PIGS

April 2021

Edited by Ciarán Carroll

Welcome to the April edition of our monthly newsletter.

It's good to see pig prices moving upwards again! This is on the back of increased demand from processors and retailers, and increased exports. China has become a significant export market for us and the recent reoccurrence of African Swine Fever (ASF) problems there, with subsequent increases in sow and pig culling, means that exports will continue to remain strong. On top of that Germany has cleared out it's backlog of pigs (created by their exclusion from China due to ASF in their wild boar population and Covid-19 problems at processing plants), and they have received regionalization export approval for Vietnam, with the hope of other countries in South East Asia following suit.

Following on from this, Louise Clarke gives us the up-to-date on what's happening with ASF around the world and the impact it is having. We also have some interesting articles on euthanasia and rearing strategies to manage body weight variation on the farm. Finally, next month sees the Irish Pig Health Society (IPHS) 2021 symposium going virtual for the first time. Full details of what's on offer and how to register are provided in this newsletter.

In this issue

Teagasc
Agriculture and Food Development Authority

Making the Right Call on Euthanasia

Laura Boyle

A pig should be culled when it is no longer profitable or euthanised when it is inhumane to allow it to continue living. However, it is very difficult for pig producers to decide at which point a pig becomes uneconomic and whether to treat or to euthanise. For most producers having clear criteria for when to euthanise an animal would help reduce some of the stress associated with making such decisions. Deciding whether or not to euthanise rests on the identification of suffering. Suffering may be physical and/or mental. At its simplest physical suffering is caused by pain or extreme distress associated for example with breathing difficulties due to respiratory disease. Mental suffering is caused by extreme stress or fear although pain also contributes to mental suffering. However, physical suffering is at the heart of any decision to euthanise an animal. Physical suffering is a feature of both the intensity and the duration/frequency of occurrence of the pain and/or distress.

The duration of suffering can be relatively easy to estimate as it will correspond to the day the injury occurred or to the first day the animal showed signs of illness. However, it is difficult to assess the degree or intensity of the pain or distress being experienced by an animal. Pigs naturally hide signs of pain as in the wild this would have made them more susceptible to attack by a predator. In fact there is no single parameter we can evaluate which can definitively indicate if an experience is painful or distressing to a pig. Nevertheless, certain aspects of pig behaviour are often altered in the face of pain or distress, albeit subtly. Social behaviours become desynchronised and activity levels are reduced but such changes take time to identify. Vocalisations are easier to identify but are often expressed only in extreme circumstances of acute stress or pain and are less frequent in older animals. Pigs which are suffering from pain or distress may also increase their performance of abnormal behaviours such as tail, ear or flank biting. This may explain why tail biting can be a problem on farms with major disease challenges. Obviously lameness is associated with changes in gait and in extreme cases the animal will be reluctant to move. Indeed extreme cases of suffering due to pain such as lacerations, compound fractures or amputations (of accessory digits, claws, tails, ears) are also relatively easy to identify. Other problems such as prolapses or large hernias are visually striking but are generally less painful than inconspicuous but more painful conditions such as arthritis or pleuritis.

There are relatively few guidelines for farm animals on the appropriateness and timing of euthanasia. Morgan Morrow of North Carolina State University adapted guidelines developed for companion animals for pigs:

- Weight loss: 20-25% of total body weight, characterized by muscle wasting
- Extreme weakness or inability with a lack of desire to eat or drink persisting for
24 hours or more
- Suffering from any infection/disease which fails to respond to treatment within an appropriate amount of time
- Moribund state: depression and body temperature <37.22^{o}C
- Nervous/musculoskeletal: injuries that cannot be healed/fractures, uncontrolled seizures

Similarly, The National Pork Board in the US has three broad standards for determining when euthanasia is warranted:

- Animals showing no improvement, or having no prospect for improvement, after two days of intensive care
- Severely injured or non-ambulatory pigs with the inability to recover should be euthanised immediately
- Any animal immobilised, with a body condition score of 1, should be euthanised immediately

