

# Teagasc Pig Open Day 2024

Teagasc Moorepark, Fermoy, Co. Cork. Wednesday May 22<sup>nd</sup>, 2024

Ballyhaise Agricultural College, Ballyhaise, Co. Cavan. Friday May 24<sup>th</sup>, 2024





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*Booklet compiled and Edited by Amy Quinn*



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## Foreward

We are delighted to welcome you to our research event, the 2024 Teagasc Pig Open Day. This event, hosted by the Teagasc Pig Development, builds on the success of last year's event. We have carefully designed today's event to maximise engagement with stakeholders, hopefully making it a convenient way to engage in our research programme.

Much of the research showcased today has an emphasis on management and nutritional strategies as well as sustainable pig production. Some of the projects showcased will introduce projects not presented before while others build upon the research highlighted last year.

This event will also give us the opportunity to update you on the Teagasc Pig Research Facility, the pig research farm. There was much interest in the newly built 'low – emissions', 'high – welfare' finisher house at last year's event. This year we will provide you with an update on how this facility is operating now that some batches of pigs have gone through the building. We will also detail some of the new technologies employed in the unit. This year we also introduce the Pig Nutrition Feed Lab and introduce the early results from wet chemistry analysis of feed ingredients from the Teagasc pig sector feedstuffs analysis programme.

Finally, as well as sharing our research with you, we would like to encourage you all to share your questions and thoughts so we all get the most out of this networking opportunity.

We look forward to meeting you all and hope that you enjoy the day.

From all at the Teagasc Pig Department.

## Pig Health

# Digital post-mortem meat inspection systems

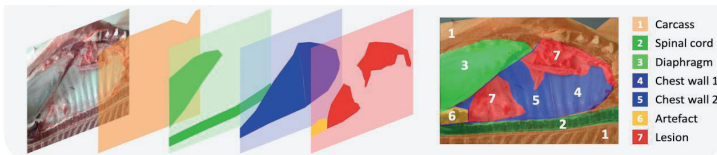


### Rationale:

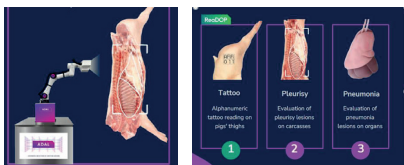
- Move to risk based & visual only meat inspection (MI)
- Need to record tail lesions on pig carcasses to monitor pig welfare on-farm
- Speed of lines poses MI challenges

### Can we incorporate digital technologies into MI?

**Methods:** Desk based study with site visits with equipment manufacturers & pig slaughter plants.

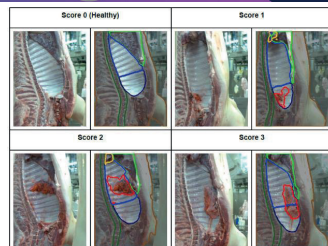


### FARM4TRADE Automatic Detection of Abattoir Lesions (ADAL)



### Take home message:

- High capital cost + retrofitting plants + data ownership
- Detailed cost:benefit analysis required



Contact: Laura Boyle — [Laura.Boyle@teagasc.ie](mailto:Laura.Boyle@teagasc.ie)

# Gastro-intestinal parasites in Irish pigs



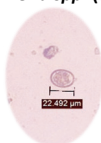
**Rationale:** Gastro-intestinal (GI) parasites affect liver quality & pig performance. Pigs kept outdoors are particularly at risk but little is known about the prevalence or species.

## Methods:

- **Outdoor systems:** 2-4 faecal samples/paddock analysed for Faecal egg count in 20 outdoor pig farms
- **Commercial systems:** Livers of slaughter pigs (100-300 pigs/farm) from 65 farms assessed for 'milk spots' in 2018

**Findings:** Identified 4 types of GI parasite eggs in pigs in **outdoor systems**

*Eimeria* spp. (coccidia)



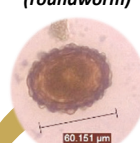
>80% of farms

*Strongyles* (Nodular worms)



>80% of farms

*Ascaris suum* (roundworm)



30% of farms

*Trichuris suis* (whipworm)



