

Edited by Ciarán Carroll

Welcome to the September Newsletter



Welcome to the September edition of our monthly newsletter.

Irish pig prices continue to remain under pressure and the situation with regards to African Swine Fever in wild boar in Germany is not helping, though it may result in extra exports from here to China which should help prices here.

This years Teagasc Pig Farmers' Conference will be virtual, due to Covid-19 restrictions. Virtual Pig Week will take place from 20th to 23rd of October, and will feature guest speaker Dr. Scott Dee from the US, a virtual tour of Moorepark pig research facility and more.

Our Let's Talk Pigs webinar series concluded on Friday 4th September with a presentation by Charlotte Lauridsen on Supplementary milk in the farrowing room. The series was a great success with very interesting and relevant topics covered, we would like to thank you for your support and

engagement. Recordings of all webinars are available on our website.

The Pig Edge podcast has continued to attract a good listenership. All episodes are available on our website, the iTunes store & Spotify, with a new episode released monthly.

The pig development department launched our Skills Series of videos and factsheets on September 18th with an informative video and accompanying factsheet now available on the topic of pig inspection. A new video and factsheet, focusing on essential skills in pig production will be available fortnightly.

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Rye in growing-finishing pig diets

Peadar Lawlor

Producers are always interested in alternative feed ingredients as a means of cheapening diets with the aim of reducing the feed cost per kg dead-weight. The area of Rye grown in Ireland has increased in recent years principally to meet demand in the distillery sector but also because its efficiency as a cereal crop in certain rotational slots and its relatively high yield. Additionally, the modern varieties have much greater resistance to moulds than heretofore and therefore mycotoxin contamination should not be an issue with them.

Recently we completed a feed trial where 0, 20, 40 and 60% rye was included in diets for growing-finisher pigs (30kg to 120Kg). The rye variety used was KWS BONO and it was grown in south Tipperary. The diets were formulated to contain 9.8 MJ NE / kg and 10g SID Lysine /kg. The price of Rye was discounted to ~94% the price of wheat at the time of purchase based on its chemical analysis so that its price was €186/tonne. When formulated the ingredient cost of each diet was within €1 of all other diets. The diet composition is shown in Table 1.

Table 1. Composition of Experimental diets

Ingredient	Diet			
	1	2	3	4
Rye	0.00	200.00	400.00	600.00
Wheat	400.00	400.00	374.55	164.10
Barley	381.60	178.51	0.00	0.00
Soybean meal	186.93	191.43	196.56	206.58
Soya oil	7.10	5.75	4.64	5.38
Lysine HCl (78.8)	3.94	3.85	3.75	3.51
DL-Methionine	1.31	1.31	1.31	1.35
L-Threonine (98)	2.00	2.00	2.00	1.83
L-Tryptophan	0.21	0.25	0.29	0.35
Vitamin & trace mineral mix	1.00	1.00	1.00	1.00
Limestone flour	11.00	10.50	10.00	9.50
Mono DiCal Phosphate	0.82	1.31	1.79	2.30
Salt	3.00	3.00	3.00	3.00
Celite	1.00	1.00	1.00	1.00
Ronozyme HiPhos (GT)	0.10	0.10	0.10	0.10
Chemical composition				
NE (MJ/Kg)	9.80	9.80	9.80	9.80
SID lysine	10.00	10.00	10.00	10.00

The trial lasted 11 weeks and during this time the pigs were provided with ad-libitum access to feed using a short trough wet-feed system. The health of pigs and their growth performance was excellent during the trial. The results are shown in Table 2. ADG, ADFI and FCE were unaffected by treatment when calculated on the normal live-

weight basis. However, at slaughter carcass weight was ~1.5kg less for rye fed pigs regardless of whether 20, 40 or 60% rye was fed. For this reason Carcass ADG was ~20g/day lower for rye fed pigs regardless of whether 20, 40 or 60% rye was fed. Lean meat % was not influenced by Rye inclusion in the diet.

