

Edited by Amy Quinn



Welcome to the October edition of the Teagasc Pig Newsletter. This year's Teagasc Pig Farmers' Conference was a great success, with strong attendance and insightful discussions on both days.

The conference provided an excellent opportunity to bring together Teagasc staff, producers, and industry experts for engaging discussions on industry challenges, technical expertise, and best practices in pig production. We are grateful to all who attended and contributed to its success.

In this month's edition, we cover three insightful articles. Kieran Keane highlights practical steps to reduce the cost of compressed air, an essential yet often overlooked area of farm operations. With most farms relying on compressors that run 24/7, Kieran offers valuable tips to improve energy efficiency, reduce leaks, and save significantly on operational costs.

Next, Laura Boyle shares details on a new project led by the Pig Development Department (PDD). Funded by the Department of Agriculture, Food

and the Marine (DAFM) as part of the US-Ireland R&D Partnership Programme, this initiative will use artificial intelligence (AI) to improve piglet survival by monitoring feeding patterns and enhancing husbandry practices. By reducing pre-weaning mortality, this research could have substantial welfare and productivity benefits.

Finally, Ciarán Carroll introduces the TAILWARDS project, an initiative under the European Innovation Partnership (EIP) for Animal Health and Welfare, focused on raising pigs with intact tails in Ireland. Funding for this project was announced last week, highlighting a commitment to improving animal welfare in the sector. Drawing from Finland's successful practices, TAILWARDS will explore practical solutions like optimised nutrition and partially slatted floors to help reduce tail biting.

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Lowering the Bar – Making compressed air cheaper



Kieran Keane

Most pig farms have at least one air compressor and most run 24 hours a day, 7 days a week, 52 weeks a year maintaining a constant pressure. Although important, the compressor is often forgotten about; that is until it stops. But while fresh air might be free, compressed air definitely isn't. The cost of running an industrial compressor around the clock for the year is in the thousands of euros. Compressed air is also quite inefficient to produce. Ninety percent of the electrical energy used in a compressor is converted into heat, which we often waste or worse use more electricity to extract this heat from the compressor room. It's estimated that 10% of all electrical use from industry is consumed by compressors. Here are some tips for saving energy and more importantly money when it comes to compressors.

1 - Reduce running hours

Most farms compressors run around the clock but do they need to? If the compressor is operating a feed system which is off for a long period overnight then why not have the compressor on a timer and save some of the unloaded running costs. A compressor will typically use 25% as much

energy unloaded as it will on full load so why not have it off as much as possible. Some feed systems can even be adapted to control the compressor and only have it running when needed.

2 - Check for leaks

It is estimated that more than 20% of compressed air is lost through leaks. A 2mm hole in an airline could cost you over €1000 per year. Most farms will have hundreds of meters of airline circuits running all around the farm. A big air leak might be heard if the environment is quiet, but small leaks may not and a small leak could still be costing a few hundred euros per year. So it is definitely worth carrying out periodic leak detection checks – whether this be with an ultrasonic leak detector or just walking the route of the airline when rooms are empty. Alternatively you could install metering devices or gauges to check pressure at different points.

3 - Reduce the pressure

As a general rule of thumb for every 1 bar of pressure reduction in a compressor's configuration it reduces the running costs by 7%.

It also reduces the impact of air leaks by 13%. If the compressor is set to its lowest required working pressure a lot of money can be saved. Often compressors are set at 10 bar and then the air is run through a pressure reducer at some point and brought down to say 6 bar for example – a lot of money can be saved here. A word of caution however- there will be a pressure drop over long lines so it's worthwhile putting in a pressure gauge at the end of a line and checking that the pressure on the last valve is sufficient.

4 - Heat recovery

As already stated it's expensive to run a compressor and a lot of this expense is in turn converted into heat. A lot of the time this heat is left off into the atmosphere while we pay for more heat somewhere else to keep a canteen or office warm or to heat water for showers. So why not use the "waste heat" from the compressor? Heat recovery systems for compressors usually pay for themselves in a short period of time and can be simple to install.

