
# PIGS

**July 2018**

**Editor: Ciarán Carroll**

## Welcome to July's Newsletter

**Ciarán Carroll**

Welcome to the July edition of our monthly newsletter. Pig prices took a disappointing drop since last month, so the pressure on farms continues. However, it is important to try to remain positive and focus on what we can control inside the farm gate. Some of the articles this month will help you focus on just that and hopefully give you some direction as to what you can do to improve your situation.

As mentioned last month the Teagasc ePM PigSys Herd Performance 2017 data analysis has been completed. The report has since been published and circulated to producers along with a very useful infographic with a summary of the Key Performance Indicators from the report. If you haven't received your copy and would like one, please let us know.

The closing date for the new Pig Managers Course is fast approaching. The aim of this course is to develop future pig farm managers via a mix of classroom lectures, field visits, discussion groups, assignments and presentations from "best in class" industry guest speakers. Initial Interest has been great and the course is almost full now. Applications must be made online. Once the applications have been received interviews will be held with interested applicants with the course set to commence in September. Contact your Advisor for further information.

Finally following recent restructuring, Teagasc has appointed researcher Edgar Garcia Manzanilla, as Head of the Pig Development Department and Ciaran Carroll as Head of Knowledge Transfer in the same department.

**In this issue:**



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# Effects of the Heat Wave!

**David Clarke**

It's been seven weeks of sunshine and practically four weeks of drought, with June being the driest month since records began. Ireland was just one degree away from breaking a 19th Century record for the hottest temperature ever recorded. Although the weather is returning to normal, where will we see the effects the temperatures have had on our units? And how can we combat a future event like this? Today's modern pig genotypes generate significantly more heat than their predecessors. Pigs dislike hot, humid weather mainly because pigs have insufficient sweat glands and relatively small lungs in order to maintain a desirable body temperature. Most animals can regulate body temperature through a combination of sweating and panting, but due to these limitations along with their thick abundance of fat, pigs are prone to heat stress. This causes high stress levels, which will affect performance, feed intakes as well as the quality of the meat sold.

## Consequences for health

When pigs are exposed to prolonged heat stress respiration rates increase, pigs will also increase their body surface area by sprawling out in order to increase contact with a cool surface, a loss of appetite is also observed. With continued heat stress pigs will start to drink excessive amounts of water which can cause a loss of electrolytes and cause a build-up of acids produced resulting in scour or even death if prolonged. Research has shown that exposure to temperatures of 35°C for 24 hours significantly reduced intestinal defence functions with increased plasma endotoxin levels observed providing opportunities for infections to arise. Even exposure between a two to six hours period causes defence systems to be significantly compromised.

## Consequences for performance

It can be difficult on any unit during extreme weather conditions to regulate the temperatures, as it greatly depends on the on a number of factors. Pigs require different temperatures depending on their stage of growth and or state (see figure 1).

Temperature along with humidity contributes to potential heat stress in pigs, when humidity levels are higher heat stress can be observed at lower temperatures. Fattening pigs are more susceptible to heat stress regarding reduction in growth performance than smaller pigs. Research shows that average daily gain begins to decrease when pigs averaging 75kg are exposed to temperatures above 23°C, in contrast average daily gain starts declining for pigs averaging 25kg at temperatures above 27°C. When humidity levels reach an average of 30% and temperatures reach 28°C health and growth performance of finisher pigs is affected.

Heat stress can also have an effect on reproduction. Temperatures greater than 27°C can delay or reduce conception rates, and increase the occurrence of early abortions. Prolonged heat exposure during the last few weeks before farrowing can result in a greater number of stillbirths.

