Second Report

GB Cattle Health & Welfare Group

July 2014

www.chawg.org.uk

CHAWG
Cattle Health and
Welfare Group

The work of the GB Cattle Health and Welfare Group would not be possible without the valued financial support of both DairyCo and EBLEX, which kindly fund the secretariat function for this cross-industry group.

The members of CHAWG are:

Agriculture & Horticulture Development Board (AHDB)

Animal Health & Veterinary Laboratories Agency (AHVLA)

Animal Health & Welfare Board for England (AHWBE)

Animal Health Distributors Association (AHDA)

British Cattle Veterinary Association (BCVA)

Department for Environment, Food and Rural Affairs (Defra)

Farmers Union of Wales (FUW)

Holstein UK/Centre for Dairy Information (HUK/CDI)

Livestock Auctioneers Association (LAA)

National Beef Association (NBA)

NFU of England and Wales (NFU)

NFU Scotland (NFUS)

National Office of Animal Health (NOAH)

Red Tractor Assurance (RTA)

Royal Society for the Prevention of Cruelty to Animals (RSPCA)

Royal Association of British Dairy Farmers (RABDF)

Royal Veterinary College

Scottish Government

Welsh Government

Foreword

Nigel Gibbens, Chief Veterinary Officer, UK

I am very pleased to be able to welcome the latest CHAWG annual report and that I am joined in doing so by my fellow CVOs for Scotland and Wales. This is a good indication that CHAWG is working across Great Britain, reflecting the interests of all our cattle keepers and the reality that disease does not respect administrative boundaries.

Dairy and beef producers are becoming increasingly professional business operators, pursuing good health and welfare in support of sustainable economic returns and hopefully even a profit! They are supported by veterinarians working in a range of models from traditional single centre practices to large multicentre owned or franchised businesses. Cattle specialist expertise will be increasingly important and crucial to the success of both veterinarians and their clients. Overall these changes are good, but there will be casualties as less professional businesses, both farming and veterinary, fail to thrive. This should not happen by chance and it is crucial that we enable people to pursue best practice based on an understanding of the challenges and the priority disease or husbandry issues to be addressed.

Although much can be done at the individual farm level, some disease problems can only be tackled by co-operation at the regional or national level. Similarly, the welfare reputation of dairy and beef producers will reflect the overall performance of the sectors and can be damaged by only a few individuals who do not care for their stock. CHAWG is looking to address all these issues and it is great to see the facts on the health and welfare of the cattle sector marshalled in an accessible way, along with insightful analysis and evidence of action being taken in key areas, such as welfare of the dairy cow or BVD and Johne's control.

The final section of the report deals with antimicrobial resistance (AMR). It is pointless to debate the relative importance of animal and human use of antimicrobials in driving resistance in human pathogens; we need to conserve antimicrobials for the future for use in animals as well as humans. We cannot support husbandry practices that rely on routine antibiotic use, and when antimicrobials are needed for treatment they must be used effectively. If we don't act, the initiative will be taken out of our hands, so I am pleased that CHAWG is fully engaged with the Responsible Use of Medicines Alliance (RUMA) on the five year strategy on AMR.

My congratulations to the CHAWG on this report and on the progress that is being made on behalf of the cattle sector across GB. I wish you every success for the coming year.

Christianne Glossop, Chief Veterinary Officer, Wales

Wales in in the process of developing a new Animal Health and Welfare Framework – as a successor to the 2004 GB strategy. Progress will be monitored in accordance with Risk Based Accountability principles, and strategic direction will be provided by our newly-appointed Animal Health and Welfare Group. Key to success will be effective collaboration between the industry, veterinary profession and all with a passion for driving improved, sustainable health and welfare standards, optimising production efficiency and increasing resilience. To operate effectively within the new framework, we will require a sound evidence base, drawing data from a wide range of reliable sources.

CHAWG is uniquely placed to provide insight into the challenges facing our cattle industry, with representation from all relevant specialist groups and organisations. I can assure you that this 2014 report will be put to good use in Wales, helping us prioritise activities and evaluate the cost benefit of interventions.

Sheila Voas, Chief Veterinary Officer, Scotland

As CVO Scotland I am privileged to work in partnership with our stakeholders to help maintain and enhance the reputation of our cattle sector for high quality, welfare-friendly produce. This reputation has been forged through strong collaborative working between industry, the veterinary profession and government in Scotland to achieve the best possible management of animal disease and animal welfare risks. This task has been assisted by continuing efforts to maintain strong working relationships across GB and the UK.

The 2004 GB Animal and Welfare Strategy helped to raise animal health and welfare standards in Scotland, and as a result there have been some key successes such as initiatives to tackle BVD and our official bovine Tb free status. A new strategy for Scotland is being prepared in consultation with stakeholders. The strategy will build on the progress that has been made by identifying steps that can be taken by government and industry to enhance animal health, tackle endemic diseases and improve welfare as well as to prepare to meet emerging threats. In implementing the new strategy we will make the best use of opportunities presented by new technology to ensure the sustainability of our cattle sector, we will look to maximise the usefulness of data to ensure our decisions are evidence based and risk weighted.

CHAWG can help us achieve our objectives by using the collective knowledge of a wide range of organisations to focus and prioritise our efforts on the most important cattle health and welfare problems. This broader outlook will remain as an essential driver of our work due to the continuing importance of livestock trade across Britain. This is why I am pleased to welcome this report, which seeks to encourage continuing improvements to cattle health and welfare.

Contents

1 Introduction

Welcome to the second report on the state of cattle health and welfare in Great Britain. This report chronicles activity since our initial report was published in September 2012.

I was delighted by the very positive response to our first report and it is pleasing to see continuing progress on a whole range of cattle-related issues. Although we again include more data on dairy matters in general, the amount of beef cattle data has increased.

The Cattle Health and Welfare Group (CHAWG) originally started as an England-only activity but it quickly became apparent that disease and indeed welfare issues do not recognise Offa's Dyke or Hadrian's Wall, and thus the Group has become a GB activity which in itself is logical, viewing England, Scotland and Wales as one biosecure unit. This makes eminent technical sense; it does mean that our ongoing and productive relationship with the Animal Health & Welfare Board for England (AHWBE) and our links with the Scottish and Welsh Governments are slightly more complicated, but the rewards are far greater than the trouble. Indeed AHWBE now uses all the various species-specific livestock groups such as CHAWG to gauge industry opinion and canvass views. This allows us direct input into on-going discussions such as the next round of the Rural Development Plan.

Obviously, one of the key priorities is the eradication of bovine tuberculosis (bTB) and it has been pleasing to note the significant new initiatives dealing with this disease in England and Wales. Scotland is of course officially bTB free. It therefore may seem strange why this report – and indeed the priorities of CHAWG – ignore bTB. This is quite deliberate as we recognise there are already a number of bTB groups/activities in place. The members of CHAWG believe we should concentrate our fairly limited resources on other priorities where we can make a difference, rather than duplicate what is already established.

CHAWG is essentially a facilitation group and therefore we were delighted to take on the responsibility for the now-finished RSPCA/Compassion in World Farming 'Beyond Calf Exports Forum', which was established with the whole meat supply chain to develop new market opportunities for dairy bull calves which would otherwise have been destroyed on-farm or exported for finishing. This Forum was a really good example of the cattle industry coming together with retailers, NGOs and others to find a long lasting solution to a very unsatisfactory situation.

I am extremely grateful to all members of CHAWG. Our quarterly meetings are very well-attended and lively, productive sessions, and everyone has been happy to make written contributions to this report. Many thanks to you all. However I would like to especially thank Gareth Hateley, head of the Cattle Expert Group in AHVLA, and Brian Lindsay, who provides the much-needed administration/ secretarial assistance to ensure our activities are properly coordinated and action-orientated, for their assistance 'beyond the call of duty'. The actual editorial duties in producing this report and indeed its 2012 precursor have been undertaken by Amy Jackson who has managed to turn a whole series of unconnected documents into a cohesive and very readable report. For this we owe her a huge debt of gratitude. Finally CHAWG could not exist without the on-going financial support from DairyCo and EBLEX. We are extremely grateful for their continuing support.

Tim Brigstocke
Chairman, CHAWG

2 About CHAWG

The GB Cattle Health and Welfare Group (CHAWG) was established with funding from the relevant levy boards (EBLEX and DairyCo) in 2009. Its members are (alphabetically):

Agriculture & Horticulture Development Board (AHDB)

Animal Health & Veterinary Laboratories Agency (AHVLA)

Animal Health & Welfare Board for England (AHWBE)

Animal Health Distributors Association (AHDA)

British Cattle Veterinary Association (BCVA)

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CHAWG's remit is to:

1. Provide an industry forum that will encourage and coordinate a programme of economically-focused improvements to cattle health and welfare across Britain.
2. Act as a forum to prioritise the research, development and knowledge interaction needs of the GB cattle industry in relation to cattle health and welfare, to ensure knowledge gap-identification, coordination and minimal duplication. Also, to assist in the dissemination of knowledge across the industry through the participating organisations within the group and others where appropriate.
3. Liaise closely with all stakeholders such as levy boards and educational institutions to promote consistent regional dissemination of national work and encourage the uptake of technological advances and best practice.
4. Provide guidance and be a resource for the Chief Veterinary Officers across GB and other relevant government bodies on cattle health and welfare matters, including the early stages of policy development and other areas, where appropriate.

CHAWG, with its limited resources, has focused its work programme on aspects not currently being tackled by other bodies or initiatives, but with the potential to impact heavily on the cattle industry, namely: Farm Health Planning (FHP); Surveillance and Monitoring; Bovine Viral Diarrhoea (BVD); and Dairy Cow Welfare – CHAWG is responsible for the GB Dairy Cow Welfare Strategy[1]. It has recently also taken on the legacy of the Beyond Calf Exports Forum[2], set up jointly by the cattle industry, RSPCA and Compassion in World Farming. CHAWG published its first report in 2012[3].

3 The Top Issues

The relevant industry bodies within both dairy and beef sectors listed their top ten cattle health and welfare issues in the 2012 report. The majority are mutual between the beef and dairy sectors, but a couple are specific. It should never be forgotten that many of these issues are also multi-factorial and have breeding, feeding and on-farm management components. Here, the issues are listed again in alphabetical order alongside an indication of economic impact, where available.

Table 1: Top Cattle Health and Welfare Concerns across GB

Dairy and Beef concerns (alphabetical order)	Estimated cost
Bovine Tuberculosis (bTB)	£14,000 to farmers & £20,000 to taxpayers per bTB breakdown (Defra)
Bovine Viral Diarrhoea (BVD)	£39.6m (University of Reading)
Calf Pneumonia & Scour	More than £80m annually between treatment, lower growth rates and mortality (Barrett 2000)
Fertility	-
Genetics	-
Johne's Disease	£13 million (SAC)
Mastitis	£225 per mild case including lost milk yield (DairyCo)
Nutrition	-
Parasites	Liver fluke: £11 million (ADAS/EBLEX)
Sector-specific concerns	
Infectious Bovine Rhinotracheitis (IBR - mainly beef)	£36.6 million (ADAS/EBLEX)
Lameness (mainly dairy)	£379.97 per average case (DairyCo)

4 Data availability and quality

While plenty of data are collected by the industry for different purposes, there would be major benefits if a more functional and better-integrated system of information capture and flow existed. This was identified as a key conclusion in the first CHAWG Cattle Health and Welfare report in 2012.

Recently, AHDB called together a relevant group from the UK livestock industry (see list below) to set out a statement of intent regarding the collation of data under the UK Government's Agri-Tech initiative[4].

It is recognised that combining modern systems of data capture, advances in computing power and technical developments in genetics, diagnostics and engineering creates the potential to build more powerful datasets which can be used to benefit the livestock industry. The primary customer is the livestock farmer, providing additional insight and capacity to increase efficiency and to improve animal health and business performance. Others in the supply chain will also benefit from combining data, creating more efficient processes or delivering better service provision to clients.

Government has a key facilitating role, but the emphasis remains squarely with delivering on industry needs. The industry has therefore endorsed the establishment of a working group to scope how relevant data could be extracted from existing systems and new combinations of data created.

List of participants

AHDB (DairyCo, BPEX & EBLEX)

AIMS (Association of Independent Meat Suppliers)

BCVA

BMPA (British Meat Processors Association)

BVA

CHAWG

FUW

LAA

NBA

NFU/NFU Cymru

NFUS

NPA

NSA

RABDF

Red Tractor Assurance

SHAWG

The Glossary at the end of this document contains the full names of these organisations.

5 Trends and demographics

Cattle numbers

The annual survey of cattle numbers shows a slight underlying decline in number of cattle premises or holdings, but a small increase in the overall number of dairy animals, coming from a rise in numbers in Scotland and Wales specifically.

Table 2: Cattle numbers and premises in Britain by purpose – dairy and beef ('000)
'Premises' = farm/ holding

	June 2003		June 2012		June 2013	
Beef '000	**Cattle**	**Premises**	**Cattle**	**Premises**	**Cattle**	**Premises**
England	3,121	52	2,852	43	2,840	43
Scotland	1,549	13	1,396	12	1,353	11
Wales	772	14	650	11	630	11
	5,442	**79**	**4,898**	**66**	**4,823**	**65**

	June 2003		June 2012		June 2013	
Dairy '000	**Cattle**	**Premises**	**Cattle**	**Premises**	**Cattle**	**Premises**
England	2,631	28	2,330	21	2,330	20
Scotland	411	4	374	3	377	3
Wales	459	6	457	4	461	4
	3,501	**38**	**3,161**	**28**	**3,168**	**27**

Source: Defra/CTS

As far as the national breeding herds (ie, calved animals over the age of two) are concerned, there are 1.8 million dairy cows in the UK, with 1.1 million (62%) of these in England[5]; there are approximately 2 million suckler cows in the UK and 960,000 of these are in England (46%)[6].

Milk production

Average size of dairy herd continues to rise across the UK (GB figures not available), but in 2012 the severe weather significantly impacted what had been a steadily rising average milk yield on dairy farms. Total milk production also fell and the UK finished the 2012/13 quota year almost 14% under quota at just over 13 billion litres. It is clear that rising herd sizes and milk yields have not kept pace with the steady decline in producer and cow numbers.

Table 3: Average dairy herd size, yield and total milk production in the UK

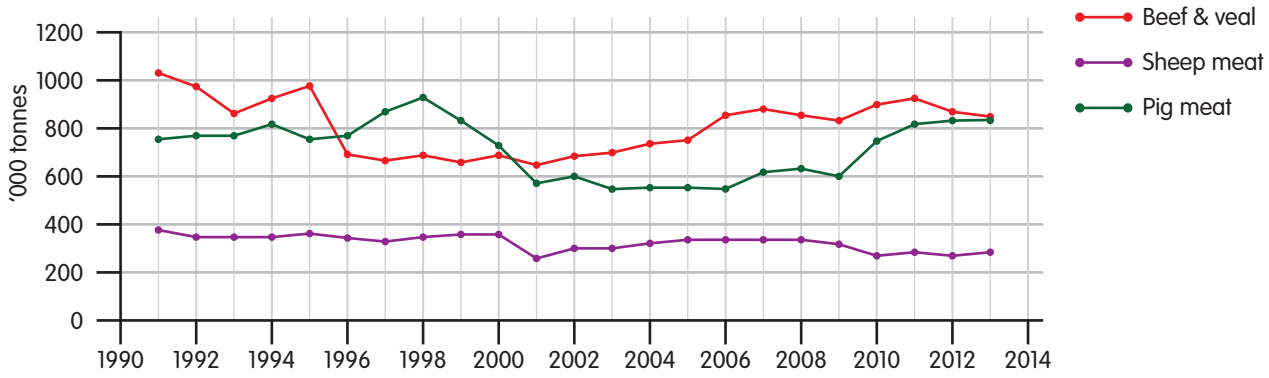
	Average size of dairy herds in UK (cows)		Average Yield in UK (litres/cow/annum)	Total milk production from UK national dairy herd (billion litres/annum)
2002	89	2002-03	6,450	14.34
2011	123	2011-12	7,604	13.75
2012	125	2012-13	7,327	13.36

Source: Defra

Beef production

Production of beef remained strong against the other red meat sectors, but fell for the second year in succession in 2013 against a rise last year in both mutton/lamb and pig meat. Please note that cattle are transported to slaughter and may not be from the region in which they are slaughtered.

