KTIF Scottish Government Final Report

KTIF Project Name: Livestock Performance Programme (LPP)

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Produced by SAOS Ltd

SAOS

Working together to shape the future of farming and food

LIVESTOCK PERFORMANCE PROGRAMME

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1. PROJECT TITLE/APPLICANT

1.1 Livestock Performance Programme

1.2 Established in 1905, SAOS are Scotland's experts on farmer co-ops and supply chain collaboration and provide a range of specialist information, development and consultancy services aimed at shaping the future of farming and food in Scotland.

Its purpose is to strengthen the profitability, competitiveness and sustainability of Scotland's farming, food and drink and rural economies through the promotion of co-operation and collaboration.

SAOS is a not-for-profit development organisation owned by its membership. As a membership organisation SAOS is committed to driving growth within agriculture and food co-operatives and stimulating collaboration within their supply chains. Innovation and co-operation are at the heart of its objectives to achieve added value and production efficiency, as is its proven role in smart project management and industry initiatives.

2. EXECUTIVE SUMMARY

2.1 The purpose of this project was to develop and trial a suckler beef herd Livestock Performance Statement individual to each producer, based on existing available information. This will inform decision making and improve farm and sectoral environmental and economic efficiency in terms of, for example, carbon emissions and profitability.

2.2 There is a recognised need and opportunity to make significant environmental and economic gains within the national beef herd through improved technical efficiency. The objective of this project was to develop a farmer-relevant way to interpret, format and present existing but under-utilised key measures of a herd's efficiency in a clear and informative manner. The ultimate aim being to progress to national roll-out.

2.3 This ambitious approach has never been attempted before but the potential benefits to the environment, producer profitability and brand Scotland are large – as is the likelihood of success. The repurposing of available information takes the burden of data collection away from the farmer and puts greater emphasis on taking positive action based on the reports messaging. This will broaden engagement, impact of engagement and legacy of this Livestock Performance Programme (LPP) project.

2.4 There are two key unique attributes within this project:

(1) **The use of above-mentioned available information**. Producers currently input cattle information into the national ScotEID database for the purpose of maintaining Scotland's high biosecurity and traceability standards. The premise of this project was for the partners to assess and repurpose this data for the value-add benefit of providing insight into individual producer's technical herd performance.

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(2) **The choice and cooperative nature of the partners**. Led by SAOS, this was a project partnership including ScotEID and Aberdeen and Northern marts (ANM) Farm Profit Programme. Project partners have strong experience and understanding of the livestock sector and the challenges faced by suckler beef producers in improving efficiencies and profitability. This was combined with a highly engaged group of pilot farmers (15) who provided invaluable feedback.

2.5 There is a significant fit between the ambitious climate change targets set by Scottish Government and the endeavours of this project. In 2019 the Scottish Government committed to the Climate Change (Emissions Reduction Targets) Act setting targets to reduce Scotland's emissions of all greenhouse gases to net zero by 2045. The Climate Change Plan (2018 – 2032) outlined a clearly defined target for agriculture of 'Reducing emissions in the sector by 9% between 2018-2032 and working to be among the lowest carbon and most efficient food producers in the world'. This project's objective is to provide clear insight based on a producer's own farm data to better inform their management decisions as a decisive and practical step in the sector positively contributing to climate change mitigations.

2.6 Fifteen farmers took part in the pilot project, and all who participated said that they could see the benefit in the management statement and feedback was overwhelmingly positive. If anything, it tapped into a desire for even more information.

2.7 One comment which summed up the feedback was; "*This has been really helpful. I know my herd, but it has really highlighted the outliers on the farm and made me ask why and want to take action".* Another said, "*this type of data analysis will act as a decision support system in time".*

2.8 A key challenge which the Livestock Performance Programme faced was that the project had intended to produce two herd statements: A Standard Statement and an Enhanced Statement (see appendix 1). It was quickly realised, once the data had been received, that this was going to be a much bigger task than originally anticipated due to the format and complications relating to the data. The project, therefore, concentrated on producing one standard statement for all farmers who participated.

2.9 The key recommendations arising from this project are:

- The project identifies that an automated, low cost, national benchmarking tool has the capability to effectively engage the industry.
- Clear presentation and greater familiarity with the multiple aspects of a producer's own beef suckler herd performance is required to instigate positive change.
- The credibility in using producer's industry owned data should not be understated. It was well received by pilot farmers alongside a more dynamic approach to presentation.
- The herd summary report outlines key performance measures. Supplementing this with more refined reports will maximise impact by informing improved decision making e.g. action reports, and breeding cow / youngstock / breeding bull statements.

3. PROJECT DESCRIPTION

3.1 Background

Funding was sought to initiate this pilot project to test and trial the suitability and presentation of a range of metrics within a Livestock Performance Statement. The overall aim being to increase the environmental and economic efficiency of the Scottish herd. Informed decision-making will reduce CO_2e per kilo of beef produced and improve herd profitability – see Appendix 2.

