

PIGS

May 2022

**Edited by Ciarán Carroll
and Orla Kinane**



Welcome to the May edition of our monthly newsletter.

There has been no relief in the financial crisis over the past month. Any small pig price rise has been overshadowed by the continuing rise in feed prices. There is expectation of a significant price rise in the coming weeks, essential if we are to move towards breakeven.

In this issue we look at keeping accurate records, improved gestation housing and the positive effects it has on welfare, and reducing waste water on farm.

The National Pig Herd Performance Report for 2021 has been published recently. This report is the detailed analysis of the performance of the pig farms that participated in the Teagasc Profit

Monitor (PM) recording system in 2021. The data available and included in this analysis is from a total of 79 herds representing over 62,000 sows or 43% of the total Irish sow herd. Ger McCutcheon goes through the main findings in our current Pig Edge podcast. More details on where to access the report are available later in this newsletter.

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Accurate Records – Become a Top Producer!

Ciarán Carroll

The Teagasc National Pig Herd Performance Report for 2021 has just been published and it is worth having a look at what goes into providing the data, how we can use it to influence our business decisions and what sets the top Irish pig producers apart from the rest? One of the major differences between top producers and those who strive for the top is in how they keep and analyse their records. This is essential for the long term survival of any pig farm. Not only does it highlight problem areas on the unit, enabling prompt remedial action, but it is critical in assessing the current production and financial situation, and assists with short term (and long term) plans and developments. Never has this been more important than during the current financial crisis.

While most farmers attempt to keep records, the accuracy of record keeping is where we often fall down. It has to be a case of all or nothing – no information is better than wrong information. There are three categories of record keepers:

1. Those who don't keep them: these units are invariably disorganised, know little or nothing about their true herd performance and nothing about their production costs. It's a bad way to run a business. While these producers will survive while pig prices are good, it's when prices are poor (now) that they really suffer. These units struggle to obtain much needed finance because they haven't got the knowledge (record analysis) to support their applications to help them weather the storm and get through a crisis.

2. Those who keep records badly: the areas for error are numerous. There is either insufficient data or inaccurate data available for analysis. The stock counts don't balance, only some non-feed costs are recorded, hidden costs are omitted and no account is taken of building depreciation. While these units may know their production performance (pigs per sow, litters per sow per year, growth rates, feed efficiency) they still don't know what their true production costs are. They may weather the storm when prices are poor but will do so with some difficulty and always at a huge

cost. When prices are good their returns are poorer than they should be, making it difficult to re-invest prudently or save for the rainy day.

3. The Premier League recorders: these are real business people. The stock counts balance, production performance is accurate and production costs are thorough and reliable. They know what their true costs are. They record data regularly and analyse it frequently. More importantly, they act immediately on what their analysis tells them.

A study of Teagasc e-Profit Monitor (ePM) records show that most farms can accurately record non-feed costs, but many do not.

Previous analysis of the ePM database showed that farms which recorded and analysed regularly (i.e. quarterly) compared with less frequent analysis had better growth rates, reduced feed intakes and more pigs produced per sow per year. Was this because the farms who keep regular records are more likely to do other things right on the farm or was it down to the record keeping itself? I think that a major part of it is down to the record keeping. The regular recording farms get into the routine of keeping the data which leads them into routine of making the necessary changes when a problem arises.

While the number of farms and sows in the Teagasc ePM system is substantial (the 2021 analysis is from a total of 79 herds representing over 62,000 sows or 43% of the total Irish sow herd) there is room for improvement.

Question Time (and yes, it's a question that's regularly asked)?

How accurate are your records? The key question that will determine this is *"How much does it currently cost you to produce 1kg deadweight?"*

The Premier League record keepers will always know the answer. What can be done for the other

leagues? The key is to identify where they fall down. The following may help.

1. **Stock Counts:** full stock counts should be carried out, ideally every four weeks, but at least every 13 weeks (quarterly). Without accurate stock counts the records are meaningless. Errors will not be detected and problems will go unnoticed. False or inaccurate reports are likely to be generated.

Use recording sheets identifying pen numbers to make counting easier. Keep numbers chalked up over pens. In large groups, walk the pigs past the counter. Record the number once each pen is counted.

