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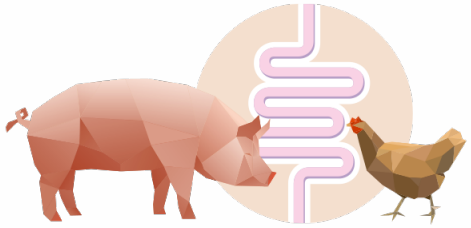

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Optimal gut function in monogastric livestock

#2214214 Feeding a gestation diet to sows in early lactation and liquid creep feeding of suckling pigs

Effect of sow transition feeding regime and feeding a liquid mixture of milk replacer and starter diet to suckling piglets on piglet growth

Shiv R. Vasa; Marion Girard; Gillian E. Gardiner; Keelin O'Driscoll; Giuseppe Bee; Peadar G. Lawlor

MonoGutHealth session/ 03-09-2024

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 955374.

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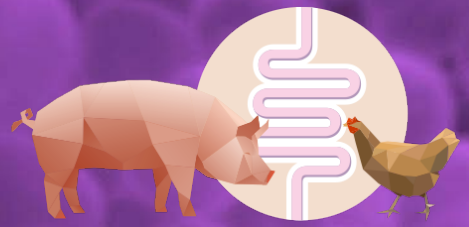

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01

Introduction

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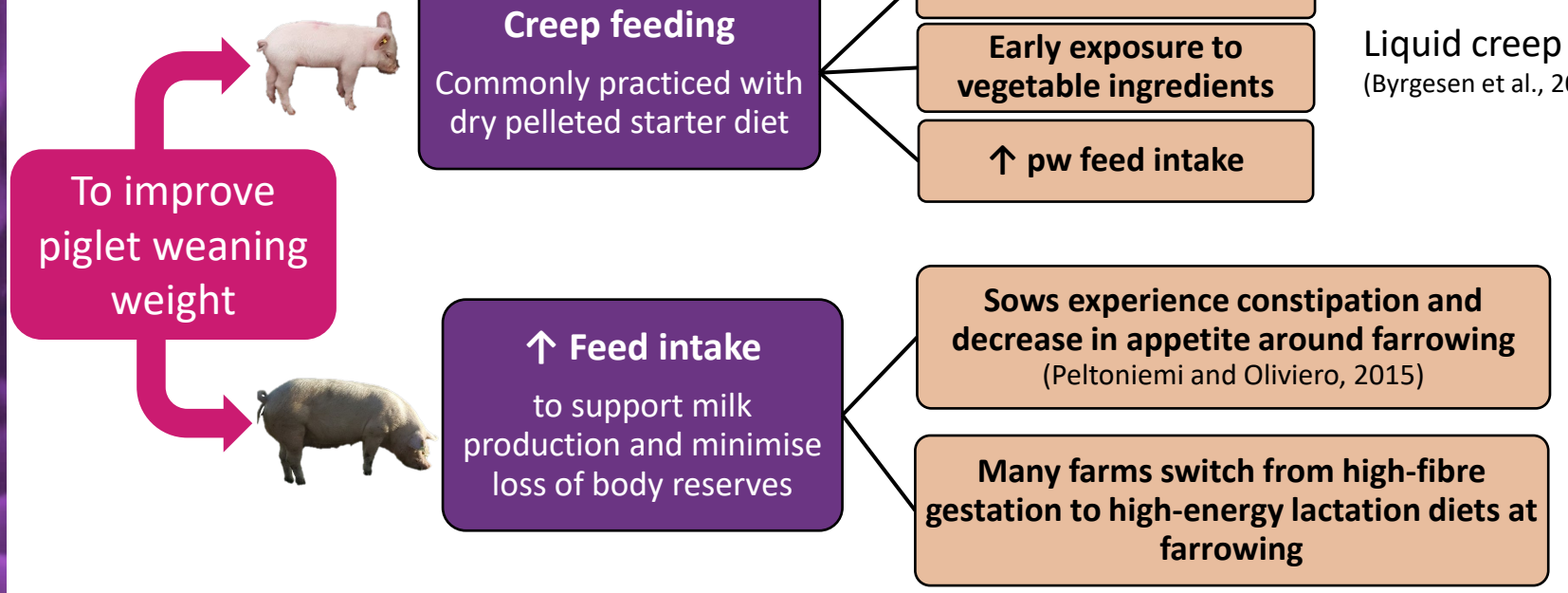
Introduction

Litter size ↑ but ↑ colostrum/milk → limiting growth & weaning weight of piglets



Liquid creep feeding can ↑ piglet feed intake
(Byrgesen et al., 2021; Lyderik et al., 2023)

Extending the distribution of the high-fibre gestation diet (bulky effect) to a few days after farrowing might acclimate sows to eat more

Hypothesis:

Feeding a transition diet to sows and providing a liquid mixture of milk replacer+starter diet to suckling piglets will increase sow lactation and piglet feed intake, respectively; increase piglet growth and minimise loss of body reserves in sows.