This project has highlighted key performance areas that can be reasonably and robustly expressed through the available data, which will allow information to be expressed in a meaningful and farmer-friendly manner.

The project was justified based on several factors:

- Successive years of low profitability have seen a significant decline in the national suckler herd. The last ten years (from 2018) have shown a decline in beef suckler herd numbers in Scotland of 12%.
- A smaller but more efficient national beef herd will improve farm profitability and contribute to fragile rural and remote rural economies.
- In 2018, the Scottish Government published the 'Climate Change Plan' which set out 5 initial policy outcomes to be delivered by 2032. Policy Outcome 3 is to "reduce emissions from red meat and dairy through improved emissions intensity".

Funding was required to develop this project to scope, design, deliver and test an innovative mechanism which could be used widely by the industry to support data driven change. The approach which this project has taken was new and untested, and the specified outcomes detailed in the methodology had not been developed for this sector before. As a result of these factors it made sense for innovation funding to be secured and the concept tested before further and considerable investment into developing a tool for national rollout.

3.2 Operational Group

The project was delivered by an operational working group, led by SAOS supported by Aberdeen and Northern Marts (ANM) Farm Profit Programme and ScotEID, Scotland's Livestock Traceability centre.

- The ANM programme supported data analysis and presentation, and the unique opportunity to work with and gain invaluable feedback from the Livestock Statement format from their KTIF funded Farm Profit Programme (FPP) farmers.

- With permission from the FPP farmers, ScotEID enabled access to specific data which is recorded for legislative

purposes within the database. This access allowed the LPP team to use the farmers' own data to reflect the performance of their beef suckler herd enterprise and directly inform improved management decisions leading to environmental and economic efficiency gains.

3.3 Farm Participants

This project has designed a model of data extrapolation for fifteen individual farm businesses and has been developed and tested with these farm businesses throughout the project's duration. This is a unique offering which is currently otherwise unavailable in Scotland. It has therefore been beneficial to trial and test this stage of the project with active, reliable and enthusiastic farmers who can see the benefit in capturing and analysing data to improve on farm performance.

Fifteen farmer participants took part in this project (see appendix 3). In every case the farm was a beef suckler unit, and either sold calves store through ANM live ring or direct to slaughter. The participants (ANM Farm Profit Programme members) were categorised into two groupings namely; Focus Farms (9) and Focus Group Members (6).

In terms of cow numbers, the average size of the herd participating in the project was 149 dams. The smallest herd contained 50 cows and the largest herd 371. In total the data from 2163 dams and their follow-on stock was analysed.

3.4 The Process

The project followed a structured delivery process in order to achieve the key aims and objectives during the project duration.

<u>Stage 1 – Farmer Recruitment</u>
This stage highlighted the opportunity for farmers to participate in a pilot project to test and trial the Livestock Performance Statements and was facilitated by Robert Gilchrist of ANM's Farm Profit Programme. Robert has built a strong relationship with the farm businesses involved in the FPP over the last three years and was in an ideal position to reach out and offer them the opportunity to be part of a pilot programme.

<u>Stage 2 – First Farm Visit</u>
A farm visit was made to 9 of the 15 farm businesses involved (focus farms), with the remaining 6 businesses (focus group members) learning of the project during an on-farm group meeting. The initial on-farm meeting was to meet the farmer, walk through the process, have time to answer any questions and finally to gather a signed copy of the Memorandum of Understanding (MoU). The purpose of the MoU was to gain permission to access their data which is stored within ScotEID. It also set out what SAOS would do with the data and assured participants of the responsibility we had when handling the data on their behalf.

<u>Stage 3 – Data Download and analysis</u>

Once permission had been secured from the farm businesses, ScotEID were able to download specific herd data with the use of the farm County Parish Holding (CPH) number. This was not a straightforward process due to formatting and complications around how the data was presented. As a result, the process took longer than hoped.

Stage 4 – Feedback process (Online & survey)

Statements for 9 of the 15 individual farms participating were sent via email and in the post with a letter which described the feedback process. Due to Covid19 we were unable to complete the feedback in the format, which was originally set out, so meetings were scheduled via Zoom in order to complete the project process. (see appendix 4 – feedback template). The remaining 6 farms who were part of the on-farm group have been contacted and the feedback process will be completed post-harvest. Initial impressions and queries were raised during the online meeting and were then followed up with a short survey to reiterate thoughts in their own words.

Stage 5 – Summary of Findings

All the findings from the feedback process can be found in the '*Feedback'* section of the report.

3.5 Measures of Success

The project was based upon meeting the following three measures of success:

1. Implementing Change

   Participating farmers were encouraged to give constructive feedback on metrics, the findings and how they will implement change as a result. Each farmer was asked to complete a short feedback form as well as attend an online zoom call to discuss the findings and share any key learnings/findings.

   Key drivers of change as a result of the herd statement include:

   - Herd health plan for young stock (reducing disease risk over winter housing period)
   - Management of youngstock from birth to twelve months to reduce mortality.
   - Bull management to tighten calving interval and to produce a more even batch of calves for store sales.
   - Heifer management – age at first calving could be reduced to allow the animal to be productive at a younger age.
   - Identifying older stock and evaluating their efficiency on farm.

