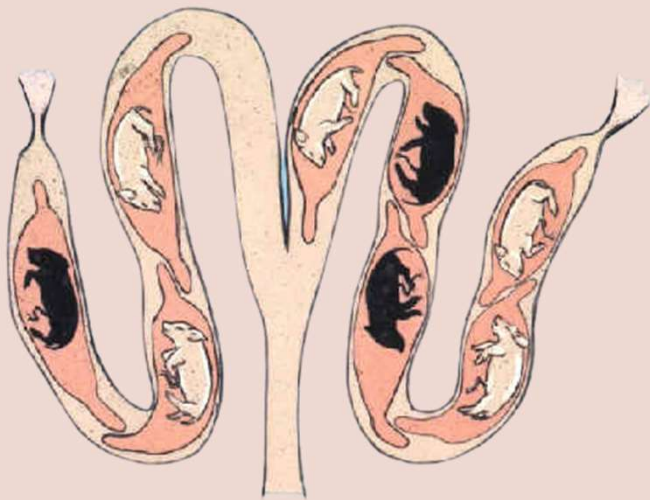


# Investigating the use of pain control for sows post-farrowing to improve performance

Sarah Hill, PhD Candidate  
Advisor: Dr. Robert Friendship

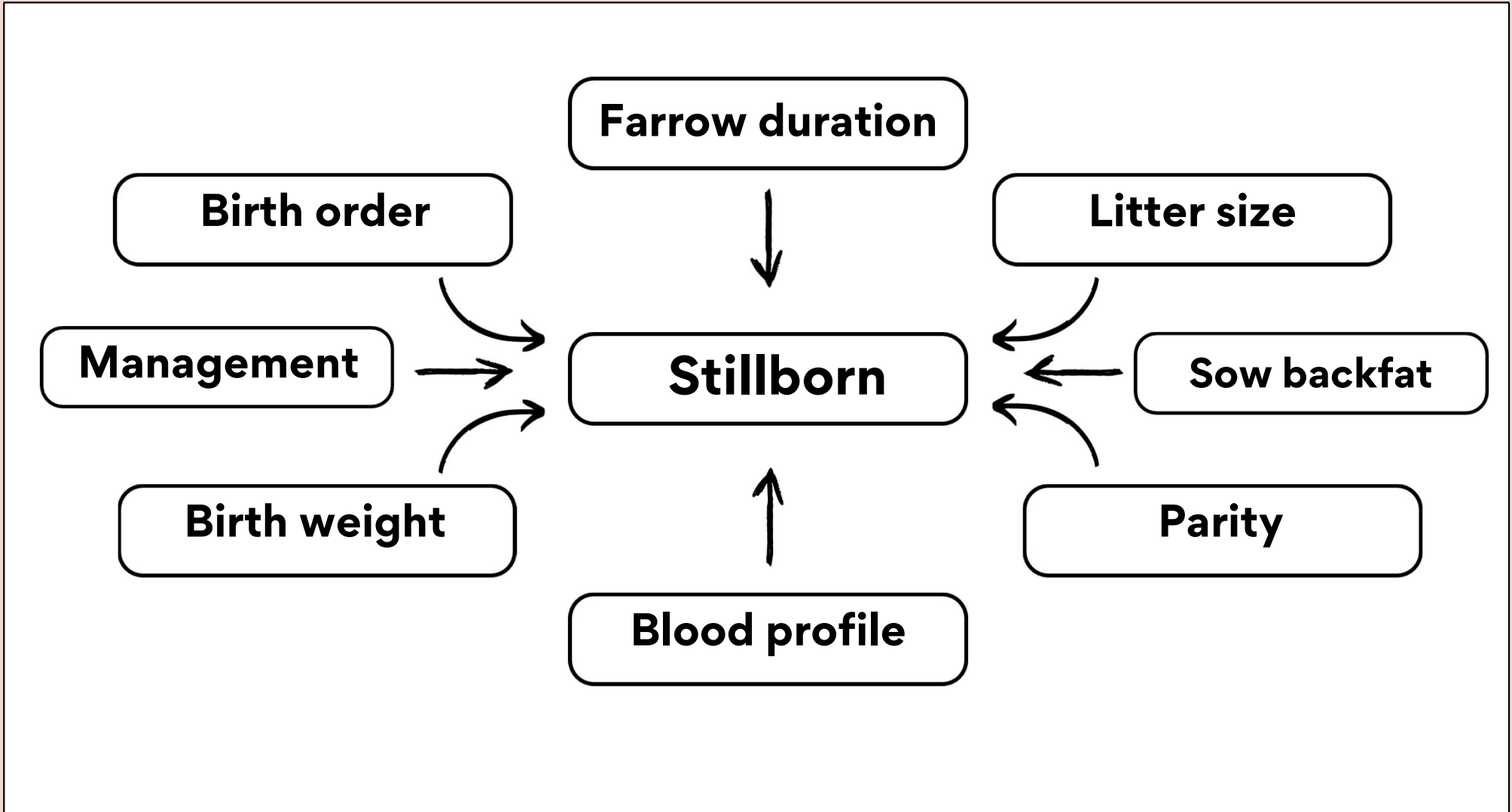


## **Average stillbirth rate is increasing**

As of 2021 Canadian Pork benchmark data, average stillbirth pigs/litter is 1.29 (PigCHAMP 2022)

## **Average pre-weaning mortality is increasing**

As of 2021 Canadian Pork benchmark data, average pre-weaning mortality is 15.26% (PigCHAMP 2022)





# Colostrum



## **Available for the first 24 hours**

Quality decreases after 6 hours

## **Globulins are only transferred after parturition**

Epitheliochorial placental type (no interaction between blood stream of sow and fetuses)

## **Inadequate milk production**

Risk factors include: stress, genetics, and management practices

Super important for piglet viability!

# NSAIDs



## Non-steroidal anti-inflammatory drugs

- NSAIDs are used to alleviate fever, pain and inflammation
- Research has examined the use on sows post-farrowing