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02

Materials & Methods

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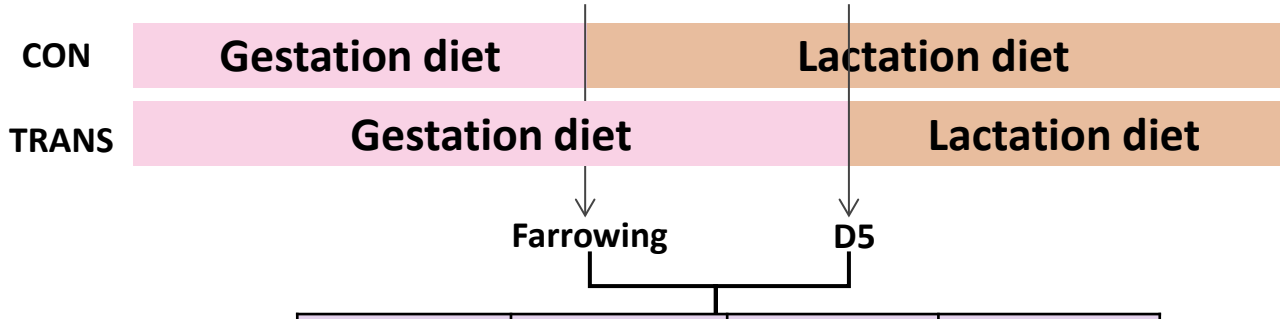
2.1 Material & Methods

- Experiment performed at Teagasc (IE) and Agroscope (CH)
- 50 sows blocked by parity, piglets weaned in previous farrowing and body weight at d110 of gestation
- Similar litter size within each block
- IE Piglets - (Large White x Landrace) x Duroc; CH piglets- Swiss Large White

Creep Feed / Sow feeding	Dry pelleted starter diet (DPS)	Liquid creep feeding (LMR+S)*
Transition (TRANS)	TRANS-DPS	TRANS-LMR+S
Control (CON)	CON-DPS	CON-LMR+S

*** Liquid mixture of milk (Swinco) and starter diet with 14 to 15% DM**



Day of lactation	DE sow (MJ/d)	CON (kg/d)	TRANS (kg/d)
0	58.1	3.87	4.40
1	58.1	3.87	4.40
2	67.7	4.52	5.13
3	75.5	5.03	5.72
4	82.3	5.48	6.23
5	89	5.94	6.74

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2.3 Materials & Methods

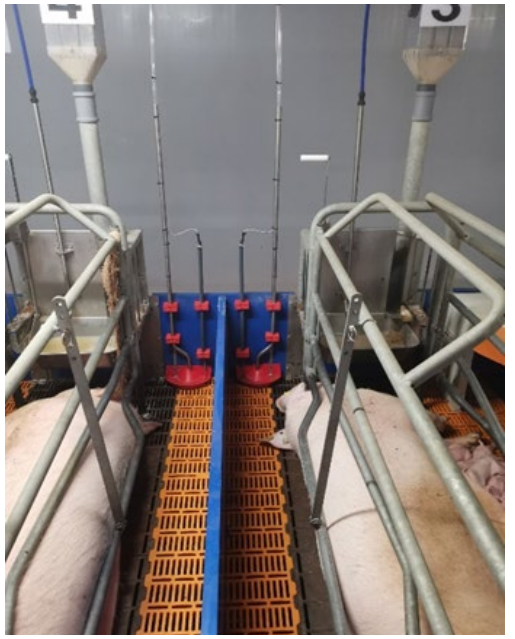
Nutrient and energy content of the gestation and lactation diets.

Calculated nutrient composition	Gestation	Lactation
DE sow (MJ/kg)	13.2	15.0
Crude fat (g/kg)	27.4	63.5
Crude fibre (g/kg)	85.0	29.9
Crude protein (g/kg)	130	170
Lysine (g/kg)	7.8	11.5

Nutrient and energy content of the milk powder and starter diet.

Calculated nutrient composition	Milk powder	Dry starter diet
Net energy (MJ/kg)	11.9	12.1
Crude fat (g/kg)	90	122
Crude protein (g/kg)	215	200
Lysine (g/kg)	18	16.2

- **Trough feeder**
- **Feeding for ~18 hours/day**
- **Sensor check every ~25 mins.**
- **Versatile feeding programs**



