



75th EAAP Annual Meeting

NURTURING PROGENY: PROBIOTICS' INFLUENCE ON SOW GESTATION PERFORMANCE AND PIGLET WEANING WEIGHT

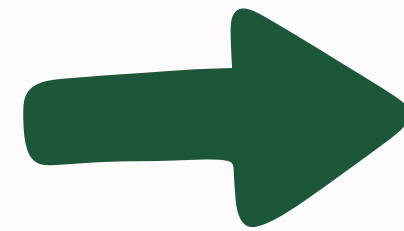
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Program in Animal Science

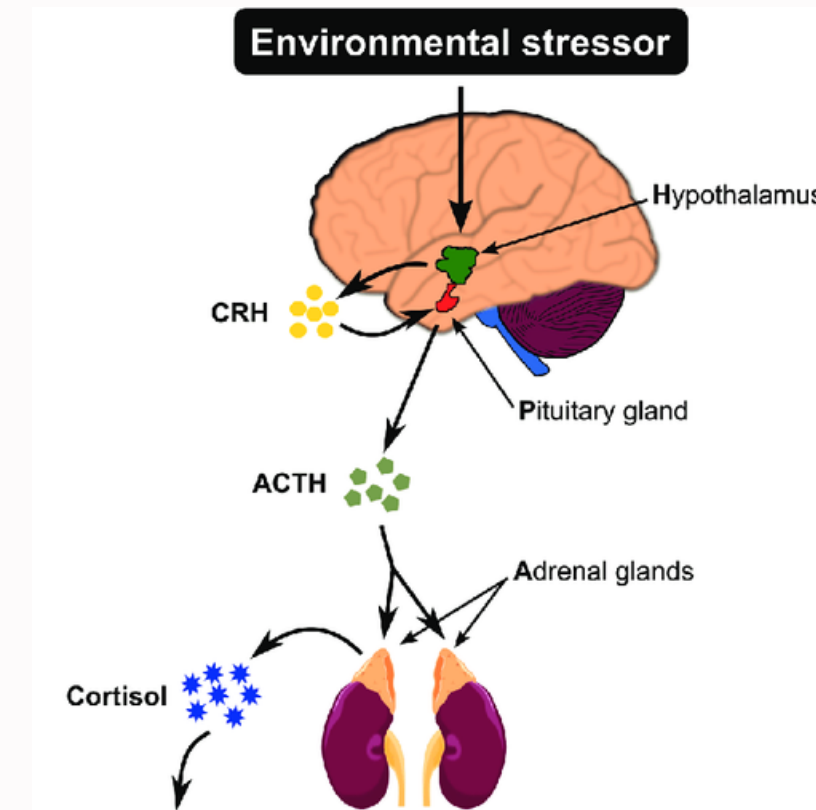
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INTRODUCTION

