SBZ|2016
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PRODUÇÃO ANIMAL
PARA AS NOVAS GERAÇÕES

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01 a 04 de Agosto de 2016

Global competitiveness, sustainability and simplicity: The challenges for a pasture based dairy industry

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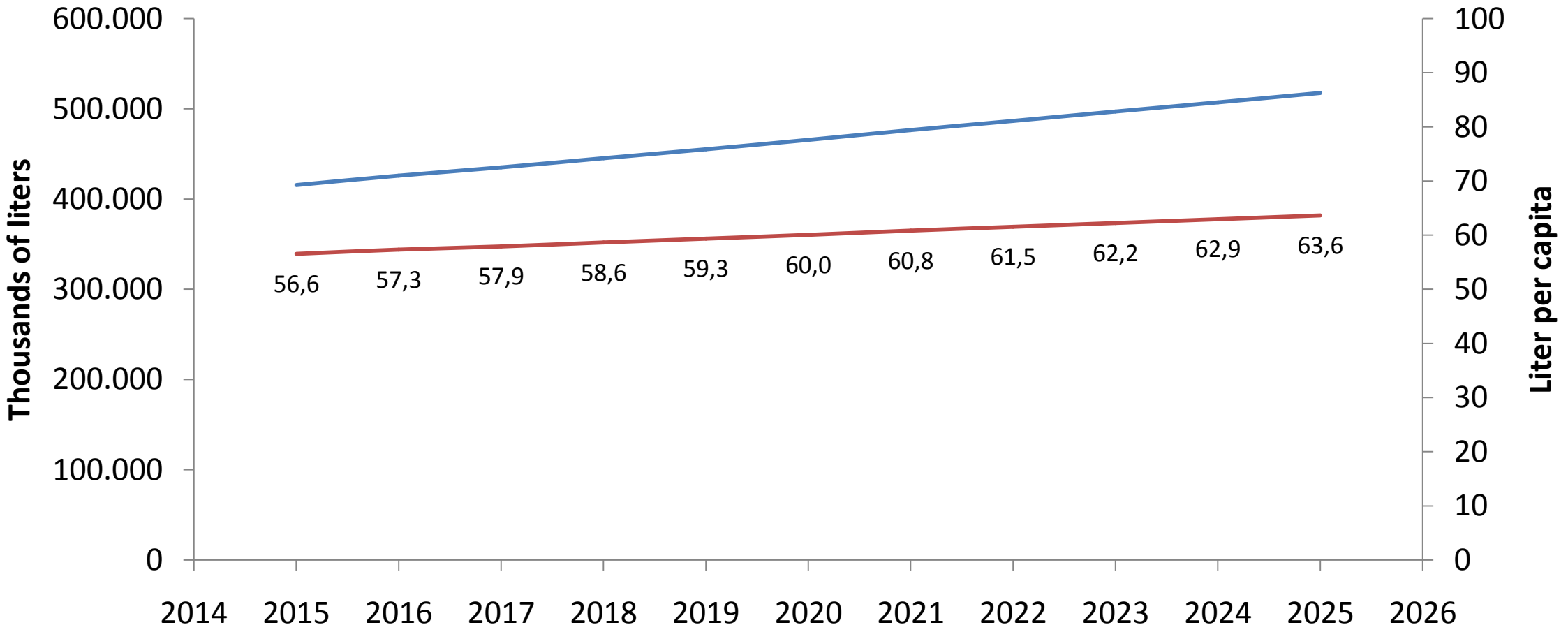
Consumption fresh dairy products



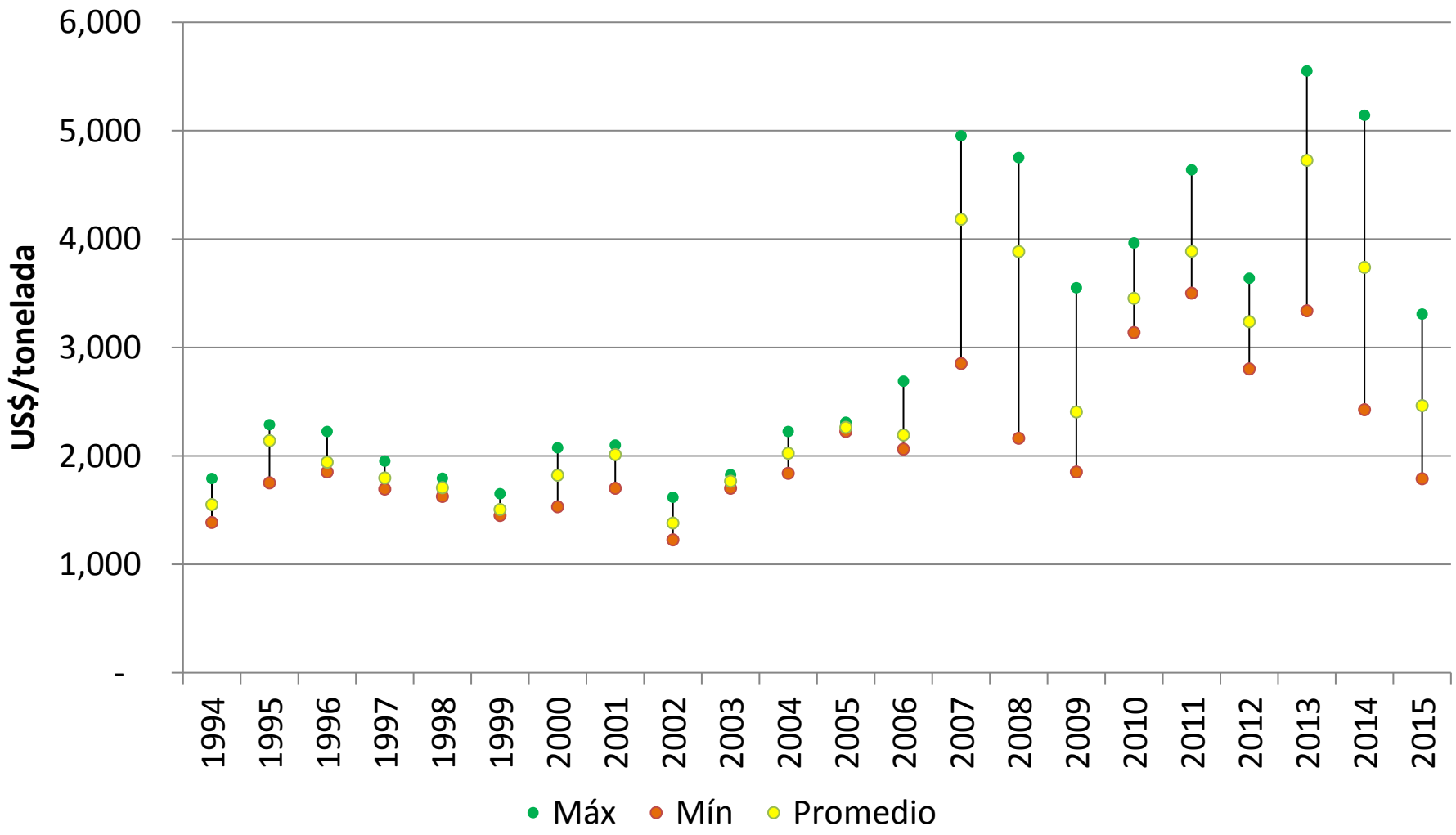
OECD-FAO Agricultural Outlook 2016-2025

Global Dairy Industry

Uruguay over 65 % for export

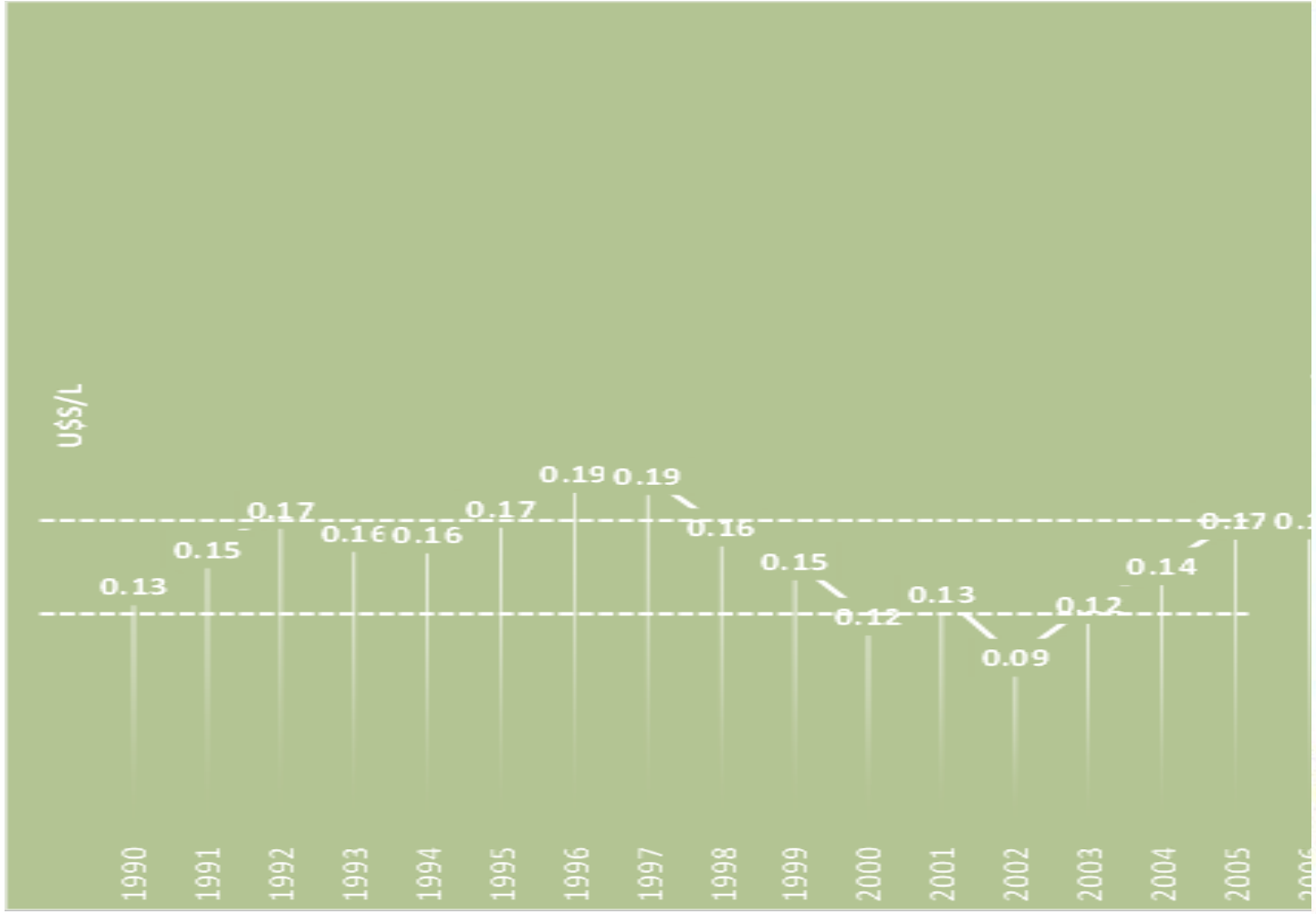
Adapted from Chadar, Foro INALE, 2015, Montevideo, Uruguay

