



RamCompare Phase I

Final Report

Summary sheet

Project number	6120005009		
Start date	May 2015	End date	Dec 2017

Project aim and objectives
<p>The aim of RamCompare was to enable the UK sheep industry to drive genetic improvement forward through the inclusion of commercial data in genetic evaluations. Partners from along the supply chain were involved and extensive data recording, from birth to slaughter, has been carried out in order to inform genetic evaluations.</p> <p>Rams were selected from five terminal sire breeds. Some were used to create linkage between flocks through artificial insemination (AI), the rest formed single sire mating groups for each farm. Using six commercial flocks around 2,000 ewes have been involved each year and have produced over 3,000 lambs both years.</p> <p>RamCompare was designed to be the first step in assessing the feasibility of running a commercial progeny test in the UK. It provides guidance for the sheep industry to understand whether data collected from farms and abattoirs on cross-bred slaughter lambs can be used in genetic evaluations. The project also enables the sector to examine how the performance of lambs from different terminal sire breeds compares under commercial conditions.</p> <p>For Sheep Breeders Round Table in November 2017, preliminary top 25 lists were generated for the following estimated breeding values (EBVs) – eight-week weight, scan weight, muscle depth and fat depth, carcass weight, carcass conformation and carcass fat - and the new index for carcass merit. These lists will be updated in the spring of each year, with the next group of rams competing to be listed.</p>

Lead partner	AHDB, QMS, HCC Meat Promotion Wales, Agrisearch, Sainsbury's
Scientific partners	SRUC
Industry partners	Evidence Group, Dunbia, Randall Parker Foods, Shearwell Data, Allflex, Farmplan, Farm IT 3000 (Border Software), Premium Sheep & Goat Health Schemes, Elanco, AB Sustain
Government sponsor	

Has your project featured in any of the following?	
Events	Press articles
Yes	Yes
Conference presentations, papers or posters	Scientific papers
Yes	Yes



Activity	Completed
Events	<p>October 2015 – RamCompare introduced to Progressive Lley Group at McCartney's Worcester Market</p> <p>February 2016 – RamCompare introduced to a group of final year students at Royal Agricultural University, Cirencester</p> <p>February 2016 – RamCompare introduced to group of vets at Talking Sheep Event, Hereford</p> <p>May 2016 – Bradley Farm, Gloucestershire, attended by 30 pedigree breeders and commercial producers</p> <p>June & July 2016 Sainsburys Lamb Development Group regional meetings</p> <p>27 July 2016 – RamCompare area featuring Bradley Farm rams on AHDB stand at Sheep Event</p> <p>3 August 2016 – Chawton Park farm event, attended by over 40 producers and industry representatives</p> <p>Autumn 2016 – workshop with SRUC/Sheep Ireland</p> <p>3 November 2016 – Thistleyhaugh farm event, attended by over 50 producers and industry representatives</p> <p>June 2017 – Beili Ficer Farm Event attended by over 50 producers and industry representatives</p> <p>June 2017 – Bowhill Estate Event attended by over 50 producers and industry representatives</p> <p>June 2017 – Moat Farm Event attended by over 50 producers and industry representatives</p> <p>10th October 2017 – Sainsbury's Steering group meeting</p> <p>w/c 16th October 2017 – 4 x Welsh Sainsbury's producer group events (Dunbia)</p> <p>w/c 23rd October 2017 – 2 x Northern Sainsbury's producer group events (Dunbia)</p>



Press articles	<p>Oct 2015 - QMS News Release</p> <p>Nov 2015 - PSGHS Article</p> <p>Nov 2015 – Ram nominations request Farmers Guardian</p> <p>January 2016 – New sires confirmed for phase two</p> <p>February 2016 – Update for breed society journal</p> <p>February 2016 – NS ram nominations open</p> <p>March 2016 – Semen available & ram nominations (Signet e-news)</p> <p>March 2016 – Project overview for Farmers Guardian Sheep Special</p> <p>May 2016 – Spring/Summer newsletter (farm updates)</p> <p>May 21016 – Update for Signet website & e-news</p> <p>June 2016 – Semen flyer</p> <p>July 2016 – Project update for Signet e-news</p> <p>August 2016 – Livestock Plus feature on Sion Williams, Bowhill, organised by QMS</p> <p>September 2016 – Project update for SAC Consulting September 2016 – Project update for Farmers Guardian or Farmers Weekly Sheep Specials</p> <p>September 2016 – Project update featuring Sion and Claire Williams, Beili Ficer organised by HCC for Y Tir (FUW newspaper), and regional press</p> <p>November 2016 – Autumn/Winter newsletter (ram updates)</p> <p>November 2016 – Update for Signet website</p> <p>December 2016 – Project update (Signet e-news)</p> <p>January 2017 – Project overview for breed society journals</p> <p>March 2017 – Project overview Signet e-news</p> <p>March 2017 – Update for AB Europe (published May 2017)</p> <p>May 2017 – Spring/Summer newsletter (farm updates)</p> <p>May 2017 – Update Signet website/e-news</p> <p>June 2017 – Update for BRP bulletin</p> <p>June 2017 – Update for Breed Societies</p> <p>July 2017 – Update for Signet e-news</p> <p>September 2017 – Continuation of RamCompare announced</p> <p>Nov 2017 – FG / FW and NSA Sheep Farmer articles</p> <p>Dec 2017 – Project results – Signet e-news</p>
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<p>Conference presentations, papers or posters</p>	<p>November 2015 – SBRT December 2015 – Video at Sainsbury’s conference April 2016 – BSAS Conference 11-13 May 2016 – Balmoral Show June 2016 – Scot Sheep June 2016 – Sheep South West June 2016 – Royal Highland Show July 2016 – Royal Welsh Agricultural Show July 2016 – Seminar slot at Sheep Event September 2016 - AHDB Beef & Lamb R&D workshop 10-13 May 2017 – Balmoral Show, Co Antrim 16 May 2017 – Welsh Sheep, Brecon 31 May – Highland Sheep, Strathpeffer 7 June 2017 – North Sheep, Co Durham 22-25 June 2017 – Royal Highland Show 3 July 2017 – N Ireland Sheep, Ballymena 24-27 July 2017 – Royal Welsh Agricultural Show 17-19 Nov 2017 – SBRT 24 Nov 2017 – Video at Sainsbury’s conference</p>
<p>Scientific papers</p>	<p>Abstracts at International Sheep Veterinary Congress (ISVC), Harrogate, May 2017</p>
<p>Other</p>	<p>1,151 Twitter followers @ramcompare</p>



