PRRS Elimination in Pigs on the Moray Coast to Refine Innovative & Collaborative Control Techniques

KTIF SG Final Report - KTIF Ref No – KTIF/027/2019

1.1 **PRRS Elimination in Pigs on the Moray Coast to Refine Innovative & Collaborative Control Techniques**

1.2 Operational Group membership

- Wholesome Pigs (Scotland) Ltd
- GW Pig Consulting Ltd
- SRUC
- SAC Consulting Ltd
- Quality Meat Scotland

Executive Summary

2.1 PRRS virus is widely considered to be the most economically significant disease of pigs in Scotland. The virus causes a spectrum of problems, from abortion and stillbirth in sows to pneumonia in growing pigs. It also causes immune suppression, leaving infected pigs vulnerable to other conditions and potentially leading to greater use of antimicrobials. These features combine to cause widespread impacts on the productivity, efficiency and welfare of the herd, and therefore control of this virus is highly desirable. Unfortunately, the organism is also readily transmissible even at distance and will infect herds rapidly if introduced in new stock, or via contamination, meaning high standards of biosecurity are an important factor in control.

In 2018 Scottish pig industry stakeholders collaborated in developing a plan to progress control of the virus in Scotland. KTIF funding was sought and secured to support a coordinated pilot project focussing on the Moray Coast region. This area was selected because as well as having a proportionately low number of PRRS positive units, many pig movements in Scotland originate from this region and therefore controlling disease at source was anticipated to aid in reducing disease downstream. Mapping work underpinned this part of the project, with QMS surveillance testing contributing data to allow a geographical overview to be maintained.

An Operational Group was formed led by Wholesome Pigs (Scotland) and involving other vets, academic and industry support organisations. It met periodically throughout the course of the project to direct the activities.

PRRS positive units were identified and producers were invited, with their vets, to participate in a series of meetings to progress control. Engagement was excellent with all of these units being open to involvement in the pilot. Support from pharmaceutical

companies made it possible for the project to subsidise testing on these units to inform decision-making and to determine the success of control strategies.

Alongside this collaboration with producers, work got underway to raise the profile of biosecurity as a vital factor in disease control. A workshop event was held in October 2019 to bring together representatives from the pig sector and allied industries such as haulage, processing, government agencies and assurance schemes. This meeting heard from researchers and veterinary surgeons and provided a platform for discussion between the various stakeholders. Several areas for process improvements were identified and the event provided an excellent networking opportunity. A follow-up event took place in May 2020 and presented producers with veterinary insights into on-farm biosecurity.

At the time of submission, the Moray Coast now only has one PRRS-positive unit remaining, on which vaccination is being used to control the disease. A number of large producers have worked with the pilot team to gather information on their unit's PRRS status in order to support further decision-making elsewhere in Scotland. Learning points from the pilot will provide a sound basis for future efforts to control the disease in Scotland's pig units.

This pilot project proved that area control of PRRS is possible in Scotland and helped to fine-tune the approaches necessary to get all stakeholders committed to the collaborative effort necessary for success.

Project Description

3.0 The objective was to eliminate PRRS in the Moray Coast area and obtain information and data required to facilitate a larger PRRS elimination project across Scotland. The following steps were planned to achieve this:

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1) Bring all participants in the Morayshire area together in order to share knowledge and develop an elimination plan
2) Phase 2 of PRRS testing carried out on +ve and -ve units in the Morayshire area
3) Vaccination against PRRS on +ve units
4) Implementation of the PRRS elimination strategy and follow up KT/E meeting with Morayshire project group
5) Re-testing of +ve and -ve units to gather data on success/failure of vaccinations
6) Evaluation of PRRS pilot project
7) Draw up national PRRS elimination strategy based on study outputs and apply for further funding

Project Aims/Objectives

5.1 The overall ambition is to eradicate PRRS virus from Scotland. The objective of the Moray Coast pilot was to eliminate PRRS virus in the Morayshire area, and from this to develop a plan for future wider control in Scotland.

Project outcomes

6.1 The original aims have largely been achieved with the Moray coast region now almost free from PRRS. While one unit in the original area remains PRRS positive, this unit is now working with their veterinary surgeon to control the disease through vaccination. This strategy sets them up in a ready position to undertake local eradication once business factors align to make this feasible. Increased biosecurity awareness helps to reduce risk to other units.

Aims were achieved through communication and engagement with producers to demonstrate that support was available for those who wished to control the disease on their units. Producers engaged in a series of meetings to discuss progress as a group. Testing of vaccinating units is underway, albeit delayed due to covid-19 restrictions. Throughout the course of the pilot it was considered important to also engage with PRRS negative units to raise awareness of the importance of good biosecurity and to help them identify biosecurity weaknesses on their own units.

Ongoing collaboration with QMS through phase 2 of the serological testing survey meant that the data underpinning mapping was contemporaneous and more robust.