Automatic delivery system Babyfeed from Schauer

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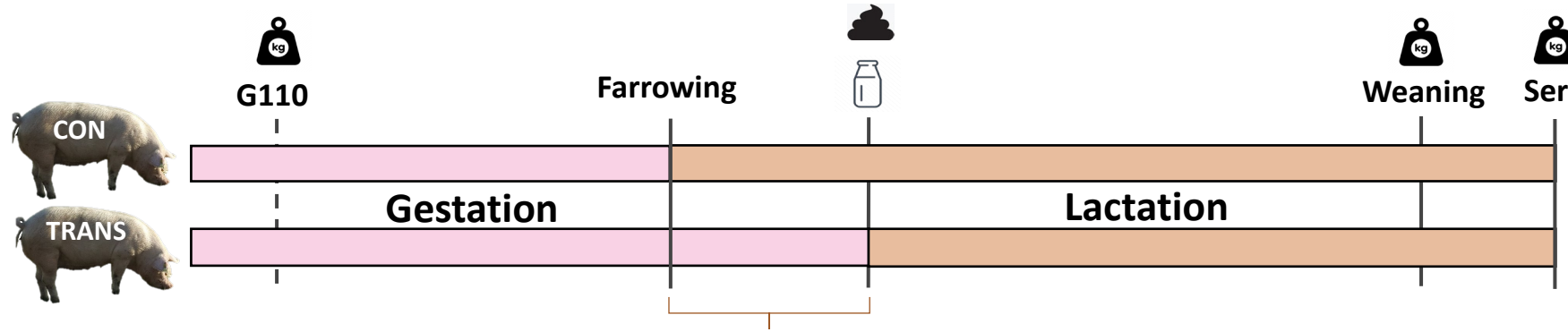
2.4 Materials & Methods

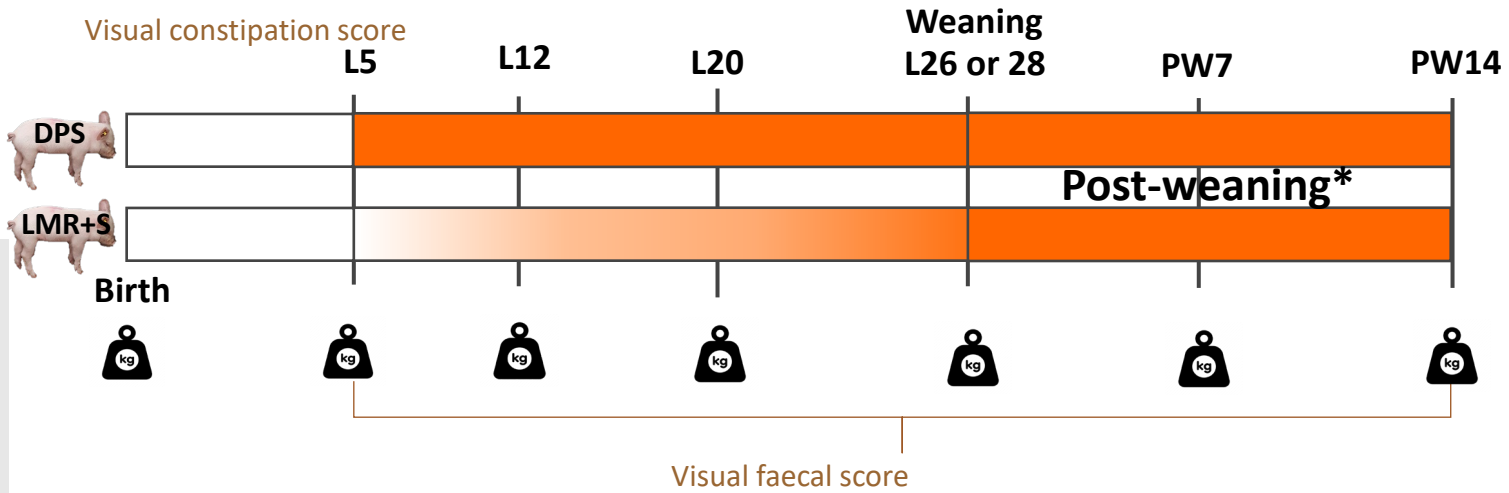


Periods

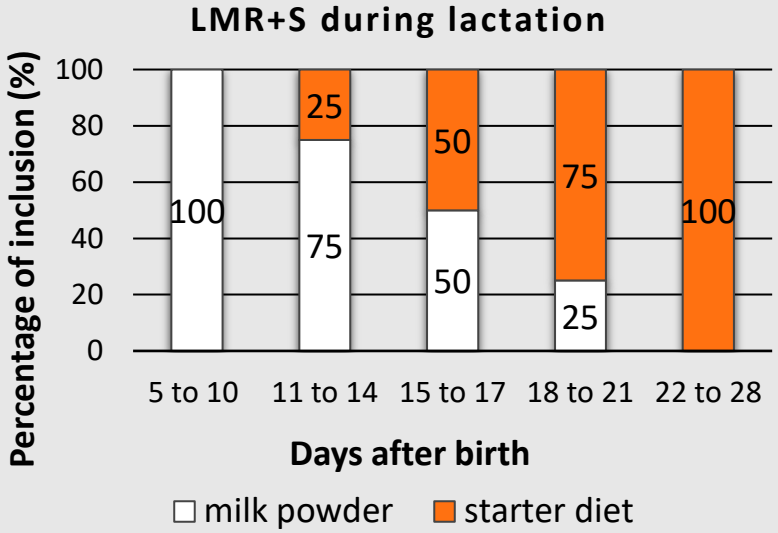
G: Gestation
L: Lactation
PW: post-weaning

