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CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS



Eskardillo: a platform based on individual animal data collection to improve decision making in dairy goats farms

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Innovation for Sustainable
Sheep and Goat
Production in Europe

Dairy goat intensification

- Increase in efficiency and productivity
- So far, intensification has focused on:
 - Increasing number of animals per farm
 - Improvements in reproduction (AI)
 - Health programs
 - Milking automation
- Little improvements in farm management

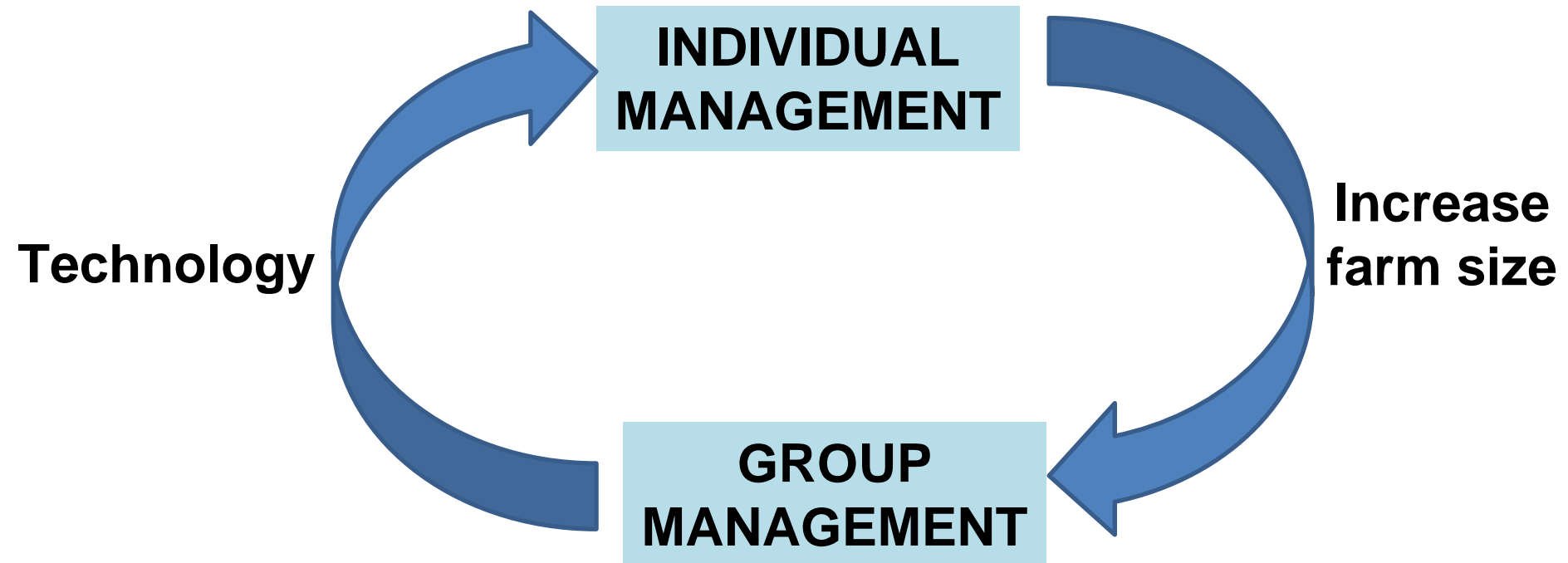


Smart livestock farming



Ancient shepherd

- Individual animal management
- Individual identification
- Filiation of individuals
- Relevant dates
- Productivity
- Selection based on productivity



ESKARDILLO

Data collection

Chip reader
Barcode reader
Digital camera
Keyboard for farmer inputs
Milk control
Morphological evaluation

Data Processing

Feedback to the farmer



Objective: Evaluate the effectiveness of the ESKARDILLO on the management of conventional farms

Material and methods

12 farms WITH ESKARDILLO

- Murciano-Granadina breeding association
- Eskardillo implemented in 2014 (pioneers)
- Forward-thinking farmers
- Monitoring results from 2013 to 2016 (4 years) considering 2014 data as reference
- Absence of sanitary problems or changes in farm management

12 farms WITHOUT ESKARDILLO (CONTROL)

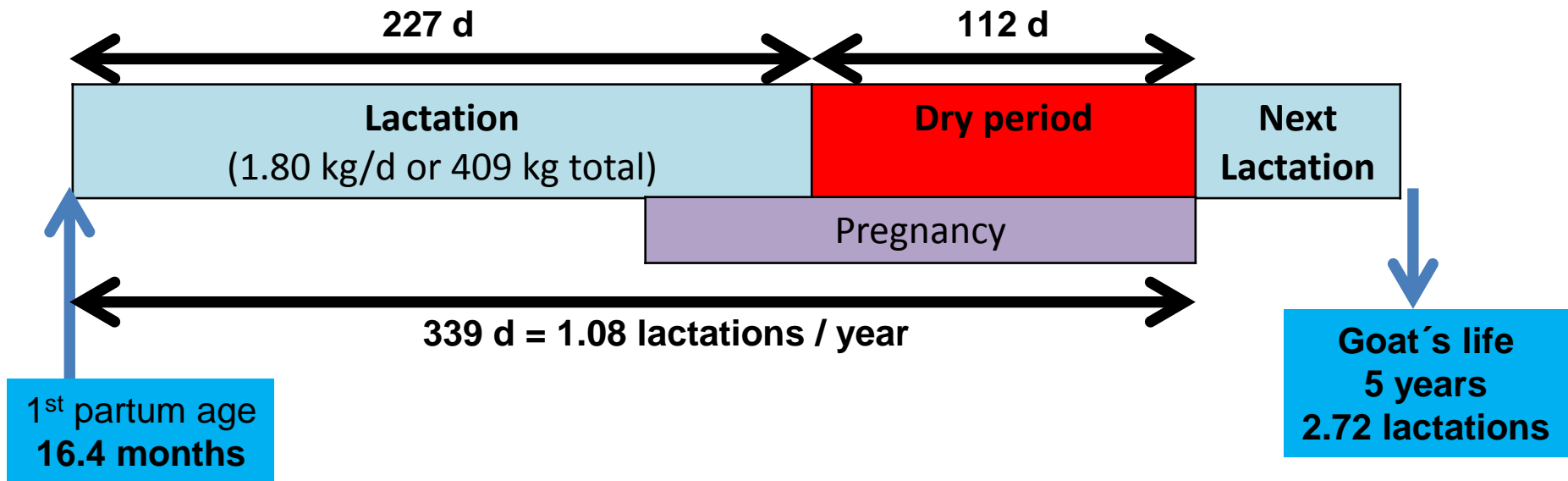
STATS: Farms as experimental units

Effects on:

- Productivity
- Genetic progress
- Seasonality of production
- Invisible loses
 - 1st partum age
 - Dry period length



Situation before ESKARDILLO (2013)