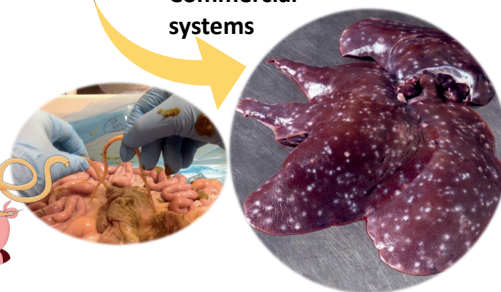
12% of farms

## Take home message:

Good hygiene practices & proper anthelmintic treatment schedule can keep outdoor & commercial indoor pigs parasite free



## Commercial systems



~30% of commercial farms sampled had **milk spots**



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## Meeting sustainability challenges

### Are your pig diets water sustainable?



**Rationale:** In pig production, feed production is the main contributor to water use. Pigs consume high quality feed ingredients which are often suitable for human consumption.

**Method:**

- *Water footprint (WFP)* water used/kg pork
- *Water use ratio (WUR)* amount of protein we get from feed crop vs pork



STANDARD

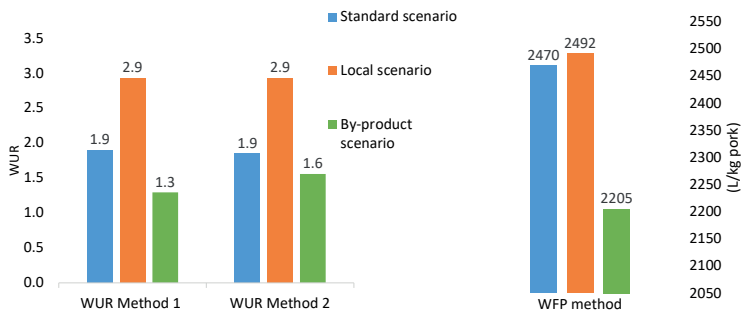


LOCAL



BY-PRODUCT

**Findings:**



**Recommendation:**

By-product based diets use less water & are better for food-feed competition



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# The value of assurance labelling to consumers



Example of one of nine product profiles



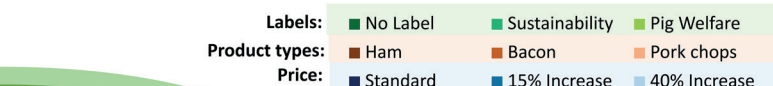
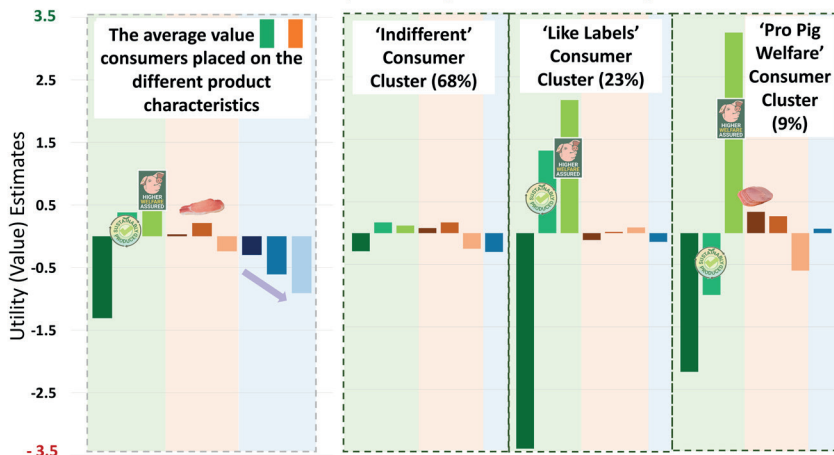
Sustainably Produced label Standard price

**Rationale:** Evidence of consumer interest in how animal products are produced. Do Irish pig meat consumers value pig welfare or sustainability labels?

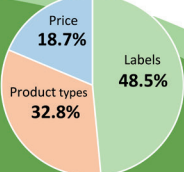
**Method:** Online survey of 766 Irish & UK pig meat consumers. Asked how likely they would be to purchase nine pig meat products with different characteristics.

## Analysis & Findings:

Grouped total sample based on how much they valued the characteristics



Estimated relative importance of each characteristic



**Take home message:** UK & Irish consumers had similar values. One third of consumers valued the pig welfare label & the majority of those also valued the sustainability label to a lesser extent.

