PIGS

April 2018

Editor: Amy Quinn

Welcome to April's Newsletter

Ciarán Carroll

Welcome to the April edition of our monthly newsletter. The past month has been very busy for events, the first being the annual Irish Pig Health Society Symposium on April 10th. The Teagasc Pig Development Department were very busy fielding questions from both producers and industry. At the symposium the panel discussion chaired by yours truly proved very interesting and informative, covering a range of topics relating to pig health and welfare.

The same week saw our researchers and students attend and present their research at the British Society of Animal Science Conference (BSAS), held for the first time in Ireland at Croke Park. It was great to see that one of our PDD students, Hazel Rooney won the industry application prize for her presentation on Gestation Feeding of L-carnitine and Sugar Beet Pulp in Gilt Diets. Out of a total of 63 applicants, a shortlist of 6 was drawn up which also included Alessia Diana from the PDD so well done to both.

Last week we held our 4th annual Pig Research Dissemination Days at Horse & Jockey and Ballyhaise where over 200 people attended. Our research team and students gave a thorough overview of current and upcoming projects.

Finally, it was with great sadness that we heard of the passing of our friend and former colleague, Dr. Jim O'Grady. Jim was the forefather of pig research in Ireland and one of the first researchers to start at Moorepark in 1958. He was a renowned scientist nationally and internationally, and a true gentleman. In tribute to Jim, staff and retired staff performed a guard of honour at Kilcrumper Cemetry, Fermoy where Jim was laid to rest. He will be sadly missed. Our thoughts, prayers and sympathy go to his family. Ar dheis Dé go raibh a ainm dílís.

In this issue:

Teagasc
Agriculture and Food Development Authority

Applications for full-time Certificate (Level 5) in Pig Production now open!

Amy Quinn

Teagasc are now accepting applications for the Full-Time Certificate in Agriculture in Pig Production (Level 5) in Ballyhaise Agricultural College and Clonakilty Agricultural College. Following on from the great success of the part-time Certificate in Agriculture in Pig Production we are delighted that a full-time option is now available. This course is ideal for school leavers or others seeking to enter the pig industry or those already involved in the sector wishing to further their knowledge.

As we all know, there is a constant demand for staff on pig farms and these jobs come with many attractive benefits for prospective employees; competitive salaries, regular work hours, with much scope for career progression and further training. The offering of this course could go a long way in encouraging some new faces into the pig industry

This course is accredited by QQI and designed in consultation with industry stakeholders. The course consists of a combination of formal course work delivered by the Agricultural College and the Pig Development Department as well as a practical learning period with approved pig farmers. The formal course work is split 50:50 (approximately) between practical/skills training and classroom (theoretical) sessions. The course will consists of a range of mandatory and elective modules. The mandatory module specifically relating to pig production care listed in Table 1.

Table 1. Pig Production level 5 pig specific modules

Module
Pig Production
Nutrition, Housing & Welfare of Pigs
Pig Manure Management
Pig Industry Structure
Herd Recording in Pig Production

On successful completion of the course students are awarded the QQI Level 5 Certificate in Agriculture. Students with this Level 5 award may progress to a Level 6 Green Cert or an Advanced Certificate in Agriculture (Pig Farm Management) programme.

This course will be offered on a full-time basis at both colleges. Applicants for the full-time programme must be 17 years old or over on 1 January 2019.

Applications must be submitted by **Thursday the 31st of May 2018.** The online application system is available at: https://www.teagasc.ie/education/going-to-college/apply-online/agriculture-courses/.

For further information please contact your Teagasc Pig Development Department specialist Advisor or contact either Ballyhaise or Clonakilty Agricultural College.

Getting a better grade

Michael McKeon

In the February newsletter I examined a farm's factory data for 1,000 pigs sent for slaughter, revealing that 21% of the pigs were being penalised for overweight (+105kgs dwt) and 73% of the pigs had a backfat of 14mm or higher which also lead to penalties. The grading penalty per pig was estimated at €2.28 /pig or €502/load or €38,304 per annum. Most of this sum may be avoided if the following steps were implemented.

