



Impact of precision feeding during gestation on the productive career of sows monitored over three reproductive cycles

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Conventional VS Precision Feeding

Conventional

Only one feed supply

- Constant SID Lys concentration

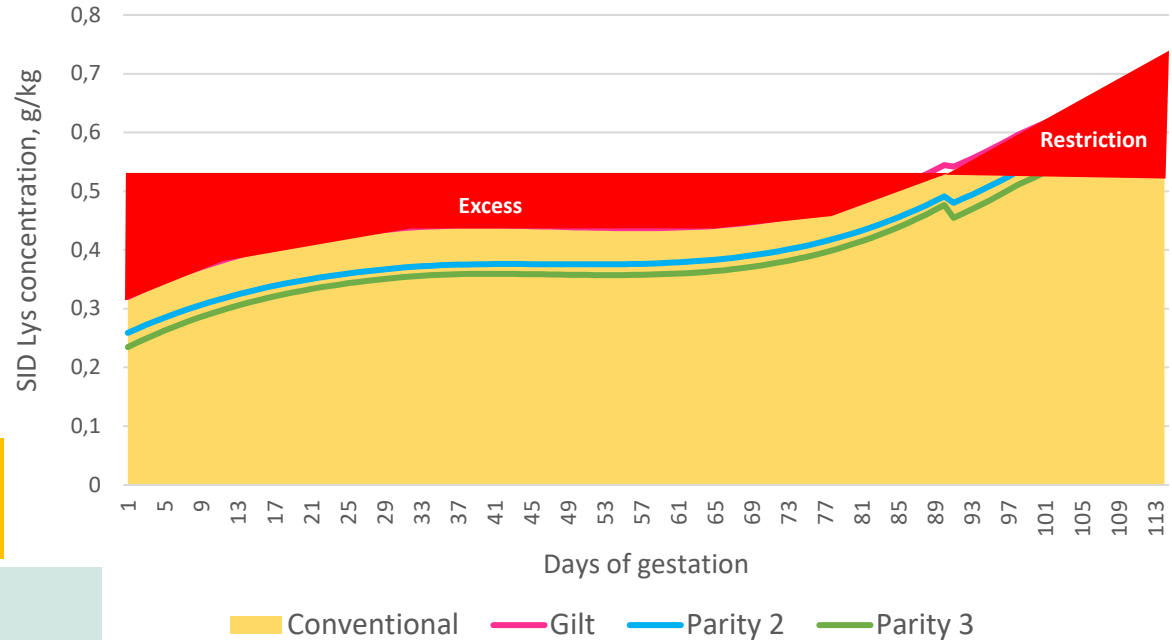
Precision feeding

Mixing two feed

- Variable SID Lys concentration

↳ **Nutrient excess** = \$ 

↳ **Better meets the needs of sows**
= effect on performances ?



New Construction= Project Opportunities

CDPQ Research farrowing barn of 675 sows, 4 weeks batches

Monitoring of 4 groups of gilts (settlement)



3 cycles: gestation + lactation

Objective : To validate the impact of precision feeding during gestation



Results after 2 Cycles



First results previously presented

For gilts:

- Significant increase of the number of piglets weaned (+ 0.6 piglet)
 - ✓ Reduced piglet mortality under the sow

For second parity sows:

- No impact on lactation performance

Objective

To determine the impact of precision feeding on gestating sows over the course of three reproductive cycles on their career performances and longevity.