5 - Select the correct compressor

When buying a new compressor it's important to note that the actual cost of the compressor itself is about 15-20% of the compressors lifetime cost –

i.e. the running costs will be a multiple of the initial outlay. Therefore it is important that you choose the right compressor based on running costs. The wrong size compressor could cost you a lot in the long run through energy costs, maintenance or loss of production due to downtime. So before buying its worth checking the following:

- Pressure required
- Air flow needed
- Are there plans for future expansion?
- Is a drier needed?
- Can heat recovery be used?
- Would a variable speed drive be advisable?

Variable speed drive (VSD) compressors can save 35% of running costs. On a fixed speed compressor there is a set number of starts per hour regardless of air demand. A VSD compressor will ramp up and down and only run when air is needed. This would work well on farms as air demand is variable throughout the day.

6 - Don't forget maintenance

Regular preventative maintenance is the best way to avoid downtime, increase efficiency of the compressor and increase the lifespan of the compressor.

Successful application for a new EIP operational group – Tailwards

Ciarán Carroll & Edgar Garcia Manzanilla

Last week, the Teagasc PDD has been awarded funding for a new European Innovation (EIP) Partnership Operational Group, **Tailwards** - *Irish pig sector stakeholders moving together towards raising pigs with intact tails.*

Ireland, similar to most European and all pig meat exporting EU countries, produce pigs with docked tails in compliance with EU regulations, to avoid tail biting. Apart from animal welfare concerns, tail docking is time consuming and takes a toll on farm

staff. Some countries, e.g. Finland, can successfully produce pigs with intact tails. There are a number of differences between the two countries which might lead us towards raising pigs with intact tails, e.g. public system of bonus payment for intact tails, farmers/vets developed plans to control tailbiting, Finnish health status is very good (free of 5 major pig diseases including PRRS), facilities mainly include single litter pens, partially slatted, with good environmental control and great attention to nutrition (feed composition) and feeding. Irish farmers, veterinarians and advisors have been exploring countries like Finland to see if it is possible to adopt some of their best practices in raising pigs with intact tails. Based on this, a group of Irish farmers and Advisors have come together in the Operational Group (OG) “Tailwards” to progress towards raising pigs with intact tails by testing and adapting different innovations. The innovations identified by the OG as key are:

- Slurry management systems that allow the use of partially slatted pens and enrichment on the floor for growing pigs
- Strategies for the control/eradication of PRRS following a recent initiative developed in Northern Ireland (NI)
- Feedstuff quality monitoring and nutrition advice systems similar to the one in Finland
- Feedback systems for farmers to prevent overstocking in farms
- High welfare schemes in collaboration with big retailers

The innovations to be tested are diverse, some include high investment in equipment (slurry management systems) and others will depend on the good coordination of farmers in their actions

(PRRS control/eradication). Thus, the involvement of farmers as promoters of such innovations will be key for the success of the OG. Farmers are not only contributing to Tailwards with their engagement, but also financially to test the different innovations. The Tailwards core team includes the main organisations providing technical advice and coordination to the Irish pig farmers; Teagasc, Animal Health Ireland (AHI) and the Irish Farmers Association (IFA). The wider group of stakeholders involved includes farmers participating in the different activities, private veterinary practitioners, farm advisors and nutritionists. The five proposed innovations will be assessed in five different tasks that are briefly described below:

Partially slatted floors

Slurry management, slurry storage capacity in particular, has been identified as the main barrier for the implementation of partially slatted floors in Ireland. This task will assess slurry management systems with the potential to significantly improve the management of slurry by separating solid and liquid phases and purifying the liquid phase until it can be released to the environment. These systems also have the potential to avoid clogging caused by environmental enrichment materials (e.g. straw) in slurry tanks of pig farms. The systems to be tested have been selected by farmers as the most cost-effective ones and the farmers are willing to make a significant investment as part of the OG. In a second step, a simulation of partially slatted floors will be carried out in these farms using rubber mats. If this task is successful, partially slatted pens could be used in Ireland and enrichment could be supplied on the floor of the pens for growing pigs.