2. **Feed Inventory:** record the quantity and value of the different feeds on hand at the start and end of the recording period.

3. **Enter the Daily Events** on the computer/record sheet each evening. This minimises the risk of error and saves time later compiling data for analysis. It also eliminates unnecessary duplication and makes calculation of weekly totals and stock numbers easier.

4. **End of Each Week:** add up totals (computer may do this for you), calculate stock numbers, calculate production, update feed costs and enter details of all pig sales and purchases. Enter all non-feed costs. This is where some producers regularly fall down. These should include the following costs: healthcare, energy, artificial insemination, manure, transport, miscellaneous,

labour/management, repairs, phone/office, repayments, interest, management, environmental, insurance, housing rent, contract finishing, water, dead pig disposal and building depreciation.

5. **End of Recording Period:** ideally data should be analysed on a quarterly basis. Short periods are fine but can produce unreliable results due to short-term variations in performance. Longer periods mean that problems are not identified quickly enough.

Full stock counts should be carried out, total all the weekly data (production, feed, sales, non-feed costs) and calculate feed usage. Check the stock balances immediately after the stock count. Try to account for “missing” pigs. These may well be deaths not recorded or could be internal transfers not recorded.

6. **Analysis:** process the data using your on-farm recording system or get your advisor to process the data for you. Interpret the analysis, identify the problem areas and seek advice where the solutions are not immediately obvious. Involve your staff in the analysis review. Use the results to praise staff where a job has been done well. Where problems are identified use the analysis to show them to staff, seek their help in providing the solutions, set targets for the next recording period and use the analysis to see if the targets are met.

Keep accurate records, analyse them regularly and become one of the top producers!

Improved gestation housing translates into better sow and piglet welfare

Martyna Lagoda, Laura Boyle, Keelin O'Driscoll

It is well known that long-term (chronic) stress experienced by pregnant sows can negatively impact their health and welfare. This can lead to poor sow performance, for example, in terms of reduced numbers of piglets produced. Chronic stress experienced by mothers during pregnancy can also negatively impact the development of their piglets as they grow in-utero through a mechanism known as pre-natal stress. This can have life-long effects on the piglets, including changes in the way they cope during stressful situations, changes in their behaviour and ability to learn, as well as reduced birth weights. It can also lead to a reduced ability to fight disease (via reduced immunity). This results in poor welfare and performance, especially at weaning (one of the most stressful events in a piglet's life), when the piglets are separated from their mother. Weaning stress makes piglets vulnerable to diseases, which require treatment with antibiotics. However, overuse and misuse of antibiotics contribute to the current growing threat of antimicrobial resistance to both humans and animals. Therefore, reducing the chronic stress experienced by pregnant mothers could play a crucial role in ensuring good piglet health, resilience and welfare, and could help combat antimicrobial resistance.

To date, aspects of sow housing and management that contribute to chronic stress remain under-investigated. Two factors with the potential to reduce chronic stress include rubber flooring to improve physical comfort while lying, and environmental enrichment to satisfy motivations to explore and to forage. We improved pens for housing of pregnant sows on a commercial farm by providing rubber lying mats, straw and natural fibre ropes, and we evaluated effects on chronic stress and welfare of sows. We also evaluated if these improvements to the mother's environment would enhance the health and welfare of her piglets.

Experimental set-up

One month into gestation, 120 sows were assigned to either conventional (CONTROL), or

improved (IMPROVED) pens. All pens had full length feeding stalls, and a fully slatted floor. CONTROL pens were typical of gestating sow housing in Ireland, and were thus equipped with 2 blocks of wood and 2 chains suspended within the group area as enrichment. IMPROVED pens had same, as well as rubber mats (EasyFix, Ireland) and a length of manila rope in each feeding stall, and straw provided in 3 racks, one in the middle and one at each end of the pen (Figure 1). Sow locomotory ability was assessed using a visual analogue scale (Figure 2) at the start (one month in), in the middle (approximately day 57), and at the end (one week before farrowing) of pregnancy. Animal behaviours were observed at similar times. The first category of behaviour were oral stereotypical behaviours, which are repetitive, invariant behaviours, indicative of lack of satiety. Examples are sham chewing, mouth stretching, palate grinding, sucking, and tongue flicking. Aggressive behaviours were also recorded. Right and left eye tear staining (chronic stress indicator) were scored a week before farrowing (0=no staining; 5=stain extends below mouth line). The number of piglets born alive, born dead, and mummified were counted at farrowing, and throughout lactation the amount of diarrhoea in the farrowing crate was scored approximately every second day, as a proxy for piglet health (0=normal; to 3=severe).



