



Innovation for Sustainable
Sheep and Goat
Production in Europe

USE ANIMAL INDIVIDUAL DATA TO IMPROVE FARM MANAGEMENT IN SMALL RUMINANTS (SPANISH CASE STUDY)

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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 farming

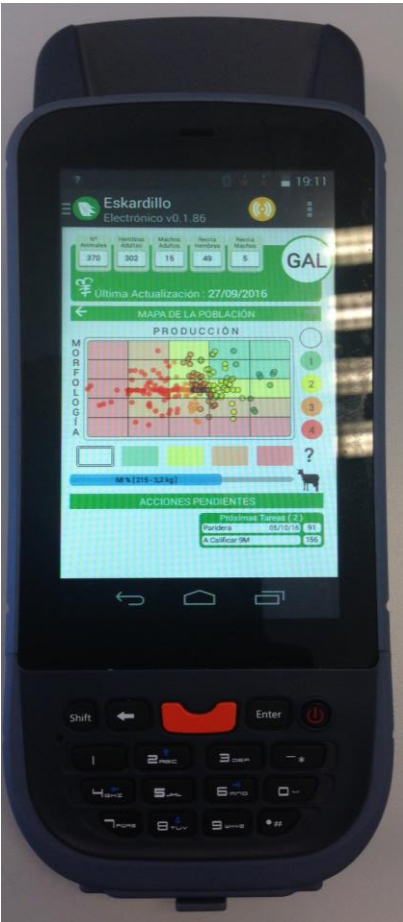


Ancient shepherds

- 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



6 functional modules

Farm management



Módulo Gestión Ganadera



Módulo Control de Rendimiento

Productivity

**Genetic evaluation
Gene bank**



Módulo ADN-Genético



Módulo Económico Técnico Ambiental

Economic / Environmental

Breeding



Módulo Centro de Sementales



Módulo Administración y Gestión

Administration

1-Farm management module



Info display

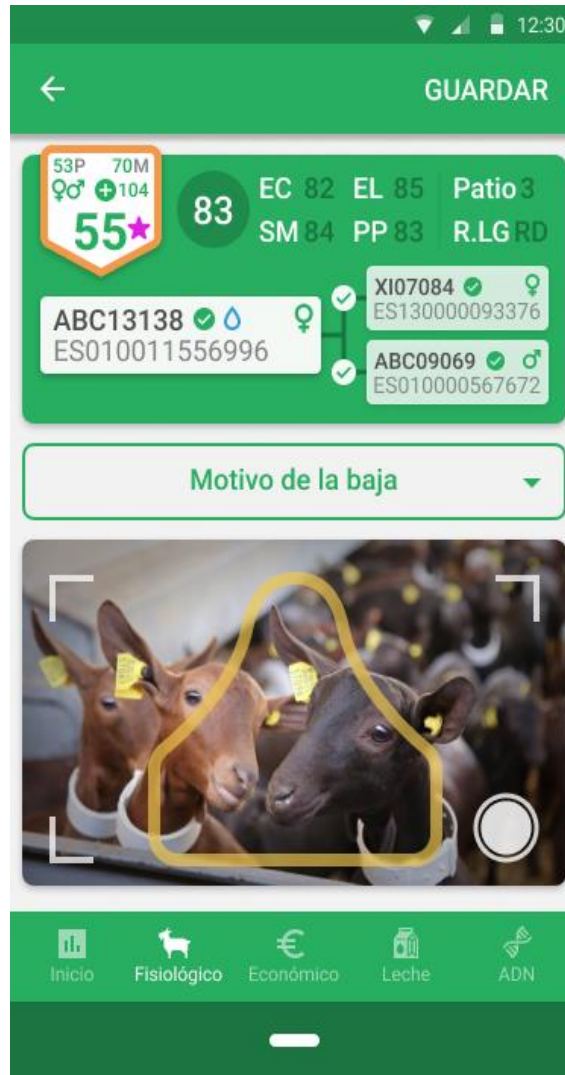
- Number of animals
- Type of animals
- Animal ranking
- Actions required

Management

- Inventory
- In and outs
- Replacement
- Culling
- Parturition period
- Drying off
- Natural mating
- AI management
- Pregnant scan



Entrants



Exiting animals

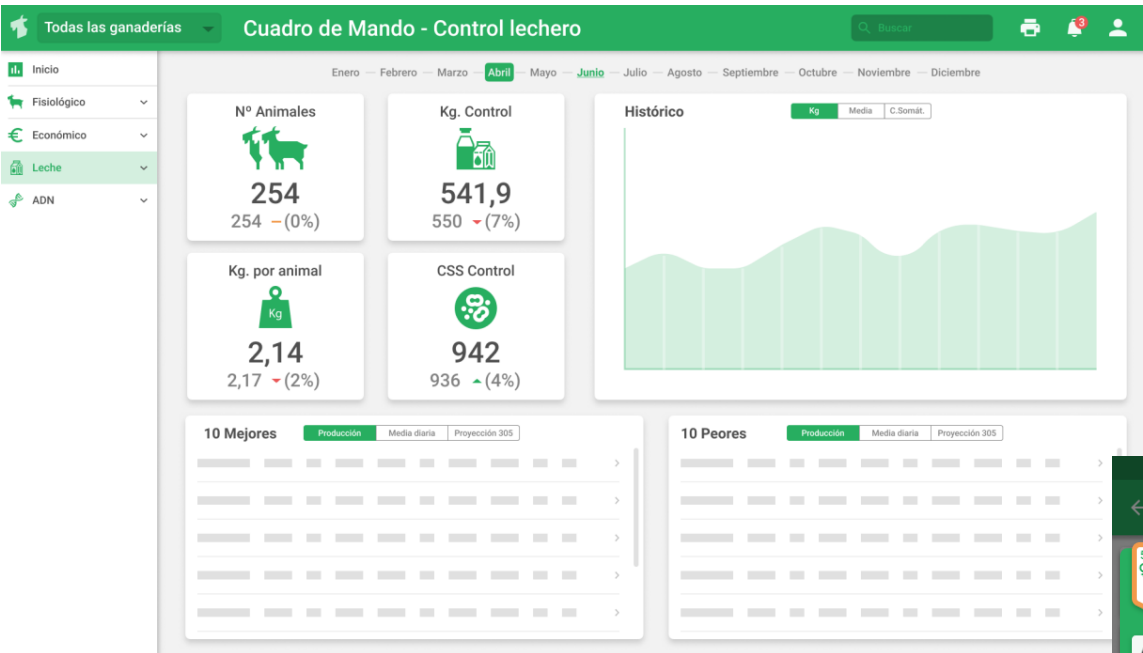


Breeding group

2-Productivity module



Módulo Control de Rendimiento



Management

- Milk control (kg, comp. SCC)
- Body weight
- Morphology evaluation

Mobile app screenshot for "Registrar peso" (Record weight). The form displays the following information:

- Animal ID: ABC13138 (ES010011556996)
- Date: 5/7/3
- Weight: 46,2 kg
- Buttons: Cancelar, Aceptar

Mobile app screenshot for "Calificación" (Evaluation). The form displays the following information:

- Animal ID: ABC13138 (ES010011556996)
- Date: 5/7/3
- Evaluation Score: 55
- Buttons: Primípara, Multipara, Macho
- Section: Estructura y capacidad (Structure and capacity)
- Sub-sections: Estatura Bajo (Height Low), Estatura Alto (Height High)

3-Genetic evaluation module



Módulo
ADN-Genético

Banco de muestras

Inicio
Gestión ganadera
Económico
Leche
ADN

Mostrar todo > Filtro > Filtro > Filtro > Filtro > +

Partes de actuación

JUNIO 2018

20 Junio 2018
ABC 13 >
ALV 89 >
JFK 22 >

13 Junio 2018
ABC 42 >

13 Junio 2018
ABC 64 >

4 Junio 2018
ABC 13 >
ALV 89 >
JFK 22 >

MAYO

13 Mayo 2018
ABC 64 >

4 Mayo 2018
ABC 13 >
ALV 89 >
JFK 22 >

ORD	D	Lote / Gradilla	Fecha	F. Nac.	Nº P.	Animal	CROTAL	Sexo	Bote	Tipo M. Biológica	Almacenada
1		B-2019-83-1	26/07/2018	26/08/2016	2	GLS16017	62356	H	B-2018-83-1	SE-SANGRE ENTERA	[-SIN DATOS]
1		B-2019-83-1	26/07/2018	26/08/2016	2	GLS16017	62356	H	B-2018-83-1	SE-SANGRE ENTERA	[-SIN DATOS]
1		B-2019-83-1	26/07/2018	26/08/2016	2	GLS16017	62356	H	B-2018-83-1	SE-SANGRE ENTERA	[-SIN DATOS]
1		B-2019-83-1	26/07/2018	26/08/2016	2	GLS16017	62356	H	B-2018-83-1	SE-SANGRE ENTERA	[-SIN DATOS]
1		B-2019-83-1	26/07/2018	26/08/2016	2	GLS16017	62356	H	B-2018-83-1	SE-SANGRE ENTERA	[-SIN DATOS]
1		B-2019-83-1	26/07/2018	26/08/2016	2	GLS16017	62356	H	B-2018-83-1	SE-SANGRE ENTERA	[-SIN DATOS]
1		B-2019-83-1	26/07/2018	26/08/2016	2	GLS16017	62356	H	B-2018-83-1	SE-SANGRE ENTERA	[-SIN DATOS]
1		B-2019-83-1	26/07/2018	26/08/2016	2	GLS16017	62356	H	B-2018-83-1	SE-SANGRE ENTERA	[-SIN DATOS]
1		B-2019-83-1	26/07/2018	26/08/2016	2	GLS16017	62356	H	B-2018-83-1	SE-SANGRE ENTERA	[-SIN DATOS]
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1		B-2019-83-1	26/07/2018	26/08/2016	2	GLS16017	62356	H	B-2018-83-1	SE-SANGRE ENTERA	[-SIN DATOS]
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1		B-2019-83-1	26/07/2018	26/08/2016	2	GLS16017	62356	H	B-2018-83-1	SE-SANGRE ENTERA	[-SIN DATOS]

Management

- Genetic evaluation (EBV)
- Parental test
- Genomic information



Módulo Económico
Técnico Ambiental

4-Economic/Environmental module



Management

-Incomes (milk, meat, youngstock, manure)

-Expenses (feed, labour, medicines)

-Economic indexes

-GHG emissions

-Carbon sequestration

-Carbon footprint

AMALTEA project

5-Breeding module



Módulo Centro de
Sementales

Todas las ganaderías **Catálogo de sementales**

DAR DE ALTA

Inicio
Fisiológico
Económico
Leche
ADN

Partes de actuación

JUNIO

20 Junio 2018
ABC 13 >
ALV 89 >
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MAYO

13 Mayo 2018
ABC 64 >

4 Mayo 2018
ABC 13 >
ALV 89 >
JFK 22 >

2 Mayo 2018
ABC 13 >

F. Alta	Identificación	M	Sexo	PR	Fecha Nac.	Tatuaje	Crotal	Madre	Padre	ID. Oficial	ID. Electrónica
20/06/2018	946		H		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		H		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		M		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		H		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		M		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		M		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		M		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		H		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		H		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		M		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		M		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		M		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		M		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163
20/06/2018	946		H		12/11/2017	ALV17366	43163	ALV15073	ALV14190	0724010021343163	10040000724010021343163

Management

- Male catalogue
- Elite males
- Tested males
- Males in evaluation

6-Administration module



Módulo
Administración y
Gestión

Todas las ganaderías **Gestión de usuarios**

Inicio
Fisiológico
Económico
Leche
ADN

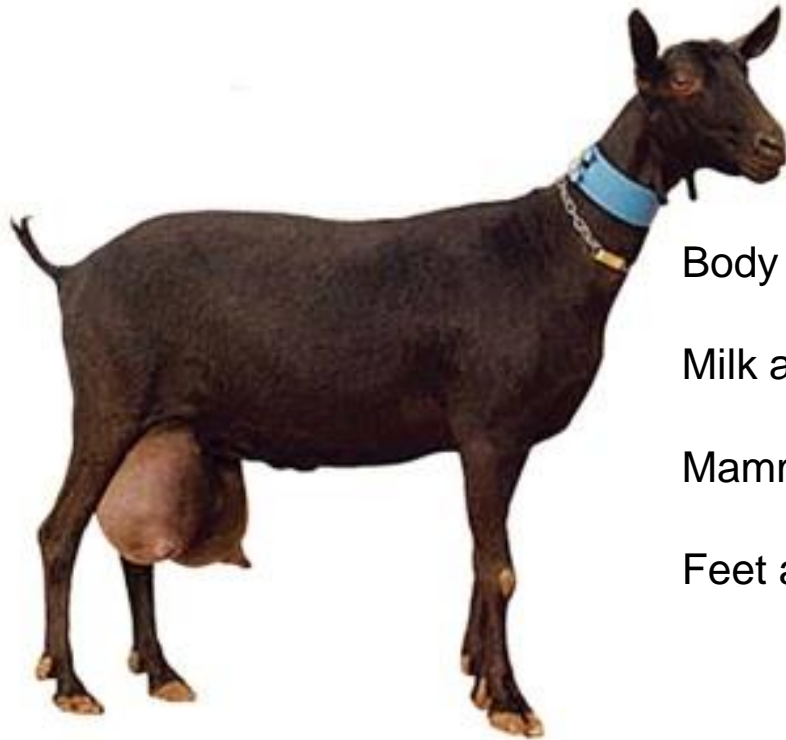
Información **Permisos** + AÑADIR USUARIO

Nombre	Usuario	Paridera	Alta	Validación	Cubrición	Inseminación	Secado	Inventario	Control lechero
AGC Alberto González Caballero	Veterinario	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AGC Alberto González Caballero	Calificador	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AGC Alberto González Caballero	Veterinario	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AGC Alberto González Caballero	Calificador	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AGC Alberto González Caballero	Veterinario	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
AGC Alberto González Caballero	Calificador	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AGC Alberto González Caballero	Veterinario	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AGC Alberto González Caballero	Calificador	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AGC Alberto González Caballero	Veterinario	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AGC Alberto González Caballero	Calificador	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AGC Alberto González Caballero	Veterinario	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AGC Alberto González Caballero	Calificador	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AGC Alberto González Caballero	Veterinario	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
AGC Alberto González Caballero	Calificador	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Management

- Users management
- Access management
- Actions management
- Configuration
- Reports and questions

Morphological evaluation



Body conformation

Milk aptitude

Mammary system

Feet and legs

kalifaDroid
Calificación Lineal v..

