

Teagasc Pig Research Dissemination Day 2018

Teagasc Pig Development Department

April 24th: Horse & Jockey Hotel, Co. Tipperary

April 25th: Ballyhaise Agricultural College, Co. Cavan



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Wednesday April 25th: Ballyhaise Agricultural College, Co. Cavan



AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

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Presentations

The identification, development and assessment of visual and digital tools for knowledge transfer in the pig industry

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The use of visual and digital aids can enhance knowledge transfer and education, improving farm efficiencies without compromising farm biosecurity. Digital platforms enable instant access to information on a continual basis, while visuals appeal to a broader audience and a wider range of learning styles.

Focus groups were conducted with five pig farmer discussion groups, three QQI level 5 student groups and a Teagasc advisor group. Participants in the focus groups proposed and discussed a number of visual and digital tools. The most popular tools, content and delivery methods were determined through analysis of the focus group transcripts, using keyword frequencies and detailed analysis of the interactions. All participants agreed that all tools “need to be very focused, user-friendly and very visual” to increase appeal and to engage a wider audience.

In total, 17 tools were proposed and discussed by the focus groups. Of these the three most popular tools were; video, infographics and factsheets, with each being mentioned 217, 73 and 42 times respectively. Of the 42 topics raised throughout the focus groups, the areas of farrowing and lactation, research and trial work and husbandry skills were the most popular, mentioned 79, 77 and 59 times respectively. The content was linked with the most appropriate tool, while the favoured delivery methods for the tools included social media, Teagasc pigs website and the Teagasc pigs newsletter which were mentioned 152, 107 and 59 times respectively.

For evaluation purposes, a sample of five tools were developed, two videos on teeth grinding and an event promotion video, two factsheets on the value of colostrum and split suckling and an infographic on the national pig herd performance figures for 2016. These tools were evaluated by administering a questionnaire to the same groups that the focus groups were conducted on. The tools were rated as “good” or “very good” by 98.46% of respondents, 98.55% would encourage colleagues or employees to refer to the tools and 99.22% felt the information was clearly delivered. An average of nine recommendations were made to improve each tool such as 20% feeling the level of text in the factsheets should be reduced. Templates and processes are in development to guide future tool development for the Teagasc advisory service based on these results.

Take home message

Farm owners, managers, staff and Teagasc advisors identified the potential use of visual and digital tools for the Irish pig industry. Digital and visual tool types, the topics to be covered and the preferred delivery methods were identified and verified templates for future tool development are in development.

Main factors affecting efficiency in Irish pig farms: overall conclusions from a representative sample

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One of the priorities of the Teagasc/IFA joint programme is increasing the efficiency of pig production in Ireland. Efficiency is affected by different factors including feeding practices, management, and health and welfare status. The objective of this work is to assess the main factors affecting efficiency in Irish pig farms and the use of antimicrobials (AM).

In 2016, a cross-sectional study of 72 Irish pig farms was conducted to assess biosecurity, use of medicines, management and feeding practices. The participating pig farms were recruited from the Teagasc Advisory service system and their performance data were retrieved from the e-Profit Monitor. From October 2017 to March 2018, two batches of pigs from each participating farm were inspected at slaughter to assess lung lesions (*health status*) and collect blood samples. Results for the biosecurity assessment and feeding strategies were presented in previous years (*RDD 2016 and 2017*).

With more than 30,700 pigs assessed at slaughter and an average of 156 plucks (*lungs, heart and liver*) assessed per batch, factory checks revealed an overall farm prevalence of 15.2% of pleurisy (IQR 3.4-22.6%), 14.1% of pneumonia (IQR 5.1-24.0%) with an average surface affected of 6.6% (IQR 4.8-8.2%) and 15.4% of scars (IQR 9.1-22.0%). Additionally, farms had an average prevalence of 9.3% of pericarditis (IQR 5.7-12.2%), and 25.5% of milk spots (IQR 2.7-50.0%) on the liver. The results suggest that a more intense work with veterinarians is needed to improve pig health. The results on the use of antimicrobials suggest Ireland is in a good position when compared to the UK but the high AM use in some farms is still of concern.

