

Editor: Amy Quinn

Welcome to September's Newsletter

Ciarán Carroll



Welcome to the September edition of our monthly newsletter. Pig prices have stabilised in recent weeks but there is still an expectation for further increases in the weeks ahead. On the feed side prices have started to drop with most feed now down €10 per tonne since last month. Combined with the strengthening pig price this is a positive development.

The Pig Development Department had a busy few days at the National Ploughing Championships last week at Fenagh, Co. Carlow. The good weather brought out great numbers and plenty of discussion was had in relation to pig markets and particularly in relation to the on-going threat of African Swine Fever. We took the opportunity to highlight our new infographic on "Reducing the threat of ASF". This infographic has been sent out to all pig farms in Ireland. Please contact us if you didn't receive it or if you require more copies.

With the return to profit, now is the time to evaluate our business and consider where best to

invest in our farms. This will be the focus of one of the papers at our forthcoming annual Pig Farmers' Conference. The theme for the conference is "Focusing on the Future". Our guest speaker this year is renowned geneticist, Dr. John Mabry from Iowa who will look at the economic impact of genetic progress on fitness traits in our pigs. The conference will also include a panel discussion. The conference takes place on 22nd October at Horse & Jockey and 23rd October at a new venue, the Kilmore Hotel, Cavan so put the date in your diary now.

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What to expect from this year's Pig Farmers' Conference

Amy Quinn

This year's Teagasc Pig Farmers' Conference is fast approaching and preparations are well underway. This year the conference will take place on the 22nd of October in the Horse and Jockey Hotel, Co. Tipperary and on the 23rd of October in a new location, Hotel Kilmore, Co. Cavan. The event will begin at 1pm on both days. This year we have decided to give the conference a running theme, "Focusing on the Future", with all presentations incorporating this theme.

The topics for this year's conference cover a wide range of topics including the future implications of the Chinese situation, feed costs and merchant credit, weaning management and on farm reinvestment to name but a few. Our guest speaker this year, Professor John Mabry from Iowa State University, will look at the economic impact of genetic progress on fitness traits. This year's conference will also include a panel discussion to discuss the topical issues of the day. We will also take this opportunity to highlight the exciting things you can look forward to from the Pig Development Department in the year ahead.

Our guest speaker, Prof. John Mabry is a Professor Emeritus of Qualitative genetics in Iowa State University. Through his long career John has been intensively involved in the pork industry through extension services, education and research. His acclaimed research focuses on maximizing profitability of swine production systems through developing breeding strategies, specifically by developing and implementing cross-herd genetic evaluation programs and using data management systems. John's lifetime of

work in pig genetics, both home and internationally, has been widely recognised by the honours bestowed on him. These include; National Pork Board Distinguished Service Award, National Swine Improvement Federation Distinguished Service Award, American Society of Animal Science Animal Industry Award. His paper at this year's conference is sure to interest all those in attendance, John will also take part in our panel discussion and we look forward to hearing his insights on the topics discussed.

We urge all those working across the pig sector to make sure to attend this year's conference as there will be something for everyone. In addition to taking in all the information on offer in the presentations the conference always provides a great opportunity to meet fellow producers and the panel discussion will give you the opportunity to give your opinions and engage in discussions. We look forward to seeing many of you there, so make sure you mark it in your diary. If you would like any further information please contact Amy Quinn (amy.quinn@teagasc.ie, 087 3779015). Please find the full conference programme below.

