

“Reproductive performance of a new cervical fix-timed insemination protocol in ewes based on three doses of prostaglandin F2 α ”

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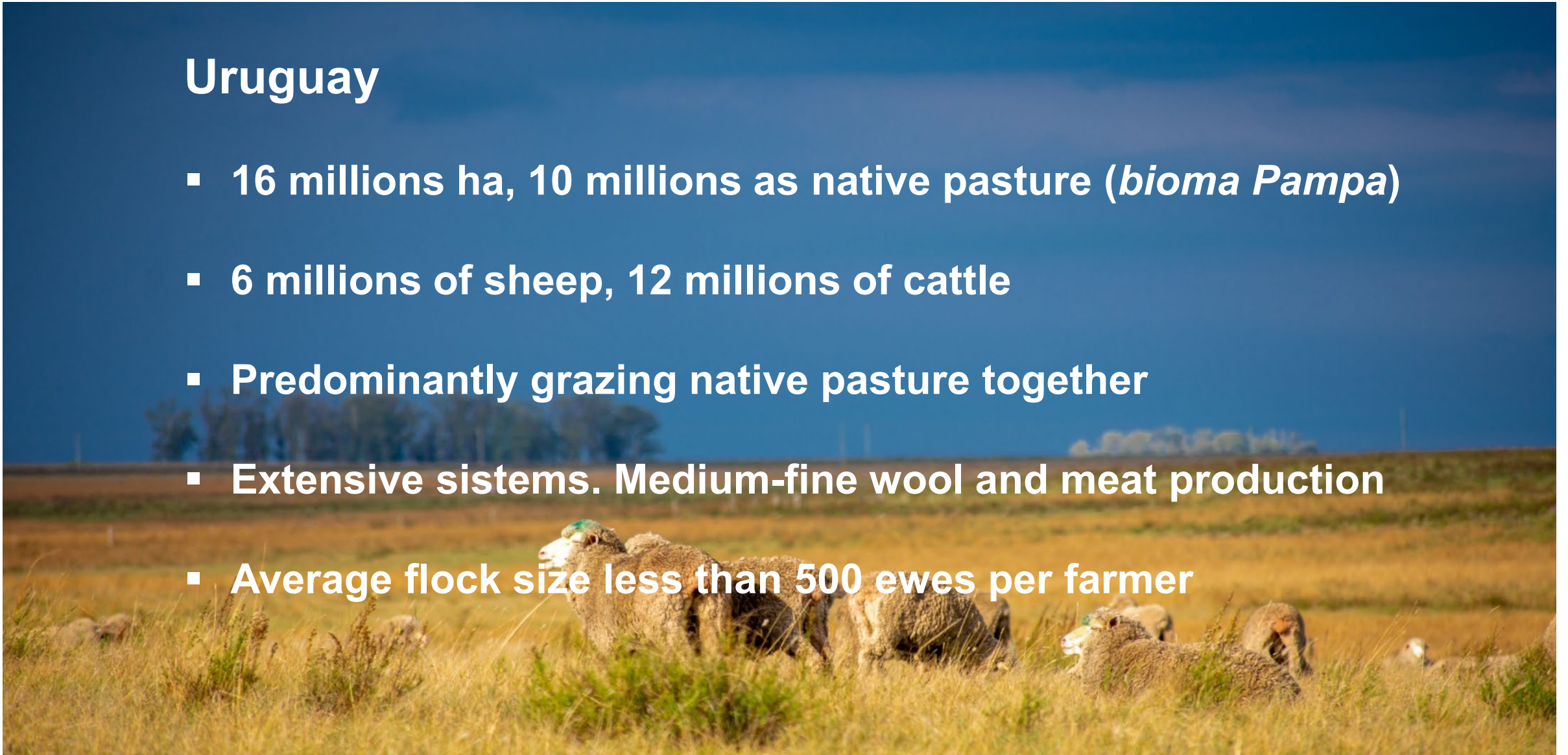


CENUR
Litoral Norte



Uruguay

- 16 millions ha, 10 millions as native pasture (*bioma Pampa*)
- 6 millions of sheep, 12 millions of cattle
- Predominantly grazing native pasture together
- Extensive systems. Medium-fine wool and meat production
- Average flock size less than 500 ewes per farmer



Introduction

Background and justification of our work

Protocols to estrous sincronization and fixed time artificial insemination in ewes (TAI)?