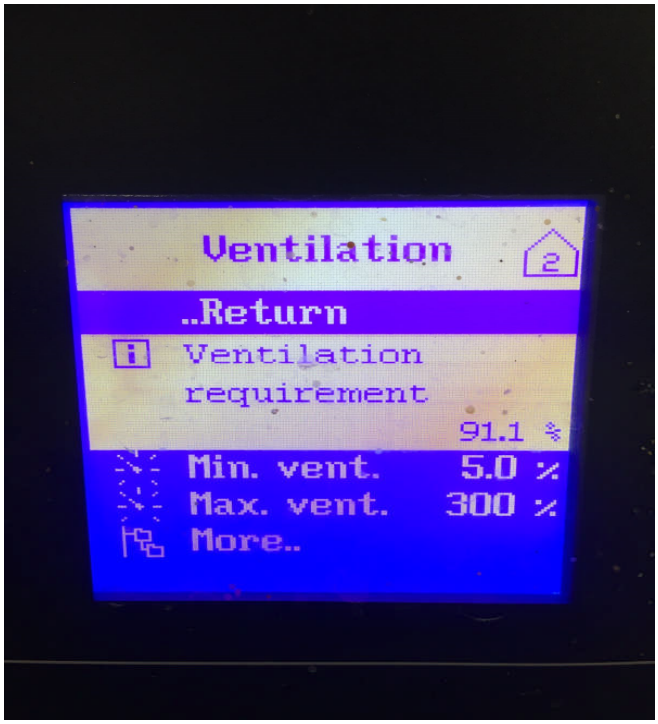
| Age | Optimum Temperature °C |
|---|---|
| New-born | 35 |
| Piglets (2–5 kg) | 30 |
| Weaners (5–20 kg) | 27 |
| Growing pigs (20–55 kg) | 21 |
| Finishing pigs (55–110 kg) | 18 |
| Gestating sows | 18 |
| Lactating sows | 18 |
| Boars | 18 |

*Fig1. Optimum temperatures for pigs*

## How to combat heat stress

There are simple ways to try and reduce temperatures to prevent heat stress in pigs. The obvious solution is to try and to increase ventilation and airflow. Opening windows can help increase airflow when ventilation systems are under pressure. Opening doors is not ideal as it decreases the air speed and therefore reduces 'wind-chill' effect on pigs thereby reducing the evaporation rate off the skin. If the daytime temperature is forecast to be very hot, switch the fans & vents to max ventilation early in the morning, this will reduce the initial room temperature and therefore move the period of high temperatures to later in the day. Obviously reset the temperature to normal in the evening/night.

Ventilation systems should be regularly checked and serviced to keep them in good working condition. Try to keep pigs out of direct sunlight during the day in pens by windows. If possible try to reduce stocking densities by making use of hospital pens or empty pens available.




During extreme heat it is recommended to abstain from feeding during the hottest part of the day, using a higher energy feed or supplementing diets with antioxidants and vitamins will also help to maintain condition. Dosing waterlines with antioxidants and electrolytes can also prevent dehydration and help prevent infections from setting in during heat stress.

# Mid-Year Outlook

**Michael McKeon**

If they think a year is a long time in politics they should try being in the pig business. In July 2017 the average pig price was 172c/kg and the margin over feed (MOF) was 69c/kg which was the highest since 2006. Unfortunately July 2018 has a current pig price of 138c/kg and a feed cost of 108c/kg, giving a MOF of 30c/kg. This is a 43% drop in the financial margin in 12 months and one of the lowest monthly margins in the last 15 years. These figures illustrate why pig producers are having severe financial problems at the moment.

## Pig price outlook

The high pig margins last year stimulated a sow herd expansion (+2%) across most of the major pig producing countries; Spain, Germany, Netherlands, Denmark. This increase in sow numbers translates into a 3% increase in the volume of pigmeat produced, with the increase in Europe's largest producer Spain, increasing by 6% in the first quarter alone. This extra pigmeat on the market certainly has a depressing effect on pig price but the bigger issue is the slow-down of Chinese pigmeat imports. The reduction in Chinese exports (Jan-Apr) in 2018 vs 2017 was 6% and 2018 vs 2016 was 20%.

**Table 1: Chinese pigmeat imports from EU (Jan-Apr)**

| 2016 | 2017 | 2018 |
|---|---|---|
| 578,840t | 492,845t | 463,274t |

On a positive note the Chinese have resumed high culling rates of their national sow herd after a brief respite for a couple of months. This indicates that they may require larger levels of pigmeat imports in the coming months but the question is when? The effect will be slow as it will take a significant increase in EU exports to China to reduce the volume of pigmeat overhanging the market and therefore pull-up the pig price in the coming months.

