



Antibiotics Unplugged

written by
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The recently completed three year pig project of the QMS monitor farm programme at Lazyfold pig unit in Aberdeenshire included a significant effort to address the niggling health issues which were slowing down growth and financial returns.

The result has been a return on investment that would be the envy of the City of London, before the additional benefits of animal welfare improvement; job satisfaction and reduction in costs per kilo of output are taken on board. Put simply, good health is good business.

Three years ago the newly selected QMS pig monitor farm was a top competitor in terms of breeding performance, as measured against a group of producers in North East Scotland who contribute to their own benchmarking group - *see Figure 1 below.*

Typical to any monitor farm, one of the first tasks was to assess the performance of the unit across a number of variables, and to then discuss the findings with the owners, the local community group of other producers, and external specialists, and to then provide a wish list of targets to drive the project forward.

High on the list was to identify where the weaknesses in the production system were impacting negatively on financial output.

The unit was positive for EP, PRRS, PMWS, and Ilieitis, but has been operating as a closed herd for many years.

Routine medication and vaccination included Tiamulin 14 days post weaning for 7 days, CTC 3-6 weeks post weaning, and then pulsed week on/week off from 30-65 kg LW.

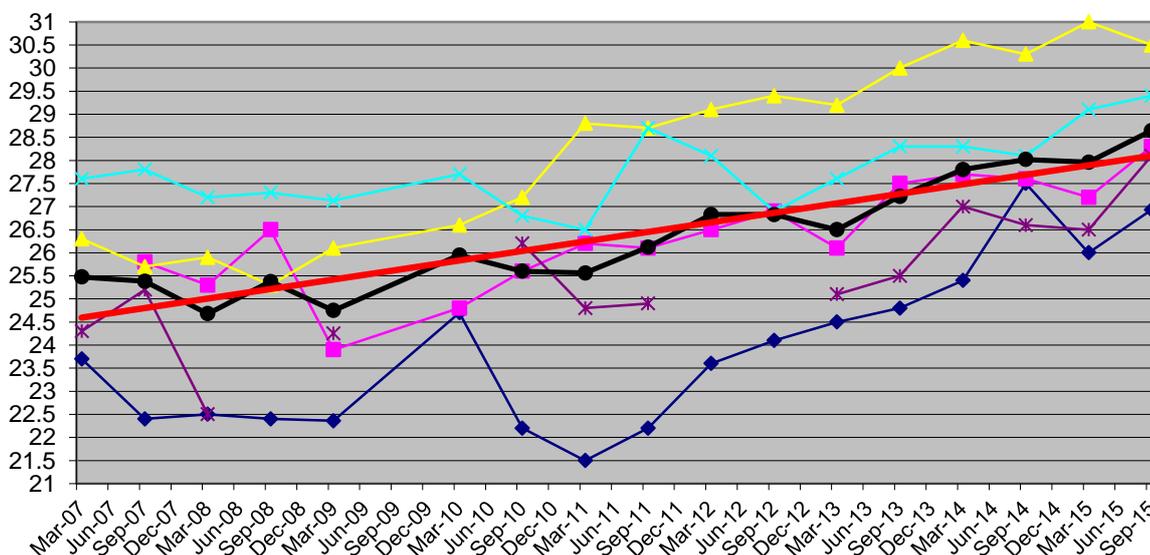


Figure 1. Piglets weaned per sow per year; local benchmarking group (pale blue = monitor farm, black is average)

SUMMARY	EP-like	LUNGS				LIVER						BODY	SKIN
		Ave Score	Viral-type %	PP-like %	Abscess %	Pyaeamia %	MS %	HS %	Pleurisy mild %	Pleurisy severe %	PC %	PT %	Tail %
	3.9	0.0	0.0	0.0	2.8	0.0	2.8	4.7	9.4	5.7	0.0	6.6	0.00
No. of Pigs Affected:	40	0	0	0	3	0	3	5	10	6	0	7	0

Table 1. Quarterly WPS abattoir surveillance report, monitor farm, before partial depop.

Biosecurity in terms of location was good (at the end of a road in Aberdeenshire) and the nearest producer is 3 miles away.

As with many units however, the background of chronic health issues was being mixed with basic pressures that reduce growth rates, increase costs and thereby impact directly on profitability.

The questions were; what parts of the process were contributing to the slow-down in growth, and by how much?

Like most units, the monitor farm had excellent records from the breeding herd, and weekly feedback from the processors on weights and grades, and quarterly reports from the Wholesome Pigs Scotland (WPS) abattoir surveillance scheme.

The latter information - *see Table 1 above* - indicated that there were variable lung scores, and some pleurisy.

