Editor: Ciarán Carroll

Welcome to the July Newsletter

Ciarán Carroll

Welcome to the July edition of our monthly newsletter. Covid-19 problems in German processing plants continue to affect sow prices here. The good news is that demand from China for pork continues to be strong & there is big demand for pigs here in Ireland. This has helped steady pig price here & with strong demand hopefully we'll see a rise here again shortly.

The second of our Let's Talk Pigs webinar series was well received, with 168 registered to hear Jeroen Dewulf from Ghent University present on 'Biosecurity - the first step to excellent health & performance' The next webinar in the series will take place this Friday 24th July & will be delivered by Peadar Lawlor on the 'Latest advances in weaning pig nutrition'. You can register for upcoming webinars or watch recordings of past webinars on our website, more details later in this newsletter.

Our Podcast series, The Pig Edge, is well established with 8 episodes released to date & more lined up for the weeks ahead. All episodes are available on our website, the iTunes store & Spotify. A new episode is released fortnightly.

Advisors are now getting back to farm visits so if you require an advisory visit please contact your Specialised Pig Advisor & they will be more than happy to oblige.

In this issue

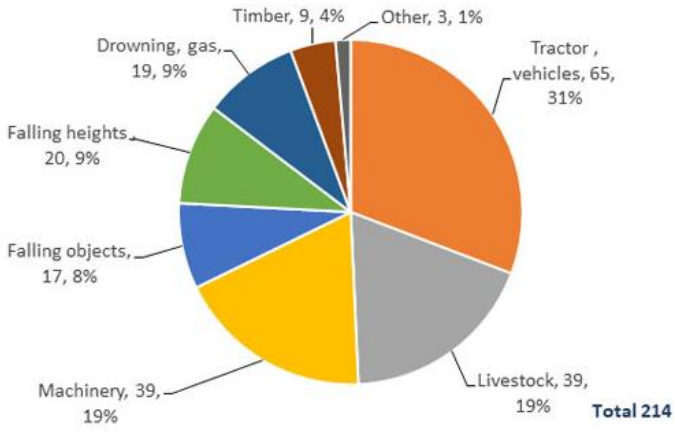
Teagasc
Agriculture and Food Development Authority

Farm Safety – a constant threat

Louise Clarke

The fatality rate in agriculture is far higher than any other economic sector, even though a small proportion of the workforce is employed in farming. Unfortunately, the level of farm accidents is not decreasing and in the first 6 months of 2020 there have already been 14 fatalities in Ireland. This is alarmingly worrying considering that the total fatalities in 2019 was 18. Health and Safety is relevant to all farming businesses including the pig sector and is always an area that warrants our attention. As a farmer you are responsible for the health, safety and welfare of yourself, employees and others that may be affected by what you do. This includes contractors, casual or part time workers, trainees, neighbours, and family members.

Picture 1: Main cause of farm deaths in Agriculture and Forestry in the last 10 years (2010-2019)



(ref: Health and Safety Authorities)

Risk assessment

All farmers are legally obliged to complete a risk assessment on their unit and this document must be available to all staff, contractors and visitors to the farm. A risk assessment is an evaluation of the likelihood of harm or loss associated with work and the protective and preventative measures required to mitigate any risk involved. The risk assessment forms an important part of the Safety Statement for your farm and all employees should be familiar with the contents of the risk assessment document. The risk assessment must be reviewed regularly and updated as required for new SOP's, new equipment and new activities on the unit. Staff should be made aware of any changes and encouraged to contribute to the risk assessment where appropriate.

There are numerous health and safety areas on pig farms that we need to be aware off as they can pose a risk if they are not dealt with correctly. Some of them areas are highlighted below.

Dangers around handling livestock

Some of the most common accidents that occur to people when handling pigs are wounds to the legs and crush injuries caused by poor handling technique. Moving pigs is one of the most common jobs on a unit and the proper handling of pigs at this time can reduce stress for both the handler and pig alike. Make sure staff have received training or instruction in safe and efficient handling techniques. Pigs should be moved in small groups at their own walking pace in a calm, unhurried manner without excessive noise. Driving boards should be used as a physical barrier when moving pigs and are a good form of protecting the handlers' leg and encouragement for the pigs to move forward. 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 which may potentially result in pigs rearing back on the handler and causing damage to their legs. If moving a boar for heat detection ensure that you have an escape route planned and you should

never turn your back on a boar. Similarly, when handling piglets around or after farrowing additional care is needed particularly if the sow or gilt is showing sign of aggression. Considering that sows are kept in farrowing crates, staff are relatively protected from the attacks, however sows or gilts can still bite though the bars when piglets are being handled, and may even attempt to jump out of the crate.

