How much progesterone do you really need? An investigation in Angus yearling heifers

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Outline

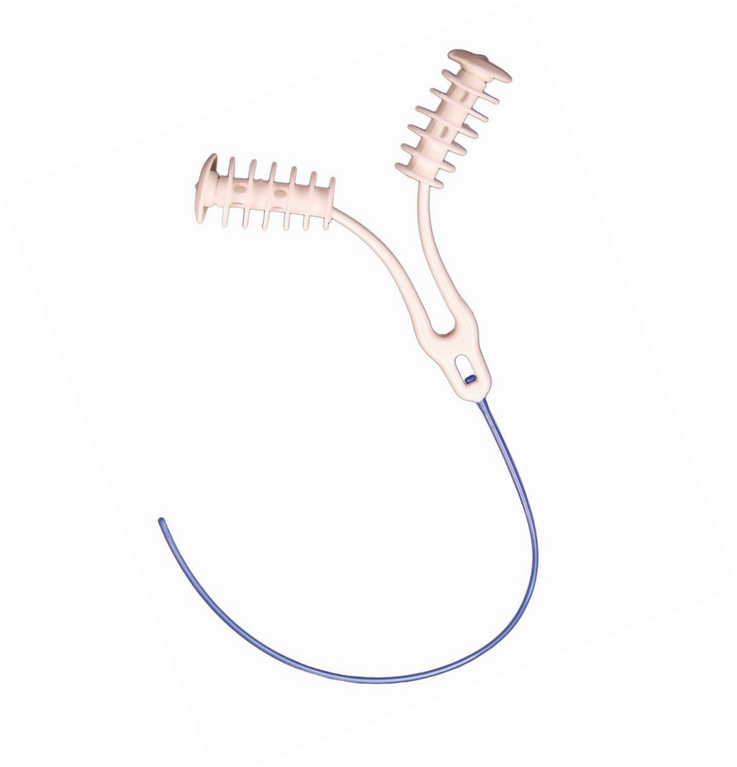
- Background
- Methodology
- Results
- Conclusions

Context

- AI in Australian beef herd is increasing
- FTAI – repeatable, practical and cost efficient
- Heifers:
  - Lower results than cows
  - Usually group of choice!

How much progesterone (P_4) is really needed?

- *Bos indicus* heifers: Low P_4 = best practice
- Little research on the *Bos taurus* heifer and P_4
- Anecdotal field evidence
- 1-Pod Cue-Mate®: 0.78 g P_4