## Feed outlook

Unfortunately the reduction in pig price has coincided with problems for the forthcoming wheat & barley harvest across Europe and Russia. The very difficult weather conditions we experienced of spring being very wet and summer too dry has been reflected in France, UK, Germany and Russia with a consequential reduction in expected yield. The Teagasc Tillage department estimates that the winter cereal yield is down 5-10% but the spring crop yields could see a reduction of 20-25%. The EU outlook is at a wheat crop of 132Mt, down 9.5Mt on the 2017 harvest, with France contributing 4.5Mt of the 9.5Mt decrease. Russia is also expected to a show wheat decrease of 15Mt in 2018 when compared to 2017 (70Mt vs 85Mt). All told, it is not a great outlook on many fronts. The only two positives are that the U.S. soyabean and maize crops are currently looking good as they enter their important pod filling stage.

An alternative option to consider when struggling with the current high wheat and barley spot prices may be to consider using higher levels of maize in the diet. Currently it is good value in relation to wheat and barley and has no performance issues providing the diet is properly formulated. In Europe the inclusion levels of maize can be as high as 60% in dry fed diets. Unfortunately if using wet feed systems then this will prohibit very high inclusion rates but 20-25% may be possible depending on the length of the feed line, number of bends etc.

# Reducing Production Costs

**Ciarán Carroll**

There's no doubt that the last few months have been difficult for pig farmers, decreasing pig prices and rising feed prices returning many farms to uncertainty and a July margin over feed figure of 30 cent per kg deadweight, some 20 cent per kg off the minimum 50 cent required. Despite this reality, it's important to try to keep a positive attitude. We have no control over market conditions or future supply of feed ingredients, but we can control what's inside our farm gate. This article outlines some strategies for you as a producer to think about and see what you can adopt to try to improve the situation on your own farm. Not all options will be suitable for all farms but the more that you can implement the greater the potential for financial savings.

## Record Keeping

It starts off with the analysis of accurate records. Knowing your true costs of production is the start to identifying where you need to focus on your farm.


There are now almost 90,000 sows on the Teagasc e-Profit Monitor PigSys Analysis system. Farms keeping and analysing their records out-perform those who do not and can result in substantial financial benefits for those farms. How complete are your records? Are you recording and analysing **all** your non-feed costs? Contact your Teagasc Specialist Advisor now to get started if you're not already doing so.

## Feed & Nutrition

Feed accounts for 70% of total production costs, and merits most attention when trying to reduce costs. The finisher pig accounts for 60% of our feed costs so we should start there. A 0.1 unit improvement in finisher feed conversion efficiency (FCE) is worth €2 per pig or almost 2.5c per kg deadweight. Some areas to consider and focus on include:

1. Reduce feed wastage: approximately 12 tonnes of finisher feed will pass through a finisher feeder annually. Repair or replace broken feeders and adjust feeders regularly. Also ensure correct stocking rates. A 4% reduction in feed waste is worth almost €2 per pig.


Too much feed in tray – grower-finisher

2. Two finisher diets: consider using a high energy density diet from 32kg and a lower density diet from 45-50kg. A €15

differential between these diets would be worth €0.80 per pig.

3. Increase slaughter weights where there is scope to do so. Care needs to be taken when you go above 108kg live weight as any deterioration in FCE beyond this point may result in increased feed costs.

4. Split Sex Selling: up to 85Kg live weight, gilts and boars tend not to have very different FCE. However, with each 10kg increment in slaughter weight above this weight the FCE of gilts deteriorates much more rapidly than that of males. For this reason, at high sale weights split sex selling of males and females could be implemented whereby the feed efficient males are sold at heavier weights and the less efficient gilts are sold lighter. This would not require any additional housing as stock number will remain constant. An improvement of 0.1 FCE when selling at an average weight of 104kg (gilts at 99kg and boars at 109kg) could result in a saving over almost €2.30 per pig.

5. Creep/link feeding strategies: are you overfeeding creep &/or link diets? Work out a feed budget, targeting 3kg creep and 5kg link usage per pig. Consider using a standard creep or feed a link diet instead of creep?

6. Weaner feed: many of us are guilty of overfeeding weaner diets. Switching to a finisher diet at 32kg weight can result in significant savings.