Fire Hazards

Fire safety in the work place is important. There has been a number of fires on pig farms over the past few years and it is important to see what lessons can be learned from these events. Careful consideration should be given as part of a planning exercise as to how to deal with fire on the unit. It is important that you make sure your staff are aware of the fire assembly point on the farm and that their first reaction is to get out of the building as quickly as possible. How many farms carry out routine Fire Safety Drills? This is something that should be done at least twice a year on farm in addition to receiving some form of fire training.

Many units will have fire extinguishers, which can cope with small fire. Fire extinguishers should be selected with consideration for the risks involved – e.g. carbon dioxide is appropriate to use on electrical fires, water is not. It is important to note that many farms do not have sufficient water pressure to deal with a major incident. Access to water in the event of a fire is something that should be discussed with your local fire services to ensure there is a supply of clean water for them to use in the event of a fire occurring. If you have a reservoir on your unit or are considering putting one in make sure it is in an accessible point on the farm and that the reservoir can be accessed in line with fire brigade equipment.

If you are planning on a new build or refurbishment work it is worth considering the installation of fire resistant barriers around fans, making sure that lights are not fixed directly onto insulation, making sure fuse boards don't touch the wall and consider using a fuse board fire cabinet and fitting the unit with smoke alarms in addition to fire alarms.

Height and depths Hazards

Working from heights may be a job that is required at times on a pig farm whether it is minor repairs on a shed or building or on a feed silo. However when doing so it is important to ask yourself if you or your staff are fully competent to do so. Do as much as you can from the ground. If a ladder is deemed to be the best option, the risk assessment should include checking that it is in good condition and that there is a firm, level base to support it to prevent it slipping away or kicking out at the base. It may be possible to secure the ladder by roping it to a suitable support in some situations. If your work involves repairs on a feed silo there should be a ladder on the silo with a fall back cage and the lower portion of the ladder should be removable and secured to ensure that children don't climb up it after hours. Avoid roof work wherever possible. Working on roofs involves several different risks of falls, including a fall climbing to or from the roof, falling through a roof light, treading on a week part of the roof and falling off the edge. Where maintenance work at heights cannot be avoided, plan ahead to make sure you have the right equipment and training.

Workings with depths poses similar dangers. In the unfortunate event of the slats collapsing you or any of your staff should never enter the tanks unless you are fully equipped with proper breathing apparatus. Unfortunately, we do not need to be reminded of the tragic events that occurred in the last few years with slurry pit accidents.

Personal protective equipment

Personal protective equipment (PPE) in the workplace is a requirement by law and is designed to protect vulnerable parts of the body. Some hazards can be eliminated while others can be reduced by the use of proper PPE. The typical examples of PPE used on pig farms include; safety glasses, earplugs, suits/overalls and gloves. However, you need to make sure that the PPE you provide is of the correct standard. Personal protective equipment must carry a CE stamp and EN number. For example dust masks will be marked with either FFP 1,2,3 meaning that these reduce dust by a factor: 1 (4), 2 (10), 3(20). It would be advised to use either the 2 or 3 rating when working on a pig farm. Overalls protect against disinfectant and detergent spills but must have a category 3 rating. All PPE should be fully inspected before and after use. Any reusable PPE such as gloves, goggles or water proof clothing and ear muffs should be maintained in good working order, stored correctly when not in use and replaced regularly to avoid excess wear and tear.

A pig farm is a busy place where several tasks are being completed each day and health and safety should not be an afterthought to any of these tasks. It is essential everyone understands the safest methods and correct equipment needed to complete the tasks successfully and safely. While farmers at times can consider themselves a jack of all trades we need to ask ourselves if it is really worth the risk. Would we allow builder or contractors to care for our livestock? Time and money spent on health and safety should be seen as an investment and should not be considered wasted. The money you spend on prevention will be far less than the costs associated with a farm accident.

The importance of age of gilts at first service for improved sow lifetime productivity

Julia Adriana Calderón Díaz

Sow productivity is usually measured as number of pigs produced per sow per year. In Irish farms, it has increased from 24.1 in 2011 to 26.9 in 2020. Although this is a good indicator of overall herd performance, looking at sow productivity on a yearly basis might not be the best indicator of production costs per pig produced as some animals are culled before producing a single litter. It has been proposed that sow lifetime productivity, defined as the total number of quality pigs produced during the reproductive lifetime of a breeding female (i.e. from the time she becomes breeding eligible until she leaves the herd) could be a better indicator. This is because the total cost of a replacement female is recovered from the sale of their offspring over various parities & thus, increasing sow lifetime productivity reduces the production cost of finisher pigs in the long term.