Factory reports and benchmarking figures for antimicrobial use, production performance, health and biosecurity have been prepared to inform the farmers, PVPs and advisors how their units compare to others.

Take home message

Increasing efficiency in Irish pig farms is possible through the improvement of internal biosecurity (*management*), selection of the best feeding strategies for each farm and the establishment of farm-specific herd health programmes (*i.e. serology farm profiles to develop vaccination protocols*).

Use of antibiotics in Irish pig farms. Work in progress

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The AMURAP project commenced in September 2017 with the objective of studying the use of antibiotics in the Irish pig and poultry sectors and their effects on antimicrobial resistance. Data on antimicrobial use available from 67 farms from the Pathsurvpig project was used as a starting point and had been completed by individual farm visits during the last six months. Total use of antibiotics in feed, water and injectables for the year 2016 was collected from farmers as a first measure of antibiotic use on Irish pig farms. The data obtained may be expressed in different units and the results vary slightly depending on the units used. The average use of antibiotics in mg/kg of liveweight sold was 91.0mg/kg and in mg/PCU was 132.3mg/PCU. This level is lower than for some EU countries, the UK for example, but still higher than the level used in reference countries such as Denmark or the Netherlands. Current data indicates that 89% of all antimicrobials used in pig production are administered in medicated feed. The next steps to be taken in the project are to collect data from PVPs and mills to compare the results when obtained from different sources and to relate the levels of antibiotic use with the levels of antimicrobial resistance.

In November 2017, DAFM released Ireland's National Action Plan (iNAP) including all the actions to be carried out in the following years by the various stakeholders to reduce the use of antibiotics both in humans and animals. The planned actions in which Teagasc will be involved are the establishment of a national database of antimicrobial use for the different species and the creation of a good practice guide.

Take home message

The use of antibiotics in Irish pig farms is lower than other countries, however there is still work to do to reach the levels of use in countries of reference like Denmark and the Netherlands. A low use of antibiotics in food production is an increasingly important consideration for the consumer and will be relevant to pork exports in the near future. The collaboration of all stakeholders will be key to the success of reducing the current use of antibiotics in the pig sector.

When 'All-in/all-out' is not 'All-in/all-out': implications for pig welfare and performance

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'All-in/all-out' (AIAO) is a management practice whereby pigs of the same age are moved together through the production stages aiming for uniformity in growth and feed efficiency and of minimising disease transmission. However, it is common to hold small/sick pigs back from the normal production flow to allow them to catch up; a practice which involves remixing. The aim of this study was to investigate the implications of this practice for pig welfare and performance in a farm with a self-declared AIAO management.

A total of 1,016 pigs born within one week were tagged at birth and followed until slaughter. The declared management on the farm was for pigs to spend eight weeks in the nursery stage (*four weeks in each of the two nursery stages*), four weeks in the grower and eight weeks in the finisher stage. The weekly movement of all animals was tracked. Pigs were individually weighed and inspected for the presence of tail, ear and body lesions at weaning and on transfer between each production stage. Pigs were retrospectively classified into three production flows according to the time they spent in each production stage (*flow 1=normal, flow 2=pigs delayed by one week and flow 3=pigs delayed by >1 week*).

Growth rate differed between flows on transfer between each production stage. Pigs in flow 1 had a higher risk of tail, ear and body lesions than pigs in flow 2 or 3. Tail lesions were 2.24 times more likely in flow 3 than in flow 2 and ear lesions were 1.57 times more likely in flow 3 than in flow 2.

Flow 3 pigs were associated with poorer performance and greater risk of welfare issues. These pigs were generally re-mixed which is a known stressor with a detrimental impact on growth performance. Data collected at slaughter showed that flow 3 pigs had also more health problems. This suggests that being delayed from the normal production system had a negative impact on pig health and welfare. However, welfare lesions were also a problem in flow 1 pigs which were thriving suggesting that high growth rates and potentially lower space allowances may challenge pigs coping abilities. These results highlight the multifactorial nature of welfare problems and the negative implications of delaying pigs from an AIAO management system.