Full Report

Q1: Financial reporting –

	Yes	No	N/a
Was the project expenditure in line with the agreed budget?	Yes		
Was the agreed split of the project budget between activities appropriate?	Yes		
If you answered no to any of the questions above please provide further details:			

Q2: Milestones – were the agreed milestones completed on time?

Project milestones	Proposed completion date	Actual completion date
Start of project	01/05/2015	01/05/2015
Circulation of 1st Quarterly report and submission of invoices	29/06/2015	29/06/2015
Circulation of 2nd Quarterly report and submission of invoices	28/09/2015	28/09/2015
1st Biannual project meeting	20/11/2015	20/11/2015
Circulation of 3rd Quarterly report and submission of invoices*	28/12/2015	28/12/2015
Report to Joint R&D committee	01/01/2016	15/12/2015
Report to Joint R&D committee	01/03/2016	10/03/2016
Circulation of 4th Quarterly report and submission of invoices*	28/03/2016	28/03/2016
Report to Joint R&D committee	01/05/2016	16/06/2016
2nd Biannual project meeting	06/06/2016	06/06/2016
Circulation of 5th Quarterly report and submission of invoices*	27/06/2016	27/06/2016
Report to Joint R&D committee	01/09/2016	14/09/2016
Circulation of 6th Quarterly report and submission of invoices*	26/09/2016	26/09/2016
Report to Joint R&D committee	01/11/2016	16/12/2016
Events x 3	03/11/2016	03/11/2016
3rd Biannual project meeting	23/11/2016	23/11/2016
Circulation of 7th Quarterly report and submission of invoices*	26/12/2016	23/12/2016
Report to Joint R&D committee	01/03/2017	07/03/2017



Circulation of 8th Quarterly report and submission of invoices*	27/03/2017	27/03/2017
Report to Joint R&D committee	01/05/2017	26/06/2017
4th Biannual project meeting	01/05/2017	13/06/2017
Events x 3	01/07/2017	28/06/2017
Circulation of 9th Quarterly report and submission of invoices*	26/06/2017	07/07/2017
Report to Joint R&D committee	01/09/2017	21/09/2017
Circulation of 10th Quarterly report and submission of invoices*	24/09/2017	28/09/2017
5th Biannual project meeting	07/11/2017	07/11/2017
Presentation at SBRT	17/11/2017	17/11/2017
Report to Joint R&D committee	01/12/2017	12/12/2017
Report to AHDB R&D committee	01/12/2017	19/12/2017
Report to HCC R&D committee	01/12/2017	01/12/2017
Report to QMS sheep industry group	01/12/2017	01/12/2017
Report to Agrisearch sheep committee	01/12/2017	01/12/2017
Report to Sainsbury's lamb steering group	01/12/2017	01/12/2017
Final report and submission of invoices*	18/12/2017	22/01/2018
If any of the milestones above are incomplete/delayed, please provide further details:		

Q3: Results – what did the work find?

<p>The original project aims were:</p> <ol style="list-style-type: none"> 1. To collect and collate data from over 6,000 lambs, sired by high genetic merit rams from the main terminal breeds, from several commercial farms and abattoirs 2. To collate and include data from a variety of sources – written records, electronic identification (EID) systems, software programs, abattoirs – in current breeding evaluations 3. To use commercial data to improve the development of the combined breed analysis (CBA) 4. To investigate the relationship between on-farm measurements of performance (growth rate, ultrasound scanning of muscle and fat depth) and industry measures of economic value (carcase weight, days to slaughter, carcase conformation and fat class) 5. To explore if the genetic ranking of rams reared on intensive diets is similar when progeny are reared under forage-based commercial conditions 6. To examine how the performance of progeny of different terminal sire breeds compares under commercial conditions 7. To test the feasibility of running a commercial progeny test



1. Data collection

The project achieved its aim of collecting over 6,000 lamb records at birth, however the total number that was used in the production of EBVs was lower due to mortality or not all lambs being weight recorded or ultrasound scanned.