68,353 LACTATIONS; 31,859 GOATS

Optimizing farm management

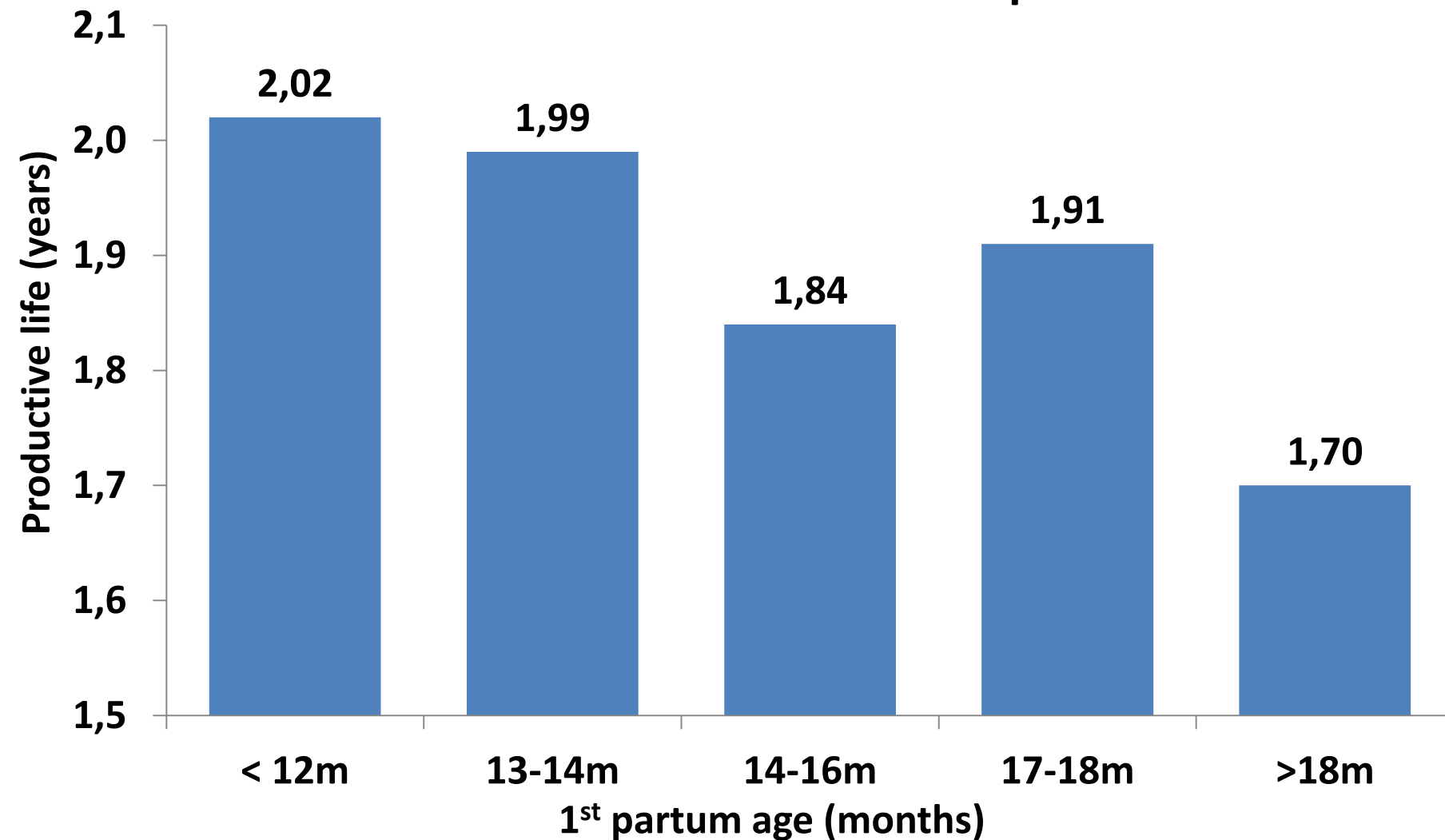
- Decreasing unproductive periods

– 1st partum age

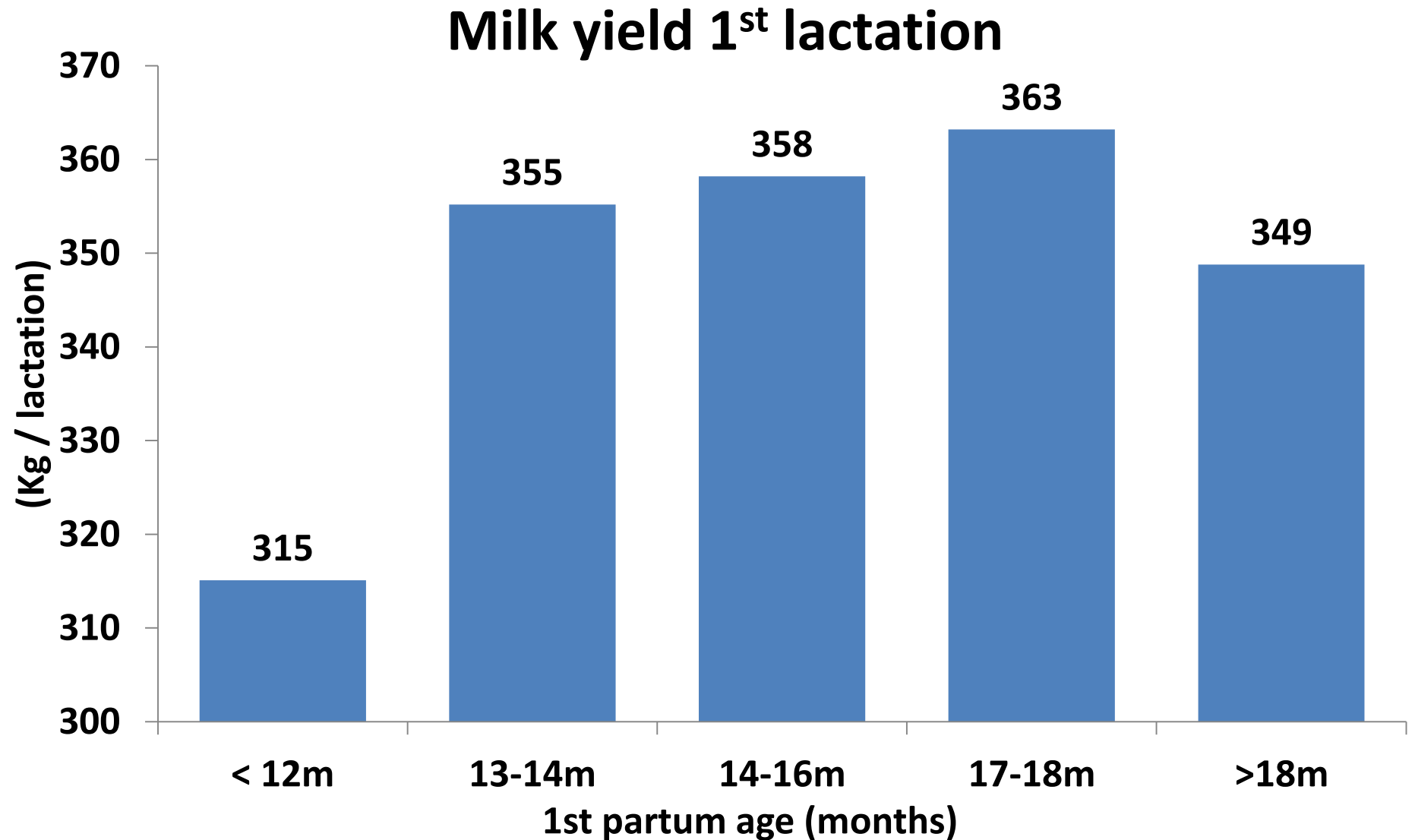
– Dry period length

Does 1st partum age affect productive life?

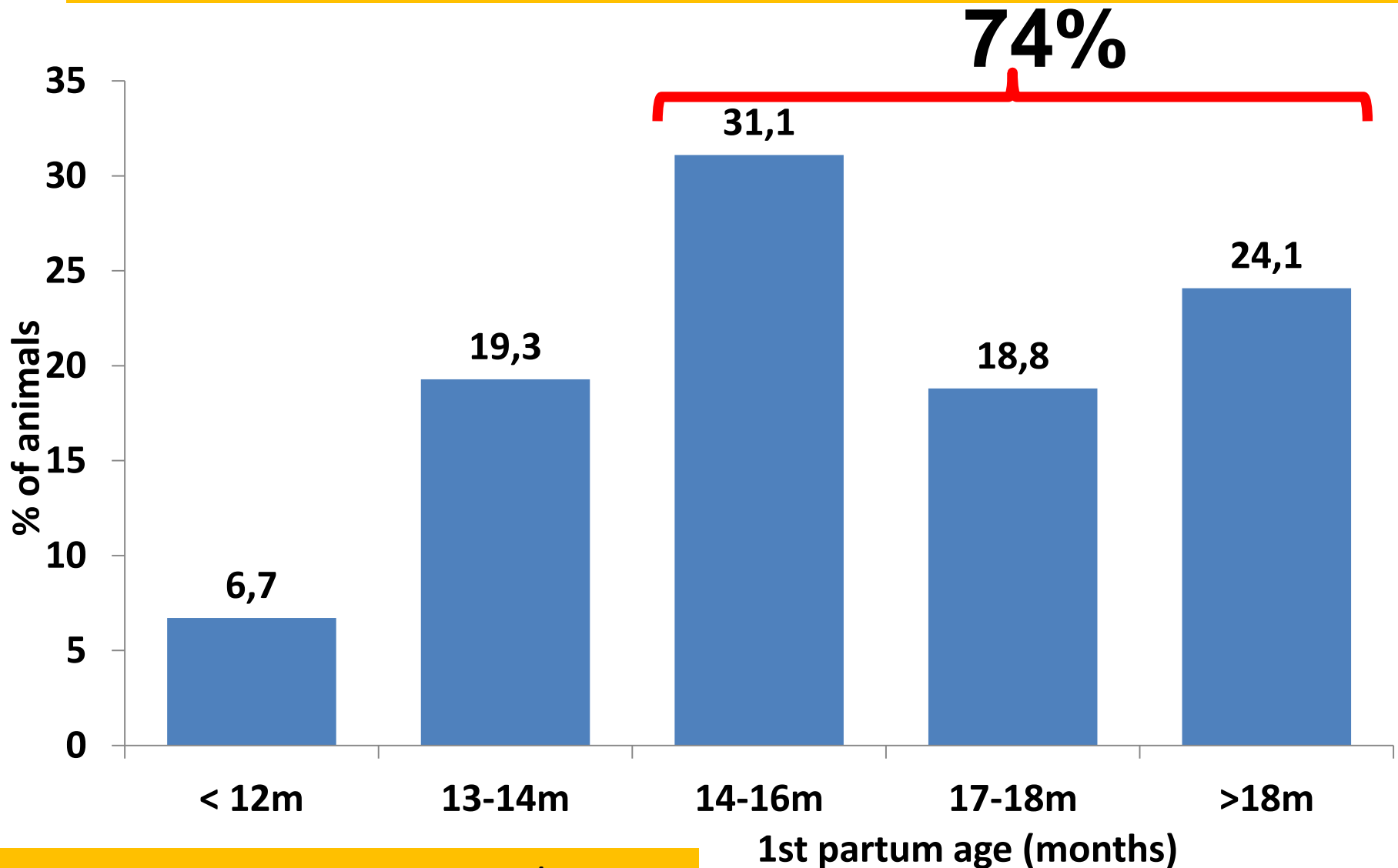
Productive life = death date - 1st partum date



Does 1st partum age affect milk production?