Table 2. Effect of including rye in the diet of growing-finishing pigs

	Inclusion of rye (%)				se	P-value
	0	20	40	60		P
No pens per treatment	9	9	9	9		
Weight (kg)						
Day 0	30.7	31.6	30.7	31.0	1.72	0.52
Day 78	122.0	121.8	120.6	120.5	1.98	0.67
ADFI	2805	2828	2740	2779	40.6	0.46
ADG	1171	1154	1154	1148	11.2	0.51
FCE	2.40	2.46	2.38	2.42	0.029	0.23
Carcass weight (kg)	93.2a	91.7b	91.8b	91.6b	1.37	0.001
Lean meat yield (%)	57.0	57.3	57.0	57.1	0.29	0.14

We can conclude that rye inclusion up to 60% in the diet yielded excellent growth performance in growing finishing pigs and that it can be considered a safe ingredient to use in pig diets. However, its price needs to be discounted to less than 94% relative to the price of wheat. Its value is intermediate between that of wheat and barley being closer to that of barley.

On a similar note, there is growing interest in field (faba) beans currently in the feed sector from a carbon foot-printing perspective. We have sourced three varieties of field beans from this year's harvest. Two of these varieties LYNX and

VICTUS (low vicine/convicine) were grown in Ireland while the third (TAUFIN) is a zero tannin variety which was grown in Germany. We plan to evaluate the feeding value of these varieties in the coming months. This information should supplement earlier work that we did with field beans in finisher pig diets where growth performance with them was excellent.

Acknowledgement Thanks to Tim O'Donovan from Seedtech for sourcing and organising delivery of both rye and field beans for these trials.

Interpig Figures 2019 performance

Gerard McCutcheon

The figures from the Interpig meeting which was held remotely this year because of Covid-19 are due to be finalised and published in the next few weeks. The figures that were presented by each country represented the performance in 2019. They are a benchmark by which we can compare our performance.

The performance figures from Denmark, France, Spain, and the Netherlands are presented below.

They are shown alongside the Irish performance. The Irish figures represent 78,000 sows or 52% of the national herd as compiled on the Teagasc e-Profit Monitor record analysis system.

Spain has become the largest pig producer in the EU. The figures comparing sow performance are shown below in Table 1.

Table 1. Components of the number of pigs weaned/sow/year

	Denmark	Spain	Netherlands	Ireland
Born Alive / Litter	17.5	14.0	14.8	14.1
Pre-weaning Mortality %	14.8	13.7	12.7	11.3
Weaned / Litter	14.9	12.1	12.9	12.5
Litters / Sow / Year	2.26	2.30	2.33	2.28
Weaned / Sow / Year	33.6	27.7	30.1	28.5

The born alive figures in Ireland have improved over the last number of years to 14.1 pigs born alive per litter. The average born alive figures was 17.5 in the Danish herd in 2019. While the Danes have higher pre-weaning mortality the number of pigs born alive still gives them a higher number of pigs weaned per sow per year.

The number of pigs produced per sow is the number born alive minus all mortalities. It is a very good parameter to use to compare performance. The post weaning mortality figures and the number of pigs produced/sow/year are shown below in Table 2.

Table 2. Post weaning mortality and the number of pigs produced/sow /year

	Denmark	Spain	Netherlands	Ireland
Weaner Mortality %	3.6	5.2	2.4	2.9
Finisher Mortality %	3.4	4.1	2.4	2.7
Post Weaning Mortality %	7.0	9.3	4.8	5.6
Pigs Produced/ Sow /Year	31.2	25.1	28.7	26.9

Each country has a different live-weight at slaughter. It is highest in the Netherlands (122.3 kg), lower in Denmark and Spain (114.8 and 115kg respectively) and lowest in Ireland (113.5 kg).

The Danes achieved the best average daily gain with Spain showing the lowest ADG from weaning to sale. These figures are shown below in Table 3.