Optimal Strategy

- Nutrient Requirement
- Performances
- Longevity

Material and Method - Animals

4



*Batches of gilts followed over
3 cycles of gestation and
lactation*

393 gilts

Batches

+ 1 000 litters

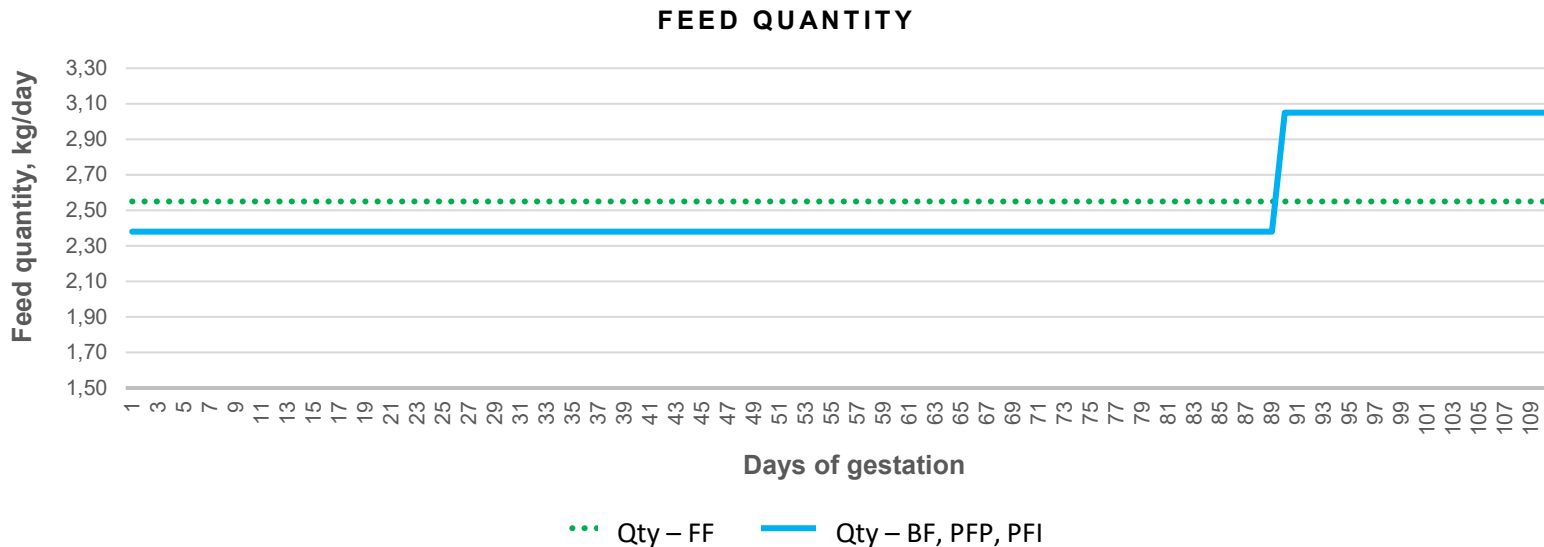
Feed and Feeding Strategies

2 different feed used:

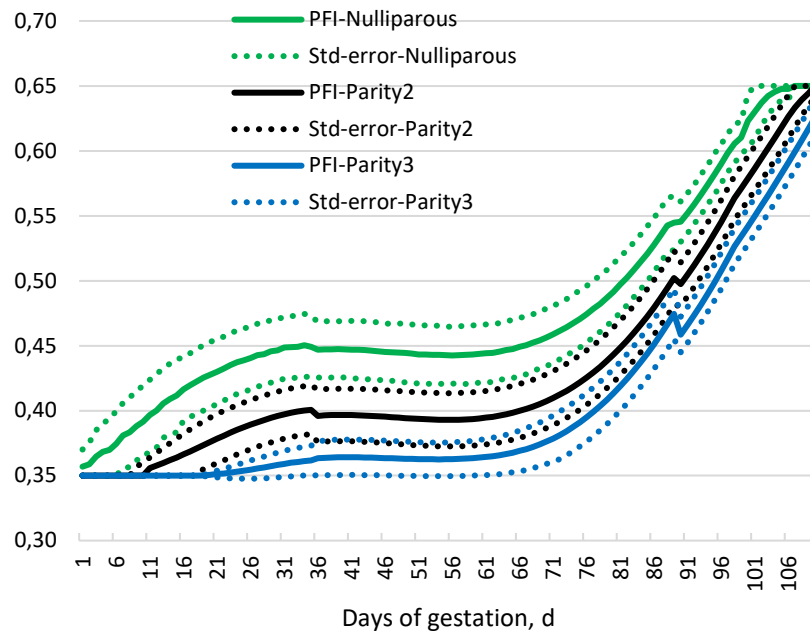
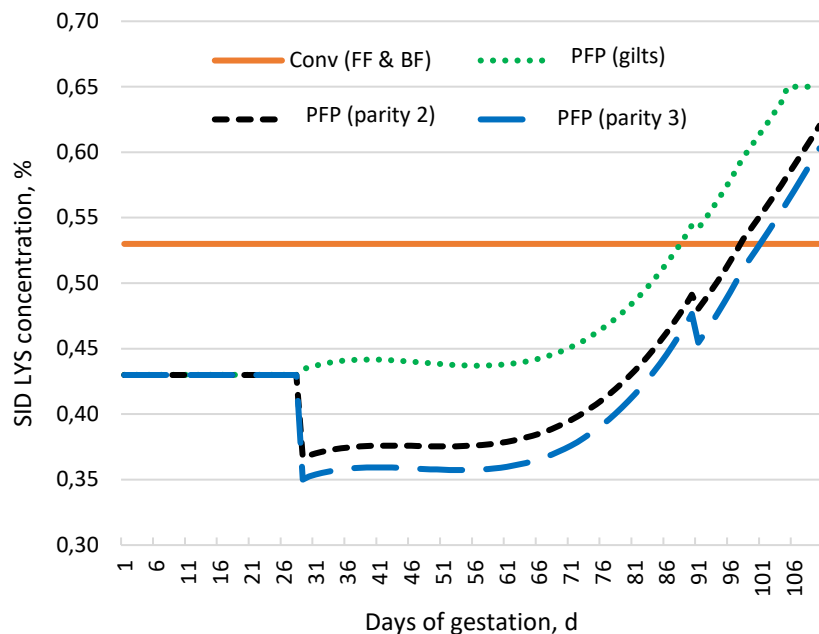
- A : 0.35 % SID Lys/ 0.20 % dig P.
- B : 0.65 % SID Lys / 0.40 % dig P.