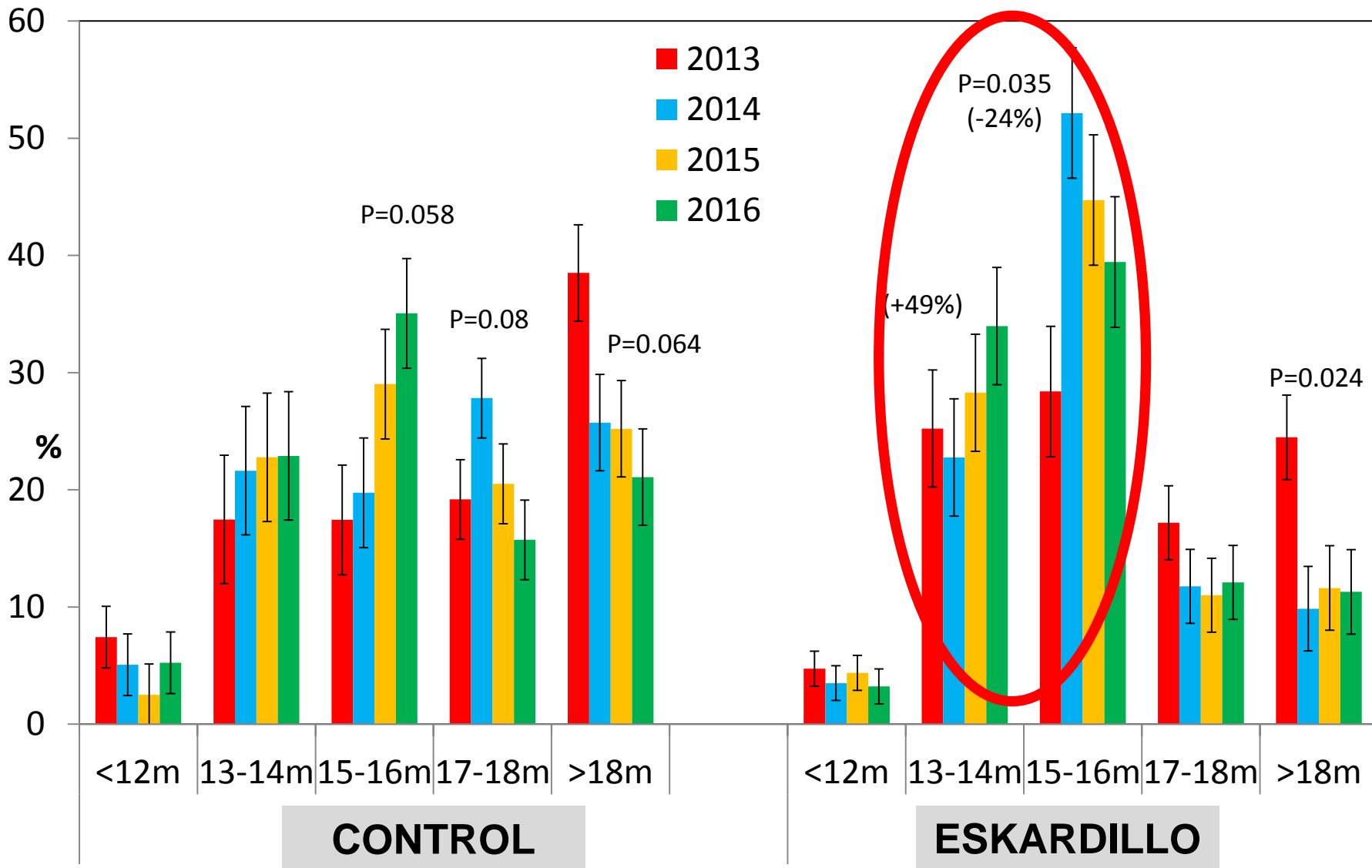


Implications of 1st partum age

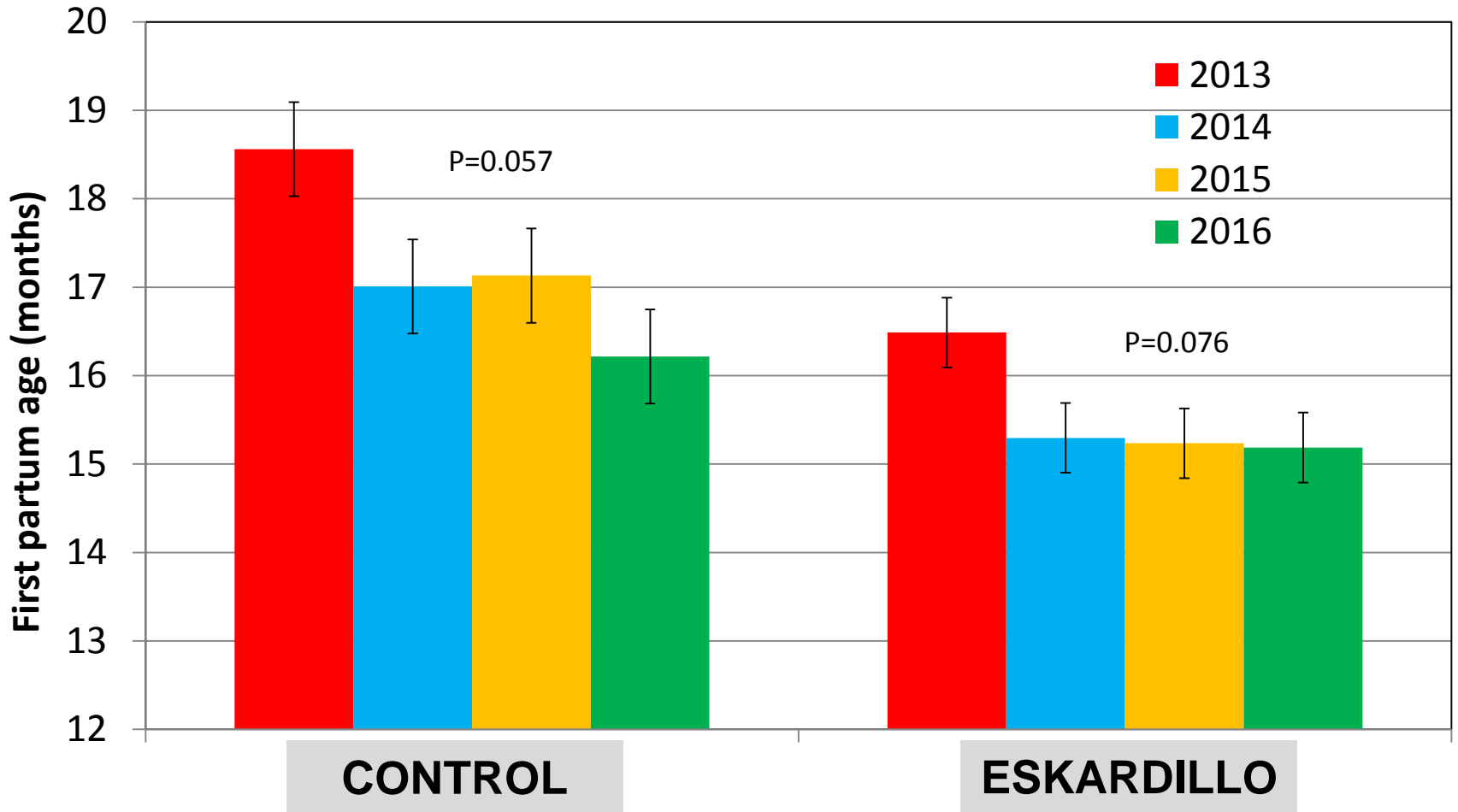


Extra feeding cost =12,1 €/animal

Effect of Eskardillo on 1st partum age

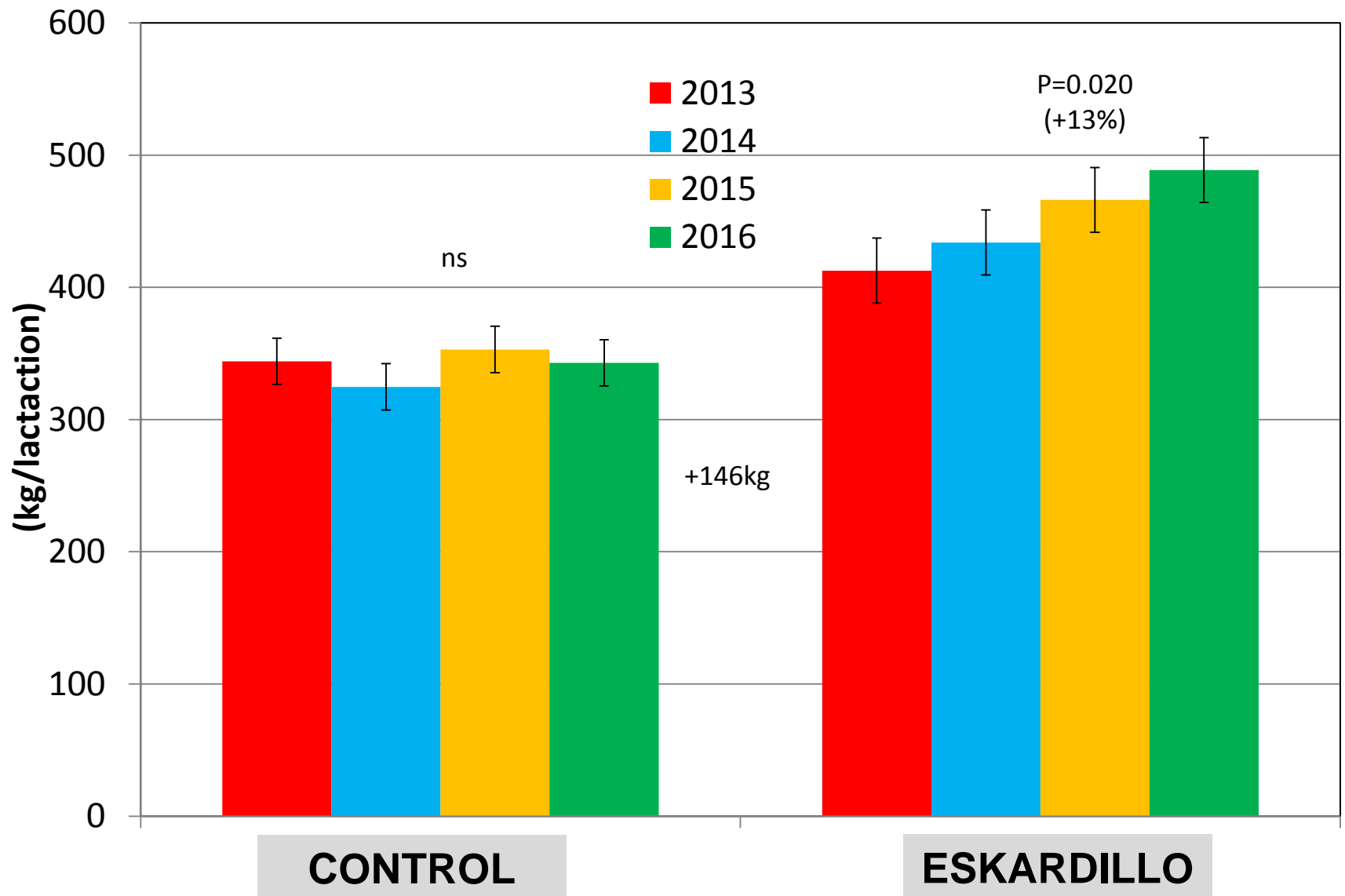


Effect of Eskardillo on 1st partum age



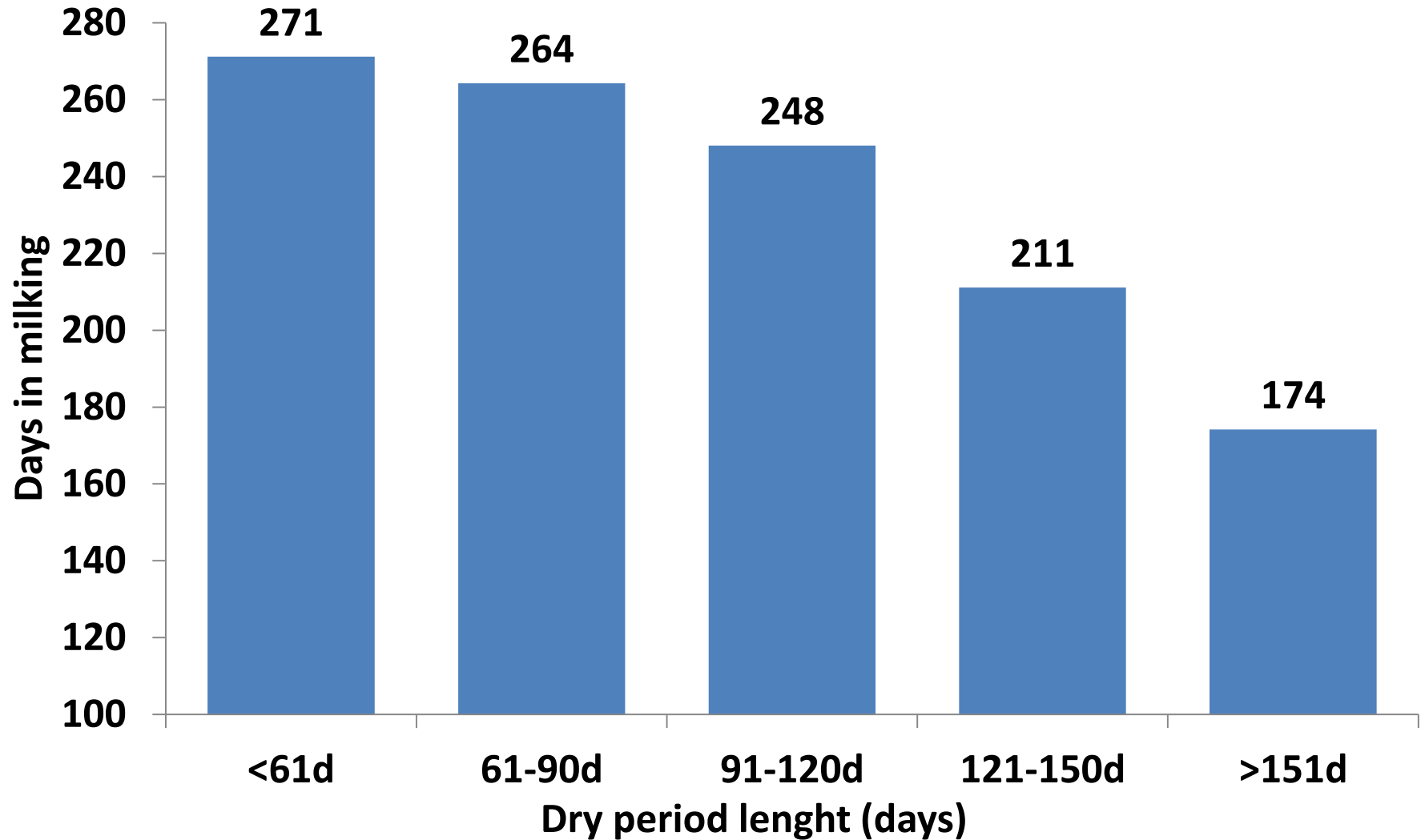
1 month less

Milk production in 1st lactation