Research from USA production systems showed that production costs are minimized by retaining sows in the herd for at least five parities with a 15% net return on investment. Furthermore, when feed prices are low, production cost would be minimised when sows remain in the herd for at least six parities. There is no recent available information on average parity of or reasons of removal in Irish pig farms (last available report is form 1998!) but it is reported that improving sow time in the herd by a single parity equates to the same economic impact as improving lean meat content by 0.5%. There are several factors affecting sow lifetime productivity such as genetics, gilt development management, gilt selection criteria, animal health, among others. However, one of the main factors influencing sow lifetime productivity is when, or at what age, a gilt enters the breeding herd & starts her productive life. Indeed, age at first service is a management decision impacting performance & retention of a gilt in the breeding herd & thus, knowing when first to breed replacement gilts is crucial. It is important to ensure there are sufficient replacement gilts available to serve in the correct condition, at the required time.

It is generally recommended a minimum age at first service between 210 to 250 days of age with the optimal “economical age” of 200 to 220 days of age. This time frame is recommended to allow gilts to reach adequate maturity of their reproductive organs, adequate body weight (135 to 150 kg) & to develop adequate body fat (18 to 22 mm) required for pregnancy in order to maximize the number of piglets born alive in her lifetime. A younger age at first service is associated with superior expected longevity with sows having greater probability of reaching parity four. In fact, increased age at first service is associated with increased return to estrus likely due to decreased ovary & corpora lutea functions & lower progesterone concentrations increasing the risk of culling due to reproductive failure. Gilts with earlier age at first service have higher conception & farrowing rates, fewer lifetime non-productive days, produce more litters & more piglets born alive during their lifetime & consequently, lower initial costs. Additionally, younger age at first service is associated with lower levels of aggression in group housed sows. This is particularly important as stress has negative implications on sow reproductive performance.

Nonetheless, earlier age at first service (e.g. 160-190 days) is not recommended because gilts may

not have adequate body composition or sexual maturity. On the contrary, although gilts with age at first service >260 days have greater number of piglets born alive in their first litter, late age at first service is not recommended as these gilts have lower fertility, greater weaning-to-first-service interval, lower lifetime piglets born alive & consequently lower reproductive efficiency thereby increasing their risk of culling. The lower reproductive performance in gilts with increased age at first service is related to the fact that these gilts are also at risk of being overweight at breeding.

Age at first service is a management decision & thus, it can be advanced, up to certain extent, by an adequate feeding regime during the gilt development period & by a puberty stimulation program for gilts.

For instance, lifetime growth rate at 160 d of at least 600 g/day (but lower than 790 g/day) is crucial for reaching an optimal age at first estrus (& subsequently at first service) while a lifetime average daily gain below this threshold would be considered limiting for future reproductive performance. Puberty stimulation programs include direct boar contact (i.e. not fenceline contact) by daily exposure of gilts to a rotation of mature boars starting between 140 to 160 days of age, taking the gilts to the boar rather than taking the boar to the gilts pen, & re-mixing non-cyclic gilts. Also, staff working in the gilt development unit must be properly trained on estrus detection protocols, & on keeping & closely monitoring records on gilt age at first estrus.

Giltlife: A good start is half the battle!

Phoebe Hartnett & Keelin O'Driscoll

The lifetime performance of commercial sows relies on longevity, which is dependent on good health & reproductive performance. However there is a high rate of wastage of sows in the early parities which is influenced by the way they are managed & housed during rearing.

Rearing conditions

Rearing conditions for replacement gilts can affect development of the skeletal & other systems with subsequent effects on their health & performance in later life. Many studies show that the majority of skeletal development occurs in young animals, which indicates that the most important time for preventing muscular-skeletal issues is during early development. Nutrients & management factors affect issues of structural integrity & sow mortality is associated with lameness due to structural complications. The most common reasons for premature culling of sows are reproductive problems & lameness. Lameness is a clinical symptom of a variety of conditions which has negative consequences on breeding herds & has many potential causes, discussed in detail in the 2019 March newsletter. Since then, the Giltlife project has concluded, so we can now update you on the results from our research on gilt rearing in Moorepark.