Weight spread

The number of pigs overweight (21%) can be reduced by either reducing the sale weight or reducing the weight variation per week. By selling all the pigs one week earlier the overweight percentage would drop from 21% to 13% which would save €1.60 of the €2.28 grading loss per pig. While this would be a very simple solution unfortunately the downside is that the total amount of pigmeat produced per sow per year on the farm would fall with a consequential rise in the fixed costs per kg e.g. bank repayments, labour etc. This high cost of production would eliminate most of the gain achieved from reduced penalties and higher pig price achieved.

The other option is to begin a stringent 'Tops' program whereby the heaviest pigs males/females within pens are selected for sale three weeks before their comrades. This gives a number of advantages when compared to selling a week earlier. The first is that the pigs remaining in the pen have much more space and less feeder competition which is very important in the last weeks before sale when competition is at its highest. This results in better growth performance thereby ensuring that the high sale weight can be maintained. The second advantage is that the weigh variation per week is reduced and therefore the percentage of overweight pigs can be reduced from the 21% to 8-10%, which equates to a saving of €2 of the €2.28 lost on grading.

Backfat

The other area that can be targeted is backfat. I recently spoke to a pig producer who mentioned that 'he hadn't heard of pigs being too fat in years'. Unfortunately if pigs are maintained on a single high spec finisher diet from 35 kgs to sale (115 kgs) then there is a significant waste incurred as they will be too fat! Pigs at 35kgs have a high protein (muscle) accretion rate that's increasing but are limited by their ability to consume very high feed intakes and therefore must be supplied with a high spec finisher diet. However at approximately 70kgs the daily growth curve begins to plateau (level-off) but their feed intake ability is also much higher therefore they can consume more of a lower spec diet and still maintain their growth rates. If you continue to feed a high spec diet after 70 kgs then the pig will quite happily store the excess energy as backfat. It won't affect your performance but it will mean the finisher feed cost is unnecessarily high. A lower spec diet will cost approximately €10/tonne less and reduce your combined two stage finisher feed cost by €6/tonne. If your factory penalises for excess backfat levels then

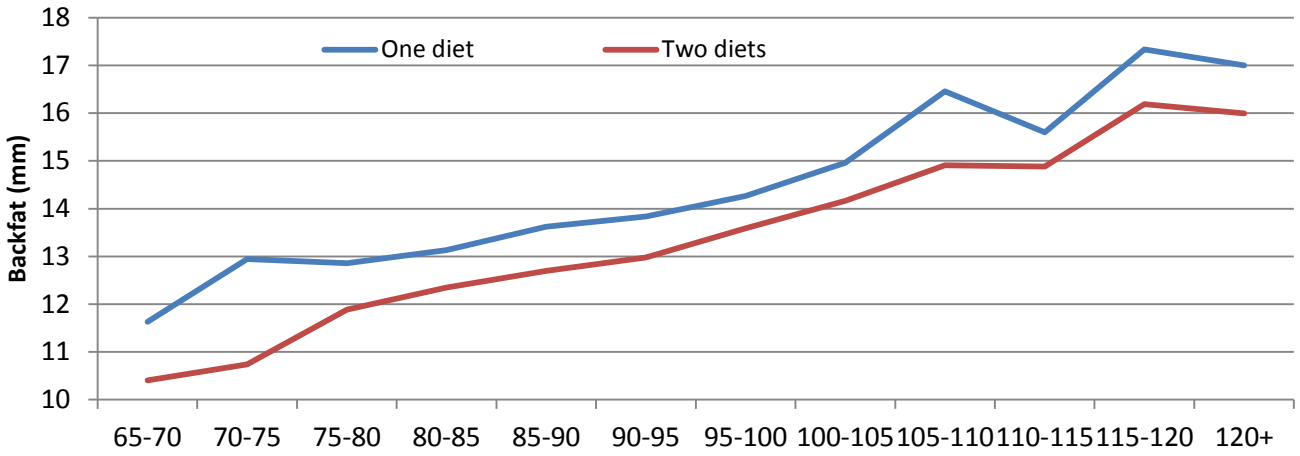

Figure 1. Comparison of backfat levels at increasing slaughter weights (kg dwt.)

this will also be reduced. The graph in figure 1 shows a comparison of two farms: one with a two stage finisher diet and the other with a single high spec diet.

Conclusion

The most important take-away message form this article is to examine and analysis your factory data when it arrives each week, don't just look at the average pig weight and price received. Whatever option you then take will depend on your grading payment system, housing layout and feed system. Happy grading!!