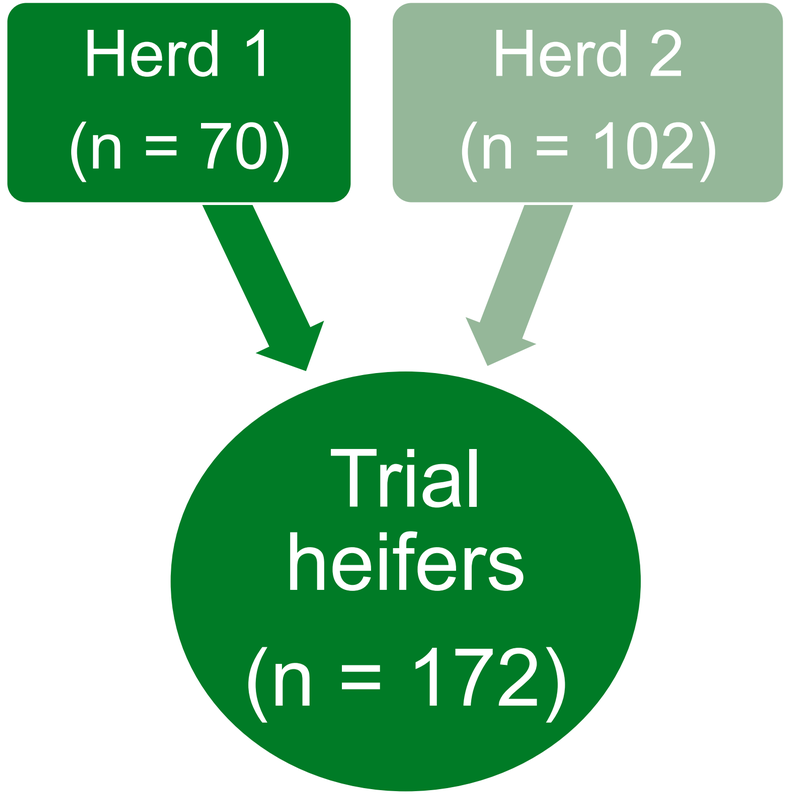


The study

- Answer the question
- Independent: Invetus
- Applied: commercially relevant

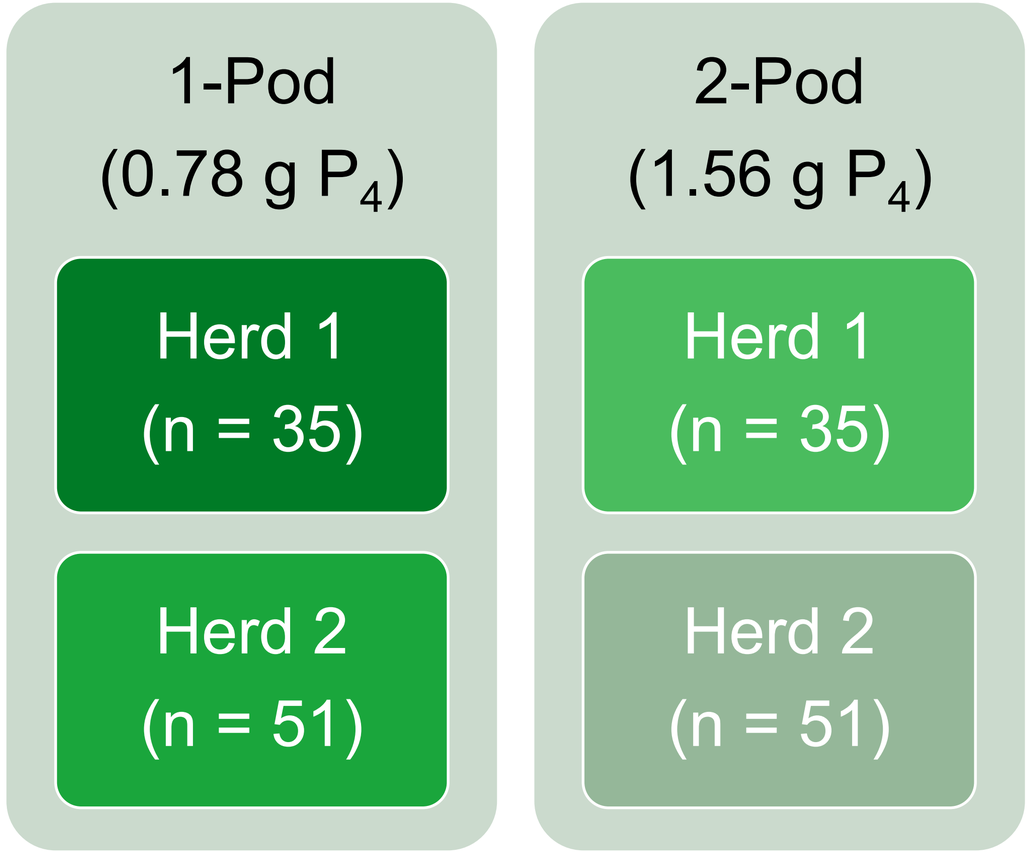
Heifer Selection and Management

- During mid-spring, in northern NSW tablelands
- Typical Angus yearling heifers
- Part of the Angus Sire Benchmarking Project, Cohort 7