Higher volatility: whole milk powder price in Oceania

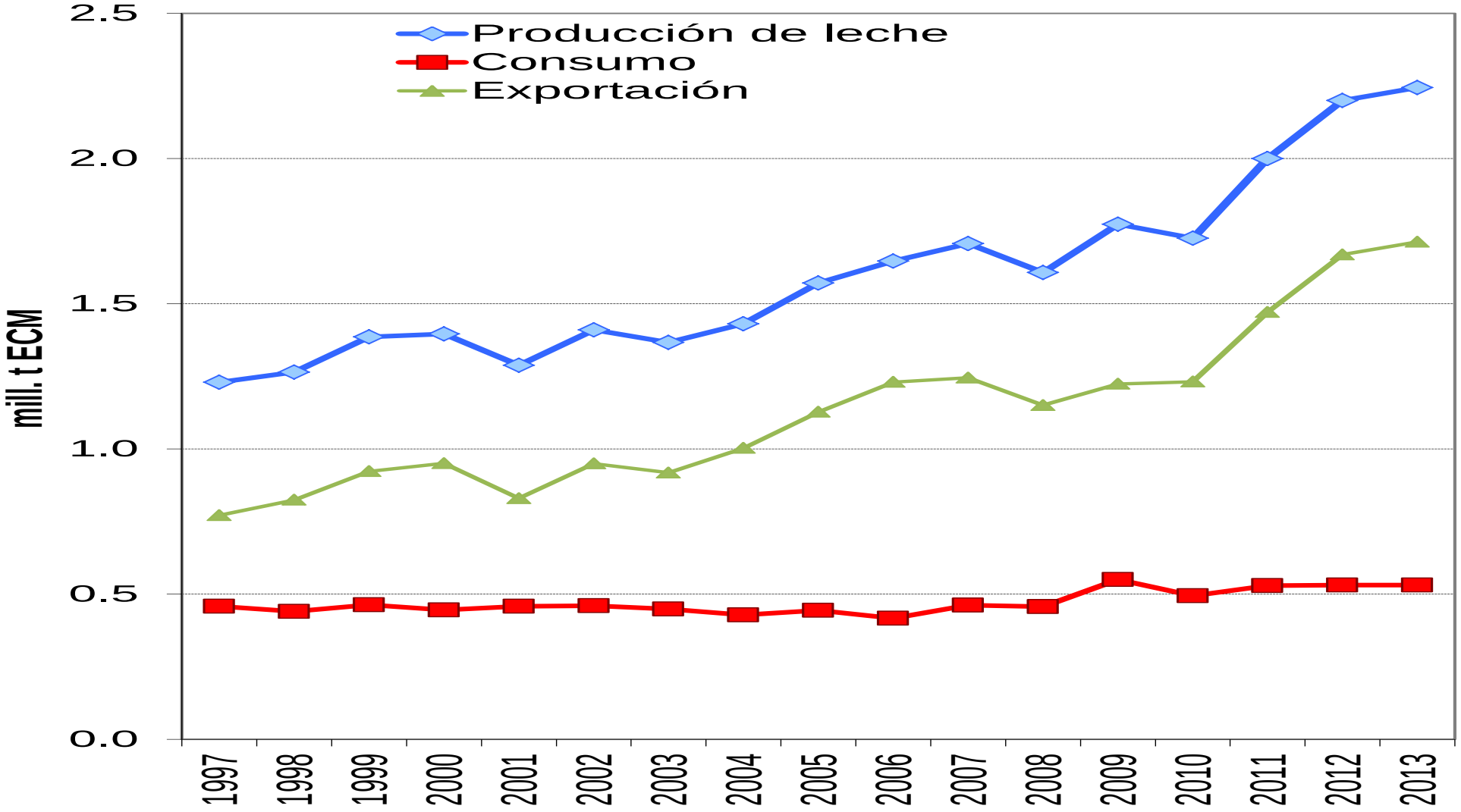


Adapted from INALE, 2016

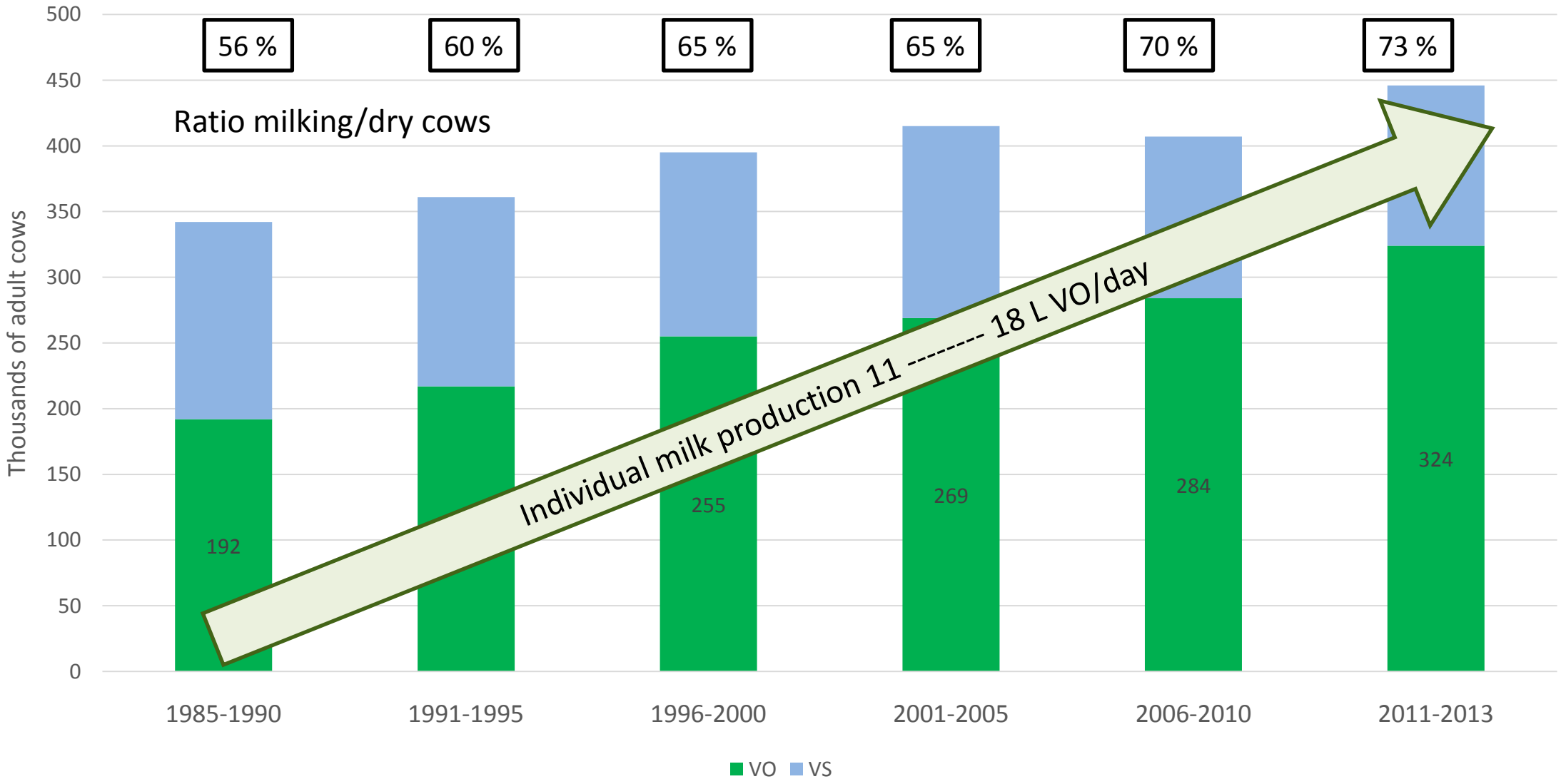
Uruguayan dairy farmers milk price



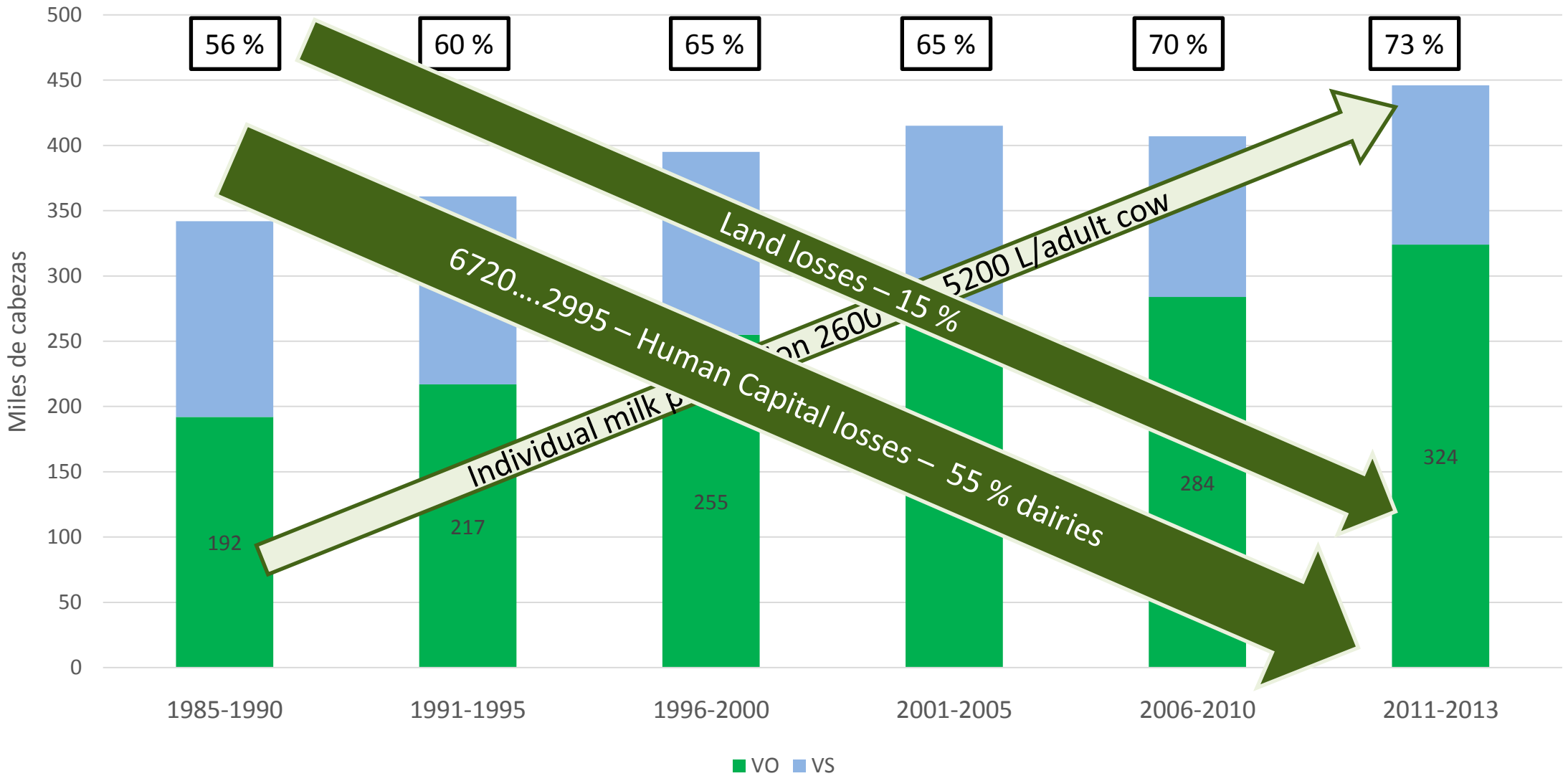
Uruguayan dairy industry



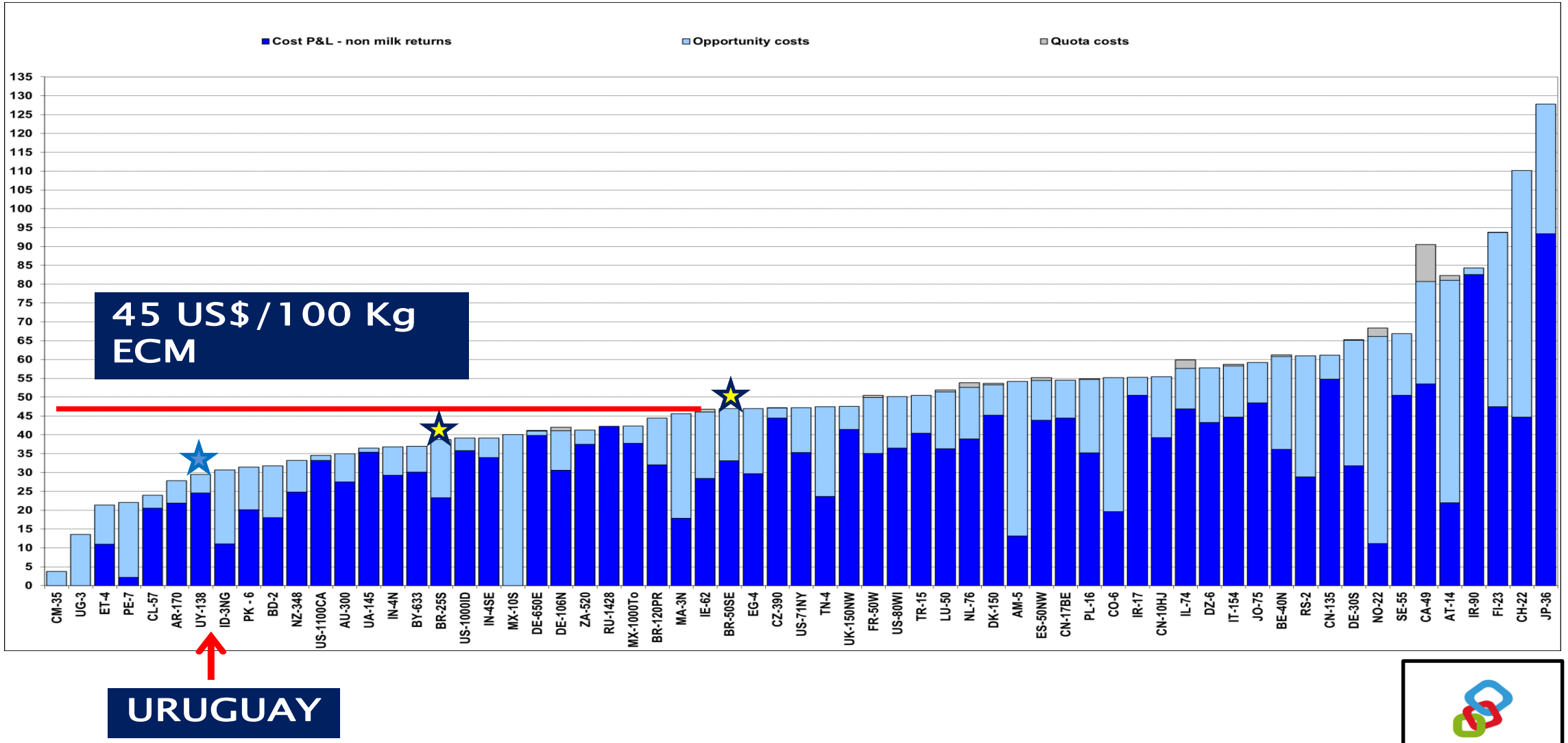
Growth foundation: productivity



Growth sides effects: land and human capital

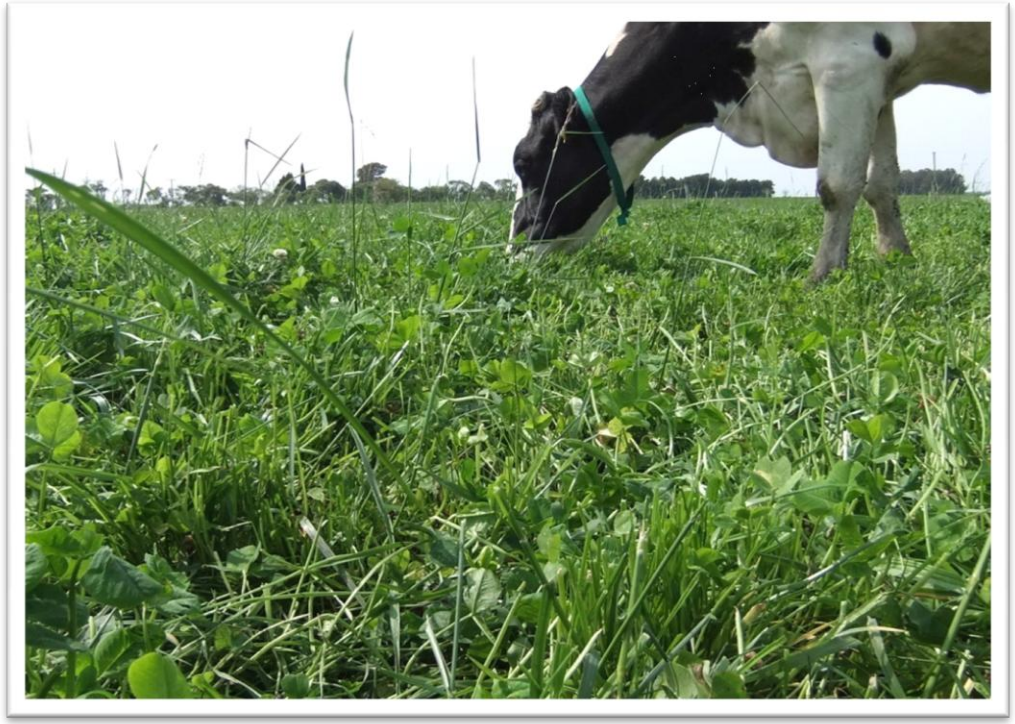


Global milk production costs



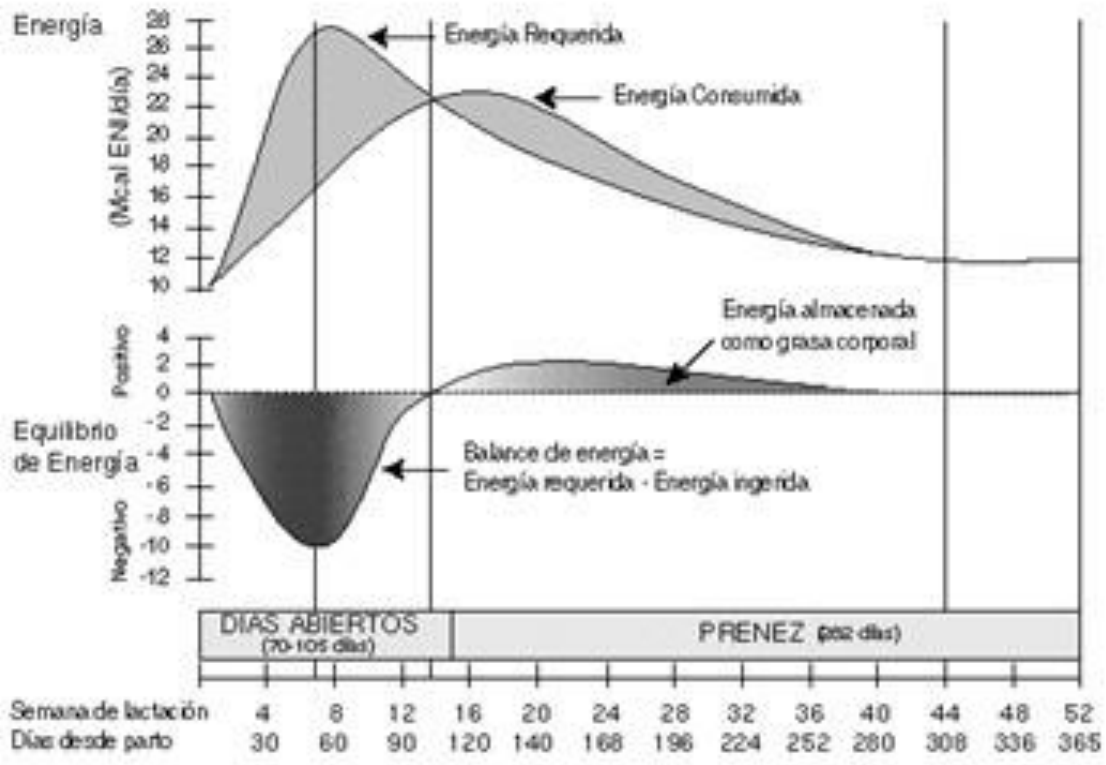
inale
Instituto Nacional de la Leche

Productivity, efficiency and costs under the new international scenario: a dynamic tension between “pastoral” and “supplemented” oriented systems….



Cow´s integrated responses to forage allowance: primiparous cows

- First lactation cows: stress (calving) & dominance factors + still growing cows.