Table 1: Details on the data collected extracted from RamCompare preliminary results report

Measurement	Number of records	Average	Standard deviation	Use
Birth weight	6,706	4.41kg	1.18kg	Enhance existing EBV in CBA
Lambing ease	7,701			Work on-going within CBA
Eight-week weight	5,801	21.10kg	4.75kg	Enhance existing EBV in CBA
Scan weight [^]	5,685	29.33kg	6.20kg	Enhance existing EBV in CBA
Muscle depth [^]	5,578	21.7mm	3.58mm	Enhance existing EBV in CBA
Fat depth [^]	5,578	2.09mm	1.01mm	Enhance existing EBV in CBA
Abattoir records	5,124 (to date)			Produce new EBVs
Primal weights	1,191 (to date)			Future research
Tenderness	673 (to date)			Future research
DNA sample	5,685			Research opportunity

Note: EBV = estimated breeding value, CBA = combined breed analysis, [^] = measurements taken at 88 days, to date = at the time of writing this report additional lambs needed to be killed.

The lambs were sired by 71 rams (see appendix 1) from the five main terminal sire breeds (Texel, Suffolk, Charollais, Meatline and Hampshire Down) over the two breeding seasons on six commercial farms (see appendix 2). Artificial insemination was used to link farms and years, enabling the farm or year effect to be removed within the genetic evaluation.

For the 2015/16 the mating plan can be seen at <http://beefandlamb.ahdb.org.uk/wp-content/uploads/2015/10/RamCompare-newsletter-autumn-winter-15.pdf>

the Details of the rams used in the first two years can be seen at <http://www.signetfbc.co.uk/ramcompare/rams-for-the-2016-lamb-crop/>.

For the 2016/17 the mating plan can be seen at <http://beefandlamb.ahdb.org.uk/wp-content/uploads/2016/11/RamCompare-newsletter-autumn-winter-16-111116.pdf> and the details of the rams used in the first two years can be seen at <http://www.signetfbc.co.uk/ramcompare/rams-for-the-2017-lamb-crop/>.

A significant amount of work was done on the mating plans to ensure a variety of rams were on test from a range of breeders and bloodlines. Work will be conducted by EGENES to investigate the connectedness between the project farms to ensure the structure was appropriate.



2. Data collation

The use of EID has made RamCompare possible as all data were sent electronically from the farmers and abattoirs to Bridget Lloyd and Signet. The development of systems at Signet for handling large electronic datasets has helped, but significant resources were still needed to check data. Changes were made to the Signet database so the new data, for example, carcass weight and conformation and fat classifications could be captured for use in the analysis.

A significant amount of work was required by Signet to ensure the data was presented correctly to EGENES. The funding from this project to EGENES ensures that the models to generate EBVs from the new commercial data are now established and can be added into the standard evaluations.

Further work is required to streamline of data from the farmers and abattoirs into Signet to reduce the amount of time handling data. Additional work is needed by EGENES to develop a financial index. These two areas are priorities for the second phase.

The project team is particularly grateful to Shearwell who provided the tags free of charge in the first phase of RamCompare. The software companies (FarmIT, Shearwell and Farmplan) were involved in trying to help the data collation and did work with farmers and Signet on particular queries.

3. Commercial data in combined breed analysis

Combined breed analysis (CBA) was a separate AHDB-funded project to develop one best unbiased linear prediction (BLUP) analysis that contained all the terminal sire animals. The breeds will be reported separately, with the original aim of having all breeds on the same base so direct comparison can be made. It currently looks like each breed will continue to have its breed-specific base and benchmark, but conversion equations will be made available to the industry.

The projects are interconnected as both have a multi-breed approach; RamCompare will take advantage of CBA's more regular runs while providing data for new carcass traits. The RamCompare has been, and will continue to be, used to validate the CBA as multiple breeds are being tested on the same farm, which is less common in the pedigree sector.

RamCompare has led to changes on how muscle and fat depth EBVs are calculated. They will be weight adjusted rather than age adjusted in CBA, with the aim of achieving more muscle and appropriate fat levels in a carcass at a set weight rather than a set age.

The aim is that CBA will be fully launched during 2018, as there is still work to do on the genetic parameters and the base that will be used for each breed. It was used to produce the standardised index in the RamCompare preliminary results. The values were not used directly in the report as the figures could change as the parameters are refined, so a standardised index



was used to avoid confusion if different EBVs for the same ram were seen once the full results come out. See pages 10-17 in the report for the top 25 rams for the existing EBVs (eight week weight, scan weight, muscle depth and fat depth) that were enhanced by the RamCompare data, analysed using the CBA approach and presented as standardised values.

The three new EBVs – carcass weight, carcass conformation and carcass fat class – were analysed in a standalone analysis for the RamCompare preliminary results report. See pages 18-23 in the report. The aim is to incorporate these new EBVs into the CBA during 2018.

4. Relationship between on-farm measurements and industry measures

Before RamCompare, no carcass data was being utilised in genetic evaluations. Attributes affecting carcass value were predicted from live weight, ultrasound and computed tomography scanning.