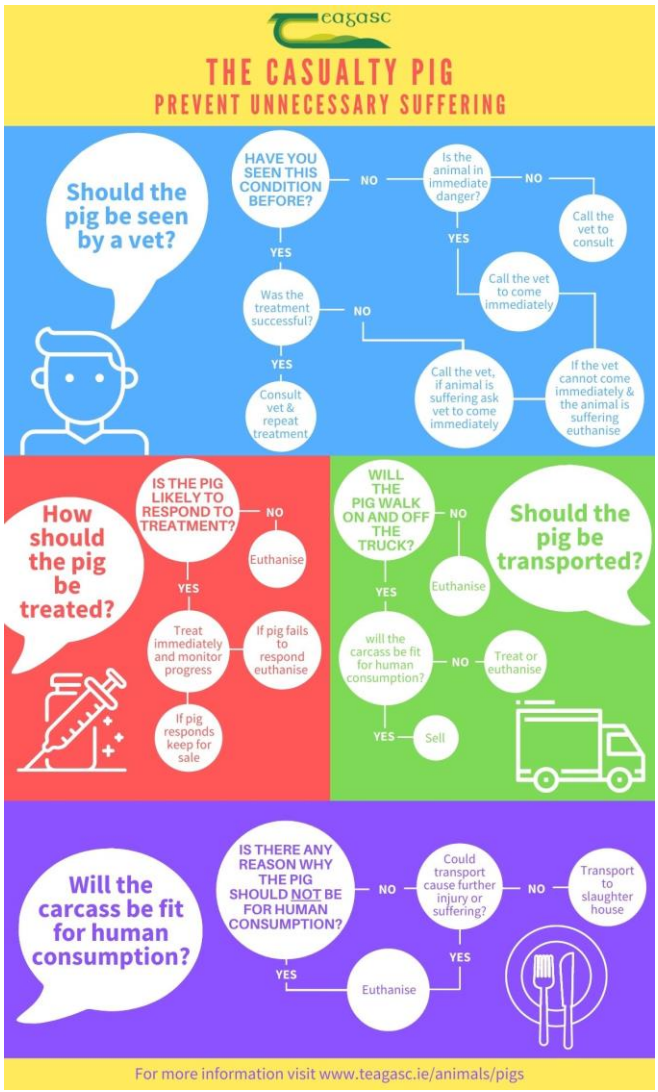
Morgan Morrow also describes a “two-strike” system for weaner pigs whereby there are two criteria that must be fulfilled before the animal is euthanised; 1) it must be underweight and 2) have a disability such as a rupture, or joint ill, claw damage/lameness etc. However, euthanasia on the basis of bodyweight alone is probably warranted in the case of neonatal pigs (less than 3

days of age) weighing ≤60g. Such piglets in addition to those born with physiologic ailments, deformities or underdevelopment represent a vulnerable subpopulation due to their small size, limited body reserves and poor immunological status. This predisposes them to hypothermia, starvation and/or crushing and they likely experience extreme suffering before eventually dying.

There are other reasons to consider euthanising piglets with extremely low birthweights at birth. They will rarely if ever compensate for their low birthweight during the growing/finishing phases such that they contribute significantly to weight variation in slaughter pigs. These animals are more susceptible to sub/clinical disease and death throughout their lives. Use of antibiotics and other medications in such animals is high which not only represents a serious drain on labour resources but also poses a risk for antimicrobial resistance. They generally have poor feed conversion ratios and take longer to reach slaughter, spend longer on the unit acting as reservoirs for disease.

As described by the American Veterinary Medical Association (AVMA; 2013), "Euthanasia is usually used to describe ending the life of an individual animal in a way that minimizes or eliminates pain and distress". Additionally they note, "[We] recognize that complete absence of pain and distress cannot always be achieved". Similarly, Merriam-Webster (2013) defines euthanasia as "the act or practice of killing or permitting the death of hopelessly sick or injured individuals in a relatively painless way for reasons of mercy". Both of these definitions recognize pain and distress are inherent in the process. For the process to be humane, or termed as euthanasia, the goal must be to minimize these during the killing process.