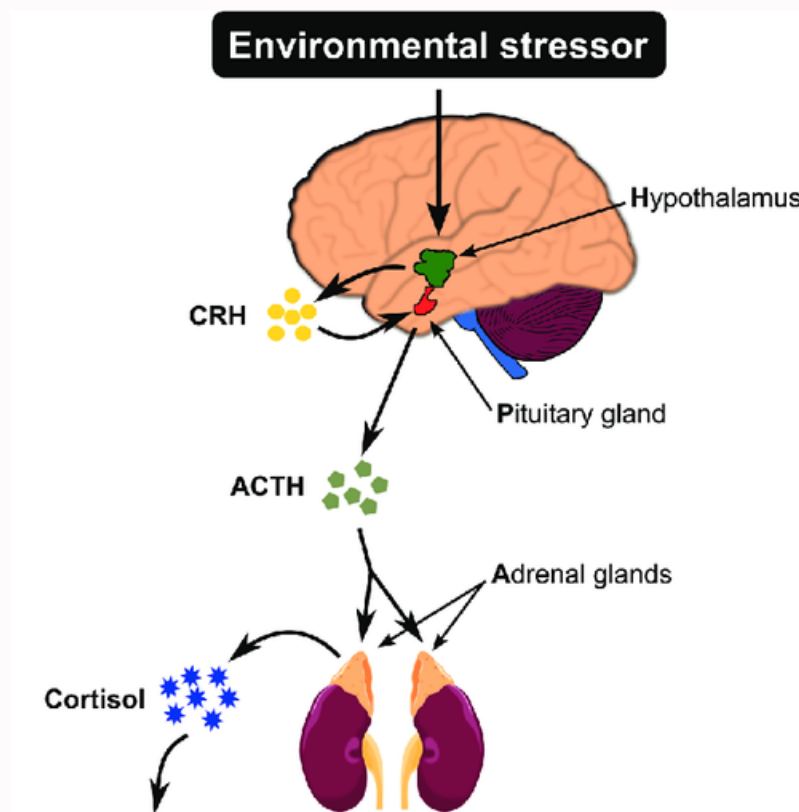


Stressful
situations



Reduced embryo development
Short lactation
Poor farrowing and weak piglets

INTRODUCTION



Excessive exposure to glucocorticoids can *alter organ development* during the foetal period

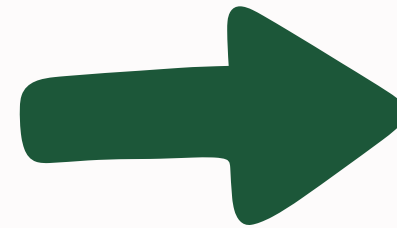
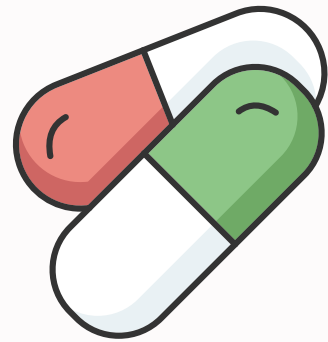
Piglets can present *lower weight, worse gut health and reduced muscle glycogen content*

Problem solver?

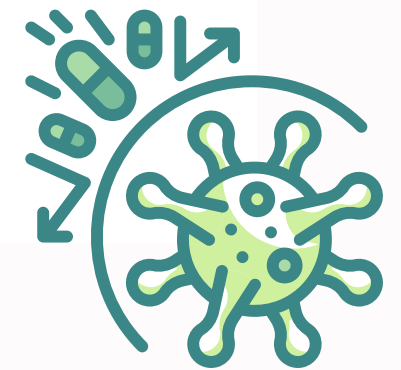


INTRODUCTION

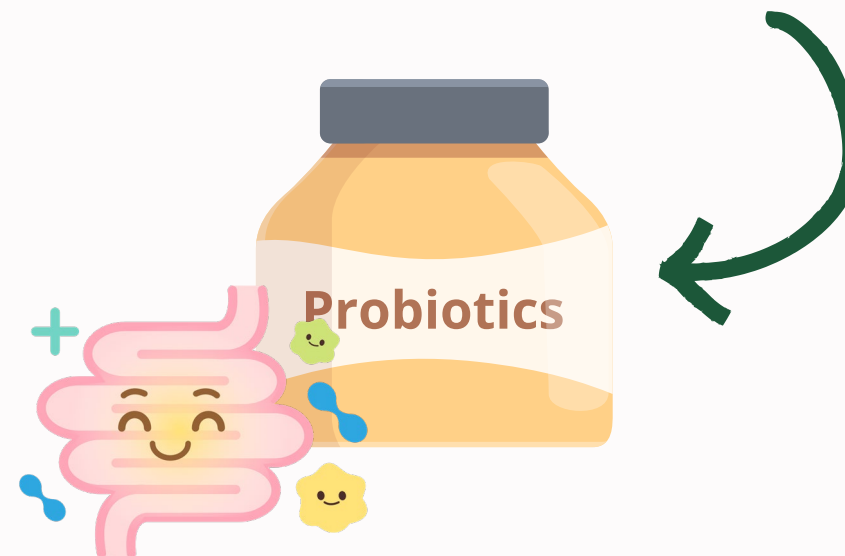
Problem solver?



Think of the future!