Table 2 shows the relationship between EBVs generated from on-farm traits (weights and ultrasound scanning) and CT information from pedigree (lean and fat weight, gigot) to EBVs generated from carcass information (carcass weight, conformation and fat) and the carcass merit index.

For carcass weight EBV there is a good association with eight week weight, lean weight and gigot EBV and terminal index. For carcass conformation EBV, there is a good association with lean weight and gigot EBV and terminal index. For carcass fat class EBV, there is a good association with fat depth and fat weight. For the carcass merit index, there is a good association with eight week weight, lean weight and gigot EBV and terminal index. The number and value of the associations between these EBVs and indexes suggest that the analysis is working correctly, for example the terminal sire index could predict around 50% (0.50) of the variation seen in the carcass merit index. This is reassuring as it means that they are connected but they do tell us different things and just relying on the on-farm measured traits is not going to explain all the variation.



Table 2: Correlations between EBVs generated from on-farm traits to EBVs generated from carcass information

	Carcass Weight EBV	Carcass Conformation EBV	Carcass Fat Class EBV	Carcass merit index
CBA 8 week weight	0.49	0.16	0.17	0.42
CBA Scan Weight	0.28	-0.03	0.24	0.19
CBA Muscle Depth	0.14	-0.01	0.23	0.09
CBA Fat Depth	-0.12	-0.30	0.64	-0.25
CBA Lean Weight	0.38	0.45	-0.23	0.46
CBA Fat Weight	0.02	-0.23	0.65	-0.11
CBA Gigot	0.37	0.63	-0.28	0.52
CBA Index	0.40	0.49	-0.30	0.50

5. Genetic ranking on forage vs intensive diets

No specific work has been done to address this aim as the analysis time was prioritise elsewhere. It can be seen from the farmers' details in Appendix 2 that the lamb finishing system tended to be grass and forage-based. Information has been collected on the ram's rearing system.

It is likely that further analysis of genetics by environment (GxE) will be conducted in the second phase of RamCompare and may need to done as part of a separately funded PhD.

6. Performance of different breeds

Figure 1 shows the proportion of each breed that was represented in the intake of rams (first bar) and then the proportion of each breed that was represented in the top 25 list for eight week weight, scan weight, muscle depth and fat depth (fattest and leanest).

For example, for Texel (yellow) they represent 22% of all the rams used, but 24%, 8%, 4% and 40% of the top rams for eight week weight, scan weight, muscle depth and fat depth (fattest and leanest) respectively. Suffolk rams did well for eight week weight, scan weight and muscle depth, and were well-represented in the fat depth (fattest) table. Meatlinec, Hampshire Down and Charollais rams were well-represented for muscle depth, fat depth (fattest) and fat depth (leanest) respectively.