- Maintained better condition and body scores (Viitasaari et al., 2013)
- Decrease pre-weaning mortality (Homedes et al., 2014)
- Higher ADG in piglets (Tenbergen et al., 2014 & Mainau et al., 2016)
- Overall, evidence of the effectiveness of NSAIDs given to sows post-farrowing to improve sow performance and reduce pre-weaning mortality is not conclusive

# Research objectives

1 Examine risk factors associated with stillbirths & difficult farrowings

2 Determine whether NSAIDs improve sow performance & pre-weaning mortality

# Methods & Materials

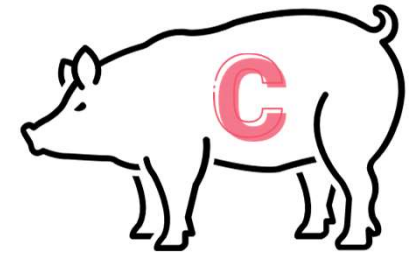
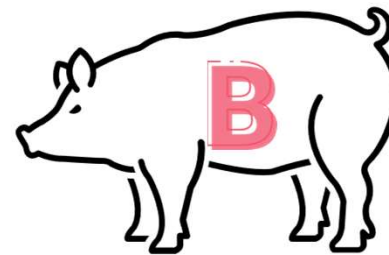
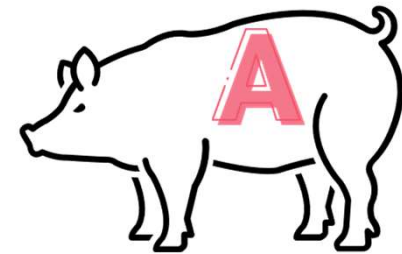
Blinded randomized controlled trial at Arkell Research Station

Assign 450 sows to 1 of 3 treatment groups:

- Saline (n=150)
- Meloxicam (Metacam) (n=150)
- Ketoprofen (Anafen) (n=150)

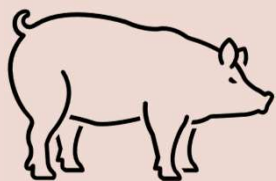
Injections given during or immediately after parturition

Collect data points: ~111 day of gestation, during parturition and 2 weeks post-parturition