## Gilt & Sow Management

There are two main areas to focus on here. The first is your gilt pool. Are you carrying an excess number of gilts on your farm? Gilts will consume about 210kg of feed so excess gilts could be costing you €55 each in feed costs. Target a gilt pool of 12% of herd size.

The second area here is sow culling. Remove unproductive sows! Cull sow income accounts for only 2% of total sales income. Continually assess sow performance and cull unproductive sows immediately. Do not try to restore condition before sale as sows have an FCE of 7:1. Remember that each empty day costs almost €3, thus 10 extra empty days per litter could cost €35,000 for a 500 sow herd.

## Non-Feed Costs

Labour costs are usually the highest of the non-feed costs, running at over 14 cent per kg dead weight (e-PM PigSys Report 2017). While reducing labour on a farm is not an option in most cases and could seriously impact on productivity, it is worth reviewing how we utilise our labour. Use casual labour for washing and maybe consider Summer-only washing in the short term?

With regards to loan repayments, what are your current repayments? Know your debt; comprised of banks, merchants, contractors and service providers. Establish your current position with the help of your Teagasc Specialist Advisor by

carrying out a cash flow analysis of your business. This will help to identify any need for restructuring repayments and the amount involved, and will help assess long term viability of the business. Again, accurate records are essential to do this. Combine your production performance with a sensitivity analysis to highlight the areas of greatest financial impact.

Where necessary, meet your bank manager to discuss your options. Before you do, take time to prepare; gather your set of accounts, your Teagasc e-PM PigSys Analysis and a cash flow. Bring with you relevant information in relation to the current market for pig meat and feed, and market indications for the months ahead. Discuss moratorium or 'interest only' options with them. Is an extension to your current overdraft an option? If monthly losses are significant use a bridging loan rather than extending the overdraft. Consider extending the loan period to reduce monthly repayments or amalgamate some existing loans to a single loan package. The key consideration of any restructuring process is the actual cost of doing so.

Energy use is another key cost on your farm. What's your current energy bill? Are you availing of the cheapest rates, e.g. night rate options? Can you replace tungsten bulbs with more efficient T5 or T8 fluorescent bulbs? Your farrowing room heatpads can account for 20% of your electricity cost. Make sure you check the controllers and time of use regularly. Make sure that heat and ventilation systems aren't working against each other. Cleaning dirty fans can reduce energy use by 20%.

Pig slurry has a current fertiliser value of €26 per 1,000 gallons (at 4.3% dry matter). Do you charge for your slurry? If not, is it an option for you? Could you split spreading costs with your customer farm or contractor?
Other things to consider: talk to someone; your family, your Teagasc Specialist Advisor, other pig farmers. Get involved in a Discussion Group. By talking to others and sharing our thoughts and worries we can ease the pressure and even find answers that can help.

### In Summary

- Keep a positive attitude
- Focus inside the farm gate
- Measure and benchmark your herd performance
- Know your debt
- Identify focus areas for your farm
- Draw up a plan and **implement it!**
- Monitor progress and readjust where necessary
- Talk to someone

# Pig Farmer's Lucky Escape – a warning for us all

**Thomas Finn, Mitchelstown**

Pig Farmer and Teagasc client, Thomas Finn, from Mitchelstown had a lucky escape recently. The following article is published by kind permission from Thomas and AgriLand who first published it. It serves as a warning to all of us about the importance of farm safety.

AgriLand received the following letter at 2:20am this morning (July 20) from Cork pig farmer, Thomas Finn. The father-of-three penned this message while lying in pain in a hospital bed (on day five of Farm Safety Week) where he is recovering from injuries sustained after becoming trapped under a quad bike for 30 minutes earlier this week. This is his story:

"Hi. I'm writing this letter in the hope it might help others that might find themselves in the same situation. My name is Thomas Finn. I'm a pig farm manager and hobby sheep farmer in Mitchelstown. I also hold a bachelor's degree in engineering. I farm along with my brother-in-law, Philip O'Brien. On Monday night last (July 16) - day one of Farm Safety Week - I arrived home from the pig farm at about 6pm as usual. I had organised that I would do some routine weed control prior to helping my wife put my kids to bed.

## Rushing

I ate my supper and rushed off on the quad with a 100L standard sprayer on the rear. I had it filling while eating my supper. I decided to traverse across a piece of inclined ground whilst making my way to the paddocks I wished to work on.