Figure 1: The proportion of each breed in the top 25 results for current EBVs

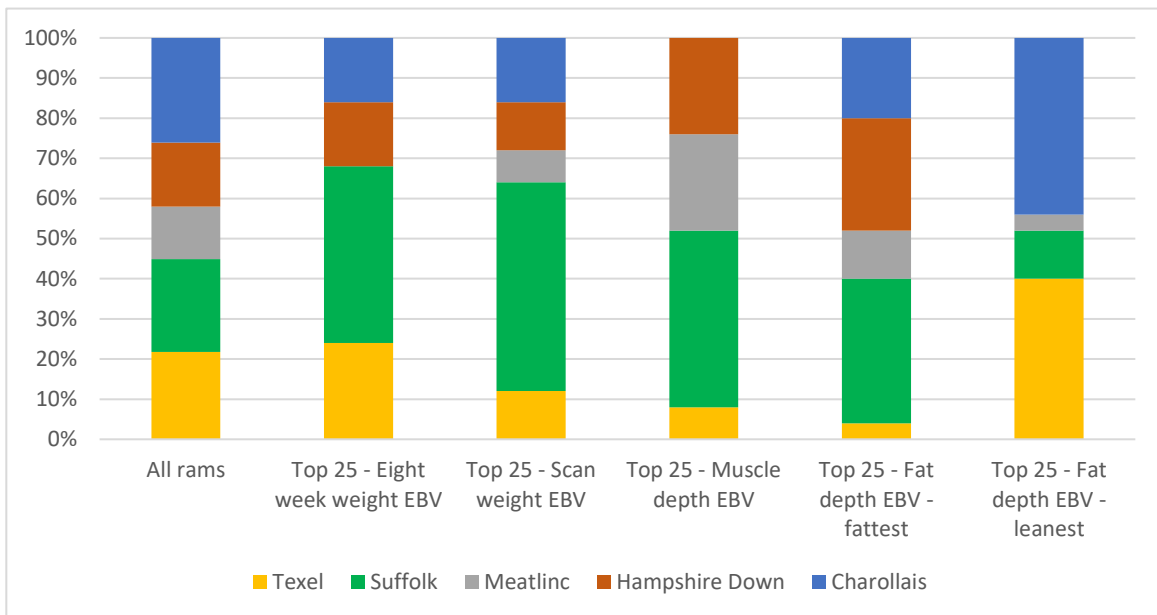
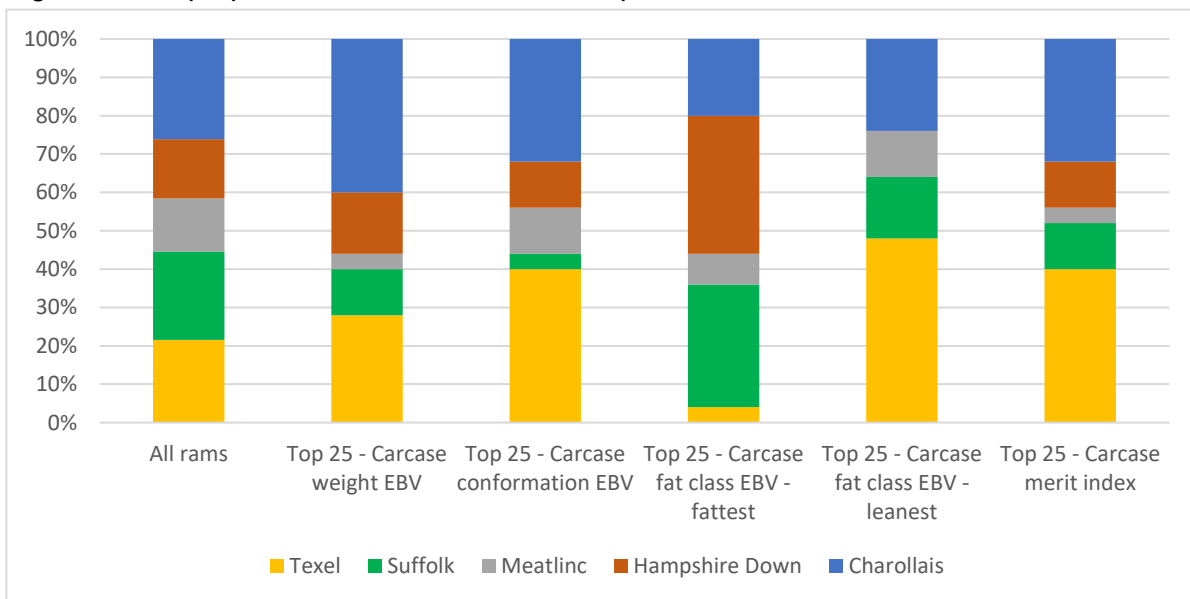


Figure 2 shows the proportion of each breed that was represented in the intake of rams (first bar) and then the proportion of each breed that was represented in the top 25 list for carcass weight, carcass conformation, carcass fat class (fattest and leanest) EBVs and carcass merit index.

For example, for Texel (yellow) they represent 22% of all the rams used, but 28%, 40%, 4%, 48% and 40% of the top rams for carcass weight, carcass conformation, carcass fat class (fattest and leanest) EBVs and carcass merit index respectively. Suffolk and Hampshire Down rams were well-represented for carcass fat class (fattest). Charollais rams were well-represented for carcass weight.

Figure 2: The proportion of each breed in the top 25 results for carcass trait EBVs and index





All the breeds have demonstrated strengths from the first phase results and with each breed there are rams that perform less well. The results also help identify areas where there is potential for improvement within each breed. The first step is to get more rams nominated for the fourth breeding season and this is an important measure of engagement by the ram breeders.

It has also highlighted future research questions:

- Suffolk rams perform well for eight week weights and scan weight EBVs but don't seem to translate that into good carcass weight EBVs, so where is the weight going? CT derived EBVs and information could help to explain these results
- Meatline rams perform well for muscle depth EBVs but don't seem to translate that into good carcass conformation EBVs, so what is the variation between the loin and other areas of the carcass? Primal yield data will be able to help with this question

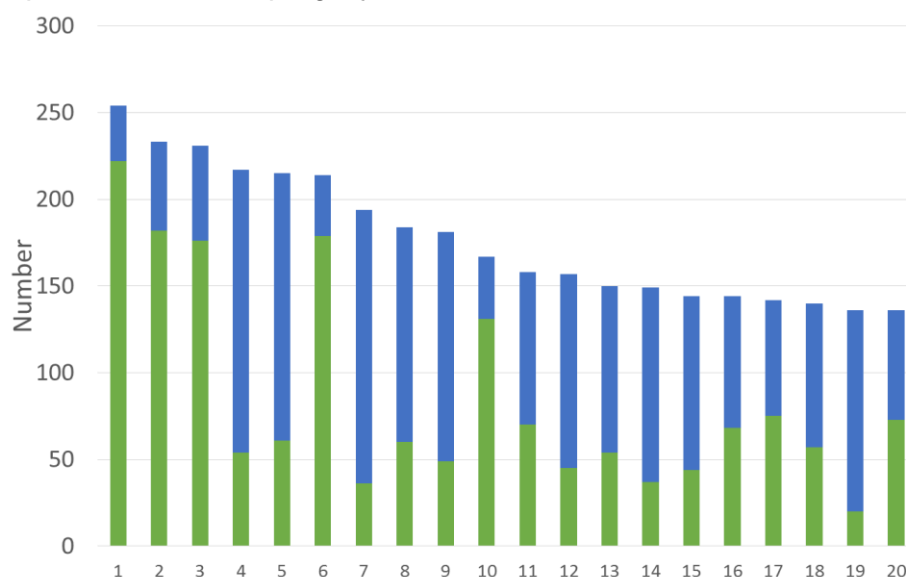
It may appear that there are greater differences between breeds than previously thought.