EC 83 ✓ EL 85 ✓ SM 78 ✓ PP 82 ✓

ABC09190 - 67803
ES010000567803

(7) 17/10/2016

81

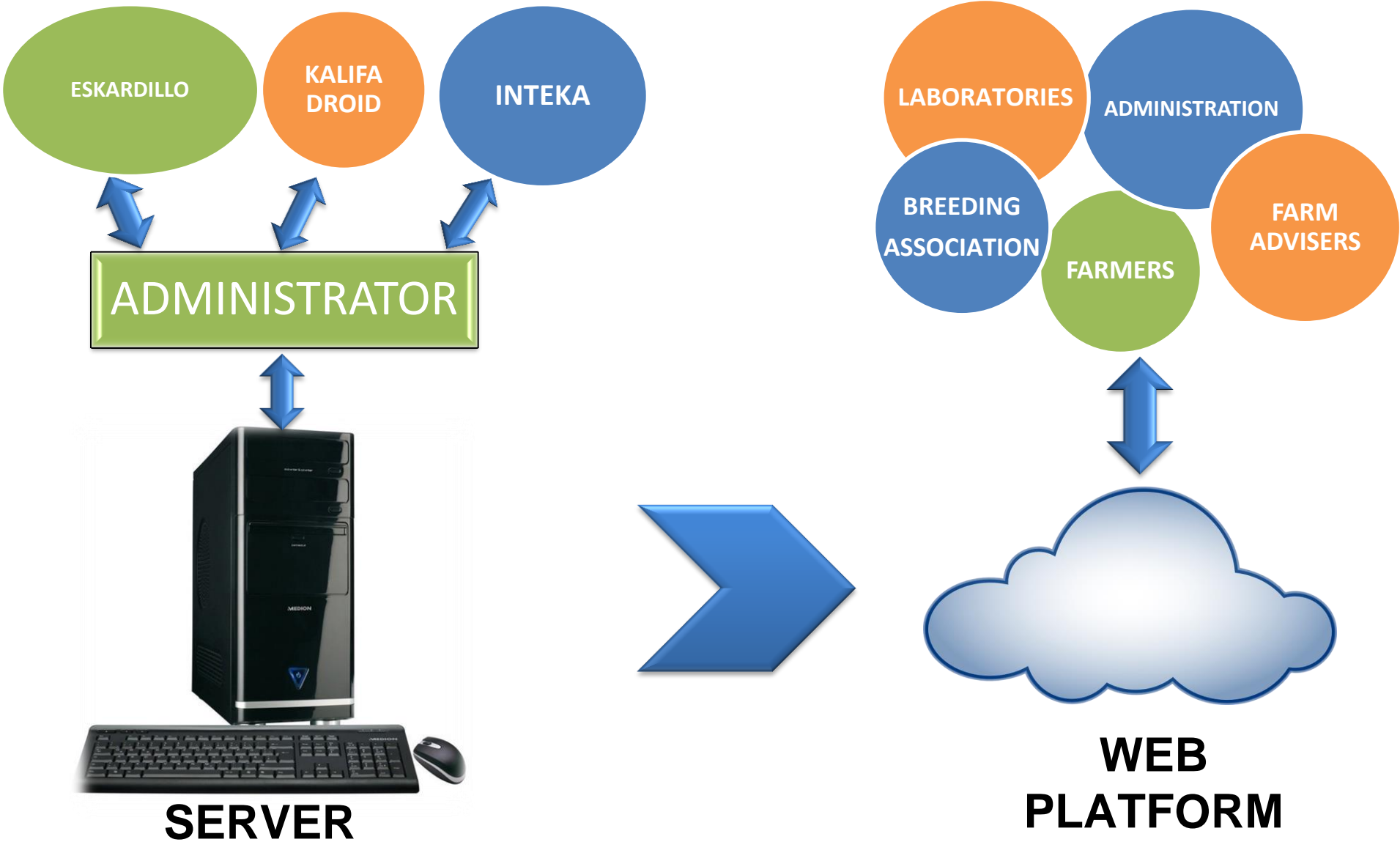
Estructura y Capacidad

Estatura	1	2	3	4	5	6	7	8	9
	Bajo					Alto			
Anchura de pecho	1	2	3	4	5	6	7	8	9
	Estrecha					Ancha			
Profundidad corporal	1	2	3	4	5	6	7	8	9
	Poco Profunda					Muy Profunda			
Anchura de grupa	1	2	3	4	5	6	7	8	9
	Estrecha					Ancha			
Ángulo de grupa	1	2	3	4	5	6	7	8	9
	Derribada					Corregida			

Estructura Lechera

Angulosidad	1	2	3	4	5	6	7	8	9
	Redondeada					Angulosa			
Calidad de hueso	1	2	3	4	5	6	7	8	9
	Recto y redondo					Plano y nítido			

On going improvements



INTEKA

Animal data
 ID
 Mother and father
 Date of birth
 Goat from AI
 Historic milk potential

Reproductive information
 Number of partum
 Partum date
 Dry period length
 Litter size, ID and sex
 Offspring as replacement

Reproductive information
 Number of miscarriages
 DIM at conception
 Number of breeding seasons
 AI, date and male
 Result of pregnancy scan
 Scan date

Potenciales para Cubrir ...							
Propuesta			Información				
E	MN	IA	MD	PR	Nº Genealógico	Crotal	ID. Oficial
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	XI07090	93343	072413000009
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC07219	36371	072401000043
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC07231	36302	072401000043
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09013	67640	072401000056
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09022	67615	072401000056
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09057	67651	072401000056
7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09086	67646	072401000056
8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09131	67770	072401000056
9	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09149	67772	072401000056
10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09190	67803	072401000056
11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09218	67794	072401000056
12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09227	67828	072401000056
13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09243	67882	072401000056
14	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09289	67879	072401000056
15	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09278	67844	072401000056
16	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09326	67331	072401000056
17	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC09331	67323	072401000056
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19	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC10120	65078	072401000056
20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC10186	67107	072401000056
21	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC10214	67105	072401000056
22	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC10232	67135	072401000056
23	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC10233	67118	072401000056
24	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ABC10334	67279	072401000056

Conformar lote de IA ...

Fecha IA : 03/11/2017

- Incluir a Inseminar primero las MFS
- No Inseminar animales en circuito de cubrición.
- No Inseminar animales con menos de **120 DEL**
- No Inseminar animales con más de **290 DEL**
- Utilizar los patios (separados ,) **1,2,3**
- Inseminar animales con requisitos genéticos
 - Inseminar con VGL positivo
 - Inseminar con VGL, VGGr, VGPr positivos
 - Inseminar con VGL, VGGr+Pr positivos
 - Inseminar con VG todos positivos
- No Inseminar animales con Nº Parto mayor a **7**
- No Inseminar animales con PPa inferior a PPr
 - Potencial referencia (PPr) primiparas **1.50**
 - Potencial referencia (PPr) multiparas **2.00**
- Inseminar sólo animales de la propuesta de MN
- No incluir en el lote de ins. más de **100 animales.**
- No incluir madres marcadas para NO quedarse sementales

Nº Registros : 731

Acción Reproductiva								
	Abs	DEL	NCu	IA	F. Cubric.	Macho	Dg	F. Diagnos.
0	383	1			11/09/2017			?
0	212	1			05/07/2017			?
0	388	1		<input checked="" type="checkbox"/>	06/09/2017	ABC15175		?
0	474	1			11/09/2017			?
0	210	2			12/07/2017			<input checked="" type="checkbox"/> 25/08/2017
0	229	2			12/07/2017			<input checked="" type="checkbox"/> 25/08/2017
0	292	2			05/07/2017			?
0	184	0						
0	193	0						
0	320	0						
0	419	1		<input checked="" type="checkbox"/>	06/09/2017	ABC15176		?
0	258	0						
0	263	0						
0	189	0						
0	171	0						
0	242	0						
0	207	0						
0	820	5			05/07/2017			?
0	213	2			12/07/2017			<input checked="" type="checkbox"/> 25/08/2017
0	508	1			05/07/2017			?
0	315	0						
0	475	1			11/09/2017			?
0	465	1			11/09/2017			?
0	473	1			11/09/2017			?

Productive information

- Date last milk control
- Date dry period begins
- Location (pen)
- Milk yield in the last 4 milk controls
- Estimated milk yield at 305 DIM
- Days to get the lactation peak
- Days with maximum milk yield (persistency)
- Maximum milk yield
- Current milk yield
- Estimated milk yield at drying

Genetic information

- Mother of breeding male
- Mother of breeding female

Breeding value for

- Milk yield
- Milk fat
- Milk protein

Morphology (body capacity, alignment, udder, feet)

Overall breeding value

Management information

- Physiological stage
- Next event (AI, natural mating, pregnancy scan, drying, partum)
- Estimated date for next event

Información Productiva																					Información VG y Recría										Información Gestión													
bs.	Dpc	F. Control	F. Secado	Pt	Kg-3	Kg-2	Kg-1	Kg	PR305	pDEL	xDEL	PPx	PPa	PPr	PPs	C?	Or	H	ES	Vg	Vg L	Vg G	Vg P	Vg G+P	IM	IMP	IMM	Co	CAL	EC	EL	SM	PP	Estado del Animal	Prox. Evento	Fecha Evento								
		11/10/2017		3	0.0	0.0	2.7	2.8																											87	78	84	ANIMAL EN PRODUCCIÓN						
		11/10/2017		2	4.0	4.8	3.0	3.2	865.1																											87	84	84	ANIMAL EN PRODUCCIÓN	CUBRICIÓN	03/11/2017			
		11/10/2017		2	1.6	4.2	2.1	4.1	759.2																												85	82	85	ANIMAL EN PRODUCCIÓN	CUBRICIÓN	03/11/2017		
		11/10/2017		2	3.6	4.2	2.8	0.5	608.8																													87	83	85	ANIMAL EN PRODUCCIÓN	CUBRICIÓN	03/11/2017	
7	58	11/10/2017	08/09/2017	0	2.9	3.4	0.0	0.0	579.0																																			
		11/10/2017		1	3.4	3.0	2.7	2.5	939.2																																			
		11/10/2017		1	3.8	3.2	2.0	2.3	911.3																																			
		11/10/2017		2	2.0	4.8	3.9	2.8	828.6																																			
		11/10/2017		3	0.0	0.0	2.5	3.0																																				
		11/10/2017		4	3.1	3.0	1.4	0.9	476.8																																			
7	77	11/10/2017	27/09/2017	0	3.1	3.2	1.4	0.0	625.6																																			
		11/10/2017		3	0.0	0.0	2.5	3.2																																				
		11/10/2017		1	3.8	3.0	1.6	1.8	588.8																																			
7	58	11/10/2017	08/09/2017	0	3.1	3.2	0.0	0.0	656.9																																			
		11/10/2017		2	2.5	2.1	1.2	0.5	565.0																																			
		11/10/2017		2	1.1	1.7	1.4	1.4	984.7																																			
		11/10/2017		2	4.0	4.9	3.0	3.2	870.1																																			
		11/10/2017		1	1.6	1.9	1.2	1.4	515.0																																			
		11/10/2017		1	2.7	1.0	0.4	1.8	369.3																																			
		11/10/2017		4	0.0	2.9	3.5	3.7	735.3																																			
		11/10/2017		2	1.6	2.7	1.8	2.1	899.0																																			
		11/10/2017		2	2.9	4.2	2.3	2.8	688.7																																			
		11/10/2017	11/09/2017	0	0.9	1.7	0.0	0.0	368.7																																			
		11/10/2017		1	3.6	3.0	2.8	2.1	872.0																																			

[Seleccionar Madres ...](#)

Seleccionar 50 chiva/s de madres paridas en los ultimos 45 dias, ordenadas por ...

