7	42
Highlander	2.4	0.8	5	51
Exlana	1.1	0.8	44	44
Abertex	1.4	0.7	8	27
Aberblack	0.9	0.4	6	21
Aberdale	0.6	0.4	0	21
Millenium Blue	0.7	0.2	8	5
Focus Prime	0.6	0.2	0	14
New Zealand SufTex	0.4	0.1	0	6
British Milksheep	0.2	0.1	63	3
Tefrom	0.2	0.1	0	4
Cambridge	0.2	0.0	25	0
Easydam	0.2	0.0	0	3

The rise of the crossbred ram

This survey found that the use of purebred rams has fallen from 93% to 83% in the last eight years (Table 31). This change isn't solely due to the arrival of named composite strains sold by breeding companies, but also due to an increasing use of crossbred rams, often produced from purebred parents.

In many cases, the resulting rams will benefit from the muscling associated with the integration of continental genetics (Texel, Beltex and Charollais) and the hybrid vigour derived from crossbreeding, which would be expected to enhance their longevity, fitness and fertility. Where crossbreds are displacing purebred rams, it would be interesting to speculate why this may be arising and what the purebred ram breeder can do to respond to this changing market requirement.

A summary of crossbred ram use is shown in Table 34.

Table 34. **The number of farms and crossbred rams used in 2020**

Crossbred/strain	No. rams (000)	No. flocks (00)	Rams/ flock	% of rams	% Rams homebred	% AI rams	% EBV rams	Ewes mated (000)	% of ewes mated
Texel cross	6.2	1,162	3.7	1.7	26.7	1.3	5.0	219	1.7
Texel x Beltex	4.7	977	3.3	1.3	17.1	0.6	1.7	150	1.2
Beltex cross	3.2	556	4.0	0.9	30.1	0.8	3.9	117	0.9
Suffolk x Texel	2.8	383	5.0	0.8	32.1	0.0	41.7	109	0.8
Charollais x Texel	2.2	488	3.2	0.6	18.1	0.0	4.4	68	0.5
Charollais x Beltex	2.0	470	2.9	0.5	6.8	4.6	2.3	63	0.5
Beltex x Texel	1.8	414	2.9	0.5	9.7	0.0	0.5	68	0.5
Suffolk cross	1.7	321	3.6	0.5	39.5	2.2	1.6	38	0.3
Mixed breeds	1.6	99	10.9	0.4	15.4	0.0	4.6	347	2.7
Texel x Charollais	1.5	408	2.5	0.4	26.5	0.0	6.6	66	0.5
Crossbreed unspec.	1.4	346	2.8	0.4	14.0	0.0	13.4	63	0.5
Beltex x Charollais	1.3	328	2.8	0.4	2.0	0.0	0.7	52	0.4
Charollais cross	1.2	334	2.5	0.3	27.1	0.8	0.0	44	0.3
Texel x Suffolk	1.0	155	4.4	0.3	43.2	0.0	0.0	39	0.3
Unknown breeds	0.6	136	3.2	0.2	0.0	0.0	1.4	108	0.8
Easycare x Exlana	0.6	12	32.5	0.2	95.4	0.0	4.6	3	0.0

The wool-shedding breeds

In Britain, wool prices are currently at a historic low. On some farms, wool is viewed as a cost to the enterprise rather than a potential source of income. It is therefore not surprising to find several breeds being used to capitalise on their natural wool-shedding genetics.

Historically, 'primitive' breeds and breeds derived from ancient cultures, such as the Soay, Boreray and Wiltshire Horn, have had wool-shedding characteristics, since this was the 'original' default in sheep species. Domestication bred this out in many breeds, but clearly it has modern appeal, particularly at the present time.

With wool-shedding genetics shown to be caused by a single Mendelian dominant gene in many breeds, it is a relatively straightforward trait to breed for.

Table 35 summarises wool-shedding breed use in 2020 for both ewes and rams.

A quarter of a million ewes and about 5,000 rams of various wool-shedding breeds and composites were used in 2020, with the rams mated to over 200,000 ewes. The most numerous type was the Easycare (a Wiltshire Horn/Welsh composite developed in the 1960s), followed by the Exlana and the Wiltshire Horn and its crosses.