   These key drivers are relatively simple but often difficult to get visibility from on-farm records. It was often challenging to manipulate the data to clearly define these measures from within a national database too. Yet, it is worth it. Positive change in a few key areas has a disproportionately positive impact on herd economic and environmental efficiency.

2. Consolidation of Learning

    - By amalgamating the feedback received from participating farmers, it was felt that three key areas were identified as routes to drive efficiency gains, they were:

        i. Herd fertility – Number of; cows in calf, cows calved, cows back in calf.
        ii. Bull Management – tighter bulling period to establish shorter calving period. This also helps identify cows which are slipping cycles, which could indicate fertility issues.
        iii. Management of young stock from birth to twelve months – calving ease, ensuring colostrum, vaccination programmes, pre-weaning preparation etc.

3. National Roll Out

SAOS are committed to taking the LPP concept to the next stage and working towards national rollout. The senior team believe in the potential of this approach and support the aspiration of adding value by unlocking the potential of under-utilised, industry-owned data. It also complements elements within the approach outlined in the Suckler Beef Climate Scheme recently proposed by the Walker Committee. With the prospect of Brexit and Net Zero on the horizon the need to achieve improved environmental and economic efficiency within the sector is clear.

"SAOS is very grateful to Scottish Government for KTIF funding to investigate and demonstrate the value that can be achieved from using existing farmer owned datasets to help farmers make better business decisions. This project has demonstrated the potential to not only improve farm business productivity and profitability but in doing so improve environmental performance and farming's contribution to meeting climate change targets. There is now the opportunity to secure wider aggregate benefit by rolling this approach out nationally.
SAOS is committed to building on this pilot and using our livestock data experience through ScotEID to scope out and develop a national benchmarking system leveraging existing data to help farmers develop business action plans, identify broader sector issues such as training needs and skills gaps and provide the engine room/underpin policy proposals for sustainable beef farming and other groups."

Tim Bailey, CEO SAOS

"Cattle keepers throughout Scotland spend countless hours recording data for their registers, primarily to maintain compliance with regulation. Most usefully this data is central to the BVD eradication scheme and is vital for maintaining the assured Scotch beef brand. Utilising the data to assist farmers increase their production efficiency makes the hours of recording that much more worthwhile. ScotEID are proud to provide data access, which underpins its strategy of maintaining industry ownership and common control with Scottish Government and is delighted to continue with its support."

Bob Yuill, Director of ScotEID

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The Farm Profit Programme (FPP) was pleased to be invited to join with SAOS in delivering Livestock Performance Programme. For nearly 25 years, BCMS has been amassing a trove of on farm data that can be used to improve farm performance and in the age of big data LPP is the next logical step for the industry. As a project that focusses on the technical changes that livestock farmers can make to improve their businesses, FPP found the outputs from LPP were a great help in communications with the programme farmers.
Having quick and easy access to data such as calving interval, calving pattern and calf mortality has allowed the FPP farmers to look harder at certain areas of their business to form plans to improve these measures. Not only will this reduce the carbon emissions, it will also increase the profitability from their beef enterprises.

With the progress made in stage 1, we are keen to participate in stage 2. This is an incredibly important project for the future of the Scottish red meat industry and look forward to an eventual national rollout.

Robert Gilchrist, ANM Farm Profit Programme Lead

4. FINANCE

4.1 To deliver the programme a grant application of £60,873 was made to the Knowledge Transfer and Innovation (KTIF) Fund. This grant source is jointly funded by the Scottish Government and the European Union. 100% funding was secured.

4.2 The total spends on this 12-month project was £64,979.85. This was £4106.85 over budget.

Project Area	Claim 1	Claim 2	Total Spend	Budget	Variance
Project Development	17,520	40,360	57,880	53,792	-£4088
Project Management	960	5,100	6,060	5,220	-£840
T & S	993.65		993.65	1,861	£867.35
Materials		46.20	46.20	0	-£46.20
				60,873	**-£4106.85**

4.3 This project came in over budget as a result of the additional time incurred in developing and managing this project to the highest standards. The time and resource required to analyse the data and to manage the project process effectively resulted in a total overspend of £4106.85. An additional printing cost of £46.20 was also required for printing of materials for the participating farms. COVID guidelines meant that we were no longer able to facilitate the feedback session in the format outlined in the original application and so this was agreed as a necessary expense to ensure the quality of delivery of the final results of this key

piece of work. As a result of the overspend, SAOS have subsidised the project with time and resource in kind in order to satisfy the grant award and to ensure project completion as required.

5. PROJECT AIMS/OBJECTIVES

5.1 Aims

As set out in the application, the **aim** of this project was to increase the environmental and economic efficiency of the Scottish herd by piloting an LPP statement with fifteen farms in the North and North East of Scotland. The project started in June 2019 and finished in August 2020.