- Lower DMI intake during early lactation in primiparous vs mutiparous cows (McEvoy et al. 2009).



- Do they get enough DMI to express their genetic potential with 8 h grazing and supplement? (need of a positive control TMR group)

Animal Feed Science and Technology 173 (2012) 201–209

Contents lists available at SciVerse ScienceDirect

Animal Feed Science and Technology

journal homepage: www.elsevier.com/locate/anifeedsci

Effect of herbage allowance on grazing behavior and productive performance of early lactation primiparous Holstein cows

P. Chilibroste[a,*], D.A. Mattiauda[a], O. Bentancur[b], P. Soca[a], A. Meikle[c]

- No studies on herbage allowance in primiparous cows.
- Very few during early lactation
- No studies on grazing behaviour, metabolic or reproductive parameters.

Animal Feed Science and Technology xxx (2013) xxx–xxx

Contents lists available at ScienceDirect

Animal Feed Science and Technology

journal homepage: www.elsevier.com/locate/anifeedsci

Effect of sward condition on metabolic endocrinology during the early postpartum period in primiparous grazing dairy cows and its association with productive and reproductive performance

Ana Meikle[a,*], María de Lourdes Adrien[b], Diego Antonio Mattiauda[c], Pablo Chilibroste[c]

Materials & Methods

44 primiparous Holstein cows

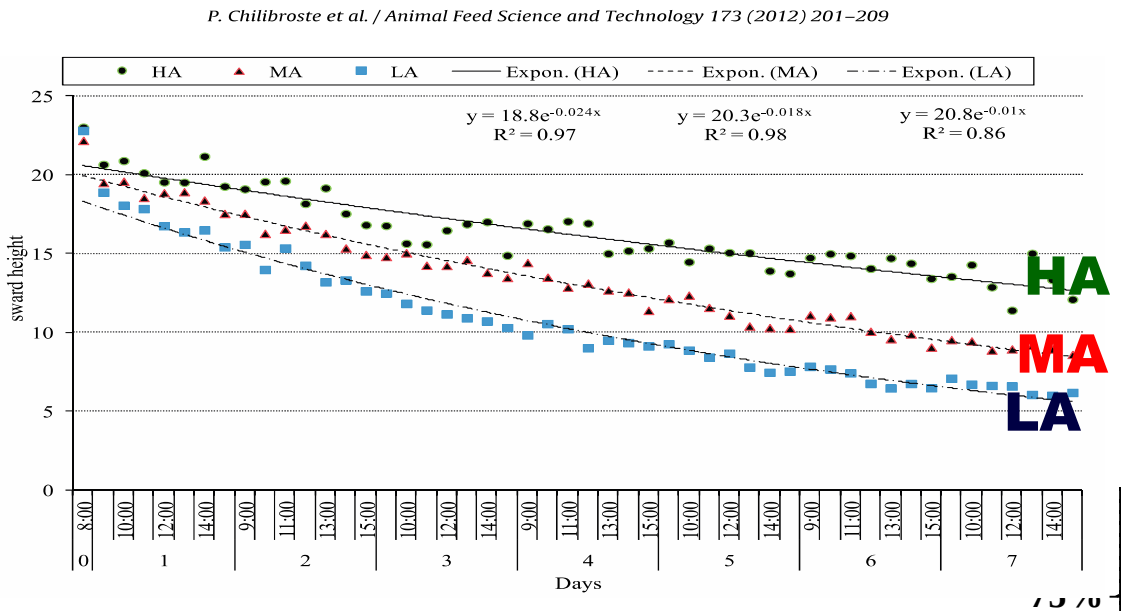
Control: TMR ad libitum forage/concentrate 55:45.

Grazing groups:

TMR estimated for maintenance requirements + 10 Liters + **8 hs of grazing**

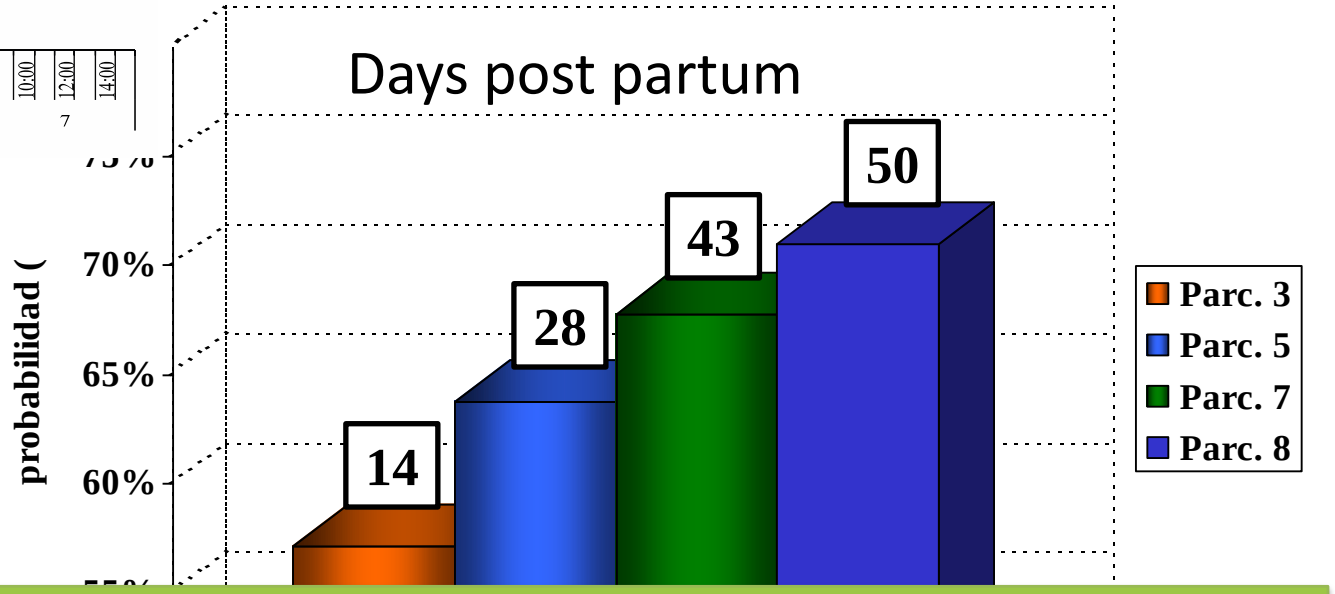
- High herbage allowance (**HA**): 30 kg MS/d/c
- Medium herbage allowance (**MA**): 15 kg MS/d
- Low herbage allowance (**LA**): 7.5 kg MS/d/c