This month Teagasc Pig Development Department have produced a decision tree poster which aims to prevent unnecessary suffering by providing producers with the best course of action when dealing with a casualty pig. We suggest that you print off this poster and post it at various locations on you farm as a guide to staff so that they can make the right call on treatment and/or euthanasia of the casualty pig.
Click here to view the poster.

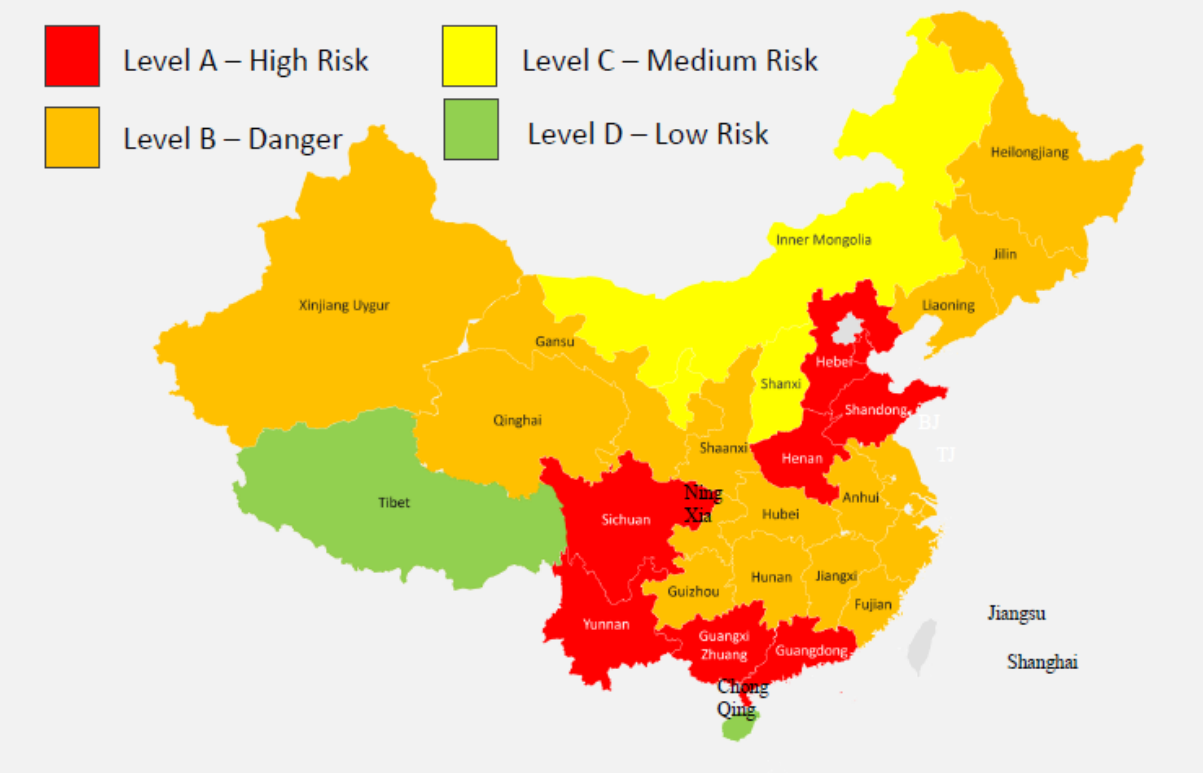


African swine fever update

Louise Clarke

In China, African Swine Fever (ASF) is still causing major problems. On a recent webinar facilitated by Kiernan Milling and Alltech, Ron Lane (Alltech) spoke about the Impact and Recovery of ASF in China. Many provinces, including Sichuan, Yunnan, Shandong and Guangdong remain in the "high risk" category. Earlier in the year it was announced that a new variant of the ASF virus had found its way into some Chinese pig farms, possibly caused by the use of improper/illegal vaccines that do not give full protection against ASF. The new variant of the virus in China is causing more concerns as the virus appears to be spreading more quickly in some areas than the previous dominant variety. This is leading to panic selling which has disrupted the market and will continue to disrupt the market in the second half of the year.