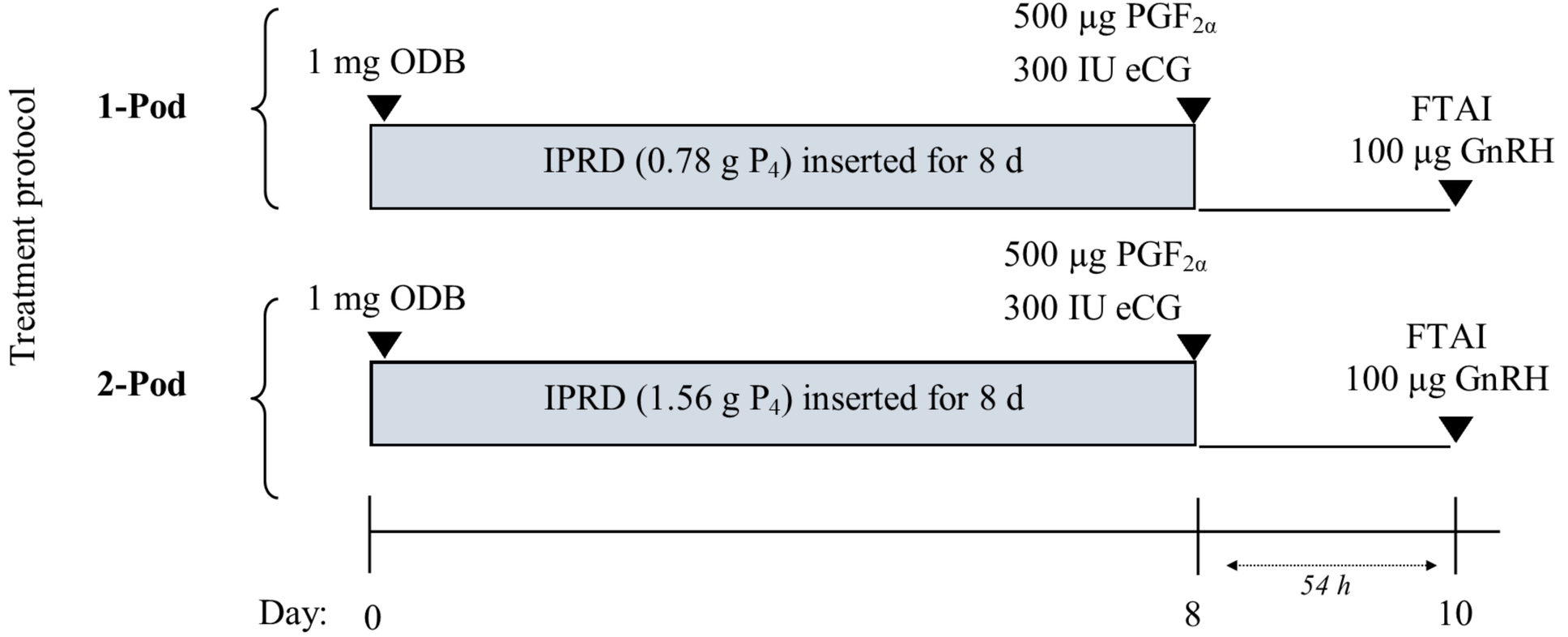


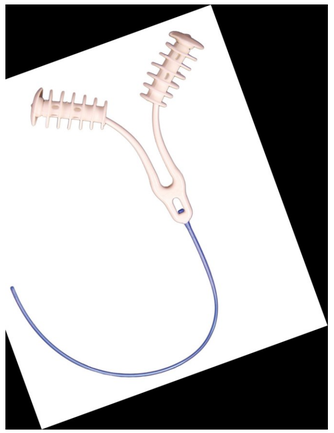
Heifer allocation procedure

- 5 days prior: Weigh, BCS and reproductive exam by U/S
- Heifers blocked into pairs and randomly allocated using coin toss.
- Group mean bodyweights, large follicle diameters and CL % were not different.



Ovulation Synchronisation Protocols





Protocols used to treat Angus heifers in the 1-Pod (n = 86) and 2-Pod (n = 86) treatment groups