Table 3. Feed performance from weaning to sale

Weaning to Sale	Denmark	Spain	Netherlands	Ireland
Total Days Weaning to Sale	138	174	161	148
Kg of Gain- Weaning to Sale	108.3	109.0	114.3	106.5
Kg of Feed	262	260	277	259
ADG	782	626	711	720
FCE Weaning To Sale	2.42	2.38	2.43	2.44

Our growth rates compare favourably to the Dutch but are lower than the Danes. Our feed conversion figures are similar to the Dutch and the Danes but higher than those figures achieved in Spain. There is a lot of contract rearing of pigs in Spain which is closely monitored by veterinary inspections and this may be the reason for the very good feed conversion even though the growth rates are lower. The lower growth rate is also related to the warmer weather in Spain leading to lower feed intakes, and lower growth rates as a result.

When we look at the feed costs in each country (Table 4) we see that the Danes have the lowest feed cost per tonne. Caution is advised here as the Danish farmers grow crops on lands that they farm and this appears to contribute to reduced feed costs from their tillage enterprise. It seems much more sensible for us to benchmark our feed costs against the Dutch and Spanish as they are operating solely as pig producers with no associated land that could reduce their feed costs

Table 4. Feed costs for each country

	Denmark	Spain	Netherlands	Ireland
Sow Feed €/t	233	239	269	284
Weaner/Rearer Feed €/t	340	410	376	398
Finisher Feed €/t	237	255	252	272

Conclusion

We still need to work to reduce this feed cost differential. How do your feed costs compare? Are you feeding the correct nutrients to your pigs at the correct stage of growth or are there further efficiencies to be made on your farm?

Managing supplementary milk in the farrowing room

Emer McCrum

2010 was the first year in Ireland when the average number of piglets born alive exceeded 12 per litter. Fast forward to 2019 and following further advancements at farm level in the intervening years, the average born alive crossed 14 piglets per litter for the first time. While

improved performance and increased output is welcome, this hasn't come about without an additional workload. Sow prolificacy in recent years has led to the number of piglets in a litter oftentimes exceeding the number of functional teats per sow. Further to this, sow milk yield does

not increase proportionally to larger litter sizes and as such, with each additional piglet per litter, milk intake per piglet actually decreases. As a result support mechanisms are necessary to rear the additional numbers and producers essentially have two options in this scenario; the use of nurse sows or the provision of supplementary milk.

Milk replacer has been around for quite some time now and can be found on almost every farm across the country where it has become an integral part of farrowing house management. Milk replacer can be fed to early weaned pigs in rescue deck systems or, as is more common in Ireland, to supplement suckling piglets that have remained with their dam. In either scenario, milk can be administered manually or via an automated system. This article will focus on the management of supplementary milk in the farrowing room.

A helping hand

It is important to stress that despite the name, milk replacer should not replace sows milk but rather be used to supplement natural milk production or as a 'boost' for suckling piglets. We still depend on the sow to provide the majority of nutrients to piglets and most especially to newborns who simply will not survive without colostrum from their dam. Additionally, milk replacer should not be provided at a rate that could hamper the milking ability of the sow. Sows have considerable milking potential and this should always be optimised as it is the safest and most efficient method of rearing piglets, while supplementary milk provides sows with a 'helping hand' to rear large litters.



Hygiene

Meticulous hygiene is the golden rule where the use of supplementary milk is concerned and this is particularly important for the manual feeding of milk replacer. Automated systems have built in flushing cycles which should be operated as per manufacturer instructions. For manual feeding, hygiene starts with the mixing of milk and it is essential that all tools used at this point, such as buckets, tanks, whisks, jugs, scoops and scales are kept clean and free from build-up. Good quality fresh water should only be used to mix the milk replacer. Feeders or trays used in the farrowing house should be thoroughly cleaned daily, cleaned between feeds if soiled and disinfected regularly. If residual milk is present in the tray at the point of the next feed, this should be discarded and not topped up. Milk can rapidly sour in the warm farrowing house and can contaminate fresh feeds if not removed.