Reports on the ground in China indicate devastating performance in re-populated areas. Reports of 10 to 30% losses in some province areas, lighter slaughter weights of pigs (@18% of total slaughter) coming to market and less semen sales (down 16%) were cited. In addition to that a feed company in Shandong with 5 large feed mills lost 70% of their customers in the last 6 weeks.



(Ron Lane, Alltech)

In the last 6 months alone, 8.5 million breeding pigs (approximately 15-20%) have been lost to ASF. Rabobank have suggested the national herd fell by as much as 5% each month in December, January and February. China is now trying to rebuild its breeding stock. However, most farms are selecting meat-type gilts for breeding stock which consist of 50% meat type genetics which will have poor reproductive capacity when compared to the true breeding sows. These gilts are currently ranging in price from €780-800 (6,000 RMB). Reports indicate that in January 2021, 42.85% of the breeding stock were commercial gilts/sow indicating that the true breeding stock are slow to come forward. Imports will continue to be strong in 2021 for both pig meat and pig meat offal. Already, 900,000 tonnes of pork have been

imported into China during January and February 2021. In March this figure fell slightly due to the panic selling situation however the outlook for the remainder of the year should remain strong.

On February 19th 2021 Malaysia confirmed the country's first case of ASF. The strain involved is Genotype II, which is the same strain currently circulating throughout Eastern Europe and the continent of Asia. The source of the outbreak is not currently known. Since the first reported case Malaysia has now confirmed one disease event in wild boar and four separate outbreaks in backyard pig holdings. Surveillance is being conducted and intensified throughout the entire country.

In Europe, ASF continues to be reported in wild boar. To date, there has been no reports of ASF in the domestic herd in Germany however, cases of ASF in wild boar have now been reported in both the states of Saxony and Brandenburg and have exceeded the 1,000 mark. The subsequent ban on imports from Germany still remain in China, Japan and South Korea. Romania has reported significant numbers of confirmed cases of ASF in wild boar as well as in domestic pig farms, many of which are smaller backyard holdings. Belgium and the Czech Republic are the only two European countries to have successfully eradicated ASF to date.

As ASF continues to spread to new countries, Irish pig farmers are advised to remain vigilant and to implement biosecurity measures to mitigate the risk of an outbreak of the disease in this country. As the saying goes, prevention is better than a cure and we all need to play our part in preventing ASF for entering the Irish pig herd. Such measures include never allowing pigs to have access to food waste and implementing a proper protocol for all visitors entering your farm (discuss this with your PVP). Vigilance for any unexplained disease patterns or unusual presentations of disease should be maintained. Any suspicions of ASF must be reported to your Regional Veterinary Office or the NDCC without delay for further investigation. This advice applies equally to all pig keepers, whether commercial or not.

Further biosecurity advice, ASF videos, posters and disease updates can be viewed and downloaded from the gov.ie website at: https://www.gov.ie/en/publication/249e9-african-swine-fever/

Strategies to manage body weight variation on a farrow to finish Irish pig farm implementing all-in-all-out management

Julia Adriana Calderón Díaz

All-In/All-Out (AIAO) production systems improve growth performance and feed efficiency, and reduce the risk of disease transmission. In true AIAO systems, pigs are grouped together based on age and they move in the same group through the different production stages with enough time allowed between batches to clean, disinfect, and dry the facilities. This is of particular importance in farrow-to-finish pig herds with weekly farrowing batches, as the contact between pigs of different age groups is potentially higher and older pigs could act as a carrier of pathogens to susceptible younger animals. However, natural variation in growth performance exists between pigs from the same batch with up to 11% of pigs considered as slow growers. Slow growing pigs usually need longer time in either the nursery or finisher stages to reach slaughter weight, which is associated with a greater risk of disease and economic losses. It is recommended that slow growing and pull out (i.e. sick pigs that are segregated from the "normal" production flow) pigs should be moved to an "off-site" facility and mixing of different age groups should be avoided. In practice, implementing such a strict AIAO policy is challenging if farmers try to maximise space usage by maintaining

homogeneous weight groups and they do not have an off-site or on-farm specific facility for slow growing and/or delayed pigs. Nonetheless, even when an on-farm facility exists to house slow growing pigs, it can easily become a disease pool if not managed properly. Pigs from different age groups and health status are mixed there sharing the same air space and sometimes moved back to normal production flow with healthy animals. As such, in the absence of a specific facility, pig farmers use other practices to manage growth variation in pigs such as delayed weaning, re-grading groups by BW and/or delaying slow growing pigs from moving to the next production stage to allow them to catch up and reach adequate slaughter weights. However, such practices disrupt AIAO production and resemble more a continuous animal flow management system affecting animal performance, health and welfare indicators.