Figure 1 IMPROVED pen set up, with rubber mats and natural rope in individual stalls, and straw racks in the middle and at each end of the pen.

Overall locomotion

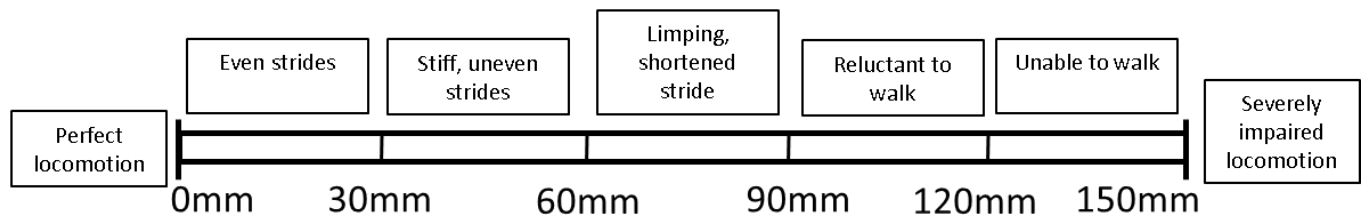


Figure 2 Visual analogue scale used to locomotion score experimental sows.

Effects on the sows

IMPROVED sows had lower locomotion scores in mid-pregnancy and tended to have lower locomotion scores in late pregnancy than CONTROL sows, reflecting the beneficial effect of the rubber mats on their leg health and reduced lameness. They also had a lower right eye tear stain score, and tended to have a lower left eye tear stain score than CONTROL sows, which is an indicator of being less stressed. This is also supported by the fact that these sows performed fewer oral stereotypies in mid- and late pregnancy than CONTROL, and indeed tended to perform fewer stereotypical behaviours only 72hr after entry to the treatment. This confirms previous findings on the beneficial impact of straw on oral stereotypical behaviours in sows.

Aggressive behaviour levels were lower in IMPROVED pens than in CONTROL upon entry to the pen, likely related to the initial novelty of the enrichment which acted as a distraction and ameliorated aggression. In contrast, levels of aggression were higher in IMPROVED compared to CONTROL pens in late pregnancy. This occurred in the loose area of the pens, so it is likely that competition for access to straw enrichment devices was the underlying cause.

Effects on the piglets

Our results indicate lower stress levels in early to mid-pregnancy in IMPROVED sows. High maternal

stress levels at this time are associated with piglet losses. Any piglet that dies after the formation of its skeleton (day 38-45) is not reabsorbed by the sow's body, and persists as a mummy. Hence IMPROVED sows had fewer piglets mummified than CONTROL sows. In addition, fewer piglets born dead from IMPROVED sows indicate a smoother farrowing process, a possible consequence of lower chronic stress levels in late pregnancy. Finally, diarrhoea scores were lower for piglets born to IMPROVED sows than CONTROL.

Conclusions

- This research confirms that good welfare acts like 'preventative medicine' for health conditions in both sows and their offspring, with additional benefits to sow reproductive performance.
- The improvements to pen design we implemented are easy to install on typical commercial farms in Ireland, and as such are easily transferrable to commercial situations.
- These findings are crucial in improving the sustainability of pig production and in addressing the grand global challenges of antimicrobial resistance.

Reducing waste water on farm

Keelin O'Driscoll and Shilpi Misra

Provision of sufficient water for drinking is considered fundamental in animal agriculture to ensure good welfare. In pig production, drinking water accounts for 80–87% of the total on-farm water use and the grower/finisher stage accounts for 64% of the total herd water use. During this stage, drinking water use ranges from 1.9 to 6.8 L/pig/day. Part of this water is indeed consumed by the pigs, but a part is also wasted. Besides impacting on fresh water resources, water wastage increases the volume of the slurry which dilutes the nutrient content. This increases the operating costs (i.e. cost for manure processing and disposal), and is therefore another reason to try and minimise waste.