AI and Pregnancy Diagnosis

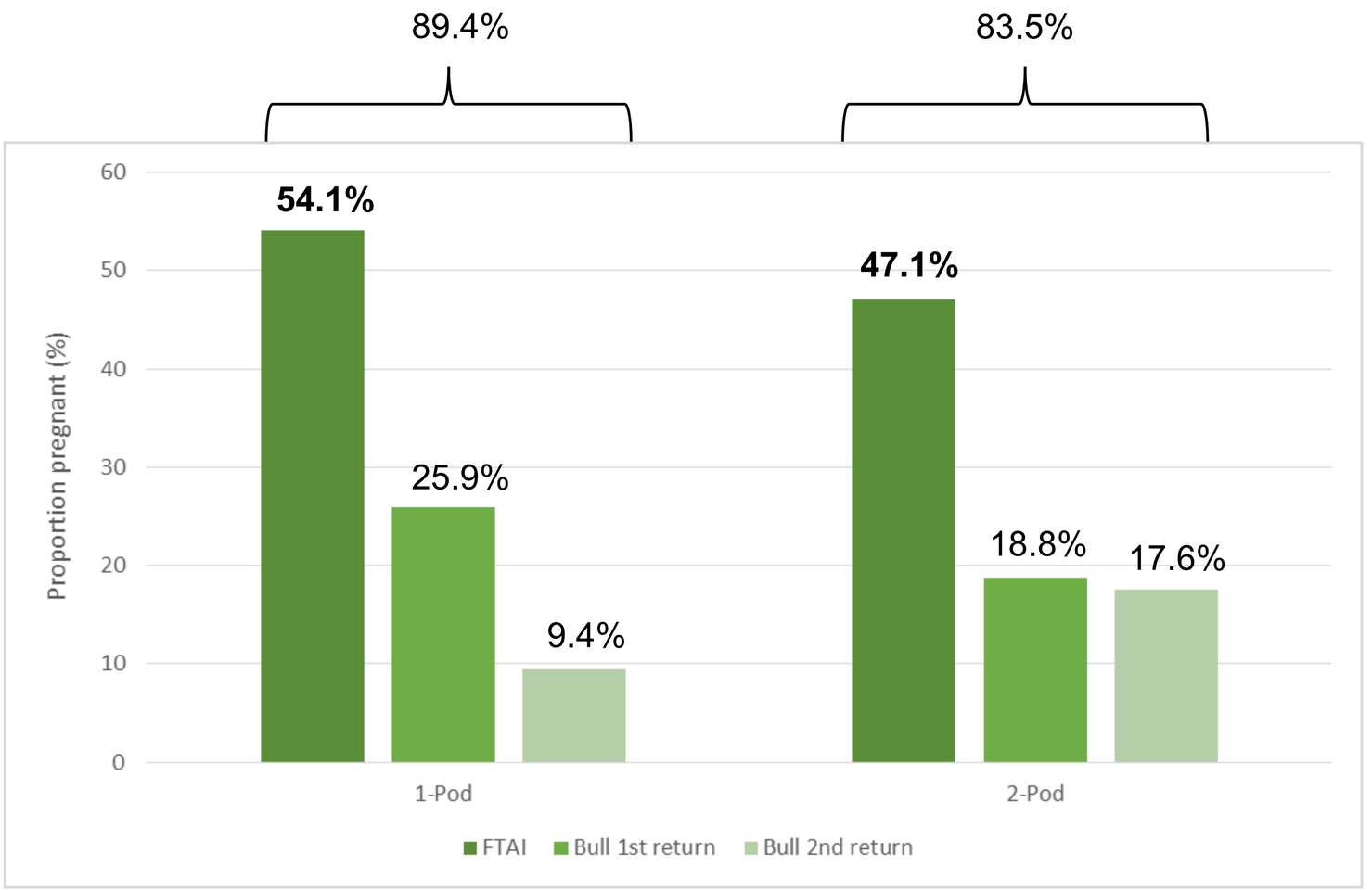
- Single Technician
- 24 Sires (Angus Sire Benchmarking Project)
- 4 ‘mop-up’ bulls (2.3%) – 10 days after FTAI
- Foetal ageing by U/S– 12 weeks post FTAI

Results - Allocation

Treatment	1-Pod			2-Pod		
Herd	1	2	Total	1	2	Total
n	35	51*	86	35	51*	86
Median BCS (Day -5)	2.6 ± 0.0	2.6 ± 0.0	2.6 ± 0.0[a]	2.6 ± 0.0	2.7 ± 0.0	2.7 ± 0.0[a]
Bodyweight (kg)						
Day -5	301.3 ± 3.4	314.7 ± 3.2	309.2 ± 2.5 [a]	301.0 ± 3.8	310.9 ± 3.0	306.8 ± 2.4 [a]
Day 96	414.2 ± 4.3	427.5 ± 4.8**	422.0 ± 3.4	413.9 ± 4.3	424.9 ± 4.0**	420.4 ± 3.0
Average Daily Gain	1.1	1.1	1.1	1.1	1.1	1.1
Ovarian scan (Day -5)						
Large follicle diameter (mm)	10.5 ± 0.5	9.8 ± 0.4	10.1 ± 0.3 [a]	10.3 ± 0.5	9.3 ± 0.4	9.7 ± 0.3 [a]
Proportion CL (%)	17.1	41.2	31.4[a]	17.1	43.1	32.6 [a]

[a] Means/proportions with the SAME superscript are NOT significantly different at $p<0.05$.
* Two heifers, one each from the 1-Pod and 2-Pod groups both originating from Herd 2, were found deceased between Day 10 and 96.
** Data includes (n = 50) due to incidence in*