## ~111 day of gestation

sows are moved to farrowing crates



### **Recorded:**

Blood – to assess anemia

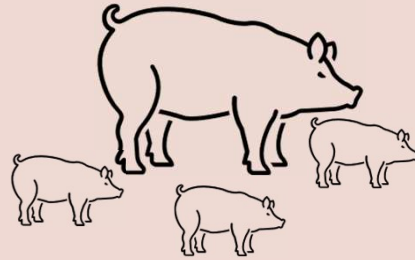
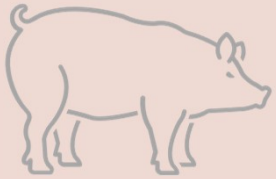
Backfat measurements

Body condition score

Sow weight

Sow history

## Parturition & lactation



---

### **Recorded on video:**

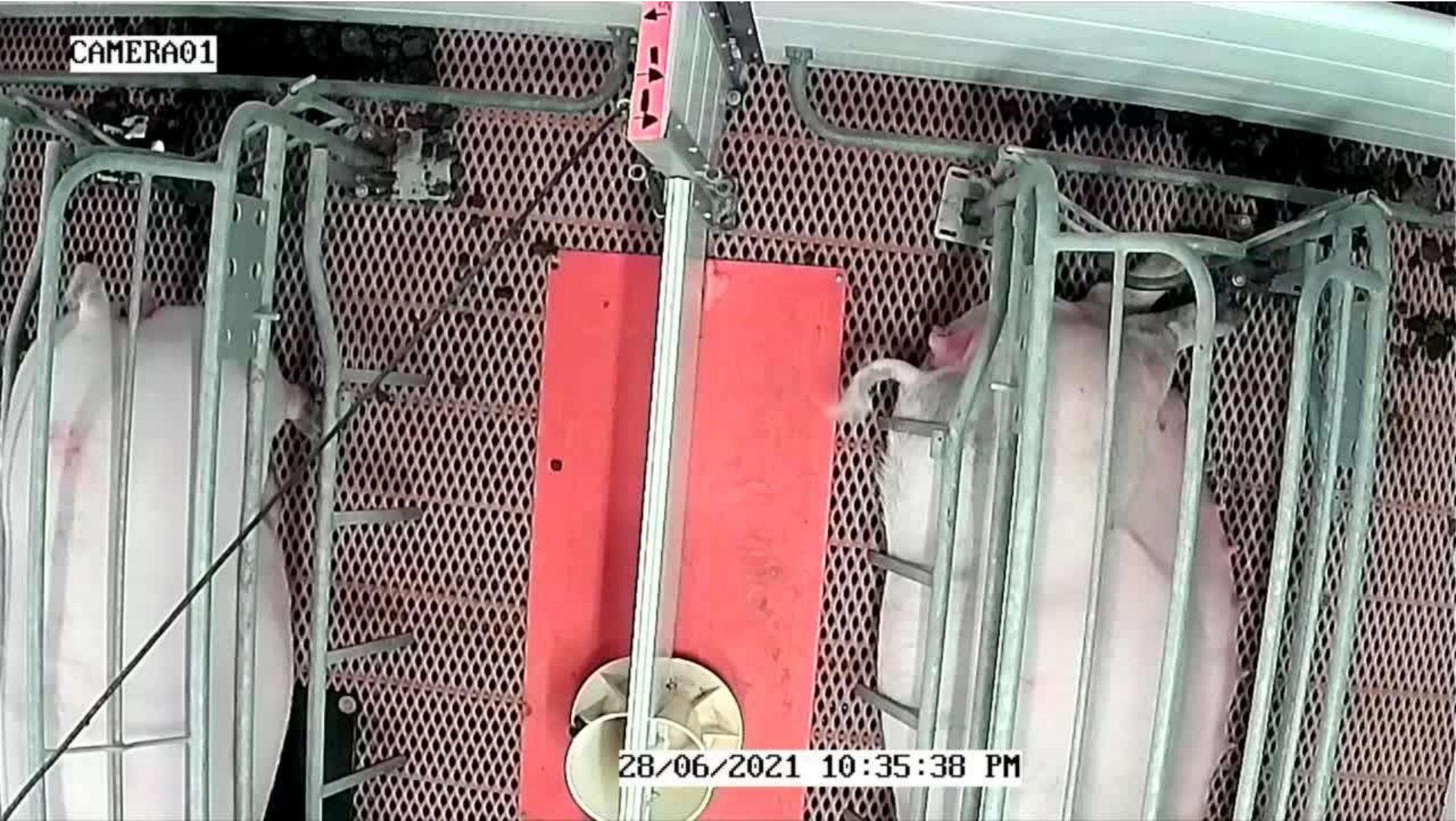
Farrowing duration

Interval between piglets

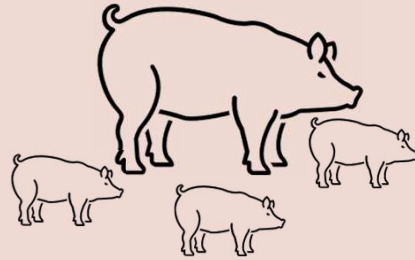
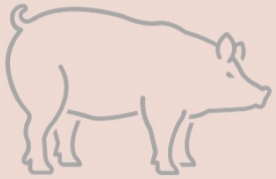
Behaviour of sow (24 hours)

CAMERA01

28/06/2021 10:35:38 PM