This article presents a summary of the main strategies observed in a 1,500-sow Irish farrow-to-finish-pig farm to manage body weight variation and its implications for animal health. We followed a batch of 1,047 pigs born within one week from birth to slaughter. Additionally, a group of 49 pigs born the following week was also followed through the production cycle as they were weaned with the original batch of 1,047 pigs. This farm declared that it followed an AIAO policy whereby pigs would spend 4 weeks in weaner 1, 4 weeks in weaner 2, 4 weeks in the grower stage and 8 weeks in the finisher stage. More details about the study can be found here. A representation of all animal movements observed on the farm is shown in Figure 1

1. Earlier weaning: In practice, earlier weaning should refer to weaning pigs some days earlier with respect to the average weaning age already in place on a given farm. For example, in a farm where pigs are routinely weaned at an average age of 35 days, pigs weaned at 28 days of age are considered as earlier weaned pigs. Also, **earlier weaned pigs are an exception** and not the normal practice on the farm. However, earlier weaning should only be considered under specific circumstances, not before 21 days of age (legally they cannot be weaned at less than 21 days of age), and only for pigs that have reached adequate weaning weights (i.e. approx. 7 kg) to minimise post-weaning weight depression. In terms of AIAO this practice is not ideal but the risk of transferring disease in this case is likely minimal as most of these animals may be healthy and close enough in age to the following batch. Farmers wanting to implement this management strategy on a regular basis should have dedicated (AIAO) pens for earlier weaned pigs and avoid mixing them with pigs weaned at an older age to minimize risk of disease transmission. Also, such pens should be clearly identified to ensure that earlier weaned pigs are vaccinated at the appropriate age

2. Delayed weaning: An increase in weaning age is associated with better post-weaning performance. Spending extra time with the sow could allow lightweight pigs to catch up with their bigger counterpart during the weaner and finisher stages. However, delaying weaning for a long period (e.g. up to 49 d of age) might not improve performance as pigs are likely to continue to grow slower and to being delayed throughout the successive stages. These animals can be potential carriers of diseases, for example, presence of pleurisy, enzootic pneumonia (EP)-like lesions and pericarditis is more common in delayed weaned pigs. Moreover, delayed weaning could have a negative impact on the overall performance of the farm. Sows weaned at 28 days would produce an average of 2.4 litters per year; this would be reduced to 2.3 litters per sow per year and 2.1 litters per sow per year for sows weaned at 35 days and 49 days post-farrowing, respectively. In turn, this decreases the mean number of herd litters per sow per year and the mean herd number of pigs produced per sow per year. This highlights the importance of moving all pigs forward throughout the different stages of the production cycle.

3. Re-grading groups by BW: Re-grading pigs by BW/size is a common practice in pig farms whereby producers try to minimise BW variation at the time of slaughter, as abattoirs prefer more uniform batches. The result is the inadvertent creation of several “production flows” increasing the likelihood of disease transmission between pigs of different age groups with different immune status. Also, re-grading and therefore re-grouping, is associated with stress in pigs and does not

reduce the within pen BW variation. Lighter pigs continue to be lighter by the time of slaughter as they still receive the same feed and are under the same management practices as heavier pigs. There are two instances where pens of pigs might need to be re-mixed: 1) on transfer from one production stage to the next and 2) at the point of slaughter. Re-grading pigs on transfer from one production stage to the next should only occur if the number of pigs per pen will change in the following stage due to the design of available facilities. This is often the case in older units or where buildings are renovated in different stages. However, mixing of groups should be minimised and pigs must remain in their original groups as much as possible. This would contribute to reduced stress associated with mixing aggression and to minimise the spread of pathogens inside the group. Re-grading pigs at the point of slaughter should be by split-marketing where heavier pigs are sent to slaughter once they have reached target slaughter weight. By doing this, pigs do not progress too quickly through the production stages ensuring that their age appropriate needs are met by the housing environment and slow growing pigs are allowed to remain the extra time required to reach adequate slaughter weight only during the finishing stage. In practical terms, pens should not be split-marketed more than twice, with the entire pen being sold on the second time.