Diets

Gestation diet
Lactation diet
DPS
LMR+S



***IE pigs followed until day 43 PW**



Measurements and samplings

Milk
Weight + backfat
faeces collection

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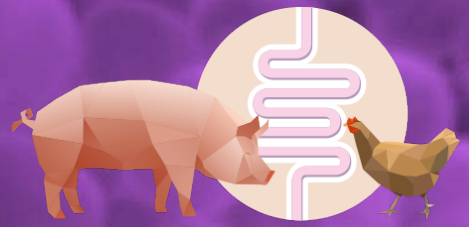

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03

Results

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Results – 3.1

Effect of transition feeding on sow feed intake during lactation at both farms

Day of lactation / Average daily intake	0-5 (IE/CH)	6-14	15-weaning
Fresh feed (kg/d)	*(+0.7/0.8)	NS	NS
DE sow (MJ/d)	NS	NS	NS
Crude fat (kg/d)	*(-0.16/0.12)	NS	NS
Crude fibre (kg/d)	*(+0.35/0.26)	NS	NS
Crude protein (kg/d)	*(-0.1/0.05)	NS	NS
Lysine (g/d)	*(-13/6)	NS	NS

No effect of transition feeding on sow faecal DM and bodyweight or backfat changes (P>0.05)

*** - TRANS significantly increased or decreased compared to CON (P<0.05)**

NS - No difference between TRANS and CON (P>0.05)

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Results – 3.2

Effect of transition feeding on sow milk composition on day 5 of lactation

Milk composition (%)	TRANS feeding	
	IE	CH
Solids	NS	* (-1.6)
Lactose	NS	NS
Fat	NS	* (-1.2)
Protein	NS	T (-0.4)

* - TRANS significantly increased or decreased compared to CON (P<0.05)

T- TRANS tended to increase or decrease compared to CON (0.05 < P ≤ 0.1)

NS - No difference between TRANS and CON (P>0.05)

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Results – 3.3

Effect of transition feeding on sow faecal short-chain fatty acids on day 5 of lactation in CH

SCFAs	TRANS feeding	
	Concentration (µmol/g)	Proportion (%)
Total SCFAs	* (+50.4)	100%
Acetate	* (+25.0)	NS
Propionate	T (+16.4)	NS
Butyrate	* (+15.5)	* (+7.2)
Isobutyrate	NS	* (-0.9)
Valerate	T (+1.4)	NS
Isovalerate	* (-0.7)	* (-1.6)

* - TRANS significantly increased or decreased compared to CON (P<0.05)

T- TRANS tended to increase or decrease compared to CON (0.05 < P ≤ 0.1)

NS - No difference between TRANS and CON (P>0.05)