Wood or hanging rubber toy, how do they compare?

Keelin O'Driscoll & Jenny Rafter

There is a growing need to identify materials that can be provided to pigs in slatted pens which are effective in occupying the pigs and reducing damaging behaviour. We know that soft wood, and a rubber floor toy (Easyfix) are objects which are favorable to pigs. However, a significant difference between these items is that the rubber floor toy can be moved around the entire pen by the pigs, whereas the wood we have investigated is attached to the wall of the pen. We decided to compare wood and soft rubber, when both are attached to the pen walls. This was so that we can compare directly the material, without the results being confused by whether the pigs can move the items.

This experiment was carried out in the Moorepark unit in June and July of 2017. Twelve pens of finisher pigs, which were 9 weeks post weaning at the start of the experiment, were used, with 10 pigs per pen. Half of the pens contained male pigs, and half female. At the start of the experiment, each pen was assigned to one of three treatments: 1) provision of a hanging rubber toy, 2) provision of a larch post, diagonally attached to the wall of the pen, and 3) provision of both the toy and the wood. The rubber toy

hung from a chain so that it was at approximately eye level of the pigs, whereas the wood rested directly on the floor (see figure 1). Every week, each pen had the enrichment changed so that after three weeks all pens had experienced all three treatments.

Figure 1. The devices as installed in the pens

For the last three days of each week the pens were observed directly and the total amount of aggressive behaviours (fighting and head knocking), harmful behaviours (biting of tails and ears) and positive behaviours (play and interactions with the enrichment devices) in the pen were recorded. As well as this, we took video recordings of 6 of the pens, focusing in only on the enrichment devices. From these recordings we monitored how long the pigs spent interacting with the devices, and any aggression that occurred while they were interacting with them.

From the direct observations we found that there was no effect of whether the pigs were male or female on harmful behaviours, or positive behaviours, but males were more aggressive than females, which is to be expected. Compared to when both devices were given to the pigs, aggression occurred more when they only had the wood, and the positive behaviours were lower. However, there was no difference in the harmful (biting) behaviours. From the video, we found that pigs spent more time interacting with the toy than the wood.

There was no difference between the length of time a pig spent with the toy either when it was alone, or if there was wood provided (Figure 2). Similarly, there was no difference in the duration of interaction with the wood whether it was alone or provided with a toy. This means that when pigs were provided with both items they didn't reduce the amount of time spent with either, compared to when only provided with one. Although the pigs spent less time overall interacting with the wood, they were more aggressive near it than when near the toy.

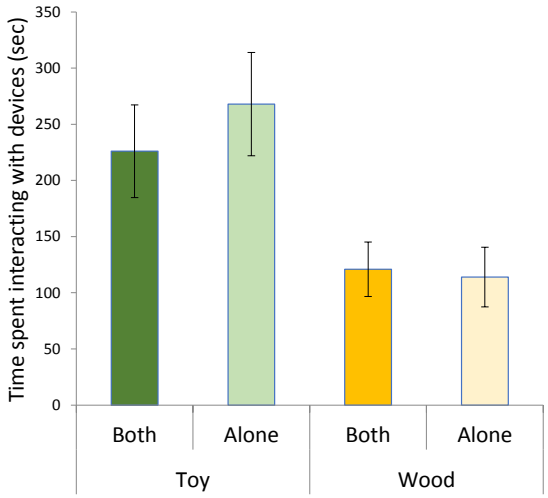

Figure 2. Time spent interacting with the rubber toy, and the wood, depending on whether they were provided alone or with the other material also present

It was interesting that the pigs spent less time interacting with the wood than the toy, but this may reflect more the method of presentation than the preference of the pigs for the actual material. We noticed that 4 or 5 pigs could approach the toy at any one time, whereas for

the wood a maximum of 3 could interact with it. In fact, usually there was only 1 at a time, and the pig that was using it often lay down next to it, preventing others from coming near it. This is backed up by another study where both wood and a toy were suspended, and they were both used equally often. We suspect that there was more aggression near the wood, as the pig that was using it was likely keeping the others away.

There was no difference between the frequency of use of an object alone and its use when provided alongside the alternate form of enrichment. It is possible that certain individuals favour certain devices, so some pigs may have stayed using the wood even when the toy was also provided, and vice versa. This result also implies that one item per 10 pigs may not be enough of a ratio to keep all pigs in the pen engaged.