Take home message

- Adherence to a stricter policy of an AIAO management would help in minimising health and welfare problems
- Consider maintaining a separate 'flow' for pigs returning from the hospital
- Pay additional attention to the requirements of fast growing pigs (i.e. feeder/space allowance)

Effects of therapeutic ZnO on the microbiome, resistome and immune system of pigs and strategies to face ZnO withdrawal

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Pig production in Ireland and other EU countries is heavily dependent on the use of high doses of zinc oxide (ZnO) in piglet feed. ZnO is used at high levels to control diarrhea in early-weaned pigs, a major health problem in pig production. The removal of ZnO from feeds often results in high mortalities and important delays in growth. However it is considered an environmental issue and the Committee for Medical Products for Veterinary Use (CVMP) of the EMA recommended the European Commission to ban the high-level use of ZnO. The Commission has voted to phase out ZnO as a veterinary product giving countries five years to find alternatives. Piglet diarrhea is also the main use of antibiotics in animals. The removal of ZnO from piglet diets will result in an increase on the use of antibiotics. However, there is even more pressure from the EC to reduce the use of antibiotics. This makes the situation even more complex.

This project will study the effects of ZnO on the pig's microbiome, resistome and immune system in commercial conditions using cutting edge technologies. This information will help understand the actual consequences of the removal of ZnO and will help develop alternative strategies to stop the use of ZnO on Irish farms. But this has been studied by many research groups in the past. What is the difference in this project? The methodology used in this project is the main difference with the research done previously on the mechanisms of actions of ZnO to control diarrhea. Previous research has mostly been done in experimental farms to describe very particular effects of ZnO. This project will be done in commercial farms selected from the AMURAP project (10 to 15 farms total) with different health situations and will develop alternatives in real conditions. This approach includes factors of interest that are excluded in experimental farms. Familiarity with the farms involved in this study and the collaboration of farmers is key in this approach. The studies include comparisons of farms working with or without ZnO, a follow up of the consequences of the removal of ZnO in farms where ZnO has never been removed and comparisons of the effects of ZnO, different antibiotics and new alternative approaches.

Management strategies to optimise piglets' survival

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Hyperprolific sows often do not have enough teats to feed all of their piglets, which hampers piglet growth and survival. This is exacerbated by low birthweights, also common in large litters. This project investigated three strategies to improve outcomes for piglets from large litters.

Energy Boost: 406 low birthweight piglets (<1.1 kg) were either dosed with 2 ml of commercial product, coconut oil, water, or not dosed 3h post-birth (t_0). Blood glucose concentration (t_0 ; t_0+24h), rectal temperature (t_0 ; t_0+1h), and pre-weaning survival and growth were recorded. **Nurse Sows:** At one day-old, 463 piglets either remained with their mother (M) or were moved to a nurse sow (NS) either seven or 21 days into lactation. Pre-weaning growth, survival and teat-fighting behaviour were recorded. **Artificial Rearing:** 233 piglets were either sow-reared (SR) or artificially-reared (AR) in a Rescue Deck® from seven days-old until weaning. Pre-weaning survival and growth were recorded, and emotional reactivity was assessed post-weaning at 33, 69 and 100 day-old.

Energy Boost: Rectal temperature, pre-weaning survival and growth were not affected by treatment. Coconut oil increased blood glucose concentration more than other treatments 24h post-dosing. **Nurse Sows:** Pre-weaning survival was similar in all litters. NS piglets were initially heavier than M piglets but weaning weights were similar. There was more teat-fighting in litters reared by nurse sows in late lactation than in litters reared by sows in early lactation (*mother or nurse*). **Artificial Rearing:** AR piglets were lighter than sow-reared piglets from the day following transfer until weaning. They were less reactive to a sudden event and to human contact. However, they were less likely than SR pigs to explore a novel environment.

Neonatal energy boost did not promote growth or survival of small piglets. NS and AR piglets had the same survival rate as piglets remaining on mother. However, the weight advantage at birth of NS piglets was not maintained at weaning, and AR piglets were unable to recover from the growth check experienced following transfer. In both systems welfare was slightly impaired. Nevertheless, they offer viable alternatives to rearing piglets from large litters.