Not surprisingly, the primitive breeds, such as the Soay and Boreray, were only found in small numbers, probably because their other characteristics were less commercial than the modern composites.

Table 35. **The use of wool-shedding breeds in 2020**

Breed	No. of farms with ewes (00)	No. of ewes (000)	Homebred (%)	No. of farms with rams (00)	No. of rams (000)	Homebred (%)	Ewes mated to rams (000)
Easycare	4	167	61	4	3	23	145
Exlana	1	30	86	1	1	44	44
Wiltshire Horn cross	<1	15	99	<1	<1	0	0
Easycare cross	<1	14	95	<1	<1	100	3
Easycare x Lleyn	<1	8	90	<1	<1	0	0
Wiltshire Horn	1	7	63	1	<1	36	16
Exlana cross	<1	5	100	<1	<1	0	0
Lleyn x Easycare	<1	4	100	<1	<1	0	0
Easycare x Exlana	<1	3	8	<1	1	95	<1
Soay	<1	1	49	<1	<1	14	1
Texel x Easycare	<1	1	100	<1	<1	0	0
Dorset unsp. x Exlana	<1	1	100	<1	<1	0	0
Exlana x Easycare	<1	1	86	<1	<1	0	2
Boreray	<1	1	65	<1	<1	60	<1
Texel x Monsa	<1	<1	100	<	<1	80	<1
Total (including small breeds not above)	8	258		7	5		214

BREEDING FLOCK MANAGEMENT

Over the last 50 years, several management tools have been introduced to the British sheep industry in an attempt to improve productivity and profitability. Breeders were asked about their use of various techniques, including condition scoring, ewe concentrate feeding before and after lambing, using sward-height measurements as an aid to grassland management and the use of electronic identification devices.

Body condition scoring

Breeders were asked when they body condition scored the ewes in their flocks and 74% said they took this measurement at least once per year (Table 36). Respondents could tick more than one box and of those farmers that body condition scored their flock, 36% did it once a year, 25% twice, 18% three times and 21% did it at on all four occasions listed – tupping, scanning, lambing and weaning.

Table 36. **A summary of the answers to the question about body condition scoring (BCS) the flock (numbers of respondents)**

Flock size	Total responses	Never	At tupping	At scanning	At lambing	At weaning	BCS at least once a year
1–49	1,594	515	819	222	279	384	68%
50–124	1,145	305	607	242	202	303	73%
125–499	1,771	383	957	520	323	476	78%
500–999	599	100	342	259	140	206	83%
>1,000	226	48	136	106	56	84	79%
Unknown	152	84	58	14	19	27	45%
All flocks	5,487	1,435	2,919	1,363	1,019	1,480	74%

However, these results don't show how this information was being used. While some farms will have been recording condition scores using farm software, in many cases the process of body condition scoring would be an unrecorded assessment of the ewe in the race, enabling ewes with a similar body condition to be grouped and fed accordingly.

Feeding ewes in late pregnancy

Breeders were asked if they fed concentrates to ewes in late pregnancy (3–6 weeks before lambing). The majority of flocks were feeding concentrates to ewes in the run-up to lambing, although a greater proportion of the larger flocks were using alternative approaches to boost pre-lambing nutrition (Table 37).

These approaches may have arisen in flocks where feeding concentrates to large numbers of ewes was logistically difficult. A third of flocks were using buckets/blocks as part of the pre-lambing feeding programme.

Table 37. **A summary of responses about ewe concentrate feeding before lambing**

		Number of responses	% using bought-in feed	% using home-mixed feed	% using bucket or block feeds	% do not feed concs
Flock size	1–49	1,598	80	5	39	4
	50–124	1,138	76	8	40	4
	125–499	1,765	79	11	33	5
	500–999	594	80	10	25	6
	>1,000	222	72	11	27	12
	Not known	124	74	5	35	10
	All flocks	5,441	78	8	35	5
Type of flock	Replacements	1,246	75	9	34	7
	Finisher	1,506	80	12	28	4
	Store	304	75	7	36	7
	Hill	362	77	2	39	6

NB. Respondents were able to tick more than one answer.