Figure 1: Trends in red meat production, UK, 1991-2013



Source: Defra

Table 4: Cattle slaughterings, UK, 2000-2013 ('000 head)

	Prime Cattle	Cows and bulls	Calves	Total cattle
2000	2,275	1	152	2,428
2008	2,028	599	44	2,632
2009	1,981	489	43	2,513
2010	2,096	553	61	2,710
2011	2,114	643	81	2,838
2012	1,965	642	74	2,681
2013	1,927	607	91	2,625

Source: Defra

Table 5: Cattle slaughtering by region, Great Britain, 2000-2013 ('000 head)

	GB	England	Wales	Scotland
2000	2,019	1,473	39	507
2008	2,201	1,559	138	504
2009	2,059	1,420	141	498
2010	2,242	1,582	146	514
2011	2,397	1,715	158	524
2012	2,240	1,605	155	480
2013	2,180	1,558	148	474

Source: Defra

Cattle imports

Imports of cattle to Britain are growing. The Netherlands remains the biggest exporter of live cattle to GB, but numbers from the Republic of Ireland and Germany have increased significantly, doubling between 2011 and 2012 and maintaining those elevated levels through 2013.

Table 6: Imported Cattle 2013 – numbers of animals
Cmts = consignments or numbers of lots in which cattle are imported

	England				Wales		Scotland				
	Breeding / Production		Slaughter		Breeding / Production		Breeding / Production		Slaughter		Total Animals
Country	Cmts	Animals	Cmts	Animals	Cmts	Animals	Cmts	Animals	Cmts	Animals	
Austria	9	9									
Belgium	10	146			31	334					
Denmark	96	2,119			10	267	22	640			
France	111	1,796			24	101	17	49			
Germany	194	4,896	1	32	29	638	19	347			
N Ireland	293	4,302	88	3,088	26	285	354	5,881	401	11,280	
Rep Ireland	332	6,880	1	32	151	2,508	111	1,548	2	86	
Isle of Man	37	1,293	16	386	3	30	2	79			
Italy	4	30									
Jersey	2	17									
Netherlands	361	6,439			95	1,700	71	1,521			
Poland	1	2									
Hungary	4	70					1	20			
Spain	1	2									
Switzerland	1	7									
Total 2013	**1,456**	**28,008**	**106**	**3,538**	**369**	**5,863**	**597**	**10,085**	**403**	**11,366**	**58,860**
Total 2012		**28,224**		**0**		**4,737**		**7,109**		**7,116**	**47,186**
Total 2011		**16,694**		**347**		**2,997**		**1,260**		**837**	**22,135**
Total 2010											**31,338**
Total 2009											**28,953**

Source: AHVLA

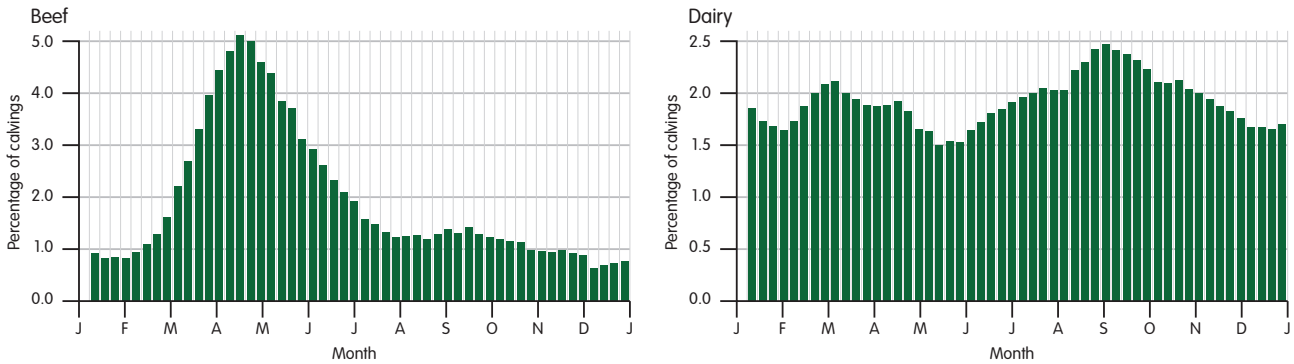
2013 saw 58,860 cattle imported into Britain, three-quarters of which were breeding stock. It is expected that with bTB continuing to place pressure on the availability of replacement breeding stock, imports of dairy heifers, particularly from the Netherlands, Germany, the Republic of Ireland and Denmark, will continue at an elevated level. This is unless the removal of milk quotas in 2015 results in less availability of breeding stock from these countries, which are actively pursuing their own dairy expansion agendas.

Calving patterns

A paper published in 2013 based on 2007 British Cattle Movement Service (BCMS) statistics[8] indicated that there is potentially a rich stream of data available through this source.

It shows suckler beef production was highly seasonal with more than 50% of calvings occurring in the three-month period between March and May. Dairy calvings were more uniformly distributed across the year – undoubtedly driven by seasonal variations in milk price to ensure a consistent year-round supply to meet British market needs, although small peaks were observed in early spring and autumn.

Figure 2: Seasonal distribution of (a) beef and (b) dairy calvings in Great Britain
Please note the scales vary



Source: Gates, MC

> "It is expected that with bTB continuing to place pressure on the availability of replacement breeding stock, imports of dairy heifers will continue at an elevated level."

6. Surveillance and monitoring

Surveillance bodies in Great Britain

The Animal Health and Veterinary Laboratories Agency (AHVLA) is an executive agency working on behalf of Defra, Scottish Government and Welsh Government. The agency was formed following the merger of Animal Health (AH) and the Veterinary Laboratories Agency (VLA).

Its role is to safeguard animal health and welfare as well as public health, protect the economy and enhance food security through research, surveillance and inspection.

It is also responsible for advising policy-making departments and providing the veterinary evidence base for animal health and welfare policy decisions.

AHVLA's range of functions include: research and consultancy; the surveillance and management of disease controls including import and export controls; and protecting the nation's food supply. It also has global responsibilities, notably acting as the national, European and international reference laboratory for several exotic and zoonotic notifiable diseases, and protecting Convention on International Trade in Endangered Species-listed endangered fauna through its wildlife registration and licensing role.

AHVLA works primarily to prevent and control animal disease across Great Britain through activities on farms, at markets and other livestock-related premises, and through specialist veterinary laboratory and scientific services. In Scotland, the specialist veterinary laboratory and scientific service functions are undertaken by SAC Consulting Veterinary Services, part of Scotland's Rural College (SRUC). These functions are addressed using the same diagnostic criteria and quality standards.

Changes to scanning surveillance in England and Wales

Over the past few years there have been several reviews of the veterinary scanning surveillance system in England and Wales and, while acknowledging the successes, each review has recommended changes to improve the surveillance system.

The findings of the independent Surveillance Advisory Group (March 2012) identified further ways in which the delivery of scanning surveillance in England and Wales could be improved to provide greater coverage both geographically and across livestock sectors:

1. Establish a tiered surveillance network that improves the access to post-mortem facilities.

2. Establish species-based centres of expertise providing in depth pathology and disease investigation and a focus for surveillance information management.

3. Development of expertise within AHVLA veterinary staff in gross pathology, disease investigation and subject-specific experts.

4. To increase the diagnostic service submission rates. This recommendation had two aims – to ensure maintenance of expertise in AHVLA veterinary staff and to maximise the amount of surveillance information gathered.

5. To establish a cost effective collection service where necessary to enable access to diagnostic service or achieve minimum case load.

6. To develop processes by which universities, practitioners and others can contribute and benefit from the surveillance network.

7. Further development of the Species Expert Groups.

8. Availability of post-mortem training for practitioners.

9. Collection of a wider set of data and integration of these data with the existing sources to enable alerts of new and re-emerging threats.

10. Establishment of effective internal governance including stakeholders.

From December 2012 to February 2013, AHVLA undertook a public consultation process. The consultation document[9] described a new emphasis of approach, incorporating greater engagement with a wider range of information sources and the systematic collation of data from private veterinary practitioners and others, in order to ensure that threats are identified and understood. It also considered the required infrastructure and proposed various scenarios that could make the system both more effective and affordable.

Following this, AHVLA refined the options and made recommendations to Defra and Welsh ministers. Ministerial approval was granted and the new model was announced on 4 December 2013[10]. Key elements of the restructured model are:

- A geographically-distributed network of government vets to conduct on-farm investigation into new and re-emerging and statutorily-controlled diseases, and engage with the range of potential intelligence providers.

- Training and supporting private veterinary practitioners and the fallen stock industry to jointly provide expertise and facilities to enable a large increase in the number of diagnostic post-mortem examinations (PMEs) carried out to investigate farm animal disease incidents.

- Further development of the AHVLA Species Expert Groups to act as virtual species based centres of expertise and a focus for scanning surveillance intelligence gathering and analysis in their species and in the dissemination of findings.

- Retaining a smaller, but still geographically well distributed, network of AHVLA PME facilities and expert pathologists. These facilities have been chosen due to their proximity to the main centres of populations of farmed animal species and these locations will, along with the species expert groups, act as centres of expertise for these species.

- Providing a carcase transport service to ensure that while the private provision of a gross pathology service develops AHVLA is able to maintain surveillance coverage.

- Including other providers of high quality PME facilities and expert pathologists within the surveillance system.

- A new Surveillance Intelligence Unit:

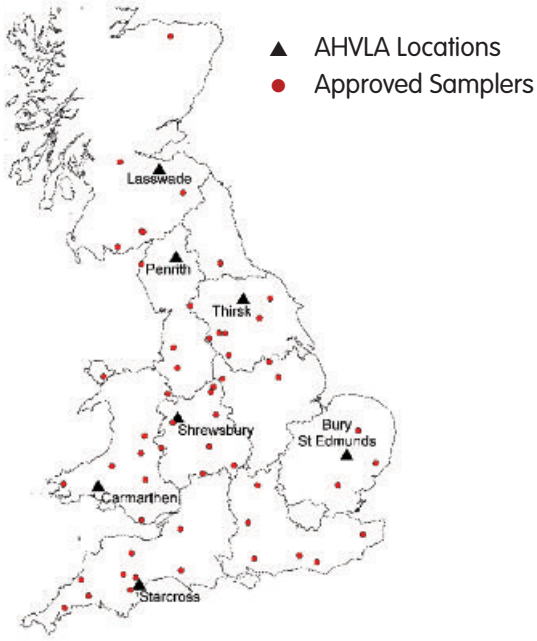
  - To engage with alternative data sources to improve coverage including, initially, data from private laboratories, active intelligence gathering from private vets, establishing collaborative surveillance networks, monitoring changes in animal keeping that could be precursors for disease or welfare risks and networking with industry bodies.

  - To support data capture, exploration, collation, analysis, reporting and use of surveillance findings to trigger risk mitigation measures or further research.

  - Supported by ready access to relevant population and risk factor data.

Figure 3: Locations of AHVLA PME facilities to remain open and location of fallen stock sites approved for Transmissible Spongiform Encephalopathies (TSE) sampling

Please note Lasswade provides specialist support skills and facilities for poultry surveillance



- Maintaining and improving expertise within AHVLA in pathology, disease investigation, species, systems, and epidemiology. Also greater working with others in industry and academia to ensure the best expertise is used in gathering and analysing intelligence.

- Development of a purposeful partnership with non-government organisations.

- An efficient diagnostic testing service.

- A new governance system for scanning surveillance that includes Defra and the Welsh Government, the veterinary practitioner community and representatives from other industry stakeholder organisations to ensure that scanning surveillance is fit-for-purpose, cost-effective, and informs risk management in the future.

Further details about these changes can be found on the Defra website[11].

Veterinary surveillance in Scotland

Following the publication in 2011 of the Kinnaird review on Veterinary Surveillance in Scotland, the Cabinet Secretary quickly acted on one of its key recommendations and established a Strategic Management Board (SMB) to oversee the future of veterinary surveillance in Scotland and any reform of it.

The SMB is a small, focused group, with the membership being the responsibility of Scottish Ministers. It is chaired by the Chief Veterinary Officer (Scotland) and includes Scottish Government representatives, an independent veterinary surgeon and livestock industry and public health representation appointed for their acknowledged expertise in their field.

The main task of this board is to set and implement the strategy for veterinary surveillance in Scotland, fostering improvements in active and passive surveillance by agreeing and setting surveillance goals.

The SMB has reviewed the current landscape of veterinary surveillance in Scotland, building on the Kinnaird report, and has made its initial principal recommendations to the Cabinet Secretary, which have been accepted. The recommendations set out a strategic direction for veterinary surveillance in Scotland, focusing on the principle of a centralised diagnostic laboratory (CDL) and a rationalisation of the current disease surveillance centre (DSC) network. Current surveillance partners and relevant others are looking into possible options of how this will look in reality, with modelling being based on the following principles:

- A CDL must be able to demonstrate improvement in efficiency and cost savings with no deterioration to the current customer experience.
- Resilience and reserve (back up) capacity should be maintained across different sites.
- Ongoing DSCs must operate in the most efficient manner with a critical mass of veterinary expertise being present at each site.
- DSCs and the expertise contained within must be located in the areas of the greatest livestock production intensity and/or strategic risk.

In due course the SMB will review the various modelling options to ensure all decisions fit in with the overall strategy set by the SMB, where they will continue to set the direction of travel for veterinary surveillance in Scotland.

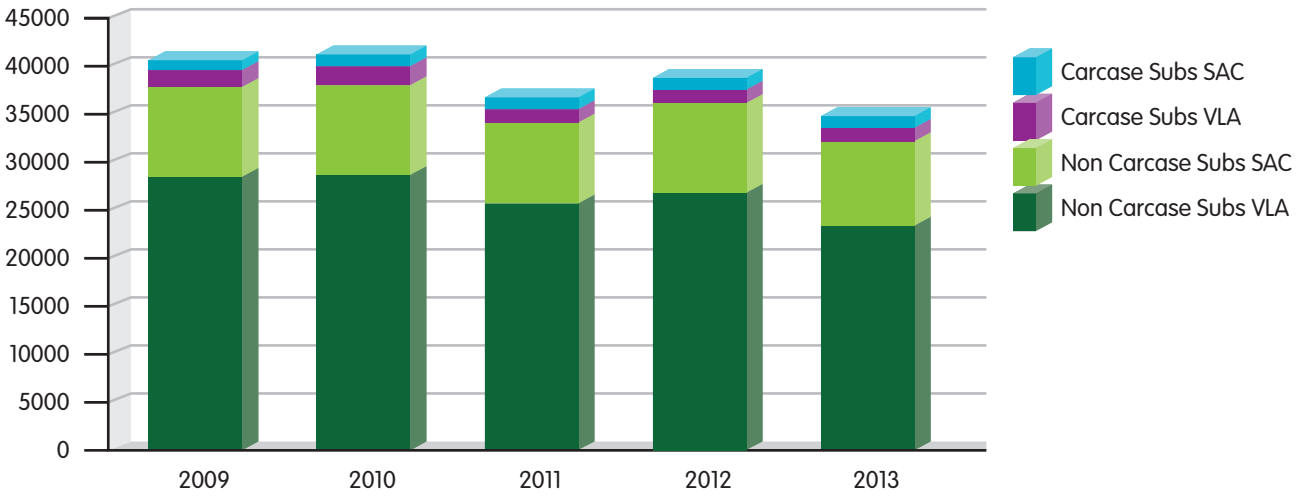
Scanning Surveillance summary for 2012-13

Surveillance indicates there have been a number of emerging health and disease threats to the industry over the past two years, some of which have been precipitated by adverse weather events.