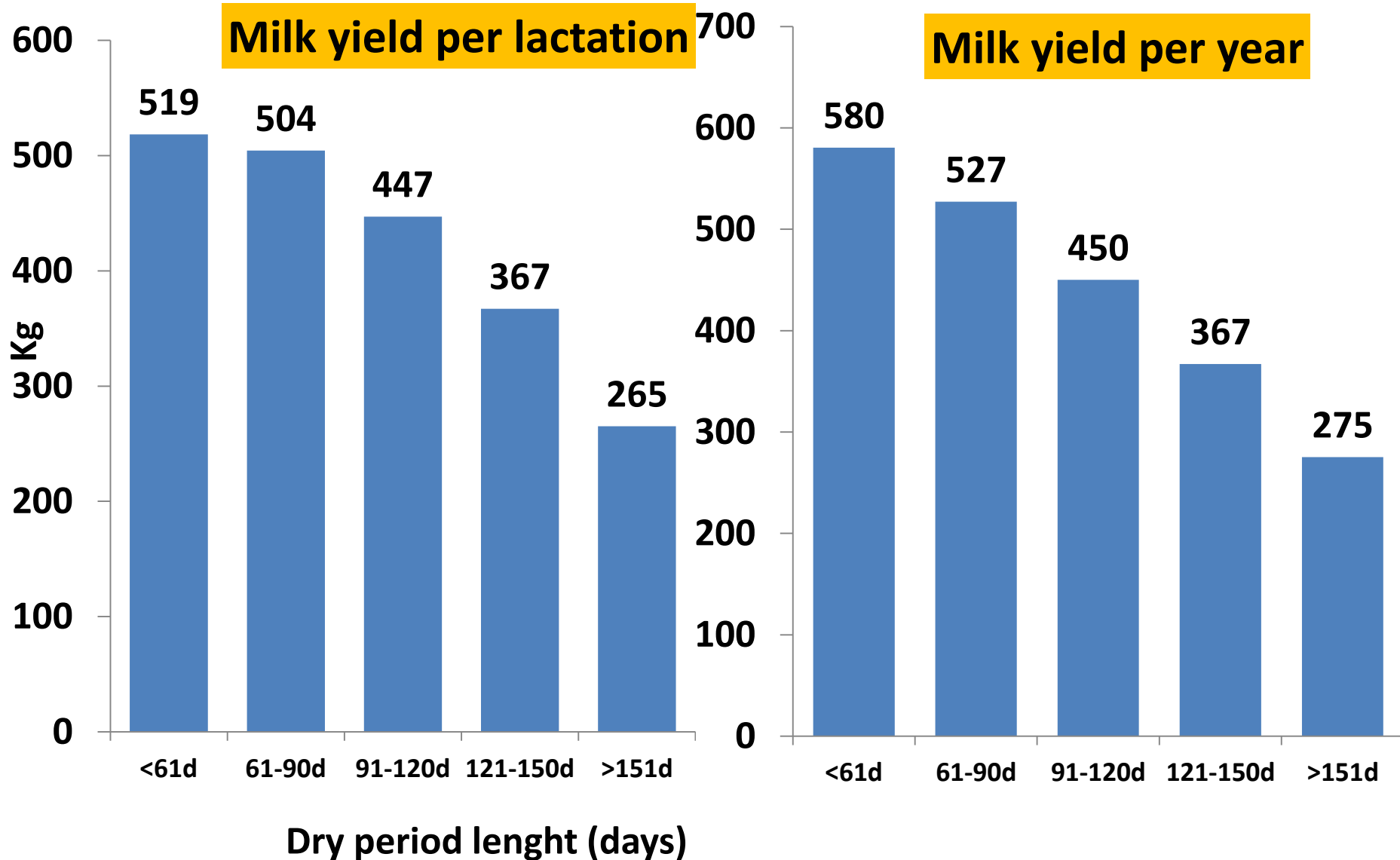
Dry period length

Does a long dry period increase lactation length?

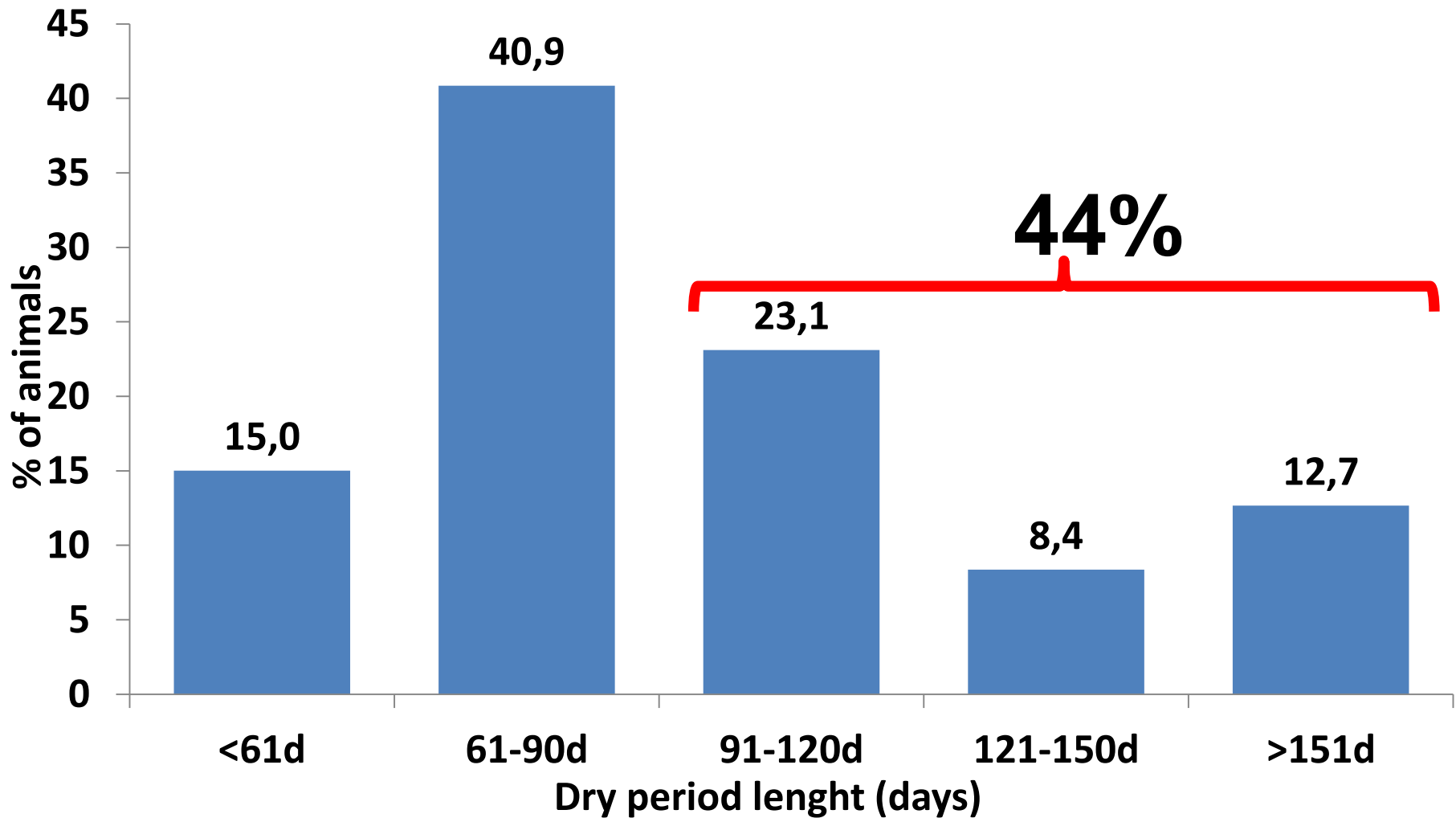


(Matec3n et al., 2013. IV Foro Nacional Caprino)

Does a long dry period increase milk yield?



Implications of dry period length



Extra feeding cost =16 €/animal

How long a lactation should be?