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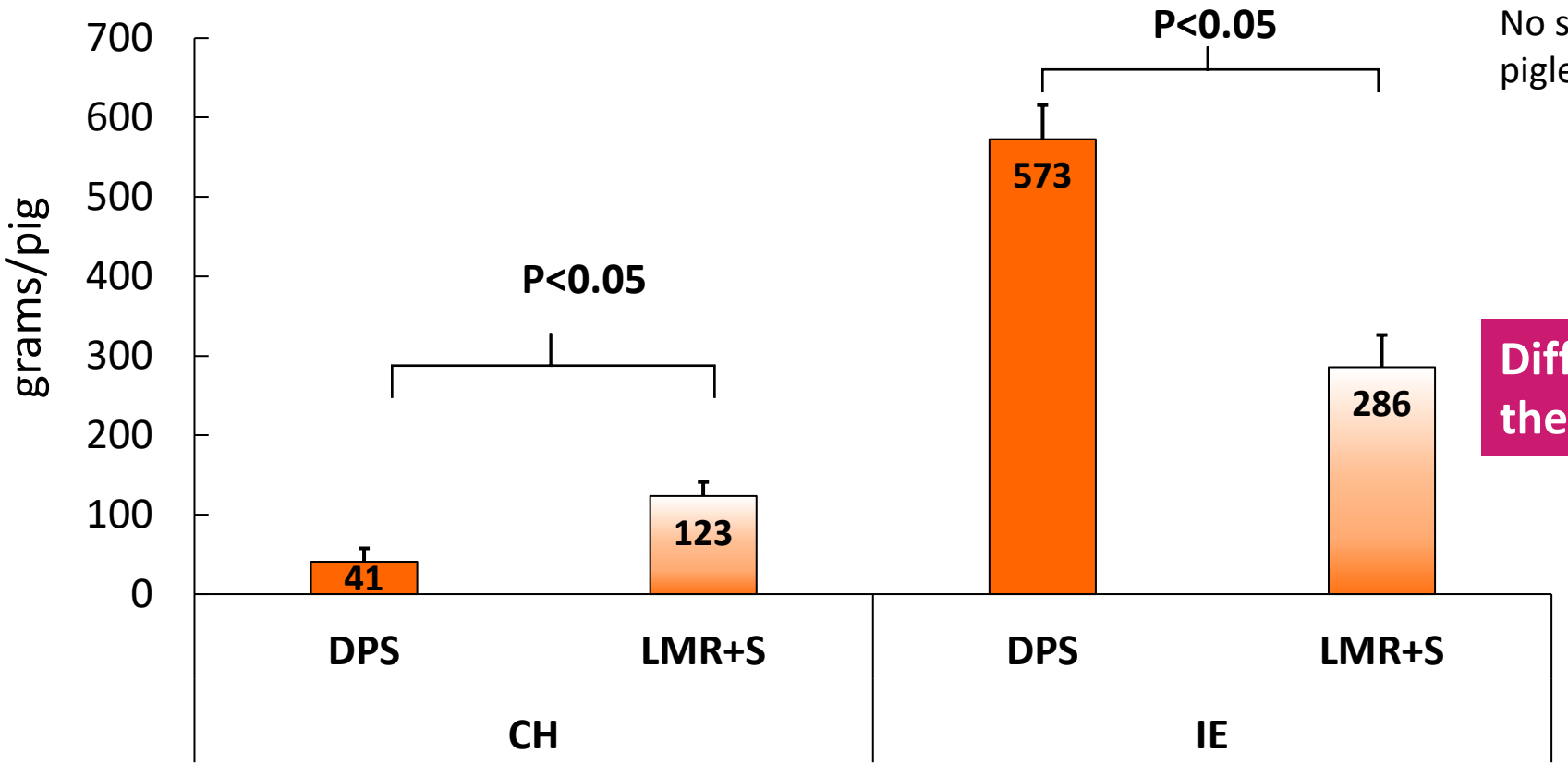
Results – 3.4