Drinking water use and waste is affected by pig (e.g. body weight, feed intake), environmental (e.g. temperature, humidity) and management factors (e.g. drinker type, pen design). When it comes to management, group size appears to affect both water use and drinking behaviour, with pigs in larger groups using less. Pigs in larger groups have more shared space per pig, which could provide a more complex and engaging environment for them. The impact of this on drinking behaviour has not been investigated scientifically, but it could be that more shared space leads to less engagement with the drinker resulting in less wastage, as pigs have a greater area for exploration. The commercial environment in which pigs typically live could also result in the performance of redirected (foraging) behaviour. This can manifest itself in the form of playing with drinkers, which wastes water. Providing appropriate environmental enrichment could reduce the occurrence of these kinds of negative behaviours.

Experimental treatments

We evaluated three group sizes, and two enrichment strategies. Pigs were kept in small, medium or large groups (12, 24 or 48 pigs/pen), with the same stocking density across all pens. For the enrichment strategies, all pens were equipped with one wooden post and one hanging rubber toy/12 pigs. However half of the pens were also equipped with a rack of fresh grass/12 pigs, which was topped up daily (HIGH enrichment v's LOW enrichment in pens without the rack).

What we measured

A water meter was installed on each drinker to record the volume of water used in all pens. To record water wasted, a wooden box ($0.9 \times 0.43 \times 0.22$ m) was designed that surrounded the drinker on all sides, with an opening through which the pigs could access it. Water overflow was collected using a container placed inside the box and underneath the drinker, which fitted comfortably to the sides of the box; thus any waste water could not escape between the side of the container and the box. Wasted water was measured between 09:00-16:00 one day per week for six weeks. Video cameras were also placed over the drinkers, and from this we were able to calculate the number of drinking bouts, the duration of each bout, and the duration of drinker occupancy per hour.

Overall Water Use

Pens with the racks enrichment used less water (10.4 ± 0.4 L/pig/day) than pens without them (11.0 ± 0.4 L/pig/day). In the largest groups (48 pigs), pens with the racks used less water than those without ($p < 0.001$). This tended to be the case in the pens with 24 pigs as well (less water use in pens with racks; $P = 0.083$).