- Ordenando por Índice de Manejo (IM)
- Ordenando por IM Productivo (IMP)
- Ordenando por IM Morfológico (IMM)
- Ordenando por VG Leche (VGL)
- Ordenando por VG Grasa (VGG)
- Ordenando por VG Proteina (VGP)
- Ordenando por VG Gr+Pr (VGG + VGP)

[Aceptar](#)

[Cancelar](#)

Decision making based on big data

- Culling strategy
 - Low productivity (quantity / quality)
 - Reproductive and health problems
 - Old animals
- Selection of replacement animals
 - Genetic value
 - Morphology
 - Correct filiation
- Breeding strategy
 - Artificial insemination for high merit animals
 - Natural mating for low merit animals
 - Identification of the best conception timing



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). Using 2014 as reference
- Absence of sanitary problems or changes in farm management

12 farms without Eskardillo (CONTROL)

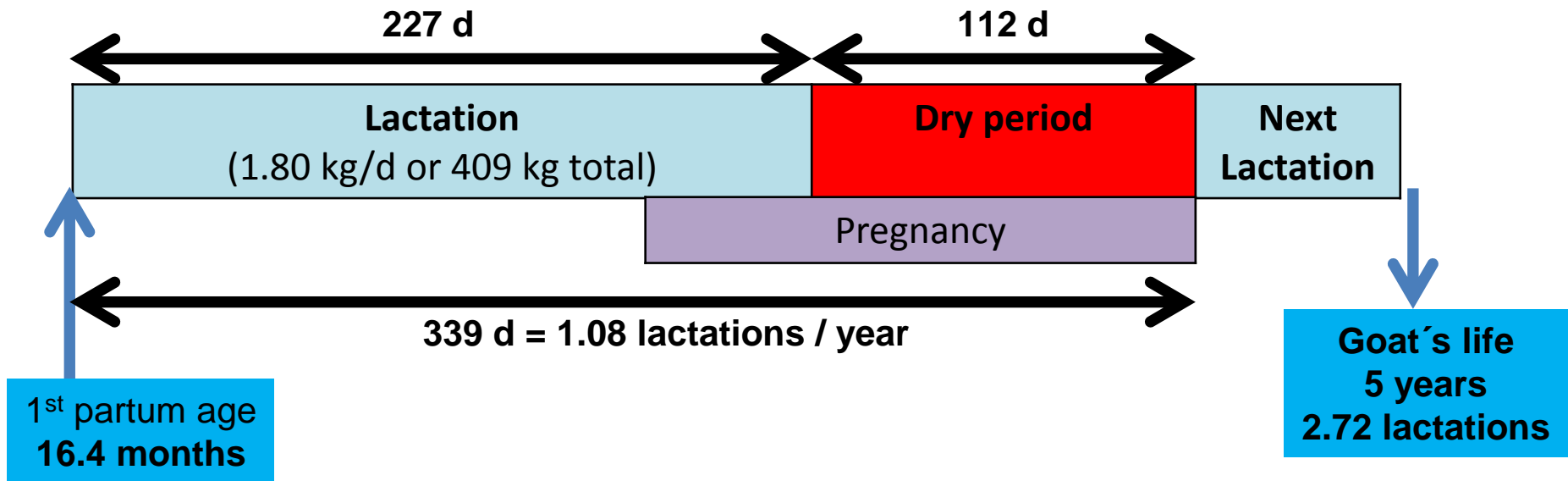
STATS: Farms as experimental units

Effects on

- Productivity
- Genetic progress
- Seasonality of production



Situation before ESKARDILLO (2013)



68,353 LACTATIONS; 31,859 GOATS

Optimizing farm management

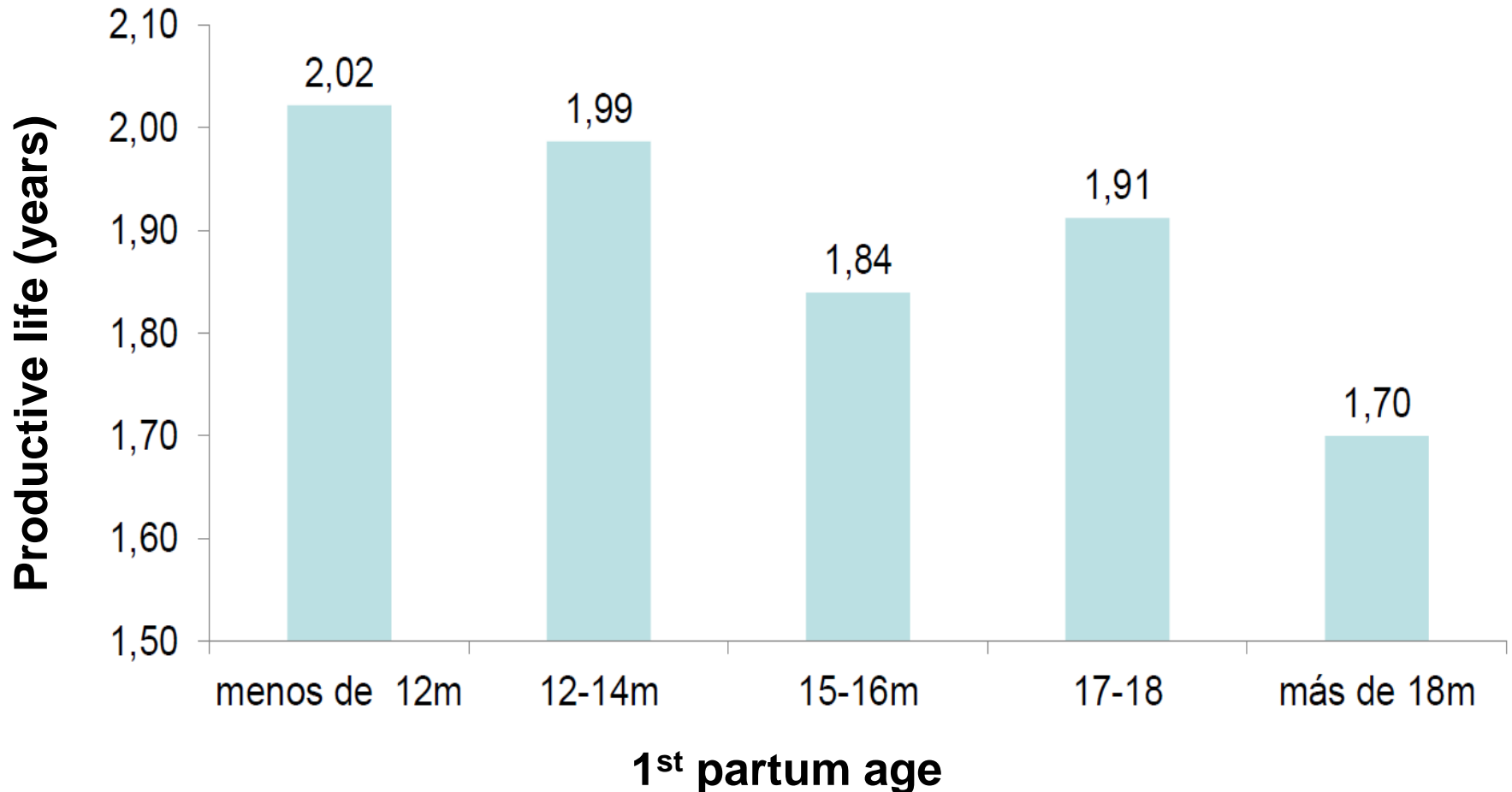
- Decreasing unproductive periods

– 1st partum age

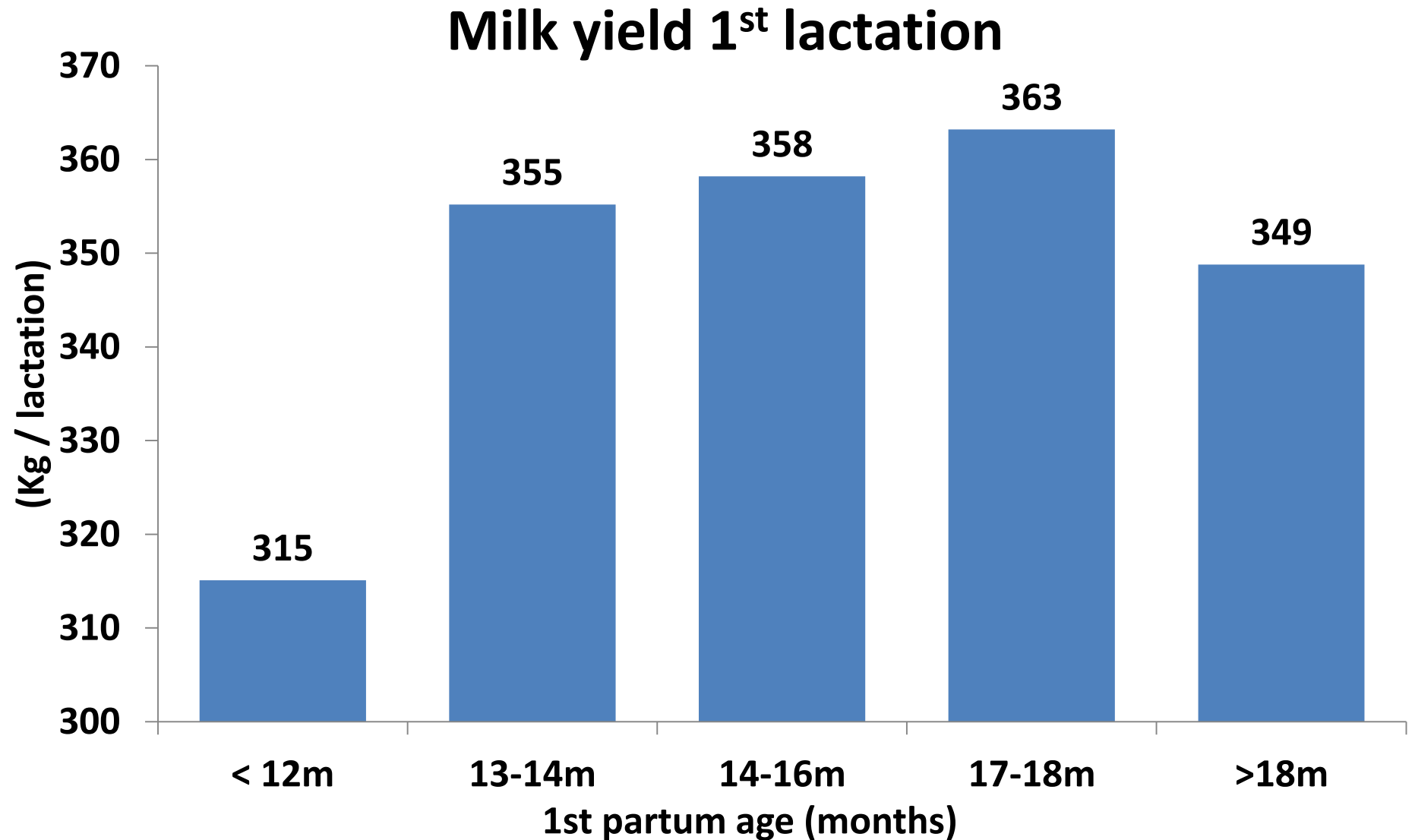
– Dry period length

Does 1st partum age affect productive live?

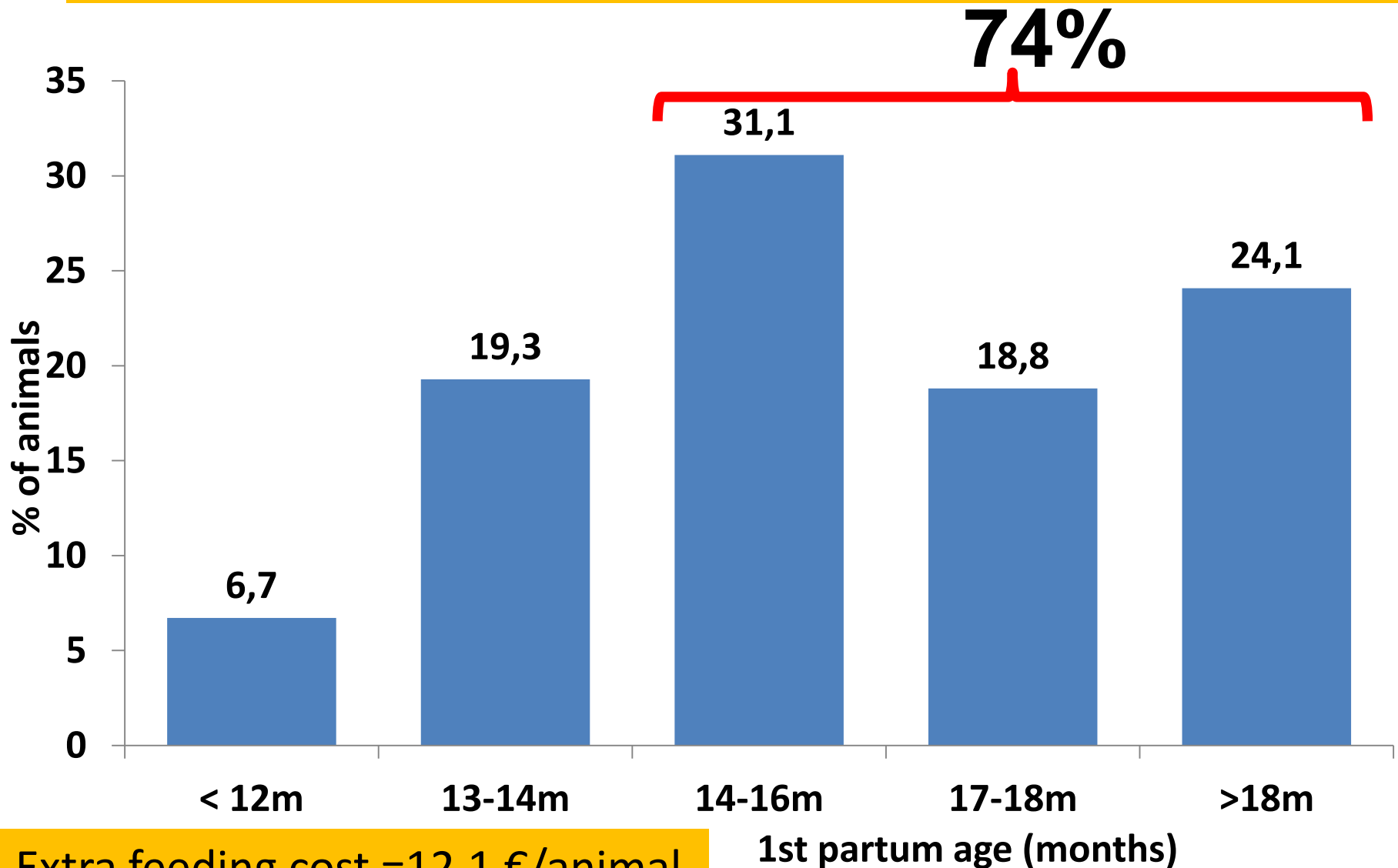
Productive life = Age at death – Age at 1st partum



Does 1st partum age affect milk production?