## Parturition & lactation



### **Recorded:**

Sow feed recorded

Time of treatment

Rectal temperature prior & 24h after treatment

Normal assistance provided by staff and recorded including; date, time and dosage

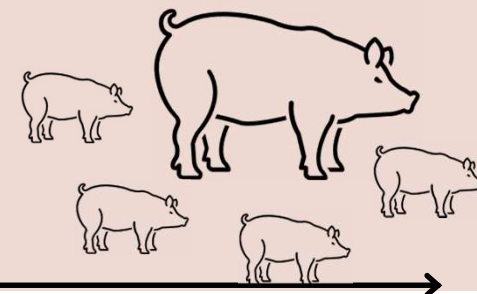
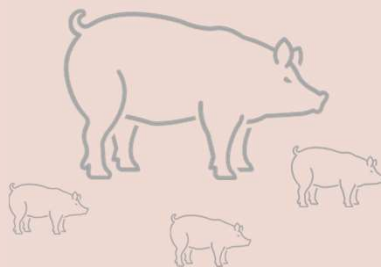
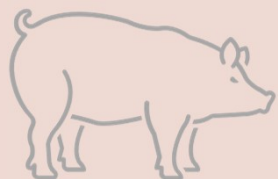
Born alive, stillborn, & mummies

Piglet birth weight & placenta weight

Cross-fostering will be carried out to create litters of 12 piglets if possible (within 48 hrs only)

All piglet treatments will be recorded (drug, dosage, time and date)