Total dry matter creep disappearance during entire lactation

No sow*piglet treatment interaction

No sow treatment effect but significant piglet treatment effect at both farms



Different effect according to the farm

DPS: Dry pelleted starter diet

LMR+S: Liquid creep feeding

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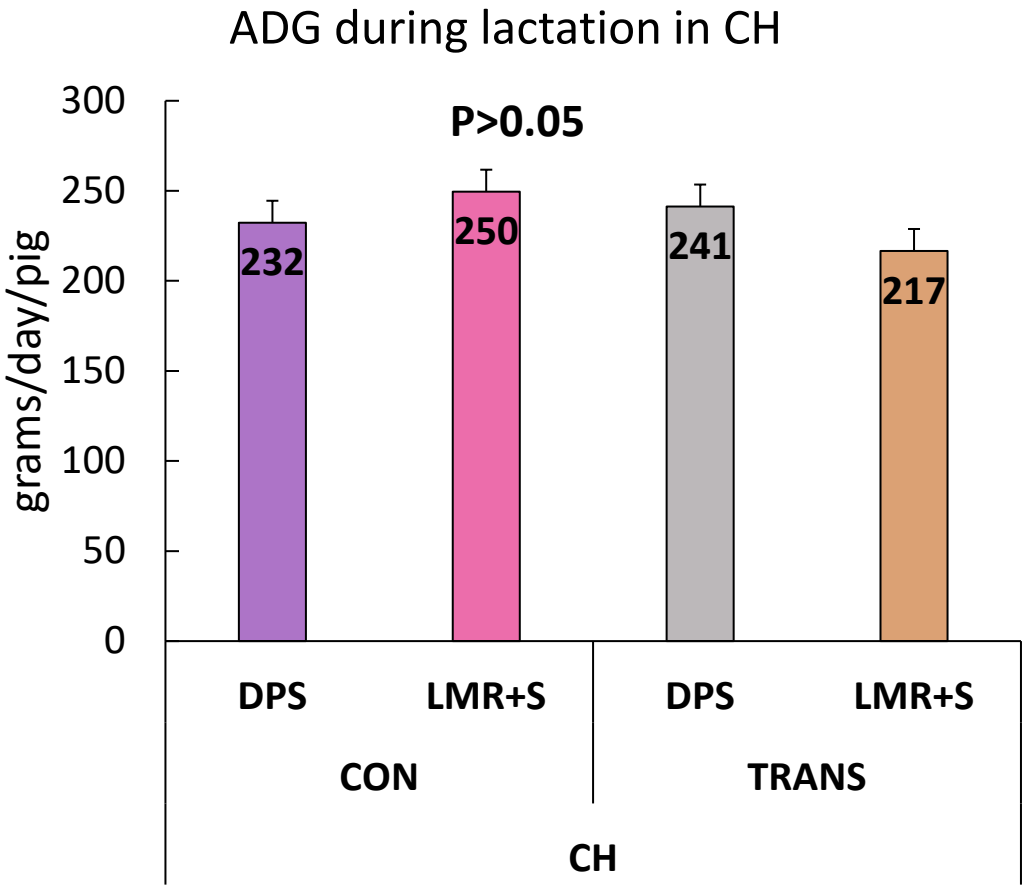
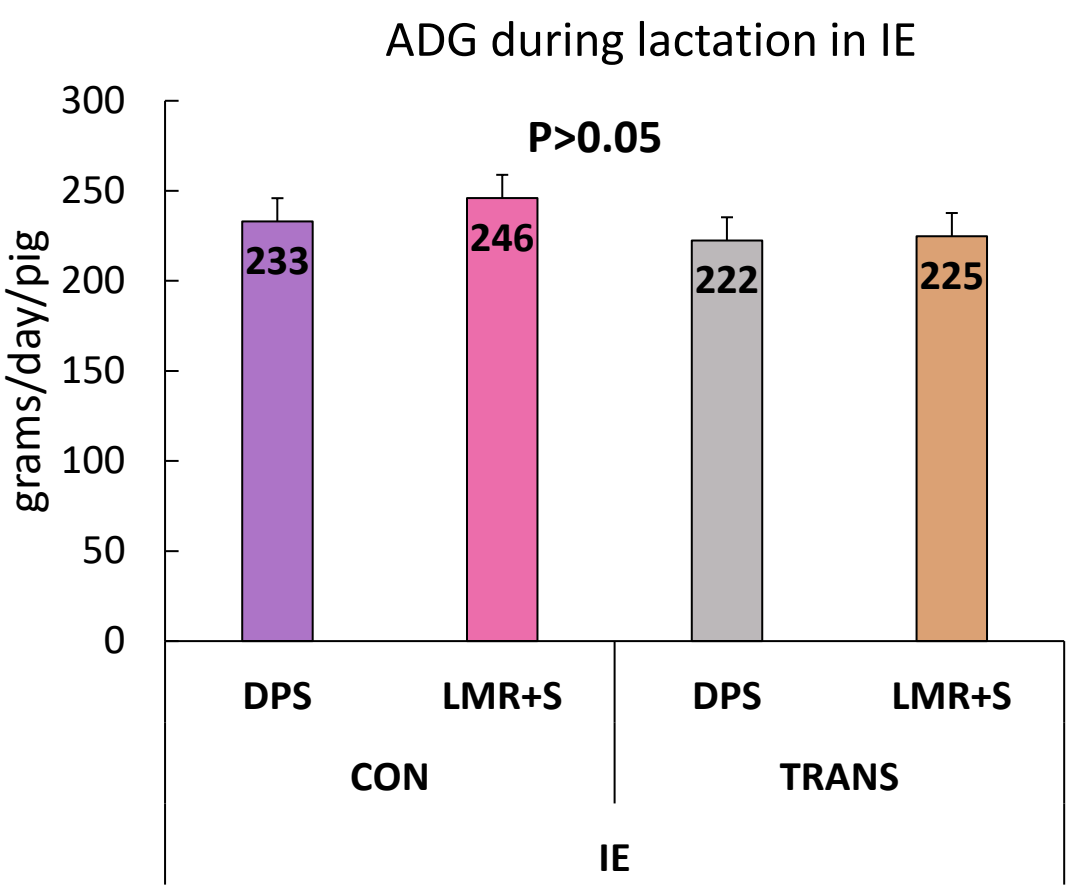
Results – 3.5

Pre-weaning growth performance





No effect on mortality, medication usage and prevalence of diarrhoea during lactation on both farms (P>0.05)