Pasture depletion pattern



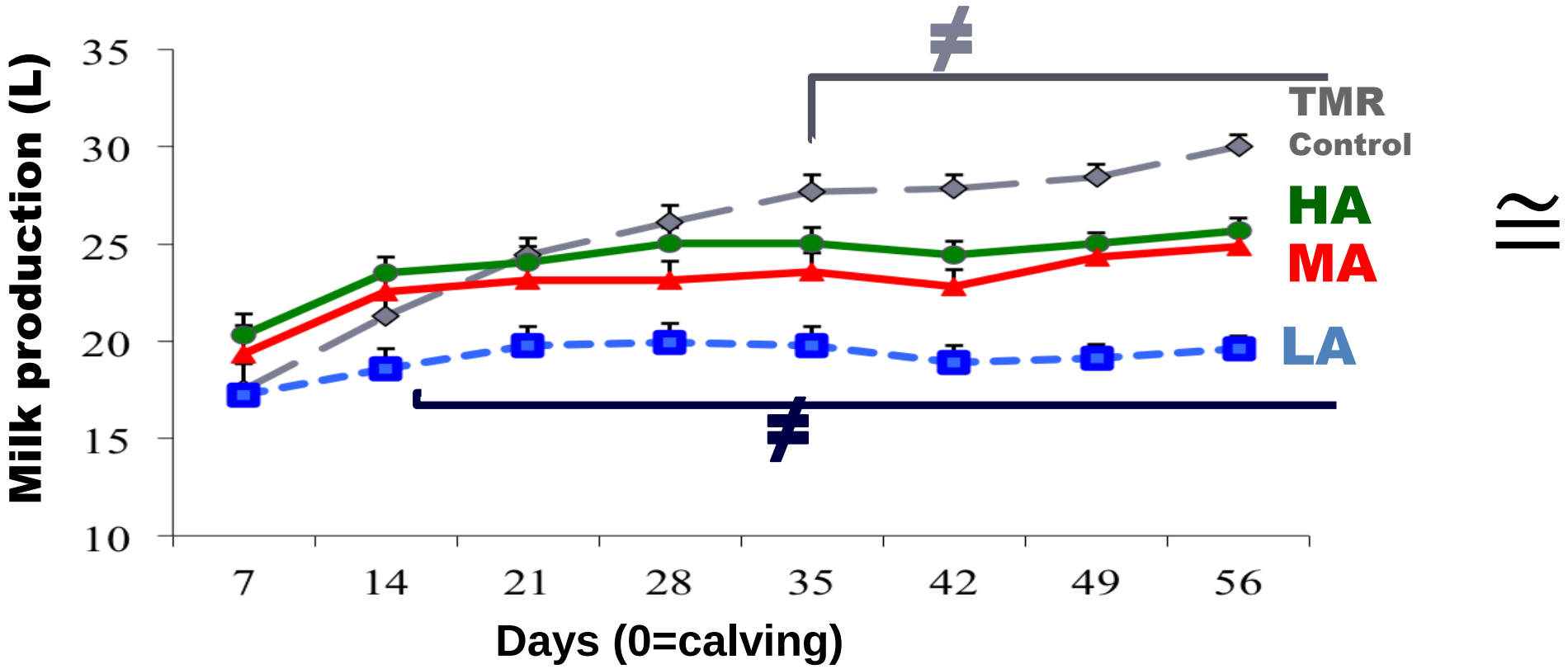
Bite rate slope differed:
MA/HA vs LA: 0.60 vs 0.29 bites/min/DIM

Probability of grazing:
slope MA/HA vs LA 0.41 vs 0.22 min/1000/DIM



Primiparous cows after calving with reduced grazing time (<35%) and at lower rates (<25 bites/min)

P. Chilibroste et al. / Animal Feed Science and Technology 173 (2012) 201–209

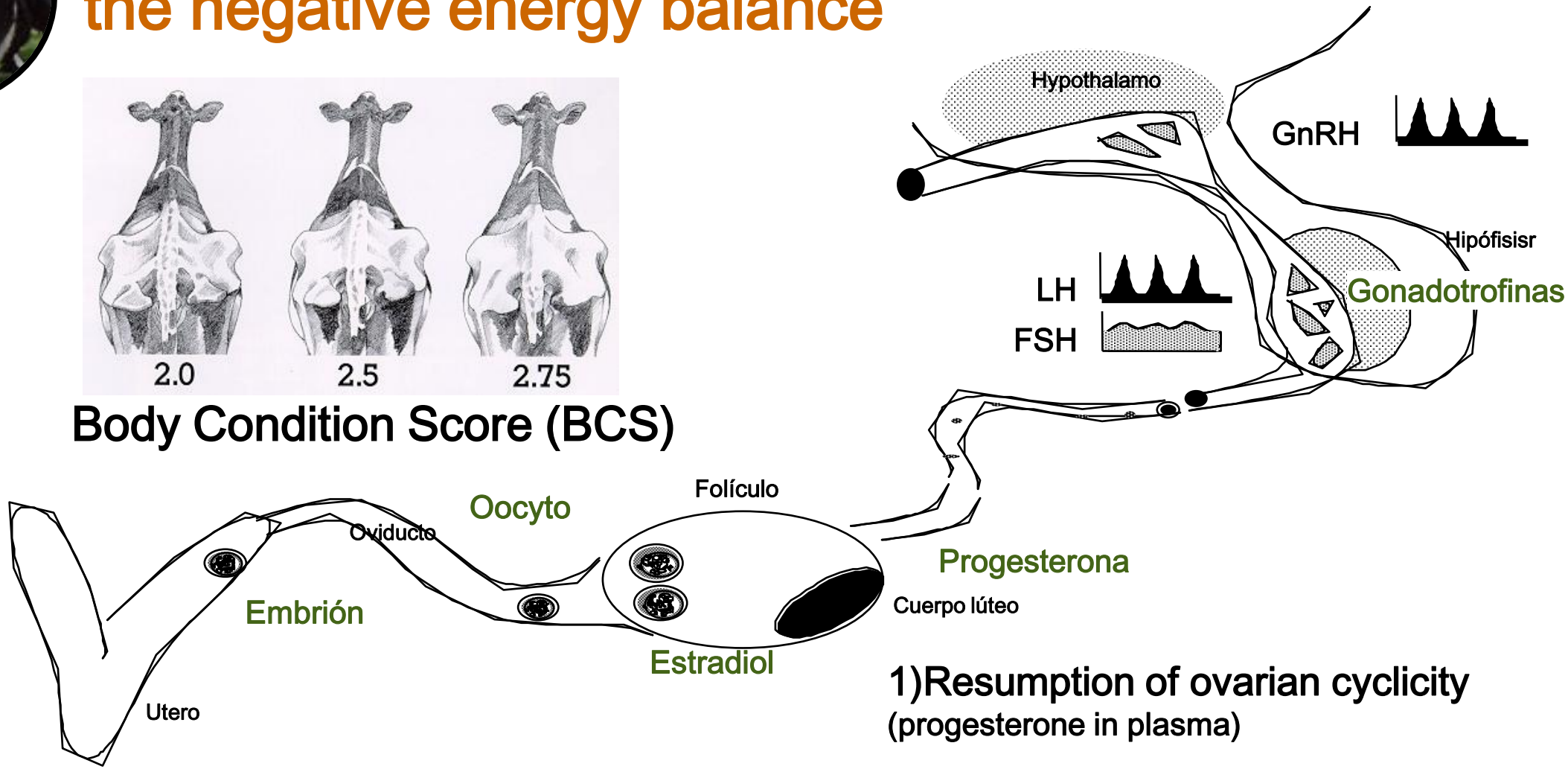


The change from **LA** to **MA** treatments increased 0.43 L milk/kg of extra herbage allowance, while from **MA** to **HA** did not differ (0.08 L/kg).