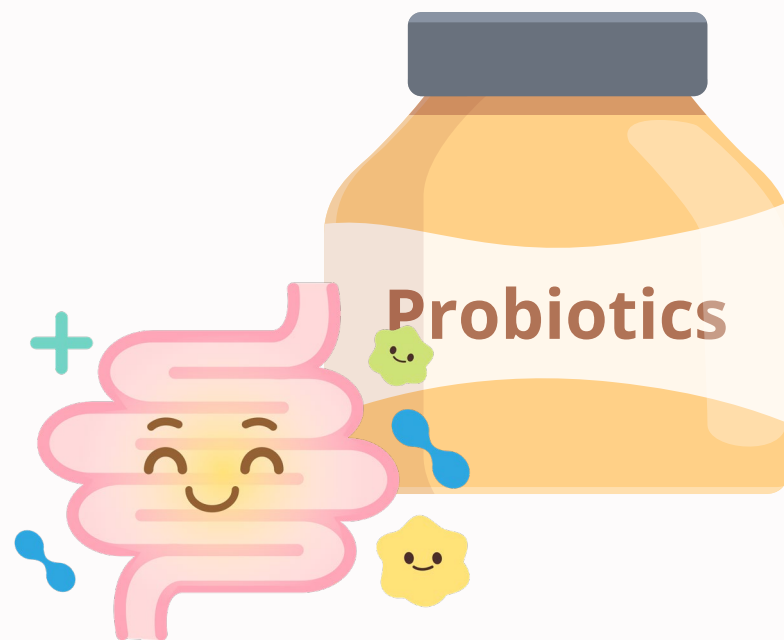


Companies started to seek *solutions* and *alternatives*

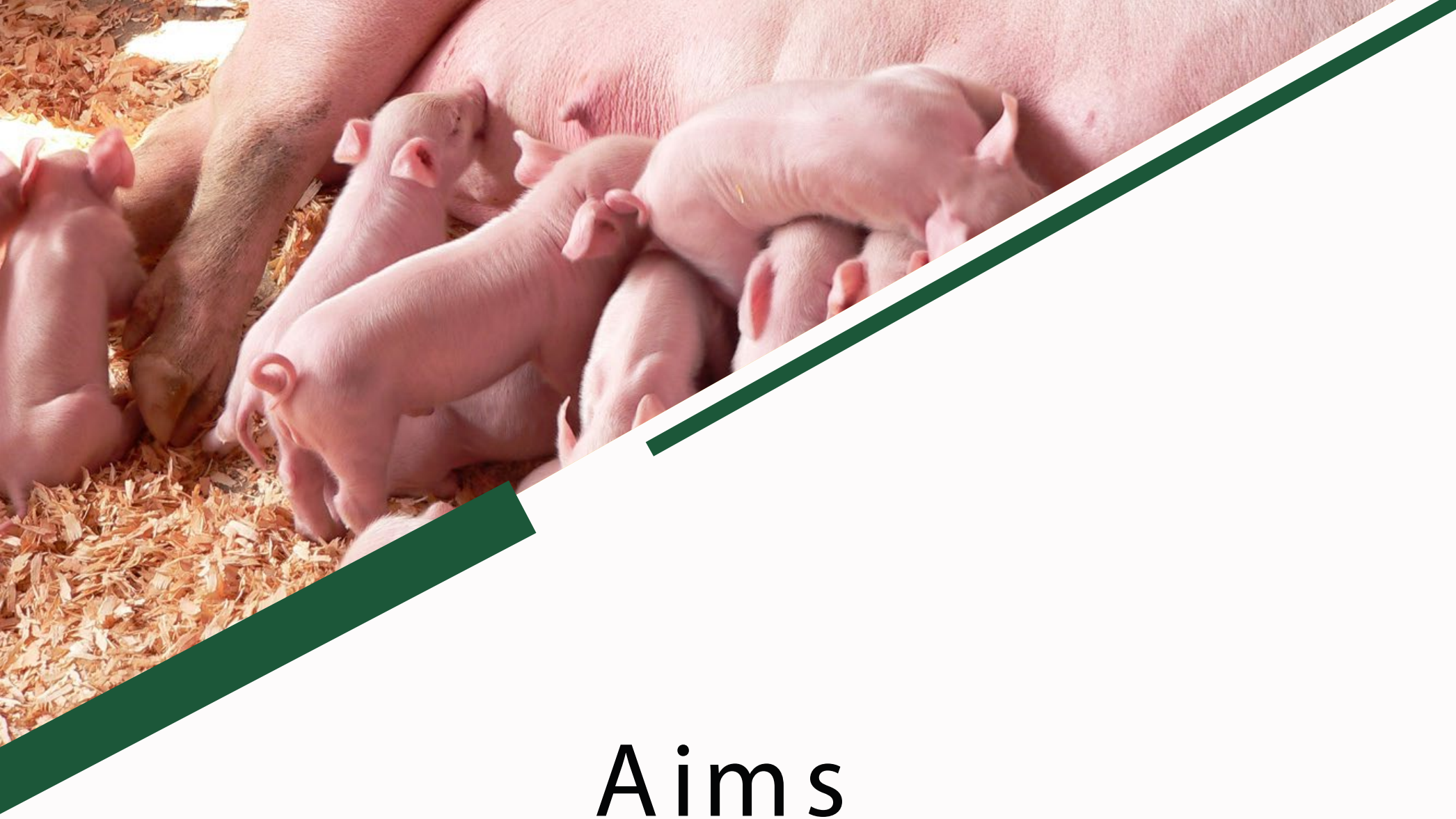


INTRODUCTION

Why probiotics?

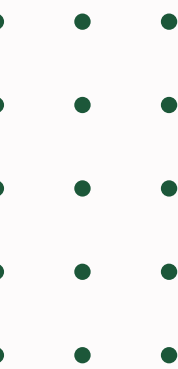


- Improves colostrum
- Milk quality
- Feed intake during lactation
- Influences performance
- Reduces mortality rate
- Healthy and heavier piglets
- Enhanced animal welfare

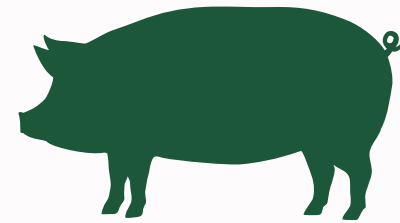


Aims

Evaluate the effects of probiotic on sows' gestation performance and piglet's weaning weight



METHODS



47 sows

1-6 farrowings

7-12 farrowings



Gestation, farrowing,
post-partum and lactation



*Enterococcus faecium, Lactobacillus