Feeding concentrates to ewes in early lactation

Breeders were asked if they fed concentrates to ewes in early lactation (up to four weeks post lambing). The proportion of flocks that used bought-in concentrates fell as flock size increased, with a quarter of the larger flocks not feeding any form of supplementation (Table 38). However, post-lambing supplementation with concentrates was clearly an important factor in British sheep production; even in hill flocks, 70% of farmers were feeding bought-in concentrates post lambing.

Table 38. **A summary of responses about ewe concentrate feeding in early lactation**

		Number of responses	% using bought-in feed	% using home-mixed feed	% using bucket or block feeds	% do not feed concs
Flock size	1–49	1,631	74	6	32	7
	50–124	1,161	69	7	30	10
	125–499	1,787	66	9	25	15
	500–999	599	67	6	20	19
	>1,000	227	56	8	22	24
	Not known	131	69	5	30	8
	All flocks	5,536	69	7	27	12
Type of flock	Replacements	1,229	65	7	26	18
	Finisher	1,492	71	10	20	14
	Store	297	61	3	32	22
	Hill	359	70	1	29	13

NB. Respondents were able to tick more than one answer.

Use of sward-height measurements

Breeders were asked if they measured and recorded sward height in their grazing land. A high percentage of flocks never routinely measured and recorded sward height (Table 39). The practice was more common in larger flocks, where weekly forage budgeting was arguably more important and the consequence of running short of grass more serious and harder to overcome.

Table 39. **A summary of the use of sward-height measurements**

		Number of responses	Aways (%)	Sometimes (%)	Never (%)
Flock size	1–49	1,613	2	12	85
	50–124	1,147	2	15	83
	125–499	1,770	2	16	82
	500–999	597	4	18	78
	>1,000	228	4	25	71
	Not known	203	1	9	90
	All flocks	5,558	2	15	83
Type of flock	Replacements	1,235	4	18	78
	Finisher	1,492	3	19	79
	Store	301	2	17	81
	Hill	361	2	16	82

Use of electronic identification (EID)

Breeders were asked: Do you use electronic identification (EID) as a management tool? Since 1 January 2015, every lamb born in the UK has been required to have an ear tag containing an electronic identifier (EID) when it leaves the farm. As well as providing a permanent and unique identifier that can be read electronically when lambs head through markets and abattoirs, the integration of EID technology with farm software provides farmers with the opportunity to record individual animal records to monitor health treatments (including the legal requirement to record medicine use), individual animal performance (to aid retention and culling decisions) and provide an overview of flock performance.

The survey results show that at the moment this functionality was an underutilised resource (Table 40). For small flocks, it is no surprise that many couldn't justify further investment and didn't use EID beyond its legal requirement. Yet among larger flocks with over 500 ewes, only 12–14% perceived and exploited the value of using EID within an integrated management system.

Table 40. **The use of electronic identification devices in different flock sizes (%)**

Flock size	Number of responses	Fully automated management system in place	Handheld reader used for full management	Handheld reader used for some management	Not used beyond legal requirement
1–49	1,464	1	1	5	93
50–124	1,053	2	3	11	84
125–499	1,656	3	5	16	76
500–999	574	5	7	24	64
>1,000	220	8	6	29	57
Not known	179	3	2	11	84
All flocks	5,146	3	3	13	81

Looking at the subgroups of farming types doesn't indicate major differences between the groups. This is interesting given that the benefits in a flock breeding replacements is arguably much greater than that of one focused on store lamb production; while the ease of use in a lowland flock where lambs are more regularly handled is far greater than for flocks running on the hill (Table 41).

Table 41. **The use of electronic identification in different farming systems (%)**

Flock size	Number of responses	Fully automated management system in place	Handheld reader used for full management	Handheld reader used for some management	Not used beyond legal requirement
Replacements	1,167	5	6	19	70
Finisher	1,432	3	5	21	71
Store	284	4	3	18	75
Hill	333	5	4	19	73

CONCLUDING REMARKS

The 2012 survey concluded by saying:

> **"This report has described a unique body of data, both in terms of the 2012 Sheep Breed Survey and also as the fifth survey in a comparable series stretching back over 40 years. Given the limitations of such a survey methodology and the level of accuracy achievable under such circumstances, the story of the British sheep breeding sector told here is a remarkable one.**
>
> **If you asked the large urban population in Britain what has happened to sheep in Britain over the last 40 years you would probably be met with blank stares and a veritable lack of an answer. Yet this report, and its four predecessors, paints a picture of a dynamic and ever-changing industry reacting to political and economic pressures in a way unthinkable to those who just see sheep as woolly animals that keep grass down in the countryside."**

The same paragraph could begin the 2020 concluding remarks.

