PIGS

November 2020

Edited by Ciarán Carroll

Welcome to the November edition of our monthly newsletter.

Pig price is getting a lot of attention in recent weeks and the recent 4c/kg dead weight was really disappointing. It comes on the back of uncertainty in relation to a number of world market issues. These include the backlog of pigs in Germany (and associated backlog in Denmark) because of Covid problems in processing plants and the occurrence of African Swine Fever in part of it's wild boar population. Some positive news is the installation of a new butchering line in one of the main plants which will speed up the slaughtering capacity. This will help to begin to clear the 700,000 backlog of pigs.

China has not yet given a decision on the regionalization proposals for German exports so their market still remains closed for China. Acceptance of these proposals would certainly give a boost to pig prices.

In other news, our Pig Edge podcast series continues to grow. The latest episode focused on 'Alternative ingredients for pig diets' with Dr. Peadar Lawlor. The next episode will be available on Friday 27th November as part of Animal Health Awareness Week, with Margaret Wilson, SRO, DAFM discussing 'Post-mortems and preparedness- pig health through the laboratory lens'. All episodes are available on our website, the iTunes store & Spotify, with a new episode released monthly. If you have any suggestions for topics for future we'd love to hear them.

In this issue

Teagasc
Agriculture and Food Development Authority

Relative Price of Feed Ingredients

Peadar Lawlor and Joe Patton

On a recent podcast I was talking about some of the work that we have done with field beans and Rye. We have had good experiences with both in feeding trials. During the discussion I was asked what the relative value (price in €/tonne) of these were compared with some of the more commonly used feed ingredients like barley and soybean meal. This was easy to answer for Rye as it replaces barley and wheat in the diet. However, for field beans I could not give an answer off the top of my head. The purpose of this newsletter article is to answer that question for field beans but also to demonstrate how this can be used for other ingredients also.

To do this you need to have the prices of your reference ingredients. In this instance we have chosen barley and soybean meal. So on 12th November we got a spot price for barley of €195/tonne and one for soybean meal of €425/tonne. Principally, these ingredients supply energy and amino acids to the pig. For this reason we also needed the Net energy and SID lysine values for both reference ingredients. This information is available from reference tables or you could use values specific to the batch of ingredients that you have prices for, if available. Once this information was to hand (Table 1) the value in euros of a MJ of NE and a percentage point of SID can be calculated.

Table 1. Information on reference feed ingredients to calculate per unit values for Lysine and Net Energy

	Net Energy(MJ/Kg DM)	SID Lysine % DM	Spot Price €/tonne Fresh-weight
Barley	10.99	0.33	195
Soya 48	9.25	2.84	425

At this point if you know the Net Energy value and SID Lysine % of an ingredient (again available from reference tables or could be specific to the batch of ingredient) that you are interested in (e.g. field beans) you can calculate its relative value in €/tonne. From Table 2, you can see that the relative value of field beans is €331.04/tonne. This means that if field beans are available to you on the market at below the reference price then they are likely value for money and can help cheapen your diets. On the contrary if the price of field beans on the market is higher than the relative price in Table 2 they are not value for money and will only make your diet more expensive.

Of course, this is a relatively simplistic approach to getting the relative value for an ingredient. It does not consider, anti-nutritional factors that may be present (e.g. tannins in field beans), variability in the composition of some ingredients etc. However, it is still a very useful tool to use to decide on the potential monetary value of ingredients available to you. For that reason we would like to develop this with a view to making it available for your use on the Teagasc website. If there are any ingredients that you are particularly interested in and want included for this purpose please let us or your advisor know, so that we can include them. Of course this can also be used to value by-products / co-products even when they are low in dry matter as this is also considered in our calculation. As phosphorous (P) is also an expensive constituent in the diet, we may fine-tune the tool further so that a value is put on each % unit of digestible P contributed by ingredients also.

Table 2. The relative value (€/tonne fresh-weight) of feed ingredients based on the current prices of barley and soybean-meal.