7. Feasibility of commercial progeny test

The first phase of RamCompare proved it was possible to run a commercial progeny test in the UK. It cost around £5,000 per ram to test via RamCompare during the first phase, with ambition to reduce this to £3,000 in the second phase. Part of this reduction is due to the contribution that the breeders are being asked to make by accepting a lower than market price for rams and semen.

The project team were happy with the number of progeny per rams (see Figure 3), which ensures the analysis will be robust.

Figure 3: The progeny number plus the proportion with carcass records (blue section) for the 20 top rams in terms of progeny number





Overall, RamCompare achieved six out of its seven original aims. It has established that a commercial progeny test can be run in the UK by working with commercial farmers and using data from along the supply chain. The preliminary results that were communicated to the industry in November 2017 are available at <http://www.signetfbc.co.uk/ramcompare/results/>.

Q4: Discussion – what do the results mean for levy payers?

1. Breeders and farmers can select rams with improved existing EBVs and new EBVs for carcass traits

From spring 2018, the improved and new EBVs will also be available to animals with appropriate linkage to the flocks that nominated rams in the first phase. The ambition is that breeders will market stock to breeders and farmers based on the new information. The second phase of the project will allow further validation of the new EBVs.

Table 3 demonstrates an example using three rams from one farm with lambs born in 2017. It shows that selecting for a positive carcass conformation EBV does improve the proportion of lambs being classified as E and U. However between 97-99% of lambs hit specification for EUR for the three rams (average for the farm was 97%) and there were differences in days to slaughter for the rams.

Table 3: An example of the impact of carcass conformation EBV on conformation of lambs from one farm in 2017

	Stonedge Wallykazam	Ortum Supersire 05	Wernfawr Magnum
Breed	Texel	Suffolk	Charollais
AI or NS	NS	AI	AI
Carcass conformation EBV	2.32	-0.19	-2.13
Accuracy (%)	97%	98%	98%
<hr/>			
Number of carcass records	135	31	41
Percentage of E	19%	3%	2%
Percentage of U	41%	39%	29%
Percentage of R	39%	55%	66%
Percentage of O	1%	3%	2%
Average days to slaughter	113	97	103

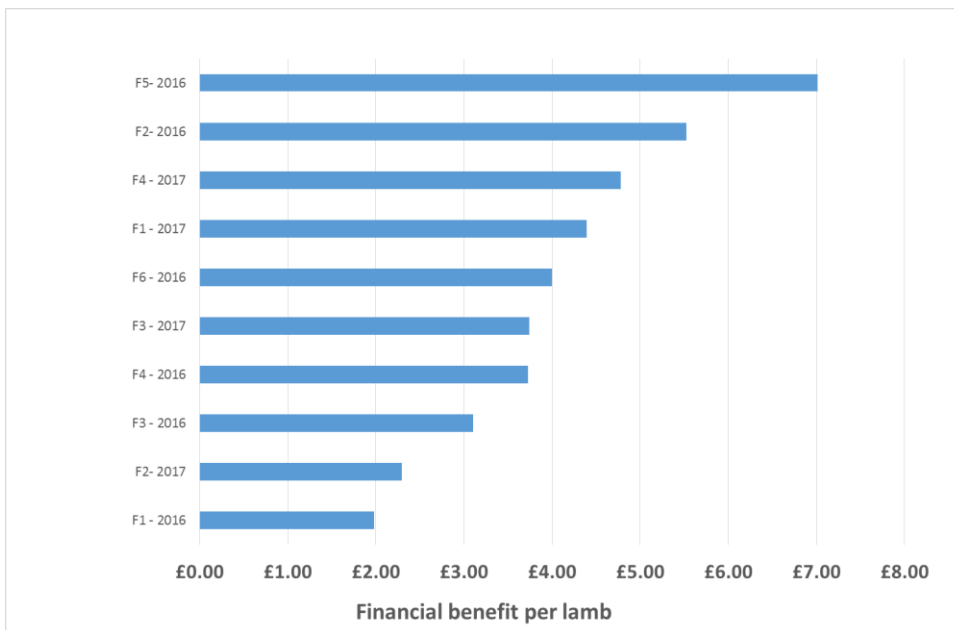
The availability of the new carcass EBVs provide another opportunity to discuss with farmers about getting more animals in spec and using genetic tools as a way to improve. Data from progeny rather than just the ram data appears to improve the engagement from farmers on the value of these EBVs.



2. The value of using performance recorded stock

The rams on RamCompare tended to be in the top 25% of the analysis, although it did vary by breed. Table 4 suggests there is around £4 difference between the top three sires for carcass value and the bottom three. Around 10 rams were tested per farm per year and it was thought to be fairer to compare the top and bottom three rather than the extreme animals only. There was some variation between farms and years; some of which can be explained by feed availability.