With the benefit of looking back at 50 years of sheep breeding, it is possible to see that British flock owners are resilient, innovative and have the genetic material to react to market demands. Sheep numbers themselves have shown an ability to change within the political and economic constraints imposed from both inside and outside Britain. The encouragement given to breeders from the tariff-free EU market has been key and, now that Britain has left the EU, it will be interesting to see the effect on sheep numbers. Lamb producers have reacted to the market demands of the EU by increasing the use of crossbreds, both as the mothers of the final lamb product and the lambs themselves.

Even with the reduction of the EU effect, crossbred use has continued to rise, but this has been possible by using 'new' types of crossbreds rather than reverting to the tradition mule and halfbred types. These new crossbreds are both combinations of current breeds and composites marketed with particular characteristics. So although ewe numbers remained similar between the current and previous survey in 2012, the composition of those numbers is very different in 2020.

Historically, the British sheep breeding sector has been thought of as a stratified crossbreeding structure with some purebreeding and a small amount of crossing in the lowlands. In fact, it is now possible to talk about the industry being divided into two crossbreeding structures: the stratified one being based on the classical hill/longwool/terminal sire model and the 'new' structure being based on lowland breeds mated to terminal sire rams (specifically Texels) and further crossing from there. The main difference between the two structures is the large number of 'other' crossbreds found in the lowland sector. Crossbreeding, which allows producers to exploit both hybrid vigour and complementarity, is still dominant but now in two very different groups.

Purebreeding has become focused on three very different sets of breeds. The hill breeds remain a large purebreeding group for geographical, biological and economic reasons. The terminal sire breeds remain important because of their role in lamb production. The third group are lowland ewe breeds, which are now increasing in importance as economical dams of finished lambs, often combining the important characteristics of prolificacy with relatively small mature size, a characteristic which makes them more economical to maintain throughout the year than the larger traditional crossbreds or indeed crossbred ewes that contain terminal sire genetics.

Interestingly, despite the failure of composites to capture the market in the past, new composites continue to appear all the time, creating new maternal and terminal sire breeding lines. Time will tell whether the new composites rise from the ashes of their predecessors and then emulate them by crashing and burning or whether they start a new trend in the British sheep industry and take off in a very un-phoenix-like manner.

This survey has tried to assess the impact of new technologies introduced over the last 50 years on sheep breeding in Britain. These included concentrate feeding of ewes, condition scoring, pregnancy scanning, breeding value use, sward-height measurements and the use of electronic tagging. Unsurprisingly, the use of these methods varied with both size and type of flock. However, it is worth noting the varying and widespread use of these techniques, none of which were available in 1971 when the first Sheep Breed Survey was carried out. It would be interesting to assess the impact of technology transfer represented by these developments on the British sheep industry.

Whatever the future brings, British sheep breeders will surely innovate in their use of the breeds and crosses available to them. Perhaps the vital question is whether the infrastructure to develop and spread new technologies to underpin the industry will remain, or even grow, in the coming years.

Dr Geoff Pollott
Honorary Lecturer in Genetics
Royal Veterinary College

Details of sheep breeding stock – mating Autumn 2020

CONFIDENTIAL

County

Postcode (important)

	Ewes put to ram				Rams used to mate ewes			
Age class	Name of breed or cross	Number of ewes	Of which, how many homebred	Number of ewes on LFA land	Date rams in	Date rams out	Name of breed or cross	Number of rams
Ewe lambs								
Shearlings								
Mature ewes								

Summary of rams used				
Name of breed or cross	Total number of rams	Of which, how many:		
		Home-bred	AI rams	Have EBVs

Ewe lambs on the farm but NOT mated		
Name of breed or cross	Total number	Of which homebred

Total females put to the ram in 2019		Number of lambs sold from 2020 lamb crop by month of sale (Do NOT include purchased store lambs)											Lambs on hand at the end of December
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	Finished												
	Store												

	Sheep sold for breeding in 2020					
	2020 born		2019 born		Older (include draft ewes)	
	Breed	No.	Breed	No.	Breed	No.
Rams						
Ewes						

Telephone number (optional)

Email address (optional)

We would only use these to verify the form details if required

Do you register lambs with a Breed Society? Yes No

Which breeds do you register?