PRRS Eradication/Control

Porcine Reproductive and Respiratory Syndrome (PRRS) causes reproductive pathology in breeding animals and respiratory disease in growing pigs. The virus also affects the immune system of pigs making them more susceptible to infections. In 2020, NI developed an OG to control PRRS in the area of Cookstown. By the end of the project, the number of positive units was reduced by one third, the overall viral load was reduced by 20%, and pleurisy and pericarditis were reduced 70% and 40%, respectively, at slaughter. The initiative has now been expanded to the rest of NI. Tailwards aims to adapt this initiative to the Cavan area as a pilot in the ROI. The main steps included are: i) Mapping the level of PRRS in the area ii) Assessing and improving biosecurity on individual units iii) Synchronised vaccination in breeding herds within a short time window iv) Monitoring of the results by blood analysis and slaughterhouse checks. If the task is successful, the initiative could be extended to the rest of the country.

Nutrition Advice Systems

Finnish veterinarians remark that optimal nutrition plays a key role in the control of tail biting, in particular amino acid imbalances and poor quality ingredients. Ireland, being an island, restricts the availability of ingredients and the humid climate makes feedstuffs conservation difficult. Additionally, the lack of a monitoring system for the quality of ingredients also favours that poor quality ingredients are imported to Ireland when rejected in other ports. Teagasc has been working on an initiative to monitor the quality of the ingredients used by pig farmers similar to those existing in other countries. Tailwards will carry out an intensive sampling

protocol in a group of farms for a year to define the current range of variability in the quality of the feedstuffs. Then, improvements in the current formulation will be tested in collaboration with the farm nutritionist. If successful, this approach could be extended to the rest of the country to improve the quality of the feeds used in Irish pig farms avoiding protein and amino acids imbalances, reducing the occurrence of undesirable things like mycotoxins, and increase the use of fibres in the diets.

Feedback Systems to Prevent Overstocking:

Overstocking has been identified by veterinarians in Ireland as an issue to solve before pigs can be raised with intact tails. Overstocking is often related to fluctuations in the pig market with farmers trying to take advantage of good prices by increasing pig numbers in their farms. Based on available data from slaughterhouses and farms we believe it is possible to give farmers real time feedback of future overstocking issues. Then, patterns in density can be managed by pig flows in slaughterhouse and by facility adjustments due to poor sizing of farms. This idea will be tested using the farms participating in the OG and could be easily extended to the rest of the country if successful.

High Welfare Schemes

Consumers have an appetite for high welfare pig meat and retailers are more and more interested in exploring collaborations with farmers to develop high welfare, low carbon footprint products. Lidl has recently shown interest in this type of approach in Ireland and other retailers have previously contacted Teagasc in relation to this. This task will be developed in collaboration

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with ValuePig, an ongoing project in Teagasc to develop new pig products that result in higher income for farmers. We will contact the retailers to discuss the main requirements on their side in terms of animal welfare and what volumes of product would be required. From there we will establish a dialogue with the farmers involved in

Tailwards to gather their views on the possibility of establishing such high welfare schemes. Retailers will be kept informed of the progress within Tailwards and any possibility of developing high welfare schemes will be planned as a follow up for Tailwards.

DAFM US-Ireland R&D Partnership Programme Award for Teagasc to Improve Piglet Survival with AI



Laura Boyle

The PDD at Teagasc Moorepark secured funding from the Department of Agriculture, Food and the Marine (DAFM) as part of the US-Ireland R&D Partnership Programme to use Artificial intelligence (AI) for improving piglet survival rates by monitoring feeding patterns and enhancing husbandry practices. Newborn piglets face a range of challenges at birth; their low body fat reserves

places them in danger of chilling, their small size compared to the mother places them in danger of being crushed, the large number of newborns in a litter relative to the number of teats places them at risk of starvation. Many of these problems are exacerbated by genetic selection for hyper prolific sows; larger litters are associated with lower individual piglet birthweights and greater weight

Pigs

variation within the litter which is a risk for piglet survival. These problems contribute to high pre-weaning piglet mortality which poses economic, animal welfare and ethical concerns.

Dr Edgar Garcia Manzanilla and Dr Laura Boyle from the Pig Development Department at Teagasc and a cross-disciplinary, multi-institution research team are using artificial intelligence (AI) to better understand piglet feeding patterns. Their goal is to develop solutions to reduce pre-weaning mortality, improve production efficiency, and ensure piglet welfare.