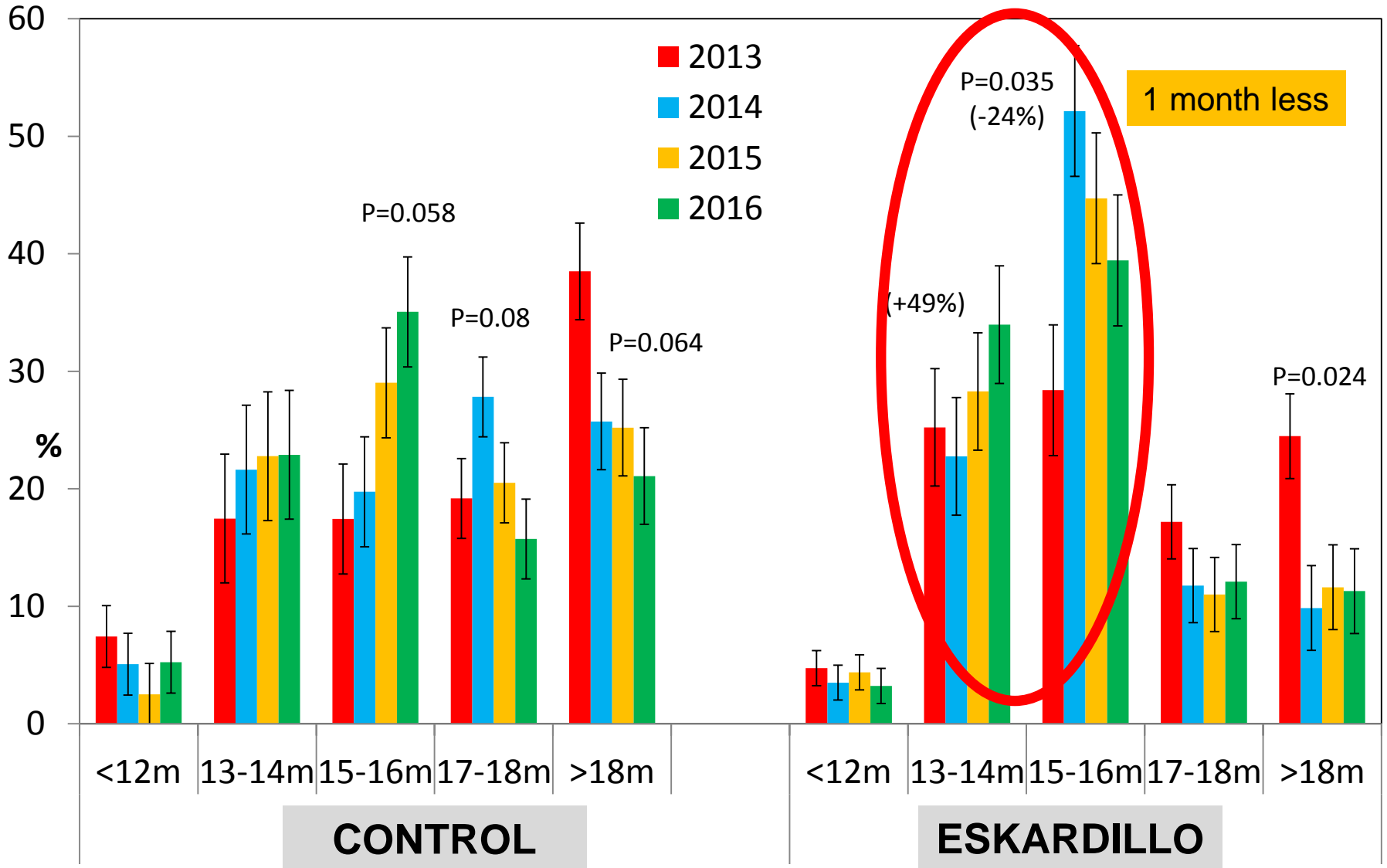


Implications of 1st partum age

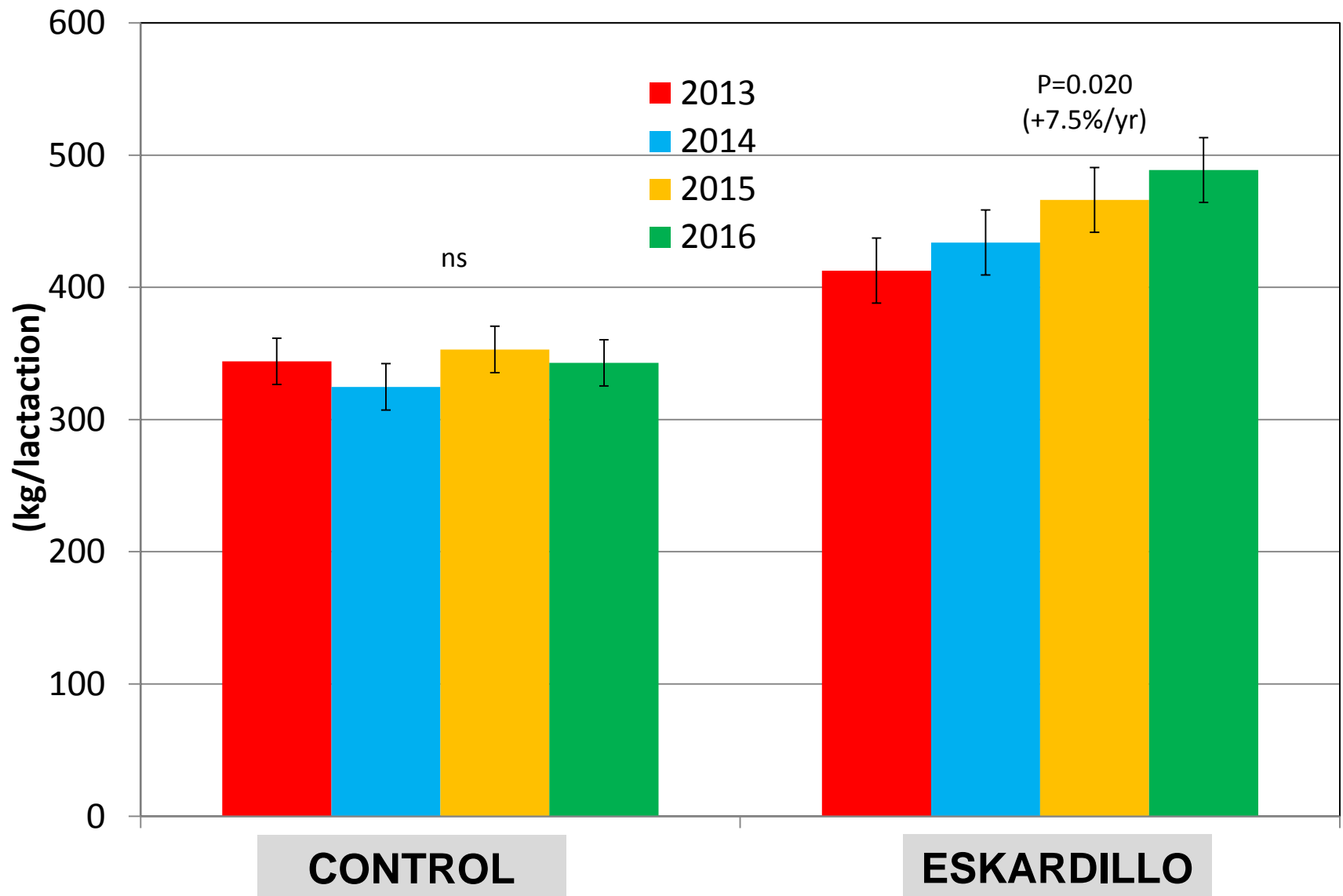


Extra feeding cost = 12,1 €/animal
Objective 1st partum at 13-14 mo.

