

Editor: Ciarán Carroll

## Welcome to the March Newsletter

Ciarán Carroll



Welcome to the March edition of our monthly newsletter. This was the opening paragraph of my editorial 12 months ago: ***“Storm Emma introduced March with a bang and with it went the expected pig price rise. Farmers continue to wait patiently for a much needed boost to their income.”*** It’s hard to credit that it’s taken so long to finally see a price rise, but the recent 4 cent/kg is very welcome indeed and comes with an expectation of more when we see what’s happening in China, and with the significant recent rises in Germany!

It’s been a very busy month again for all in the Pig Development Department. Despite the cold, we had a huge turnout for the Agri Aware Farm Walk and Talk day. Schools from all around the Munster region visited Moorepark and the Pig Development Department students were on hand to give them an overview of Irish pig production as well as highlighting the different career paths for anyone with an interest in pigs.

On 9<sup>th</sup> April next the Pig Health Society Symposium takes place at a new location, the Midlands Park Hotel, Portlaoise. Teagasc will have a stand there so

make sure you come along and visit us on the day where we will have updates on current research projects and other developments in the Pig Development Department.

Later next month our fifth annual Pig Research Dissemination day series will take place, with two excellent days planned at Horse & Jockey Hotel on April 30<sup>th</sup> and, Cavan (venue to be confirmed) on May 1<sup>st</sup>. It will feature a number of presentations and posters, giving attendees the most up-to-date research results and an overview of on-going research carried out by our research team and their postgraduate students. We look forward to seeing you there!

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- Lameness: prevalent & costly
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## An Update on the Moorepark Pig Research Facility

**Tomas Ryan, Keelin O’Driscoll, Edgar Garcia Manzanilla**

The Pig Research Facility in Moorepark, which opened 2 years ago, is a 200 sow fully integrated research facility with approximately 2500 animals on site. The research projects which are constantly carried out in the facility can affect productive performance; however, it is still of huge interest and benefit to the pig industry to be aware of and learn from the management systems used, and to be updated on the performance of the herd.

### Management

The farm works in a 3-weeks batch system and current genetics is PIC Hermitage-LW/LR F1s x PIC Hermitage-Danish Duroc. Replacement is external and the replacement rate for the last year has been around 40%. The objective for 2019 is to have a replacement rate of 45%. The dry house has one dynamic group of sows with 2 electronic feeding stations, with sows moved into the farrowing house 1 week before farrowing. One of the farrowing rooms is equipped with 6 loose farrowing crates; the production performance of sows in this system, along with welfare of both sows and piglets, is being currently being compared with conventional crates by researcher Keelin O’Driscoll, and Orla Kinane, who is carrying out the research as part of her MSc. Preliminary results will be presented at the 2019 Research Dissemination Day.

Piglets are weaned at 28d of age with an average weight of 8.15 Kgs. They are weaned as full litters (pens can hold up to 14 pigs) except in cases where mixing is required for research trials. Piglets are in the same weaner accommodation for 7 weeks and are fed a dry starter diet for 1 week, a dry link diet for 2 weeks and a weaner diet for the rest of the time in



the weaner accommodation. The average weight at transfer to finisher is 34.9 Kg.

The finisher facility has 4 rooms equipped with wet-dry feeders and one room for liquid feeding (Figure 1).



Figure 1. The liquid feeding room

The pigs in the wet-dry rooms were sold in 2018 at an average sale weight of 109 Kgs (Carcass 83.1kgs). The pigs in the wet-dry rooms were sold at an average sale weight of 106 Kgs (Carcass 80.5kgs). All finishers were fed one diet during 2018 but a second finisher diet is being tested at the moment from 60 kg to slaughter, with the aim of reducing feed costs. Weaner and finisher diets are shown in Table 1.

Table 1. Nutrient composition of diets currently used (weaner and grower-finisher) and a new diet being tested for finishers from 60 to 115kg.

	Weaner	Grower-finisher	New finisher from 60kg
Net energy, MJ/kg	10.6	10.0	10.2
Crude Protein, %	17.9	16.1	14.2
SID Lys, %	1.12	0.92	0.80
Wheat %		43.5	43.5
Maize %		30	35.1
Soybean 48 %		17.1	12
Price €/t		220.98	210.78

All diets contain 30% maize. For the new finisher diet (fed from 60kg) we reduced soyabean meal by 5% and increased maize inclusion by 5%.