The Department of Agriculture, Food and the Marine (DAFM) awarded Teagasc funding for four years for the proposal *“IDEAS Tripartite: Automated Piglet and Sow Monitoring for Early Detection of At-Risk Piglets”*.

This project is one of 11 selected for the [Inter-Disciplinary Engagement in Animal Systems \(IDEAS\) program](#), which supports integrated research and outreach projects focused on precision animal management, the environmental impacts of animal production, and the societal aspects of animal welfare.

The primary goal is to generate robust data to inform sow and piglet husbandry practices and contribute to research in areas such as nutrition science, breeding, lactation biology, applied ethology and animal sciences, including welfare, genetics and genomics.

This international team, or tripartite, led by Dr Madonna Benjamin of Michigan State University College of Veterinary Medicine, is made up of

research leaders from North America, the Republic of Ireland, and Northern Ireland, specialising in computer vision, data-driven technologies, sustainable animal production, global food security, farm animal behaviour and welfare, and piglet and sow nutrition. With research sites in three countries, the team will collect data from farms using diverse husbandry methods, including free-lactation pens.

The IDEAS Tripartite: Automated Piglet and Sow Monitoring for Early Detection of At-Risk Piglets team also includes Drs’ Llias Kyriazakis and Niall McLaughlin from Queen’s University Belfast; Dr Ramon Muns from the Agri-Food and Biosciences Institute in Belfast; Drs’ Monique Pairis-Garcia, Mark Knauer, and Eduardo Beltranena from North Carolina State University; Dr Tami Brown-Brandl from the University of Nebraska-Lincoln; Dr Russ Hovey from the University of California, Davis; Dr Chantal Farmer from the Sherbrooke Research and Development Centre of Agriculture and Agri-Food Canada; and Drs’ Beth Ferry and Daniel Morris from Michigan State University.

Through engineering expertise the computer vision capture systems will see nuances that human eyes can’t—each camera will focus on one sow and her piglets 24 hours a day without the distraction of other tasks.

This work is supported by grant no. 2024-68014-42559 from the USDA National Institute of Food and Agriculture, Ireland’s DAFM, and the Northern Ireland Department of Agriculture, Environment, and Rural Affairs as part of the US-Ireland Research and Development Partnership.

Teagasc Pig Farmers' Conference 2024



The 2024 Teagasc Pig Farmers' Conference took place on October 22nd and 23rd, marking a significant milestone as it celebrated 30 years. Hosted at the Horse and Jockey Hotel in County Tipperary and Farnham Estate in County Cavan, this year's conference focused on industry challenges, technical expertise, and best practices in pig production.

Attendees benefited from insights from renowned speakers, including Hans Bundgaard, who discussed cross-fostering and nurse sow management; Pedro Nonay, who addressed geopolitical impacts on agro-trade; and Dr. Elizabeth Ball, who shared strategies for reducing the environmental impact of pig production. The conference also introduced the WelFarmers project to tackle key welfare challenges. Additionally, strategies for improving feed conversion efficiency (FCE) and reproductive performance were discussed to boost overall farm productivity.

Overall, the 2024 conference served as a valuable platform for knowledge-sharing and networking within the sector, equipping participants with the tools to enhance their operations and navigate future challenges. For more information and to access the conference booklet, visit;

<https://www.teagasc.ie/publications/2024/Teagasc-Pig-Farmers-Conference-2024.php>



Survey of the status of PRRS on pig farms

Porcine Reproductive and Respiratory Syndrome (PRRS) – Blue Ear - is a viral disease infecting sows and pigs leading to reproductive failure (abortions, weak and stillborn piglets, infertility), and causes pneumonia and increased mortality in young animals. It is one of the most economically important diseases for the global pig industry. To explore the possibility of developing a control programme for PRRS at national level in conjunction with Northern Ireland, the first step is to pinpoint all pig farms on a map including their current status for PRRS.

We are asking for your collaboration in completing this very short survey <https://www.surveymonkey.com/r/6S965BQ>

When presenting the map to stakeholders the exact locations of the farms will be anonymised so no individual farm can be identifiable.



For more information:

Please visit our webpage at:
<https://www.teagasc.ie/animals/pigs/>

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