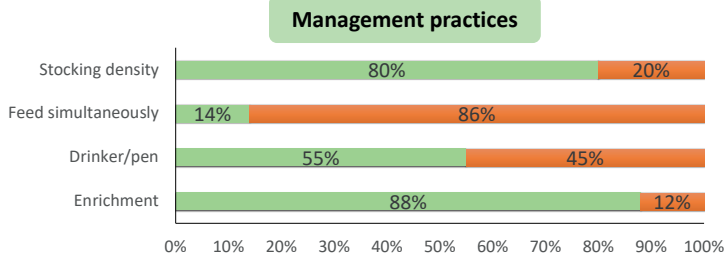
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## Tail biting risk assessments



**Rationale:** Risk assessments for tail biting are recommended in EU states. We assessed the effectiveness of the currently employed national system, managed by AHI

**Methods:** We obtained assessments from 27 farms, & compared the results with tail lesion scores at the factory



**58% of pens considered at risk**

**30 % of tails had skin damage**

- Tail lesions on farm, & severe lesions at the factory were correlated 😊
- Risk assigned at farm were not related to assessor observations 😞
- Farms considered at risk, were not the ones with most tail damage 😞

### Take home message

The tool identified major risk factors on Irish pig farms  
Risk assigned did not agree with factory tail scores, or assessors observations at the pens



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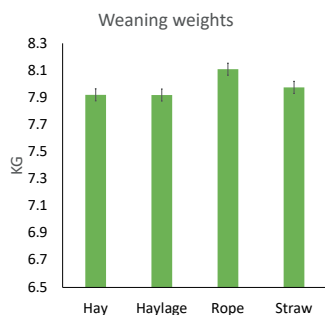
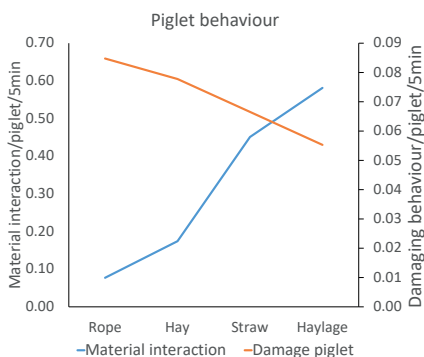
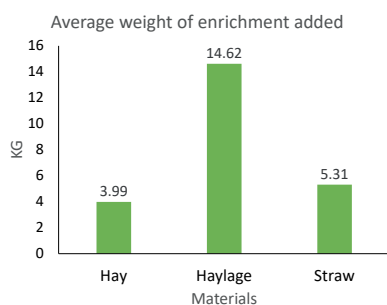
## Farrowing room management & feeding

### Farrowing room enrichment options



**Rationale:** Farrowing crates limit the expression of natural investigative & nest building behaviour in sows. Providing enrichment in farrowing crates could improve welfare of sows.

**Methods:** Loose material (Hay, Haylage, Straw) compared to hessian rope in crate



#### Take home message:

Provision of loose material in farrowing crates:

- **Pros:** Increase in enrichment interaction = lower damaging behaviour in piglets  
No negative impacts on production
- **Cons:** Blocks slats – very dirty



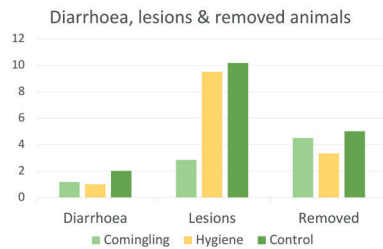
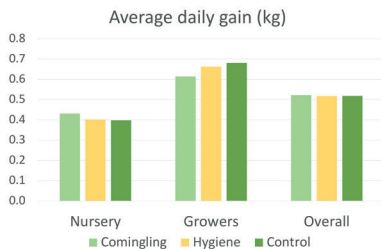
Contact: Melissa Cupido — [Melissa.Cupido@teagasc.ie](mailto:Melissa.Cupido@teagasc.ie)

## Piglet commingling



**Rationale:** Commingling piglets & improving hygiene in farrowing rooms can ease the transition to weaning & improve post-weaning performance

**Methods:** Commingling + hygiene vs hygiene vs control



### Commingling benefits:

↓ Post-weaning aggression

↑ Growth

↑ Welfare



Contact: Mario Ornelas — [Mario.Ornelas@teagasc.ie](mailto:Mario.Ornelas@teagasc.ie)