But this is not the only response that is economically important…

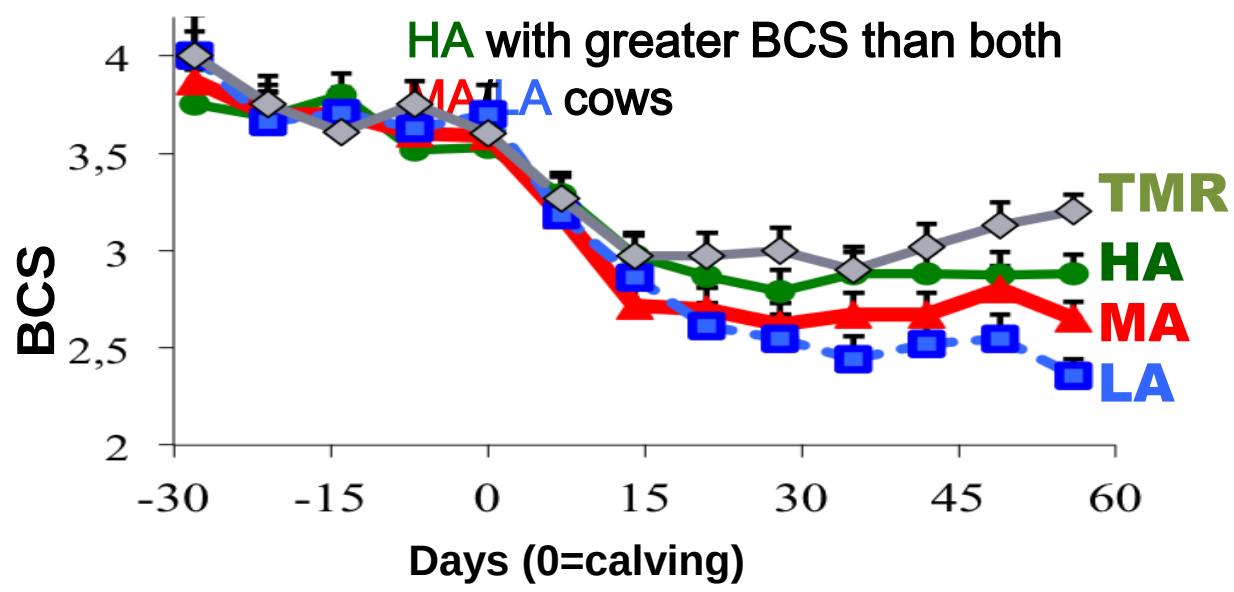
Reproductive performance is affected by the negative energy balance

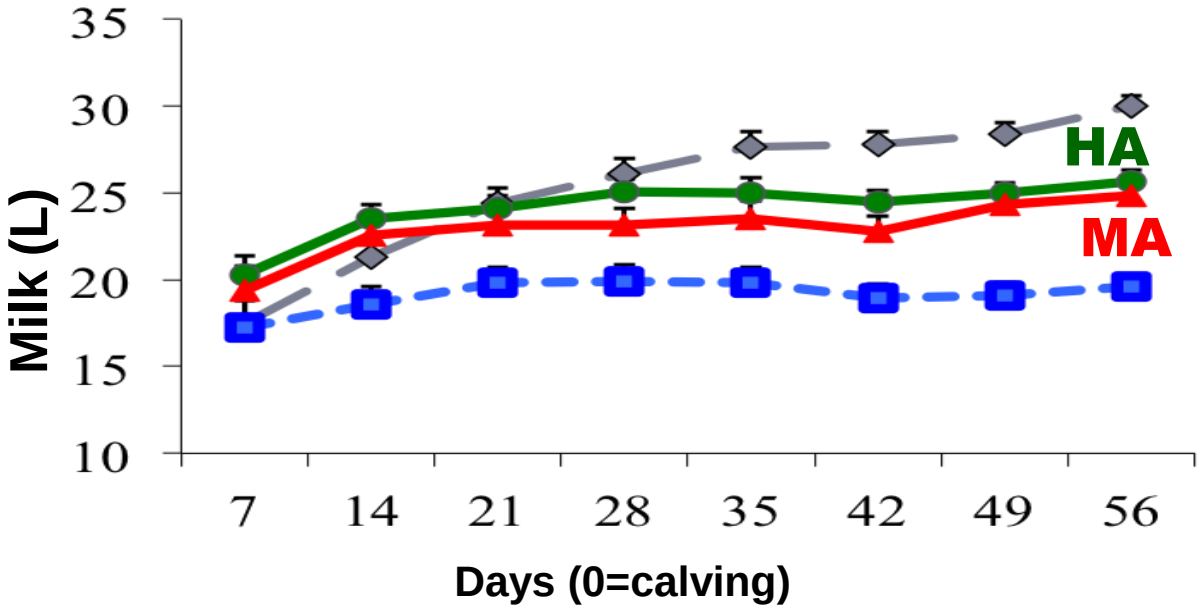
Body Condition Score (BCS)

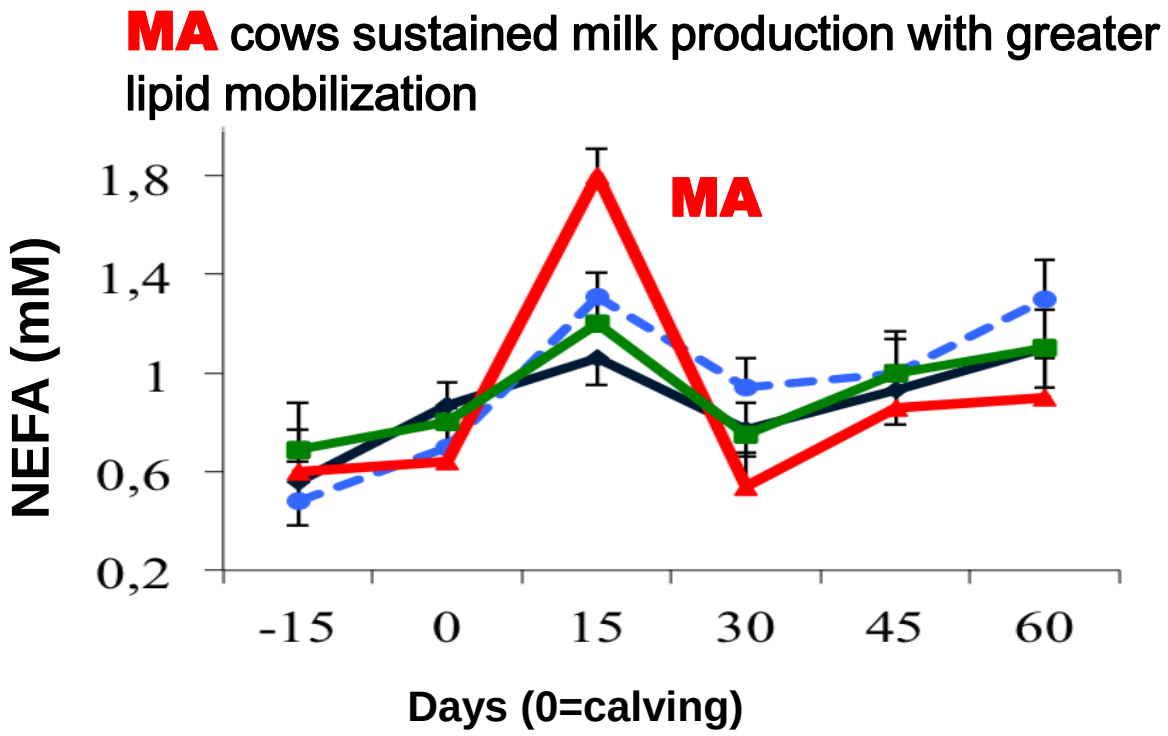


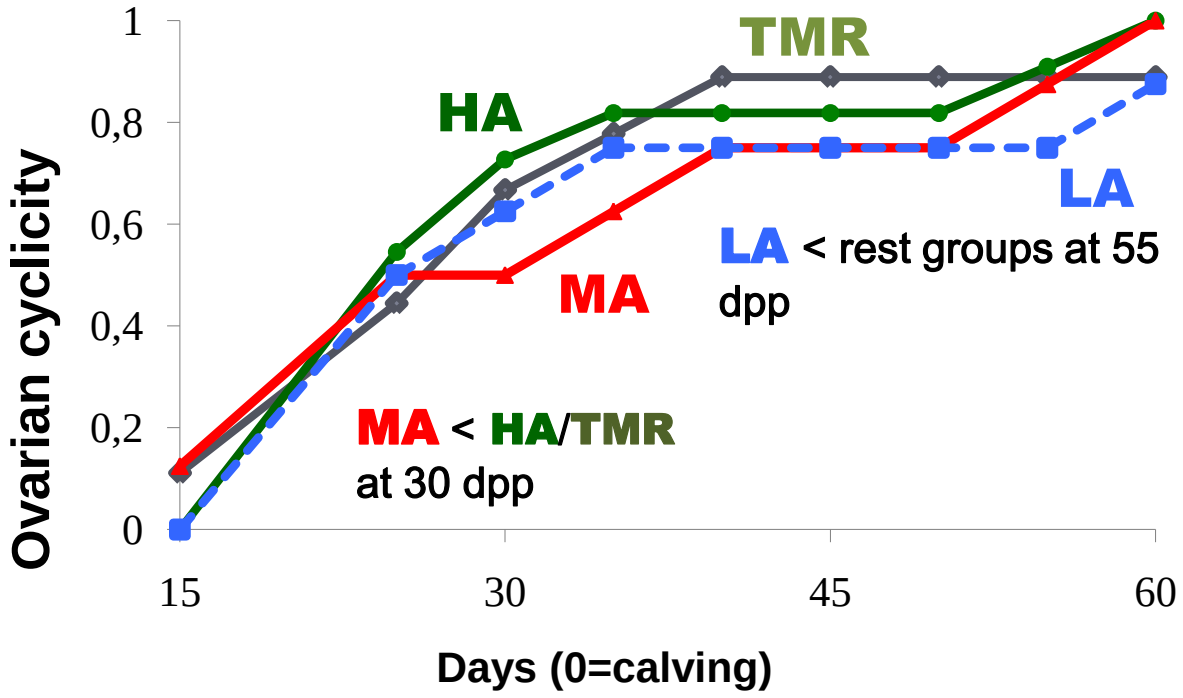
1)Resumption of ovarian cyclicity
(progesterone in plasma)