acidophilus, Lactobacillus plantarum*

Administered daily

Gestation - 1g/sow/day

Post -partum and lactation - 6g/sow/day

Treatments

T1

CONTROL GROUP

Basal diet without probiotics
(11 sows)

Addition of probiotics from
the *1st day* of gestation and
lactational period

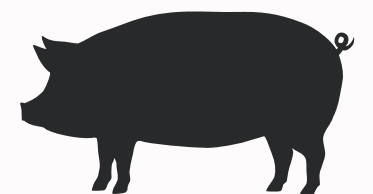
T2

T3
Addition of probiotics from
the *38th day* of gestation
and lactational period

Addition of probiotics from
the *76th day* of gestation
and lactational period

T4

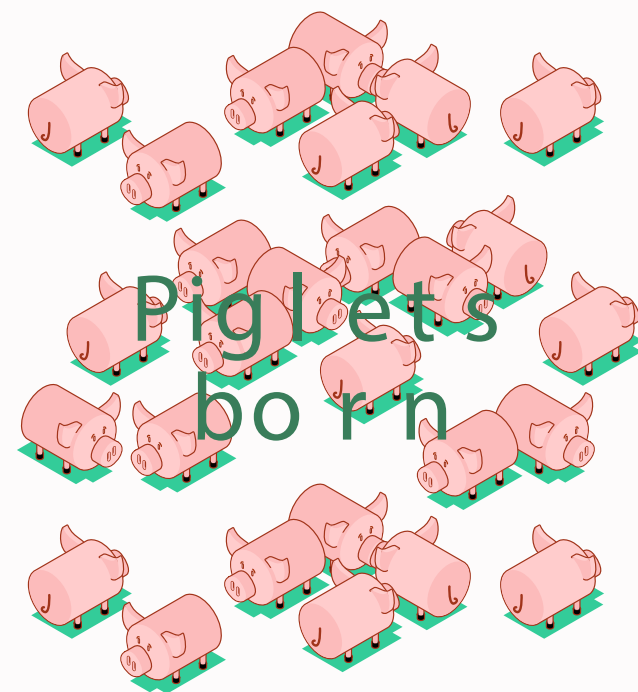
12 sows



METHODS

Parameters evaluated

Total number of born, live born, stillborn and crushed piglets
Piglet weight at birth