#### Production performance

For the last year, the average farrowing rate was 83% with 2.28 litters/sow/year. These figures went up to 89% and 2.37 in the last quarter after some changes in weekly management were implemented. The number of pigs born alive per sow/litter was 14.1 resulting in 28.4 pigs/sow/year for 2018.

Weaners are currently growing at 545 g/d before they are transferred to the finisher building and the performance for both wet-dry and liquid feeding facilities are shown in table 2.

Table 2. Production performance of finisher pigs in the 4 rooms equipped with wet-dry feeders or liquid feeding system for 2018.

	WET DRY FEEDERS	LIQUID FEEDING
Average daily feed intake, g/d	2504	2855
Average daily gain, g/d	1130	1188
Feed conversion ratio	2.22	2.41
Weaning to sale growth, g/d	840	870

#### News for 2019

As mentioned above, the target for replacement rate will be higher and a new finishing diet has been introduced in 2019. The new diet is €10/tonne cheaper than the grower-finisher previously fed for the whole finishing stage. The diet has already been tested in 2 batches of pigs and no differences have been observed in growth. Additionally, the sale weights for 2019 have been increased to 115kg. The increase in weights and the new diet are expected to increase profit per pig significantly. However, the pressure on the system will be higher, as pigs will be kept for longer, and this may result in more health and welfare issues if management is not good enough. As well as this, the unit is now rearing 3 or 4 litters of pigs with intact tails from each farrowing batch. Farm staff (not researchers), are responsible for monitoring the condition of the tails and implementing strategies to control biting, with the assistance of the farm manager. An update on progress will be provided at the Research Dissemination Day. Finally, new terminal genetics will be tested in 2019 and 2020, not only for productive performance, but for other important traits like tail biting, hernias or lameness.

## Lameness: a highly prevalent and costly production disease

Phoebe Hartnett

### Lameness

'Lameness' covers a broad range of locomotory problems and is a common problem in pig production, particularly for sows. Lameness not only reduces welfare, but can also be detrimental to farm productivity; it can increase work load, antibiotic use, and involuntary culling. The annual culling rate on a pig farm in Ireland is 51% (PIGSYS, 2017), and lameness is still the second most significant reason for the premature culling of sows, after reproductive problems.

### Causes of Lameness

Lameness is a clinical symptom of a variety of conditions affecting both breeding and fattening herds and has many potential causes. There are two main types; non-infectious and infectious. Non-infectious causes are more common and also, more difficult to treat. These include physical injuries (e.g. claw damage, such as cracks and broken dew claws) and joint disorders (e.g. osteochondrosis). Infectious causes are less common but can arise from untreated non-infectious lameness.

### Identification

When a pig can put minimal/no weight on an affected limb or if they are completely unable to/refuse to walk, they are considered clinically lame and this is easy to identify. Sub-clinical lameness should also be monitored and this can be visually assessed by observing the locomotion of the pig. However, pigs are prey animals so they can hide signs of overt weakness.

The most common signs of sub-clinical lameness include;

- Unwillingness to move
- Slowness
- Short/uneven strides
- Increased swaying of hindquarters

### Specific Disorders

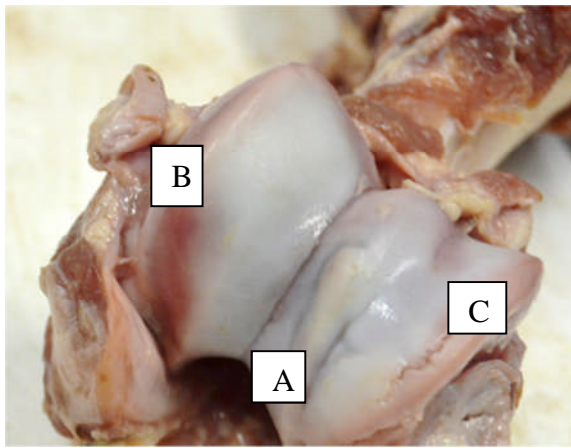
#### Osteochondrosis

Osteochondrosis affects all growing pigs and is a cause of leg weakness which is associated with lameness and premature culling.