Comparison of 4 isoenergetic treatments



Feeding Strategies



Data Collection

Sows

- Weight
- Backfat thickness

Breeding

30 d

90 d

Farrowing

- Nb of total born, stillborn, born alive, mummified and weaned
- Weight (birth, weaning, death)
- Weight gain in lactation

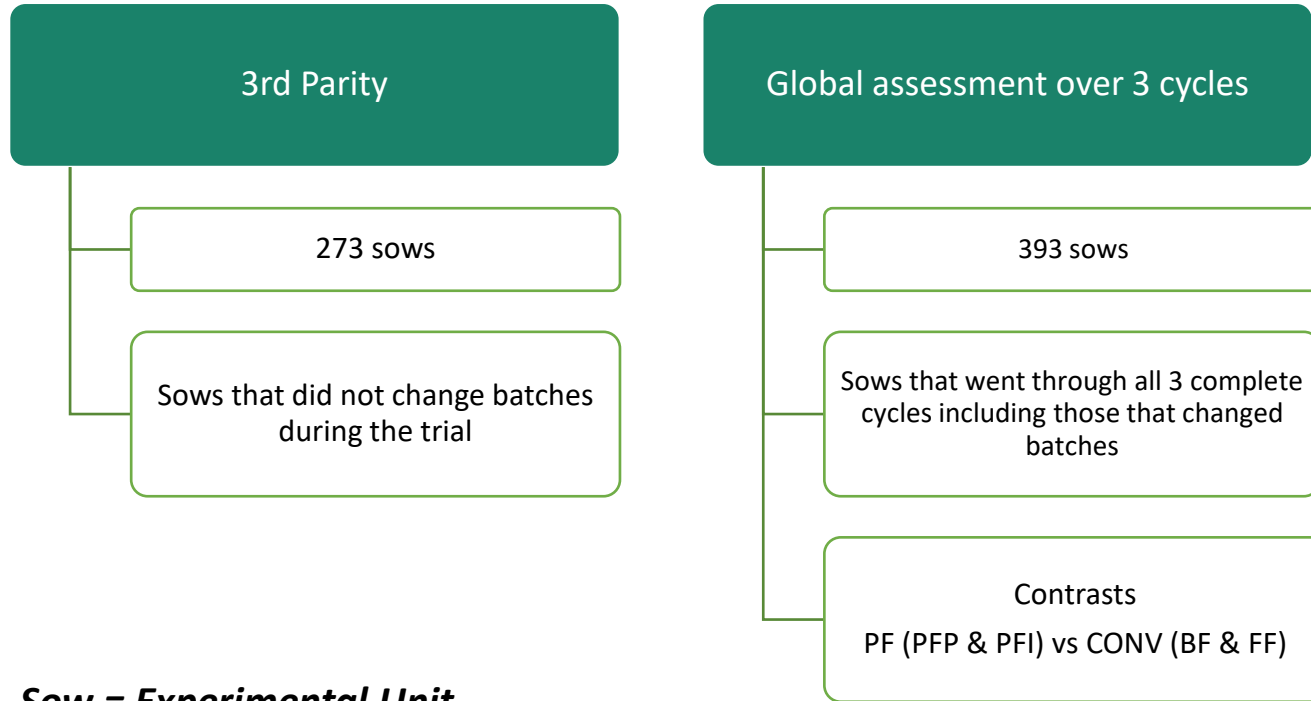
Piglets



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Data



Sow = Experimental Unit

Results

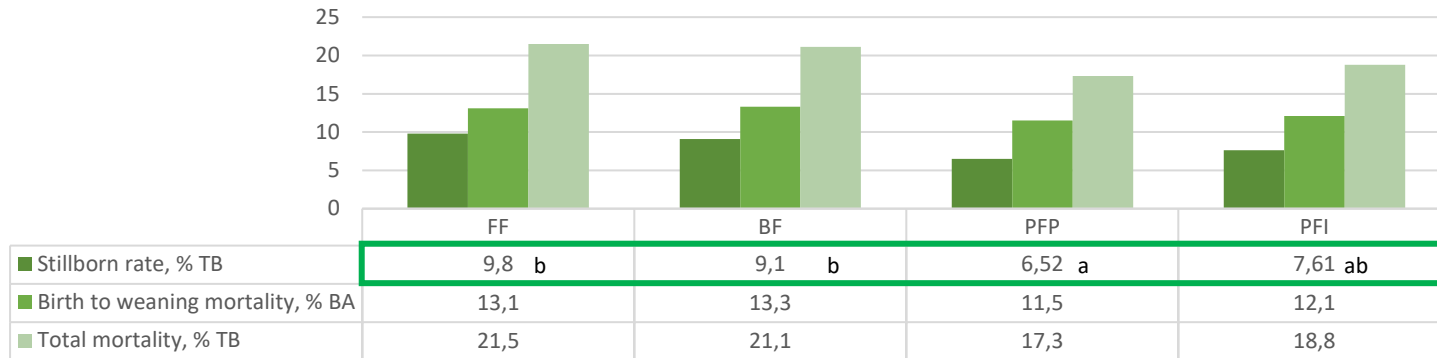
Sows – Parity 3

Results – Body Composition

Variables, Units	FF		BF		PFP		PFI		P value	SEM
	N	Mean	N	Mean	N	Mean	N	Mean		
Initial weight in gestation, kg	73	224.8^a	72	221.1^{ab}	60	219.6^b	68	217.1^b	<0.01	1.7
Weight at farrowing, kg	73	259	72	259.9	60	259.9	68	258.9	0.942	1.7
Weight at weaning, kg	73	235.5	72	234.6	60	233.3	67	232.3	0.665	2.3