Programme

1:00pm Registration

1:30pm Session 1

- China and what's beyond, *Michael McKeon*
- Feed Costs –No such thing as a Free Lunch!
Gerard McCutcheon & Louise Clarke
- There's gold in your data mountain, let's mine it, *Maria Costa, Michael McKeon, Amy Quinn & Laura Boyle*

- Investing for the future, *Ciarán Carroll, Amy Quinn, Laura Boyle & Emer McCrum*

2:45pm Coffee Break/ Poster session

3.30pm Session 2

- The effect of genetic improvements on fitness traits, Prof. *John Mabry*
- The effect of rearing strategy on gilt health,

welfare and lifetime performance, *Keelin O'Driscoll, Phoebe Hartnett & Laura Boyle*

- Simple strategies to improve the transition of pigs at weaning, *Peadar Lawlor, Laura Boyle, Amy Quinn & Keelin O'Driscoll*
- Panel Discussion
- 5:00pm Close**

Improve feed efficiency but always minimise feed cost

Peadar Lawlor

I had an interesting query from a farmer recently regarding feed efficiency. He wanted to know what improving FCE would be worth to him and what effect feeding a cheaper lower energy and nutrient density diet would have on the feed cost for his finisher pigs. Normally at times of high pig price, as is currently the case, producers forget about feed efficiency but to his credit this farmer was planning ahead for leaner times.

The facts I had were the following:

Finisher feed price	€284/tonne
Transfer weight	30 Kg
Final slaughter weight	110 Kg
Feed conversion efficiency	2.72 kg/kg

1. How does a change FCE of 0.1 affect feed cost per pig?

This is quite simple to calculate and frankly it is a figure that all pig producers should calculate for their own unit on a regular basis. It is calculated as follows from the above unit data:

Cost (€/pig) of 0.10 FCE units = [Final slaughter weight (kg) - Transfer weight (kg)] x 0.1 x [finisher feed price (€/kg)]. Where 0.1 is the change in FCE

Or

Cost (€/pig) of 0.10 FCE units = (110 - 30) x 0.10 x (284/1000) = €2.27

So from the above, each 0.1 FCE unit change is worth €2.27/pig. On the example farm above this means that feed cost per pig would be reduced by €2.27/pig if FCE was brought from its current 2.72 to 2.62 by a change in diet, management or other. Likewise a change in FCE from its current 2.72 to 2.82 would increase feed cost per pig by €2.27/pig.

Each unit should be aware of this figure which is specific to their unit being influenced by weight range during the finishing period and the prevailing finisher feed price for their unit.

2. How does a €10/tonne change in feed price affect feed cost per pig?

The farmer's second query related to his option to buy a cheaper finisher diet than he was currently feeding. Let us first assume that the feed price change does not affect the FCE of his pigs. The cheaper and lower spec diet was available to the farmer for €274/tonne or a €10/tonne reduction in feed price. Table 1 shows

the effect of the €10/tonne feed price reduction on the cost of feeding a pig.

Table 1. Effect of changing feed price per tonne by €10 on feed cost per pig in the absence of a change in FCE.

Finisher feed price (€/tonne)	284	274
Initial weight Kg	30	30
Final weight Kg	110	110
Feed conversion efficiency kg/kg	2.72	2.72
Feed cost per pig (€/pig)	61.80	59.62
Change in feed cost per pig (€/pig) for a €10 change in feed price per tonne	€2.18	

Or alternatively we can calculate the effect of increasing the price of finisher feed by €10/tonne on the feed cost per pig in the following way

Cost of €10 change in feed price (€/pig) = [Final slaughter weight (kg) - Transfer weight (kg)] x [10/1000 (€/kg)] x current FCE. Where 10 is the €10 change in feed price per tonne

Or

Cost of €10 change in feed price (€/pig) = (110 - 30) x (10/1000) x 2.72 = €2.18

So from above it is clear that a reduction in feed price of €10/tonne will reduce feed cost per pig by €2.18/pig. However, this assumes that FCE does not change as a result of the diet change. This assumption may hold if the price of the same feed was simply reduced because of a drop in ingredient prices and therefore that the diet specification remains unchanged.

However, in this particular case the cheaper diet was lower in Net Energy and lysine density than the diet currently being fed by the farmer and would be expected to result in some

deterioration in FCE as a consequence. The question now is really how severe will be the deterioration in FCE as a result of diet change, and really this is something that must be measured on-farm. However, we can calculate the break even change in FCE after which changing to the cheaper diet will increase feed cost per pig above that which it is currently, thereby making the change to the cheaper diet uneconomic.