During the summer of 2016 we bred sows in the Moorepark herd with maternal line semen to produce experimental gilts for the project. The gilts were weaned between December 16 & February 17, & at that point split into two different rearing strategies; 16 pens with only gilts (F), & 16 pens which were half male, & half gilts (FM). All pens were reared using standard management for weaner & finisher pigs, but about halfway through the finisher stage (16 weeks of age), half of the F, & half of the FM groups were switched on to a diet which was supplemented with AvailaSow minerals (Min; 0.1% inclusion rate; Zinpro Corp, Eden

Prairie, Minnesota USA), which provided additional Copper, Zinc & Manganese. The other half were kept on a control finisher diet (Con). There were three slaughter ages; at finishing age. The males & half of the females from the female only pens were sent to the factory. The remaining females were kept until breeding, at which point approximately 100 were sent to the factory. Finally, 80 gilts were kept for breeding (20 of each; FMin, FCon, FMMin, FMCon).

What we measured

During rearing & the first gestation we monitored the growth, locomotory ability, salivary cortisol levels, behaviour, body lesions, & hoof health of all the animals. At breeding age, we extracted the front left limb, & measured bone mineral density, as well as cartilage health. Finally, we investigated sow performance to the 5th parity, & the performance of the offspring from the first litter.

Welfare during rearing

We found that both single sex rearing, & supplementation with minerals, had welfare benefits during rearing. The main findings were as follows:

Relative to mixed sex groups, female only groups experienced:

1. Less aggression, & almost no sexual behaviour
2. Lower cortisol (stress hormone) levels towards the end of the finisher period, as the amount of mounting increased
3. Fewer scratches on their bodies (Figure 1; likely due to less aggression & mounting)
4. Greater growth, likely due to less stress (due to aggression & mounting)
5. Less hoof damage, specifically less mechanical damage due to twisting & turning (white line disease & heel-sole separation)

Relative to gilts fed the control diet, gilts fed the mineral supplemented diet experienced:

1. Less hoof damage, specifically less damage due to heel erosion, which is caused by wearing away of the skin/horn

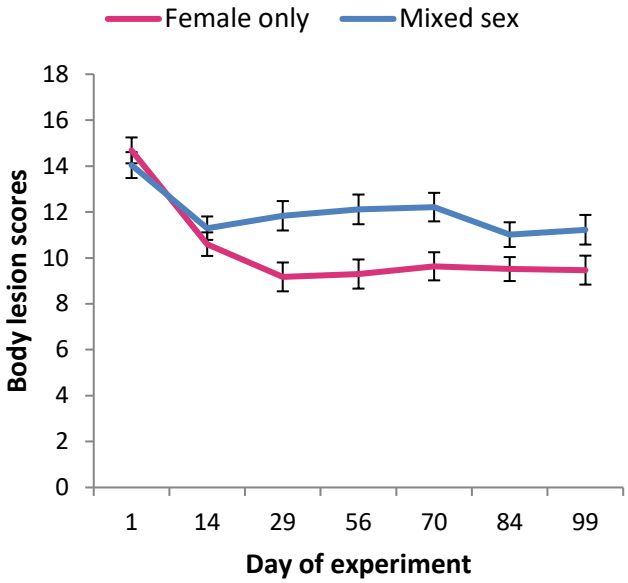


Figure 1: Body lesions during rearing

Bone & cartilage condition at breeding age

Areal bone mineral density (aBMD), which provides a snapshot of bone health, was measured using dual energy X-ray absorptiometry. After this, we counted the number of areas of thin cartilage, invaginations, & overgrowth on the end of the bone, as was the number of areas where the cartilage had completely separated from the bone. Gilts on the Min diet had increased aBMD in the humerus compared to gilts on the finisher diet. In fact overall, aBMD was highest in the Min gilts which were reared in female only groups. We found that both female only rearing, & the addition of minerals, both reduced the number of lesions to the cartilage (thinning, invagination & overgrowth). The minerals also tended to reduce the amount of separation from the bone, which is an extremely painful condition (Osteochondrosis). In fact, all gilts which had more than one area of separation of cartilage were on the standard finisher diet.

Welfare during first gestation

Although the gilts were all managed in the same way after service, we wanted to investigate if the differences in early life welfare & health carried through to the first gestation. In fact, the hoof damage that had started during rearing became progressively worse, particularly in sows which had been reared with males (Figure 2). However, when only considering the gilts which were reared with males, addition of the minerals reduced the amount of new damage, relative to the gilts which had been on the standard finisher diet; so in cases where there may not be the facilities to keep gilts separate from males during the finisher stage, mineral supplementation could counteract some of the negative effects on hoof health. With regard to behaviour, the gilts reared with males kicked more in the hoof examination crate, & were more fearful of humans. These behaviours could be due to increased sensitivity of the limbs (kicking) or wariness of forced interactions after the experience of being reared with males.