Weight gain in gestation, kg	73	34.0^a	72	39.4^b	60	40.3^b	68	41.9^b	<0.001	1.3
Weight gain in lactation, kg	73	-23.5	72	-25.7	60	-26.5	67	-27.1	0.219	2.3
Total weight gain, kg	73	10.7	72	13.5	60	13.7	67	15.1	0.110	1.7
Initial backfat thickness in gestation, mm	73	13.1	72	12.6	60	12.8	68	12.9	0.651	1.2
Backfat thickness at farrowing, mm	73	14.2	72	13.9	60	14.3	68	14.4	0.815	2.6
Backfat thickness at breeding, mm	73	12.5	72	12.4	60	12.2	67	12.2	0.837	2.9
Fat deposition in gestation, mm	73	1.02	72	1.33	60	1.48	68	1.49	0.417	2.6
Fat deposition in lactation, mm	73	-1.62^{ab}	72	-1.45^a	60	-2.11^b	67	-2.24^b	0.048	0.08
Total fat deposition, mm	73	-0.59	72	-0.12	60	-0.62	67	-0.71	0.196	0.3
ADFI in lactation, kg/d	72	7.31	71	7.48	60	7.2	66	7.31	0.355	0.18
Total feed intake in gestation, kg	73	308.6	72	311.3	60	312.5	68	311.5	0.481	3.1