Probiotic treatment group (PTG)

Half that received 2 mL
with 0,5 g of a new
probiotic

Bifidobacterium bifidum
and *Lactobacillus casei*

Control treatment group (CTG)

Half that received water
in equal measure as a
placebo

➤ Weaning weight

METHODS

STATISTICS



Analysis of variance (ANOVA) through the linear model (GLM) was used

Dependent variables → weaning weight

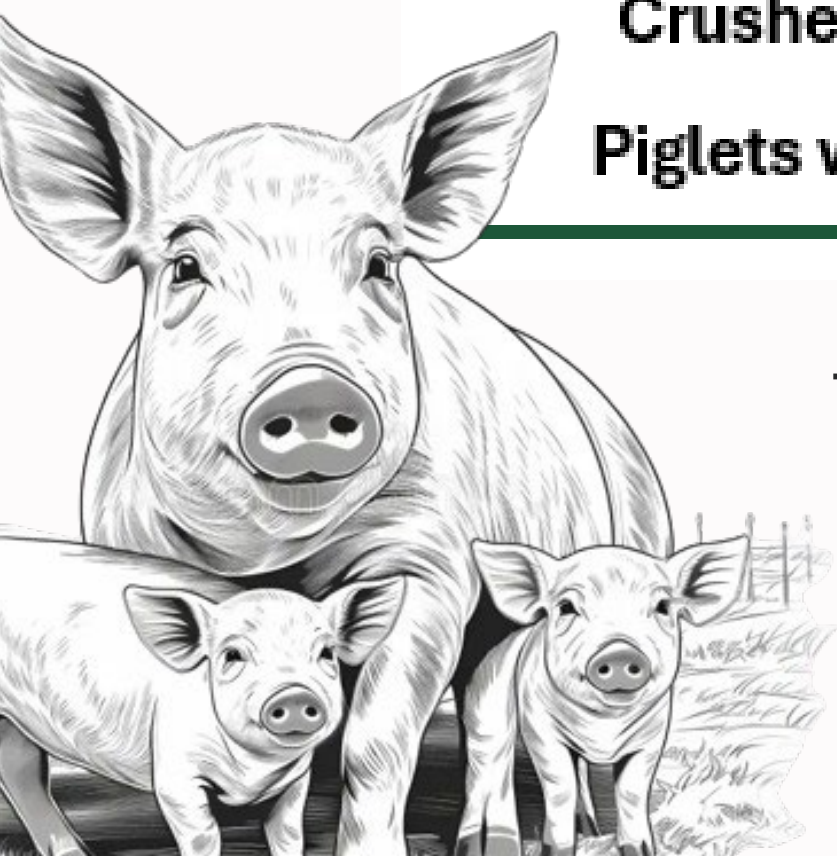
Independent variables → sow treatments, piglet treatments, farrowing order, days in the maternity ward, and number of weaned piglets

RESULTS

GESTATION PERFORMANCE

Parameters	Sow treatment				<i>p-value</i>
	T1	T2	T3	T4	
Total piglets/sow	14.11±2.31	14.12±2.95	15.44±1.06	15.90±1.05	0.8519
Piglets born alive	12.44±2.29	12.12±2.94	13.11±0.92	14.40±1.83	0.8613
Stillborn piglets	1.66±2.54	2.00±2.39	2.33±3.12	1.50±1.08	0.7689
Crushed piglets	1.77±1.56	1.71±2.42	1.37±1.30	1.30±1.15	0.1948
Piglets weight, kg	1.37±0.21	1.31±0.23	1.32±0.14	1.37±0.15	0.8758

There was no difference of the probiotic supplementation period on sows' gestational performance