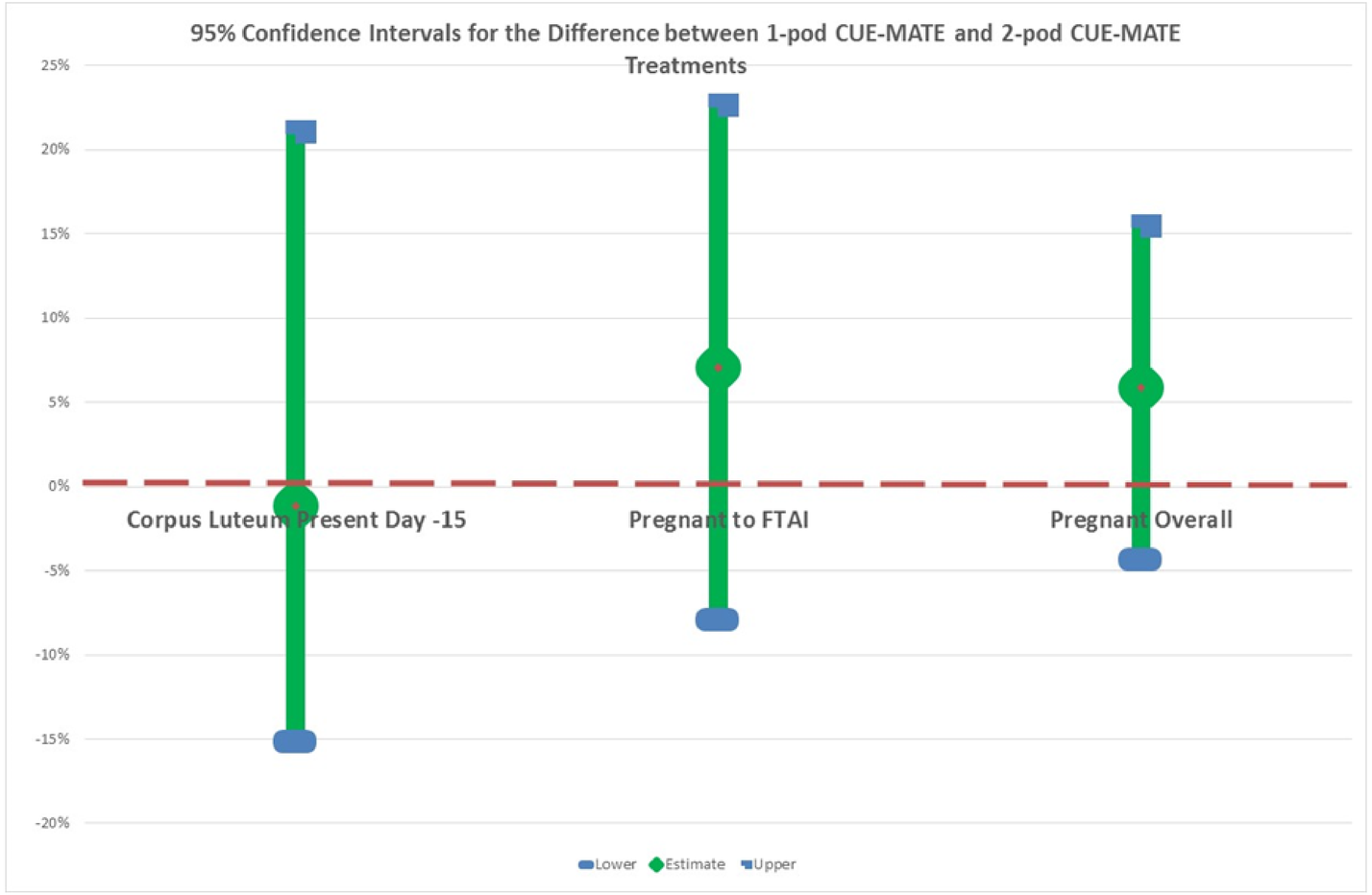
Results - Allocation



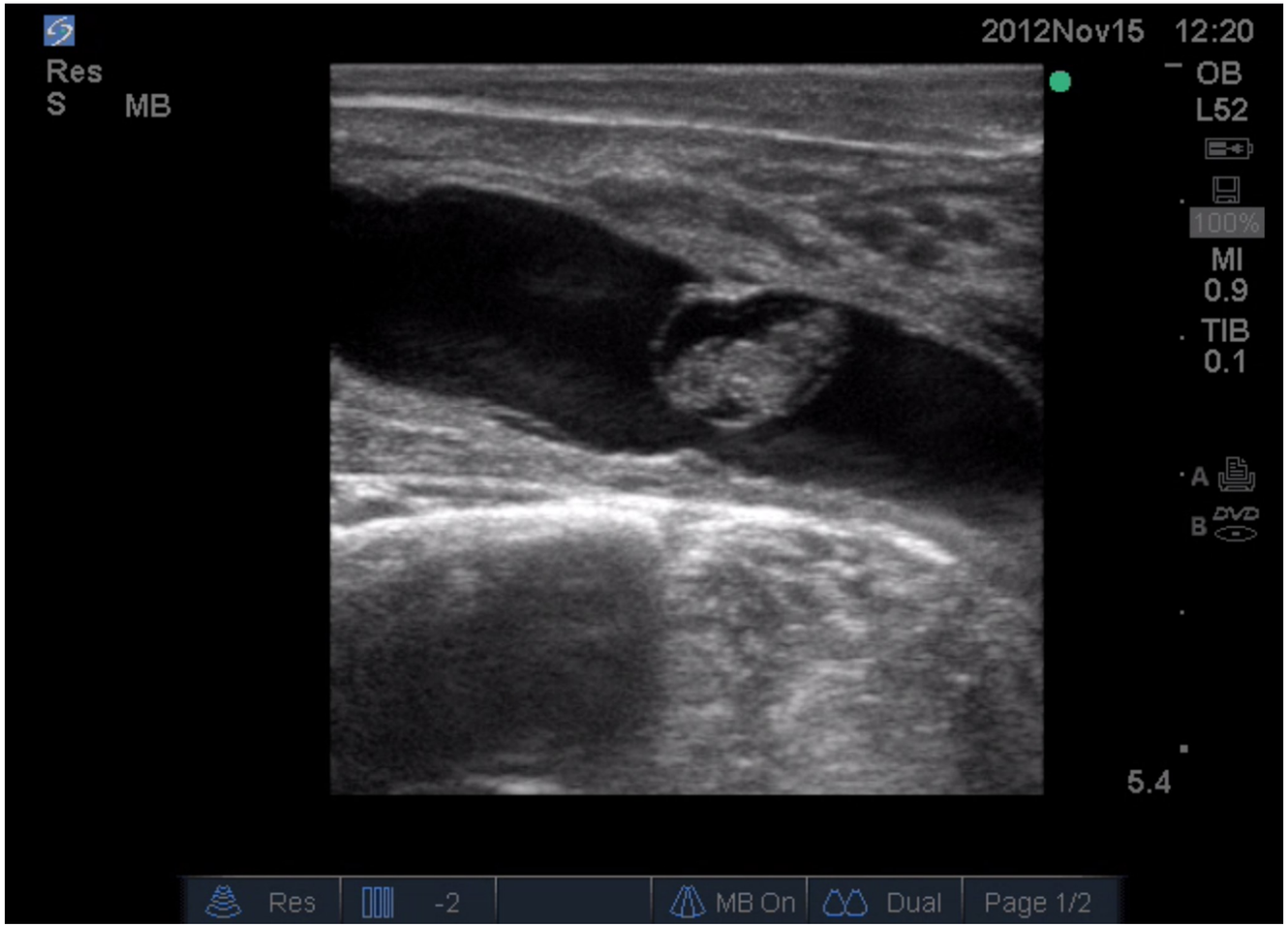
Overall: P = 0.262

FTAI: P = 0.357

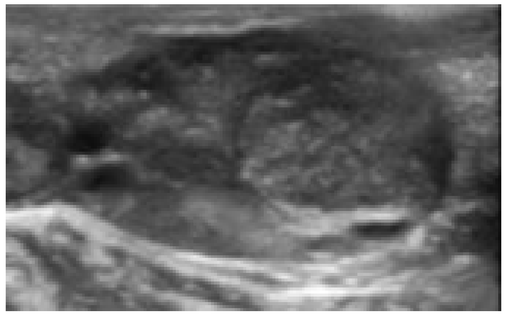