Take home messages

- There is no ideal solution to deal with large litters and small piglets
- Nurse sows represent the best option for piglet performance and welfare

Acknowledgements

OPTIPIG is funded by the DAFM's FIRM/RSF/CoFoRD 2013 Research Call (grant no. 13S428).

The implications of chronic stress in gestating sows for sow performance and welfare and for the resilience of her piglets to stress and disease (SowWeanWel)

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Group living can be a stressful experience for sows. Apart from the acute stress of mixing they can experience chronic stress over competition for resources and bullying. These problems have implications for sow welfare and performance but can also expose offspring to pre-natal stress which may render piglets less able to cope with stress or disease challenges. Use of medication to protect piglet health at weaning has serious implications for antimicrobial resistance. The objective of the SowWeanWel project is to evaluate the effect of chronic stress on pregnant sows on welfare, health and productivity and on the resilience of their piglets in terms of coping ability and health. We also aim to quantify the impact of chronic stress on reproductive performance and identify risk and protective factors associated with different housing and feeding systems for pregnant sows. Firstly, literature surrounding sow welfare, pre-natal stress, immune function and implications for antibiotic use will be reviewed. In the first task a commercial farm keeping records of sow reproductive performance will be selected. Gestating sows on this farm will be inspected for skin lesions 24hrs post weaning and 3wks later. The association between skin lesion counts at both periods and subsequent reproductive performance will be evaluated. Aspects of the housing, feeding and management will be documented for a pilot examination of potential risk factors for chronic social stress. This information will be used to inform a larger epidemiological investigation of risk and protective factors on sow farms. This study will be conducted in Poland where a wider variety of gestation housing systems are in operation. A controlled longitudinal study will be conducted on an Irish farm. Sows will either be housed in a 'control' environment or in pens modified to reduce the problem of chronic social stress/aggression and detailed measurements of their behaviour, health and welfare and stress physiology will be taken. Resulting piglets will be monitored from birth through to weaning to establish the impact of pre-natal stress on their viability and ability to cope with weaning stress. Records will also be kept of antibiotic use.

Employing social science and mathematical theory to improve management and understanding of aggression in pigs

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Aggression between pigs at regrouping is a welfare and economic issue. Research has identified several aggression control strategies but on-farm uptake is poor. Genetic selection could also help to reduce aggression but is hampered by the complexity of social behaviour in pigs. The aim of this research is 1) to understand barriers to the uptake of aggression control strategies and 2) to employ social network analysis to provide new insights into social behaviour which could aid in genetic selection. Pig farmers ($n=90$) and non-pig farmers ($n=60$) were asked to score how severe and how exhausting fights were from six video clips of aggressive encounters between pigs. Scores were compared between groups and against the actual severity measured as change in number of skin lesions and blood lactate concentrations. Farmer perceptions of fight outcome corresponded with these objective measures. Furthermore the scores did not differ between groups of pig farmers and non-farmers. This indicates that experience of working with pigs does not affect perceptions of fight outcomes and that farmers do not underestimate the physical impact of aggression on pig welfare. This research is now focusing on how the cost of aggression mitigation strategies may influence uptake at farm level using choice tests. Traditionally aggressive behaviour at mixing is measured in terms of interactions between pairs of individual pigs (*dyadic interactions*). The ability of group-level network structures (NS) to predict aggression-related injuries at 24 hours and three weeks post-mixing (24hrs-PM and 3wks-PM) was tested. A total of 78 pens were video recorded for 24hr PM. Each aggressive interaction that occurred during this time was used to construct group-level NS. The relationships between group-level NS at 24hr and the pen level injuries at 24hr-PM and 3wks-PM were analysed. NS at 24hr predicted long term aggression (3wks-PM) better than simply looking at dyadic interactions. The NS of some groups in the first 24hrs-PM was associated with fewer injuries at 3wks-PM while other NS were more likely to be associated with increased rates of injury at 3wks-PM. Hence early group NS has predictive value for chronic aggression, and has potential for identification and intervention for 'at risk' groups.