	DM (%)	Dig. P (% DM)	NE (MJ/Kg DM)	SID Lys (% DM)	Value (€/T DM)	Value (€/T Fresh)
Barley	86.7	0.162	10.99	0.33	224.91	195.00
Wheat	86.8	0.164	12.10	0.28	238.04	206.62
Maize	86.4	0.084	12.84	0.22	243.73	210.58
Rye	87.3	0.172	11.30	0.29	225.59	196.94
Triticale	87.3	0.190	11.85	0.37	244.14	213.14
Oats	88.1	0.116	9.00	0.34	192.21	169.34
Sorghum	86.5	0.080	12.65	0.18	235.90	204.05
Beet pulp molassed	88.1	0.019	7.10	0.41	167.94	147.96
Beet pulp unmolassed	89.1	0.019	6.94	0.36	159.47	142.09
Citrus pulp	89.3	0.208	8.01	0.22	161.57	144.28
Rapeseed meal	88.7	0.412	7.14	1.52	296.31	262.83
Soyabean meal 48% CP	87.8	0.227	9.25	2.84	484.05	425.00
Mollasses, beet	76.7	0.005	8.72	0.16	166.74	127.89
Molasses, cane	73.7	0.015	8.71	0.02	150.47	110.89
Peas	86.4	0.215	11.21	1.44	356.35	307.88
Beans	86.1	0.203	10.70	1.76	384.48	331.04
Soya hulls	89.4	0.030	4.66	0.03	82.72	73.95
Pot-ale syrup	32.0	0.590	10.50	0.46	231.99	74.24
Soya oil	100.0	0.000	29.77	0.00	506.42	506.42

Ok so now that we have explained what was done to get the relative value of ingredients presented in Table 2, what does this mean today? Well for example if we look at wheat, the relative value for wheat is €206.62/tonne and we have a spot price of €225/tonne for wheat. This means that wheat is currently very expensive in the market place and using it will make diets more expensive.

Regarding maize the relative value from Table 2 is €210.58 and we have a spot price for maize of €223/tonne. Similar to that for wheat this means that maize is currently very expensive in the market place and using it will make diets more expensive.

Now back to the ingredients that were the subject of the podcast. Rye has a relative value of €196.94 and if you can source rye for less than this price you should consider including it in your finisher diet at least to reduce diet cost.

The Economics of Early Culling

Ciarán Carroll

Introduction

Managing sow culling properly is a key factor in maximising profitability in pig production. A sound culling policy is an integral part of herd management. It provides for the removal of less productive sows and the entry of replacement females on a regular basis without disrupting the overall performance of the breeding herd. But how well do we manage sow culling on our farms? For many years now the data indicates that sows are being culled at a younger age and this has a negative impact on farm profitability. Many sows are removed from the herd before they reach their peak performance (parity 3 – 5), and Teagasc ePM data indicates that 13% of gilts introduced to the breeding herd are removed

before they even have one litter. Previous Teagasc research by Laura Boyle et al (1998) showed that 32% of sows were culled before they reached their third parity.

Culling Rates

Irish farms had an average culling rate of 48.3% in 2019 (Teagasc National Pig Herd Performance Report). This is consistent with sow culling rates in recent years on Irish farms (see Table 1).

Table 1. Sow Culling Rates on Irish Farms 2001 - 2010

Year	2014	2015	2016	2017	2018	2019
Sow Culling Rate %	49.6	48.5	50.1	49.3	49.2	48.3

Source: Teagasc National Pig Herd Performance Report

O'Driscoll, Boyle and Haigh (Teagasc Pig Farmers' Conference 2015) highlighted that a higher proportion of voluntary, rather than involuntary culling is fundamental in establishing a stable, profitable, parity profile. Voluntary culling occurs when a decision is taken to cull an otherwise healthy sow so that she can be replaced by a younger, and hopefully more prolific animal, or so that there can be a change to the genetic stock. The decision to cull should be taken based on the biological condition of the sow, and a proven healthy sow may in many cases be less of a risk for poor future performance than an unproven replacement gilt.

Involuntary culling, on the other hand occurs when the stockperson has no choice over whether to cull the animal, for instance due to a health problem (lameness is the most common), or infertility.

Better awareness of the costs and causes of involuntary culling are essential to reduce this problem. It must also be noted that many herds now have a policy of voluntary culling after five litters. We should question whether this is practical or economical for these herds?

Our advice is that culling should occur after the sow has had six litters. This is a common recommendation across many countries. Stalder (SowBridge 2010) has suggested the following reasons for this:

- Large herds operate on a proforma basis: replacements are ordered well in advance or prepared in gilt pools for automatic entry, it's a convenient parity, it fits pig flow.
- Naturally acquired immunity tends to fall off in sows at this age in general: this can threaten younger animals, viral diseases often peak again at this time
- Rapid turnover to maximise genetic improvement

It is also perceived that after six litters sow performance decreases in terms or fewer numbers produced, higher number born dead, more uneven litters produced and reduced mothering ability.

We must also remember that immunity is much higher in progeny of litters 2-7. Teagasc research (Manzanilla et al.) reported that gilts progeny had by far highest mortality therefore lowest immunity. To highlight how important this is we can look at the difference between culling at 5th & 7th litter on the amount of 'immuno-compromised' pigs. Take a 600 sow herd culling at 5th parity; this herd will have 6.5 gilts per 27 farrowings every week which gives 85/351 piglets (24%) compromised pigs weaned every week. Compare that with a 600 sow herd culling at 7th parity; this herd will have 4.8 gilts per 27 farrowings every week which gives 62/351 piglets (17.7%) compromised each week. On an annual basis this is 1,196 less compromised pigs and this is especially important nowadays as birth and weaning weight is falling with higher Born Alive.