Effect of Eskardillo on 1st partum age

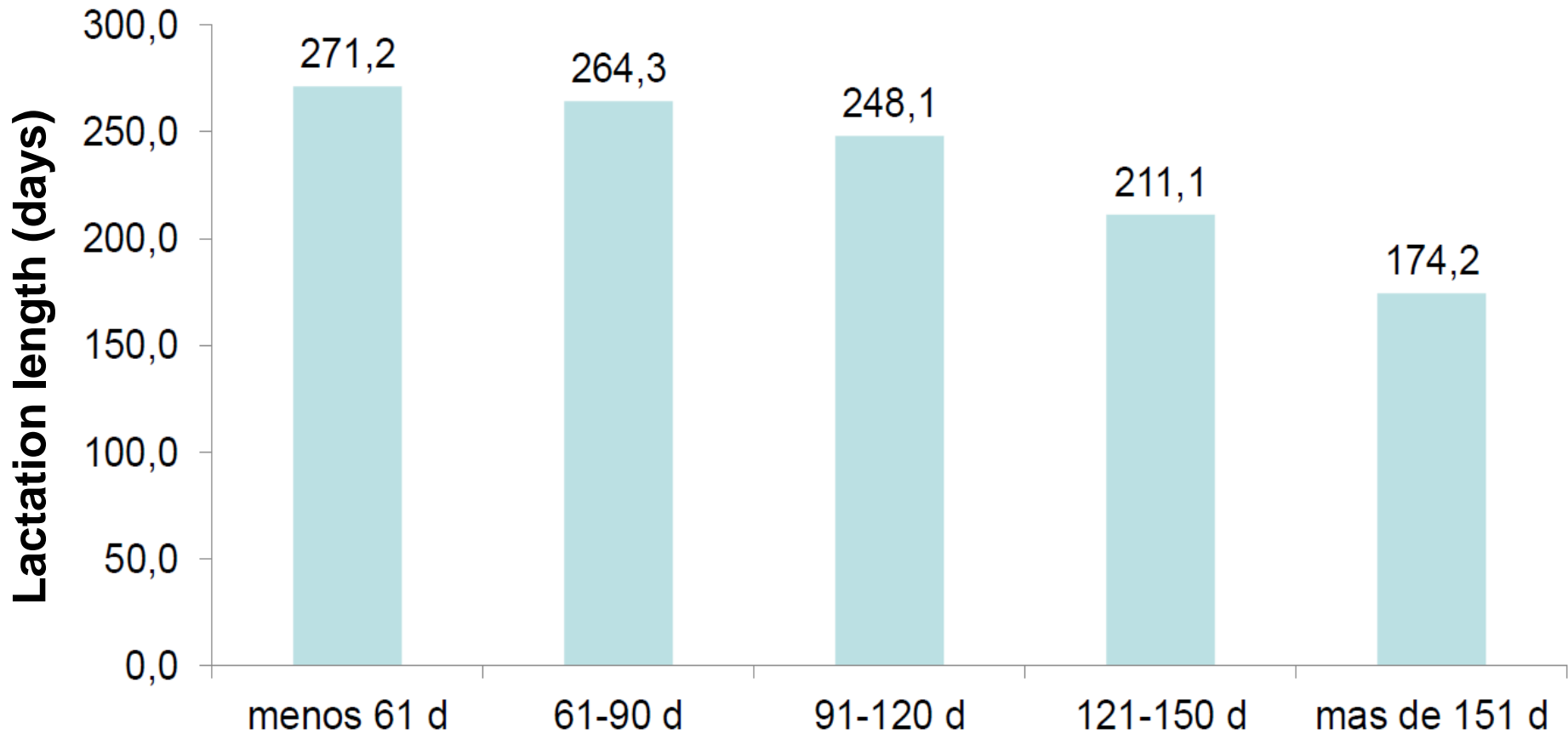


Milk production in 1st lactation



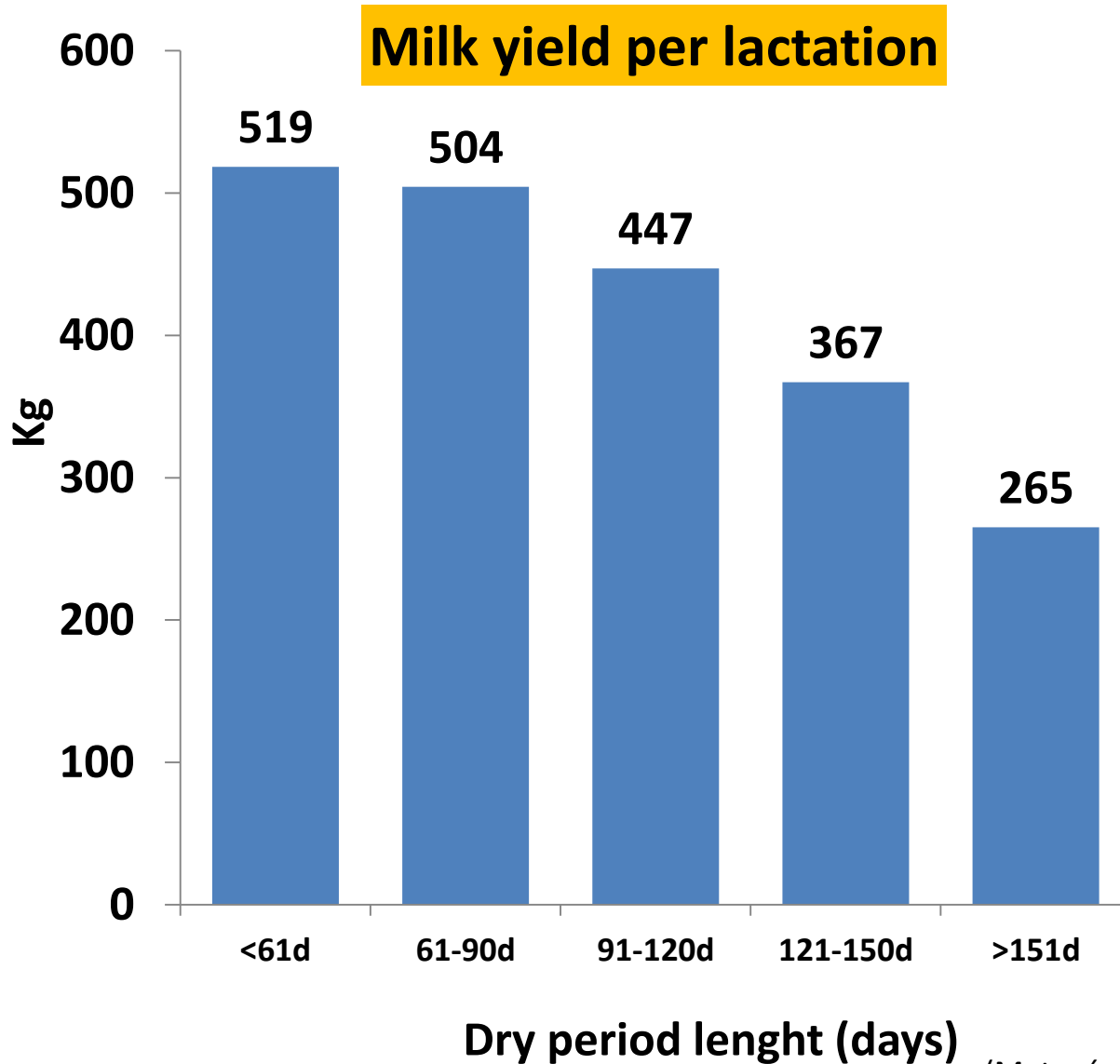
Dry period length

Dry period and lactation length

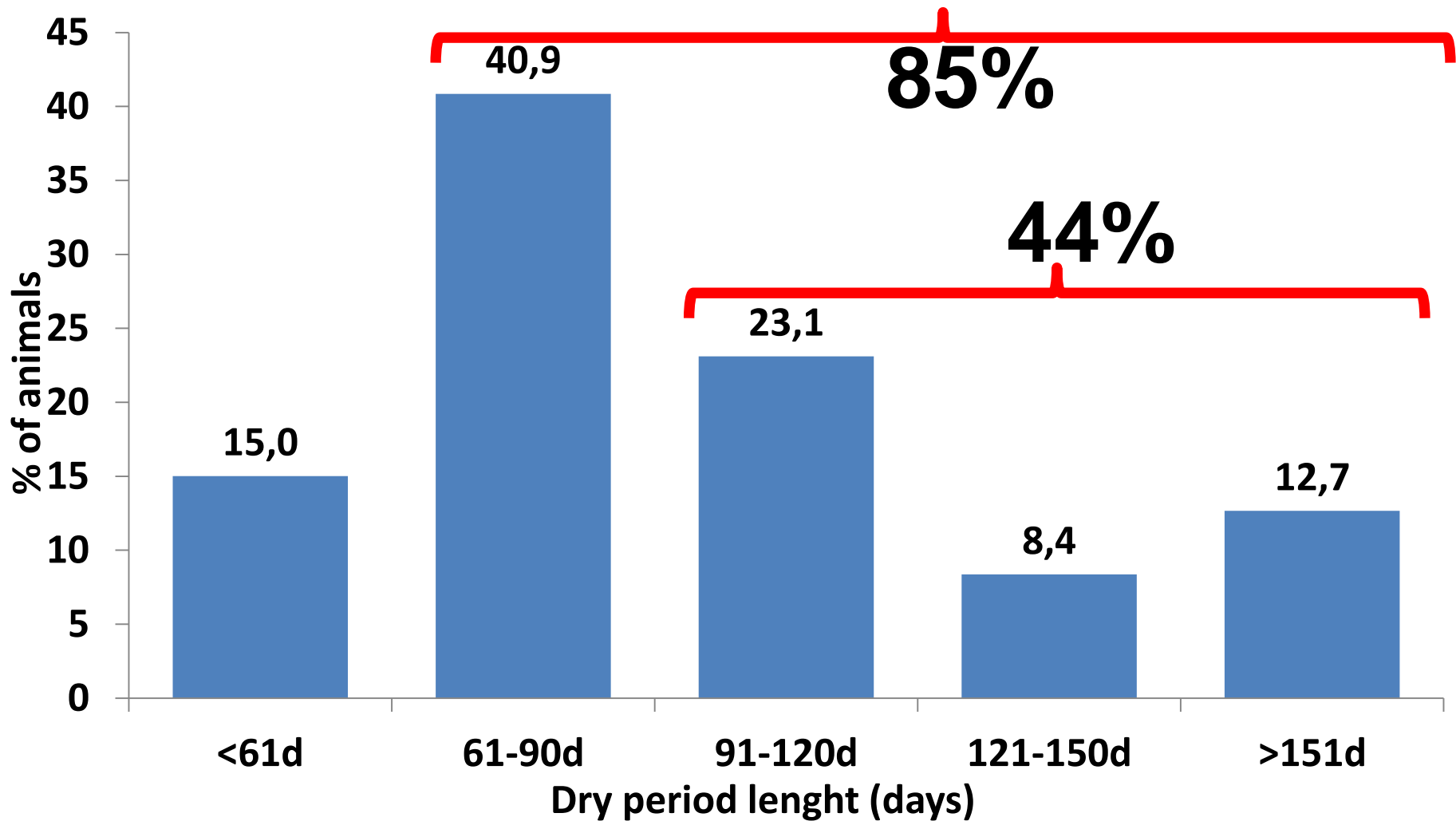


Most farms aims to have one partum per animal per year
Mating is conducted at a fix time without considering production

Does a long dry period increase milk yield?



Implications of dry period length



Extra feeding cost = 16 €/animal
Objective: 2 months of dry period

How long a lactation should be?

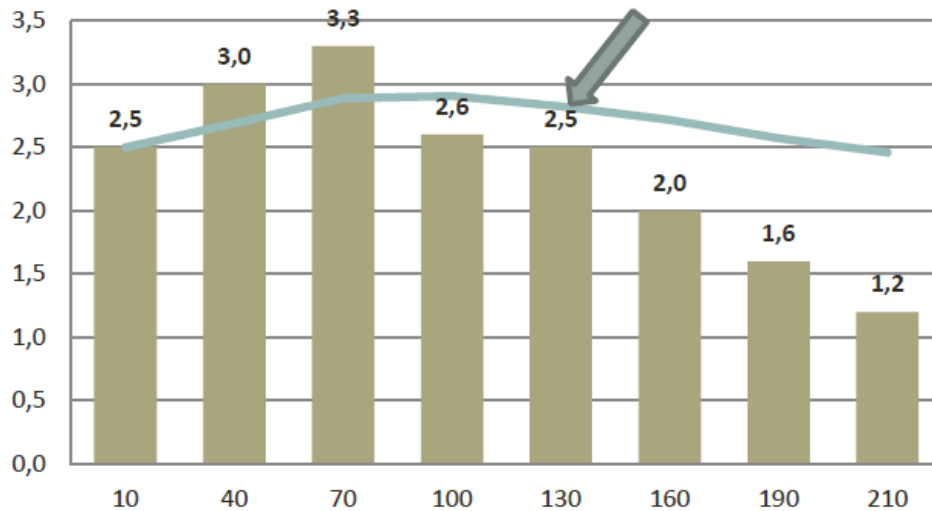
As long as you make money with it.
There is a profitability threshold.

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

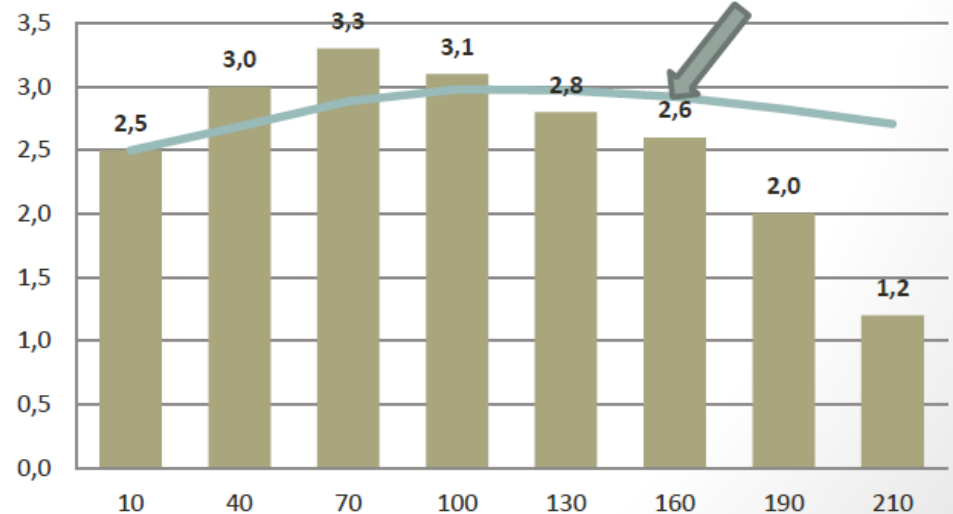
Below that threshold animals should be dry off
and give birth 2 months after

Eskardillo: Reproductive plan according to productivity

Lactation curve Type I

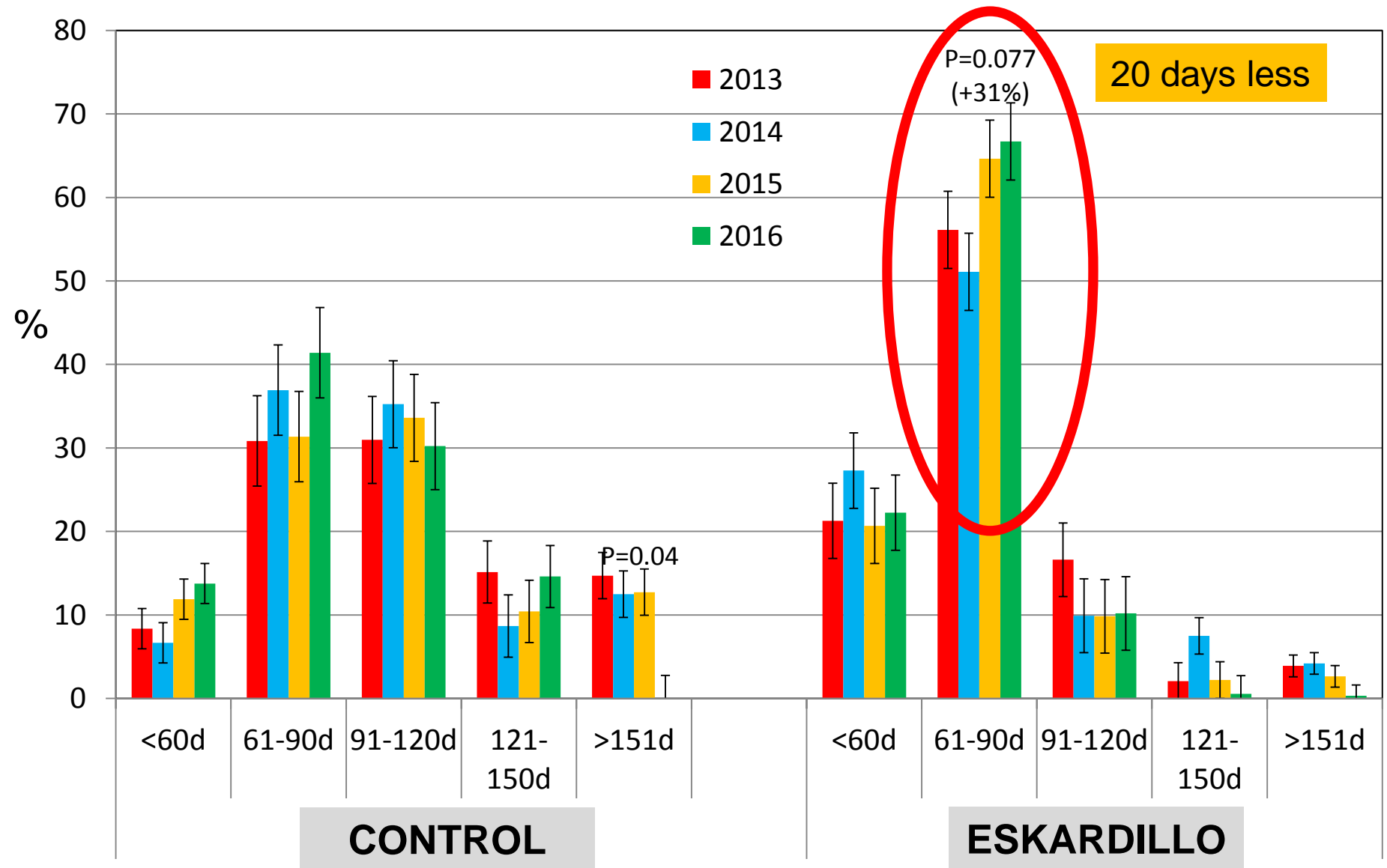


Lactation curve Type II

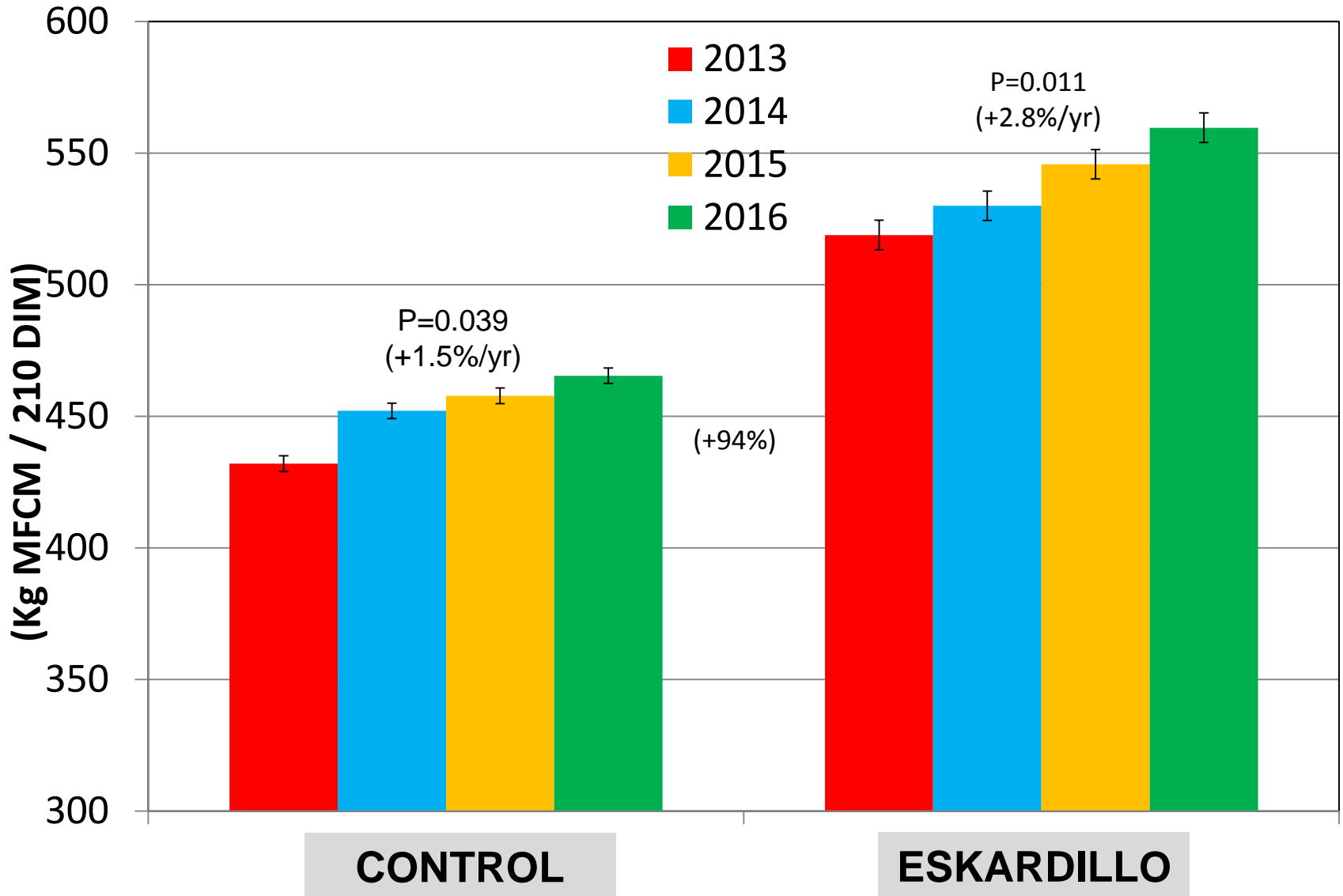


(Matec3n et al., 2013.
IV Foro Nacional Caprino)