Evaluation and future strategy will be discussed under 7.1 and 7.2.

6.2 **Milestones**

	Milestone	**Date**	**Comments**
M1	Moray Coast producer and veterinary group meetings to share knowledge and planning	June to Dec 2019	
M2	Completion of phase 2 surveillance testing in association with QMS	March 2020	
M3	PRRS vaccination	Dec 2019	Ongoing
M4	Follow-up KT/E meetings	Oct 2019, May 2020	
M5	Completion of testing to negative on PRRS +ve units	November 2020	Subject to ongoing local veterinary review
M6	Project evaluation	September 2020	
M7	Develop national PRRS elimination plan	December 2020	

Lessons Learned

7.1 **Issues and challenges**

Summer 2019 saw an outbreak of swine dysentery, the first in Scotland in three years. This coincided with the rollout of the pilot, necessitated treatment of multiple units across the country and hampered decision-making as producers sought to minimise the impacts on their businesses. As a result, commencement of testing and control was delayed in the Moray Coast region, with one of the PRRS target units being affected. This did serve to focus producers' minds on biosecurity, acting as a reminder that all units can be vulnerable to infectious disease. The ongoing advance of African Swine Fever cases into Europe reinforced the message that vigilance is essential. The Staying Ahead of Disease event crystallised many points in the flow of Scottish pig production at which biosecurity could be significantly improved.

For all producers there is willingness in principle to undertake a control programme, but since for the majority of units this would necessitate at least a partial depopulation and associated financial and labour costs, strong pig prices acted as a disincentive. PRRS breakdowns in units which have undertaken depopulations have led to reticence amongst some producers, but biosecurity education can help mitigate this problem. The project still acted as a means to develop relationships with such units, offering support with testing to help gain a better understanding of the disease status of their herd. These foundations leave units in a better position to undertake depopulation once confidence and business factors make it a viable undertaking.

Given the infectious nature of the virus, geographical spread between neighbouring herds is possible and with much of Scottish pig production taking place outdoors, mapping is vital. However, all mapping has limitations, as disease status may change quickly and gathering data rapidly and comprehensively to reflect such changes is a challenge. Nonetheless the map provides a record of all sites on which pigs are or have been kept, which provides useful information to vets and producers assessing the biosecurity of potential new sites. It also informs strategy when planning regional disease control efforts, allowing relevant producers to be targeted for engagement and education.

A key team member (Carla Gomes) left SRUC during the course of the project, requiring her duties to be shared between others but this was achieved without significant disruption.

Covid-19 has also led to some unavoidable delays, with restrictions hampering non-diagnostic veterinary visits and social distancing requirements presenting practical challenges to sampling. These have not significantly impacted the project.

7.2 **Impacts**

The pilot served to focus minds on this disease and by doing so encouraged collaboration between producers to achieve shared aims. This engagement is vital because both PRRS positive producers and those who are free from disease (but whose stock are therefore at risk of infection) benefit from disease control.

Insights into the motivations and attitudes of producers were gained through the various contacts made throughout the project. Importantly this allowed a deeper understanding of the barriers to undertaking disease control at unit level, and this knowledge will inform future disease control efforts, even beyond PRRS.

Mapping was already established thanks to prior work (by ERU/WPS), but the pilot put this tool to practical use at unit level for the first time, with the information made available to help vets and producers make decisions on unit locations and geographical risk. The map is a vital measure in planning area control strategies and its value, scope and limitations were explored in real situations.

Education is central to control of this disease and the pilot was timely given the concurrent swine dysentery outbreak and advancing African Swine Fever threat in Europe. Producers were alert and keen to heed biosecurity advice and we benefited from high levels of attention and interest in our outreach events as a result.

Antibiotic use is rightly under close scrutiny, with the pig sector working hard to limit use of antimicrobials in stock. Control of PRRS has a knock-on effect in reducing the levels of bacterial disease experienced by pigs, so any efforts to reduce the levels of PRRS infection in the Scottish pig population has the potential to positively impact on our antibiotic use at local and national level. This will be a long-term target to monitor.

Similarly, PRRS control has the potential to improve overall efficiency in pig production by improving reproductive efficiency and minimising losses in production. Anecdotal reports from producers in the pilot group suggest that improvements in productivity are already being seen at unit level. The potential to increase efficiency on a wider scale exists, and will benefit not just the sector but will have a positive impact in reducing the carbon footprint of pig production.

Communication and engagement

8.1 Communication has taken place at multiple levels – with the focussed group of Moray Coast producers, with the wider group of producers in the North of Scotland, with veterinary surgeons and with allied industries and stakeholders.