The total number of cattle diagnostic submissions to AHVLA and SAC increased in 2012, but in 2013 showed a decrease of 10% overall, comprising a 13% decrease in AHVLA submissions and a 2% decrease in SAC submissions.

There are multiple factors that could influence the number of submissions to diagnostic laboratories, including the incidence and prevalence of disease conditions, their perceived importance, and economic factors. However, the differences in the changes of cattle submission numbers between AHVLA and SAC for 2013 raises the possibility that the evolving differences in how scanning surveillance is approached by the two delivery agents may be starting to have an impact already.

▼ **Figure 4: Cattle diagnostic submissions – yearly summaries 2009-2013**
VLA is now the AHVLA; Subs = submissions



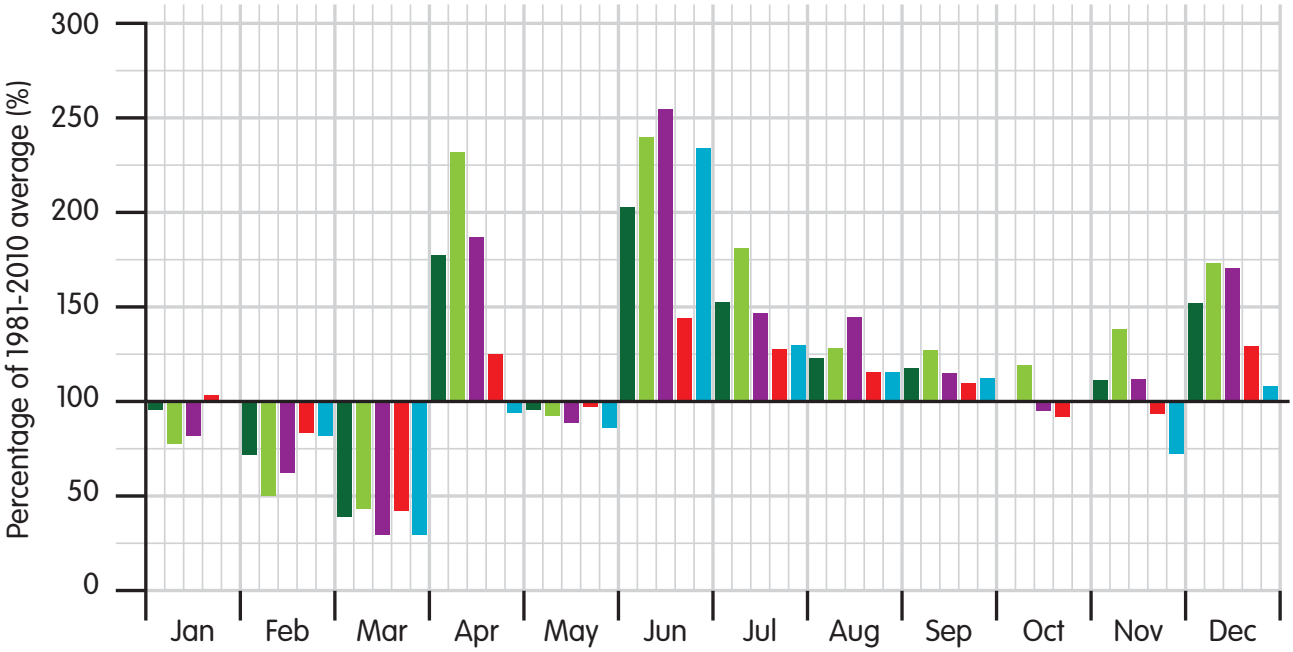
Source: AHVLA

Weather and associated risks

The rainfall in quarters three and four of 2012 was exceptional; further heavy rainfall in the last quarter of 2013 led to severe flooding in many areas, especially the south and west.

> “Surveillance indicates there have been a number of emerging health and disease threats to the industry over the past two years, some of which have been precipitated by adverse weather events.”

Figure 5: Rainfall anomalies for 2012 (table in mm)

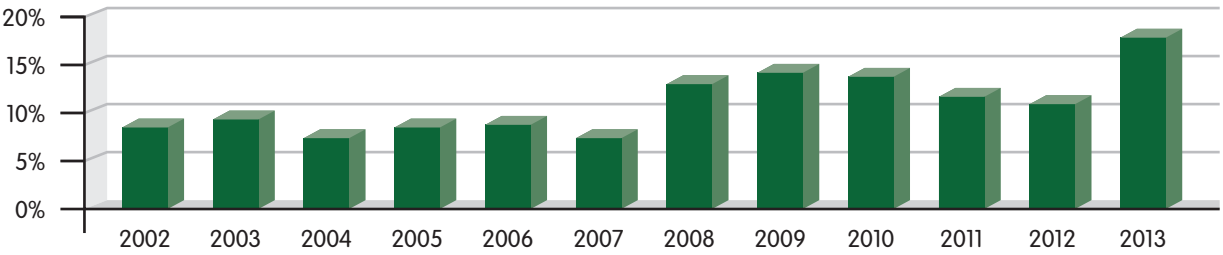


	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
UK	91	68	39	176	94	203	152	124	117	101	111	150
England	77	50	41	232	92	239	182	129	126	118	137	173
Wales	83	58	27	189	89	256	144	146	114	92	111	167
Scotland	103	82	41	125	98	142	127	116	109	88	93	130
N Ireland	99	80	27	93	86	235	129	116	113	99	70	111

Source: The Met Office

It was predicted that the unusually wet weather could have adverse consequences for cattle health, including the creation of conditions conducive to the life cycle of some cattle parasites. This was corroborated by an increase in bovine fasciolosis (liver fluke) diagnoses in 2013. Figure 6 shows the proportions of submissions tested for fasciolosis that were diagnosed with this disease.

Figure 6: GB incidents of fasciolosis in cattle as % of diagnosable conditions



Source: AHVLA

It is likely that the high rainfall during 2012 also resulted in increased dispersal of the snail intermediate hosts involved in the life cycle of the rumen fluke. Adult rumen flukes are generally well tolerated by cattle, but heavy infection with immature rumen flukes can result in severe clinical disease in young cattle. The AHVLA identified two incidents of a severe form of rumen fluke infection in young cattle in south west England in 2012. This is the first time this severe form has been diagnosed in cattle in GB.

Salmonellosis

There were 561 isolations of *Salmonella* in cattle reported in 2012 compared with 823 in 2011, a decrease of 31.8%. The reason for this is unclear as the reduction was across the majority of serovars isolated, with only S. Newport, a wildlife-related strain, showing a small but notable increase. Reports of cattle-related serovars S. Mbandaka and S. Montevideo increased in feed, indicating it was unlikely that reduced feed contamination was a factor in the overall reduction. The decreasing trend in isolations of S. Typhimurium continued, while S. Dublin remained the most common serovar isolated from cattle (66.3% of isolations) with S. Mbandaka (10% of isolations) the next most common. Further information is available in the AHVLA's 2012 *Salmonella* report[12]. Salmonellosis reports in 2013 were broadly similar in number (514) to 2012, and S. Dublin remained the most commonly isolated serovar.

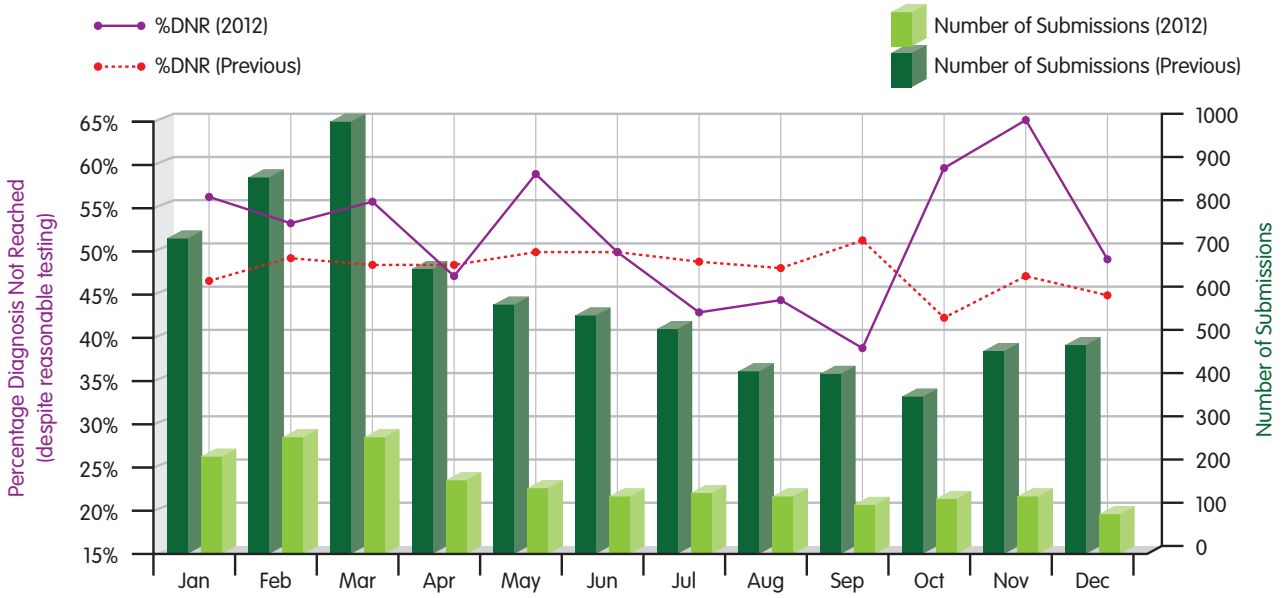
Antimicrobial resistance and antibiotic usage

Resistance to the third-generation cephalosporin antibiotic cefotaxime was observed in 15-17% of *E. coli* (including presumptive *E. coli*) isolates recovered from clinical samples from neonatal calves in 2009-2012; this is higher than the figure for isolates from neonatal lambs over the same period (2-7%). Although these *E. coli* isolates from calves may have little direct relation to those causing human infections, they form a reservoir of resistant genes and it is desirable that the level of resistance to cefotaxime remains as low as possible, both from public and animal health perspectives. Third-generation cephalosporins are important first-line treatment options for Gram-negative infections in humans.

Submissions where a diagnosis was not reached

Cattle submissions where no diagnosis is reached are analysed as part of the scanning surveillance process, as this may be the first indicator of the presence of a new disease. As shown in Figure 7, an increase in the number of cattle abortion submissions not resulting in a diagnosis, despite reasonable testing, was identified in quarter four of 2012. Potential reasons were investigated and a new or re-emerging disease threat was not suspected.

Figure 7: Undiagnosed abortion in GB cattle by month in 2012 and in previous years
Num Subs = number of submissions; DNR = Diagnosis Not Reached (despite reasonable testing); Prev = Previous years (pooled data for the equivalent period in the previous five years)



Source: AHVLA

The annual figures for 2013, not included in Figure 7, also showed a significant decrease in overall DNR rate from 25% to 20.1%. No new cattle-related threats were identified by DNR analysis during 2013.

Other issues

Surveillance activity associated with the investigation of abomasal or digestive disorders in calves raised the question of the legality of feeding milk to young calves once a day. Having sought clarification from the European Commission, Defra communicated its position to the industry that once a day feeding of calves is illegal. In practice, calves do not eat a sufficient amount of solid food in the first four weeks of life to constitute a feed. Therefore, where this is the case, calves should be fed twice a day with liquid food to satisfy their nutritional needs. The requirement for twice daily feeding remains until six months of age. The issue has stimulated debate within the industry about best practice of calf rearing in general and possible future benchmarking.

The findings of scanning surveillance are published by the AHVLA and SRUC[13].

7. Horizon scanning

Horizon scanning aims to identify potential threats, opportunities and likely future developments within the field of cattle health and welfare, including but not restricted to those at the margins of current thinking and planning

Table 7: Potential specific disease threats

Influence	Comment
Foot and Mouth Disease	The Middle East and North Africa and in particular Turkey remain a significant risk of being the source of a new disease incursion into Europe, particularly concerning given the level of political instability in Syria and other countries in the region, and the associated movements of people and livestock. Government has a responsibility to maintain border security, but equally the industry must uphold its responsibility for trading in a risk-aware way.
Bluetongue	Six serotypes (BTV-1, 2, 4, 8, 9, 16) were circulating in mainland Europe in 2013, with particularly high levels of BTV-1 & BTV-4 in the Southern Mediterranean. There is always the potential therefore for further incursion of this disease into Northern Europe, either from these known serotypes or from new emerging strains and there is a need to be mindful of this in terms of trade and surveillance for signs of disease[14].
Lumpy skin disease	This disease has emerged recently in the Middle East, including Turkey, and has had a significant impact on the dairy herds across the region. Political instability is hampering control efforts and therefore there is a risk of incursion into the EU Member States bordering this region.
BVD type 2c in mainland Europe	A new strain of BVD (2c) was identified in Germany and the Netherlands in 2012[15]. The strain was associated with disease characterised by haemorrhagic diarrhoea and high mortality, particularly in calves. The risk of spread of this disease to GB is thought to be low but farmers should always consider the disease risks and impacts of where they source cattle.
Bovine psoroptic mange	This disease has spread slowly since it was first identified in south-west Wales in 2007. It poses a significant risk to the health and welfare of affected cattle and to the economic performance of affected herds, particularly dairy herds due to long withdrawal periods of available treatments. A small number of new cases of psoroptic mange in dairy cattle have continued to be detected in the winter of 2013. The AHVLA has received anecdotal reports of disease re-emergence in two dairy herds in which disease had been previously diagnosed. There are other non-statutory diseases of cattle that could potentially be introduced to GB through imported animals, e.g. parafilariasis and besnoitiosis.