~ 14-day old piglets



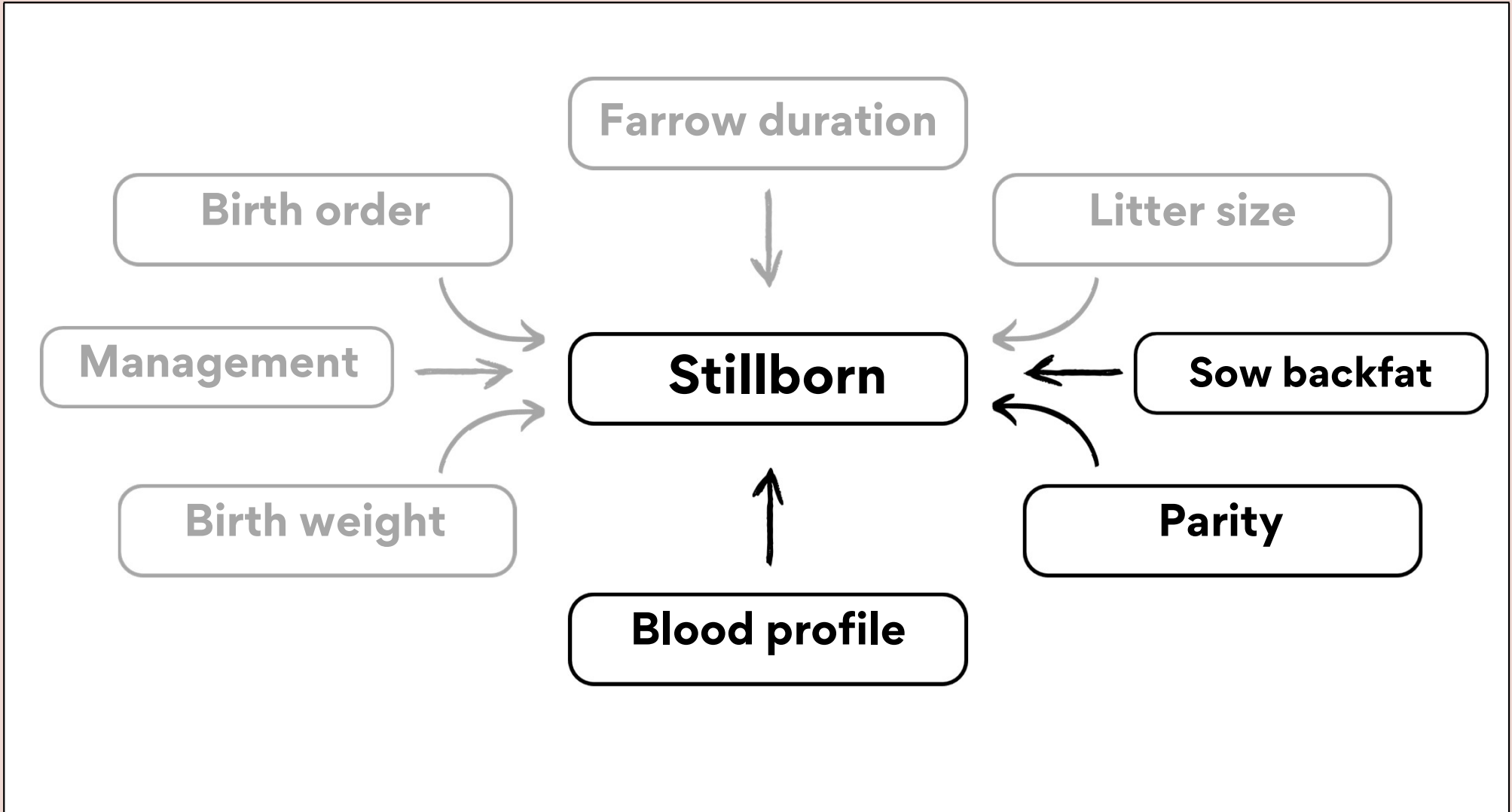
**Recorded:**

- Backfat measurements
- Body condition score
- Sow & piglet weights
- Pre-weaning mortality
- WBI