Take Home Message

Aggression has an underappreciated impact on sow and pig performance. The factors associated with minimizing aggression are well known but are not being applied at farm level.

Rearing undocked pigs to slaughter: Experiences to date in Moorepark

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Routine docking of pigs' tails is not permitted as a method of controlling tail biting without exhausting other options first (Council Directive 2008/120/EC). Recently there has been an increased focus on this legislation at both EU and national level. The ENTAIL project has been running for just over three years, and aims to identify strategies that will permit rearing of pigs without tail docking. The first two years of the project focused on identifying materials which are favourable to pigs and feasible for the producer, using docked pigs (RDD 2016, 2017). We are now on our third experiment with undocked pigs. We initially provided undocked pigs with either spruce posts or a rubber floor toy, along with either a standard or high fibre diet, with 14 pigs/pen, well within the legal allowance. The incidence of tail biting outbreaks was extremely high; of the 48 pens 22 had one outbreak (*fresh blood present on 20% of the pigs*), and four pens had two. Twenty outbreaks occurred in the weaner stage, and six in finisher. There were 12 outbreaks in high fibre pens, 10 in the control, and 13 outbreaks each in pens equipped with a toy or wood. This level is unacceptable; besides the number of outbreaks, it took 19.5 ± 12.7 days to ensure an outbreak was over, with associated labour and hospital pen requirements. In light of this, we decided to carry out a 'proof of concept' study to investigate whether it was even possible with our pen design to rear undocked pigs. We used 12 pigs/pen and 'overloaded' the pens with enrichment. This meant eight enrichment items per pen, including a rack for loose material (*as specified in EU commission SWD (2016) 49*), and all pigs could access a device simultaneously. There were no tail biting outbreaks, and in pens where we changed the enrichment every two weeks we found less tail damage than pens where the pigs had the same devices throughout. However, this type of management is not commercially feasible. Our current study is investigating how much we can reduce the allowance before biting becomes problematic.

Take home message

Increasing the amount and variety of environmental enrichment items in a pen can reduce tail biting outbreaks, and tail damage. Provision of loose material in a rack is particularly beneficial in occupying pigs.

Feed enzymes as a means of increasing feed efficiency in grower-finisher pigs: a systematic review and meta-analysis

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Supplementing feed with enzymes has been suggested as a strategy to improve feed efficiency in grower-finisher pigs. While many studies have tested the effect of dietary enzyme supplementation, the ability of feed enzymes to improve feed efficiency is not always consistent. A systematic review and meta-analysis were conducted to determine which enzymes are most consistent in improving feed efficiency and to investigate the effect of diet formulation on the response in grower-finisher pigs.

A systematic literature review was conducted using the on-line database “Web of Science™” using the keywords “enzyme name”, “growth” and “pig”. The enzymes included in the literature search were xylanase, xylanase+ β -glucanase, mannanase, protease, cellulase and α -galactosidase. A database including the gain to feed ratio (G:F) of the experimental control group and the G:F of the enzyme-supplemented group together with dietary composition from each selected study was prepared. The metafor package in R was used to conduct the meta-analysis. Mean difference (MD) was the size estimate effect used in the meta-analysis and was calculated by subtracting the mean G:F of the control group from that of the enzyme-supplemented group and tested in a mixed model with enzyme type, ingredient composition and dietary energy level as explanatory variables.

Gain to feed was improved in 56 studies, remained un-changed in 47 and deteriorated in 12 of the studies, in response to enzyme supplementation. Gain to feed was improved when diets were supplemented with mannanase or a complex of enzymes. The G:F response to enzyme supplementation was influenced by dietary energy and protein level. When enzymes were supplemented to low density diets, the G:F response was increased compared to high density diets.

Take home message

The exogenous enzymes that most consistently improved G:F in grower-finisher pigs were mannanase and multi-enzyme complexes. The G:F response to enzyme supplementation was higher when the energy density of the diet was low.

Acknowledgements

Research leading to these results received funding from the Teagasc-funded project PIG-ZYME and the European Union's Seventh Framework Programme for research, technological development and demonstration (ECO-FCE project no. 311794). A. Torres-Pitarch's PhD is funded by the Teagasc Walsh Fellowship programme.