Table 8: Other potential threats

Influence	Comment
Climate change and anomalous weather events	While there are wide-ranging opinions on the role man-made greenhouse gas emissions may have on climate change, effective herd health planning has a pivotal role in helping reduce greenhouse gas emissions from cattle production. Extreme weather and anomalous weather events, which may or may not be linked to climate change, are already impacting cattle farming in many ways including increasing vectors that can transmit disease, heat stress, flooding and drought (such as the heavy rainfall and storm surges seen in 2013), poor forage yield/quality and parasite life cycles.
Anti-microbial resistance	The risks to cattle health are through the potential development of non-efficacy of antimicrobial treatments and because of the possibility of steps being taken at some stage in the future to restrict the use of certain antimicrobials in livestock in GB. The EU legislation on veterinary medicines is currently under revision and the UK along with other Member States and the Commission is examining the available evidence to establish whether there is a need for additional controls on antibiotics used in animals, in particular those which are critically important for human health.
Recycled manure solids used for cattle bedding ('Green bedding')	In September 2013, DairyCo commissioned a scoping study aimed at assessing the potential risks and benefits of using recycled manure solids under UK conditions[16]. The scoping study is now complete, the benefits to cow comfort and the potential cost savings are apparent but the risk to cow health is also evident. The report highlights that much of the existing knowledge on the use of recycled manure solids as cattle bedding has been acquired through experience and anecdote rather than rigorous scientific study. There are still many unanswered questions and much to learn on how to mitigate the health risks. After consideration of the report, the policy position of government regulators is to adopt a precautionary approach which will allow the use of green bedding under a set of prescribed and controlled conditions. This will provide time for the gaps in knowledge and evidence to be addressed. At the time of writing, discussions are underway between Defra, DairyCo, BCVA, Dairy UK, NFU and Red Tractor to agree the conditions to which users will be expected to adhere.
Use of recycled waste	The need to reduce landfill and make more use of recycled waste requires effective risk management in order to preserve cattle health from the use of such materials on cattle farms. This is done through collaboration with the Environment Agency, whose website provides useful guidance for farmers and veterinary surgeons. Some waste material may be used for dressing pastures but not for bedding, for example, gypsum, which reacts with slurry to produce highly toxic (for humans and animals) hydrogen sulphide.

Influence	Comment
Changes to EU legislation	In May 2013 the European Commission published a package of proposals to revise the current legislation governing health controls in the food and agriculture industries. The EU Animal Health Regulation[17] is one of the proposals and its aim is to set a legal basis for a common EU animal health policy and a single, simplified, transparent, flexible and clear regulatory framework for animal health. It will replace a complex set of regulations covering all aspects of animal health. The regulation forms part of the broader Smarter Rules for Safer Food package of measures which also includes a revision of the Official Controls legislation (replacing and expanding the scope of Regulation 882/2004). Of particular relevance to the cattle industry are the sections concerning requirements for animal keepers to have: appropriate knowledge of the species that they keep; veterinary visits at a frequency appropriate to the risk of the animals kept; and rules relating to the identification, traceability and movements of livestock. While the proposed Animal Health Regulation and the related proposal on official controls build on what already works well and do not represent a whole scale change in animal health policy, they do contain the potential for doing things differently. One objective is to increase the application of the concept of 'earned recognition' – reduced checks for animal keepers who have a proven track record of compliance; another is to introduce greater consistency between the responses required in the case of outbreaks of different diseases; a third is an increased potential to apply for disease-free status for distinct regions or compartments in order to enable continued trade in the case of disease outbreaks in another part of the country. The proposal on official controls also contains provisions requiring the authorities to charge for all official controls carried out in order to ensure compliance with the Regulations, although it also states that small businesses should be exempt. Defra officials have been working closely with Sector Councils, such as CHAWG, to look at the risks and opportunities the proposed Animal Health Regulation provides. Negotiations are not expected to be completed until 2015 and there will then be a three year transition period. Realistically, this means that the proposals are unlikely to be implemented until 2018 at the earliest.

8. Farm assurance

Dairy cattle

Changes to the Red Tractor Dairy standards and assessment were introduced from 1 October 2013, aiming to deliver an improvement in cow and calf health and welfare.

Table 9: Summary of the changes to Red Tractor Dairy Standards

What's new?	Why?
The scoring of 10 cows against four key welfare outcomes, to be carried out by the assessor, during the assessment: • Mobility • Body Condition • Hair loss, lesions, swellings • Cleanliness	• To help focus the assessment on the welfare of cows and promote discussion between the farmer and assessor on the cows and their management • To identify unmanaged health and welfare issues • To enhance the integrity of the scheme by using a more outcome based method of assessing welfare • To help the farmer and the scheme monitor cow welfare improvements on the farm and across the industry
Changes to the health plan to require the collation of data for involuntary losses and calf mortality; and compulsory involvement of the vet in an annual herd health review	• To encourage better review of on-farm losses • To encourage more review focused health planning and generate discussion on how to improve with the vet
Recommendation to mobility score a sample of the herd six-monthly	• To encourage the detection and treatment of lameness within the milking herd

Source: Red Tractor Assurance

The scoring of 'Welfare Outcomes' during the farm assurance assessment helps refocus the assessment onto the cows. An additional benefit of scoring is the collection and generation of statistically significant data on the prevalence of issues within the UK herd that will enable the scheme and industry to benchmark performance and progress.

The welfare outcomes that will be scored during assessments have been developed or refined by the AssureWel team – a collaborative team including vets and welfare experts from the University of Bristol, Soil Association and RSPCA. The chosen measures are critical to an individual cow's welfare and are also indicative of cow, feed and facility management. The outcome measures being scored are:

- Lameness: using the DairyCo mobility method[18], assessors identify severely lame cows and investigate their management
- Body Condition: using the DairyCo Body Condition score[19], assessors identify the thin and fat cows and investigate their management
- Hair loss, Lesions, Swelling: using the University of Bristol score, assessors identify cows with hair loss, lesions or swellings that may indicate a problem with housing/cubicles[20]
- Cleanliness: using the University of Bristol score, assessors identify dirty cows and investigate housing management[21]

In addition to the individual cow scoring, assessors will also be recording incidence data for Mastitis, Lameness, Culling, Involuntary Culls and Calf Mortality from each farm's herd health plan. Not only does the scoring of 'Welfare Outcomes' formalise the welfare assessment by the assessor and help refocus some of the assessment on to the cows, it also helps the scheme meet the expectations of many of its stakeholders – notably those who, through the Dairy Cow Welfare Strategy (coordinated by CHAWG), recommended the changes as a priority. In time it will provide statistically significant data on the prevalence of key welfare issues within the UK dairy herd.

"Not only does the scoring of 'Welfare Outcomes' formalise the welfare assessment by the assessor and help refocus some of the assessment on to the cows, it also helps the scheme meet the expectations of many of its stakeholders."

Beef cattle

Changes to the Red Tractor Beef and Lamb scheme related to cattle health and welfare are anticipated in late 2014. A subgroup of the Red Tractor Assurance Beef and Lamb Technical Advisory Committee reviewed the 2012 GB Cattle Health and Welfare Group report Top 10 issues and considered what the role of Red Tractor Assurance could be. The conclusion was that through making the Health Plan more dynamic and review focused would encourage farmers to identify issues on their farm and act upon them. The new scheme requirements are being finalised. AssureWel is in the process of investigating the development of welfare outcome scoring for beef cattle and sheep. Red Tractor will continue to work with AssureWel on the development of these.

9. Breeding and genetics

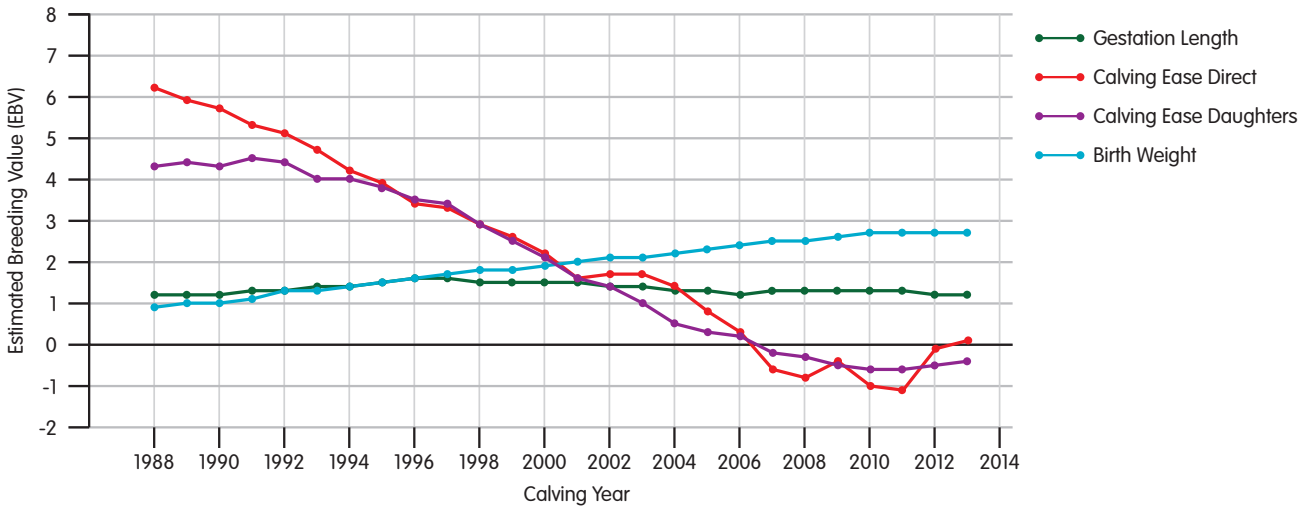
Beef genetics

A number of economically important traits are routinely analysed by the two genetic evaluation services operating in Great Britain: Signet and Breedplan. The main health and welfare traits in beef breeding are Estimated Breeding Values (EBVs) for calving ease and birth weight based on the % incidence of calving difficulties over and above those recorded in the base year of 1990.

These show that over the past 20 years, selection for increased growth rate and muscling has tended to increase birth weights and reduce calving ease. It is not possible to compare EBVs between breeds; however, the direction of change is clear.

The Charolais breed has been the first to proactively respond to this challenge, with the genetic potential for calving ease improving without a corresponding reduction in birth weight. Arguably this has been driven by commercial pressures, as some commercial beef producers have moved towards easier calving breeds and some breeds have lost market share as a result. More than 75% of bull buyers look at Calving Ease EBVs when buying bulls to serve heifers[22].

Figure 8: Genetic trends for Charolais breed on birth weight and calving ease
Please note Signet-recorded data to 2007, thereafter ABRI Breedplan



Source: British Charolais Cattle Society

In its submission to the Farm Animal Welfare Committee's report on the welfare of the beef animal, EBLEX has identified several opportunities to breed animals suited to high welfare in modern production systems. Examples are:

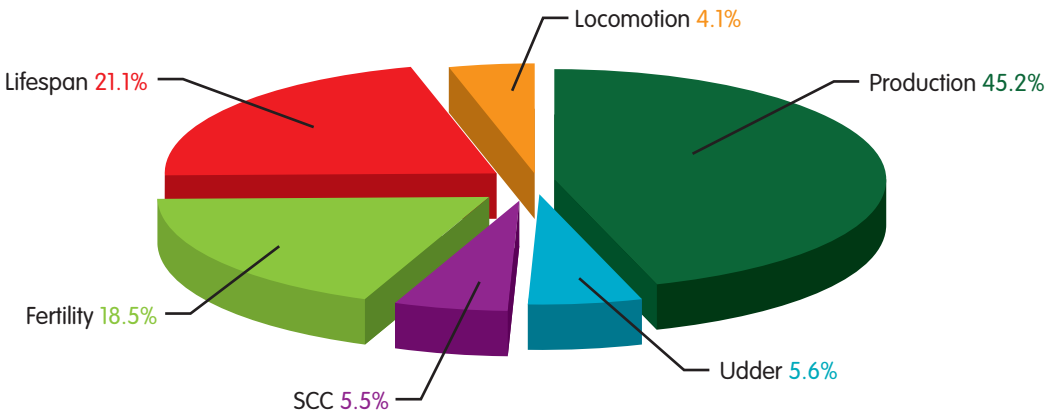
- selection for polling (absence of horns)
- selection for docility – animals that are less prone to stress and are easier to handle
- better use of estimated breeding values to select animals for easy calving with good growth and carcase traits.

Dairy genetics

The vision for genetic improvement in the UK, as set by DairyCo's Genetics Advisory Forum, is to breed dairy cows able to thrive in the many diverse dairy farming systems found in the United Kingdom, and to provide farmers with the opportunity to improve the health, welfare and productivity of their animals.

Fitness traits, including udder conformation, somatic cell counts, locomotion, fertility and lifespan, currently account for 55% of the relative weight used in the overall genetic merit PLI (Profitable Lifetime Index) calculation.

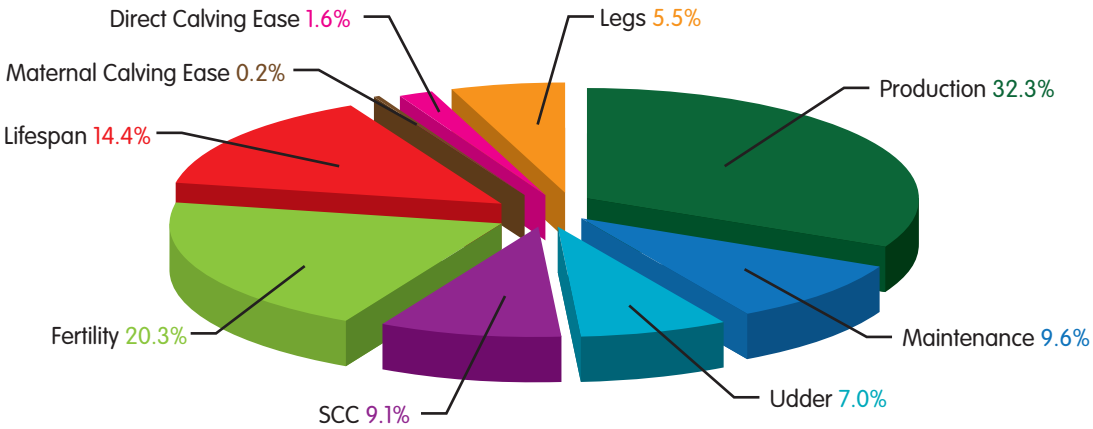
Figure 9: Relative weighting on traits in the Profitable Lifetime Index, Dec 2013



Source: DairyCo Breeding+

A further refinement to the PLI index is planned for August 2014, where new traits will be added to the index (Calving Ease and Maintenance, which recognises that greater stature requires greater nutritional maintenance), and a further reduction to the relative weight of production traits will be seen (down to a third of the total index). Locomotion correlates closely with the new measure, Legs.

Figure 10: Relative weighting on traits in new PLI, to be introduced August 2014

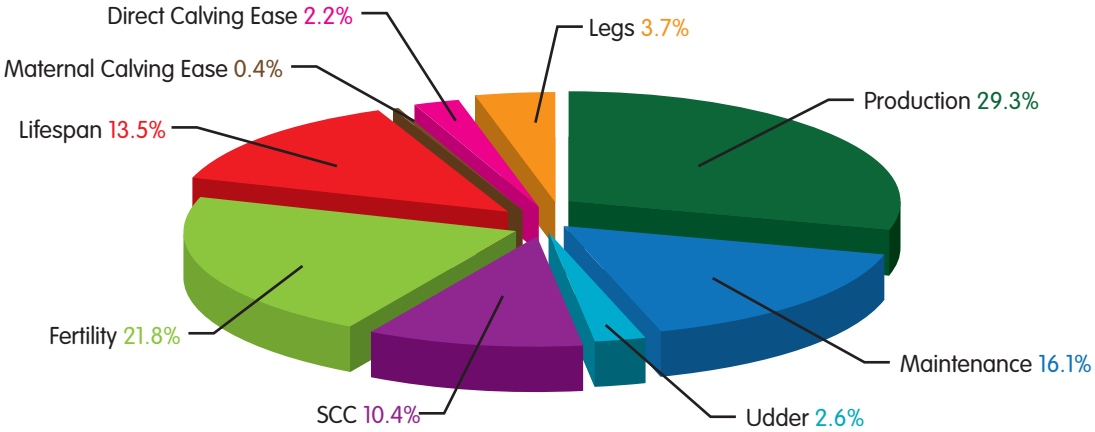


Source: DairyCo Breeding+

Calving Ease has been introduced within the PLI for the first time. Direct Calving Ease gives a prediction of the ease with which a calf by that sire will be born, and Maternal Calving Ease provides a prediction of the ease with which a daughter of that sire will give birth.