5.2 Objectives

The **key objective** of the project was to use data to reflect the herd performance of a beef suckler herd enterprise back to the farm manager leading directly to efficiency gains. Through the delivery of a pilot the project would:

1. Facilitate two ANM FPP 'Focus Farm' meetings with each of the six Focus Farms at the beginning and end of the project.
2. Facilitate two ANM FPP 'Focus Group' meetings e.g. Grantown to introduce and conclude the project.
3. Select and identify the Herd Performance Statement metrics that are appropriate and viable for this project.
4. Carry out herd performance analysis using data from ScotEID to produce a detailed Livestock Performance Statement for each of the participating farms. To include a Standard Performance Statement for each of the 'Focus Group' farms participating and an enhanced Herd Performance Statement+ for each of the six 'Focus Farms'
5. Collect, collate and analyse the herd performance data of the participating farms in order to produce their Herd Performance Statements. Statements to be designed and displayed in a format which is easy to interpret to encourage and drive change at farm level.

PROJECT OUTCOMES

6.1 How aims/objectives were achieved

1. Facilitate two ANM FPP 'Focus Farm' meetings for each of the six Focus Farms at the beginning and end of the project.

    - Delivery of two in person meetings for each of the nine focus farms were completed. It was not possible to facilitate the feedback meetings face to face due to Covid19 so these meeting were carried out via Zoom.

2. Facilitate two ANM FPP 'Focus Group' meetings e.g. Grantown to introduce and conclude the project.

- An initial meeting to introduce the LPP project to an ANM FPP group was completed, however members of the SAOS team were unfortunately unable to attend. Robert Gilchrist, ANM FPP introduced the project to the group of six farmers and sought buy in from members on behalf of the project. The statements for these farmers were completed alongside the other 9 and so the process of producing the documents still provided us with valuable learning and experience of working with the data. Due to Covid19 it was not possible to complete the second feedback meeting with the group, however, if restrictions are lifted late Autumn, the team will endeavour to meet in person or virtually (Zoom) with those remaining 6 farm businesses.

3. Select and identify the Herd Performance Statement metrics that are relevant, have impact and are measurable using available data.

   - Several metrics were identified during the application process (see appendix 1). These were explored in detail and refined further once the data had been received from ScotEID for the participating farm businesses.

   The final statement which was produced for the participants was six pages in length and consisted of five key areas covering the breeding herd using 2019 data. The statement needed to be user friendly, easy to understand and allow with little investigation conclusions to be made which would drive productivity and efficiency within the breeding herd. Accompanying each table/graph was an 'explainer section which outlined what each page was presenting, how it had been calculated and how the farmer could use the information to support on farm decision making. The five key areas were:

   i. Herd Overview – the purpose of this section was to highlight the herds performance relative to its potential output. This included drawing the reader's attention to the number of calves which had been registered in the twelve month period as well as highlighting deaths, calves bought at foot and calves bought independently to give an overall picture of the young stock enterprise against the breeding herd numbers. Information relating to calves alive at the end of the calendar year in comparison to the previous year was also showcased to show whether improvement had been made.
   ii. Herd Fertility – This section presented the calving profile of the herd based on registered calving's on the holding in the calendar year and compared it with the previous year (2018). This allowed the keeper to reflect on cow, heifer and breeding bull fertility and or the success of any management change.
   iii. Herd Profile – This section covers two areas. The first chart summarises the total number of cows and all heifers on the holding at the end of the calendar year. It provides some indication of longevity and replacement needs. The second chart indicates productivity within the herd across age groups and distinguishes between home bred and bought in animals to support a more detailed analysis. For example, from this chart, can highlight if a heifer is calving for the first time at two years old, and has a registered calf every year, a ten-year-old cow should have had eight calves registered against her. Any fewer calves than this would

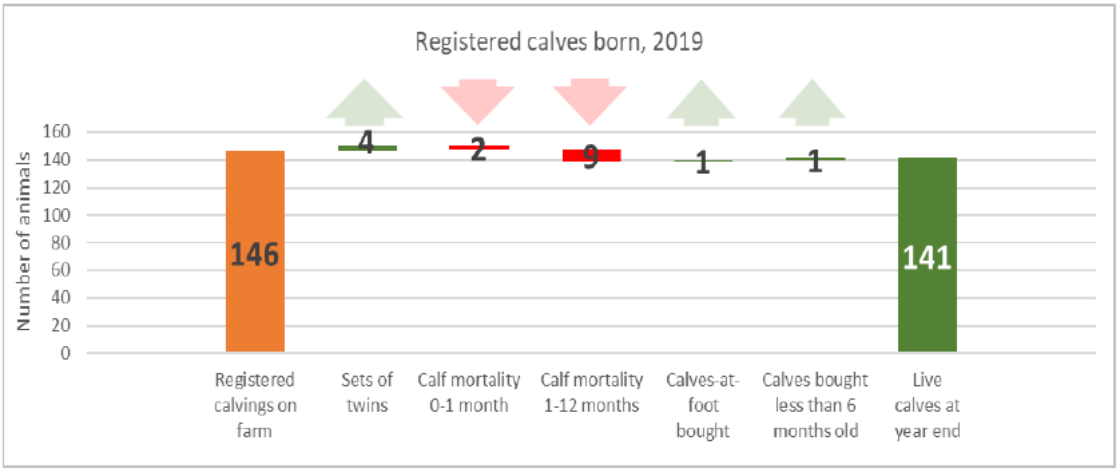
suggest death before registration a cow being retained not-in-calf until the following season. Any cow below the line is roughly indicating that she is performing below average for her age.