Mixing milk

Different milk replacers can have contrasting instructions where mixing is concerned and the guidelines set out by the manufacturer should be precisely adhered to. Some milk replacers are to be mixed with cold water while with others, it is recommended to mix the powder with warm water. Milk replacer however should never be mixed with hot water as this will cause nutrient degradation. Dosage rates can vary between different milk replacers so always check the bag to ensure you are mixing the correct amount of powder to water as per the guidelines. Measuring cups or scoops are a useful way to ensure the correct amount of powder is allocated as opposed to scales which can be more time consuming. Measuring by eye or by the handful should be avoided. Certain milk replacers are designed for different age groups of piglets so it is important to ensure the product is suitable for the age and stage of the piglet. While some milk replacers may stay in good suspension for longer than one day, it is strongly recommended to prepare a fresh

solution at least daily. Milk replacer should be covered and stored securely in a dry area when not in use.

Feeding milk

Milk replacer should be fed in smaller amounts initially before being gradually increased in line with piglet demand. When manual feeding, it is recommended to feed milk little and often 2-3 times per day. Creep feed should be introduced as normal at 10-14 days and milk allowance thereafter gradually lowered to encourage creep feed intake. Plastic and galvanised metal feeders are recommended for the delivery of milk replacer which should be durable, portable and easily cleaned and filled daily. Special milk feeders are available for the farrowing house but turkey or creep trays are commonly used to provide milk to piglets. Feeders should be positioned away from corners or dunging areas and beyond the reach of sows. In cases of diarrhoea, overfeeding and/or poor hygiene more often than not are the causative factors. In the event of an outbreak, allowances of milk replacer should be lowered, electrolytes provided to piglets and antibiotic treatment administered if necessary (in

consultation with your vet). If diarrhoea while feeding supplementary milk is a persistent problem in the farrowing room, it is recommended to review the management of the process on your farm and seek veterinary guidance.

The use of supplementary milk has numerous benefits such as increased weaning weight, greater uniformity within the litter, reduced preweaning mortality, reduced handling and capacity for nurse sows and it can also reduce the risk of disease spread and disturbance associated with the movement and crossfostering of piglets. While advantageous, the provision of supplementary milk is an additional cost to the system and a significant labour input is required to ensure this management tool is effectively utilised. Simple steps such as those outlined above however should be implemented to help realise the benefits associated with this practice.

If you would like to find out more, Charlotte Lauridsen recently presented a comprehensive overview of the topic on our 'Let's Talk Pigs' webinar series. Charlotte's presentation also provides up to date research results in this area, the recorded webinar is available to view here <https://bit.ly/SupplementaryMilk>

Choosing the best pig

An introduction to selective breeding

Daniel Crespo Piazuolo

With the first domestication of livestock animals, humans started selection of individuals based on certain qualities to satisfy their needs. Animals with qualities such as being bigger, more docile or with a specific coat colour, were chosen as breeding animals. However, it wasn't until the 1930's, when Jay Lush proposed the use of quantitative genetics and statistics to select animals that the ideas and methods for modern-day animal breeding were established. In his book *Animal Breeding Plans*, he described that the commercial traits of interest were controlled by

genes and that animals which were close relatives, because they had more similar genotypes, had a greater probability of performing in a similar manner than unrelated individuals. A decade later, Lush with his student, Lanoy Hazel, developed the selection index theory. This method allowed breeders to include more than one trait for selection. A weight was assigned to each trait based on its importance or economic value and thus, ranking of the animals was possible after all the measurements of the traits were combined into an index score. Nonetheless, this method had

some flaws as it didn't allow the comparison between animals from other farms or between unrelated animals.

BLUP

The biggest improvement in animal breeding was the development of the Best Linear Unbiased Prediction (BLUP) method in the 70's by Charles Roy Henderson, which could be exploited due to increases in the computing power of computers at that time. The BLUP method estimates breeding values using information of measured traits (phenotype; e.g. ADG) collected in animals and their relatives as well as the fixed effects (e.g. sex, breed, season) for each individual. Animals could then be ranked based on their genetic merit. This method is particularly advantageous in cases where the phenotype that the breeder is interested in requires the slaughter of the animal, such as carcass weight, or it is not measurable in one sex, such as prolificacy in males. As an example, the implementation of the BLUP method in the swine industry increased greatly the number of pigs born alive (~3% per year). However, the BLUP method relies on the accuracy of the pedigree of the individuals and requires a huge database of accurate measurements to compare animals from different generations.