Intravaginal dispositives of Progestagen plus eCG (P4-eCG): **validate** but **questioned...**
(residues, unpractical, animal welfare, cost)

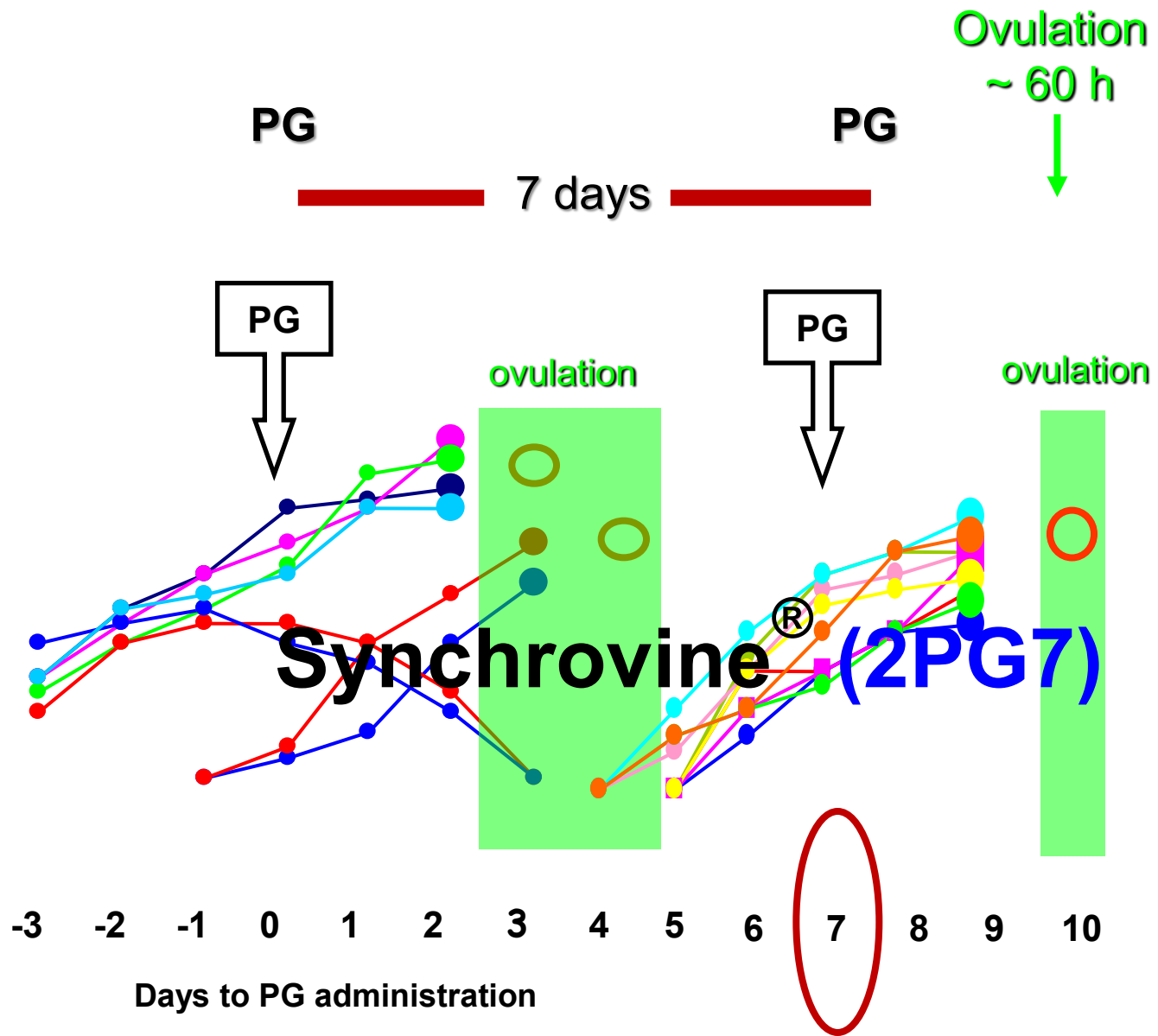


González-Bulnes et al., 2020

Prostaglandine F2 α (PG): **not validate yet**



Fierro et al., 2013



Protocol with high estrous response and synchronized ovulation, but low reproductive performance