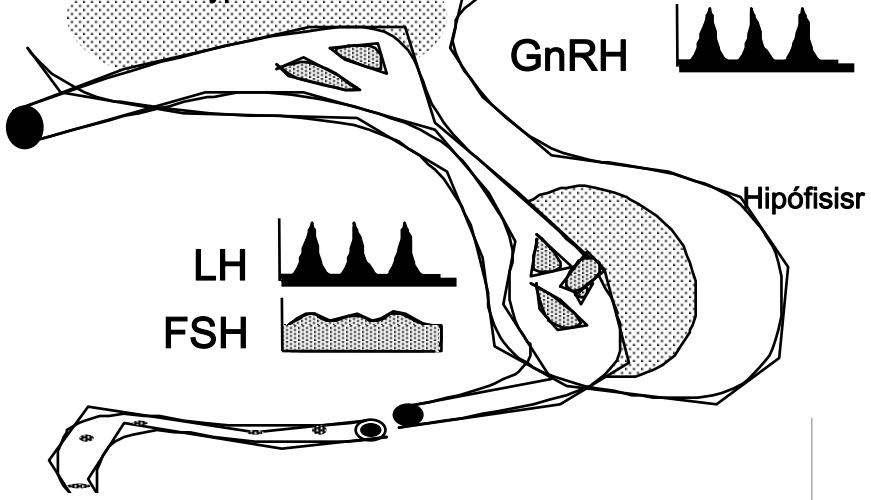
2) Fertilization and maintenance of pregnancy (appropiate uterine environment for embryo development)

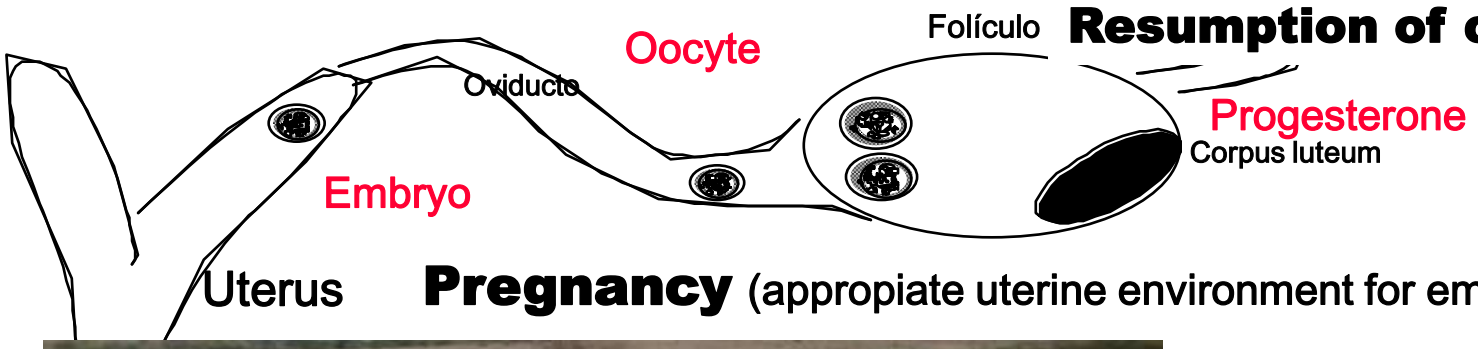

HA with greater BCS than both MA/LA cows
BCS
4
3,5
3
2,5
2
-30
-15
0
15
30
45
60
Days (0=calving)
TMR
HA
MA
LA


Milk (L)
35
30
25
20
15
10
7
14
21
28
35
42
49
56
Days (0=calving)
HA
MA


MA cows sustained milk production with greater lipid mobilization
NEFA (mM)
1,8
1,4
1
0,6
0,2
-15
0
15
30
45
60
Days (0=calving)
MA

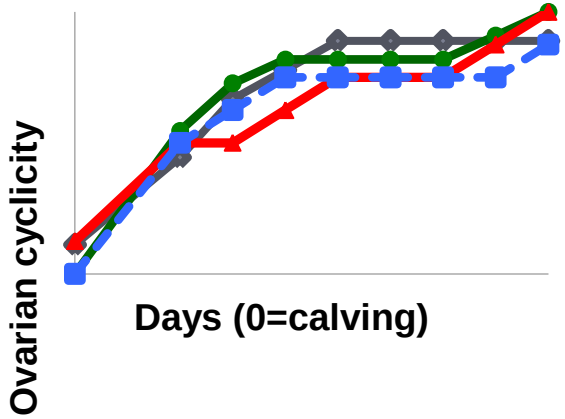

Ovarian cyclicity
1
0,8
0,6
0,4
0,2
0
15
30
45
60
Days (0=calving)
TMR
HA
LA
MA
LA < rest groups at 55 dpp
MA < HA/TMR at 30 dpp

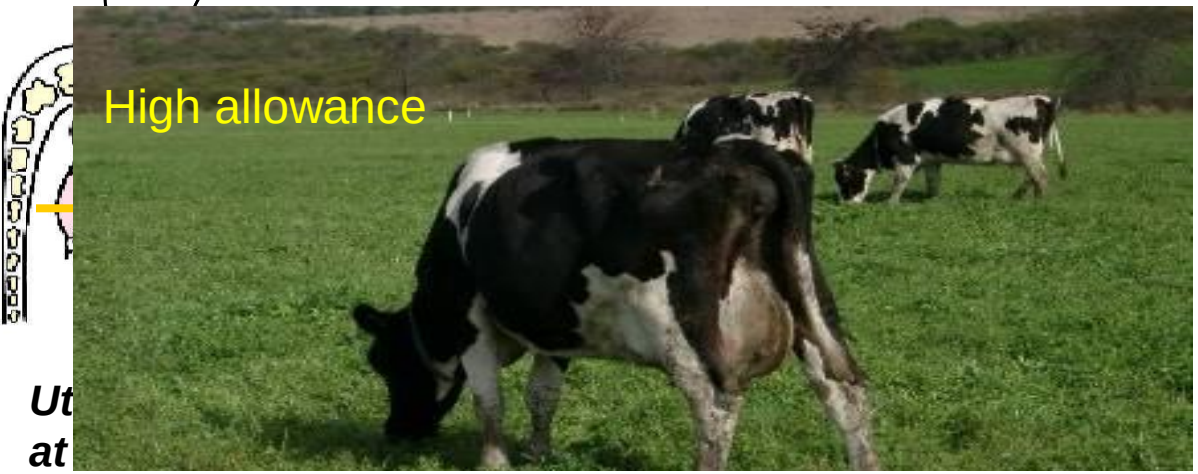




Resumption of cyclicity

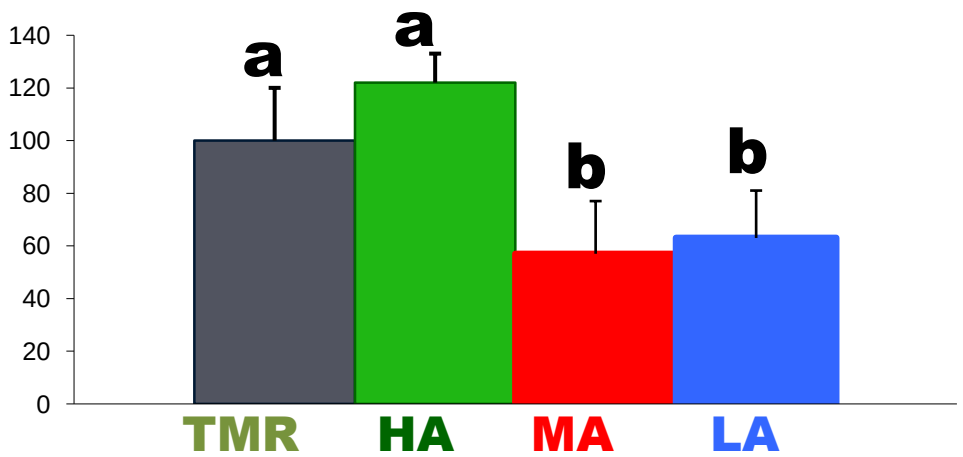
Pregnancy (appropiate uterine environment for embryo development)





HA cows with greater uterine sensitivity to progesterone

Progesterone receptor mRNA



Astessiano et al 2016 submitted

Supplemented based dairy systems

Use of mixed rations combined with grazing

Livestock Science 181 (2015) 51–57

Contents lists available at ScienceDirect

Livestock Science

journal homepage: www.elsevier.com/locate/livsci

Use of mixed rations with different access time to pastureland on productive responses of early lactation Holstein cows