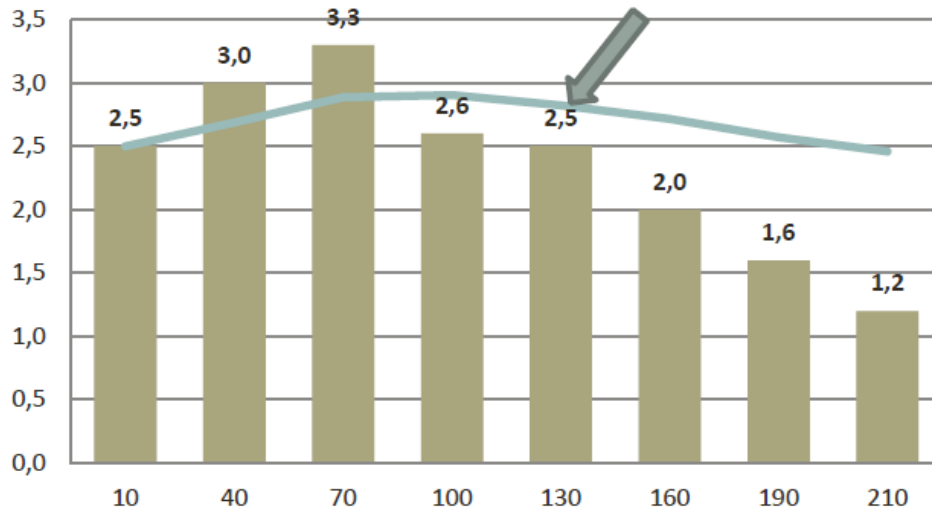
As long as you make money with it.
There is a profitability threshold.

Feeding cost	Milk price		
	0.4 €/L	0.6 €/L	0.8 €/L
0.40 €/d	1 L	0.67 L	0.5 L
0.50 €/d	1.25 L	0.83 L	0.62 L
0.60 €/d	1.5 L	1 L	0.75 L

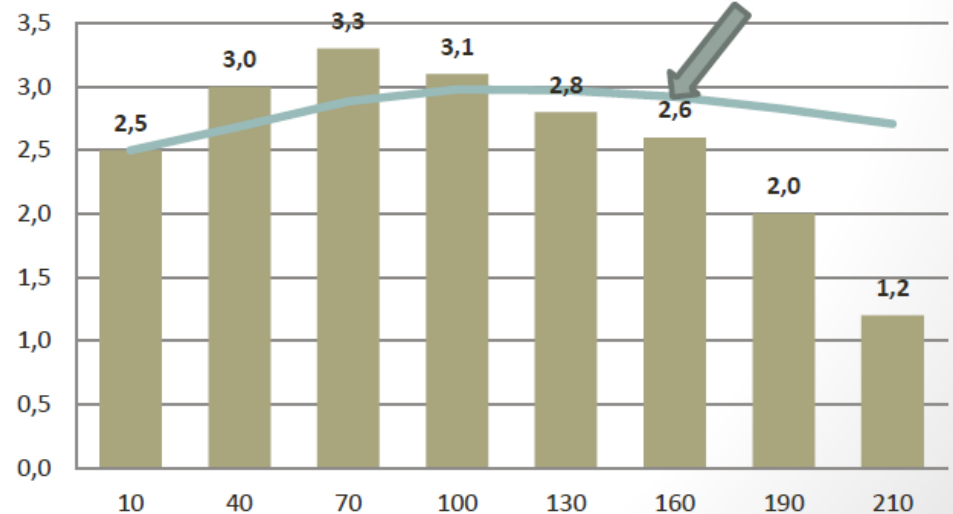
Below that threshold animals should be dry off
and give birth 2 months after