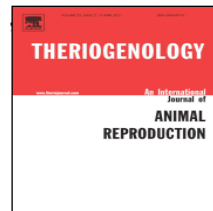
Why?



Available online at www.sciencedirect.com



Theriogenology 76 (2011) 630–639



Effects of prostaglandin administration on ovarian follicular dynamics, conception, prolificacy, and fecundity in sheep

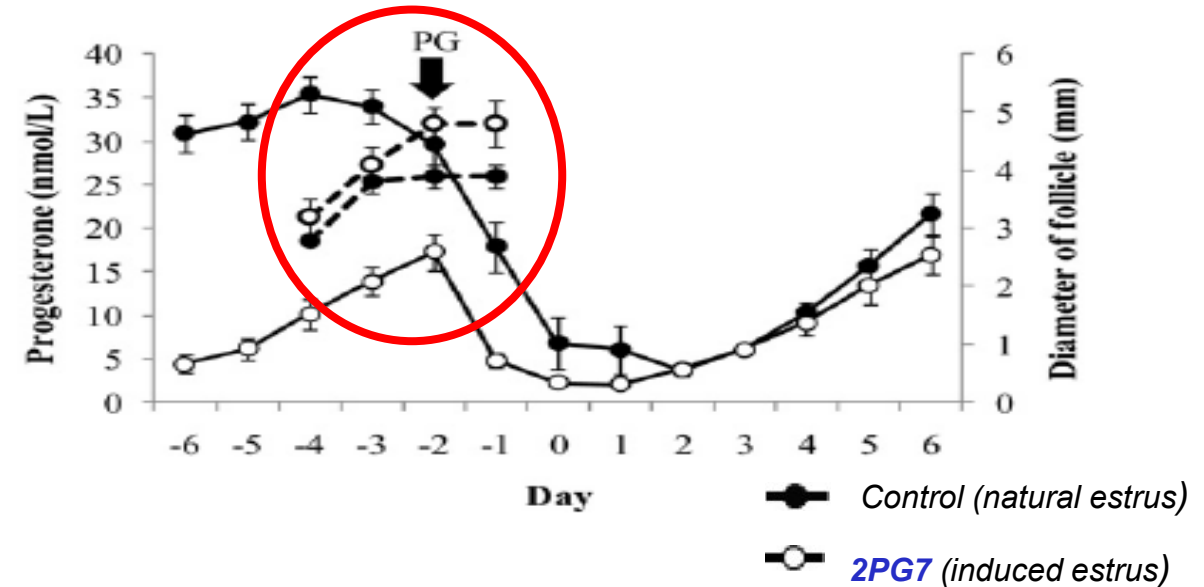
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*“The **lower performance** of **2PG7** was associated with an **uterine environment** with **increasing but low progesterone** levels during **ovulatory follicular growth**”*

Performance of “short”, “mediun” or “long” interval **2PG** TAI protocols vs. P4-eCG

(Corriedale ewes, cervical TAI at 56 h, fresh semen; n= 513)

	Fertility (%)	Prolificacy	Fecundity (%)
2PG7	33 ^a	1.19 ^a	39 ^a
2PG12	40 ^a	1.31 ^{ab}	52 ^a
2PG13	40 ^a	1.20 ^a	48 ^a
2PG14	49 ^{ab}	1.40 ^{ab}	68 ^{ab}
2PG15	63 ^{bc}	1.34 ^{ab}	84 ^{bc}
2PG16	60 ^{bc}	1.30 ^{ab}	78 ^{bc}
P4-eCG	66 ^{cd}	1.45 ^{bc}	95 ^{cd}

^a vs ^b in the same column: P<0.05

Reproductive performance at TAI with **2PG15** vs. **natural estrus**

(Corriedale ewes, cervical way, fresh semen, n= 247)

Protocol	Ovulation rate	Fertility (%)	Prolificacy	Fecundity (%)
2PG15 (TAI)	1.47 ^a	60 ^b *	1.42 ^a	85 ^b
Natural estrus	1.54 ^a	91 ^a	1.31 ^a	120 ^a

Why?