iv. Herd Sales – this chart identifies all youngstock, calved females and breeding bulls which have been sold in the twelve-month period and in what month. It is important to understand and determine the best point of sale relative to market price. Thus, this table highlights the frequency of sales and may lead to further investigation to determine the price achieved at different points in the year.

v. Herd Mortality – this chart identifies all youngstock, calved females and breeding bulls which have died on farm during the twelve-month period analysed (excluding any pre-registration deaths). This information allowed the data to speak for itself, highlighting key risk periods for animal health and welfare.

4. Collect, collate and analyse the herd performance data of the participating farms in order to produce their Herd Performance Statements. These statements will be designed and displayed in a format which is easy to interpret to encourage and drive change at farm level.

   Below are a few examples of the design and display which were used in the final report:



The example above is from the Herd Overview (page 1) and is highlighting changes in the youngstock performance i.e. highlighting the herds performance relative to its potential output. The arrows in red and green indicate an increase or decrease in productivity and or animals which have been bought in. This helps focus the mind on exactly what is happening within the breeding herd and will raise questions within the management system which could be improved upon.

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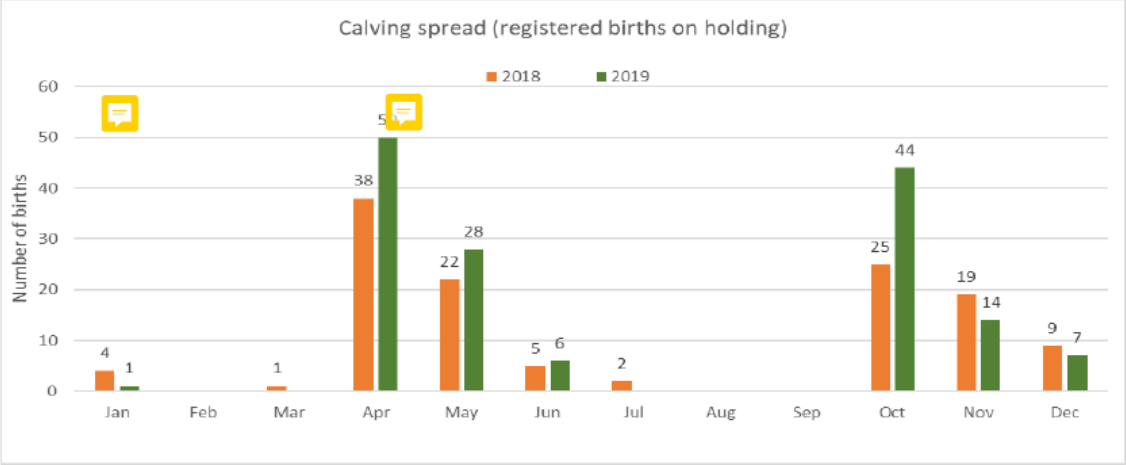
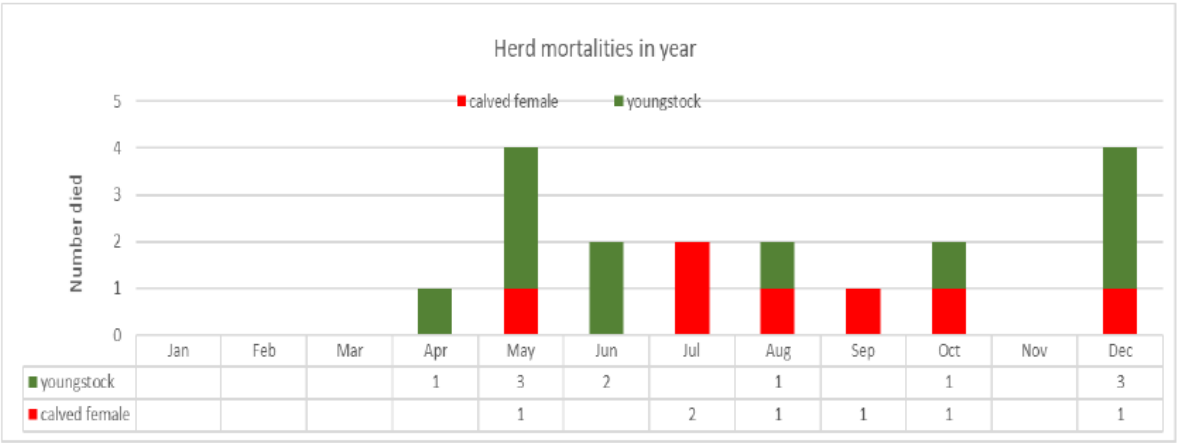


The example above relates to Herd Fertility. The chart is displayed in bars per calendar month, differentiating the year by colour. This instantly gives a clear comparison showing improvement (or not) in the spread of the calving period. The number of births registered in the month is displayed above each bar line to give exact records, allowing additional analysis to be made on the number of cows calving in the month. This example shows that both the spring and autumn calving herds have tightened their calving spread by almost three months. By displaying the information in this way, the farmer has been able to see the results of improved management at bulling. Similarly, if the calving spread had grown, questions around bull fertility and management would be clear to see.