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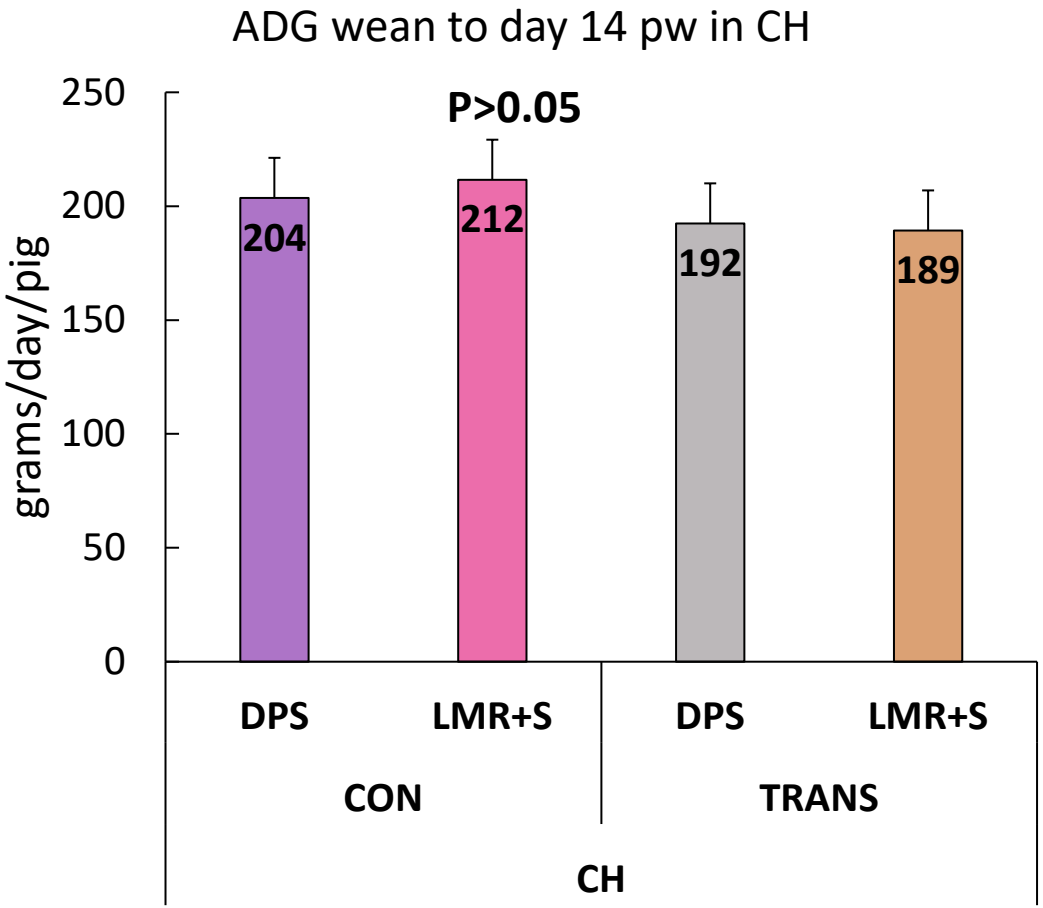
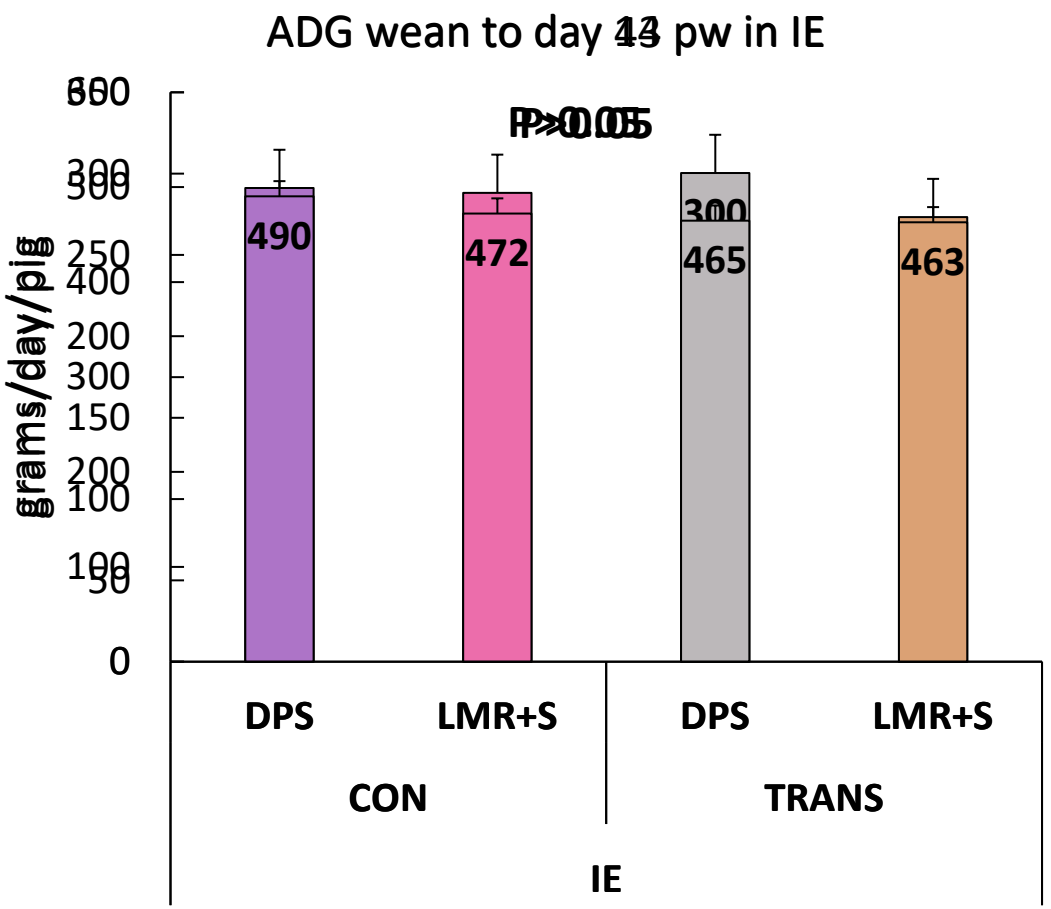
Results – 3.6