Effect of feed form and delivery on the growth, feed efficiency and carcass quality of grow-finisher pigs

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Approximately 70% of pigs in Ireland are liquid-fed. Many producers use liquid feeding, as their units were built at a time when significant volumes of liquid by-products (*e.g. liquid whey and skim milk*) were readily available. Liquid feeding offered the potential to feed such by-products with a balancer, thereby providing a cheap balanced diet. However, these products are no longer available to the same extent and/or quality. In addition, there are now dry feeding systems available that are equally as labour saving as liquid feeding. Pelleting feed for pigs has been shown to improve feed conversion efficiency (FCE) due to improvements in nutrient digestibility, increased nutrient density per unit volume and reduced feed wastage during feeding. There is very limited, good quality, information available comparing liquid, dry and wet/dry feed delivery systems, in controlled conditions and where information exists, it is often conflicting. The aim of this study was to compare dry, wet/dry and liquid feeding (*Delivery*) using a common diet in meal or pelleted form (*Form*) on the growth, feed efficiency and carcass quality of grow-finisher pigs.

This experiment was conducted in two batches using a total of 432 pigs (33.8kg; \pm 0.55 SEM). Pigs were housed in same sex (*entire male or female*) groups of six pigs/pen ($N=12$ pens/treatment). The experiment was a 2x3 factorial arrangement with two factors for diet form (*meal and pellet*) and three factors for delivery (*dry, wet/dry and liquid*). The treatments were: 1. Meal from dry feeder, 2. Meal from wet/dry feeder, 3. Meal from liquid system, 4. Pellet from dry feeder, 5. Pellet from wet/dry feeder, 6. Pellet from liquid system. The experiment lasted 63 days, and growth and feed intake were recorded every 21 days.

Pigs fed the pelleted diet had increased average daily gain, improved FCE and a heavier live weight at slaughter compared to those fed meal. The average daily feed intake of pigs fed dry, wet/dry and liquid was 2334, 2488, 2864 g/day, respectively. The ADG of pigs fed dry, wet/dry and liquid was 1058, 1094, 1188 g/day, respectively. The FCE of pigs fed dry, wet/dry and liquid was 2.21, 2.28, 2.42 g/g, respectively.

Take home message

Pelleting increased growth and improved FCE. Liquid feeding increased feed intake and growth to slaughter but worsened FCE. Dry feeding resulted in a superior FCE compared with all other methods of feed delivery, especially liquid feeding.

Acknowledgements

Project funded by Teagasc (WET-FEED). F.M. O' Meara and A. Torres-Pitarch's PhDs are funded by the Teagasc Walsh fellowship programme.

Supplementary Abstracts

Effect of sugar beet pulp and L-carnitine in gilt gestation diets on gilt weight, lactation feed intake and growth of progeny

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Advances in genetic selection for increased sow prolificacy has resulted in reduced piglet birthweight and increased piglet mortality. Therefore, strategies to increase piglet weight and robustness at birth are of increasing importance. Previous research found that supplementing gestating sows with L-carnitine (L-car) increased piglet birthweight and growth. However little information is available on feeding L-car to gilts. Increasing dietary fibre level with sugar beet pulp (SBP) during gestation may increase gut capacity in gilts, thereby facilitating increased lactation feed intake.

At day 38 of gestation, 84 gilts were assigned to dietary treatments until farrowing; Control (0% SBP; 0g/d L-car), Control + L-car (0.125g L-car/d), High SBP (40% SBP) and High SBP + L-car (40% SBP; 0.125g/d L-car). Weight and back-fat (P2) of gilts were recorded on days 90 and 108 of gestation and at weaning (~25 days). Individual pigs were monitored from birth to slaughter (~142 days). Pigs were weighed at days 1, 6, 14 and 25 of lactation and on days 75, 108 and 141 of age.