The final example is looking at Herd Mortalities. A chart which stimulated a lot of thought and discussion during feedback highlighted when deaths were registered on farm. Linking this to specific calving and weaning periods, allowed the farmer to come to their own conclusions about the reasons behind the death's records. By highlighting this information on a regular basis, it is hoped that additional management measurements will be put in place to help prevent loss of income and productivity on farm.

For more information on the design and display of the statement

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please see appendix 3.

5. Carry out herd performance analysis using data from ScotEID to produce a detailed Herd Performance Statement for each of the participating farms. This includes a Standard Performance Statement for each of the 'Focus Group' farms participating and an enhanced Herd Performance Statement+ for each of the six 'Focus Farms'.

   - Analysis was carried out on 15 farm businesses for the 12-month period January 2019 – December 2019. Due to complications with the format of the data, it was not possible for the project to fulfil two separate herd statements (Standard and Enhanced). The project did, however, complete 15 standard statements, an example of which can be seen in Appendix 4.

6.2 Feedback

The consultation stage of the project aimed to gather feedback / constructive criticism of the statements to further enhance our approach. During the feedback session, it was evident that the statements were extremely well received. The main request was to provide even more information and more detail.

Some of the comments included:

"This statement has great potential, if more data could be included. Finishing (animal) data would help complete the picture".

"I would certainly use it (the statement). Very useful for benchmarking against previous years".

"Farm software packages just churn out lists. The graph format used are much more helpful at highlighting problem areas".

"It has been really helpful to see this data on paper, and it doesn't need a lot of explanation".

The feedback process as mentioned previously was not in the format in which we planned for, however the time taken to gather thoughts and suggestions for future development was truly valuable. Below is a summary of the individual feedback received from six of the nine farmers who received copies of their herd statement. Unfortunately, three of the farmers did not have time to complete the individual feedback document, but there views were gathered during the online feedback session. Please note that feedback via Zoom was collected from all nine farmers who received the statements, and feedback is still to be collected from the additional 6 farmer participants post-harvest.

LPP Focus Farmer feedback - Summary of Findings					
What was your overall impression of the LPP Statement?	Very Good	Good	Average	Poor	Very Poor
	1	**5**			
Did you find the information within the Statement useful?	Yes, Very	Fairly Useful	Average	A bit useful	Not very useful
	3	**3**			
Would you use the information within the statement to support on farm management decisions?	Absolutely	Yes, I think so	I'm not sure	No, I don't think so	No
	3	**3**			
On a scale of 1 – 5 how easy was the information within the charts and tables to understand?	1 (very hard)	2	3	4	5 (Very Easy)
				3	**3**
What would have made the information easier to understand?	1. On a broad spectrum it's okay, but for the individual not so much. 2. Display columns of info side by side rather on top of each other. 3. Nothing, the table at the side made it very easy to understand.				
On a scale of 1 – 5 how would you rate the clarity of the 'explainer' section?	1 (very hard)	2	3	4	5 (Very Easy)
				3	**3**
On a scale of 1-5 how would you rate the overall presentation of the statement? (text type, colour, size)	1 (very poor)	2	3	4	5 (Very Good)
				4	**2**
What could improve the presentation of the statement?	1. Axis info on graphs difficult to read - could be bigger. 2. More colour - some graphs tricky to read at first. 3. Nothing, it was easy to understand.				

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What farm management decision do you think you might make as a result of reading the information within the statement?	1. Not enough info yet to make informed decisions. Need more years and more info (BES) to be included. 2. Tighter calving. 3. Tighten calving period, culling non-productive cows. 4. Keep a check on bulling dates, cull poor performing cows/bulls, review deaths. 5. We would look at ages of cows and take them out the system quicker. Look to see why the calves are dying and what of. 6. I'm not sure - a lot of the information already confirms what I knew. It highlights it in graph form though.
Do you already have access to this type of herd analysis? If not, would you use it in the future?	1. We have our own spreadsheet system. 2. Yes. 3. Not as detailed, but yes (would use in the future). 4. yes, we have a cattle data programme. 5. Yes, we do and yes definitely. 6. I have access to a lot of the analysis but not all of it. I would certainly use it. Very useful for benchmarking.
What was the most surprising/interesting/valuable take away from the statement for you?	1. Herd Fertility. 2. Simplicity. 3. The amount of calves some of the cows had reared and calving interval. 4. Age profile of the herd could be improved and calving interval. 5. I was very surprised that 1 sold cattle 11 months of the year. I confirmed it on my cattle software but using graph form really highlights it. Details like age at first calving and cows sold after one calving are good. 6. That the bought in heifers that were calving at 3 years old are moving out of the system quicker than homebred ones that calve at two.
What was the least useful aspect of the statement for you?	1. Herd Profile, part two. 2. Sale dates on page 5. 3. It was all relevant. 4. Breed structure of my herd just showed what i already knew. 5. Sale dates but was still good to have them in.
What areas of the statement do you think could be improved and in what way?	1. Great potential with inclusion of more info. 2. Page 3 - cow age and number of calves produced needs to have cow identification to have meaning. 3. Be able to show if a cow has reared a foster calf. 4. Targets set - top third performance figures for comparable. Signpost ways to find useful information online. 5. Comparisons to other similar herds would be very useful. 6. Herd sales and mortality. Tagging dead calves with a number and putting it against the cow to make mortality rate more accurate.