I do sell rams – but I don't register them with a breed society

Additional questions

(please circle the most appropriate options)

1 **What are you planning to do with your breeding ewe numbers next year?**
Increase / Maintain / Decrease

2 **Are you likely to change your lambing period in the next 3 years?**
Yes - Move earlier / Yes - move later / No - stay the same / Don't know

3 **When do you body condition score ewes?**
Never / At tupping / At scanning / At lambing / At weaning

4 **When do you weigh lambs?**
Never / At 8 weeks / At weaning / Selection tool for selling / When retaining ewe lambs

5 **Do you use electronic identification (EID) as a management tool?**
Yes – fully automated management system in place / Yes – handheld reader used for full management /
Yes – handheld reader used for some management / EID not used beyond legal requirement

6 **Do you intentionally use estimated breeding values (EBVs) for selecting breeding stock?**
Always / Sometimes / Never (explain why in comments below)

7 **What is the main way that you purchase breeding rams?**
Directly from breeders / From auctions (list main venues in comments below) / Both

8 **Do you measure and record sward heights in your grazing land?**
Always / Sometimes / Never

9 **What is your main forage crop for feeding to ewes in late pregnancy (3 – 6 weeks from lambing)?**
Grass / Rootcrops/ Hay / Straw / Grass silage / Red clover silage / Maize silage / Lucerne /
Herbal ley / Other (explain in comments below)

10 **Do you feed concentrates to ewes in late pregnancy (3 – 6 weeks from lambing)?**
Yes – bought in / Yes – home-mixed / Yes – bucket or block / No

11 **What is your main forage for feeding to ewes in early lactation (up to 4 weeks post lambing)?**
Grass / Rootcrops / Hay / Straw / Grass silage / Red clover silage / Maize silage / Lucerne /
Herbal ley / Other (explain in comments below)