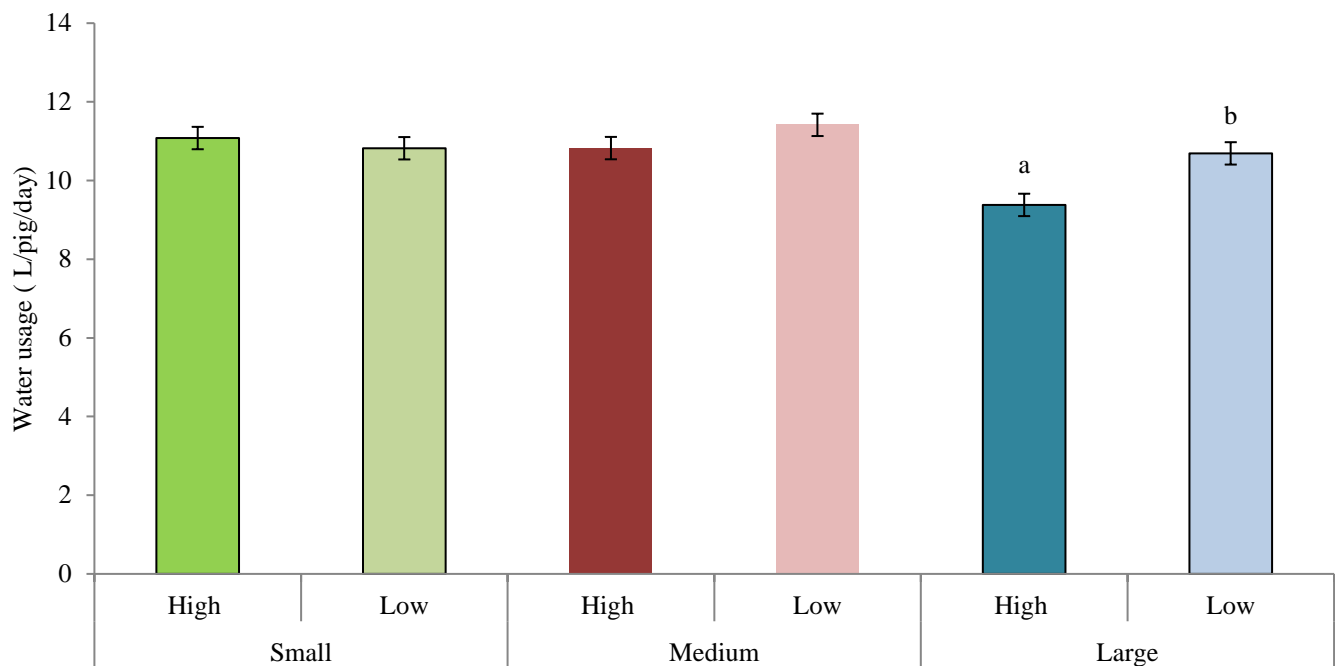


Figure 1. Water use in each of the pens types in the experiment

Water wasted

More water was wasted per hour in pens with LOW enrichment (0.95 L/hour) compared to pens with HIGH enrichment (0.76 L/hour; $P=0.003$). A greater % of the water dispensed was wasted in pens with LOW enrichment (9.4%) compared to pens with HIGH enrichment (7.4%; $P=0.013$). Group size didn't affect how much water was wasted.

Animal behaviour

The total duration of drinker occupancy per hour was not affected by the group size but there was an effect of enrichment ($P=0.048$). Pigs in pens with LOW enrichment spent more time occupying the drinker, compared to the pigs with HIGH enrichment ($P<0.05$). This was because the number of drinking bouts per hour was higher for pens with LOW enrichment (24.4 bouts/drinker/hour) compared to HIGH enrichment (15.5 bouts/drinker/hour; $P=0.037$). There was no effect of group size.

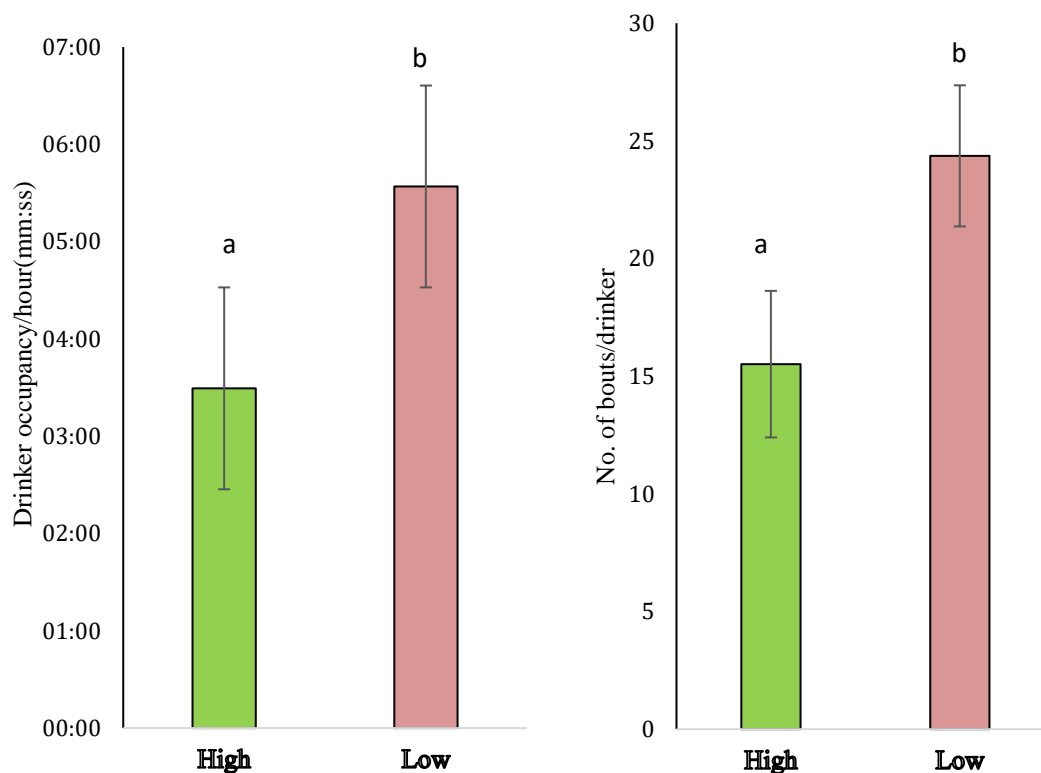


Figure 2. Pigs in pens with racks of grass occupied the drinkers less, because they had fewer drinking bouts

What does this mean for you?