Anything else they would like to add which hasn't been asked?	1. Need finishing data for complete picture. 2. There are anomalies due to animals being kept on farm i.e. barren cows. 3. Average life of bulls and reasons why they are getting sent off farm.

The constructive feedback which was received via zoom can be summarised into the following:

- The explainer section is seen as very useful, but it would be good to highlight/direct the reader to read this first before analysing the tables and charts.
- It is better to reference years directly rather than relatively i.e. 2018 as opposed to previous year.
- The summary numbers are very useful above the bars on the graphs and help aid quick analysis/quick verification against holding owners' internal records.
- It would good to show national averages/official industry targets where possible so the holding owner can compare.
- Need to be able to identify outliers and best/worst performers.

6.3 Milestones

Guide Date	Main Activity
1 x June 19 1 x March 20	Facilitate 2 Focus Group Meetings to introduce, test and gain feedback on the 'Standard' LPP Statements.
6 x July 19 6 x March 20	Facilitate 12 Focus Farm Meetings to introduce, test and gain feedback on the 'Plus' LPP Statements. Time with FPP team to prepare.
Dec 19/Jan 20	Collect, collate and analyses data for each of the 6 Focus Farms & 10 Focus Group members as well as draw out trends and herd national averages for Scotland
Jan 20/Feb 20	Develop and design a herd performance statement template
Jan 20/Feb 20	Commission technical expertise to develop easy to understand graphs charts and tables capturing the ScotEID trends and data analysis.
June 19	Design and Develop Livestock Performance Statement metrics
Ongoing	Evaluation, reporting, financial claims

The milestones which were set out in the application were all achieved, albeit not all on the guide date specified due to circumstances mentioned previously.

7. LESSONS LEARNED

7.1 Issues/Challenges

The most significant challenge the project faced was a change in personnel at ScotEID. Originally arrangements had been made with a

longstanding member of staff who had unfortunately moved on by the time of commissioning the work. This change in the team inevitably resulted in delays introducing someone new but also resulted in change in roles and responsibilities in a way we had not anticipated. It also resulted in the initial project data-download requiring further formatting and manipulation before analysis could commence. Luckily a member of the SAOS team had capability to undertake this additional task, however, the extra time and resource needed for this work did affect the original timelines.

Covid19 clearly also emerged as an issue to the project. Although the pandemic prevented face-to-face farmer meetings, using Zoom as an alternative seemed to work remarkably well and invaluable farmer feedback was still gained. The greatest loss to the project were the farmers who we were unable to meet in person at least once. Relationships, engagement and commitment are hugely important to a project such as this, which was a cause of frustration. Nonetheless, we have felt reassured by the level of engagement we were able to achieve with the 9 farmers that we were able to meet face to face.

7.2 Impacts

In terms of the economic, social and environmental impact of this project the potential of the LPP statement approach is clear across all three metrics. Each measure outlined in the application for this project can be endorsed by the results that have been achieved. The work that has been carried out demonstrates that the concept is robust, and the approach is viable at a national level. Clearly, this initial pilot has only reached 15 farms so far but the range of farm types and herd sizes, level of scrutiny and resulting (overwhelmingly positive) feedback is highly encouraging. From improved competitiveness and profitability of the beef suckler herd, to preserving farming communities and businesses on fragile hill and upland areas to reducing the GHG emissions from livestock farming per kg of beef produced; this approach can help deliver all of these key ambitions for Scotland.

8. COMMUNICATION & ENGAGEMENT

8.1 Detail throughout the project's lifetime

- Individual physical on-farm meetings with 9 of the 15 participating farms to introduce the project aims and objectives as well as describing the requirement needed from the farmers involved during the yearlong project.

- On farm group meeting with 6 of the 15 participating farms to introduce the project aims and objectives as well as describing the requirement needed from the farmers involved during the yearlong project.

- Email communication with the 15 participating farmers to keep progress during the project duration known, allowing farmers to be involved and bought into the process which evolving.

- Physical copies of the final statement sent to participating farms, which were followed by an online Zoom call to gain face to face interaction and engagement with the farmers and their feedback on the document which was produced.