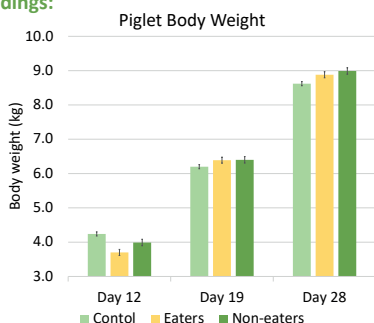
# Creep feeding to increase weaning weight



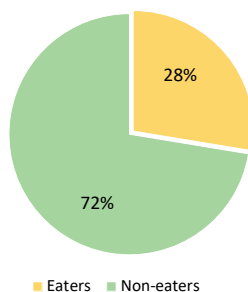
**Rationale:** Providing creep feed to suckling pigs can ↑ weaning weight & growth

**Method:** Determine the 'Eaters (E)' & 'Non-Eaters (NE)' within each litter  
Record pig weight up to weaning

## Findings:



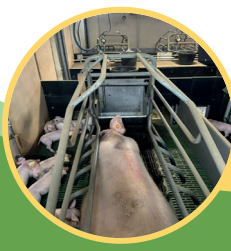
% of 'Eaters' & 'Non-Eaters'



- Low % of E in litters offered creep feed
- "Eaters" were lighter than "Non-eaters" which were lighter than the control pigs at D12
- Both "Eaters" & "Non-eaters" were heavier than control pigs at D19 & D28
- Creep feeding increased weaning weight for both E & NE

## Recommendations:

Provide creep feed to piglets to ↑ weaning weight  
Lighter pigs will eat creep feed  
When creep feed is provided Non-Eaters also benefit  
↑ % of Eaters within each litter



Contact: Peadar Lawlor — [Peadar.Lawlor@teagasc.ie](mailto:Peadar.Lawlor@teagasc.ie)

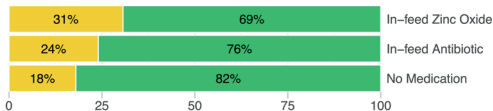
## Post weaning period

### Post weaning diarrhoea monitoring

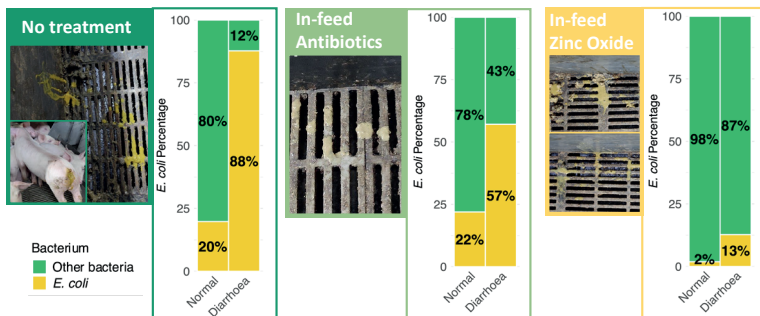


***E. coli* is a common commensal inhabitant of pig gut...**

*E. coli* percent at first day of weaning



**The problem comes during first weeks of weaning with Diarrhoea in pens....**



**Although we saw diarrhoea in all treatment pens its composition was different between treatments**

#### Take-home message:

- Loose faeces or diarrhoea in the first days post weaning is normal, keep calm!
- Not all diarrhoeas require treatment, clinic diarrhoea does.
- The “Other bacteria” are important. Zinc Oxide has affects these bacteria
- Future measures in Zinc Oxide-free pigs breeding should include increasing the “Other bacteria” while controlling *E. coli* overgrowth at weaning



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# Dietary acid binding capacity in post weaning diets



## What is acid binding capacity (ABC)?

- The amount of acid in milliequivalents required to lower the pH of 1kg of feed
- Two endpoints: ABC-4 (pH of 4.0) & ABC-3 (pH of 3.0)
- Weaned pigs have poorly developed capacity to produce gastric HCl
- Low dietary ABC → Less gastric HCl required to maintain low stomach pH

## Experiment looking at reducing ABC & crude protein in post-weaning diet

Crude Protein, %	High (21%)			Low (17%)		
ABC	High	Medium	Low	High	Medium	Low
Diet	1	2	3	4	5	6
ABC-4	504	440	376	407	342	278
ABC-3	792	718	644	653	579	505