I was not moving that fast when I felt the quad going to one side.
I remember thinking "I'm GONE".
As it turned, I leapt from it. I tried to go in the opposite direction at first, but instinct told me this was impossible - so I ended up jumping a large distance down the same incline as the quad.
As I landed I could hear the quad rolling after me.
I moved quickly, but I had a sharp pain in my leg.


## Pain

The incline was not steep initially, but the end was and it was only about 10ft across; it was just a little hill really. I managed to jump most of the way to the bottom as I came off. But the bike did also and trapped both my legs. I remember the pain. I freed one leg; but could not free the other.
I searched my pockets for my phone - which I have on me 99.9% of the time. The phone was not there and the bike was still running - although on its side. I reached for the petrol isolation switch and turned it off; the bike cut out. I had severe pain in my left leg - the one that was free.
I tried to push the bike from my trapped leg.
It took me at least half an hour to get it off.


## I believe that accidents are caused

I crawled back up the hill and searched for the phone on my way. I had no luck though. I had 300m to go to my house you see, so I started to crawl and I found two makeshift crutches on the way. I eventually made it back and iced my leg right away. My kids were there and I was very happy to see them again - Elizabeth (5), Norah (2) and Peggy (1), along with my wife Hannah Kate.

I went to the VHI Swift Care Clinic in Mahon. I subsequently had to have an operation on my leg - two screws were set into the bone.

I believe accidents are caused - and I caused this one. I was rushing. I did not allow for the top-heavy water tank on my quad. This raised my centre of gravity and gave me little chance on any incline - an incline I should not have attempted in the first place.

I pride myself on farming safely and don't take chances. I understand risk assessments, health and safety statements and I am competent in this area. But, in this case, I did not listen to my own advice and I've paid, as what I see, a small price.

## Lucky Man

It might have been a whole other story if I was not as agile and if I was unable to get out from under the quad. Or maybe luck was on my side.

I am a lucky man. My ankle will be fixed hopefully in a couple of months.

I would like my story to reach as many people with quads as possible. Maybe it will help them be aware of the risks.

I did not lose my phone in the grass as I jumped; I simply did not bring it with me as I was rushing.

My dad also had a farm accident at a young age and lost his arm. Apologies for the typos, I'm currently lying in hospital with a pain in my leg on day four of Farm Safety Week trying to tell my story."

## Gratitude

Thomas offered his sincere gratitude to all his family, friends and work colleagues for their support. He thanked Dr. Bowler and the team of Bon Secours Hospital Cork; and he also highlighted the value of investing in one's health and life insurance.

# Sustainable Water Footprint of Pig Production Systems

**Shilpi Misra**

The demand for meat products is expected to rise in future as the world population increases and the dietary preferences change. However, to produce large quantities of meat we require large quantities of water. Pig production is not an exception, it also requires large intake of freshwater and overall production is impacted greatly by the rate of water use at the different stages. During the pig production cycle water plays an important role starting from feed production to on farm water use to final pig meat processing at the factory. Thus, large quantity of water use during the production process is putting pressure on already water stressed resources causing water depletion and scarcity. It is important to increase the sustainability of this sector by optimizing the water used for the whole pig production supply chain.

## Method of estimating water use

"**Water footprinting**" is a method which is widely used to estimate the use of water resources for the whole product supply chain or a process. Water footprint calculates the amount of water used to produce per unit of a product (e.g. 1kg of pig meat). It considers the whole production chain and quantifies the total amount of water required to produce the product or service. The global average water footprint for pig meat is estimated at 6000 $m^3$/ton of meat. According to some studies, during the whole pork production process, feed production is the major contributor to the water footprint, followed by on farm water use and slaughtering (Fig 1).


**Fig.1 Distribution of water used during the pig production chain**

Water footprint is calculated in terms of green, blue and grey water, which are used during the production process. Green and blue water are water use for crop production or animal drinking. Grey water is water used to dilute pollution from the production process (Fig. 2). Water footprint of pig production up to farm level consists of different components: the "*indirect water footprint*" of the feed and the "*direct water footprint*" related to the drinking water and service water consumed. By quantifying the water footprint of pig meat production in Ireland we can estimate how sustainable our production process is and we can optimize the water use.