What is it? Osteochondrosis is a non-infectious, degenerative condition which affects the cartilage and growth plate in the joints, which can cause secondary changes and damage to the bone underneath. Less severe damage consists of thickening of the cartilage and an irregular surface, which can develop to separation between the cartilage and the bone, and in severe cases, wearing away completely of the cartilage. The damage is irreversible. The causes are considered to be genetic factors, high growth rates and lean meat percentage (this places stress on the bones) and mechanical stress.

Examples of osteochondrosis at the elbow joint are shown in Images 1 and 2, which were taken from bones extracted during an experiment on gilt rearing strategies in Moorepark. We were very surprised to find a 100% prevalence of osteochondrosis in pigs (approx. 100 pigs examined) at breeding age.

Osteochondrosis is very difficult to identify in live animals as there are no common external indicators. As part of the GiltLife project, we took blood from the gilts which had their bones extracted with the aim of identifying blood based biomarkers for identification of animals at risk.



**Image 1** - Thickening of the cartilage (A), bruising (B) and cartilage crack (C).



**Image 2** - Severe damage to the cartilage and bone is exposed.

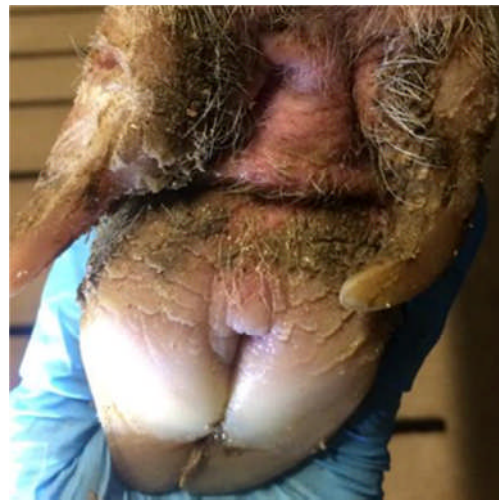
### Physical Injury

Physical injuries such as limb lesions, claw lesions, muscle damage, tendon damage and bone fractures are also associated with sow lameness, and are more easily identified than osteochondrosis.

### **Claw lesions**

Claw lesions are very common in pigs with an estimated prevalence of 88-100%. Hoof lesions cause pain as they can affect underlying sensitive tissues. Claw lesions can become infected and thus should be treated accordingly as soon as possible after they are spotted.

**Identification** –Experimentally, claw lesions can be separated into different categories such as heel erosion, heel-sole separation, white line separation, dew claw cracks, excessive toe length, and hoof wall cracks. On farm, many of the more severe lesions, such as cracks to the wall of the hoof, are often clearly visible by observing the sows feet as she is standing up. While in the farrowing crates lesions can often be spotted while the sows are lying down.



**Image 3** - Example of heel erosion (mild), dew claws curled and separation at the heel-sole junction (mild).



**Image 4** – Example of sole erosion (medium) and obvious crack along the white line (severe).

**Causes** – Lesions to the claws are generally caused by factors that increase stress on the claws, such as physical impacts due to aggression, mounting behaviour, densely stocked pens, competition for resources, and twisting and turning on concrete floors, particularly when slatted.

## Risk Factors

### Management factors

**Group composition** - mixing males and females increases risk of injuries such as limb and joint damage, fractures of the legs and lameness. Males will carry out mounting behaviours, and we have found that finisher males actually have worse claw injuries than females, presumably from landing after mounting. Males are typically more aggressive which can cause lameness problems as there is a risk of hooves/dewclaws getting caught in slats.

**Slatted concrete** - this is considered a risk factor, but as the majority of Irish pig farms house their animals on slatted floors, this means that other risk factors which could influence the occurrence or severity of lameness should be considered if trying to reduce lameness.

### Nutrition

Including trace minerals in the diet, such as copper, zinc and manganese can reduce claw lesions (heel erosion, hoof cracks and white line disease). Bone mineral density is much higher in pigs supplemented with trace minerals, therefore these minerals are important for replacement gilts and breeding sows.

- Copper is essential for antibody development and lymphocyte replication, which can aid healing.
- Zinc is particularly important for horn production and skin health due to its vital role in cell repair and replacement.
- Manganese plays a vital role in horn production and the formation and maintenance of cartilage and bone

### Growth rate

Finisher diets favour fast growth and lean meat deposition. Breeding herds however require gradual

weight gain, which can make gilts and sows susceptible to lameness if they put on too much weight too fast. Diets for replacement gilts should focus on development instead of growth rate, to reduce lameness prevalence. Teagasc research shows that bursitis is a risk factor for lameness. Bursas are fluid-filled swellings on the legs near joints which are caused by inflammation. These are more common in fast growing pigs as they become heavier causing more pressure on their joints, which is precipitated by concrete slats.