Alongside the new PLI index, a new national ranking index targeted towards the spring block-calving herds is also planned, in recognition of the diverse systems in operation in the UK. This Spring Calving Index (SCI) has been constructed with the knowledge that these cows are producing from grass and therefore inputs are restricted by the extent of the grazing platform. The ranking of sires on SCI will be done across breeds, to give farmers further information of the choice of sires that best fit their needs, regardless of breed.

Figure 11: Relative weighting on traits in new SCI, to be introduced August 2014

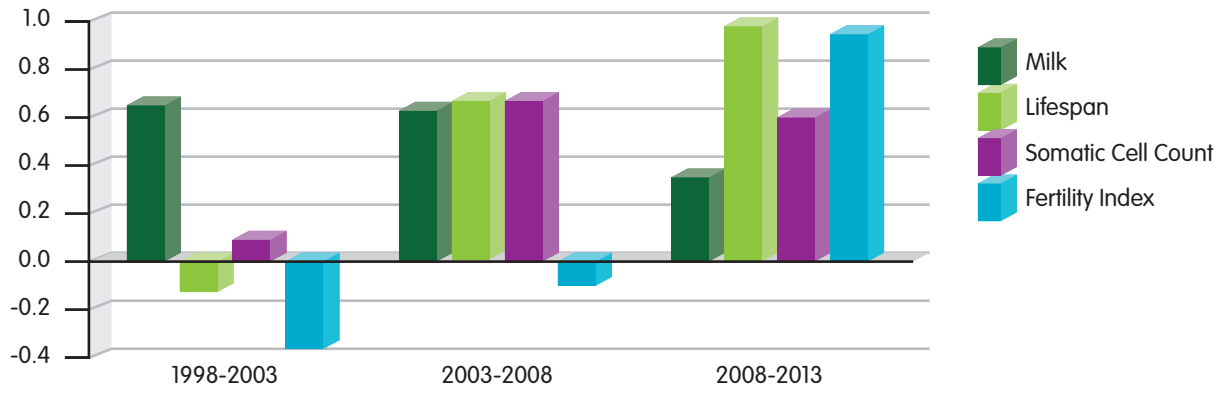


Source: DairyCo Breeding+

Following the introduction of genomic indexes (DNA information was incorporated into the UK dairy genetic evaluation systems in April 2012 for the Holstein breed), this technology has become rapidly integrated into the sector and has already transformed dairy breeding globally.

Analyses were carried out to assess the impact of both improved evaluation methodology and the broadening of the breeding goal on the type of bulls farmers are using to improve their herd. This analysis revealed that genetic trends in all four key areas (milk, lifespan, somatic cell counts and fertility) are moving in a positive direction (see Figure 12), and these are likely to further accelerate with genomic selection and refinement of the breeding goal.

Figure 12: Average genetic merit of bulls used by farmers 1998-2013 for milk production, lifespan, somatic cell count and fertility index, expressed as units of standard deviation



Source: DairyCo Breeding+

Breeding organisations and dairy farmers have quite clearly responded to this new information and advice available to them. DairyCo and Holstein UK now have web-based tools to help farmers select bulls that best suit their farm and production system. In addition, farmers can access Herd Genetic Reports to view the genetic potential of their own herd for both production and fitness traits.

> "A further refinement to the PLI index is planned for August 2014, where new traits will be added and a further reduction to the relative weight of production traits will be seen – down to a third of the total index."

10. Culling and mortality

Culling overview

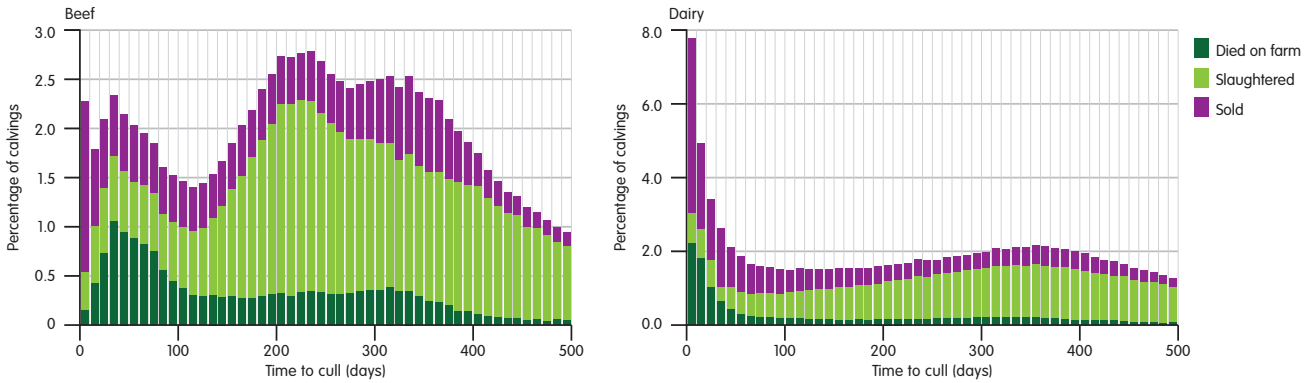
The latest available analysed BCMS data[8] indicates that 19.2% of beef and 25.8% of dairy cows were removed from the herd at the end of their lactation/cycle of production (within 500 days of calving).

Table 10: Summary statistics on the percentage of British (a) beef and (b) dairy breed cattle culled within 500 days of calving

	No. Cattle	Annual culling rate
Beef cattle	1,235,798	19.2%
Dairy cattle	1,306,468	25.8%

Source: Gates, MC

Figure 13: Distribution of the time from calving until culling for (a) beef and (b) dairy cows culled within 500 days of calving
Please note the scales vary



Source: Gates, MC

Further figures indicate that 25.4% of the beef cows leaving the herd died on the farm, as did 32.6% of dairy cows. This suggests an overall mortality rate of 4.88% for beef cows and 9.71% for dairy cows on-farm annually from animals within this dataset.

Culling in the dairy herd

The milk recording organisations are a good source of data regarding culling levels in dairy herds. Data sets are available annually from National Milk Records (NMR); in 2013, data were gathered for 74 Jersey, 33 Guernsey and 51 Ayrshire herds, but the largest data set was for 500 milk-recorded Holstein Friesian herds[23], which was analysed by the Veterinary Epidemiology and Economics Research Unit (VEERU) at University of Reading.

Table 11: A selection of Key Performance Indicators for the UK national herd 2013
(500 Holstein Friesian herds)

Parameter	Median	Target (best 25% of herds)
Culling rate	25%	20%
Culling/death rate in first 100 days of lactation	5%	3%
Age at exit (years)	6.5	7.2
Age at exit by lactations	3.8	4.4
Milk/cow/305 day yield (kg)	7,577	8,257

Source: NMR/VEERU

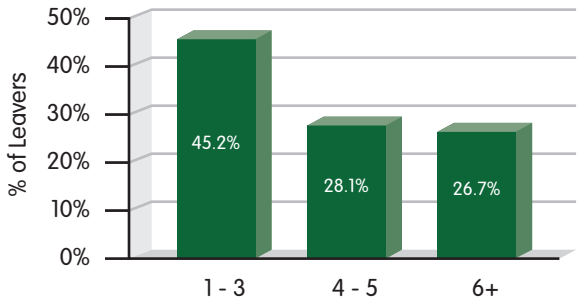
Data provided by Kite Consulting[24] and Kingshay[25] expands on reasons for culling.

Table 12: Dairy cow culling reasons

Reason for Culling (% of culls)	Kite	Kingshay
Mastitis/High SCC	14.6	14.4
Udder Conformation	7.3	5.3
Not in Calf/Not seen bulling	26.0	27.4
Abortion	2.0	2.5
Lameness/Legs & feet	10.0	11.9
Accident/Trauma	4.5	5.4
Metabolic Disorder	2.2	2.4
Calving Injury/Downer Cows	4.2	4.1
Infectious Disease	3.9	4.8
Age	7.0	4.4
Yield/Slow Milking	3.8	4.7
Died on Farm/Other	14.7	12.7
Culling % of total herd	26.22	26.12
Mortality % of total herd	2.77	3.52

Source: The Kite Health Monitor and Kingshay Dairy Costings Focus Annual Report

Figure 14: Lactation age of cows leaving the herd 2013



Source: Kingshay Dairy Costings Focus Annual Report

The Kingshay report[25] says 45% of cows exit within their first three lactations, and more than three-quarters of these culls are forced. However, historical results show that despite yield increasing by more than 1,350 litres/cow and herd size by 50 cows, overall culling rate and proportion of forced and selected culls has remained relatively constant.

11. Nutrition, transition and metabolism

The incidence rate and cost of the most common disorders connected with dairy cow nutrition and the period running up to and immediately post-calving in dairy cattle (transition) has been captured by Kite Consulting[24], Kingshay[25] and Trouw Nutrition[26].

Table 13: Average incidence and cost of main metabolic, nutritional and transition-related disorders in dairy cows

Condition	Kite		Kingshay		Trouw
	Incidence %	Cost/cow £	Incidence %	Cost/case £	Cost/case £
Hypocalcaemia	3.37	382	6	235	
Hypomagnesaemia	0.03	3			
Ketosis	1.64	207			
Displaced Abomasa	1.02	194	2	271	
Acidosis	0.79	55			
Dystocia	2.01	57	4	402	
Metritis	11.18	70	10	212	132
Retained cleansings	5.34	84	6	415	265

Source: The Kite Health Monitor, Kingshay Dairy Costings Focus Annual Report & Trouw Nutrition

The University of Edinburgh's Dairy Herd Health and Productivity Service (DHHPS) tested samples from over 42,000 cows between 2006 and 2011 to assess energy status in cows[27]. The results showed that extensive subclinical ketosis was present in 30% of the cows, and indicators consistent with clinical ketosis in 3-4%, despite no apparent clinical symptoms. According to Cornell University research, cows with these indicators of subclinical ketosis were 2-7% more likely to get a left displaced abomasum (LDA), clinical ketosis or metritis, 13% less likely to get pregnant, and produced 393kg fewer milk solids compared with their herdmates. DHHPS also suggested that dairy farmers are just as likely to see these indicators in low yielding cows at grass as in high yielding cows fully housed on a TMR – cows can get subclinical and clinical ketosis whenever the energy demands of lactation are not being met from their diet.

12. Fertility, udder health and mobility

Fertility overview

BCMS data[8] offers a thorough analysis of reproductive performance in beef and dairy herds, and indicates that only 8.5% of beef heifers and 6.9% of dairy heifers in 2007 had calved by the target age of 24 months. The average age at first calving in both beef and dairy herds was around 33 months. The average calving interval for individual cows was 394 days across all beef cows and 426 days across all dairy cows.

Table 14: Summary statistics on age at first calving, calving spread and interval
Calving weeks = number of weeks during which a calf was born during the year

	Sample Number	Calving weeks	Sample Number	Age at 1st Calving (months)	Sample Number	Calving interval (days)
(a) Beef herds	39,524	10.4	27,386	33.0	38,650	403
(b) Dairy herds	17,122	24.6	13,782	33.3	16,791	428
(a) Beef cows			179,054	32.4	958,705	394
(b) Dairy cows			324,428	31.9	838,457	426

Source: Gates, MC

Fertility in dairy herds

Figures from NMR/VEERU[23] used milk recording information from 500 NMR-recorded Holstein Friesian herds. It suggested calving-to-first-service interval has reduced from 87 days to 77 days over the past four years, and the number of extended service intervals greater than 50 days has fallen from 22% to 18%.

Significantly, this dataset indicated a lower age at first calving for dairy heifers (28.8 months) than the BCMS dataset[8] which indicated a 33.3-month average for dairy herds and 31.9-month average for individual dairy cows.

Table 15: A selection of Key Performance Indicators for the UK national herd 2013 (Holstein Friesians)

Parameter	Median	Target (best 25% of herds)
Percentage conceived 100 days after calving	29%	38%
Percentage eligible for service that conceived	11%	15%
Calving interval (days)	414	402
Age at first calving (years)	2.4	2.2
Milk/cow/305 day yield (kg)	7,577	8,257

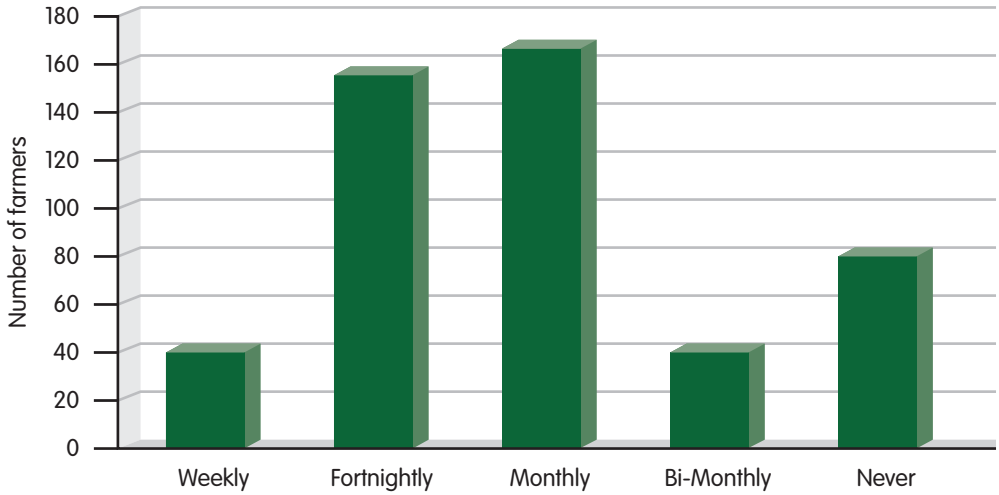
Source: NMR/VEERU

A different survey of national fertility carried out by Intervet/Schering Plough in 2013, also over 500 farms, found that only 19% of those surveyed had a calving interval of between 365 and 390 days. A quarter of farmers did not specify fertility targets but two thirds had regular vet visits for fertility.

While normal target culling rates due to fertility were 5-7% (correlating with the Kite and Kingshay figures in Chapter 10), only 36% of respondents were achieving this, with some units having a culling rate for this issue as high as 15-25%. A common cause of infertility was post-calving uterine infections.

Cow fertility remains a major challenge on many dairy farms, and another survey carried out by Genus ABS suggests that of the 500 herds averaging 180 cows which took part, 17% rated their herd's reproductive performance as very good, 50% considered it satisfactory while 32% admitted they needed to improve.

Figure 15: How often does your vet visit for routine fertility work?



Source: Genus ABS fertility survey 2013

Calving interval was the most commonly-used measure on the surveyed farms. Heat detection rate and conception rate were also seen as important on 40% and 60% of farms respectively. However, nearly 20% of respondents did not know their conception rate.

The farmers in the survey who perceived they had good fertility were principally using 'pregnancy rate' as a measure, which is a combination of heat detection rate and conception rate – or 'percentage eligible for service that conceived'. There was a range in the frequency of vet visits for routine fertility work with the majority of farms having fortnightly or monthly visits. However, as can be seen from Figure 15, almost a quarter (23%) saw the vet for fertility work less than once a month. The key issues restricting performance on-farm were seen as time available for heat detection and the accuracy with which it was carried out.