Condemnations were around average for Scottish units, and post-weaning mortality similar at between 3 and 4% over six years. Losses were not blatant, but grinding away at health, efficiency and profitability.

Again, similar to many units in the U.K. there was a lack of data on the performance of the pigs once they left the farrowing house.

A recent investment in new weaner accommodation prior to the project was shown to have not only significantly improved growth rates but given good return on investment, a fact established later by Jim Booth of SAOS who was joint facilitator of the QMS project.

At that time, grower pigs then going into an old straw based building holding 7 groups of 200 pigs from approximately 30 to 60kg LW, and then being finished on slats in a separate building.

Growth rates were known to be sub-optimal in the middle stage (680g/d), and the project decided to track 4 groups of piglets to slaughter to quantify growth rates.

The monitor farm produces around 220 piglets per week, and four consecutive weaning's were weighed and then subsequently weighed again out of each housing stage. This obviously entailed extra work, but the monitor farmer Danny Skinner, his family, and the farm team were brilliant, assisted by Iain Lyle of Boehringer Ingelheim and Jamie Robertson of LMS Ltd.

The important result was that whilst the measured growth rates in each section only confirmed what the family 'knew' about the pressure on the unit, it quantified the differences in a robust manner. The straw grower shed was slowing the job down and needed to go in order to improve health and productivity.

Table 2 on top of opposite page shows a summary of growth data from weaning to finish for four consecutive batches of pigs.

Group 1 went through the existing building in a pen provided with a wet feeder from the QMS project, and group 2 pigs were sent off site to a naturally ventilated straw yard not previously used for pigs in 2013. The average dlwg for each group through the grower stage (30/60) were significantly different from each other (P<0.004). The differences equate to more than 760kg – 1,850kg more growth per 200 pigs from the next best to least good groups respectively.

An investment appraisal provided by Jim Booth put the decision making-process on to an objective basis, and greatly facilitated what happened next.

In retrospect this step is crucial to good decision making, stripping the job back down to financial considerations and then imposing a set of 'what if' situations on the financial model.

Group No.	Group description	Avg dlwg 30/60 stage	Wean to final weigh (dlwg)	Avg weight at final weigh (kg)	Avg days to final weigh	Comment
1	Wet fed through 30/60 stage	835g/d	706g/d	103.4	136	Fastest dlwg (+90g/d) of 3 groups in standard accommodation
2	Offsite in clean accommodation	908g/d	749g/d	102.6	127	Fastest dlwg overall. Importance of clean buildings?
3	Dry fed through 30/60 stage	761g/d	681g/d	98.7	135	Poor dlwg compared with Gps 1 & 2
4	Dry fed through 30/60 stage	730g/d	686g/d	101.4	136	Poor dlwg compared with Gps 1 & 2

Table 2. Growth rates weaning to final weighing on farm. 4 groups, n>200. (Iain Lyle, 2015)

The grower shed had to go, as the status quo was that all the good work being done in the breeding side and final finishing was being undone by a bottleneck in the system that was exacerbating health issues and slowing efficiency.

The reality of losing accommodation for 1400 grower pigs in a continuous flow production system facilitated the next big decision; to eliminate the chronic health issues by undertaking a partial depop. The process is well-travelled but ultimately a major business decision with plenty of stresses to be managed.

The farm vet, Rachelle Grogan, assisted by Dr David Strachan of Boehringer Ingelheim set out the timetable and vaccination/medication policy, and the local network and Scottish Pig Producers Ltd and Derek Lamb from Harbro helped to manage the forward selling and B&B required to get live pigs off farm.

The new build was managed by Danny Skinner using Finrone structures and a lot of farm staff hours.

The depop and new build are separate stories, but after the first few batches of weaners entered the new grower shed post vaccination/medication of all the sows, the process of weighing four consecutive batches of pigs from weaning to finishing was started. The results are shown in **Table 3 to the right**

Productivity per sow per year has clearly increased - see **Figure 2 overleaf**.

There is still more performance to be found from the new build, and whilst it is not possible to clearly separate the impact of the partial depop from the impact of the new build, is that the bottom line has drastically improved.

After an obvious short-term increase in vaccination/medication of the sow herd that is a constituent of a partial depop, routine pulse medication use including routine vaccinations has dramatically fallen to 3p/kg DW.

The 3p/kg DW is purely made up of routine piglet and sow vaccines, and no in feed pulse medication has been used since the partial depop.