Results – 95% Confidence Interval



Our conclusions

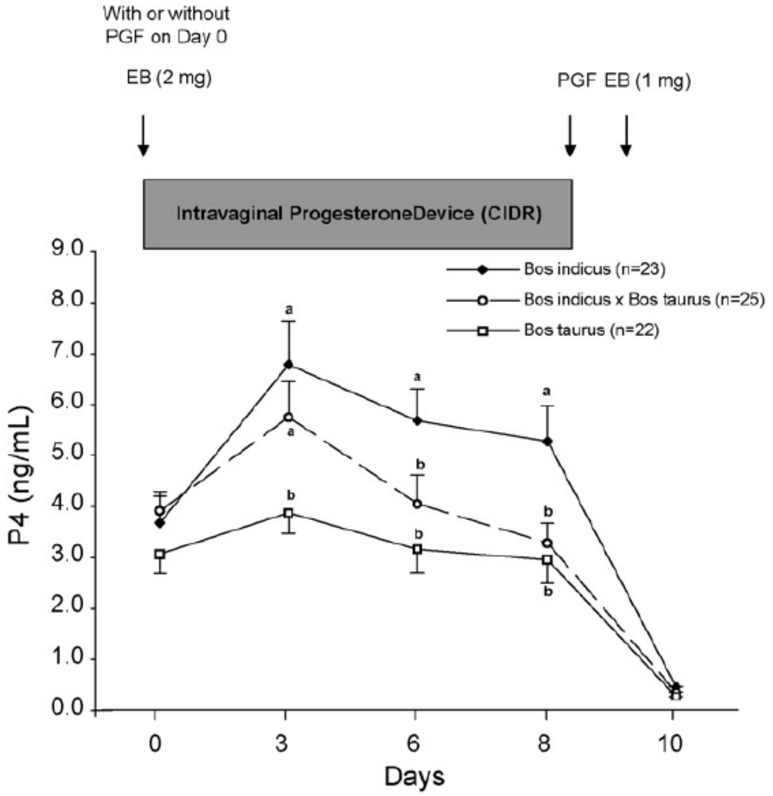


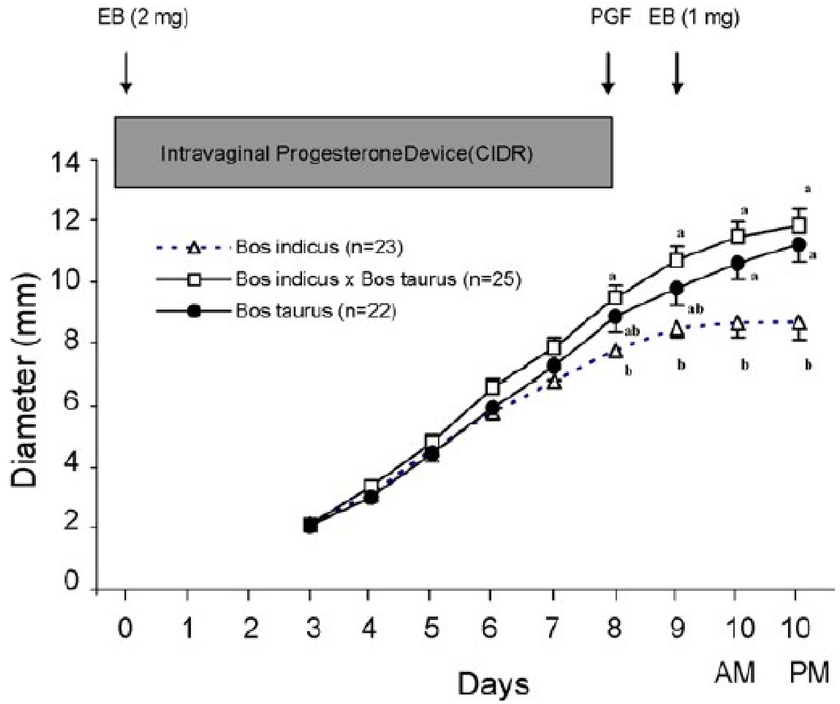
CL Presence



- Very few at synchronisation (~32%)
- Rising plane of nutrition (1.1 kg per day)
- Many with large follicles (~ 10+ mm)
- Peri-pubertal?
- Emphasis importance of nutrition