Objective: Reproductive plan according to productivity

Lactation curve Type I

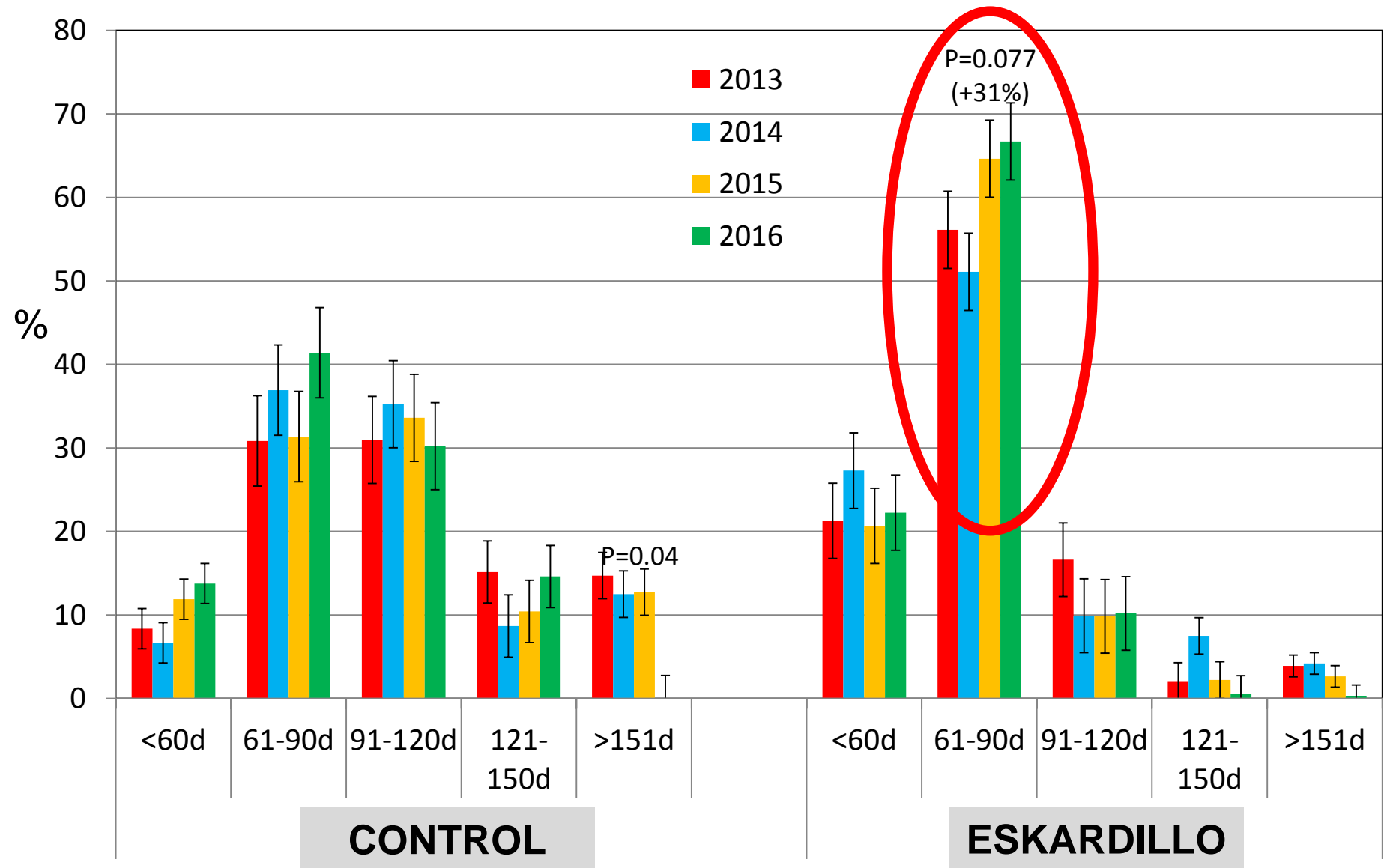


Lactation curve Type II

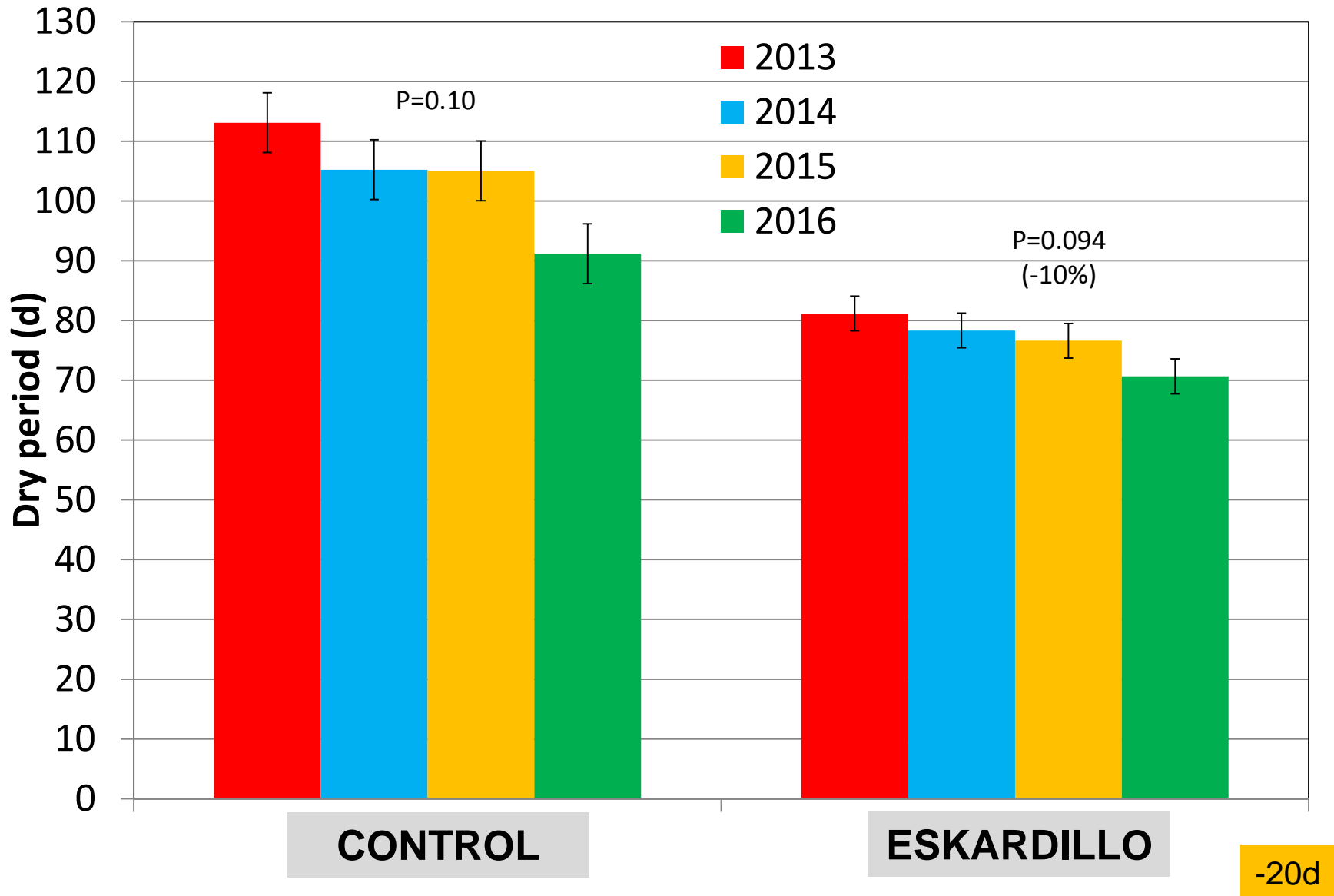


(Matec3n et al., 2013.
IV Foro Nacional Caprino)