	Previous	Budgeted	Actual
Pigs weaned /sow /yr	28.3	28.3	28.8
Pre-weaning mortality	11.5%	11.5%	11.5%
dLWG (wean – finish)	620g	750g	800g
FCR (wean – finish)	2.55	2.40	2.20
Lwt at sale	110kg	110kg	110kg
Feeding days	165	136	130
Post-weaning mortality	4.5%	3.5%	3.0%
Feed use	260kg	245kg	225kg

Table 3. Performance improvements resulting from the partial depop

Results

All health parameters as measured by the WPS abattoir surveillance programme are currently excellent. There has been a slight but temporary cough in the pigs, and a blip with one or two finishing pigs dying with what looked like Mulberry heart disease.

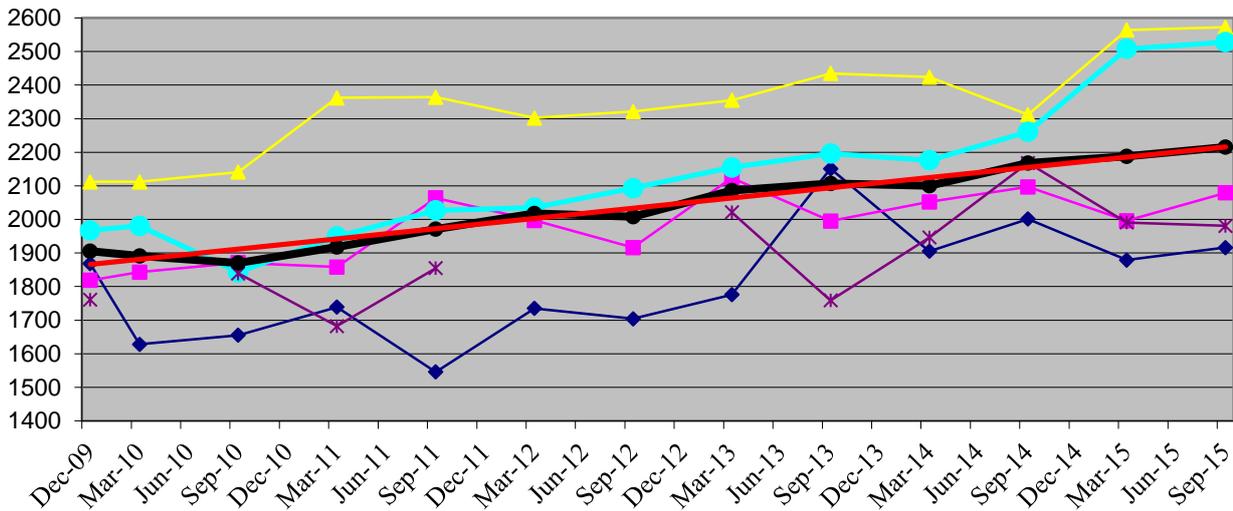


Figure 2. Deadweight produced per sow per year; local benchmarking group (pale blue = monitor farm, black is average)

In retrospect, this had been mentioned as a possibility, as fast growing pigs from highly productive herds may be short of competent levels of Vit E in the diet.

There is also an issue of high P2's which is seen in common with other herds that have improved health and performance. Healthy pigs on ad-lib diets will and can fly!

Many herds have genetic growth potential that is untapped because of chronic health issues and environmental stressors around the production system.

Once that potential is realised however and the growth rates take off, grading will be an issue until the nutritionists find a solution. Restricted feeding has been mooted but it will be a brave soul that takes that route until good evidence is produced.

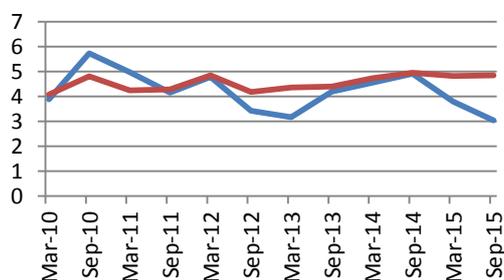


Figure 3. Vet and vet medicine costs (p/kg/DW) between March 2010 and September 2015. (blue=monitor, red is group average)

Figure 3 above shows that vet and vet medicines costs dropped from 5p/kg DW to 3p/kg DW.

Growth rates also increased from 680g/d to 800g/d, with the expectation that this can be improved by ironing out any niggles inherent with a major change in the production process.

The positive financial return is unambiguous; with the cost of the partial depop returned within 12 months, and the investment in the new grower shed looking at payback in 7 years.

Lessons learned

- Must measure performance throughout the growth period to allow objective decision making
- Planning and advice from specialists is essential
- Use of the investment appraisal process facilitated the decision process
- Sub-contracting to B&B can be costly without attention to detail at all levels
- Planned improvement in health has reduced antibiotic use and increased growth and financial returns in a manner that was predicted by the investment appraisal
- Stay aware that improved growth rates may impact on the detail of nutritional requirements

Acknowledgements

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