3. What deterioration in FCE can result from the diet change before the change to the cheaper diet becomes uneconomic?

We know from above that a 0.1 unit change in FCE is worth €2.27/pig in feed cost and that a €10 change in feed price is worth €2.18/pig in feed cost. Therefore, the breakeven change in FCE before switching to the cheaper feed becomes uneconomic is calculated below

$0.1 \times (2.18 / 2.27) = 0.096$ of an FCE unit.

In summary we now know that:

1. A 0.1 unit change in FCE is worth €2.27/pig
2. A €10 change in feed price is worth €2.18/pig (assuming no change in diet composition)
3. If diet composition does change and feed price is reduced by €10/tonne then deterioration in FCE of up to 0.096 FCE units (almost 0.1 FCE units) is tolerable before the diet change becomes uneconomic.

Do you know these figures for your unit? It is important that we continue to focus on improving feed efficiency at all times. However, we must also remember that even though feeding a cheaper less energy dense diet may result in a deterioration in FCE, the practice can still be economically advantageous if the deterioration in FCE experienced is not excessive.

Pigs on the move

Emer McCrum

Moving pigs is part and parcel of the weekly routine on any unit and the proper handling of pigs at this time can reduce stress for both stockperson and pig alike. Improper handling of pigs can lead to poor animal welfare and economic losses incurred as a result of injuries and even sudden deaths. Understanding animal behaviour and the natural instincts of the pig greatly improves handling as we can use this information to manage and move the animals in a calm and efficient way.

From a pig point of view

Overall pigs have a limited range of vision coupled with poor eyesight and so rely heavily on their other senses to establish their surroundings particularly their excellent hearing and acute sense of smell. The position and orientation of the eyes means a pig will prioritise lateral as opposed to frontal vision which increases their panoramic view but reduces their ability to calculate distances and depths. In the wild pigs are prey animals and are always on the lookout for danger with a well-established flight zone.

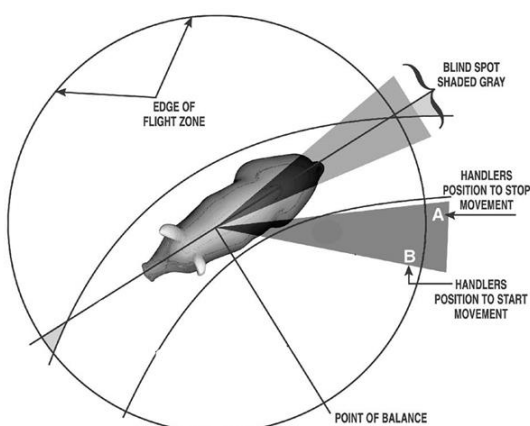


Figure 1. Source: National Pork Board

The diagram in figure 1 above illustrates the natural instincts and behaviour of the pig. Once anything perceived as dangerous, handlers included, enters the flight zone pigs will react by moving away from the threat. The point of balance located at the pigs shoulder determines in which direction the animal will move and so if you are located behind the point of balance the pig will move forward and in front, the pig will move backwards. It is important to note that immediately behind the pig is a blind spot.

In practice

Based on what we know about the behaviour of pigs, there are a number of simple measures that can ensure less stressful animal movement. Firstly, calm pigs are far easier to work with than excited pigs and as such it is critical that animals are handled with care and patience. Pigs should be moved in small groups at walking pace without excessive noise. When moving a large number of animals, blocking and crowding may occur as pigs at the front of the group stop to sniff their new surroundings. For the handler, there is less control over the group and more pressure or threat is required on pigs at the back of the group to not only move themselves but to move those pigs at the front too. Moving large numbers at a time can also cause pigs to rush which contributes to excitement and stress. This in turn can lead to injuries and impaired welfare. Loud noises and yelling can stress and confuse the animals whereas less aggressive methods such as whistling, clapping and rattles in paddles will keep pigs moving. Pregnant sows in

particular should be handled with extreme care and walked at their own pace.