4. Delaying pigs from moving to the next production stage: Delaying pigs from the normal production flow is associated with health problems such as increased antibody levels for Actinobacillus pleuropneumoniae and an increased likelihood to be lame prior to slaughter, to have their heart condemned and present pericarditis and pleurisy at slaughter compared with pigs that followed the normal production flow. This supports the theory that delaying pigs from advancing through the production stages is associated with the re-circulation of disease and/or a higher risk of exposure to pathogens. This is due to sharing air space or being housed in the same pen with pigs that had returned from the hospital facilities having recovered from illness and/or injury. Slow growing pigs should only be delayed from the normal production flow 'off-site' or in a designated on-farm room to house slow growing pigs. Additionally, hospitalised pigs that have recovered should also remain segregated from the rest of the pigs. Segregating these pigs provides the opportunity to provide more feeder space and/or specialised diets that could help to improve growth performance and to minimise the risk of disease. Unfortunately, such facilities are normally not available in modern pig farms.

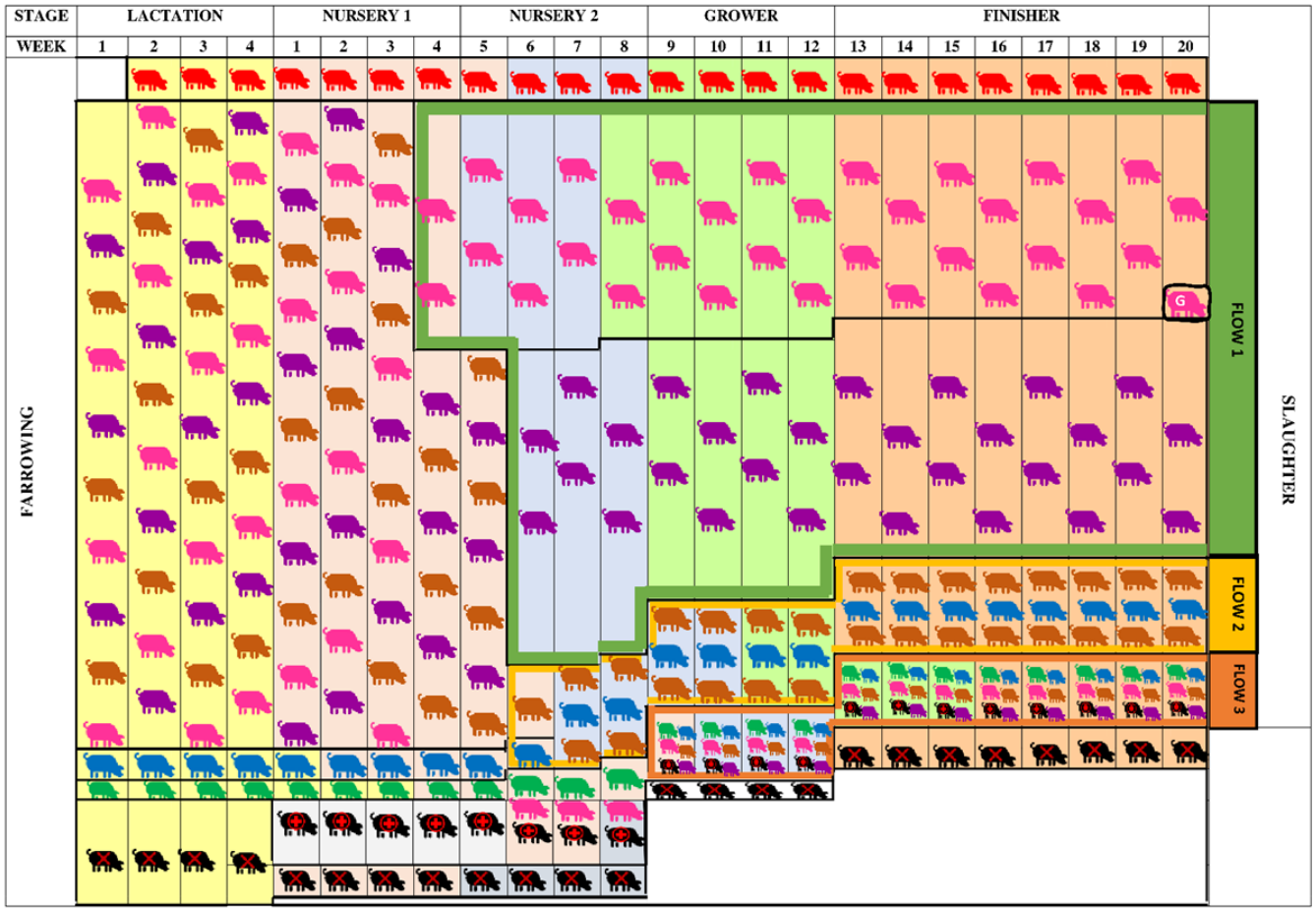
In conclusion, natural variation in growth performance poses a challenge for the implementation of a strict AIAO policy in farrow-to-finish pig farms and several management practices can implemented in a single farm. Although practices such as earlier weaning can provide some benefits, it should be implemented only when pigs exhibit superior growth rates during the lactation period. Other practices such as delayed weaning of slow growing pigs, delaying pigs from moving to the next production stage and constant re-grading of pens could negatively affect animal health. In practical terms, we suggest that re-grading of pens should be kept to a minimum and no pigs should be delayed from moving through the different stages of production on a timeline manner. We propose the implementation of an "all forward" policy as it could be more easily implemented in farrow-to-finish pig farms. Keeping records of animal movements and identifying rooms and pens by age group could help to avoid mixing of older with younger pigs. Finally, delayed weaned pigs, slow growing pigs and sick pigs should be individually tagged and housed in a separate pen (i.e., they should not be mixed with other batches). This reduces the circulation of disease and the risk of exposure to pathogens.