### Early identification and lameness prevention

Lameness can be very difficult in terms of treatment, except for infectious causes which can be treated with antibiotics. Therefore prevention and early identification are essential. Early identification and prevention gives farmers the potential to improve pig health and to reduce production costs by reducing the impact of lameness on performance.

The GiltLife project is focussing on the composition of the diet and management strategies, and we hope to show;

- Reduced lameness prevalence and severity
- Improved breeding herd performance
- Improved animal welfare
- Improved potential for profitability by reducing costs
- Reduced need for antibiotics as Teagasc research carried out by Ana Vale in WelPig project found that the highest use of antibiotics in sows is for lameness.

In conclusion, producers should aim to:

1. Rear intended replacement gilts separate from male pigs from weaning onwards
2. Supplement gilt rearing diets with important trace minerals – copper, zinc and manganese to optimise skeletal & muscular development
3. Avoid over-stocking of pens
4. Ensure all resources (feed, water, enrichment etc.) are easily accessible for all pigs

For any questions on the GiltLife project you can contact Phoebe by email at [phoebe.hartnett@teagasc.ie](mailto:phoebe.hartnett@teagasc.ie)

## News Updates

### Agriaware Walk & Talk

We had a huge turnout for the Agri Aware Farm Walk and Talk day at Moorepark. The PDD students were on hand to give them an overview of Irish pig production and highlight different career paths for those with an interest in pig production.



Walsh Fellow Jen Yun Chou spreading the pig gospel at the Agriaware Walk & Talk day at Moorepark.

### Irish Pig Health Symposium

**50<sup>th</sup> Anniversary Symposium**

**9<sup>th</sup> APRIL 2019**

Midlands Park Hotel, Portlaoise

Trade stands opening from 12pm with a hog roast lunch served.

Conference presentations from 2.00pm - 6.30pm, followed by evening dinner.

Sponsored by:

- Irish Pig Genetics
- MSD
- Teagasc

**Speaker Topics**

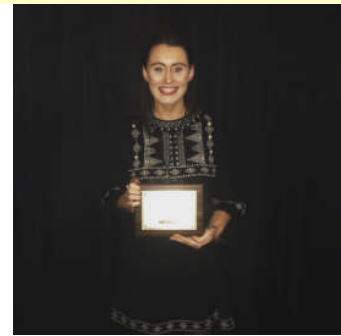
- An update on African Swine Fever (ASF)
- Farmer experience of reducing vices, presented by National Pig Association Chairman, Richard Lister
- What makes the perfect pig for processing?
- Sustainable solutions to address animal welfare challenges
- Strategies to attract and retain highly talented people
- Farm Health and Welfare panel discussion, hosted by Justin McCarthy, Irish Farmers Journal

The 50<sup>th</sup> Anniversary Symposium takes place on April 9<sup>th</sup> at the Midlands Park Hotel Portlaoise. Trade Stands open from 12pm with Conference Presentations from 2pm to 6.30pm.

### Research Dissemination Days

The fifth annual Pig Research Dissemination day series will take place at Horse & Jockey Hotel on April 30<sup>th</sup> and, Cavan on May 1<sup>st</sup>. It will feature a number of presentations and posters, giving attendees the most up-to-date research results and an overview of on-going research carried out by our research team and their postgraduate students. We look forward to seeing you there!

### More Student Success!



Congrats to Hazel Rooney, final year PhD student who was awarded 3<sup>rd</sup> place prize in the Graduate Student Competition at this year's American Society of Animal Science Midwest conference which took place in Omaha, Nebraska in March. Hazel was given the award for her presentation on 'The effect of incremental dietary energy density from 13.8 to 15.9 MJ DE/kg on piglet vitality and growth to weaning'. This work was carried out, under the supervision of Dr. Keelin O'Driscoll and Dr. Peadar Lawlor (Teagasc) and Professor John O'Doherty (UCD). Hazel was also awarded 2<sup>nd</sup> place for her presentation at the recent UCD College of Health and Agricultural Sciences graduate research student symposium.

**For more information**

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