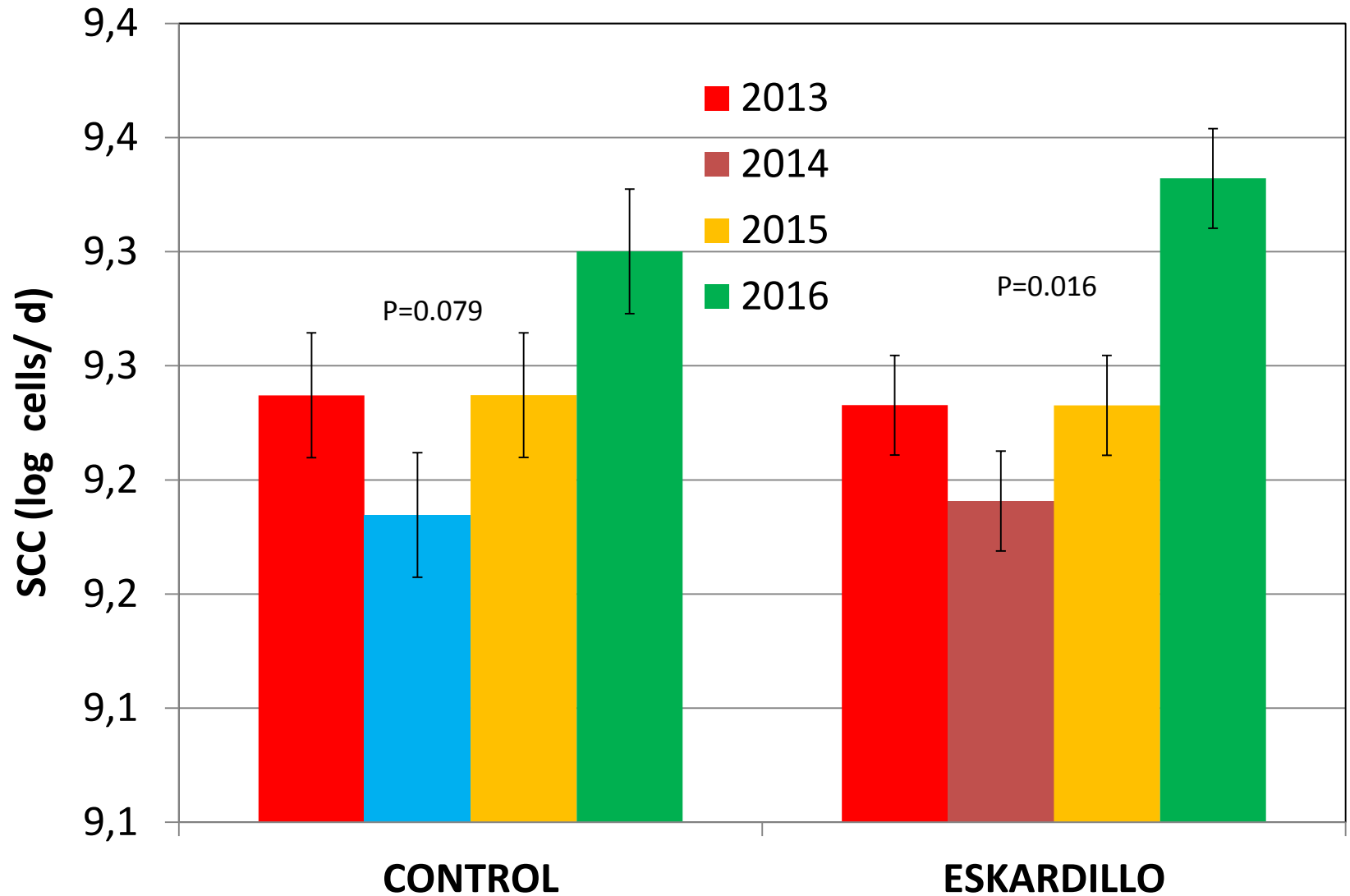
Effect of Eskardillo on Dry period length



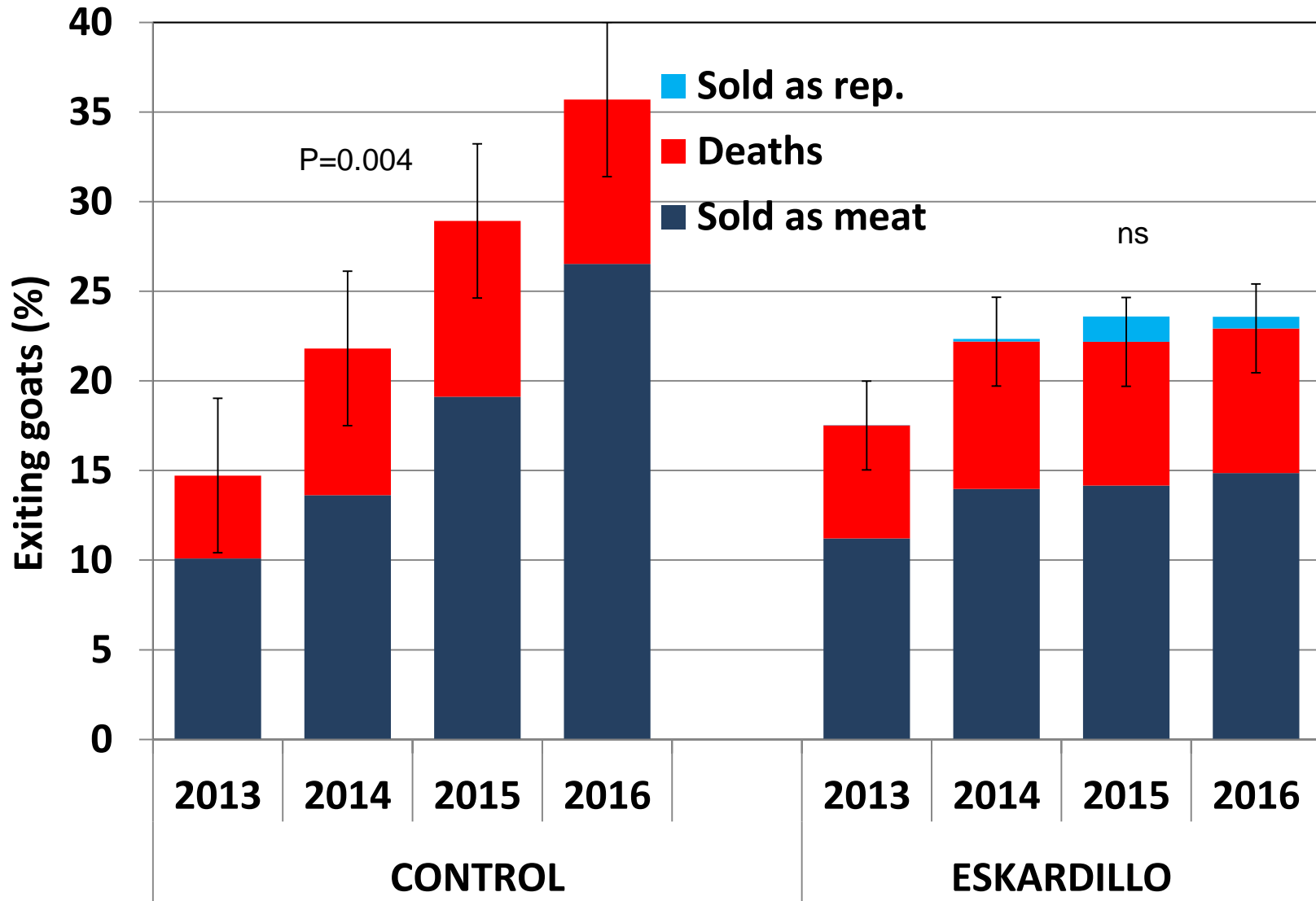
Effect of Eskardillo on Milk yield (210 DIM)



Udder health



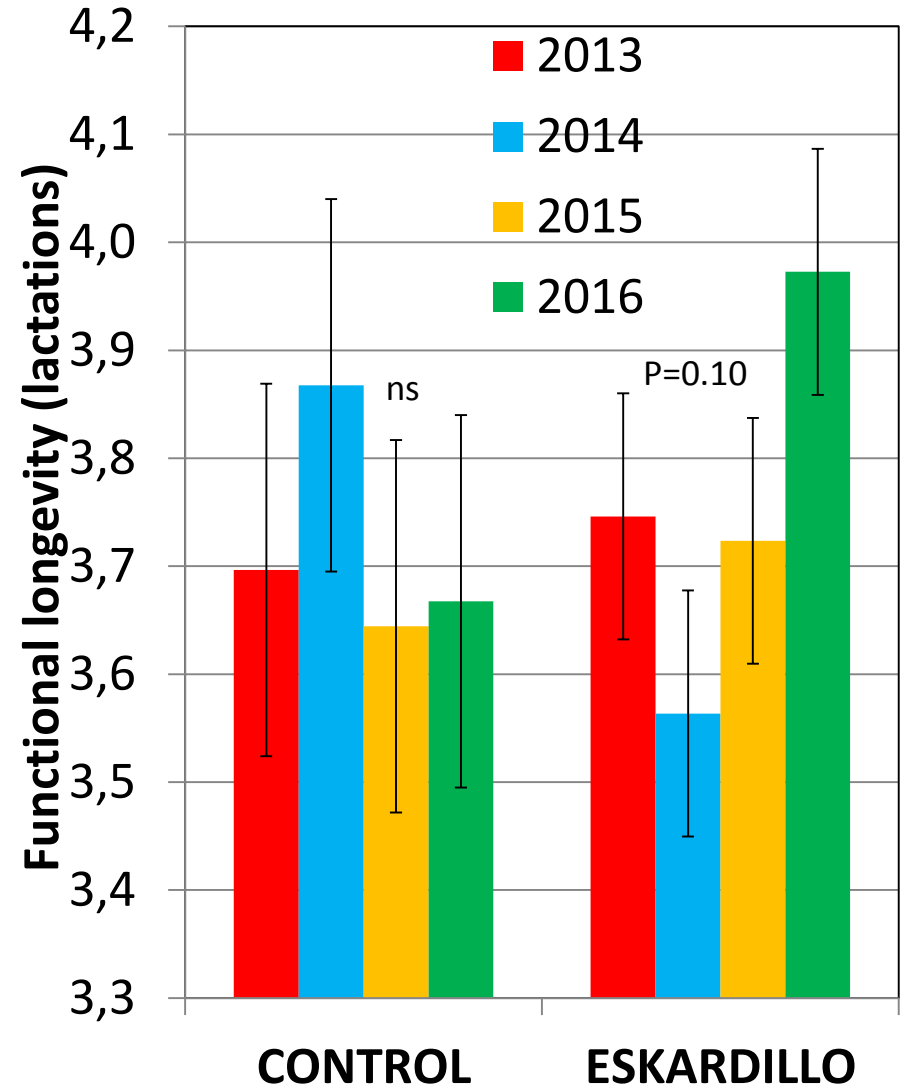
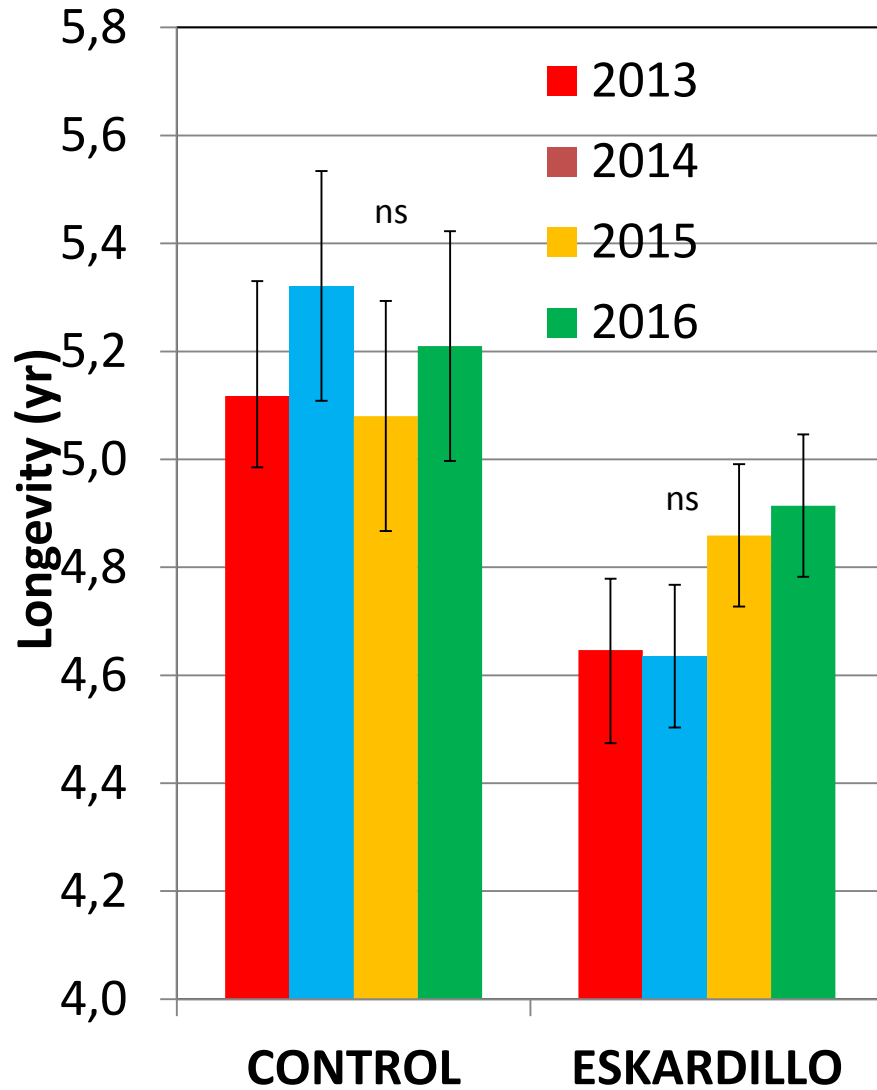
Culling strategy