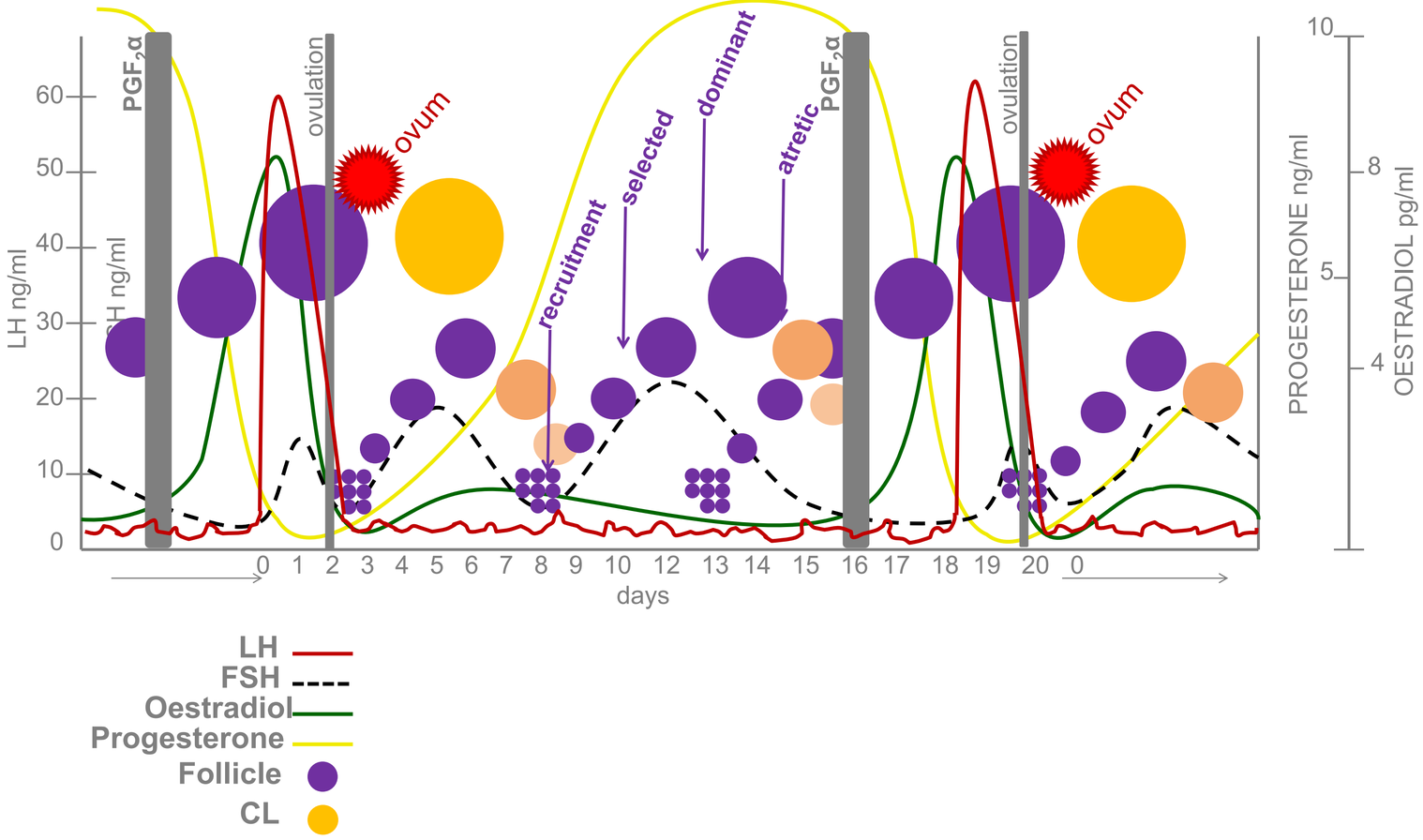
The past literature





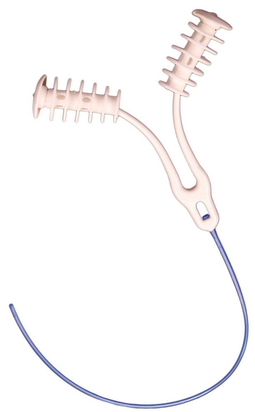
Carvalho et al (2008)

Progesterone and the oestrous cycle



Practical and cost effective FTAI

- 1-Pod Cue-Mate® (0.78 g P_4) sufficient for FTAI in Angus yearling heifers
- Good fertility of subsequent cycles
- Synchronisation protocols tailored to the target mob – reliable results.



What are the next steps?

- Ovarian function?
- Repeatability
- Heavier and older heifers?
- 1 mg vs. 2 mg oestradiol benzoate?

Thank you

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