Fertility in beef herds

EBLEX Stocktake[28] survey results show average suckler herds have calving periods extending to 19.4 and 20.2 weeks for lowland and less favoured area (LFA) herds respectively (nine-year mean 2004-2013).

Recent surveys carried out by QMS[7] indicate that in the average Scottish suckler herd, for every 100 cows and heifers put to the bull only 87 calves are weaned against a target of 94, which is a loss of around seven calves that could have contributed to the profitability of the business. There is also a wide range of performance from those in the top third to those in the bottom third. The following table shows the percentage of calves reared and sold at weaning per 100 cows and heifers put to the bull, for LFA and lowland/non-LFA herds over three years of QMS surveys; the data assumes the calf value is £550 at weaning.

Table 16: QMS survey averages for calves reared per 100 cows/heifers to the bull

	Calves reared per 100 cows/heifers to the bull		
	Bottom 1/3	Average	Top 1/3
Calves reared per 100 cows and heifers to bull	83	87	90
Extra calves compared to bottom 1/3		4	7
Extra calves if reach 94% target	11	7	4
Extra calves value if reach 94% target	£5,979	£4,065	£2,206

Source: QMS

Taking an example of two different beef herds, EBLEX has calculated that the herd with a tighter calving period and improved fertility made more profit than the herd with poorer fertility. The herd weaning 94 calves/100 cows put to the bull, with 65% of those cows calving within the first three weeks, increased output by £7,624 when compared with a herd only weaning 88 calves, with just 40% of cows calving within the first three weeks. This was as a result of the first herd having six more calves to sell, with an increased weaning weight of 23kg, a significant financial reward for better levels of fertility. A tighter calving period also gave females longer to recover, improving subsequent fertility and calf weights.

QMS has made a similar calculation[29] showing that in comparison with a 100-cow herd rearing 87% calves on a moderate calving pattern, rearing those extra seven calves to produce 94% calves increases net income by £3,500, and rearing 94% calves on a compact calving pattern, by £8,600.

QMS also comments that BVD, leptospirosis and venereal infections can all affect fertility and the on-going annual cost of these diseases can be in the order of £2,000 to £5,000 per year. However, in the first year where herds experience a BVD or campylobacter outbreak, the losses can be extreme, some as high as £20,000 per year. See Chapter 15 (Infectious Diseases) for more information on some of these conditions.

In an effort to improve fertility performance, both EBLEX and QMS have set the following fertility targets:

Table 17: Suckler herd targets for fertility

	Target
Barren cows	<5%
Calves born/100 cows/heifers put to the bull	>95%
Calves weaned/100cows/heifers put to the bull	>94%
Cows calving within first 3-week period	>65%
Calf mortality - birth to weaning	<3%
Bulling period	9 weeks (cows), 6 weeks (heifers)
Replacement rate	<15%

Source: QMS[29] and EBLEX[30]

Udder health in dairy cows

The DairyCo Mastitis Control Plan (DMCP)[31] has been firmly established as an effective model for delivering mastitis control on-farm. Currently, over 170 trained providers or 'plan deliverers' work with farm teams to support mastitis prevention, diagnosis and treatment. A total of 15% of Britain's cows are on farms that have had the plan implemented. It is estimated that between 2,000-2,500 herds have completed at least a component of the plan.

In September 2013, a mild case of mastitis was calculated through the DMCP Cost Benefit Calculator Tool to be £54, rising to £225/case when other costs such as lost milk yield were factored in. A severe case cost £284, rising to £1,218. A fatal case cost £3,039 based on average milk price, herd size and lost milk yield. Kite[24] figures indicate incidences of mastitis average 43 cases/100 cows annually with Kingshay[25] figures suggesting this can be higher at 58 cases/100 cows, costing up to £276/non-fatal case. Figures produced by NMR/VEERU[23] indicate performance across the board regarding udder health is generally improving.

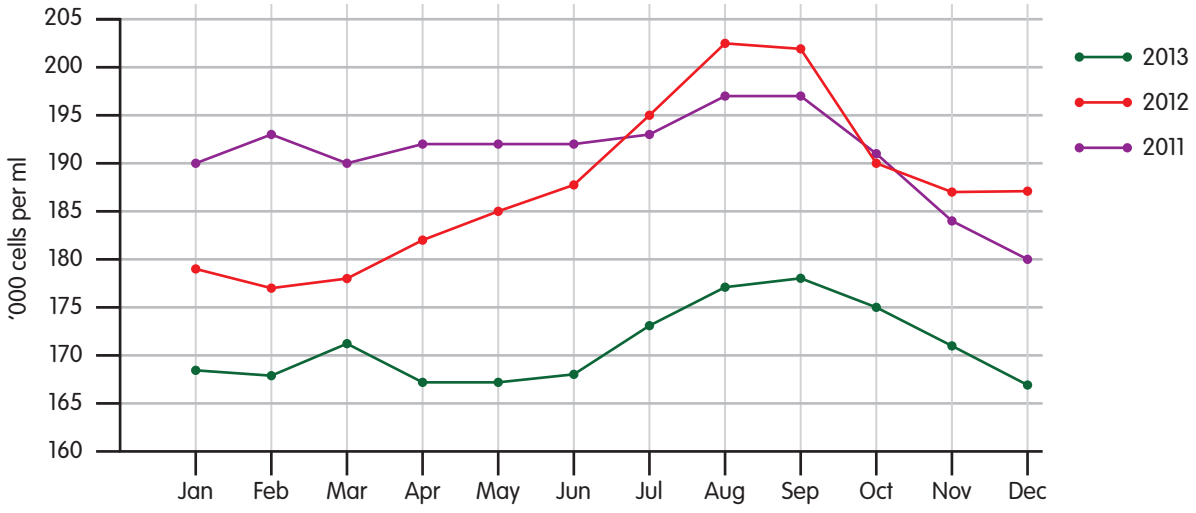
Table 18: A selection of Key Performance Indicators for the UK national herd 2013

Parameter	Median	Target (best 25% of herds)	Median		
			2012	2011	2010
Herd SCC ('000 cells/ml)	195	155	199	203	210
% milk samples with SCC ≥200,000 cells/ml	22%	17%	22%	23%	24%
% milk samples with SCC >500,000 cells/ml	8%	6%	8%	9%	9%
Milk/cow/305 day yield (kg)	7,577	8,257	7,771	7,768	7,400

Source: NMR/VEERU

Out of the 500 herds, the median average somatic cell count had fallen from 210,000/ml to 195,000/ml. Meanwhile the level achieved by the 'best' 25% of herds is 155,000/ml. This correlates with DairyCo's national figures on somatic cell counts in GB[32], gathered via the milk processors and shown in Figure 16.

Figure 16: Seasonal variation in GB somatic cell count from 2011-2013.

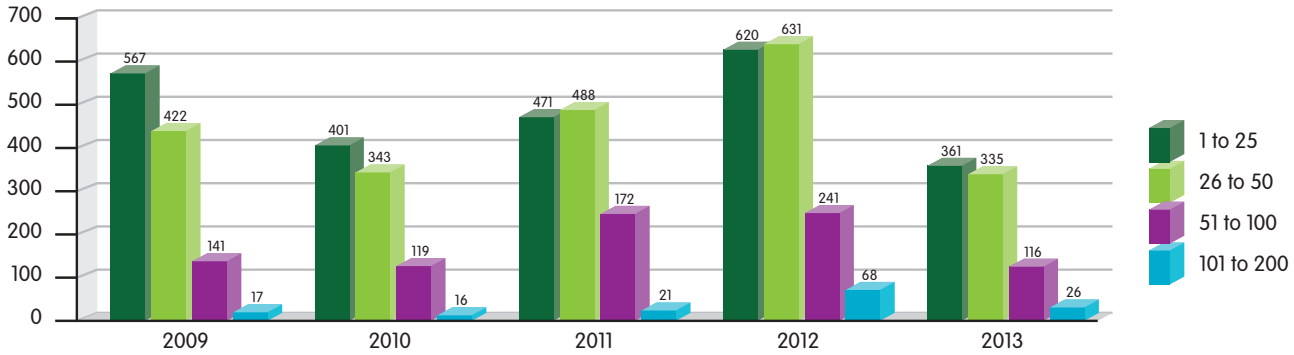


Source: DairyCo/AHDB

The fifth annual National Mastitis Survey (NMS) sponsored by MSD Animal Health with support from Genus and Promar, also found that overall, bulk milk somatic cell count (BMSCC) and clinical mastitis was improving, with half of respondents achieving BMSCC of under 150,000 cells/ml.

The survey shows that herds with lower BMSCC also tend to have fewer cases of clinical mastitis, which is backed up by the data on clinical mastitis that shows the proportion of respondents with herds experiencing more than 50 cases of mastitis/100 cows/year fell between 2012 and 2013.

Figure 17: Number of herds falling into different brackets for incidence of mastitis per 100 cows



Source: National Mastitis Survey 2013

Mobility in dairy cows

A Defra-funded research project conducted during 2012/13, investigated the delivery and impact of the DairyCo Healthy Feet Programme (DHFP)[33] on farms in North West England. The project, led by Reaseheath College, Cheshire, saw 24 farms voluntarily enrolled for the DHFP compared over the course of the study with 21 control farms which were not enrolled in the programme.

Although starting at the same levels of 32% average lameness, DHFP farms reduced their numbers of lame cows by a fifth on average (to 25% lame, a fall of 21%) by the end of the 12-month study. These DHFP farms had 15.5% fewer cows mobility scoring '2' and 36.5% fewer mobility scoring '3' on the DairyCo 0-3 mobility score[18] (see Figure 18).

DairyCo figures estimate the cost of lameness at £680.37 for sole ulcers, £411.72 for white line disease, £197.78 for interdigital lameness, and £98.79 for a case of digital dermatitis. DairyCo's average cost for a case of lameness is £379.97. Data from Kite Consulting[24], Kingshay[25] and Trouw Nutrition[26] estimate the cost as up to £260/case.

Figure 18: DairyCo Mobility Scores

Category of score	Score	Description of behaviour	Suggested action
Good mobility 	0	Walks with even weight bearing and rhythm on all four feet, with a flat back. Long, fluid strides possible.	• No action needed. • Routine (preventative) foot trimming when/if required. • Record mobility at next scoring session.0
Imperfect mobility 	1	Steps uneven (rhythm or weight bearing) or strides shortened; affected limb or limbs not immediately identifiable.	• Could benefit from routine (preventative) foot trimming when/if required. • Further observation recommended.
Impaired mobility 	2	Uneven weight bearing on a limb that is immediately identifiable and/or obviously shortened strides (usually with an arch to the centre of the back).	• Lame and likely to benefit from treatment. • Foot should be lifted to establish the cause of lameness before treatment. • Should be attended to as soon as practically possible.
Severely impaired mobility 	3	Unable to walk as fast as a brisk human pace (cannot keep up with the healthy herd) and signs of score 2.	• Very lame. • Cow will benefit from treatment. • Cow requires urgent attention, nursing and further professional advice. • Cow should not be made to walk far and kept on a straw yard or at grass. • In the most severe cases, culling may be the only possible solution.

13. Youngstock

Mortality

A recent estimate from BCMS[34] suggests 172,000 cattle under one year old died on British farms in 2013, not including calves born dead. BCMS has also published figures for dairy and beef herd calf mortality (under one month old) in 2011 and 2012.

Table 19: Births, calves dying on-farm under one month of age in Great Britain, 2011/12

Breed type	Sex	Mortality		Births		Mortality (%births)	
		2011	2012	2011	2012	2011	2012
Dairy	F	11,510	12,194	470,970	479,988	2.4%	2.5%
Dairy	M	13,343	14,486	371,372	398,148	3.6%	3.6%
Non-Dairy	F	9,554	10,040	880,478	866,653	1.1%	1.2%
Non-Dairy	M	11,912	12,455	910,948	899,749	1.3%	1.4%

Source: BCMS

Dairy bull calves

In June 2006, a Beyond Calf Exports Stakeholders Forum[2] was convened between the industry, the RSPCA and Compassion in World Farming; the aim was to find realistic and economically viable solutions that would result in a greater number of male dairy calves being reared in the UK to meet the demand for beef on domestic and international markets.

In January 2008 the Forum agreed its success would be measured by three indicators:

- An increased uptake of male dairy calves into the beef chain in Great Britain
- A reduction in calves killed on farm
- A reduction in live exports of calves for further fattening.

Its achievements against these three indicators of success were:

- **An increased uptake of male dairy calves into the beef chain** – the number of male dairy calves retained in GB rose from 245,586 to 390,140 a rise of 58%. The number of dairy calves retained compared with those born rose from 50% to 86% in the seven-year period 2006-2013.
- **A reduction in calves killed on farm** – the number of calves killed on farm reduced from 84,817 to 54,670 calves a reduction of 36%. The numbers of dairy calves killed on farm as a percentage of those born declined from 21% to 12% in the seven-year period 2006-2013.

- **A reduction in live exports of calves for further fattening** – the number of calves being exported reduced from 80,700 to 8,000, a reduction of 90%. The percentage of those exported from GB as a percent of those born declined from 20% to 2% in the seven-year period 2006-2013.

The successes of the forum were against a backdrop of rising world prices and demand, making it difficult to gauge the long-term impact of the project, but nevertheless they have allowed many dairy farmers to realise the potential value of calves for these markets. Notably, however, the initiative also successfully engaged all major GB retailers and showed the potential to have a complete supply-chain approach to tackling common problems. CHAWG has now taken over ownership of the forum as it aligns with its objectives and role within the sector, and will be monitoring progress and working to implement measures should the number of calves entering the beef chain start to decline again.

Calf pneumonia and scour

An estimated 1.9 million animals are affected by pneumonia or scour each year[35]. Costs to the UK industry associated with treatments, lower growth rates and calf mortality are significant, with estimates of £50 million[36], £60 million[37] and more than £80 million annually[38].

The latest estimates of pneumonia prevalence[39], taken from an unpublished report pending review, are:

- between dairy herds – 47%; between beef herds – 51%
- within dairy herds – 28%; within beef herds – 52%

Calf pneumonia is an expensive condition with costs per affected calf estimated at £43 per dairy calf and £82 per suckler calf[40]; costs in suckler calves are estimated as higher because of their larger size. Of these costs only 40% are accounted for in vets fees and drugs, and 60% are hidden costs such as loss in liveweight gain, and poor feed conversion efficiency resulting in increased time to finishing.

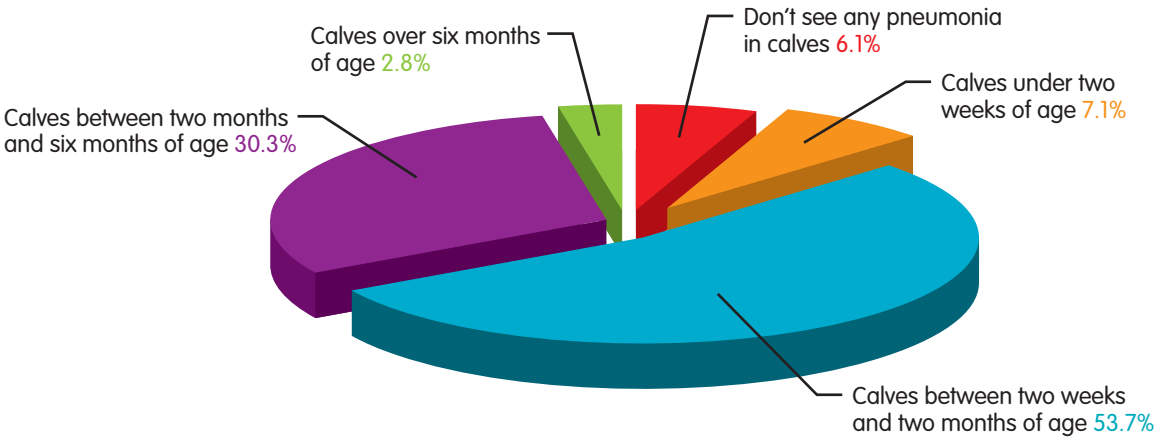
> “Calf pneumonia is an expensive condition with costs per affected calf estimated at £43 per dairy calf and £82 per suckler calf.”