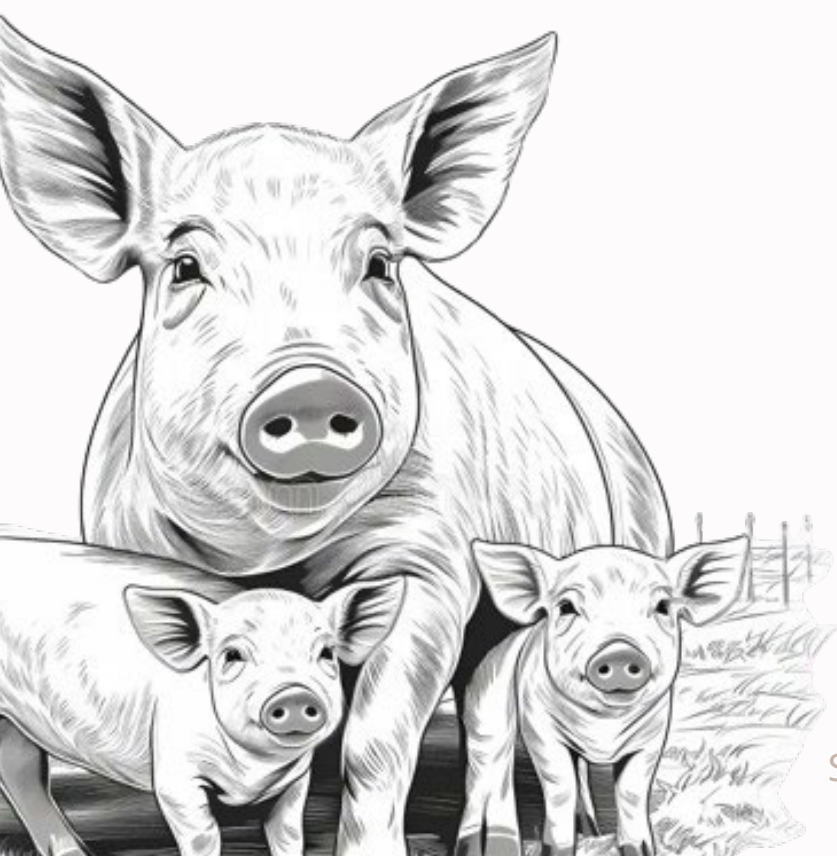


RESULTS

GESTATION PERFORMANCE

Why no effect?

1. All sows received the same amounts of feed during the experiment
2. The housing environment did not present a sanitary challenge
3. *Hypothesis* ⇒ balance in the sows' intestinal microbiota



Sun et al. (2022), Law et al. (2024)



RESULTS

GESTATION PERFORMANCE

Management is important!

The reproductive parameters are *within Brazilian farm averages* , even for the control treatment

Assistance at birth and good management during farrowing

Adequate, calm, and low-stress environment

Hypothesis ⇒ appropriate management & reduced level of stress

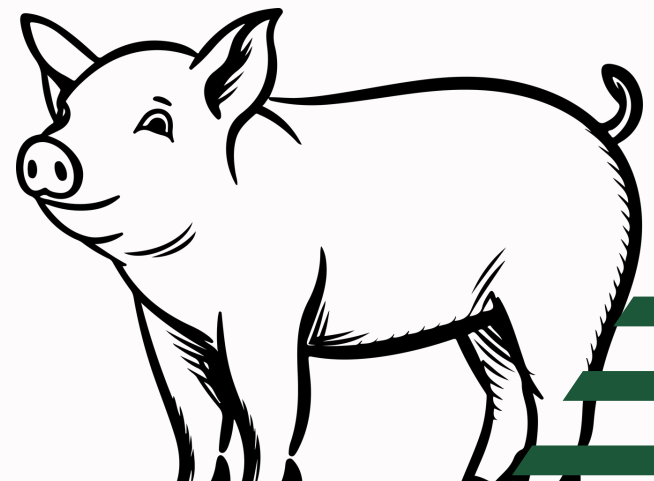


RESULTS

PIGLET WEANING WEIGHT

Piglet treatment	Sow treatment				<i>p</i> -value
	T1	T2	T3	T4	
CTG	5.103±0.906 ^{cB}	6.586±0.656 ^{bA}	5.270±0.378 ^{cB}	7.092±0.253 ^{aB}	<0.01
PTG	6.541±1.381 ^{bA}	5.881±0.714 ^{cB}	6.453±0.505 ^{b^cA}	7.579±0.771 ^{aA}	<0.01
<i>p</i> -value	<0.01	<0.01	<0.01	<0.01	<0.01

Piglets supplemented or not born from sows supplemented from the last third of gestation a higher average body weight