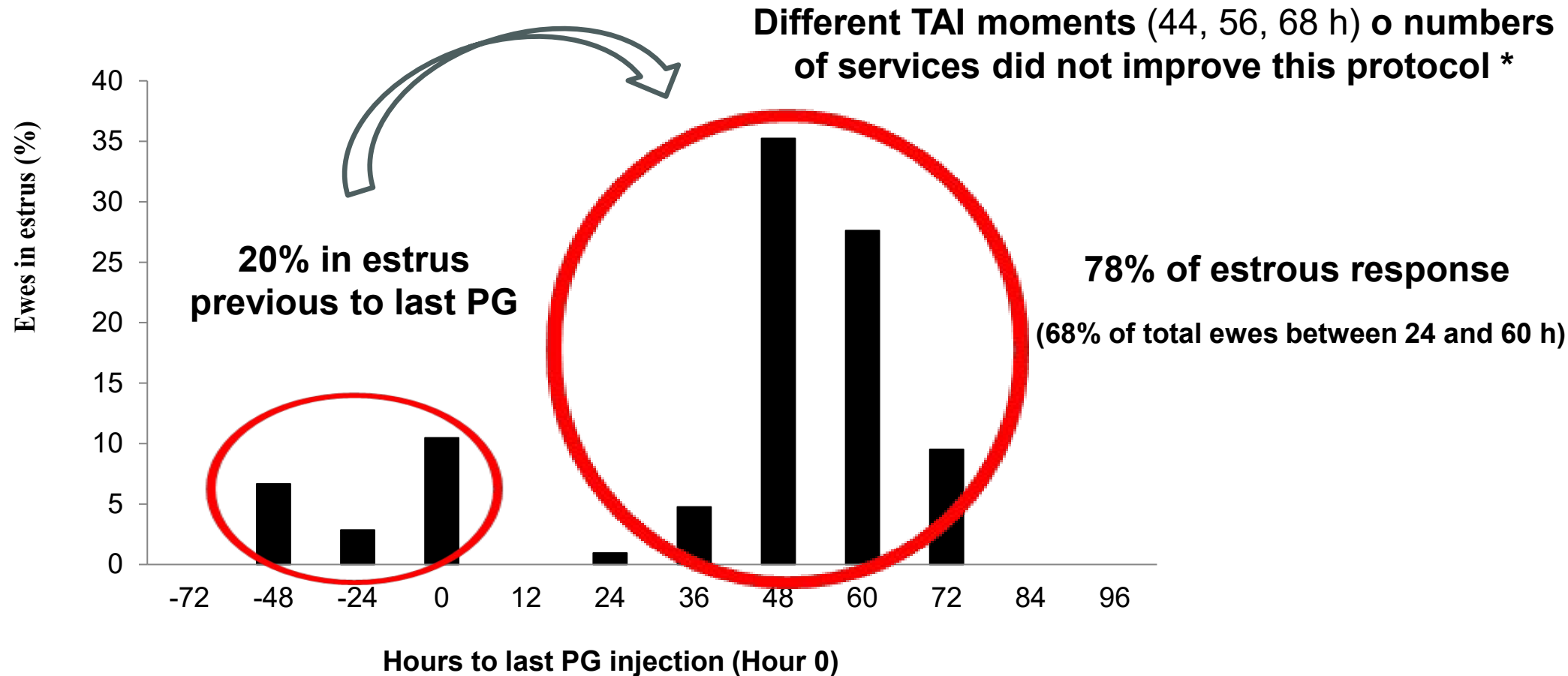
^a vs ^b in the same column: P<0.05

* : 15-20% of ewes at the end or out of estrus at TAI moment



Olivera-Muzante et al., 2020
Animal Reproduction Science 218
<https://doi.org/10.1016/j.anireprosci.2020.106482>