9. KEY FINDINGS AND RECOMMENDATIONS

9.1 The key findings and recommendations arising from this project are:

- The project identifies that an automated, low cost, national benchmarking tool has the capability to effectively engage the industry.
- Clear presentation and greater familiarity with the multiple aspects of a producer's own beef suckler herd performance is required to instigate positive change.
- The credibility in using producer's own data should not be understated. It was well received by pilot farmers alongside a more dynamic approach to presentation.
- The herd summary report outlines key performance measures. Supplementing this with more refined reports will maximise impact by informing improved decision making e.g. action reports, and breeding cow / youngstock / breeding bull statements.

This project emphasised the potential in repurposing existing cattle identification and traceability data, adding value for the benefit of those producers. Feedback was unanimous in expressing interest at seeing their herd performance clearly outlined in the report format. It was also requested that the overarching herd summary report be enhanced with more detail to refine and allow interrogation of the data in order to further direct and inform decision making. This is an important step in supporting the ruminant sector deliver greater economic and environmental efficiency.

10. CONCLUSION

10.1 Conclusion

In conclusion, the potential of the LPP statement approach is clear. With identified low suckler beef herd profitability, challenging targets set by Net Zero 2045 and impending Brexit, there is a need to engage producers in a practical and meaningful way. An initiative such as this presents a clear opportunity not only to identify industry problems but also to present industry solutions.

The Statements empower and inform tangible on-farm decision-making whereby individual producers can interpret and act for positive change. This is consistent with the ambition of the proposed Suckler Beef Climate Scheme. The combination of small, meaningful, changes on each farm adds to significant positive outcomes in relation to both economic and environmental efficiency.

The sector needs support to adapt and evolve and these statements can be a key enabler of that process of change. KTIF funding has been vital in enabling this significant first phase of testing the concept. This process identified that:

- The concept and method both work and have capacity to achieve the aims set out i.e. improved environmental and economic efficiency in the beef suckler herd.
- Farmer feedback places great value on this approach and has expressed demand for more data and information.

We now have a proven foundation to develop a nationally significant programme based on unlocking greater value from robust and legally required farmer owned data, to provide farm business, wider rural and environmental benefit.

11. ANNEXES

Appendix 1 – See Pdf Document Titled 'Livestock Performance Statement Example'

Appendix 2 - How herd data can help deliver improved environmental efficiency

The FAO Report 'Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities' was clear that the potential to significantly reduce emissions from livestock exists and is within reach. It also articulated the understanding that reducing emissions from livestock can be achieved by lowering the emissions intensity of production.

Emissions intensity is an expression of the quantity of gases that are produced per animal for a unit of production. The concept has led to thinking around the most environmentally efficient ways of producing a kilo of meat or litre of milk for example. The variability of emissions intensity on a global and regional scale and the gap between the producer with the lowest emissions intensity and the producer with the highest emissions intensity highlights the scope for reduction opportunities.

By using herd data, farms can make efficiency gains which will reduce the environmental impact of production in their beef herd. Improvements in key metrics such as daily live weight gain, calving percentages, calving interval and so on can all directly lead to a greater number of productive units per input. For example, in 2017 it was estimated (using ScotEID data: www.scoteid.com) that the average calving percentage for the Scottish herd was 81% i.e. 81 calves were born per 100 cows. In the same year an average 600kg cow was estimated as producing approximately 2.8132 tonnes of CO2e per annum using the AgRE Calc tool – an SRUC free online resource. If an average 100 cow herd increased the number of calves per cow by 5%, they would achieve a 14t CO2e savings efficiency.

Improved and informed decision-making can reduce the tCO_2e (tonnes of carbon dioxide equivalent – greenhouse gases) per kilo of beef produced from the Scottish beef herd. The role of key management decisions in securing

environmental efficiency gains and lowering the emissions intensity of production is an aim that the Livestock Performance Programme is working to support farmers to achieve.

Appendix 3 – List of involved Farmers

Farmer Name	Address 1	Address 3
Arthur Duguid	Mains of Cranna	Huntly
Andrew Gammie	Drumforber	Laurencekirk
Andrew and Debbie Duffus	Mains of Auchriachan	Tomintoul
Mark Mackay	Greenvale House	Thurso
Alan Smith	Gladhill	Fochabers
Peter Chapman	South Redbog	Fraserburgh
Steven Dalgarno	Clackriach	Peterhead
Andrew Biffen	Mains of Arnage	Aberdeenshire
Ryhs Anderson	Burnton Farm	Laurencekirk
Peter Robertson	Ednie	Fraserburgh
John Morrison	Fairburn	Banff
John Farquharson	Darley	Turriff
Murray Henderson	Yonderton	Hatton
David Watson	Darnford	Durris
Alison Webster	Ardhuncart	Alford

Appendix 4 – Pdf Example of Herd Statement 'LPP Dashboard Format (20200704) 'Mains of Cranna'

LIVESTOCK PERFORMANCE PROGRAMME