However, to replace sows economically we need to be sure that the replacement gilt performance

is going to be better than the projected sow performance for the next litter (i.e. seventh parity). Keeping accurate herd performance records is essential to identify what our sow culling policy should be. The key figures to look at in this instance are the number born alive and number weaned per gilt/sow. By knowing what our herd average and gilt average performance is we can compare it with our herd records for older parity sows. If the sow is being out-performed by the herd and gilt average then it is time to replace her (having taken account of gilt purchase/rearing and acclimatisation costs).

What costs are involved?

Table 2 below shows the annual replacement rate (accounting for sow culling and mortality) for a herd based on culling at each parity (assuming 155 days per litter, i.e. 2.35 litters per sow per year).

Table 2. Annual Replacement Rate based on culling in each parity

Parity	1	2	3	4	5	6	7
Replacement Rate %	233	118	79	59	47	39	34

So, a herd that culls after one parity has a replacement rate of 233% and a herd that culls after 6 litters has a 39% replacement rate, i.e. the more litters you get, the lower the replacement rate. What are the financial implications? Table 3 shows the cost of each culling rate for herds which purchase gilts and for those who rear their own gilts. The assumptions used are: 2.35 litters per sow per year, cull sow sale value €110 (average cull value 2015-2019), cost of purchased gilt (including acclimatisation cost) €260, cost of home reared gilt (including acclimatisation cost) €180.

Table 3. Cost per sow of various replacement rates based on culling at different parities

Parity	**Replacement Rate %**	**Cost per sow €**			
		Purchased Gilts	**Difference €**	**Home Reared Gilts**	**Difference €**
1	**233**	148		69	
2	**118**	75	73	35	34
3	**79**	50	25	24	11
4	**59**	38	12	18	6
5	**47**	30	8	14	4
6	**39**	24	6	11	3
7	**34**	22	2	10	1

Table 3 shows the longer you keep a sow in the herd, the cheaper it is to replace her. It also confirms that replacement gilts should remain in the herd for at least three parities in a home reared gilt situation and four parities where gilts are purchased. After this the relative costs per sow of replacing her between parities 5 to 7 are marginal, and will depend on other factors including numbers born alive, numbers weaned, quality of pigs produced (i.e. evenness of litter) and mothering ability of the sow.

Summary

Managing sow culling properly is a key factor in maximising profitability in pig production. Sows are being culled at a younger age and this has a negative impact on farm profitability. Considerable profit potential is never attained because the sow does not remain in the breeding

herd long enough. Our advice is that culling should occur after the sow has had six litters. Keeping accurate herd performance records is essential to identify what our sow culling policy should be. If a sow is being out-performed by the herd and gilt average then it is time to replace her. Replacement gilts should remain in the herd for at least three parities in a home reared gilt situation and four parities where gilts are purchased

Don't go with the Flow

David Clarke

Water is an essential nutrient and probably the most important one. Water is over 80 % of a piglet's body and 50 % in a finisher. Access to good quality drinking water is fundamental to regulate body temperature, transport nutrients, remove toxins, aid in digestion and to help lubricate and protect the body's organs.

Consumption of water is affected by factors like age and weight of a pig or temperature. In fact, water consumption can almost double during summer months. To make sure your pigs are achieving optimum intake it is vital not only to have the appropriate number of drinkers but also the adequate flow rate because pigs will dedicate a limited time to drink. Keep always in mind that pigs will eat if they can drink and not the other way around. Recommended minimum flow rates can be seen below in Table 1.

Table 1. Daily water requirements and minimum flow rates for different ages of pig

Type of Pig	Daily requirement (litres)	Minimum flow rate (l/m)
Piglet	0.5 to 1	0.3
Weaner	3 to 5	0.5 to 1.5
Finisher	9 to 12	1 to 1.5
Dry Sow & Boar	12 to 15	2
Lactating Sow	24 to 45	2

When checking the flow rate, it is important to check every pen in a section. Although this is time consuming it is worth the investment to achieve optimum performance. Flow rates will differ from drinker to drinker due to faulty nipples, filter blockages and leaks. Here at Moorepark we regularly carry out a check on our flow rates with a simple method.

How to check flow rates?

To check your flow rates all you need is a measuring jug or beaker and a stop watch. Operate the drinker for 30 seconds and note the volume of water collected from the nipple or overflow when using a bowel drinker. Double this to give the flow rate in litres/minute. It can be easily done alone when a room has been washed and the results are seen straight away. This week we examined our flow rates in an empty finisher room see Table 2.