**Reducing ABC can improve FCE**  
(0.1 improvement in FCE = €0.23/pig)

**Reducing CP & ABC ↓ diarrhoea-causing micro-organisms**

**Conclusion:** Dietary ABC is influenced by ingredient selection. Implications for nutrient digestion, gut health & growth in newly weaned pigs

**Current work:** To determine the interaction between reduced dietary crude protein & ABC on pig growth post weaning



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## Economics of nutrition

### Economics of liquid creep feeding suckling piglets



Trial 1	Dry pelleted starter D10-28	Only milk replacer D3-28	Liquid mixture D3-28
Total dry matter intake (g/pig)	565	471	353
Creep feeding cost (€/pig)*	0.59	1.31	0.67
Creep feeding cost (€/kg gain)	0.09	0.20	0.10

Optimised liquid feeding strategy  
(↑ DM% + sensor checks)



Tested with more litters

Trial 2	Dry pelleted starter D10-28	Liquid mixture D4-28
Total dry matter intake (g/pig)	358	445
Creep feeding cost (€/pig)*	0.42	0.83
Weight gain D4-28 (kg)	6.12	6.56
Mortality D4-28 (%)	3.96	2.37
Assumed value of dead pig (€/pig)	50	50
Total creep feeding+mortality cost (€/pig)	2.39	2.01
Total creep feeding+mortality cost (€/kg gain)	0.39	0.31

#### Recommendation:

Creep feeding suckling pigs with a liquid mixture of milk & starter diet can ↑ weight gain & ↓ mortality leading to a saving of ~ €0.38/pig

\*Based on February 2024 prices  
(Teagasc price monitor)



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# Economics of supplementary liquid milk replacer for weaned pigs



## Liquid milk replacer supplementation for 10 days post-weaning (pw):

- ↑ DM intake weaning-D10 pw (220 g/pig/day)
- Improved small intestinal structure
- ↑ abundance of beneficial gut bacteria
- ↑ BW at slaughter (3.3 kg) & carcass weight (2.6 kg)

## Economic calculation:

Treatments (10 days pw)	Dry pelleted starter	Dry pelleted starter + liquid milk replacer
DM intake (g/pig/day)	270	490
Feed cost (€/pig/day)	0.28	1.17
Total feed cost for <b>10 days</b> (€/pig)	<b>2.82</b>	<b>11.69</b>
Total feed cost for <b>4 days</b> (€/pig)	<b>1.13</b>	<b>4.68</b>
Carcass weight increase (kg/pig) <sup>†</sup>	-	2.6
Increased price/pig sold (€/pig)*	-	4.76

<sup>†</sup> Only with 10 day supplementation  
\* 5 year average pig meat price €1.83/kg dead weight

**Liquid milk replacer for 10 days:**  
(11.69-2.82)-4.76 = €**4.11** of extra cost

**Liquid milk replacer for 4 days:**  
4.68-1.13 = €**3.55** of extra cost

**Conclusion:** Liquid milk replacer ↑ DM intake & growth but too expensive for post-weaning supplementation

**Future work:** Liquid mixture of milk replacer & starter to reduce feed costs



Contact: Peadar Lawlor — Peadar.Lawlor@teagasc.ie

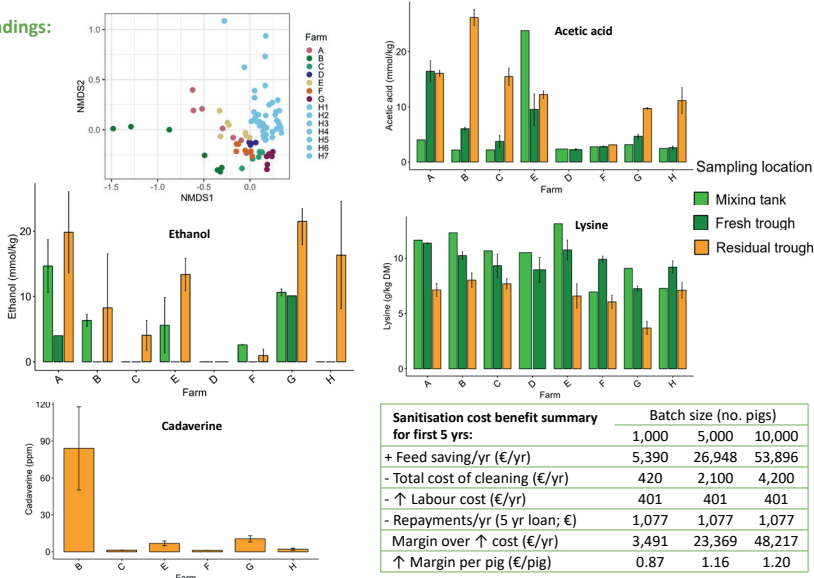
# Cost implications of liquid feed management