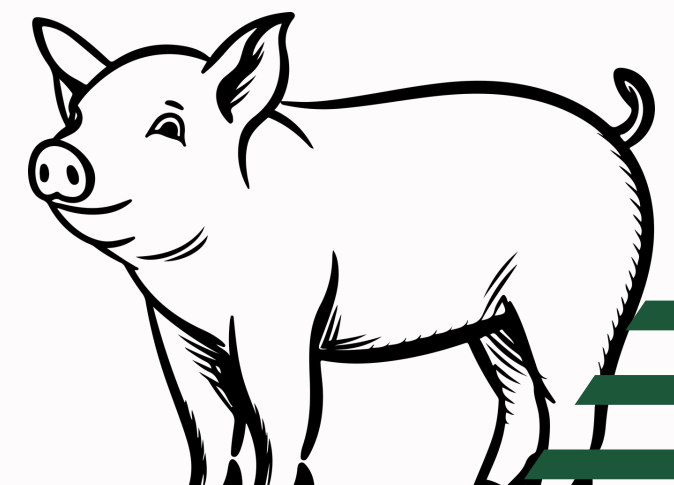
RESULTS

PIGLET WEANING WEIGHT

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p-value	<0.01	<0.01	<0.01	<0.01	<0.01

Piglets supplemented born from supplemented sows increased their body weight

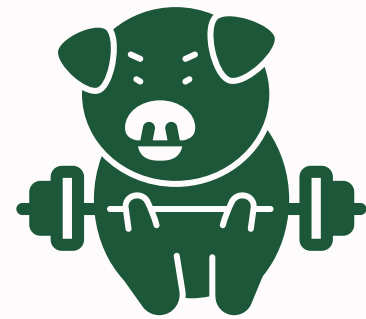
Exception → sows supplemented from insemination to weaning → piglet body weight was reduced



RESULTS

PIGLET WEANING WEIGHT

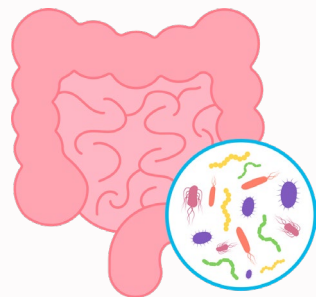
Sows' healthy microbiota



Supplementation at the *end of gestation* → enhanced nutrient availability supplied to piglets



Enhanced *milk quality* and quantity



Expected *reduction of potentially pathogenic microorganisms* living in the gut microbiome and *growth of beneficial gut bacteria*

RESULTS

PIGLET WEANING WEIGHT

Probiotic supplementation rocks!

But why the last third?

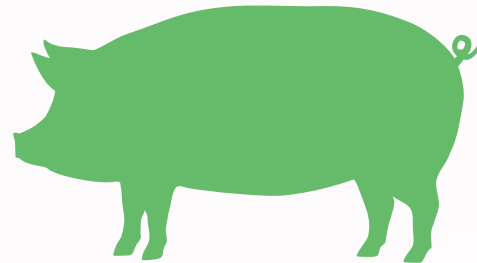
“Dams can *mobilize maternal nutrient reserves to support placental and fetal development* when these animals are subjected to a restricted-energy diet”

“Different diets during specific gestation phases *related expressive changes on farrowing rate* when sows were overfed from the last third of gestation”

Further research onto probiotics



TAKE HOME MESSAGE



Supplementing sows from the last third of gestation can increase their litter weight gain until weaning



Probiotic administration during suckling is effective and can improve the performance of piglets



Early supplementation is not interesting in a financial way as its benefits are not evident

Acknowledgements



Leandro B.
Costa, PhD



Gregório
Murilo, PhD



MonoHub
research team



Sows and
pigs



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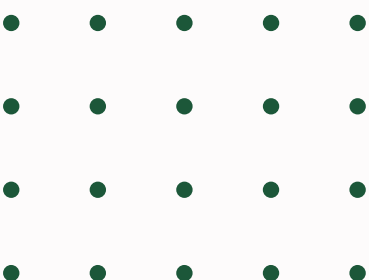
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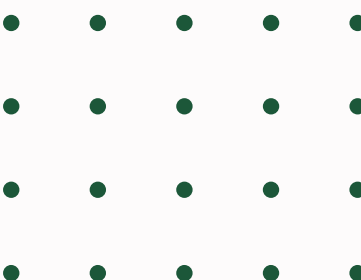
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THANK YOU!

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