Results – Performances in Lactation

Mortality Rate of Piglets



$P = 0.037$

$P = 0.604$

$P = 0.062$

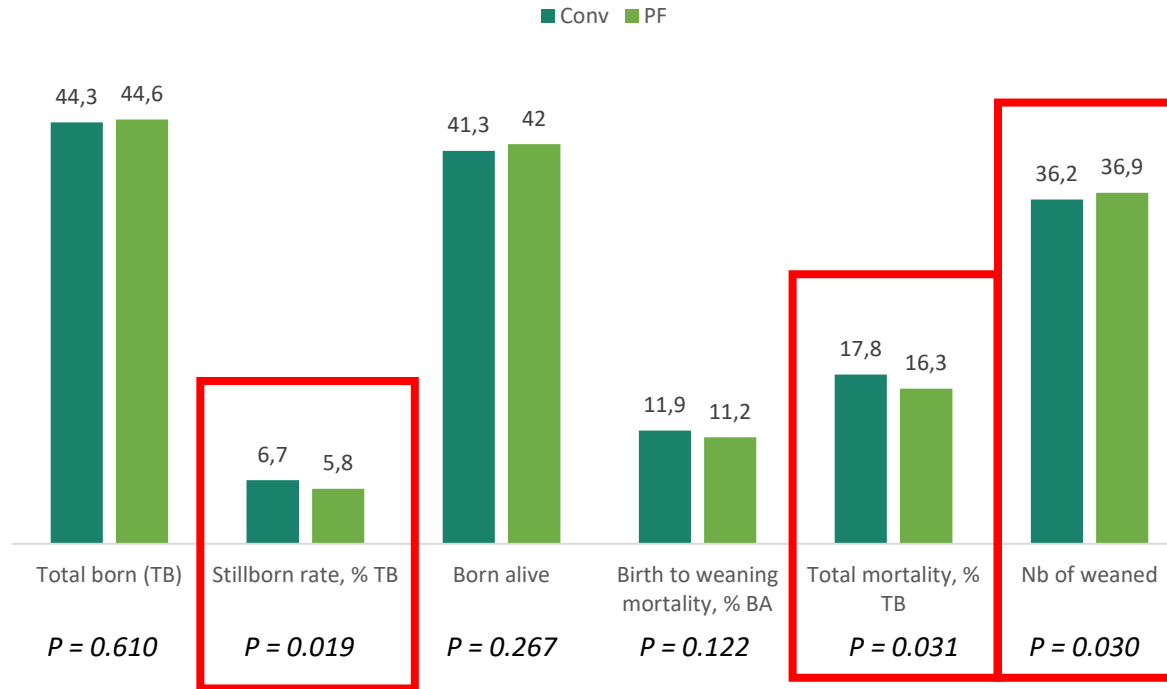
No other impacts on performances in lactation...

Similar to results previously observed, where the percentage of stillborns tended to be lower with precision feeding by parity for all sows (Cloutier et al., 2019)