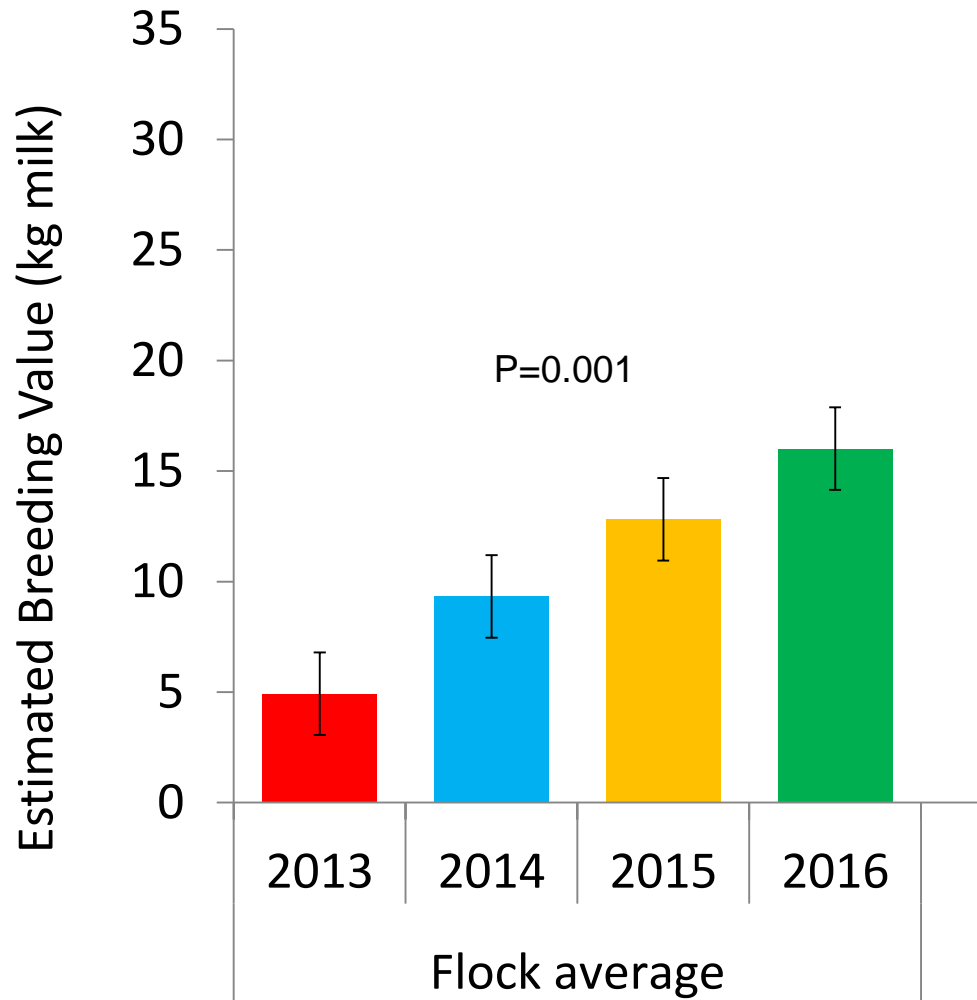
Longevity

/

Functional Longevity

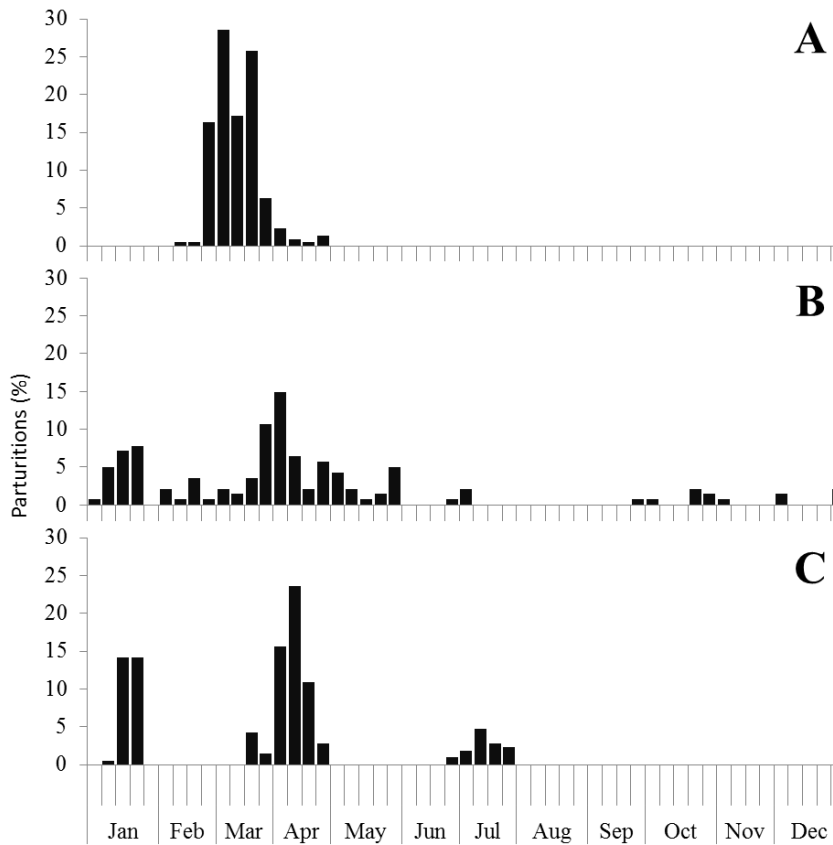


Effect of Eskardillo on Estimated Breeding Value

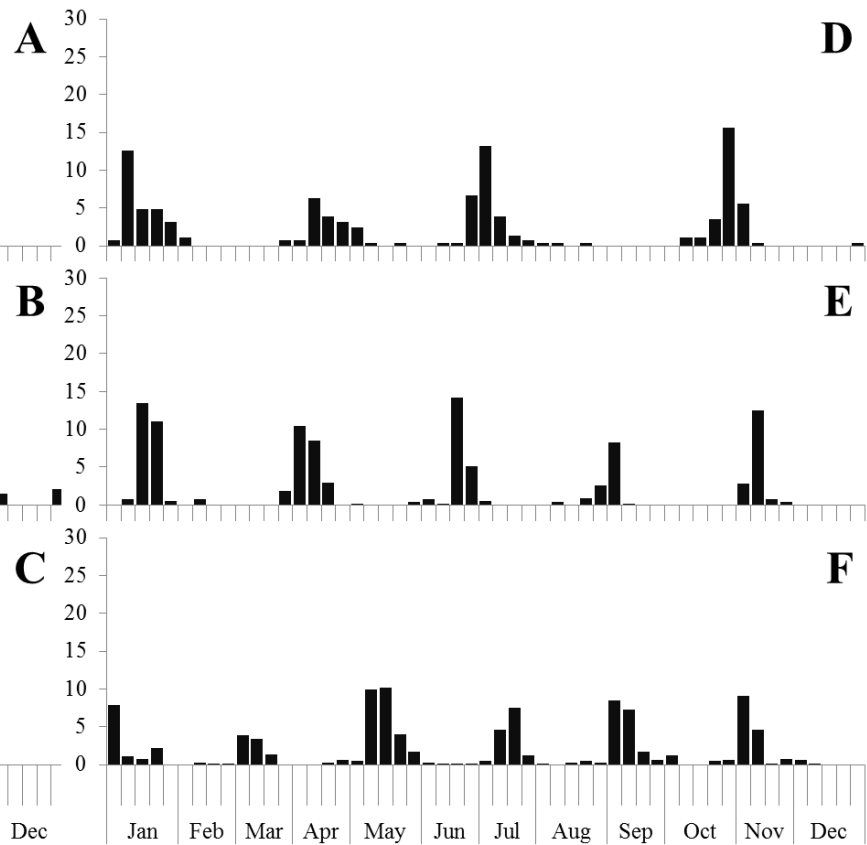


Reproductive plan (breeding seasons)