EBLEX has estimated the cost of a pneumonia outbreak in 25 calves as £2,040, whereas the potential cost benefit of vaccinating the whole group would be £1,890. The average cost per calf is £81.60[41].

The 2013 MSD Zuprevo National Pneumonia Survey confirms that pneumonia is continuing to cost farmers money. Only 15 producers out of a total of 300 respondents responsible for the rearing of a total of more than 38,000 calves claimed to never see any pneumonia on their unit. The typical picture is one of constantly trying to limit the impact of the disease, with over half of farmers having to deal with the problem in more than 5% of their youngstock. This is consistent with previous survey results and is confirmation that pneumonia can have a severe economic impact on calf rearing enterprises.

According to the 2013 findings, shown in Figure 19, the disease is predominantly seen in calves of less than two months of age.

Figure 19: At what age are calves usually affected by pneumonia?



Source: Zuprevo National Pneumonia Survey 2013

Just over 60% of the farmers interviewed said this was the age group of animals most affected. The survey suggested that around a third of farmers do not take calf temperatures regularly to help detect the disease early.

Calf scour or diarrhoea is a symptom caused by many agents, some of which can be vaccinated against, eg rotavirus/coronavirus. However, it remains one of the costliest diseases to affect suckled calf production, with average losses in the order of £33 per calf at risk[41]. For a 100-cow suckler herd this represents the losses associated with calf scour including treatments, labour and calf losses to total £3,300. However in extreme cases, where several calves die, then costs can be up to five times that.

EBLEX has produced estimated costs of £5,794 resulting from a scour outbreak in a 100-cow suckler herd (assuming 90 calves born)[41]. The cost benefit of vaccinating a herd of 100 suckler cows with 90 calves reared is £4,225, assuming the herd would have otherwise contracted scour.

Estimates for calf scour/diarrhoea[40] are:

- prevalence between dairy herds – 57%; between beef herds – 63%
- prevalence within dairy herds – 15%; between beef herds – 12%
- mortality impact in dairy calves – 1%; in beef calves – 2%

14. Parasites

COWS

Internal parasites (worms and fluke) pose a significant threat to animal health and performance. The first full stakeholder group for the industry's Control of Worms Sustainably (COWS) initiative was held in November 2012 with an exploratory workshop held in March 2013, the output of which can be found on the COWS website[42].

A number of ideas in the areas of diagnostics, therapeutics and drug resistance, and control were identified and since then various stakeholders have pursued these via their own organisations. In particular, a consortium led by Liverpool University was subsequently successful in being awarded a BBSRC grant to investigate strategies to improve the control of liver fluke on beef and dairy farms in the UK.

Liver fluke

Liver fluke costs the beef industry millions each year, with the vast majority of this loss being suffered by producers. Some 24.4% of all livers – almost 515,000 in total, from prime beef as well as cull dairy and beef cows – were excluded from the human food chain in 2013[43] as a result of fluke infection. This represents an annual loss of over £1.7 million to the meat trade. Although substantial, this is dwarfed by the estimated £25 to £30 cost to the farmer of each case of liver fluke in cattle resulting from lower growth rates, lower feed conversion efficiencies and higher levels of mortality. These losses add up to some £15.3 million a year nationally, although recent work had suggested it could be significantly higher.

EBLEX has calculated the cost of fluke in finishing beef cattle, assuming 27 days delay in finishing time, reduces carcase weight by 10kg and carcase conformation by half a score, totalling a loss of £89.68/affected animal[41].

Worms, including Parasitic Gastro-Enteritis (PGE)

A 2010 EBLEX project investigated wormer failures in cattle and possible anthelmintic resistance[44]. This small scale study, combined with evidence of reports to the Veterinary Medicines Directorate under the Suspected Adverse Reaction Surveillance Scheme (SARSS), suggests that treatment failures for wormers in cattle are uncommon. Where they do occur this is often the result of failure to administer the product correctly. The most likely reason is under-dosing through underestimation of bodyweight. Only around a third of the farms involved in this study indicated that they weighed the animals prior to treatment.

Hydatids

Hydatid disease is a parasite that can infect all humans, but children are considered more at risk from infection. The parasite normally passes between sheep and dogs to complete its lifecycle but humans, cattle and other grazing animals can accidentally ingest eggs from handling infected dogs, their faeces or from contaminated environments, such as grazing.

A recent study[45] looked at infested cattle at slaughter as indicators of regions where hydatid disease was present. It indicated that many areas and cattle farms throughout Wales and England are affected. Consequently, humans and children, either living on or visiting carrier farms, may be at risk. It is for these reasons that farm assurance schemes require evidence of dogs being treated against both tape and round worms.

Neospora

Neospora is a tiny single celled organism (protozoan), about half the size of a red blood cell, that can invade and live inside animal cells. The definitive host is the dog. Cattle are an intermediate host of the parasite and infection can result in abortion. In cattle, the parasite can stay hidden within infected cells which allows it to persist for a long time within an infected animal. However, if 're-activation' occurs during pregnancy of an infected cow, then the parasite can be transmitted to the foetus, which can lead to the death of the foetus, abortion, or the birth of a persistently infected calf.

Statistics on prevalence are sketchy but it is a global problem and one that is on the increase in the UK. A valuable addition to current knowledge on Neospora has been a project carried out by the retailer Morrisons[46]; bulk milk tests of around 500 GB dairy herds in 2012 have suggested that the prevalence of Neospora could be much higher than previously thought.

> "Based on abortion cases that were submitted to veterinary investigation centres, it can be concluded that about 20% of cases are due to the Neospora parasite."

Based on abortion cases that were submitted to veterinary investigation centres, it can be concluded that about 20% of cases are due to the parasite. Costs include those associated with abortions and loss of the calf, but also increased calving interval and failing to get the cow back in calf. Infected animals also have a reduced life expectancy. Financial modelling completed as part of the Morrisons report predicts the cost of Neospora in an average 121-cow herd to be in the order of £3,000/year. For more information on the Neospora control programme, go to the (Cattle Health Certification Standards) CHeCS website[47].

15. Infectious diseases

The main infectious diseases affecting cattle are Bovine Viral Diarrhoea (BVD), Johne's Disease, Infectious Bovine Rhinotracheitis (IBR) and Leptospirosis. Bovine TB is also a major disease but is not dealt with in this document (please see Introduction). Co-ordination of the control of these is largely managed through the not-for-profit Cattle Health Certification Standards (CHeCS)[47]. The cost of these disorders to the industry is very high (see Table 1 in Chapter 3) but there has been measurable success in reducing incidence, such as efforts to eradicate BVD in Scotland and the Welsh Black Cattle Society's herd health programme targeting Johne's Disease and BVD (refer to CHAWG's 2012 report[3]).

Johne's Disease

Losses in the beef herd

An EBLEX estimate of the annual cost of Johne's Disease in a herd of 100 suckler cows where 10% of the cows are infected is £4,532[41]. It is assumed that the presence of the disease results in 5% fewer calves being produced per annum and 5% of the calves produced each year weigh 36kg less at weaning. It also assumes that Johne's Disease results in two cows with clinical Johne's being slaughtered and unable to enter the food chain due to emaciation and in an additional three cows being culled each year.

Control of the disease

Johne's Disease control is challenging and some cattle breeders have become disillusioned with their efforts. One of the main issues has been the efficacy of testing, with recent research[48] indicating that prevalence and control measures both influence the performance of the commonly-used ELISA tests. The use of terminology such as 'accredited' has previously implied freedom from the disease, when in fact, due to testing issues, it is impossible to make this guarantee and buyers have been in danger of being lulled into a sense of false security. Thus after extensive discussions with pedigree cattle breeders and their breed societies and with the nine CHeCS registered cattle health schemes, a new risk-based programme was introduced in January 2013.

This new graded system enables herds to maintain or move towards clear herd tests. This is achieved by a combination of testing and the implementation of a management programme with an up-to-date health plan properly endorsed by both the farmer and his veterinary surgeon.

A simple comparison between the old CHeCS standard and the new risk-based approach is set out in Table 20. Full details can be found on the CHeCS website[47].

Table 20: Comparison of the new risk-based system with the old accreditation system for Johne's Disease

Old System	New Risk Level	Description	Additional Information
'Accredited'	1	3 clear herd tests at annual intervals	Number of years accredited
'Qualifying'	2	1 or more clear consecutive annual herd tests	Number of clear tests
'Control'	3	Evidence of infection but no more than 3% reactors identified at annual herd test	Must have disease reduction programme in place
'Control'	4	As level 3 but with more than 3% of the animals tested show evidence of infection	Must have disease reduction programme in place
'None'	5	No testing or health plan	Herds that present the highest risk when buying stock

Source: CHeCS

Cattle from a herd with Risk Level 1 are least likely to have Johne's Disease compared with a herd at Risk Level 5. This should assist farmers when buying stock. However, this risk-based approach only became operational from 1 January 2013 but the results to date are encouraging.

Table 21: Percentage of cattle participating in a CHeCS-licensed scheme (approx. 14,000 herds) falling into each Johne's Disease category

Risk Level	Old System	% in each category
1	'Accredited'	52.3
2	'Qualifying'	40.3
3	'Control'	3.6
4	'Control'	3.6
5	'None'	0.2

Source: CHeCS

Bovine Viral Diarrhoea

Cost of BVD

BVD as a disease is strategically important because it tends to mask other conditions. The cost of a BVD outbreak in a commercial suckler herd with no immunity to the virus was likely to be £37/cow as a result of infertility and abortion alone in 2004[49]. The current cost, when the increased market value of cattle is taken into account, is likely to be in the region of £50 for every suckler cow in the herd. ADAS has calculated for EBLEX that the benefit per cow of identifying Persistently Infected (PI) animals and vaccinating against BVD is £101/cow[41]. Data provided by MSD Animal Health show that 60% of herd samples submitted for MSD Beef Check between January and June 2011 were found to be positive for antibodies to BVD.

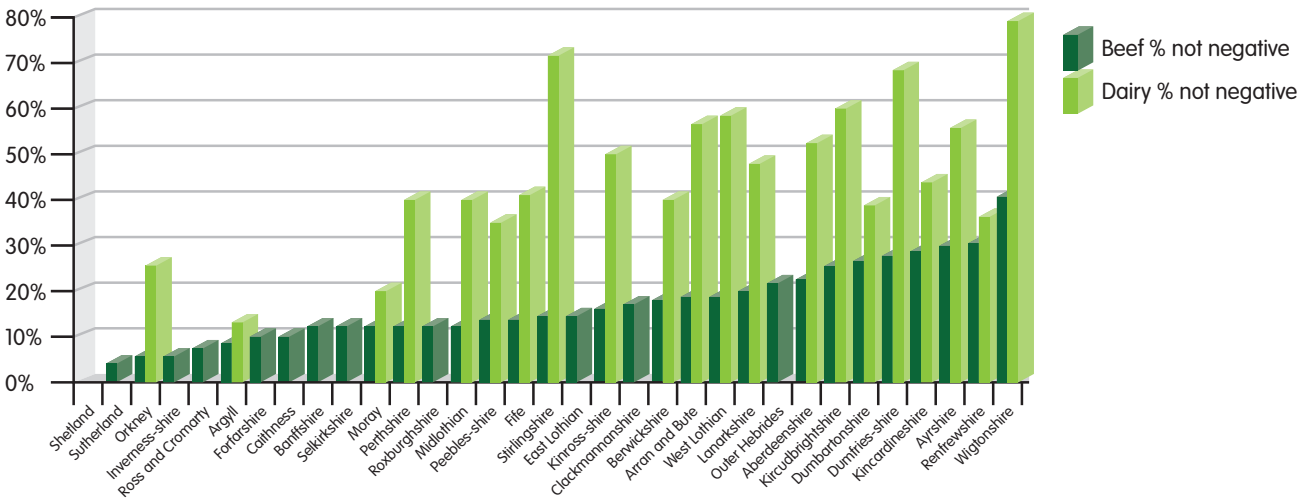
The Scottish scheme

One of the most successful initiatives to tackle BVD has been the Scottish eradication scheme, referred to in the 2012 CHAWG report[3]. The 'control measures' phase of the Scottish scheme has been in place from 1 December 2013; this primarily set out to stop the movement of PI animals and encourage smarter purchasing.

Under this, it is illegal to knowingly move a PI animal, or an animal whose last individual test was positive for BVD, other than direct to slaughter. Any herd that has not completed an annual herd screen is placed under restriction until they have completed their test. It is also a requirement to declare the herd or individual animal status when selling an animal. The status is available on the database for purchasers to check and markets are able to display the status at sales. The value of this declaration focuses on highlighting the risk of buying a PI animal.

At the start of the initiative, surveys suggested 38% of Scottish breeding herds had BVD; this had dropped to 28% by the end of the first voluntary year of the scheme. The final stage of the phased approach is being planned for the end of 2014.

Figure 20: Distribution of 'not negative' herds by Scottish county for Beef and Dairy
A 'not negative' result can mean cattle have been exposed to BVD in the past and have recovered, and action should be taken to investigate (and remove) the source of BVD exposure – usually a Persistently Infected animal.



Source: Scottish Government

Table 22: Distribution of 'not negative' herds within each sector group in Scotland

Type of Production	% of those herds not negative
Beef	15.75%
Mixed Beef and Dairy	29.17%
Dairy	52.72%

Source: Scottish Government

Progress has been encouraging with a 50% reduction in herds affected by BVD under the current approach. It is expected that the known status of animals being sold will be a further driver for herds to try and achieve a negative status, and provide the tools for negative herds to protect their status. During 2015, eradication will be taken forward through further controls that will include an increasing stringency on the use of tests on 'not negative' herds.

The English scheme

The National BVD Steering Group for England launched an initiative in December 2012, funded by Rural Development Programme England (RDPE) money and co-ordinated by EBLEX and DairyCo. This initiative provides advice and tools to help BVD awareness training and manage the disease on-farm[51].

An earlier initiative operating in the South West, via the South West Healthy Livestock Initiative (SWHLI), and a smaller North West Dairy BVD campaign, led by the NFU and SRUC and funded by the RDPE North West Livestock Programme, have paved the way in increasing interest in those regions.

Over 1,500 farms and 700 vets took part in BVD awareness training, as part of the BVD-free campaign. Initial investigations of BVD status were conducted on 830 farms, mainly located in central and eastern England. Of these, a combination of bulk milk and young stock seroprevalence testing indicated that 63% (523 farms) were currently BVD free, and 37% (307 farms) had evidence of recent or current BVDV infection. PIs have so far been identified on 50 of these 307 farms. It should be noted that PI testing was still ongoing on a number of these farms, and this number may increase with time. Of the 50 herds where PIs have so far been identified, 37% (18 farms) had been vaccinating against BVD.