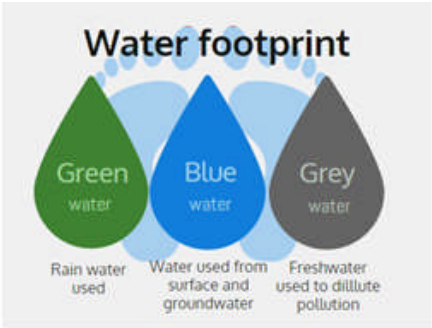



**Fig. 2 Components of water footprint (WFN)**

## Food-feed trade offs

Sustainability of pig production systems not only depends on water use for feed production but also on the perception that feed produced for animals compete with human food supplies. Globally, almost 40% of the arable land is used for animal feed production. Resource use competition will further increase if high quality land is used to cultivate feed in preference to food. Livestock production is important for economic and social sustainability and thus to lessen the competition it becomes essential to look for alternative diets. Recycling safe and valueless by-products from the human food and fiber production can decrease the environmental impact of feed production and make then more sustainable.

**Conclusion**

Looking at the international trade context, and bearing in mind that pork production has a very big contribution towards water use, it becomes essential to assess the water footprint of this sector. Also, consumer awareness and product sustainability are gaining importance worldwide and in future it might influence the marketability of the product causing global competition. Thus, assessment of the production processes will not only make the pork production more sustainable but increase the marketability of the product worldwide.

**Student Profile**
**Shilpi Misra**

Shilpi is a PhD student on the WATERWORKS project, which looks at water footprinting and water use reduction of Irish pig production. Shilpi is supervised by Dr. Keelin O'Driscoll & Dr. Amy Quinn (Teagasc PDD), Dr. John Upton (Teagasc Livestock Systems), Prof. dr.ir. Imke de Boer (Wageningen University, The Netherlands) and Dr. Corina van Middelaar (Wageningen University, The Netherlands).

**Location:** Pig Development Department, Teagasc Moorepark
**Research Interests**: Water footprinting, Life cycle assessment, Sustainable production systems
**Contact details:** shilpi.misra@teagasc.ie & +353 (0) 761111171

## Student Success

Walsh Fellow PhD Jen-Yun Chou was awarded the Birrell-Gray travelling scholarship of £500 by the Veterinary School in the University of Edinburgh to attend the 69th Annual Meeting of the European Federation of Animal Science (EAAP) and present her work on rearing undocked pigs on fully-slatted floor by using multiple types of slat-compatible enrichment. This is an important part of the ENTAIL project led by Dr. Keelin O'Driscoll and the findings in this study are being expanded in an on-going experiment and will be concluded by the end of this year.

## Lean Principles for Pig Production

Last November Teagasc, Bord Bia and Enterprise Ireland launched a pilot project investigating the adoption of Lean manufacturing principles in pig production. The pilot project involved 29 farms selected based on geographical location, size of operation and supply to slaughter plant. The final Lean consultant reports from the farms yielded a number of key outcomes.

- Energy – pig units are relatively large and consistent users of energy throughout the year due to pig production having high ventilation and heating requirements. Most reports highlighted this as an area for significant improvement.
- Production Flow – many reports identified inconsistencies with the production flow of pigs on the farms either through fluctuations in output volume or through a 'push' effect on production causing reduced efficiencies.
- Standard Operating Procedures – many reports highlighted that most pig units have developed their own system of production but it is not documented and is transmitted only through verbal communication. A lack of documentation leads to difficulties for new staff especially if English is not their first language. It also leads to a lack of an identified and documented system of best practice for staff to strive towards by continuous improvement.

In some cases estimated savings of €50,000 per consultancy were reported. However, a standardised template to calculate expected savings is needed to verify this.

The study did demonstrate that Lean can improve the efficiencies of Irish pig farms. The reaction from farmers involved was positive.

A shared-learning meeting involving all participants and associated partners is being held next month. There will be more to follow in future newsletters after this meeting.

## For more information

This newsletter was edited by Ciaran Carroll, Teagasc, Moorepark, Fermoy, Co. Cork. For more information on any of the newsletter content please contact Ciaran at ciaran.carroll@teagasc.ie or 025-42458.

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