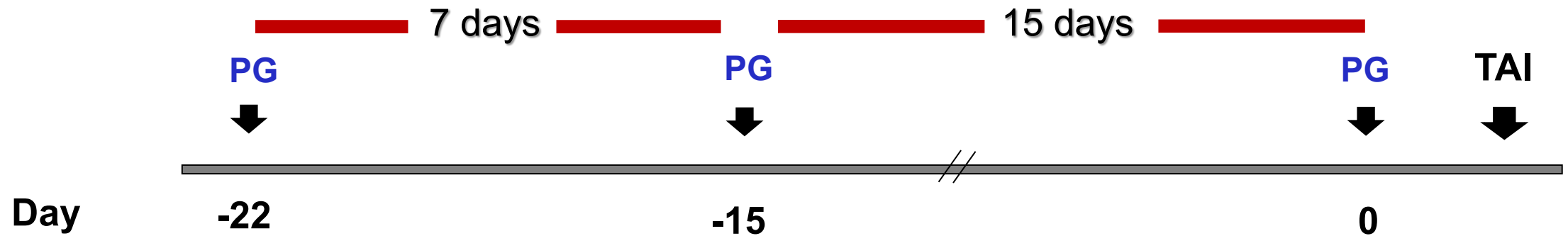
Estrous response and distribution after last PG injection in ewes treated with 2PG15



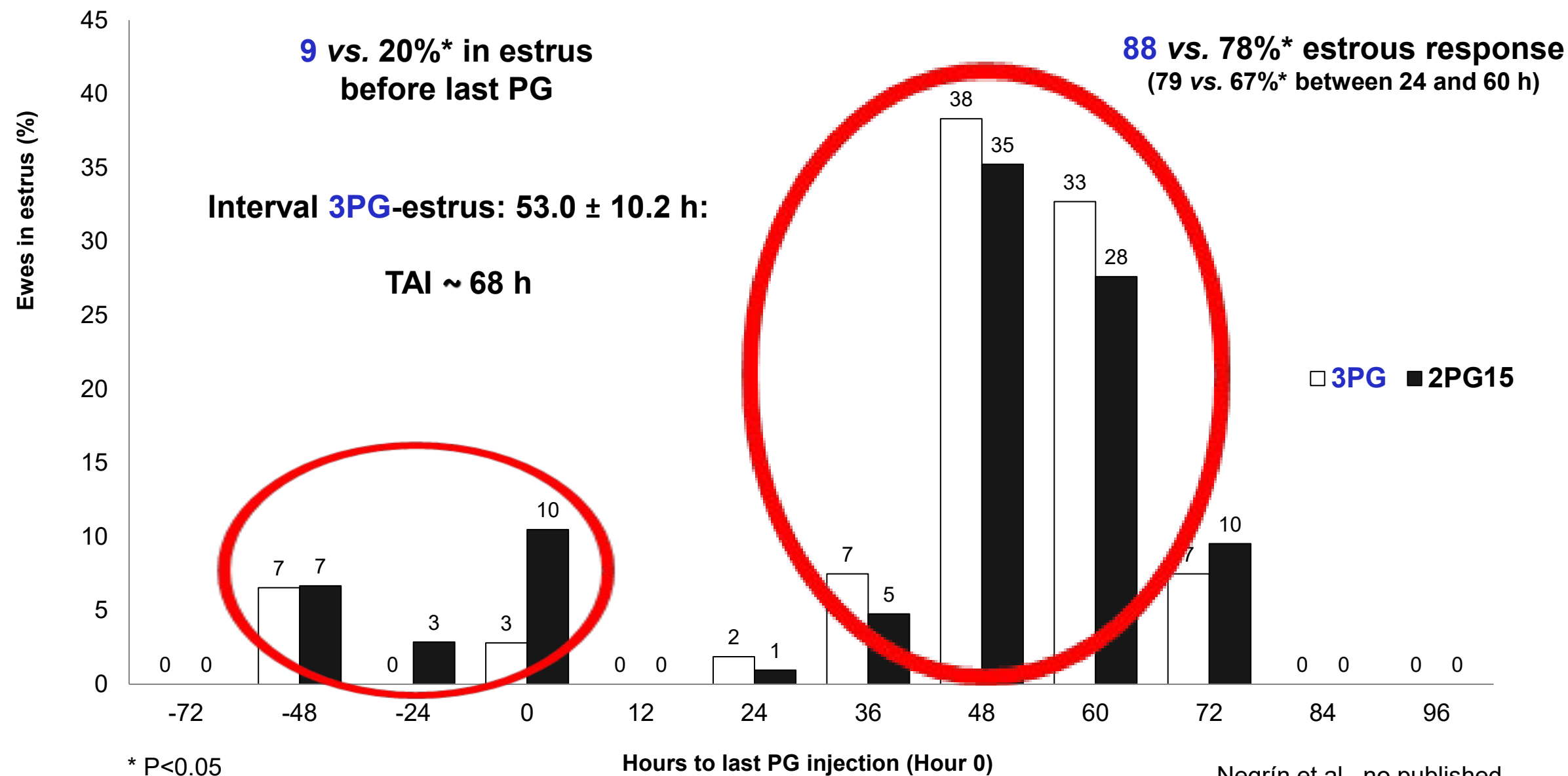
We need a new protocol with higher and concentrate estrous response after last PG injection