Driving boards should be used as a physical barrier when moving pigs but not to strike the animal. Paddles filled with rattles work as an auditory stimulus to move pigs, can be used as a visual barrier when placed close to the animals head and to gently tap the pigs to encourage movement. It is not acceptable to poke sensitive areas of the pig such as eyes and ears during handling. Handling aids should not be banged against walls, pens, doors etc. to generate noise as this will damage the tool and it is important that all handling tools are in good condition as any cracks or chips may cause injury to the animal during movement.

As pigs are prey animals they have a natural urge to escape. Small openings along the side of passageways should be covered over as what may seem like an insignificant gap to us is a potential route of escape to a pig and when attempting to escape pigs can often injure themselves. Gates, walls and the sides of loading ramps should ideally be solid for this reason.

Given that pigs rely heavily on their sense of smell to establish their surroundings, calm pigs will usually move with their head orientated towards the ground sniffing as they move and so pigs can become very distracted by any obstacles they may encounter. It is recommended to have passageways clean and free of any obstacles such as turkey trays, buckets and even puddles in advance as this can distract pigs and cause backlogs while moving. Any handlers positioned ahead of the pig such as at the door of a shed or at the loading ramp should remain quiet until the pigs have passed as the animals may hesitate at unfamiliar noise ahead.

Because pigs have poor depth perception, bright light and shadows can cause confusion. Pigs prefer to move towards a lighter area but will not approach strong blinding light. It is recommended that there is an even flow of light between passageways and rooms when moving pigs. While this can be hard to achieve on a bright day, turning on all lights in the room the pigs are being moved into can help. When loading pigs for sale and in particular on dark winter mornings ensure there is light shining into the lorry to encourage pigs into the trailer.

Steps can cause animals to hesitate which in turn will lead to backlogs during movement. Try to minimise any steps on routes pigs regularly travel through the unit opting instead for low gradient ramps. When loading pigs for sale, ensure the ramp of the lorry is flush with the loading bay to minimise disruption here.

Pigs do not like wind blowing in their faces and may baulk away from it. For this reason it is a good idea to ensure the sides of loading bays are solid to prevent pigs hesitating and this will also minimise distractions. Air movement as pigs are about to exit a shed can cause problems too. If the room is fan ventilated, it is an idea to switch off the fans while moving pigs to reduce the movement of air through the door but it is imperative that the fans are switched on immediately after the last pig has left the house.

Moving pigs is one of the most common jobs on a unit yet pigs do not understand the objective of the task and have little experience being moved. For this reason the importance of understanding the behaviour of the pig should not be overlooked as improved animal handling leads to better welfare, safety and may improve your bottom line in turn.

Sustainability a major underlying theme at animal science conferences this summer

Laura Boyle



Sustainability was a major underlying theme at the European Association for Animal Production (EAAP) annual meeting in Ghent and at the International conference on Production Diseases (ICPD) in Bern this summer. There were general suggestions that animal welfare should be included as one of the sustainability goals and that in focusing on economic and environmental sustainability that a key area of societal concern and importance is being omitted.

German research at the EAAP discussed how farmers face challenges to improve pig welfare while at the same time generating an adequate income under satisfying working conditions. They reported that there are no tools that combine pig welfare, economic sustainability and farmer wellbeing even though there is a strong relationship between the three. Farmers are

facing these trade-offs when trying to increase the sustainability of their farm. The SusPigSys project was presented at the EAAP. This aims to collect, summarise and disseminate evidence-based information on successful strategies for improving sustainability in typical as well as niche pig production systems. Project outcomes will include an on-farm assessment and feedback tool to help pig farmers compare and improve economic and environmental performance as well as animal welfare and their own wellbeing. Other research investigated pig farmers' willingness to participate in animal welfare programs. Demand for products with higher animal welfare standards is growing within the European Union. This provides an opportunity for pig farmers to escape from the pressure to produce at the level of world market prices and instead take advantage of a more differentiated

market segment for meat produced with higher animal welfare standards which is accepted and financially rewarded by society.