Take home message

Both the wood and the hanging toy were used by pigs for the same amount of time, independent of whether provided alone or along with the other enrichment. Thus a ratio of 1:10 (enrichment:pigs) may not be sufficient to allow pigs the access they prefer. Providing enrichment that multiple pigs can access at once may help to reduce aggression associated with access to the device.

We would like to thank Susan Dudley for her assistance in running the experiment. Jenny Rafter carried out this work as a component of her Undergraduate Degree programme in UCC.

How hot is my hog?

Oceane Schmitt

During the winter 2018, Oceane Schmitt, PhD student at the Pig Development Department working on the Optipig project, obtained a COST-Action grant to work in collaboration with French researchers on the neonatal survival of piglets. As one of the main causes of piglet mortality is hypothermia, we were very interested in assessing the abilities of piglets to ensure their thermoregulation shortly after birth. We also wanted to compare two genetic lines of pigs that were selected (11th generation) for their residual feed intake (RFI). One line was selected for having low RFI (LRFI; more feed efficient) and the other was selected for having high RFI (HRFI; less feed efficient). Divergent selection was done by selecting and reproducing the extremes performers in each line. The more efficient line (LRFI) was hypothesised to perform better at thermoregulation.

Infra-Red Thermography (IRT) is a novel technique that is gaining great interest from the scientific community. An IRT camera is able to measure the heat emission from a surface (e.g. the body) and thus can be used as a non-invasive technique, with no need for restraint, to estimate the body temperature of an animal. In piglets, the temperature at the base of the ear, where the skin is thinnest, is correlated with rectal temperature. Physical measures (weight, body size, rectal temperature) and infra-red images were obtained from 62 piglets: 34 piglets from 3 sows in the genetic line LRFI and 28 piglets from 4

sows in the genetic line HRFI. At birth, piglets were weighed, measured (crown-to-rump length, width and circumference) and their rectal temperature was recorded. In the weighing scale, piglets were also scored for the quality of their mobility (0 = no movement to 2 = movement in the box), respiration (0 = no problem to 2 = deep and difficult breathing) and vocalisation (0 = no vocalisation to 2 = high and frequent vocalisation). Then, the first thermal image was taken (i.e. approx. 8 min post-partum/birth) and piglets were returned to their pen. Thermal images were then acquired 15, 30 and 60 minutes post-partum. The movement and suckling activity of piglets were observed and the time spent near the heat lamp was recorded.

Temperature data were extracted from the thermal images at different locations of a piglet's body: the ear base, the ear tip, and the back surface (i.e. from the shoulders to the rumps). The minimum, maximum and average temperatures of the back surface were calculated.

Overall, temperature increased overtime for every location (ear base, ear tip and back). In addition, the birth rectal temperature of piglets was moderately correlated with the initial temperature of the ear base and the max. back temperature. Therefore, these locations seem suitable to estimate piglets' temperature and assess their thermoregulation abilities.

Overall, the LRFI line (i.e. most feed efficient) had higher minimum (28.0°C ± 0.16 vs. 26.8 ± 0.16) and average (35.5 °C ± 0.20 vs. 34.5 ± 0.13) back temperatures (Figure 1) than the HRFI line (i.e. least feed efficient). Moreover, ear tip temperature (Figure 2) decreased in HRFI piglets between 8 and 15 min post-partum while it increased in LRFI piglets (-1.1 ± 0.42 vs. 0.5 ± 0.45).

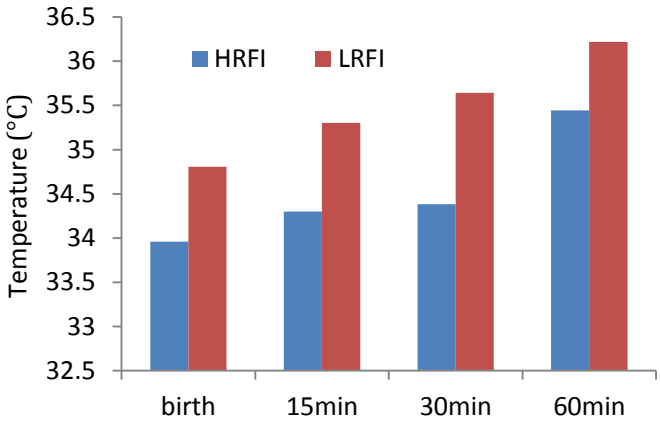

Figure 1. Average back temperature of piglets from genetic lines selected for high (HRFI) or low (LRFI) residual feed intake.