1 Examine risk factors associated with stillbirths & difficult farrowings

2 Determine whether NSAIDs improve sow performance & pre-weaning mortality

# Research objectives

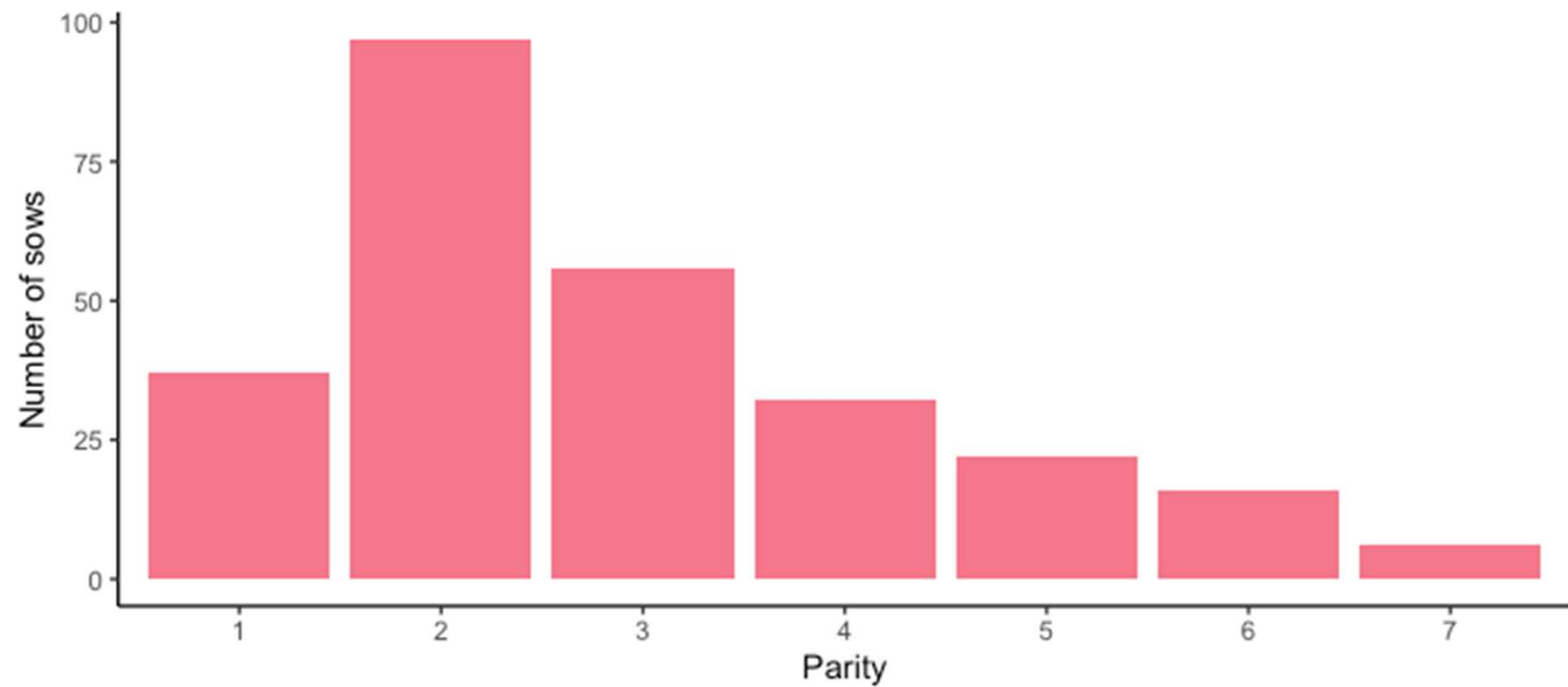


# Farrowing performance

Observation (272 litters)	Avg (SD)	Range (Min - Max)	Industry Avg (SD) <sup>1</sup>
# of born alive per litter	13.00 (3.26)	4.00 - 22.00	13.40 (0.56)
# of stillborns per litter	1.54 (1.98)	0.00 - 12.00	1.29 (0.34)
# of mummies per litter	0.43 (0.86)	0.00 - 6.00	0.41 (0.15)
# of total born per litter	14.51 (3.39)	4.00 - 23.00	15.10 (0.70)
Litter birth weight (kg)	19.15 (4.66)	6.06 - 32.46	-

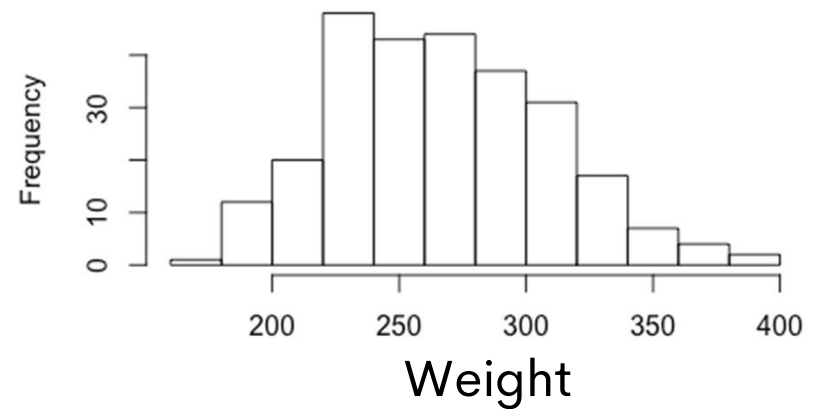
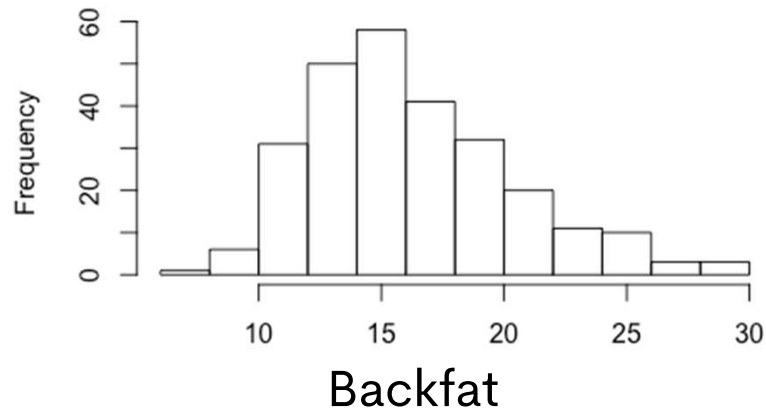
<sup>1</sup> PigCHAMP 2021 year end summary , data from 28 farms