Post-weaning growth performance





No differences in post-weaning feed intake, feed efficency and prevalance of diarrhoea on both farms (P>0.05)

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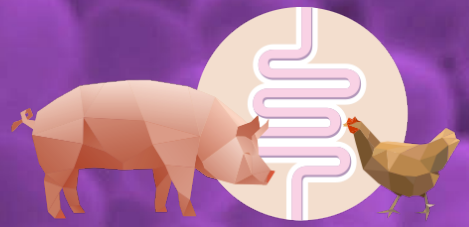

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04

Discussion

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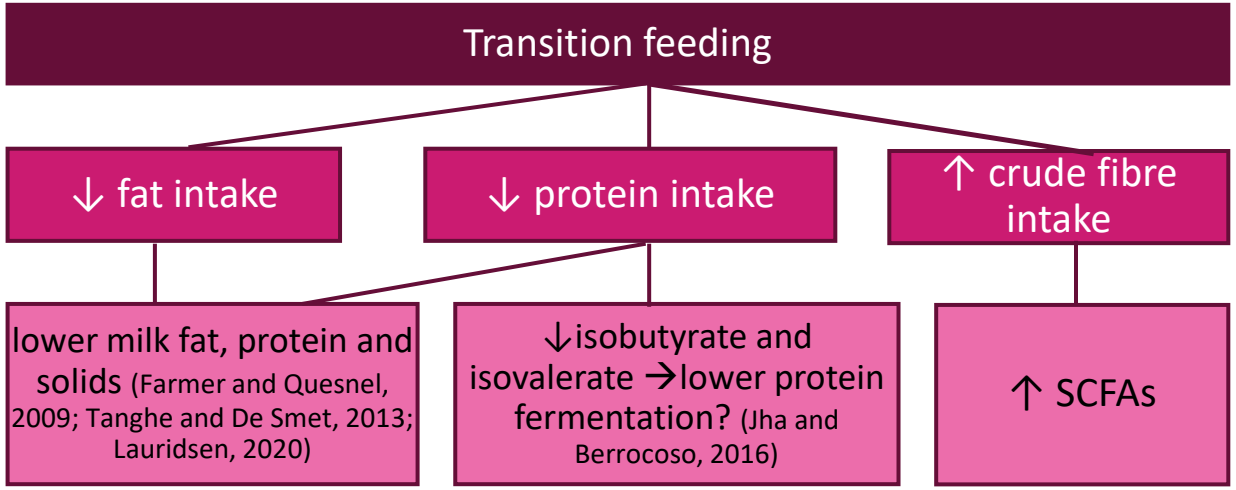
Discussion

Transition feeding did not benefit sows:

- Overall lactation feed intake, loss of body reserves and constipation unchanged



- Lactation feed intake to day 5 was increased by feeding a gestation diet to achieve comparable energy intakes (+0.5 to 0.8 kg)→ future feed curves?
- Even though feed intake was higher, more economical to provide the gestation diet until day 5.

Varied effect of liquid creep feeding between the two farms but no growth benefit:

- Feed disappearance of dry starter ↑ in IE farm possibly due to wastage - slatted floor (Arnaud et al., 2024)
- LMR+S more economical in this case (feed cost/kg gain- DPS € 0.12/pig and LMR+S € 0.07/pig)

- Feed disappearance of dry starter ↓ in CH farm, realistic - solid floor.
- Very low creep feed intake- lower weaning age and better sow rearing ability (Tokach et al., 2020, Weber et al., 2020)

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THANK YOU

Do you have any questions?

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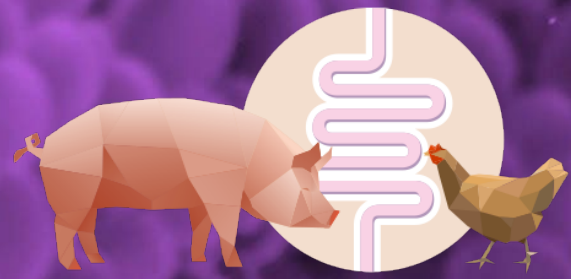

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