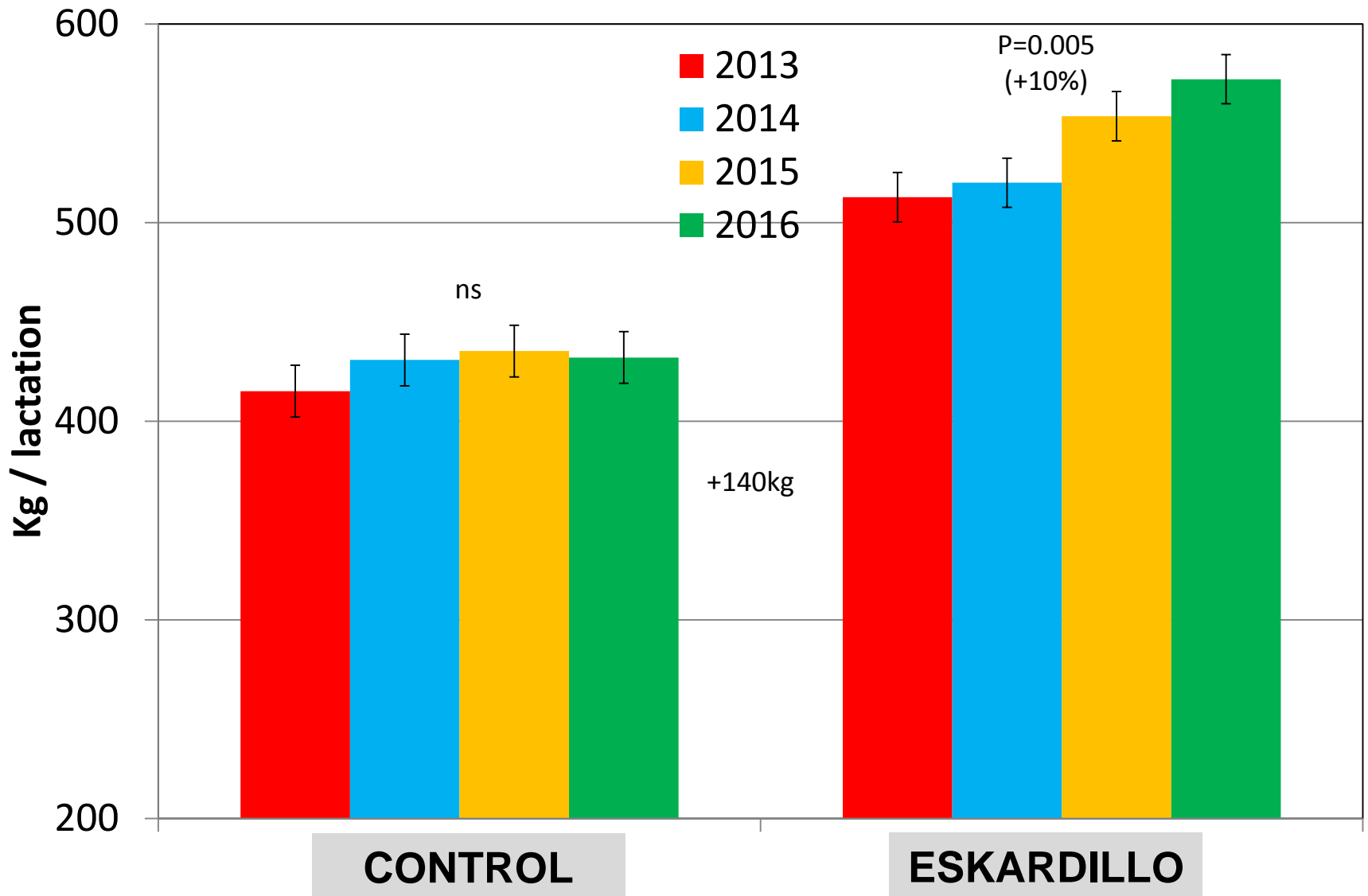
Effect of Eskardillo on Dry period length



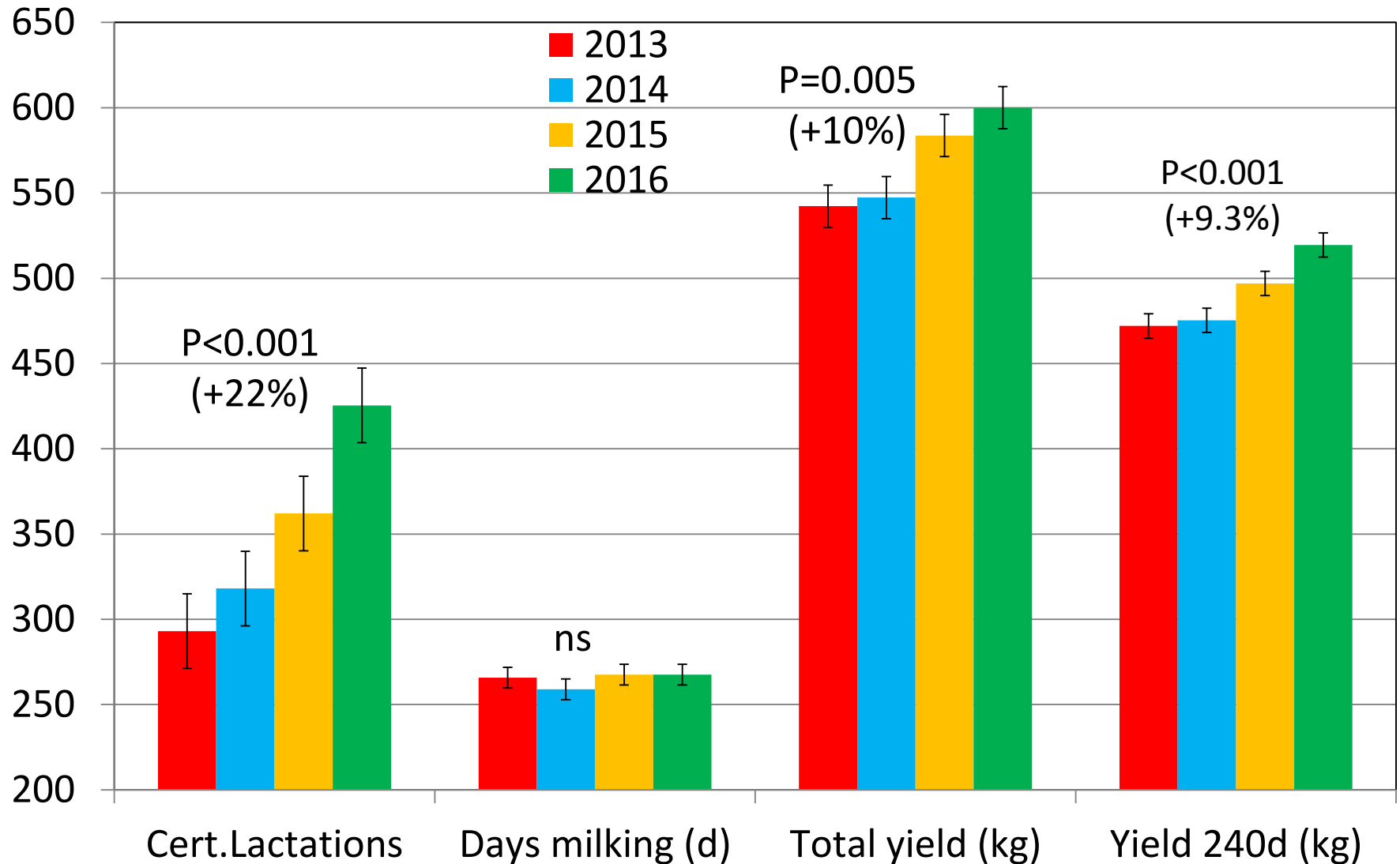
Effect of Eskardillo on Dry period length