# Parity distribution among sows



# Back fat distribution among sows

<b>N=266</b>	<b>Mean</b>	<b>Std</b>	<b>Median</b>	<b>Min</b>	<b>Max</b>
Backfat at Entry (mm)	16.29	4.19	15.70	7.56	28.70
Weight (kg)	267.01	42.71	263.2	172.2	388.2



# Hematological parameters

Blood was collected from sows ~ 6 days prior to farrowing (1-9 day range)

<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Median</b>	<b>Range</b>	<b>Reference Mean (SD) <sup>1</sup></b>
WBC (10 <sup>9</sup> L)	269	11.43	2.59	11.10	3.10 – 21.00	13.38 (3.29)
RBC (12 <sup>9</sup> L)	269	5.86	0.54	5.85	4.20– 7.40	5.14 (0.51)
Hgb (g/L)	269	116.51	8.74	116.00	88.00– 145.00	108.56 (8.61)
HCT (L/L)	270	0.36	0.03	0.36	0.280 – 0.49	0.35 (0.02)
MCV (f/L)	271	61.70	2.81	61.00	55.00 – 69.00	65.39 (3.06)
MCH (p/g)	272	19.96	1.11	20.00	12.00 – 22.00	19.98 (1.12)
MCHC (g/L)	271	323.40	8.36	324.00	294.0 – 355.00	343.40 (10.90)
RDW (%)	267	15.94	0.88	15.90	13.60 – 19.20	16.30 (1.36)
Platelets (10 <sup>9</sup> L)	271	212.53	63.69	219.00	7.0 – 374.00	155.16 (60.47)
MPV	272	12.29	1.56	12.15	6.70 – 17.10	9.81 (1.83)

<sup>1</sup> Blood collected at 9 days prior to farrowing (Bhattarai et al., 2018)

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# Hemoglobin distribution among sows

**N=269**

**Mean**

**Median**

**Min**

**Max**

**low (<110g/L)**

---

Hemoglobin (g/L)

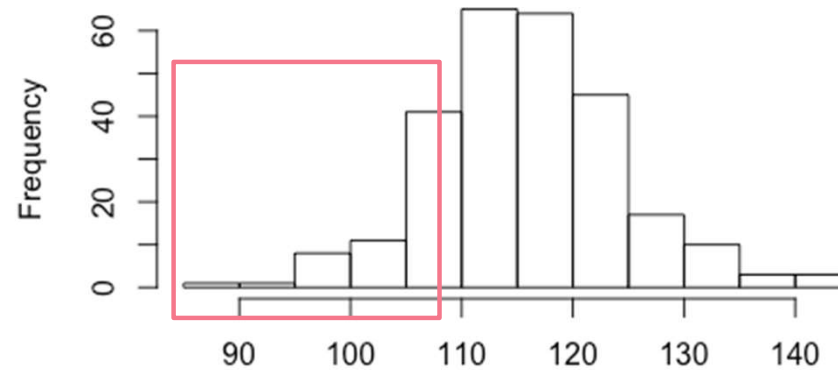
116.10

116

78

155

N=62



# Distribution of parity among sows with low hemoglobin

N=262

Mean

Median

Min

Max

low (<110g/L)

Hemoglobin (g/L)