Schmallenberg Virus

Schmallenberg Virus (SBV) is a disease that is transmitted by midges and is highly transmissible to cattle and sheep. Infection can cause acute fever and sometimes, a short-lived diarrhoea and drop in milk production. The much more dramatic consequence of infection is the delivery of malformed calves. This may happen when infection occurs between approximately 6-10 weeks of pregnancy, when the virus crosses the placenta and damages the growing calf. However, this will not be apparent until that calf is born some months later.

SBV has developed relatively quickly in the UK, and is largely attributed to climate change. The first case was detected in January 2011. By August 2012, it was detected in all rural counties of England and Wales, and by March 2013, it had also been isolated from cattle in Scotland. At that time, approximately 1,250 cattle farms in Great Britain had laboratory-confirmed cases of SBV infection[52]. It is suspected that the impact in cattle has not so much been malformed calves, but increased empty cows at scanning indicating nearly embryonic death.

Figure 21: SBV causes deformed calves or early embryonic death

Limited surveys of SBV in cattle have been carried out, so it is not possible to determine the number of herds or individuals affected in GB. In the Netherlands, the vast majority of herds have had SBV infection and within these herds, most of the animals have been infected although only a relatively small proportion have delivered malformed calves. A vaccine is now available to protect susceptible animals and manufacturer MSD reports that up to a million doses have been used in the UK. It also says dairy farmers have been working the vaccination in with current farm health planning as they are tending to experience a reduction in milk and elevated infertility rather than abortion.

> “It is suspected that the impact [of Schmallenberg Virus] in cattle has not so much been malformed calves, but increased empty cows at scanning indicating nearly embryonic death.”

Bovine TB

As stated in the introduction, Bovine TB will not be included in this report as CHAWG believes it would dominate all other issues. There are also already a number of bTB-specific groups and activities dealing with this insidious problem[53] which is slowly spreading, although Scotland is of course Officially TB-Free (OTF) of bTB.

16. Handling and slaughter

Finished cattle – routes to slaughter

Approximately a third of finished cattle reached the slaughterhouse through auction marts in 2012; it can therefore be assumed that the remainder were sold direct. Thus auction markets remain an important way of ensuring price transparency of cattle in Britain.

Table 23: Auction markets selling finished cattle 2012

Size group (head)	Number of auction centres	Total throughput (head)	Average throughput (head)	Share of throughput (%)
1-2,500	45	28,783	640	5.8
2,501-5,000	20	69,683	3,484	14.0
5,001-7,500	8	49,226	6,153	9.9
7,501-10,000	7	62,395	8,914	12.5
10,001-12,500	7	77,738	11,105	15.6
>12,500	11	209,585	19,053	42.1
Total	**98**	**497,410**	**5,076**	**100.0**

Source: AHDB/EBLEX, LAA, IAAS

Table 24: Size profile of abattoirs slaughtering cattle 2012

Size group (head)	Number of abattoirs	Total throughput (head)	Average throughput (head)	Share of throughput (%)
1-1,000	82	23,201	238	1.49
1,001-5,000	32	80,038	2,501	5.14
5,001-10,000	18	122,331	6,796	7.86
10,001-20,000	13	198,652	15,281	12.76
20,001-30,000	4	114,033	28,508	7.33
30,001-50,000	9	366,647	40,739	23.56
>50,000	9	651,495	72,388	41.86
Total	**167**	**1,556,397**	**9,320**	**100.0**

Source: AHDB/EBLEX

Auction marts

124 livestock markets in England and Wales are licensed to operate under the Animal Gathering Order 2010, selling all classes of animals. This licence sets out specific criteria for a wide range of standards that must all be met before a market can operate as a point of sale, collection and onward movement. Markets are inspected annually by AHVLA and Local Authorities before a licence to operate is awarded.

111 markets in England and Wales are members of the Red Tractor Livestock Market Assurance Scheme, with an annual inspection. This scheme also sets out standards that markets must meet and adhere to before a licence is awarded. The Livestock Auctioneers Association (LAA), in association with Newton Rigg College, has developed a bespoke livestock auction mart drover training manual to facilitate suitable in-house training for market staff that handle and move livestock within the market premises. A course in Livestock Market Operations and Management has also been established through Harper Adams University. It includes 11 modules studied over four years, of which a key module is Animal Welfare and Health.

Livestock markets are always aware that the transfer of data between vendor and purchaser is of paramount importance, especially in relation to the health and welfare of the animals. The LAA has been working with industry representatives, throughout the supply chain, to develop systems that will enhance the services auctioneers can offer at the time of sale.

Markets throughout the UK, through the LAA, are actively looking at systems that are available, or can be developed, to facilitate the delivery of accurate and timely data transfer between the two parties. Such data may include more appropriate historic animal information on, for example, bovine TB, BVD or Johne's Disease. It is hoped that a suitable livestock health database, from which this information can be extracted prior to the animal's sale, will be developed and delivered in the near future. See Chapter 4 (Data Availability and Quality) in this document for developments in this area.

Handling stock

Abscesses and bruising/trauma were two of the top four causes of rejection at meat inspection in England in 2012, alongside liver fluke and pneumonia/pleurisy (see Chapter 13, Youngstock and Chapter 14, Parasites). In total, 5.6% or 118,800 carcases had abscesses, and 1.1% or 23,000 carcases showed signs of bruising or trauma[54].

Table 25: Postmortem carcase inspection data of prime cattle – Great Britain 2013

Total throughput	Condition (% of throughput)		Condition (no. of cattle)	
	Abscess	Bruising	Abscess	Bruising
2,110,581	5.6	1.1	118,809	23,053

Source: Food Standards Agency

Cattle carcases from agitated cattle, particularly young bulls, are susceptible to a meat quality condition called Dark Firm Dry (DFD), sometimes referred to as 'Dark Cutters'. Stress in the 24-48 hours prior to slaughter depletes the muscle glycogen stores, resulting in meat with an abnormally high pH and a dark red colour. In 2011 it was estimated this condition reduced carcase value by as much as 50p/kg or £160/carcase[54]. This is likely to have been higher still in 2013.

17. Use of medicines

Controlling medicine residues

The main role of the Veterinary Residues Committee (VRC) is to advise the chief executives of the Veterinary Medicines Directorate (VMD) and the Food Standards Agency (FSA) on the formulation of the residues surveillance programmes and on the significance of the results in terms of consumer safety. As such, it produces annual reports[55] which demonstrate, through residues surveillance, that the food from animals in the UK is safe for human consumption.

Every year, quantities of active ingredient of antimicrobials used for farm animals is also recorded and collated into a report[56], which is prepared and published by the VMD[57]. The reports detail the volumes of antimicrobials sold for use in animals and also details livestock populations on a species basis.

Antimicrobial resistance (AMR)

Farm animals that fall ill are permitted to be treated with an authorised veterinary medicine on the advice of a vet, who must prescribe the appropriate medicine. But many stakeholders and lobby groups are calling for the European Commission to consider restricting or removing some key antibiotics from veterinary use to protect their efficacy in human medicine and reduce risk of antimicrobial resistance (AMR).

However, while the use of antibiotics in agriculture has been cited by some as a source of antibiotic resistance in pathogenic bacteria of humans, scientific evidence is inconsistent. Indeed other factors such as past and present levels of prescription of human medicines, and the increase in movements of people, animals and food from animals around the world may have a more important role to play. In reality a complex pattern of interactions is emerging within an evolving microbial ecology.

> “Increasing scientific evidence suggests that the clinical issues with antimicrobial resistance that we face in human medicine are primarily the result of antibiotic use in people, rather than antibiotics in animals.”

Additionally, safe food comes from healthy animals, so there is a need to maintain a balanced view between addressing public concerns over antimicrobial resistance and ensuring a sufficient supply of safe and nutritious food from healthy animals that are free from pain, injury and disease.

The UK’s Department of Health has developed a five-year strategy on AMR in conjunction with Defra[58], and has considered the relative importance of veterinary medicines in this topic. Its view is: “Increasing scientific evidence suggests that the clinical issues with antimicrobial resistance that we face in human medicine are primarily the result of antibiotic use in people, rather than antibiotics in animals.”

The Responsible Use of Medicines Alliance (RUMA) is a whole-livestock sector initiative involving 23 organisations representing every stage of the 'farm to fork' process; it aims to promote a co-ordinated and integrated approach to best practice in the responsible use of medicines.

RUMA has welcomed the UK Government's five-year AMR Strategy and its series of actions to help manage AMR in human and animal medicine. Its members have a key role to play in implementing the strategy's actions in the livestock sector. They are all signed up to do this and are working to an action plan[59] that will be updated each quarter so that progress can be monitored. From October 2014 the Red Tractor schemes are increasing their focus on antibiotic usage: the Dairy scheme is requiring the farmer to review medicine and antibiotic use with their vet; and the Beef and Lamb scheme is requiring a discussion of antibiotic use between the farmer and vet.

Review of the European Veterinary Medicines Directive

The legislation that governs the use of antibiotics in animals, the European Veterinary Medicines Directive, is currently under review with draft legislation expected to be published later in 2014. One expected change is that in the future, it is likely that more prescribing data at an individual vet practice and farm level (including legitimate 'off label' use of veterinary medicines) will be gathered so that more information on prescribing practice and antibiotic use can be gathered and assessed, with possible interventions being made where required.

It is also likely that further research and harmonised surveillance for resistance across Europe will be undertaken in the future.

18. Conclusions

Greater collaboration within the sectors to promote alignment

It was evident through the development of these first two reports that greater alignment is required on industry health and welfare-related activities to ensure progress on identified priority areas. CHAWG recommends the industry identifies its priority health and welfare areas, sets aspirational targets and focuses all efforts collaboratively in achieving these.

Animal Health GB as a concept

This has been widely discussed in various industry forums over the past 18 months. The concept of an umbrella 'organisation' (which could be an existing body), to provide industry alignment, coordination and progress evaluation, would ensure that decisions were based on the best available intelligence and would maximise potential improvement in cattle health and welfare performance. CHAWG recommends, based on examples of other countries who have established similar entities, that the cattle (and potentially other species) sector and government consider this approach as a potential solution to many of the challenges identified in this report.

Performance criteria for industry initiatives

The industry needs performance statistics upon which to base informed decisions on health and welfare needs. Currently, both government and industry-funded initiatives tend to create qualitative outputs but are less successful in terms of delivering hard evidence of success or failure. CHAWG recommends that those funding or even implementing health and welfare-related initiatives prioritise the setting of quantifiable targets that can genuinely identify whether the approach was successful against its original objectives.

AHVLA evolution

The surveillance and monitoring of cattle health and welfare in GB is fundamentally important to the sector's future. CHAWG wishes to be reassured that despite the major changes being implemented at AHVLA, appropriate resources and facilities are maintained to ensure a robust surveillance and monitoring operation in a fast-changing sector and environment

Purchased Stock and Cattle Movements

Risk-based trading of cattle purchased both in GB/UK or from abroad requires education and the establishment of a robust cattle database and infrastructure to provide health data at point of sale. Without this change, informed trading decisions cannot be made and progress on many cattle health issues may be slowed down.

Changing weather patterns

It is well-reported in this report and others that weather patterns are becoming more unpredictable which makes the planning and management of cattle health increasingly challenging. CHAWG recommends that both the governments and industry organisations collaborate to produce materials and resources that support farm health plans in reducing the cattle health risks associated with changing weather patterns.

Food Chain Information data

To enable informed decision making, farmers require relevant information which can be utilised in health planning for their herds. Abattoir feedback is a key piece of this information jigsaw. CHAWG would welcome greater levels of carcass quality information returned to farmers so they can incorporate this into their husbandry plans.

AHWBE

CHAWG encourages the Animal Health and Welfare Board for England to deliver greater clarity from the farming perspective via improved communication. CHAWG has invested considerable time and funds in supporting this initiative, and the opportunity to influence government policy via a structure that encourages continnued input from the industry should be pursued.

Glossary

AHDA	Animal Health Distributors' Association
AHDB	Agriculture and Horticulture Development Board – parent organisation of the levy boards
AHVLA	Animal Health and Veterinary Laboratories Agency, formerly VLA
AHWBE	Animal Health and Welfare Board for England
AIMS	Association of Independent Meat Suppliers
AssureWel	The initiative undertaken by University of Bristol, RSPCA and the Soil Association to establish farm animal welfare outcomes measures
BBSRC	Biotechnology and Biological Sciences Research Council, the lead funding agency for academic research and training in the biosciences at universities and institutes throughout the UK
BCMS	British Cattle Movement Service
BCVA	British Cattle Veterinary Association
BMPA	British Meat Processors Association
BMSCC	Bulk Milk Somatic Cell Count
BPEX	The levy board representing pig producers in England
Breeding+	DairyCo's dairy cattle genetic evaluation service for all UK cattle
Breedplan	An Australian genetic evaluation system for beef cattle breeders that supplies services to some breed societies in GB
BVA	British Veterinary Association
BVD	Bovine Viral Diarrhoea
CDL	Centralised Diagnostic Laboratory
CHAWG	Cattle Health and Welfare Group of Great Britain (see Chapter 2)
CHeCS	The Cattle Health Certification Standards, a non-trading organisation established by the cattle industry in UK and Ireland for the control and eradication of non-statutory diseases
COWS	Control of Worms Sustainably, an industry stakeholder group which aims to promote best practice in the control of cattle parasites
CTS	Cattle Tracing System
CVO	Chief Veterinary Officer
DairyCo	The levy board representing dairy producers in Great Britain
Dairy UK	The trade association for the British dairy supply chain
Defra	Department for Environment, Food and Rural Affairs
DSC	Disease Surveillance Centres
EBLEX	The levy board representing beef and lamb producers in England
FSA	Food Standards Agency
FUW	Farmers Union of Wales

HCC	Hybu Cig Cymru, responsible for the development, promotion and marketing of Welsh red meat
IAAS	Institute of Auctioneers and Appraisers for Scotland
IBR	Infectious Bovine Rhinotracheitis
LAA	Livestock Auctioneers Association
LFA and non-LFA	Referring to land that is classified as Less Favoured Area and non-Less Favoured Area according to its inherent challenges to productivity and the subsidy support for which it may be eligible. Also refers to herds kept on one area or the other.
NBA	National Beef Association
NFU	National Farmers Union
NFU Cymru	The National Farmers Union's Welsh arm
NFUS	National Farmers Union of Scotland
NMR	National Milk Records
NPA	National Pig Association
NSA	National Sheep Association
PI	Persistently Infected
PME	Post-mortem examination
QMS	Quality Meat Scotland, the levy board representing the red meat industry in Scotland
RABDF	Royal Association of British Dairy Farmers
RADAR	Rapid Analysis and Detection of Animal-Related Risks – captures and processes data from a range of sources including the BCMS Cattle Tracing System (CTS)
RDPE	Rural Development Programme for England
Red Tractor	A food assurance scheme which covers production standards on safety, hygiene, animal welfare and the environment
SARS	Suspected Adverse Reaction Surveillance Scheme
SBV	Schmallenberg Virus
SHAWG	Sheep Health and Welfare Group
Signet	Signet Breeding Services provides genetic evaluations to sheep and cattle breeders, and is funded by EBLEX, HCC in Wales and QMS in Scotland
SRUC	Scotland's Rural University
TMR	Total Mixed Ration, a method of feeding cattle that combines all forages, grains, protein feeds, minerals, vitamins and feed additives into a feed
VIO	Veterinary Investigation Officer
VLA	Veterinary Laboratories Agency, merged with the Government's Animal Health agency in 2011 to form the Animal Health and Veterinary Laboratories Agency
VMD	Veterinary Medicines Directorate

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