*Table 4: The financial benefit per lamb based on top three sires and bottom three sires for each farm for each year**



**Two farms only have one year's data as kill not fully complete at time of analysis*

It is likely that the difference between elite genetics and average rams will be greater than £4, but this project was not designed as a high/low trial.

Q5: New knowledge – what key bit of new knowledge that has come out of this project so far?

The production of the improved (eight week weight, scan weight, muscle depth and fat depth) and new EBVs (carcass weight, carcass conformation, carcass fat class) and carcass merit index for over 70 rams confirms that RamCompare has been successful at dealing with collecting and using data from along the supply chain in genetic evaluations. The updated results will be available in spring 2018. We have also got updated information about the financial value of using EBVs.

The challenge is to convert the new information and tools into knowledge and action on farms.



It also needs to be recognised that the project team has demonstrated that a commercial progeny test is feasible in the UK, but a focus on maintaining breeders' interest is required.

Q6: Gaps in knowledge – what gaps in knowledge has this project currently identified?

1. Data flow

The project team are investigating different approaches to capturing and cross-checking data to reduce the amount of time it takes. Progress will be reported during the second phase.

2. DNA and genomic information

As shown in Table 1, a significant number of DNA samples have been taken from the rams on test and the lambs. Some of the samples have been used to check for parentage and to follow animals from farm through abattoir to boning hall. Some of the rams have been sent away for analysis on a high density single nucleotide polymorphism array (HD SNP chip) and some of the lambs are being analysed by a low density SNP chip. This is partly to check DNA quality after storage, but also as a pilot to see how valuable the genomic data is for this group of cross-bred lambs. Further work is required to understand how to exploit genomic technology within RamCompare.

3. Further analysis

Some of the data that have been collected, e.g. primal yields, tenderness and ewe body condition score and weight, have not been fully analysed so more work is needed to ensure full value is realised. The primal yield data and tenderness analysis will be undertaken once the full two years of data are loaded into Signet's database. Research questions are being developed for the primal yield data set by the project team including Sainsbury's. The initial purpose of the tenderness analysis is to see whether it is useful to continue collecting the measurements as there is a significant amount of variation (e.g. animal age, date of kill, abattoir) in the background. The ambition with the primal yield and tenderness data is to appraise their value and the level of development needed before an EBV can be produced.

4. Days to slaughter EBV

EGENES did evaluate the data but there was not enough genetic variation in the first two years' worth of data to produce a useful EBV. This was disappointing as it is one that is frequently asked for. As the third season's data comes in, it will be evaluated to see if a days to slaughter EBV can be produced.



5. Economic index

As stated above, EGENES are still working on the production of an economic index for carcass merit. This will be in development during 2018 with the ambition of being ready to be tested in 2019.

6. Validation of new EBVs

The new EBVs (carcass weight, carcass conformation, carcass fat class) generated by RamCompare will be joined by new CT-derived EBVs (spine length, a predictor of intramuscular fat and eye muscle area) in 2018. It will be important to understand the new CT-derived EBVs for the rams that have been tested and currently on-test, and the primal yield data will be useful to validate these EBVs. The ambition would be to understand the economic or commercial value of these new EBVs by 2019.

The rams being brought on to RamCompare in the autumn of 2018 will be judged based on all the new EBVs and it is possible that extreme animals for the traits will be brought on.

7. Breed difference in carcass composition

As stated above, the production of the new carcass EBVs have highlighted future research questions on carcass gain, particularly in Suffolk lambs, and the relationship between areas of the carcass, e.g. muscle depth in Meatline lambs compared to primal yield information. Further analyses will be conducted as more data come in through the second phase.

8. Support for breeders and farmers

There is a significant amount of change happening for terminal sire breeders with the introduction of CBA, a new base and new EBVs. There needs to be significant support from the levy boards to ensure breeders are happy and aware of the new changes, which means they can effectively communicate them to their clients. There is also a need to help farmers understand how to use the new EBVs in their businesses.

The levy boards are working together to ensure their knowledge exchange activity is coordinated with technical support coming from Signet.



Q7: Additional deliverables – what activity is planned with the results from this project?

Activity	What is planned?	When likely to happen?
Events	Combined Breed Analysis events Talking sheep events (vets) 3 x RamCompare farm events Scotsheep (QMS) Sheep Event + US Demo (AHDB + HCC) Royal Welsh + US Demo (HCC + Signet) Sainsbury's producer group events	December 2017 Jan-Feb 2018 May-August 2018 30 May 2018 18 July 2018 23-26 July 2018 October 2018
Press articles	Breed society updates Ram nominations open – press release Ram nominations open – Signet e-news Combined breed analysis kitchen table events Updated results – online only Results article in bulletin FG article & NSA sheep farmer articles for updated results EBVs Results article in bulletin	Dec 2017 - March 2018 January 2018 January 2018 January 2018 February 2018 February 2018 March-May 2018 May 2018
Conference presentations, papers or posters	Presentation to all levy board R&D committees Presentation to Sainsbury's lamb steering group	December 2017 December 2017
Scientific papers		March-May 2018
Other	"My ram is on test" promotion boards "My ram is on test" digital logo link	May 2018 May 2018
Other	Website – ram updates	July 2018