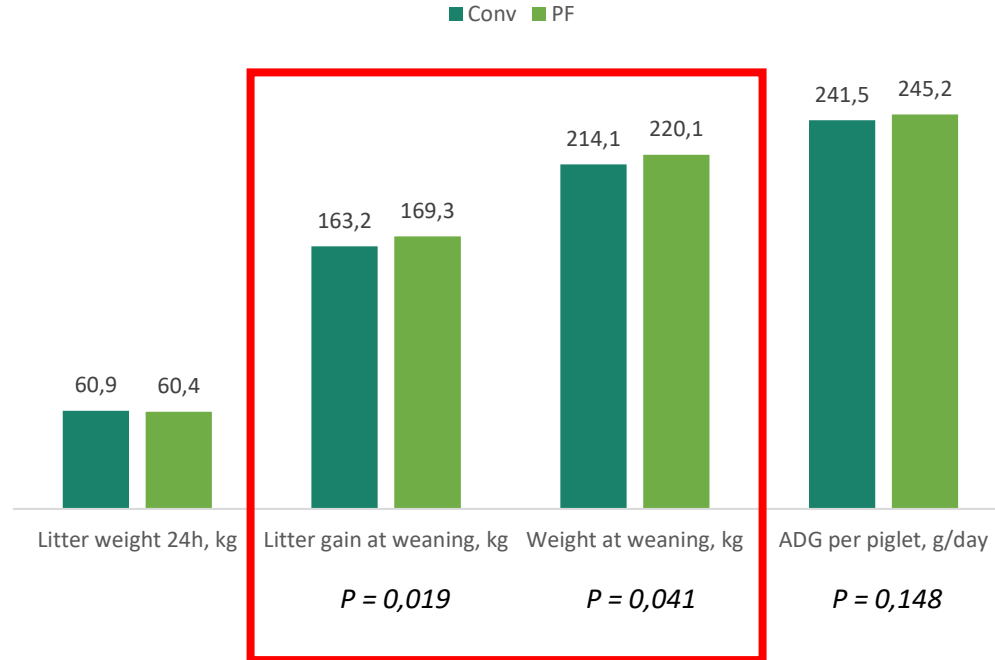
Overall Performance after 3 Cycles

Precision Feeding (PF) vs Conventiønnal (Conv)

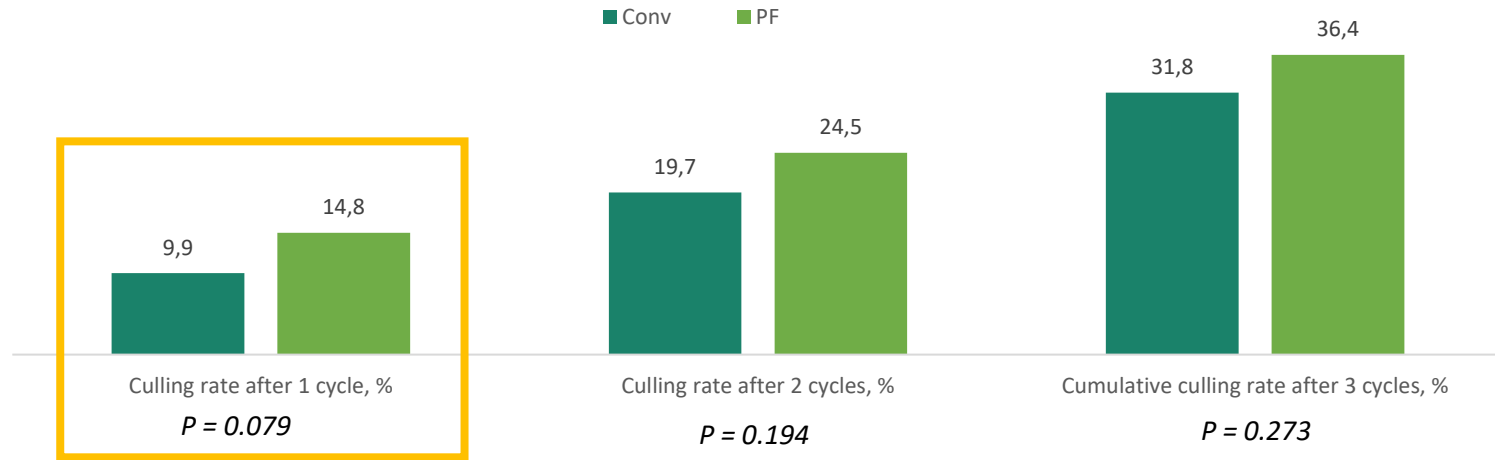
Overall Performance after 3 Cycles - Performances in Lactation



Overall Performance after 3 Cycles - Performances in Lactation



Overall Career over 3 Cycles – Culling Rate



+ 0.17 skipping batches with PF vs Conv = equivalent to 4.79 days ($P = 0.015$)

Weaned sows that are not bred in the following batch after weaning, hence skipping a batch (four weeks) = unproductive days

Conclusion

Conclusion

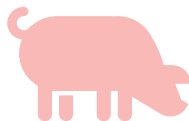
At the end of 3 cycles, compared to conventional feeding strategies, precision feeding has allowed :



↓ Intake : of SID Lys by 15 %, of crude protein by 11 % and of dig P by 17 %



↓ of total piglet mortality by 1.5 %
(+ 0.7 weaned piglet)



↑ Unproductive days (skipping batch) +
tendency for a higher culling rate after the
first cycle

Therefore, precision feeding during gestation would have the potential to improve performance beyond the economic and environmental gains associated with feed.

... however, additional studies are needed to refine the method in order to reduce potential negative impacts on the longevity of gilts.

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