Group size didn't affect water use or waste, so this isn't something that we think can be adjusted to reduce waste on farm. However, providing pigs with a rack of grass as enrichment reduced their drinker occupancy, the amount of water wasted, and the % of water dispensed that was wasted (i.e. there wasn't more waste simply because they were using more). It could be that the provision of grass specifically reduced thirst, but another likely reason is that pigs spent time interacting with the rack, and so were distracted from the drinker. Thus in this case, a method of improving animal

welfare also had benefits for the environment (less water wasted) and the producer (less dilution of slurry).

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National Pig Herd Performance Report 2021

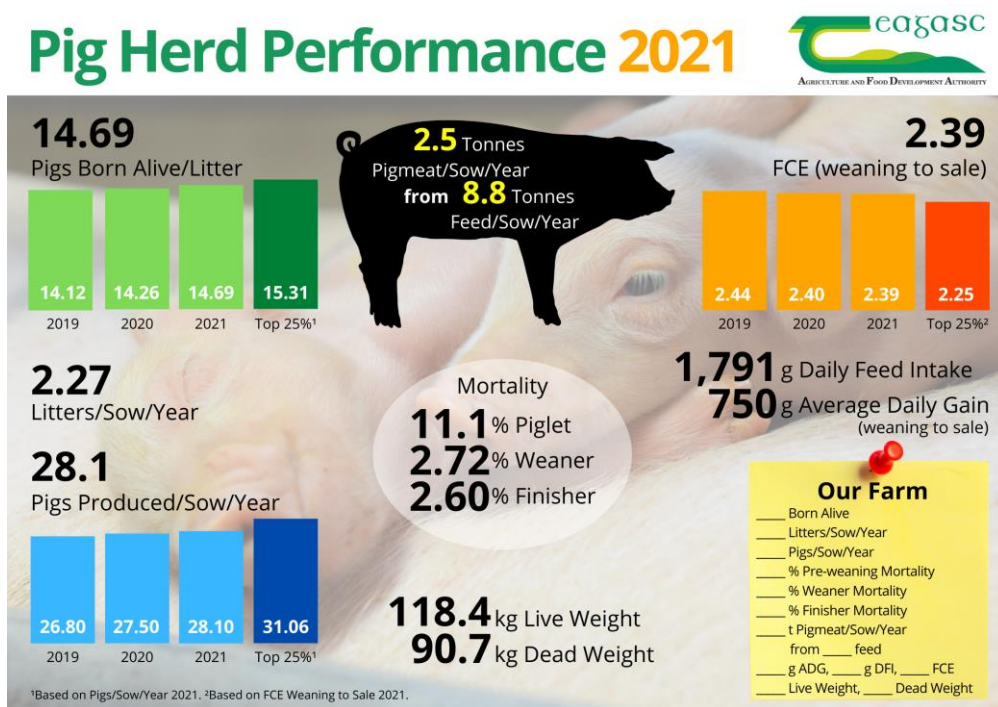
The National Pig Herd Performance Report 2021 is now available. This report is the detailed analysis of the performance of the pig farms that participated in the Teagasc Profit Monitor (PM) recording system in 2021. The data available and included in this analysis is from a total of 79 herds representing over 62,000 sows or 43% of the total Irish sow herd. The average herd size included in

this database is 790 sows and ranged from less than 100 sows to over 2,500 sows.

[Read the National Pig Herd Performance Report](#)

The accompanying infographic summarises some of the main results from the 2021 National Pig Herd Performance Report. A main feature of the infographic is the comparison of a number of the 2021 statistics with those of previous years.

[Download the Pig Herd Performance PDF](#)



Best of Luck Lukasz!

The PDD wish Lukasz Wajda the very best of luck as he leaves the department after completing his work on the Exclude MRSA project to take up a new position.



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

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