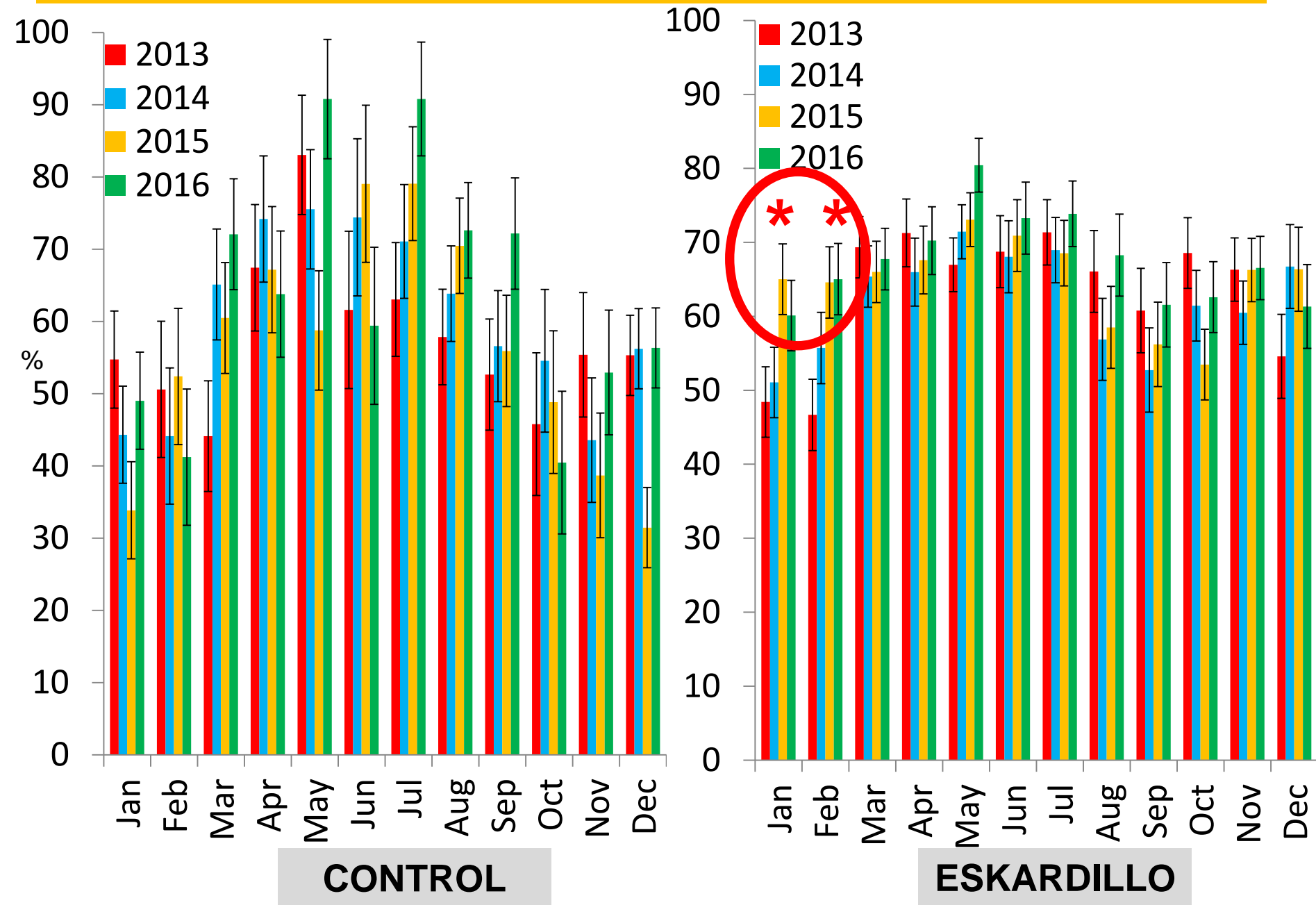
CONTROL



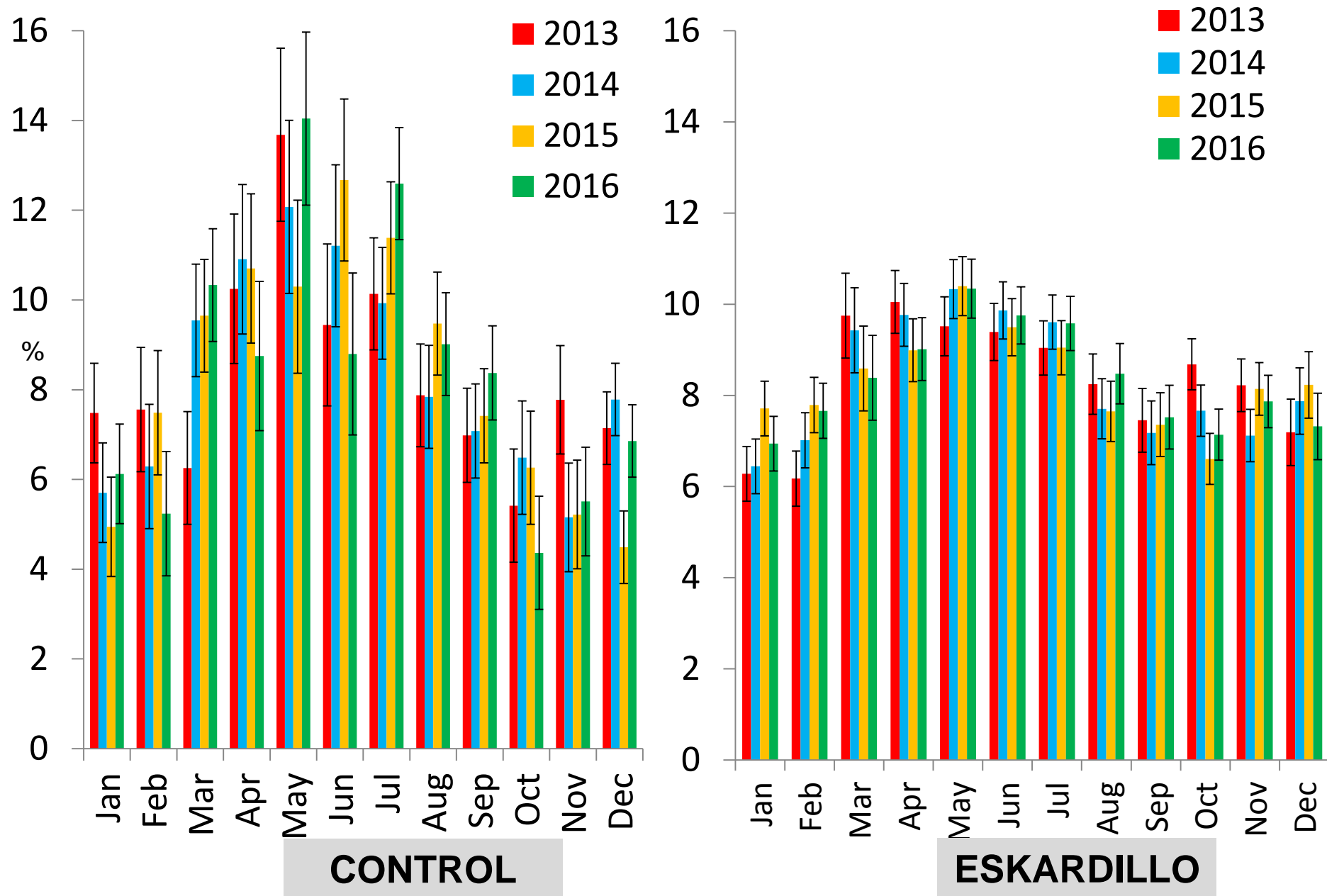
ESKARDILLO



Production seasonality (% of goats in milking)



Production seasonality (% of milk production)



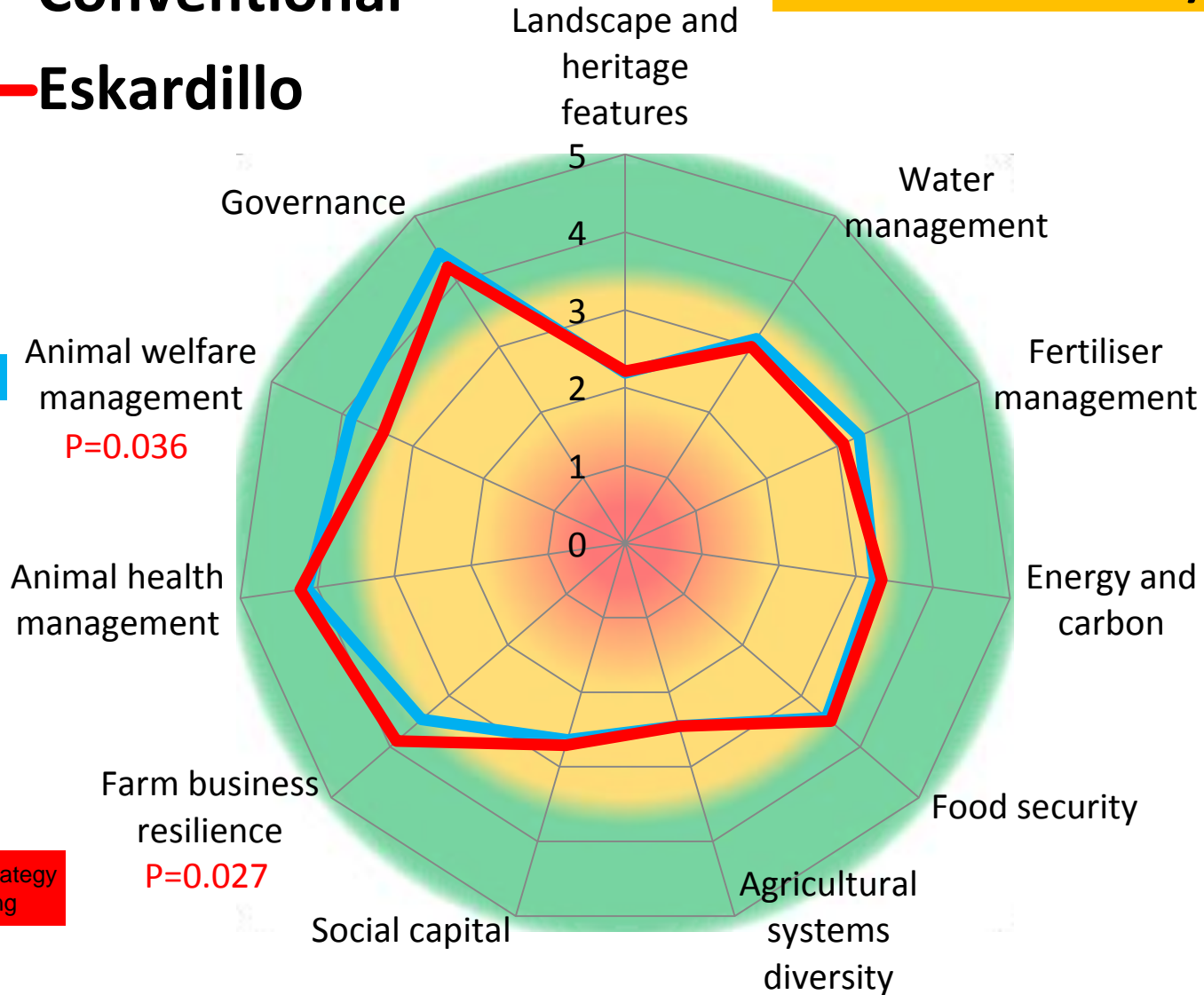
Sustainability

Overall
P=0.839

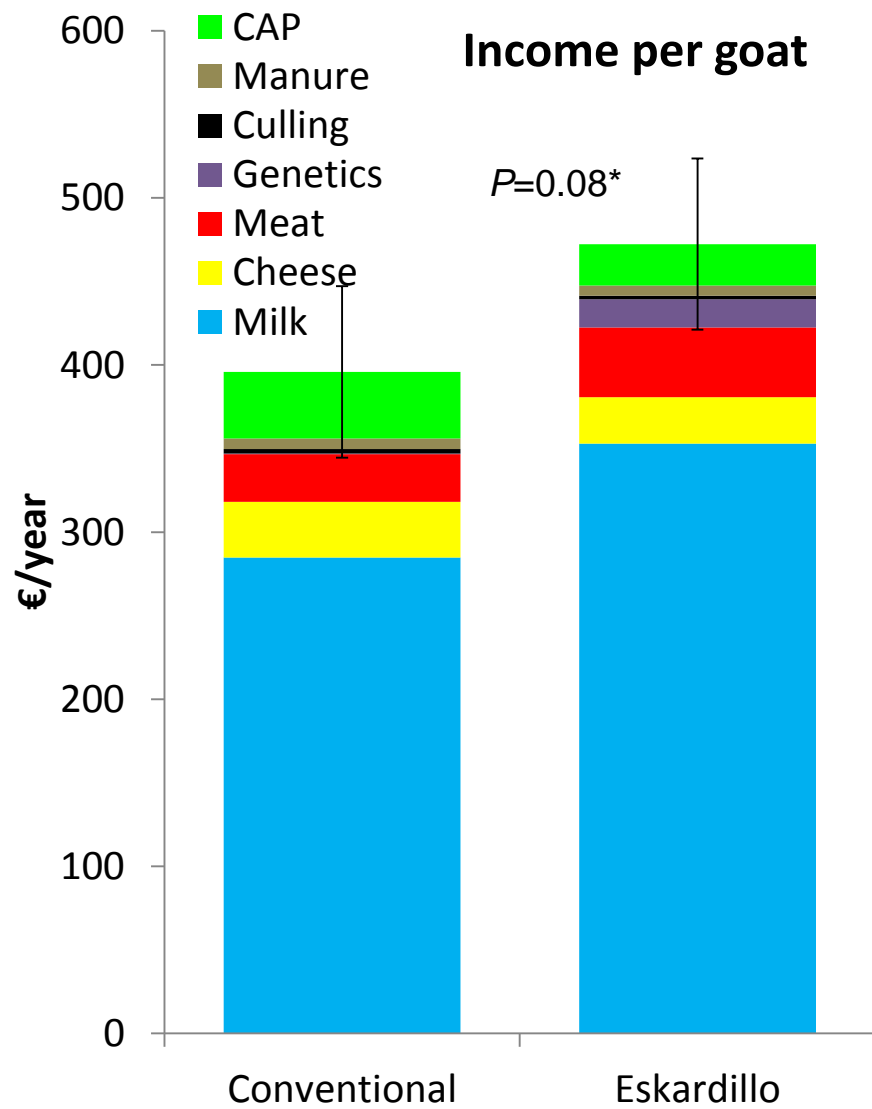
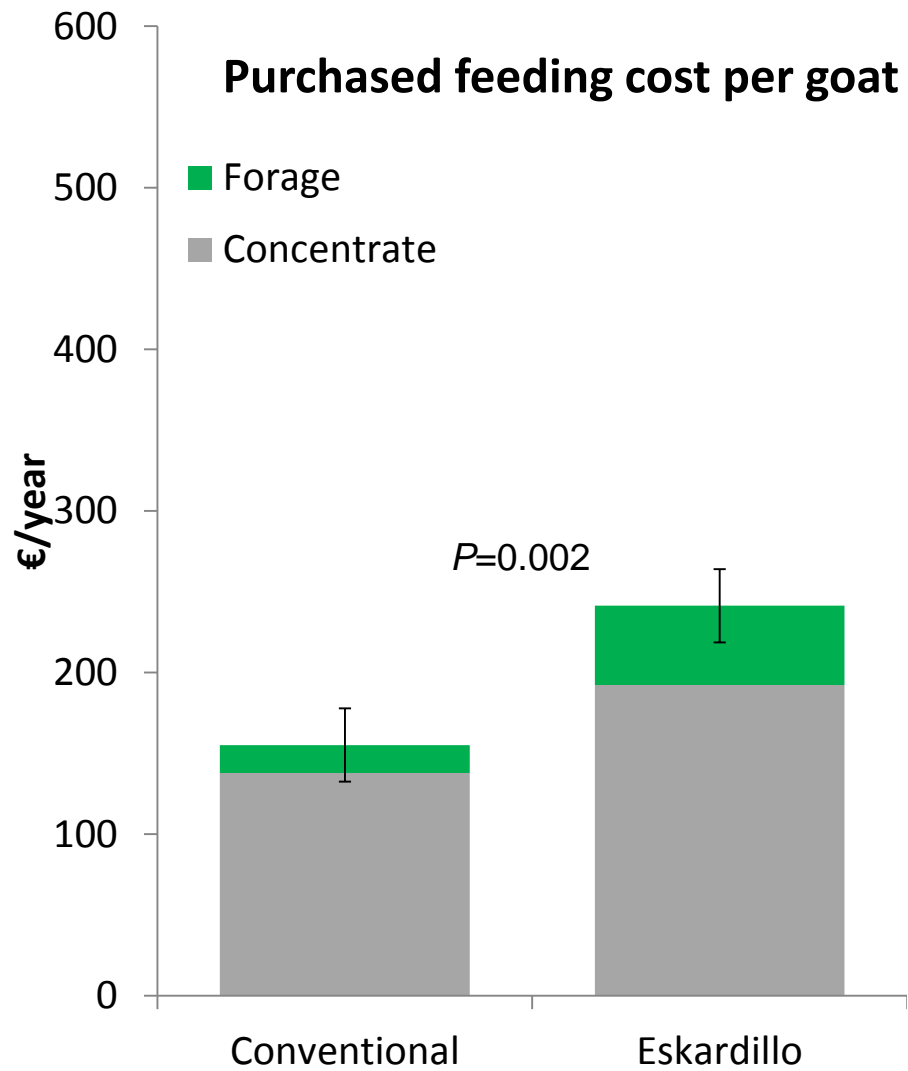
— Conventional

— Eskardillo

Natural behaviour



Vision/Strategy
Networking



Limitations of this innovation

This innovation requires a well established data collection system is needed, which implies:

1. Constant inputs from the farmer to keep updated animal data
2. A continuous and updated milk control program
3. A breeding program with detailed information about
 - Phylogenetic information
 - Breeding value
 - Morphology evaluation
4. Technical support from the breeding association
5. All hardware and software for an efficient information flow

Main constrains of this innovation

This innovation is getting very popular (>80% of Caprigran farmers)

Some farmers are reductant to used due to:

- The investment may not be profitable in very low income farms
- The additional time required for the data collection and reproductive intensification
- The need for versatile facilities to house increasing number of groups of animals with different physiological requirements
- Difficulty of adopting this innovation by farmers which are not familiar with new technologies
- The farmers' feeling of interference or intrusion of the Eskardillo in their decision making process

Conclusions

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

- **Decrease unproductive periods**
- **Improve milk production**
- **Decrease production seasonality**
- **Without compromising the farm sustainability**

As a result, it facilitates farm management towards a sustainable intensification

Thank you for your attention



Innovation for Sustainable
Sheep and Goat
Production in Europe