PIGS

EXPECTED TIME SPENT AND ANIMAL FLOW BY PRODUCTION STAGE

STAGE	LACTATION				NURSERY 1				NURSERY 2				GROWER				FINISHER								
WEEK	1	2	3	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
FARROWING																									SLAUGHTER

OBSERVED TIME SPENT AND ANIMAL FLOW BY PRODUCTION STAGE



Cohort	Description
1	Pigs born 1 week later and weaned at 21 days of age
2a	Pigs weaned at 28 days of age and split by body size based on farmer subjective appraisal at 3 weeks post weaning
2b	Pigs weaned at 28 days of age and split by body size based on farmer subjective appraisal at 3 weeks post weaning from cohort 2a and at 5 weeks-post-weaning from cohort 2c
2c	Smaller pigs weaned at 28 days of age and split by body size based on farmer subjective appraisal at 5 weeks post weaning
3	Pigs weaned at 35 days of age
4	Pigs weaned at 49 days of age
-	Females selected as replacement gilts
-	Sick pigs that recovered and returned from the hospital pens
-	Dead pigs

Production flow	Description
1	Pigs advancing through the production stages on a "timely" manner
2	Pigs delayed from advancing from the 1st to 2nd nursery stage by 1 week
3	Pigs delayed from advancing through the production stages by > 1 week

IPHS 2021 Symposium "One Health One Welfare"

Irish Pig Health Society

The Irish Pig Health Society (IPHS) 2021 symposium will be replaced by three online webinars this year, taking place on **Wednesdays 5th, 12th, and 19th of May**. The IPHS are very pleased to host this virtual symposium with a tremendous line up of Irish and international monogastric experts, as well as pig producers. Expert speakers will present practical solutions to current challenges of health, welfare, and productivity in the pig farming sector.