An interesting paper at the ICPD discussed whether intensive production systems are bad for animal welfare. They are certainly perceived in a negative way by society. However, they allow animals to grow according to genetic potential and offer many advantages in terms of animal health and hygiene. Nevertheless, the Belgian researchers suggested that the high prevalence of many production diseases and welfare problems in intensive systems indicates that there is still much room for improvement. It was noted that research on the use of technology and automated data collection in pig farms could help to overcome these problems. In contrast, at the EAAP, Dr. Frank Tuytens argued that technology could actually exacerbate problems for pig health and welfare. He explained how unusual welfare problems may not trigger a warning and may thus go unnoticed as well as the reduced likelihood of stockpersons directly noticing welfare problems because of reduced contact with the animals and associated reduced skills to detect problems during such contacts. Moreover, he suggested that with the rise of precision livestock farming technologies the personality profile of successful farmers will likely shift from animal to technology-centred. The final threat concerns the vulnerability of animals kept in highly automated, minimally staffed, large-scale farms to technological break-downs. These are valid concerns reminding us that technology is not the panacea it currently made out to be.

Research conducted at the TopigsNorsvin Research Center in the Netherlands on efforts to identify phenotypes useful in breeding for

resilience was presented at ICPD. Resilience is defined as minimal changes in the overall performance of an animal in spite of diseases. The presenter explained how it is difficult to include such traits in a breeding programme when pure line production is mostly done under high health conditions. Carcass findings at meat inspection clearly indicate that something was suboptimal during production. The authors found that carcass remarks for pneumonia, pleuritis, pericarditis, liver lesions and joint disorders have a sizable heritable component and that substantial genetic variation exists. They concluded that the feedback of such traits recorded on crossbred animals under challenging field conditions into the top of the purebred nucleus herds offers new opportunities for genetic improvement of overall resilience. Another reason why we need better recording and sharing of meat inspection findings!

There was also a session at the ICPD on novel strategies in health and disease management. Alternative housing which better meets the behavioural needs of pigs and therefore improves their welfare offers promise in this area. German researchers presented results indicating that free farrowing had beneficial effects not only for farrowing sows, but also for the vitality of their piglets. The farrowing process was less disrupted and it appears that this led sows to give birth to piglets which were more vigorous. They surmised that this could make the piglets more resilient to stress and other challenges during the suckling and early post weaning period. Nevertheless there were high piglet losses in the first 3 days in the free farrowing system meaning that even if allowed loose during farrowing sows should be restrained for the first three days after. Following on from this research from the University of

Helsinki reported that the expulsion phase of farrowing/parturition is now 4-5 times longer than it used to be in the early 1990's. Additionally there has been an associated increase in farrowing complications such as retained placenta. They suggested that robust breeds with a lower litter size and higher birth weights are needed for in more sustainable production systems.

One of the problems with large litter sizes is the higher proportion of piglets being exposed to intrauterine growth restriction (IUGR) and consequently lower growth efficiency than normal piglets. Danish research presented at the EAAP showed a depression of immune function in IUGR piglets at weaning, compared to normal piglets. This could have implications for resistance to pathogenic challenges in the post-weaning period. Furthermore immune challenges are major obstacles to growth efficiency, as nutrients are diverted away from growth in support of immune-related processes.

In Norway there is considerable interest and associated research on finding more sustainable protein sources for the pig and poultry industries. *Candida utilis* yeast is produced on sugars from Norwegian spruce by-products. It is a promising novel protein source with bioactive compounds known to improve intestinal health. At the EAAP research looking at the effect of *C. utilis* yeast on the development of gastrointestinal tract (GIT) function and health in post-weaning piglets reported no effect on growth performance of the piglets. However, jejunal genes were differentially expressed between control piglets and the piglets fed the yeast diet indicating

positive effects on GIT development in piglets post weaning.