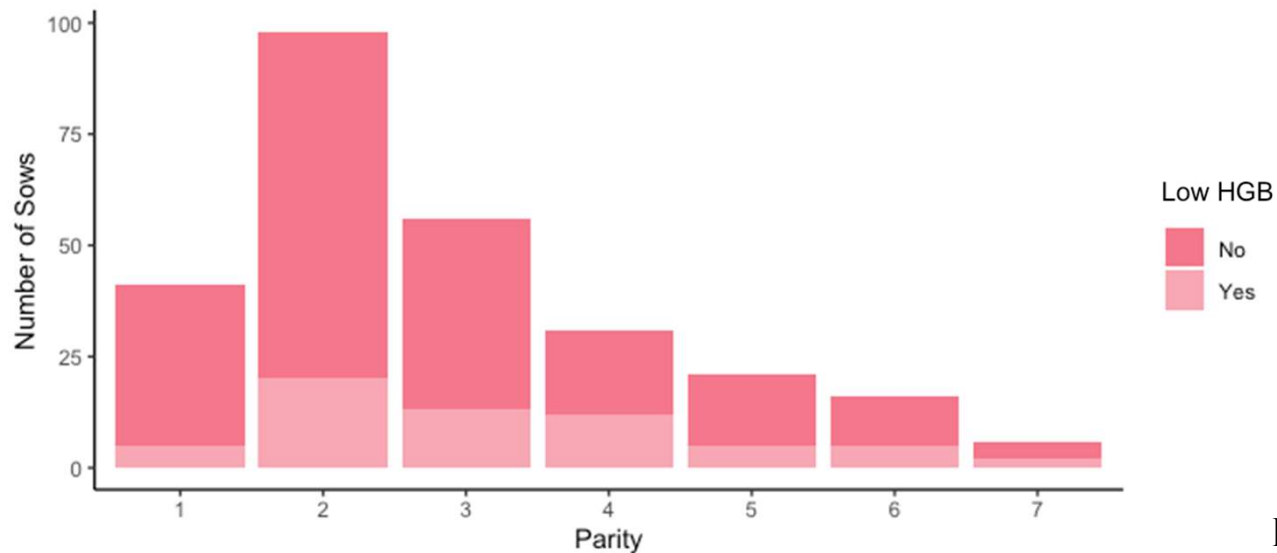
116.10

116

78

155

N=62



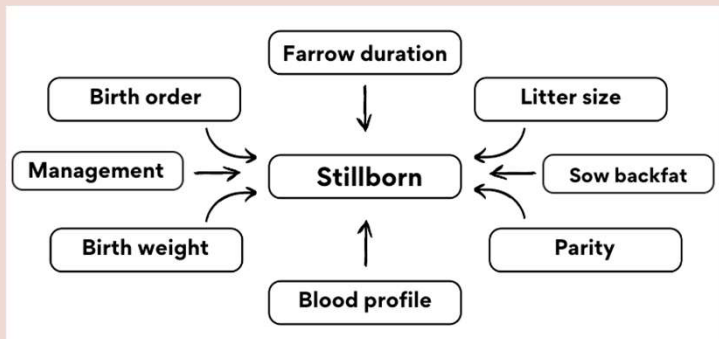
Preliminary results | 21

# Summary



- Older sows had more stillbirths
- Older sows had higher back fat
- Backfat was not associated with stillbirths
- Older sows had lower hemoglobin levels
- Hemoglobin was not associated with stillbirths
- Anemia was NOT an issue at this farm

# Next steps



## Objective 1:

- Investigate other risk factors
  - litter size
  - induction
  - assistance

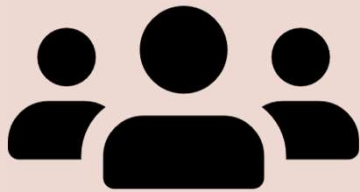
## Objective 2:

- Investigate effectiveness of NSAIDs on sow performance at farrowing
  - pre-weaning mortality
  - video footage

# Significance



- Improve welfare by reducing post-farrowing discomfort
- Economically viable management practice that can reduce pre-weaning mortality, and piglet growth



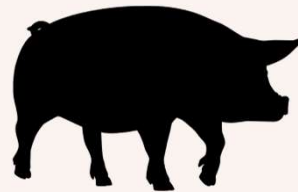
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Lau

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Thank you!

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