Session 1 (May 5th 2021 | 7:00 - 8:30pm) - Prevention versus Catastrophe. Global, local, internal, and external biosecurity perspectives

What you'll hear:

- Global perspectives on ASF – Egan Brockhoff, Canadian pig veterinary expert and veterinary counsellor for the Canadian Pork Council
- Biosecurity practices in pigs and poultry - Ciaran Cunningham, poultry veterinarian for more than 10 years and Director of Veterinary Services for Agrihealth & Iain Mortimer, pig veterinary practitioner with Agrihealth Ireland

To register for Session 1 click here: https://zoom.us/webinar/register/WN_9JZheE3VTb2yEEM5yP2b5A

Session 2 (May 12th 2021 | 7:00 - 8:30pm) - Solid Foundations. Principles, details and daily practices for improving health and welfare

What you'll hear:

- Managing Inflammation, Health and Vices – Mirjam Lechner, German pig consultant with specialisation in behavioural disorders and metabolic disorders in pigs
- How the legislation on pig welfare has been implemented in Spain – Miguel Higuera, Director of ANPROGAPOR (Spanish Pig Farmers Association) and Vice-chairman of the Copa-Cogeca Pig Meat Working Party

To register for Session 2 click here: https://zoom.us/webinar/register/WN_9uV-UJySRc-72baR-N2QHA

Session 3 (May 19th 2021 | 7:00 - 8:30pm) - Wean well. Farmer experiences in weaning without zinc and other medications

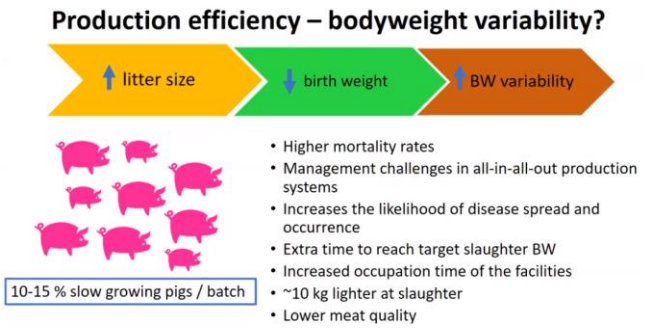
What you'll hear:

- Living without zinc oxide – practical experiences from Irish pig producers who are successfully rearing pigs in the absence of zinc oxide - Roy Gallie (pig farmer and Chairman IFA National Pigs Committee), Ciaran Sheehan (pig farmer), Ciaran Carroll (Head of Knowledge Transfer, Pig Development Department, Teagasc)

To register for Session 3 click here: https://zoom.us/webinar/register/WN_pBzPOwK_Q0qbaOX3HeuV1Q

Identifying slow growing pigs using birth and weaning body weight

Dr. Julia Calderon Diaz recently presented at the DIFME (Digital Internationalisation and Financial Literacy Skills for micro-entrepreneurs) Erasmus+ Thematic Event. She showcased the work done by Jordi Camp Montoro by demonstrating the use of machine learning models to improve pig production efficiency. The talk can be found here .



The Teagasc Pig Development Department are recruiting!

We are looking to recruit a permanent Research Technician to be primarily in charge of feed mill operations and feed manufacturing. Candidates must hold a minimum of a level 6 certificate in agriculture or a related discipline. Experience of pig production systems, feed ingredients and manufacturing would be a distinct advantage. Please keep a look out for this position which will be advertised over the coming weeks in both press and online outlets.

Survey on Antibiotic Use

We are looking for your views, as an Irish farmer, on the use of antibiotics in farming.

The survey is being carried out by Queen's University Belfast and it is important that we hear the views and opinions of farmers like you.

The survey can be completed online at the following link

https://www.surveymonkey.com/r/6PSF5PT

Or if you prefer, we can ring you and do the survey on the telephone, or post out a copy for you to complete at home.

You can get in touch with us on +44 (0)28 9097 4951 or +353-91-845248 or email c.mckernan@qub.ac.uk

The survey takes 20 minutes and the first 50 pig farmers in Ireland to complete the survey will each receive a €20 One4All voucher as a thank you for your time.

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

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Teagasc
Agriculture and Food Development Authority