APPENDIX 1: The rams used in the first phase of RamCompare

Ram ID	Name	Breed
12PE01501	Dalby Malachite	Charollais
12XCA00275	Glyncoch Monster Munch	Charollais
12XEV00325	Wernfawr Magnum	Charollais
12ZNN04521	Logiedurno Master Class	Charollais
13ZNN07239	Logiedurno Navigator	Charollais
13ZVY00706	Lowereye	Charollais
14AB00641	Crogham	Charollais
14DG04690	Foulrice On Ramcompare	Charollais
14DG04849	Foulrice	Charollais
14PE03089	Dalby	Charollais
14ZVY01279	Lowerye	Charollais
14ZWA03355	Micklehills Ramcompare	Charollais
15CJ01675	Bould	Charollais
15KF00715	Cannahars	Charollais
15WNY02086	Wedderburn Peleus	Charollais
15WNY02192	Wedderburn	Charollais
15YPP01267	Tilton	Charollais
15ZNN12375	Logiedurno	Charollais
15ZVY01700	Lowerye	Charollais
DG:09509	Foulrice	Charollais
18U09346	Kelsey 9346 Hero	Hampshire Down
18U13249	Kelsey 13249 Lysander	Hampshire Down
24Y1502085	Graylen	Hampshire Down
26X14545	Raburn	Hampshire Down
30N1401320	Yarcombe 141320 Quadrant	Hampshire Down
30N1501761	Yarcombe 151761 Dynamo	Hampshire Down
64T1500471	Whitehead	Hampshire Down
73R07739	Court 7739 Contender	Hampshire Down
73R12077	Court 12077 General	Hampshire Down
73R13090	Court 13090 Leader	Hampshire Down
92W1400386	Aspley	Hampshire Down
EV:1302300	Vines	Meatlinc
EV:1503051	Vines	Meatlinc
EV:1503061	Vines	Meatlinc
GA:149618	Bowhill Meatlinc	Meatlinc
GA:1511681	Bowhill	Meatlinc
HRF:02731	Thorganby	Meatlinc
HRF:04746	Thorganby 4746	Meatlinc
HRF:04775	Thorganby	Meatlinc



HRF:04829	Thorganby	Meatlinec
10P:14:04080	Rugley Ramcompare	Suffolk
239:11:120	Bentley Olympic Gold	Suffolk
78X:F49	Ortum Supersire 05	Suffolk
C18:15:00001	Whichford First Class	Suffolk
C41:14:00812	Kersey	Suffolk
C41:N22	Kersey Nutcracker	Suffolk
H6:14:00612	Essie	Suffolk
HRH:15:00390	Sampfordel	Suffolk
L20:15:00822	Midhope	Suffolk
L20:15:00943	Midhope	Suffolk
LYN:15:01124	Stonedge	Suffolk
NZZ:14:03934	Easyram	Suffolk
T79:13:095	Hans Fokker 95	Suffolk
Y13:13:161	Sandyknowe Sole Trader	Suffolk
Y51:13:068	Lavendon	Suffolk
Y51:13:082	Lavendon	Suffolk
AAS1401255	Miserden	Texel
AAS1401351	Miserden Valegro	Texel
CMG06129	Gaynes Major	Texel
EJR1101108	Roxburgh Shot Gun Willie	Texel
HME1501742	Elkstone	Texel
HTW1501312	Wealden	Texel
JER1505263	Rugley	Texel
MDY1400927	Tynewydd	Texel
PAP1401307	Penygelli	Texel
PAP1501802	Penygelli	Texel
PJP1304727	Drinkstone Union	Texel
PPK1400417	Kimbolton Voyager	Texel
PRH1500573	Handbank	Texel
WPS1400599	Stainton Vantage II	Texel
YDP1500991	Stonedge Wallykazam	Texel

More details of the rams can be found at www.ramcompare.com or at www.basco.org.



APPENDIX 2: The commercial farms involved in the first phase of RamCompare

Farmer	Farm details	Ram tested	Number of lambs recorded	Lamb finishing system
Antony Pearce	Moat Farm, Buckinghamshire	15 (3 Charollais, 4 Hampshire Down, 5 Suffolk, 3 Texel)	908	Grass, some concentrates
Duncan Nelles	Thistleyhaugh, Northumberland	16 (3 Charollais, 6 Hampshire Down, 3 Suffolk, 4 Texel)	1,525	Grass and clover
Ian Robertson	Chawton Park Farm, Hampshire	16 (5 Charollais, 5 Hampshire Down, 3 Suffolk, 3 Texel)	1,691	Grass, red clover, some concentrates
Sion Williams	Bowhill Estate, Selkirk	16 (4 Charollais, 1 Hampshire Down, 4 Meatlinc, 3 Suffolk, 4 Texel)	1,345	Grass, red clover
Philip and Charlie Whitehouse:	Bradley Farm, Gloucestershire	15 (4 Charollais, 4 Meatlinc, 4 Suffolk, 3 Texel)	1,013	Grass, concentrates
Sion and Claire Williams	Beili Ficer Farm, Carmarthenshire	16 (4 Charollais, 5 Meatlinc, 3 Suffolk, 4 Texel)	942	Grass, forage, some concentrates