- Producers in the trial area have received individual tailored support, along with several meetings of the involved farmers and vets.
- Wider stakeholder groups were briefed on the project at meetings including the Pig Monitor Farm, Aberdeen Pig Discussion Group, Scottish Pig Industry Leadership Group and Pig Health & Welfare Group.
- A Biosecurity Workshop was held on 31/10/19 with 60 participants, including representatives from haulage, processing, contractors, feed companies, government agencies and assurance scheme representatives, with outputs collated and circulated.
- A follow-up session on Practical Biosecurity targeting producers was held in May 20 (online due to Covid-19) and had 31 participants.
- A written update about the project was sent to all Scottish pig producers, stakeholders and press in June 2020.

Key findings and recommendations

9.0 The level of awareness of PRRS and support for its control is high amongst producers, with the majority viewing control measures positively. However, barriers often stand in the way of individual producers when progression from control to eradication is required. This is primarily due to external factors, such as high pig prices, which disincentivise producers to endure the financial loss associated with a depopulation. This is a short-term interruption in business returns, and with potential for significantly improved returns following effective disease eradication, but confidence in this investment is dented by news of failed depopulations where disease has re-entered (or not been effectively cleared from) units.

In order to ensure units undertaking such depopulations are successful in maintaining disease-free status, biosecurity education is vital. The workshop we held brought representatives with many different perspectives together and highlighted several areas where biosecurity risks were unnecessarily high and improvements would be desirable.

Recommendations fell into four main categories –

- Facilities (vehicle washing facilities at processing sites, vehicle entry points to pig units and provisions for personnel entering pig units)
- Education (ensuring information on cleaning and disinfection reaches staff at all levels in businesses serving the pig sector, and provision of clear communication on-site)
- Assurance and enforcement (increased focus on biosecurity in schemes, and follow-up to ensure standards are adhered to)
- Communication and human factors (recognition of challenges and difficulties, with collaboration to overcome these, and allocating time to biosecurity tasks, as well as improving compliance through facility upgrading).

Key to the above were a commitment to openness and wider sharing of information both with producers and stakeholders so that, for example, feed companies could plan routes to visit infected premises last. The swine dysentery outbreak highlighted areas where improvements could be made to existing systems.

The mapping tool was a valuable asset in making decisions both at a strategic level when planning control approaches, and at producer level where the mapping team could help assess suitability of pig units based on the disease status of neighbouring sites. This information is currently confidential, and no data is handed to producers, but preliminary discussions have taken place about sharing the information openly to allow producers to access it, possibly via their vets. The data is underpinned by the serological screening carried out at slaughter by QMS and is supplemented by manual submission of information from vets and cross-referenced with quarterly vet report submissions through QMS. This does mean that disease status changes may not always be entered in the mapping system and the information therefore has to remain provisional and for guidance only, but these limitations may be overcome in future if other systems of disease status monitoring are developed.

One of the reasons mapping is such a valuable resource is the ability of the virus to spread between nearby units. Using a geographical approach to controlling PRRS ("area regional control") has been implemented successfully elsewhere (eg Denmark, US) but relies on all producers in the area collaborating and agreeing to undertake synchronised control. This is a major challenge when the units in an area can vary significantly in size, type and motivation, and relies on all the producers concerned being educated on the potential benefits of control, and the means by which it would be undertaken. Even a single unit resisting involvement would put the success of others in the region at risk. However, there is a long history of collaboration in the Scottish pig sector and there is no reason to think that this could not extend to a more ambitious PRRS control project in this country, but the main limiting factor remains a strong market. Key to overcoming this barrier will be education and preparation, so that producers are ready to progress with control plans once external factors align to justify the investment required.

Conclusion

PRRS control is an ambitious undertaking, whether at unit-level or on a wider scale. There are many challenges and barriers to progress. However, the notably high level of existing cooperation, willingness to share production and heath data, and consistent engagement with vets and epidemiologists that exists in the Scottish pig sector equips it well to achieve this successfully.

Biosecurity is integral to PRRS control, and ongoing measures to raise awareness amongst those who work in, with, or on pig units is essential. This is an ongoing challenge facing veterinary and animal health professionals, but as we face increasing disease risks from overseas (eg African Swine Fever) as well as those from within the UK, widening exposure to these critical messages is essential. Stakeholders may not always be exposed to the information which is freely available to pig keepers and widening communication of key biosecurity measures to allied industries will be important for progress in disease control.

Many of the structures necessary for successful control of PRRS are already in place in Scotland, and could be used at a larger scale with some refinement and adequate funding. Whether a level of statutory control is desirable should be considered, particularly given the potential for a single unit to put others at significant risk. Like BVD in cattle, this disease has a huge economic impact and therefore controlling it nationally would be beneficial in similar environmental, welfare and efficiency respects. However, PRRS virus is more readily transmissible, with biosecurity of even more critical importance in its control. A national control scheme could give confidence to those producers for whom fear of reinfection dampens their willingness to embark on eradication strategies.

This pilot project proved that area control of PRRS is possible in Scotland and helped to fine-tune the approaches necessary to get all stakeholders committed to the collaborative effort necessary for success.