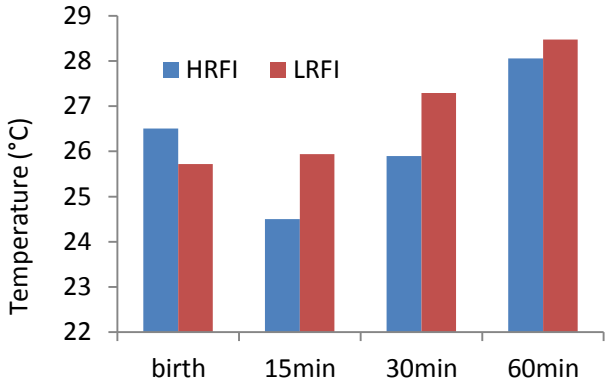

Figure 2. Average ear tip temperature of piglets from genetic lines selected for high (HRFI) or low (LRFI) residual feed intake.

In conclusion, piglets selected to be more efficient (i.e. low residual feed intake) seem to have better abilities to thermoregulate in their first hour of life than piglets selected to be less efficient (i.e. high residual feed intake). Moreover because the less efficient piglets had a decrease in ear tip temperature during the first 15 minutes after birth, this could be a sign of difficulty in ensuring thermoregulation; it is an indication that the piglets need to "move heat" from the extremities (ears, tail) to the vital organs.

Research Dissemination Day

The Teagasc Research Dissemination Days took place last Tuesday April 24th at the Horse & Jockey Hotel and Wednesday April 25th at Ballyhaise Agricultural College. The event was very well attended with over 200 people over the two days. The events provided attendees with an overview of the new and on-going research projects in the Teagasc Pig Development Department. There were many questions and much discussion on both days. A detailed overview of the meeting will be provided in next month's newsletter. The presentations from all the speakers will be made available shortly on the Teagasc Pig Webpage and a copy of the proceedings is currently available at: https://www.teagasc.ie/media/website/publications/2018/Pig-Research-Dissemination-Day-2018.pdf

Student success

Congratulations to Hazel Rooney who recently won the British Society of Animal Science (BSAS) Industry Award at their Annual meeting which was recently held in Croke Park. To be eligible for the Industry prize, the BSAS member has to be an early career animal scientist (postgraduate student or within two years of graduating with a PhD, or working in commerce or industry with an equivalent level of experience without necessarily having a PhD). The candidates were judged on their written paper and presentation at the Annual Meeting by representatives of the BSAS Industry Association. The criterion for winning the prize was based on impact to industry. Hazel works on the OPTIPIG project and is supervised by Dr. Peadar Lawlor and Dr. Keelin O'Driscoll. Her PhD project looks at feeding sows to optimise sow productivity and increase piglet viability and her presentation at the conference was titled "Effect of sugar beet pulp and L-carnitine supplementation in gilt gestation diets on gilt weight, lactation feed intake and progeny growth". A summary of this work is included in the proceedings of the recent Teagasc Pig Research Dissemination day booklet.

Pig farm managers course

The Teagasc PDD is currently enrolling for the Level 6 course in Pig Farm Management. This course will commence in September on a part-time basis of generally 2 days per month for 12 months. This course would be extremely valuable for current or future pig farm managers.

A number of people have expressed interest already and places will be limited. Please email amy.quinn@teagasc.ie if you or any of your staff are interested in enrolling.

Dates for your diary

The European Pig Producers (EPP) Congress 2018 'A Tail's Length Ahead' takes place from May 30th to June 1st in Lucerne, Switzerland. Registration for the event will be closing shortly. If you are interested in attending please contact EPP Ireland Chairman Colin Marry or EPP Ireland Secretary Shane McAuliffe for more information.

For More Information

This newsletter was edited by Amy Quinn, Pig Development Officer, Teagasc Moorepark, Fermoy, Co. Cork. For more information on any of the newsletter content please contact Amy at amy.quinn@teagasc.ie

Please visit our website at www.teagasc.ie/pigs/