GBLUP and marker-assisted selection

In the past decade, selective breeding experienced another major step forward through the use of molecular information. This genomic information can be sequenced, obtaining markers, a collection of certain DNA bases that are located along the pig genome. A marker in a certain position can be different between animals and two related individuals will share more similar markers. These markers can range from a few hundreds to the 600,000 obtained by high-throughput genotyping

platforms. Although even more expensive, the complete genome of a pig can even be sequenced nowadays and used for selection.

Genetic markers are useful to determine the paternity of a boar in case that a mixture of semen from different boars was used in artificial insemination, as the offspring share half of their markers with each parent. Through this method, the molecular pedigree of individuals can be calculated. The Genomic-BLUP (GBLUP) incorporates the information of the molecular pedigree into the BLUP method, which improves the accuracy of the estimated breeding values.

Marker-assisted selection goes one step further. In this scenario, what is selected is a collection of specific markers that are known to be linked with a trait of interest. Therefore, there is no need to phenotypically measure the trait of interest in an individual. This speeds up the selection processes as genomic assisted methods allow the selection of individuals early in life just by sequencing them or when the trait is difficult or expensive to measure, such as resistance to diseases or meat quality. Marker-assisted selection also shares the advantages of BLUP, because it can be used when the traits of interest require the slaughter of the animal or can only be measured in one sex.

In pig production, marker-assisted selection outperforms BLUP regarding selection for pigs born alive, net feed intake and meat quality, but there is not much difference between the two when the trait can be accurately measured in all individuals, such as growth rate. Nowadays, pig breeders incorporate both, the genetic information as well as the information from BLUP to maximize the response to selection. Along with this information, breeders now have access to a huge amount of performance data shared across the world from their clients. This is useful for studying how certain breeds behave in different environments or which breed crosses will perform better. All of this information will help in the selection of the breeding pigs to sire the next generation.

Virtual Pig Week 2020

Virtual Pig Week will take the place of the annual Teagasc Pig Farmers' Conference this year due to Covid-19 restrictions.

All events will be broadcast live from 20th - 23rd October, and recordings will be available on our website.

Further information on Virtual Pig Week 2020 will be made available in the coming weeks.

Pig Welfare Workshop



PIG WELFARE WORKSHOP

Killeshin Hotel, Portlaoise
Friday November 27th, 2020
10.30am to 4.00pm

Contact
Niamh on 076-1112457 or at
niamh.allen@teagasc.ie
 Or your local Specialist Pig Development Officer

Pig Welfare Regulations require that any person looking after pigs must receive guidance and instruction in welfare and be familiar with the regulations. It is imperative that all pig farms have at least one person from the farm trained in pig welfare and familiar with the regulations. We would recommend that more than one person from each farm attends training as a farm with only one pig welfare certified person may be

vulnerable if that person leaves. Pig Welfare training is also a requirement of the Bord Bia Quality Assurance scheme.

The Teagasc Pig Development Department is organizing a "once off" Pig Welfare workshop. The course will cover all current pig welfare requirements and legislation. This workshop will be held at the Killeshin Hotel, Portlaoise on Friday November 27th, 2020 from 10.30am to 4.00pm.

The fee for the workshop is €80 VAT included (tax deductible expense). To secure your place please forward a cheque (payable to Teagasc Pig Development Department) to Niamh Allen, Animal and Grassland Research & Innovation centre, Teagasc, Moorepark, Fermoy, Co. Cork. You can contact Niamh on 076-1112457 or at niamh.allen@teagasc.ie You can also book your place by contacting your local Specialist Pig Development Officer.

Skills Series

The first video and factsheet in our Skills Series focused on pig inspection, an essential task in managing pig health and welfare, it is available here <https://bit.ly/PigInspection> Another skill in pig production will be covered every fortnight.

All digital media resources including The Pig Edge podcasts, Let's Talk Pigs webinars, posters, factsheets and infographics are available in the publications section on our website, here

<https://bit.ly/PDDPublications>



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

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