**Rationale:** Liquid feed microbiology important in determining nutritional quality of diets & FCE in pigs

**Methods:** Liquid feed collected from finisher section of 8 pig units (mixing tanks & troughs)

**Findings:**



Sanitisation cost benefit summary for first 5 yrs:	Batch size (no. pigs)		
	1,000	5,000	10,000
+ Feed saving/yr (€/yr)	5,390	26,948	53,896
- Total cost of cleaning (€/yr)	420	2,100	4,200
- ↑ Labour cost (€/yr)	401	401	401
- Repayments/yr (5 yr loan; €)	1,077	1,077	1,077
Margin over ↑ cost (€/yr)	3,491	23,369	48,217
↑ Margin per pig (€/pig)	0.87	1.16	1.20

**Conclusion:** Fermentation common in liquid feed after mixing → ↓ energy & amino acids from diet → poorer FCE. Implementing system sanitisation programme → ↓ feed cost

**Take-home message:** To improve liquid feed quality & FCE, fermentation should be minimised → improve system hygiene & acidify diet with organic acids



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## Teagasc Pig Development Department facilities update

### Teagasc Pig Research Facility



**Low Emissions Building:** Opened August 2023 & currently on its third intake of pigs. We have learned from each batch depending on variables like season & stocking rate & have made adjustments & refinements to the building along the way.



**MS Nitrogen box:** We acquired this euthanasia device to assess its ability to assist stock people in euthanising low viability stock or injured animals in a timely & user friendly manner. The device works by creating an anoxic environment due to the introduction of Nitrogen gas in a foam form.

**LeeO System:** Adopted this system in late 2023. It is a herd management system that uses electronic transponders or EIDs on each animal to track & record all lifetime events to that animal. Its useful for commercial purposes but has also enhanced ability to capture research based data.



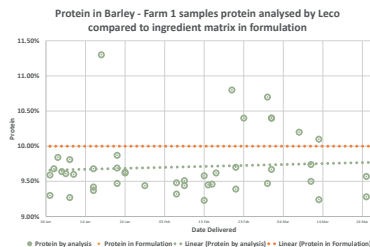
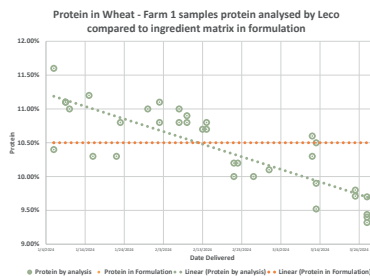
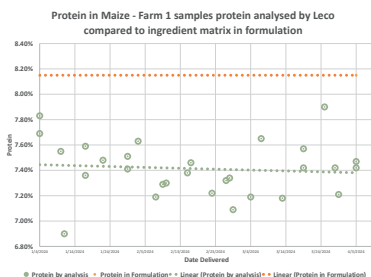
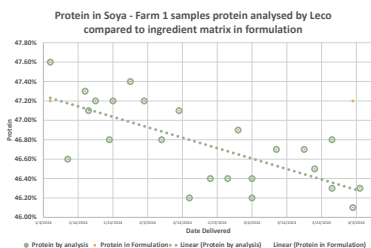
**Comingling Pilot:** Piloted the first group of pigs & sows comingling in lactation in March 2024. Six farrowing places were converted into a group house. Five sows & litters were introduced at day 12 of lactation from a conventional crated system. The sows are weaned at 29 days & the pigs then remain in situ until transfer to finishing accommodation 6 weeks later. This is the start of more work to follow next year as part of the new Fit to Farrow project.

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## Pig Nutrition Feed Lab



**Rationale:** Early results from wet chemistry analysis of feed ingredients from the Teagasc pig sector feedstuffs analysis programme



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## Funding & Collaborators



## Notes



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