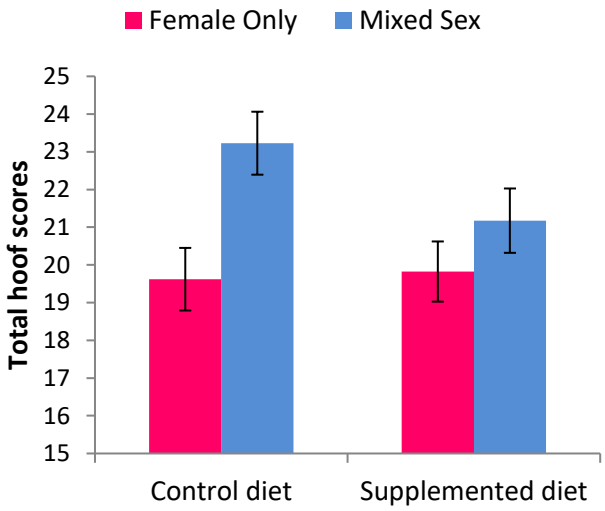


Figure 2. Hoof scores during first gestation.

Performance & offspring

There was no effect of rearing treatment on the number of piglets born alive over five parities, or the performance of the piglets born from the first litter. However, over five parities gilts which had been reared with males had the greatest number of stillborn piglets; this is startling, bearing in mind the low sample size (starting with only 40 gilts reared in female only groups, & 40 in mixed sex). Thus in a commercial situation where there are many more sows, there could be significant reduction in lifetime performance at herd level. Finally, we carried out some tests of reactivity on piglets born from gilts in each treatment. Piglets from the optimal treatments (female only, & supplemented with minerals) displayed behaviour consistent with less of a fear response. A stressful prenatal environment can lead to permanent changes in offspring behaviour after birth. Thus the benefits of good gilt rearing strategies could have benefits for piglet welfare, as well as their mothers

Take home message

Overall, we found that both strategies rearing gilts in female only groups, and/or supplementing with minerals improved various aspects of animal welfare & performance. Although we were surprised not to detect differences in locomotory ability, several other effects were observed. Rearing without males reduced the level of mechanical damage to the hooves & body, & stress levels, due to decreased exposure to boisterous behaviour. On the other hand, supplementation with the minerals strengthened the bones & cartilage, & reduced damage to the hooves when males were present. Keeping females away from males during rearing also reduced 'fearful' type behaviour both in themselves & their offspring. Larger scale studies should be carried out to determine more precisely the effects on lifetime performance of both strategies.

For further questions on the GiltLife project contact Phoebe by email at phoebe.hartnett@teagasc.ie,
or Keelin at keelin.odriscoll@teagasc.ie

Let's Talk Pigs webinar series

Let's Talk Pigs is Teagascs' new interactive webinar series, we have had two presentations to date which will continue fortnightly on Fridays at 1 pm. Join us on your computer, smartphone or stream to your TV. Connecting your laptop to the TV in the canteen or office will enable staff to tune in during their lunch break. To register for upcoming webinars or to watch previous webinars visit https://www.teagasc.ie/corporate-events/lets-talk-pigs/

In addition to the podcast & webinar series, the PDD have been expanding our range of digital media, including booklets, posters, videos, infographics & factsheets. All material is available on our website https://www.teagasc.ie/animals/pigs/publications/

Pig Levey Information Meetings

Teagasc have drafted a proposal for a new levy with the option for an increase in this levy for the next 5 years. Meetings for farmers will take place at Teagasc Moorepark & Teagasc Ballyhaise on July 28th & 29th to discuss the contents of this proposal with all pig farmers. This is an opportunity for every pig farmer, if you avail of Teagasc pig services or not, to hear the levy proposal and to have your say at number of small information meetings.

Due to COVID19 the amount of people participating in these meetings will be limited, different locations & times are available. Further information here https://www.ifa.ie/teagasc-information-meetings-on-teagasc-pig-levy/

Pig Sector Survey

We would like to thank all who have completed the Pig sector Survey, this information will keep us up-to-date with herd size & management practices on farms. All information gathered is fully confidential & will not be shared with third parties. If you have not yet done so, you can complete the survey here https://www.surveymonkey.com/r/N3Y5NBZ

If you have any queries please contact your Specialised Pig Advisor who will be happy to help.

For more information visit our website www.teagasc.ie/animals/pigs

This newsletter was edited by Ciarán Carroll, Teagasc, Moorepark, Fermoy, Co. Cork.
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