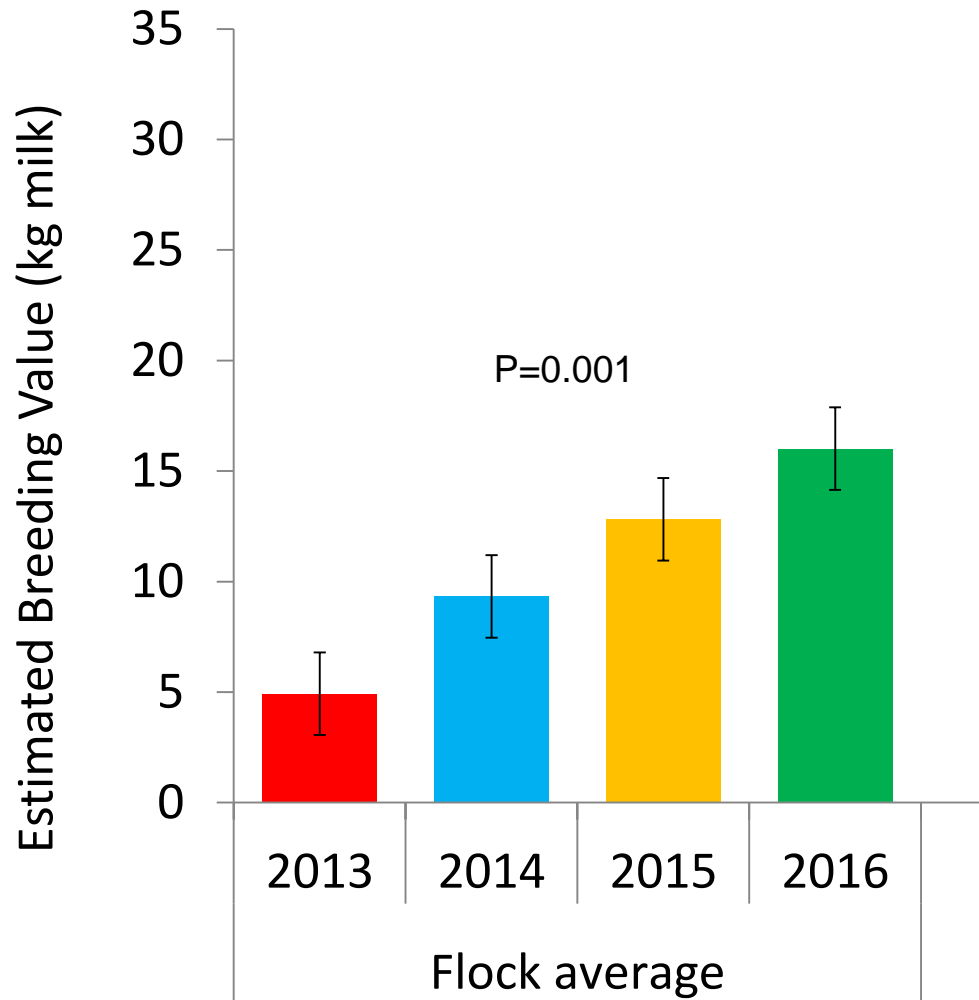
Effect of Eskardillo on Milk yield



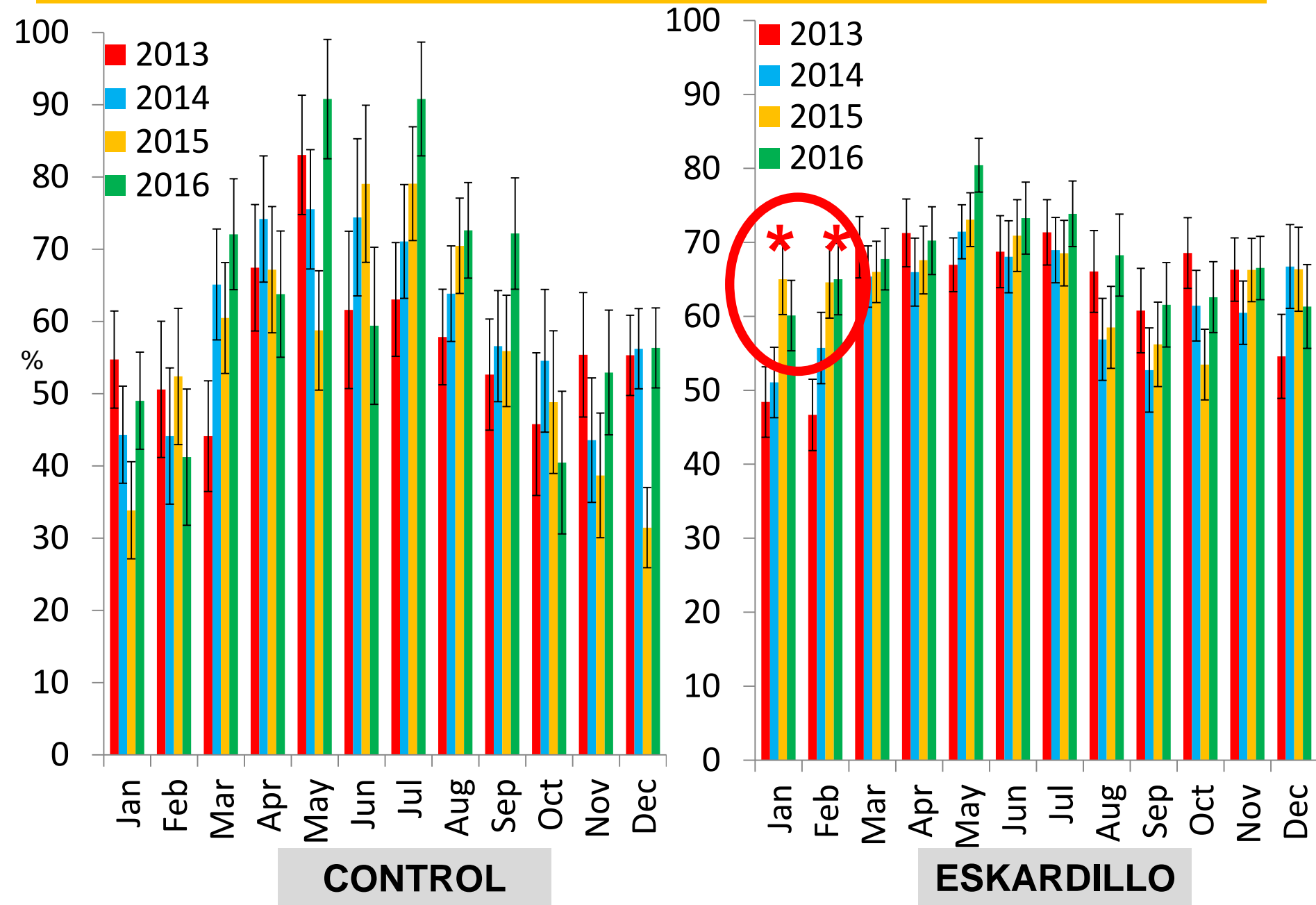
Certified lactations in farms WITH ESKARDILLO



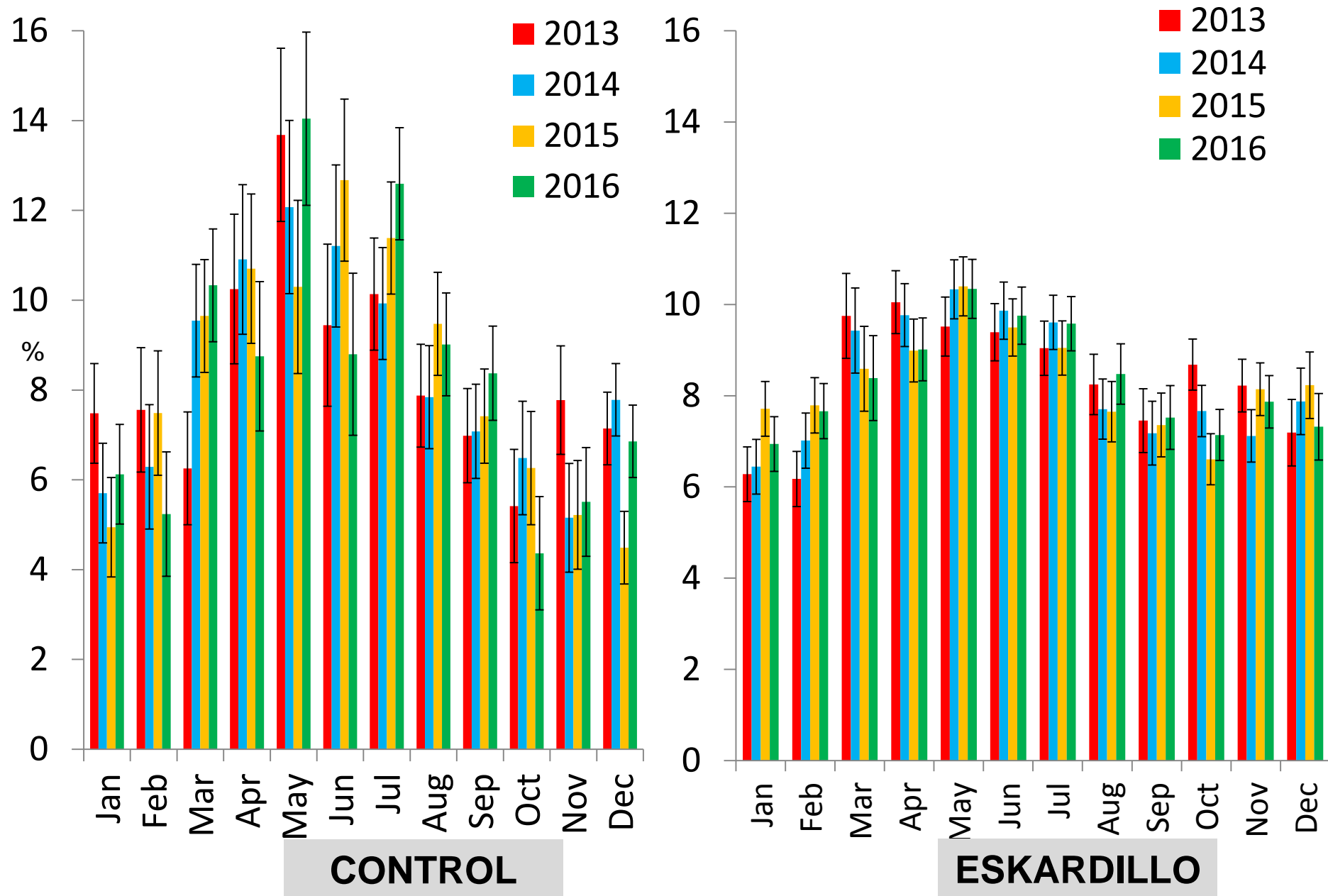
Effect of Eskardillo on Estimated Breeding Value



Production seasonality (% of goats in milking)



Production seasonality (% of milk production)



Conclusions

This study demonstrated that farm management based on a data-driven decision making is an effective strategy to:

- **Decrease unproductive periods**
 - First partum age
 - Dry period length
- **Improve milk production**
 - Better genetic selection
 - Improving culling off strategies
- **Decrease seasonality in the production**
 - Better labour management
 - Higher milk price

.....and farm sustainability?

THANK YOU FOR YOUR ATTENTION



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