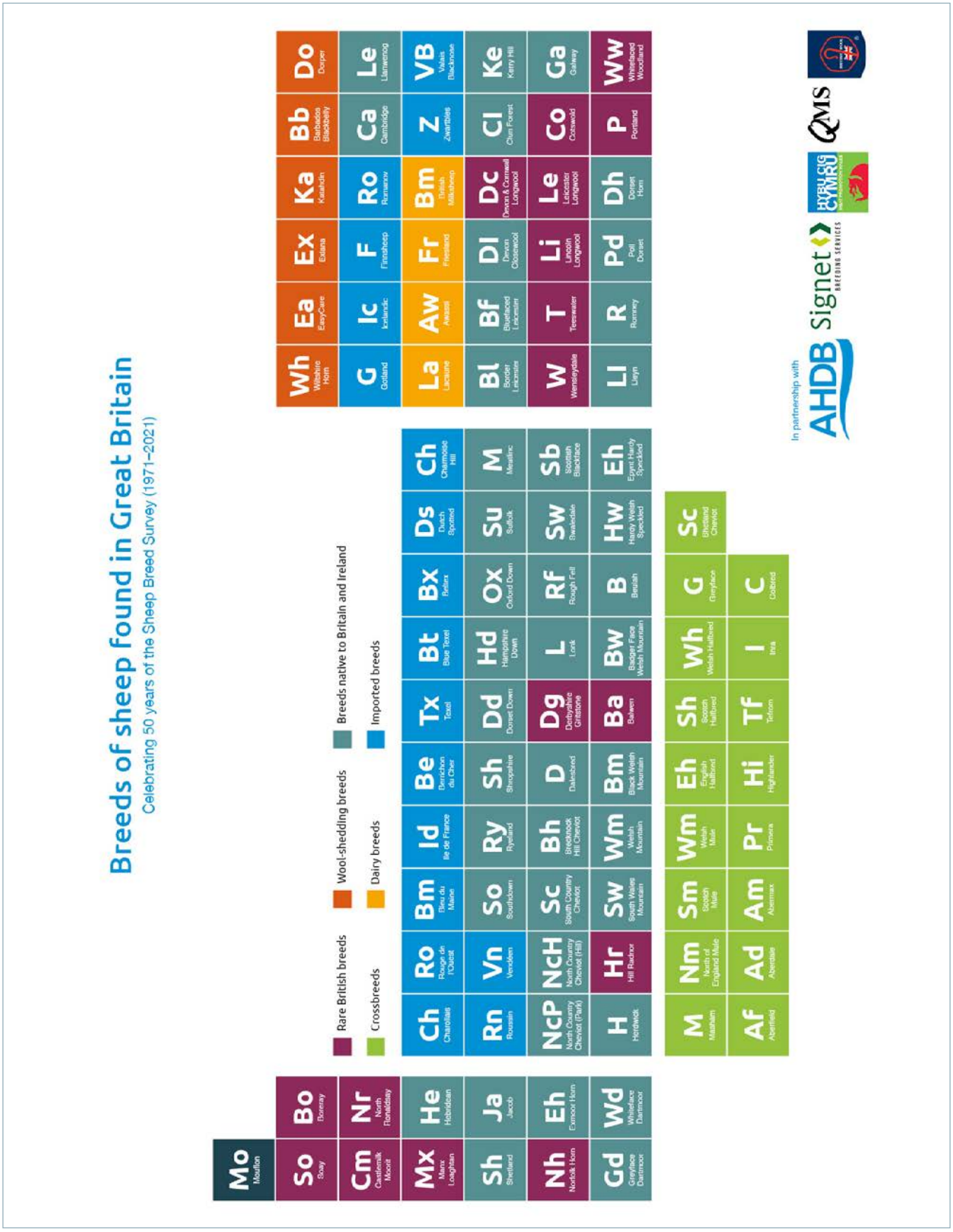
12 **Do you feed concentrates to ewes in early lactation (up to 4 weeks post lambing)?**
Yes – bought in / Yes – home-mixed / Yes – bucket or block / No

Any comments/queries

Thank you for taking the time to complete this form.
Please return by January 11 2021.

APPENDIX 2 – PROMOTION

The periodic table design 'Breeds of sheep found in Great Britain' was used to promote the Sheep Breed Survey in 2020 and showcase the array of different breeds we have in GB.



AUTHORS

Samuel Boon
Animal Breeding Senior Manager
AHDB (Signet)
samuel.boon@ahdb.org.uk

Dr. Geoff Pollot
Honorary Lecturer in Genetics
Royal Veterinary College

Co-funded by:

Photography acknowledgements:

All images are copyright AHDB, except for the following which are copyright to: Page 25 © Irwel Jones; Page 32 © Gill Trace. The following images are copyright to Dreamstime.com: Page 5 © Adeliepenguin, ID 54092580; Page 11 and 40 © Stargate3000, ID 75263552 and 116471553; Page 14 © Jomann, ID 3856490; Page 43 © Tatianabelyakova, ID 19986932; Page 44 © Androniques, ID 21899361.

Produced for you by:

AHDB
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2TL

T 024 7669 2051
E comms@ahdb.org.uk
W ahdb.org.uk

If you no longer wish to receive this information, please email us on **comms@ahdb.org.uk**

AHDB is a statutory levy board, funded by farmers, growers and others in the supply chain. Our purpose is to inspire our farmers, growers and industry to succeed in a rapidly changing world. We equip the industry with easy to use, practical know-how which they can apply straight away to make better decisions and improve their performance. Established in 2008 and classified as a Non-Departmental Public Body, it supports the following industries: meat and livestock (cattle, sheep and pigs) in England; horticulture, milk and potatoes in Great Britain; and cereals and oilseeds in the UK. AHDB's remit covers 72 per cent of total UK agricultural output. Further information on AHDB can be found at **ahdb.org.uk**

60027 0829