Looking ahead to a potential time when EU legislation may allow the use of processed animal proteins (PAPs) obtained as by-product from the slaughter of pigs and poultry researchers from Wageningen argued that the processing of PAPs has been improved in the last decades to assure optimal biosecurity and nutritional value. They believe that PAPs can make an important contribution to a sustainable animal production to meet the increasing global demand for animal sourced food while reducing Europe's dependency on imported soybean meal. At the EAAP they presented findings on testing of five poultry by-products (low-, medium- and high-ash poultry meal, feather meal and blood meal) in 48 growing pigs. They found important differences in nutritional value of the products and an effect of the ash content within the group of poultry meal products. PAPs inclusion also affected the pH in the stomach but not in other segments of the digestive tract, which may influence physiological processes. Inclusions of up-to-date values for nutrient content and digestibility of these poultry by-products in feedstuff tables will allow their optimal use in pig diets should EU legislation allow the use of PAPs in farm animal diets. Other Dutch research modeled the contribution animals can make to a resource efficient food system by upcycling 'low-opportunity-cost feed' defined as food leftovers and grass resources into nutritious animal-source food. Pigs are highly efficient at valorising food leftovers in this regard. Several papers investigated the nutritional contribution insects such as black soldier fly could make to the pigs diet.

ASF poster

All producers should have received a copy of the ASF poster in the post this month. Teagasc with the support of Cargill and the Irish Pig Health Society have developed this poster for on farm use on how to reduce the threat of African Swine Fever. If you have not received one or wish to get more copies please contact amy.quinn@teagasc.ie.

QQI Level 5 Pig Course

The Teagasc PDD is still looking for expressions of interest for the part time QQI Level 5 Certificate in Agriculture in Pigs. This course is aimed at enhancing the skills and knowledge of farm operatives. Please email amy.quinn@teagasc.ie if you or any of your staff are interested in completing this course.

DAFM Letters issued to Pig & Poultry Farms re Record 3 Forms

DAFM Nitrates Division issued letters to Pig and Poultry holdings regarding the declaration of movements of organic manure types. They are requesting that movements of pig slurry be declared to the Nitrates Division only on the Record 3 Form from now on and this will be the only format acceptable. We also reminded people that the deadline for receipt of 2019 records is 31st December 2019 but why not submit them early and save the last minute rush.

EAAP 2019

PDD PhD Students, Jordi Camp Montoro and Jen Yun Chou also attended the EAAP 2019 conference during the 25th to 30th of August in Ghent, Belgium. Jen, was the winner of last year Wageningen Academic Publishers early career competition and she was invited to present her

results about “Managing tail biting in undocked pigs on fully-slatted floors with different enrichment strategies” at the Tail Biting and Feather Pecking session. Her presentation highlighted the results from her 4-year PhD project under the supervision of Dr. Keelin O’Driscoll. Jordi, a first year PhD student working on pig production and swine nutrition under the supervision of Dr. Edgar Garcia Manzanilla, was selected to present his results about how “Birth body weight does not always determine subsequent growth performance in grow-finisher pigs” at the Innovative approach to pig production and pig research at this year Wageningen Academic Publishers early career competition.

Congratulations Jen

The PDD would like to congratulate Jen-Yun Chou on recently submitting her PhD thesis ‘Strategies to manage tail biting in pigs housed in fully-slatted systems’, to Edinburgh University. Jen’s work is a significant contribution to the scientific literature regarding enrichment options for slatted systems, as the majority of work to date has focused on options suitable for either partly or fully solid floors. She has also played a pivotal role in contributing to the knowledge of researchers and technicians in the Teagasc PDD on the feasibility of rearing undocked pigs in our systems. We wish Jen every success in her viva, and future career!

Teagasc Pig Farmers Conference 2019

This year’s Teagasc Pig Farmers’ Conference will take place at 1pm on the 22nd of October in the Horse and Jockey Hotel, Co. Tipperary and on the 23rd of October in Hotel Kilmore, Cavan (note new venue for Cavan this year).



For more information:

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

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