Approach:

To use a “3PG” protocol: a third PG dose seven days before that “2PG15”



Estrous response and distribution after last PG injection in ewes treated with 3PG or 2PG15



Objective of our work

To improve the reproductive outcomes of 2PG15 including a third PG dose seven days before (“3PG” protocol)

Metodology (I)



✓ **March – June** (breeding season); 31° 03' S - 57° 13' W; Salto, Uruguay

Metodology (II)



- ✓ **200** multiparous **Merino** ewes grazing native basaltic pastures
(1200 kg/DM/Ha; CP: 10.5%, ADF: 38.8%, NDF: 62.6%)

Metodology (III)



- ✓ Based in **BC** (3.2 ± 0.3 , score 1-5) and **BW** (39.8 ± 4.3 kg), ewes were assigned to **two protocols**: **2PG15** (Control) or **3PG** (Treatment)

Experimental design



Delprostenate (160 µg/dose/ewe)



Abdominal US



Fertility
Prolificacy
Fecundity

Protocol

2PG15

PG
↓

PG
↓

PG
↓

Cervical TAI with fresh
semen (56 or 68 h)



3PG

Day

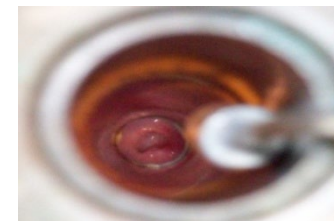
-22

-15

0

Mucus state (1 to 6; Restall, 1961)

60



Results

Reproductive performance of ewes synchronized with **2PG15** or **3PG** protocol and cervical TAI with fresh semen

Protocol (n)	Mucus state	Fertility (%)	Prolificacy	Fecundity (%)
2PG15 (99)	2.17 ± 0.09 ^a	64.6 ^b	1.30 ± 0.06 ^a	83.8 ^a
3PG (101)	2.14 ± 0.10 ^a	77.2 ^a	1.19 ± 0.04 ^a	92.1 ^a

^a vs ^b in the same column: P<0.05

A higher response and concentration of estrus maybe explains this results

Conclusions

We concluded that the **3PG** protocol significantly **improve the fertility outcomes at TAI** compared to ewes synchronized with the **2PG15 protocol**

Future questions

- **3PG** protocol equipare **fertility of natural estrus** ewes?
- **Prolificacy** of **3PG** protocol would improve with **focus feeding**?



Gracias por su atención !!



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