Table 2. Flow rates of a finisher room with 30 pens in the Teagasc Pig Research Facility

Room	Flow rate (l/m)
Minimum flow	1980
Maximum flow	4440
Average	2905
Standard deviation	568

As seen above all our drinkers were above the recommended flow rate this time. This is not always the case. It is interesting to note the variation between drinkers and it can be seen where problems might occur. The flow in some drinkers more than doubled the flow in others.

What to do if my flow rate is below recommendation?

If you notice all or some of your drinkers are below recommendation make sure to resolve the issue straight away. Even minor dehydration in pigs can lead to reduced feed intake, lower daily gains, poorer feed conversions, reduced milk production in sows and lower weaning weights.

Low flow rates may be caused by a blockage in the system or problems with the water pressure. The water pressure is affected by factors such as: pipe diameter, dirty filters, tank height or the pump itself. Troubleshoot to try and see where the problem is occurring.

Conclusion

To conclude, if pigs don't drink as much as they need, they won't eat as much and will grow slower. Regular drinker checks coupled with monitoring feed intake can help solve issues with water intake before they arise. Lastly, remember to service your water pumps regularly and have a back-up pump and generator be ready for any emergencies.

Alternative Energy Sources

Ciarán Carroll

We've had some queries since the Virtual Pig Week in relation to costs and savings of the different energy systems installed on the Sheehan farm. Here's a summary:

Biomass Woodchip Boiler

- The farm was using 36,000 litres of diesel per year pre-installation
- At 70cent/litre this was costing €25,000 cost per year
- The SSRH grant is €10,000 per year and will be paid for 15 years (c.€150,000 total)
- Timber costs €10,000 per year (effectively covered by SSRH grant), so savings of circa €25,000 per year (not using any diesel)
- Boiler cost €60,000 installed, so just over two year payback

Solar Panels

- Cost €90,000 to install
- 30% Grant Aid
- Produces 75-77,000kWh per year
- Need to use all energy produced, doesn't pay if not being used and storage not economical at present
- Estimated savings from Solar energy circa €11,500 per year

Teagasc Virtual Pig Week 2020, Biosecurity and Energy Use Farm Visit with pig producers Eugene and Ciarán Sheehan, and Teagasc Bioenergy specialist Barry Caslin. Watch the video here https://www.youtube.com/watch?v=QpXMn1snNKw&feature=emb_title

New national study: Risk factors for Salmonella

Salmonella can cause disease in both animals (including pigs) and humans. The primary reason to control Salmonella at all stages of the food chain, beginning at the farm, is to protect public health, however it is also important for trade reasons and animal health.

The case-control study for Salmonella is a collaborative project between Animal Health Ireland, Teagasc, UCD and DAFM that will include sampling of pig pens and a questionnaire in management practices on farm. Data gathered will be compared between farms with high and low prevalence for Salmonella to understand practices that can be used to better control for Salmonella in all Irish pig farms.

If you receive a letter inviting you to participate in the study and you want to collaborate, please sign the form, and send it back to DAFM. If you want to discuss the details before you sign please contact Carla Gomes (cgomes@animalhealthireland.ie) or Edgar Garcia Manzanilla (Edgar.GarciaManzanilla@teagasc.ie).

Read the final EU PiG Newsletter

The final EU PiG Newsletter is available here https://www.eupig.eu/news/newsletters/eu-pig-newsletter-october-2020

We would like to hear from you! PigInvest Survey

The Pig Development Department is conducting a feasibility study for PigInvest (formerly known as the Teagasc Pig Production Model) in collaboration with Enterprise Ireland and we would like to hear about your experience with farm management software for decision making. Please visit the following link to hear more about PigInvest and to complete a short survey https://www.surveymonkey.com/r/QTLSDMX

Animal Health Awareness Week 2020, November 23rd – 28th

The Department of Agriculture, Food and the Marine will hold Animal Health Awareness Week (AHAW) 2020, which will take place from the 23 to the 28 November. The event will feature webinars, podcast appearances, and a social media campaign, as well as interviews and advertisements on local radio. The Teagasc Pig Edge podcast will feature Margaret Wilson, SRO, DAFM discussing 'Post-mortems and preparedness- pig health through the laboratory lens'.

For more information visit www.gov.ie/en/publication/1b1d4-animal-health-awareness-week-2020/

To read the DAFM AHAW booklet visit https://ahi.egnyte.com/dl/0UWI0kYfLC/

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

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

For more information on any of the content contact Ciarán at ciaran.carroll@teagasc.ie

Teagasc
Agriculture and Food Development Authority