Gilts fed SBP were heavier on days 90 and 108 of gestation compared to all other treatments. L-car gilts had a higher lactation feed intake compared to all other treatments. Numbers born (*Total and Live*) and piglet birth-weight was unaffected by treatment. Pigs from L-car gilts were lighter on days 14 and 25 of lactation compared to pigs from gilts not fed L-car. L-car gilts weaned a higher number of pigs compared to gilts not fed L-car. Piglet ADG between birth and weaning was not affected by feeding SBP or L-car to gilts. Between weaning and day 141, ADG and FCR were unaffected by treatment. However, between days 108-141 of age, the ADG of pigs from SBP gilts was reduced and their FCE worsened. Pigs from SBP gilts and L-car gilts had heavier carcass weights and increased muscle depth.

Take home message

Feeding L-carnitine to gilts during gestation is a viable, on-farm strategy for increasing the number of pigs weaned. Furthermore, L-carnitine supplementation increased carcass weight and muscle depth at slaughter. Feeding sugar beet pulp in gestation did not increase lactation feed intake but unexpectedly increased progeny carcass weight at slaughter.

Acknowledgements

OPTIPIG is funded by the DAFM's FIRM/RSF/CoFoRD 2013 Research Call (grant no. 13S428). H. Rooney's PhD is funded by the Teagasc Walsh fellowship programme.

The effect of four liquid feeding strategies on the growth, carcass quality and feed efficiency of grow-finisher pigs

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Up to 70 % of Irish pigs are liquid-fed. Fermenting liquid feed prior to feeding can be beneficial to pig intestinal health due to reduced pH, proliferation of lactic acid bacteria and decreased enterobacteria counts. However, the effect of diet fermentation on growth and feed efficiency is inconsistent. Fermenting only the cereal fraction of the diet may be preferable to whole diet fermentation, as microbial damage to free amino acids is avoided. The aim of this study was to compare the effect of four liquid feeding regimens on growth, feed efficiency and carcass quality of grow-finisher pigs.

A total of 216 pigs (29.8kg \pm 1.00 SEM) housed in same sex pens of six pigs/pen (n=9 pens/treatment) were allocated to one of four dietary treatments: (1) Single space wet/dry feeders (Wet/Dry), (2) Fermented cereal diet (Ferm Cer) where the cereal fraction (38% barley, 40% wheat) of the diet was fermented prior to feeding, (3) Fermented whole diet (Ferm Whole) where the whole diet (78% cereal, 22% balancer containing soyabean meal, soya oil, synthetic amino acids, phytase, minerals and vitamins) was fermented prior to feeding, (4) Fresh liquid diet (Fresh) where the diet and water were mixed immediately prior to feeding. All pigs were fed the same meal diet, which was formulated to 9.8 MJ NE/kg (13.8 MJ DE/kg) and 1% standardised ileal digestible (SID) lysine (1.1% total lysine). Following an initial 48 hour fermentation using a starter culture (Sweetsile, Agway, UK), fermentation tanks were replenished daily to replace feed consumed by the pigs with either cereal or whole diet at a water:meal ratio of 2.5:1 (DM).

Pigs fed the Ferm Whole diet had lower average daily gain, final live weight, carcass weight and kill out percentage, as well as poorer feed conversion ratio when compared with all other feeding regimens. Pigs fed the Wet/Dry, Fresh and Ferm Cer diets performed similarly in terms of growth, feed efficiency and carcass quality.

Take home message

Pigs fed a fermented whole diet require an increased number of days to reach their target slaughter weight and this together with poorer feed conversion efficiency means that their feed cost per pig or per kg of carcass is increased. At today's feed cost (€262/tonne), it would cost €13.94 more to feed pigs the Ferm Whole diet from 29 to 105Kg LW than to feed Wet/Dry.

Acknowledgements

This project is funded by Teagasc (WET-FEED). F O' Meara and A. Torres-Pitarch's PhD's are funded by the Teagasc Walsh Fellowship Programme.

Acknowledgements

The Teagasc Pig Development Department would like to take this opportunity to acknowledge all farmers that have participated in research projects to date. We would also like to acknowledge the research technicians and staff of the Teagasc Pig Research Facility for their contributions to research, and to the Teagasc Pig Advisors for their assistance.

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Notes

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