M. Fajardo [a,*], D.A. Mattiauda [a], G. Motta [a], T.C. Genro [b], A. Meikle [c], M. Carriquiry [a], P. Chilibroste [a]

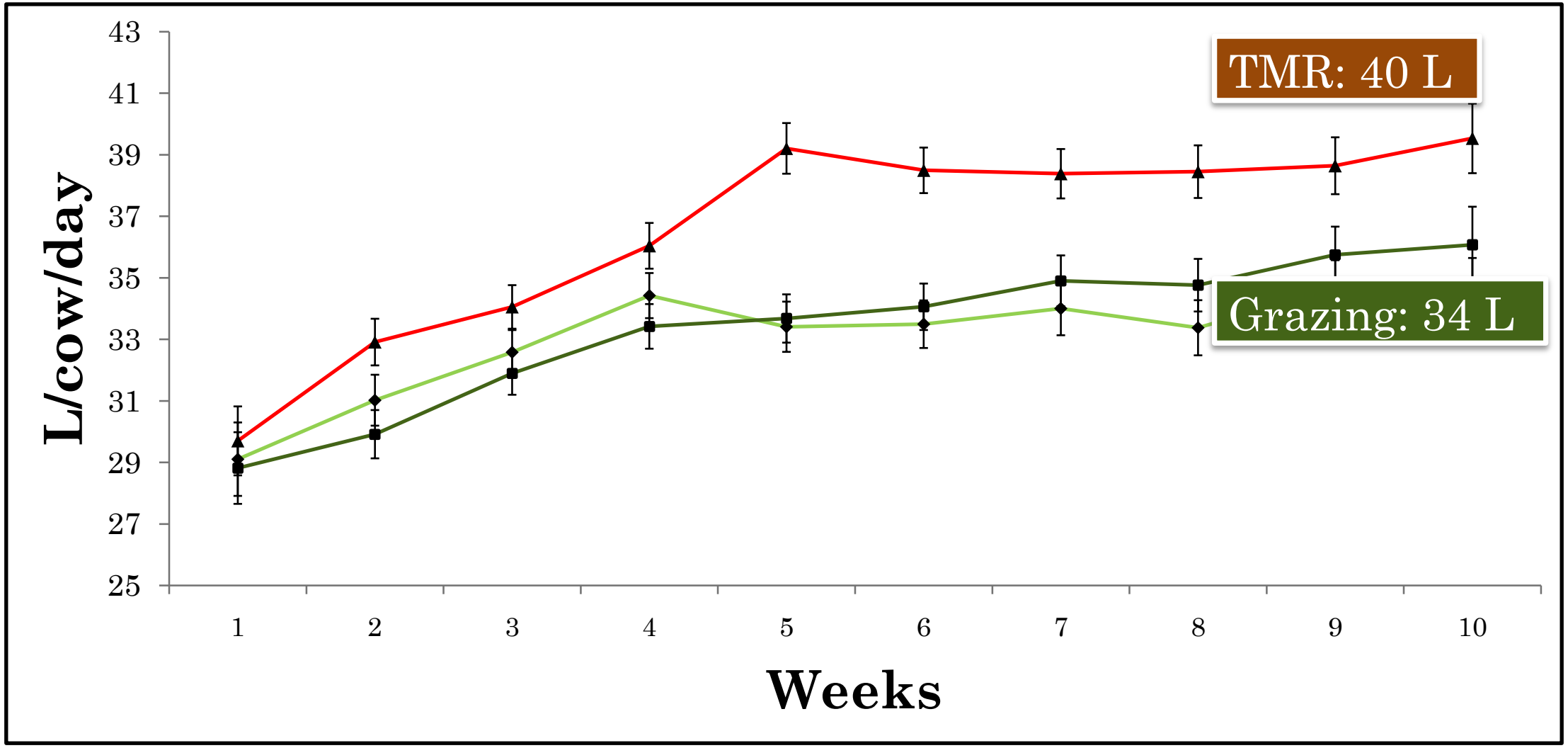
[a] Facultad de Agronomía, Departamento de Producción Animal y Pasturas, Universidad de la República, Montevideo, Uruguay
[b] Embrapa Pecuária Sul, Bagé, RS, Brasil
[c] Facultad de Veterinaria, Departamento de Biología Molecular y Celular, Universidad de la República, Montevideo, Uruguay

Milk production (DIM 0-60)

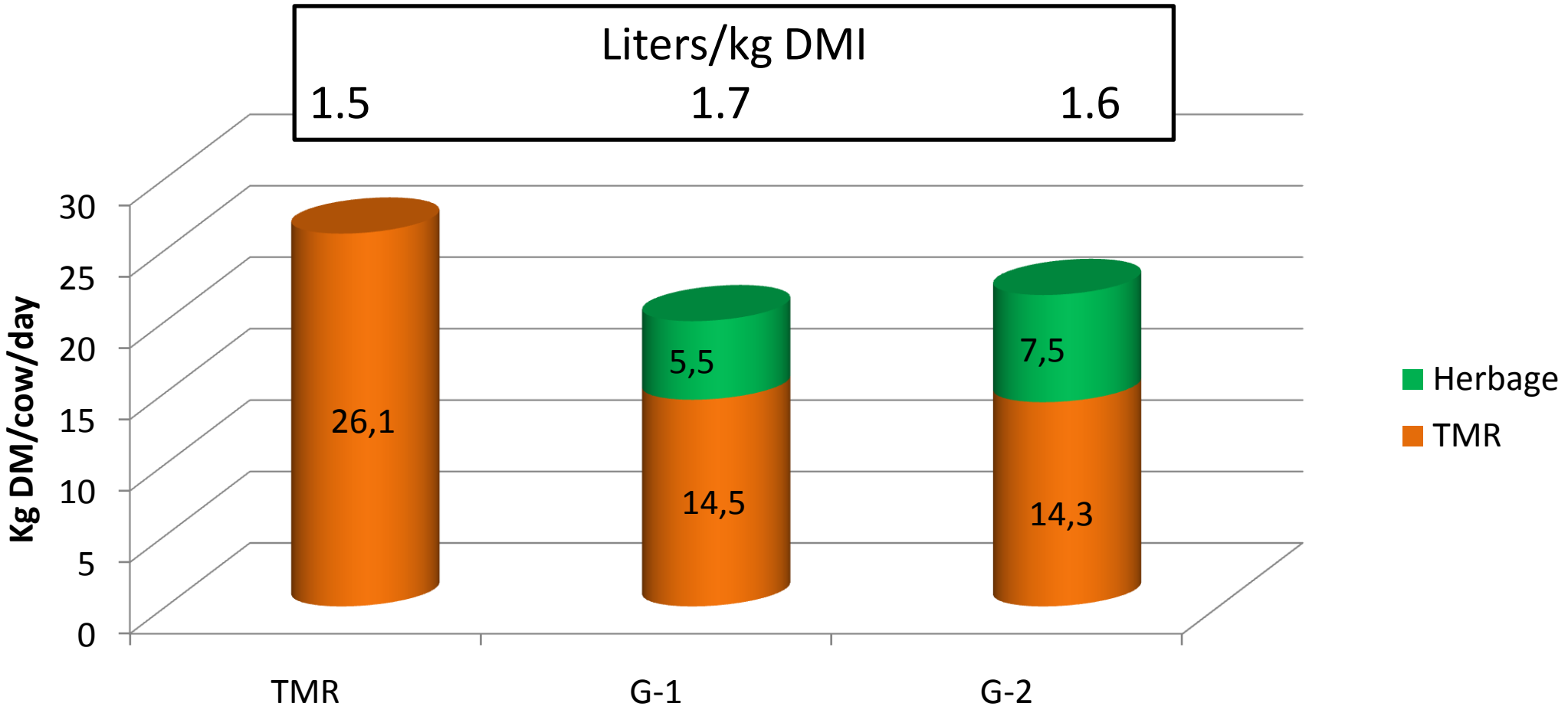
	Treatments		
	TMR	G-1	G-2
Milk l/cow/d	37.2[a]	33.7[b]	33.9[b]
Fat %	3.7[b]	3.9[a]	3.9[ab]
Fat kg/d	1.3	1.3	1.3
Protein %	3.3	3.5	3.4
Protein kg/d	1.3[a]	1.1[b]	1.1[b]

M. Fajardoetal./LivestockScience181(2015)51–57

Milk production evolution



DMI - Efficiency



Why G2 was able to eat more pasture ?

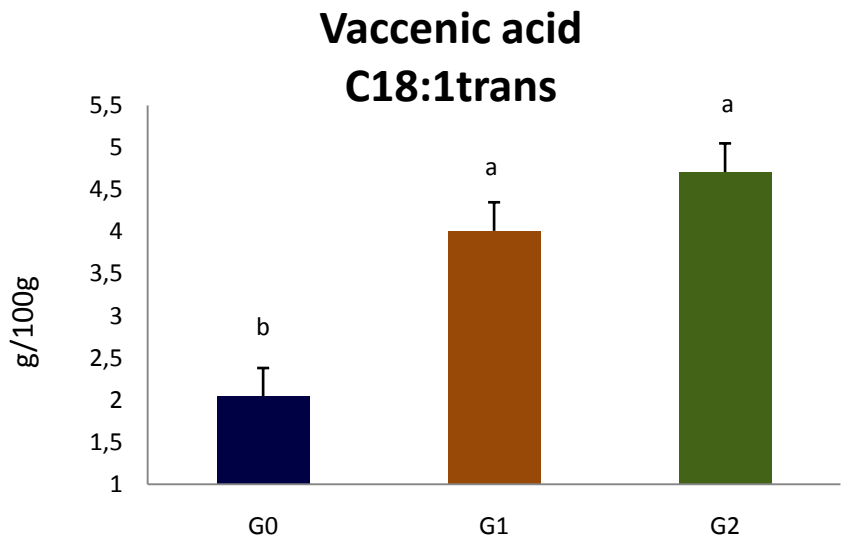
	G-1	G-2	EE
Total grazing time (min)	231.3 b	281.3 a	7.6
Grazing time 0-1 hour	55.1	54.6	1.7
Grazing time 0-3 hours	135.5 a	106.3 b	4.4
Grazing time 0-6 hours	231.3a	185.0b	6.8

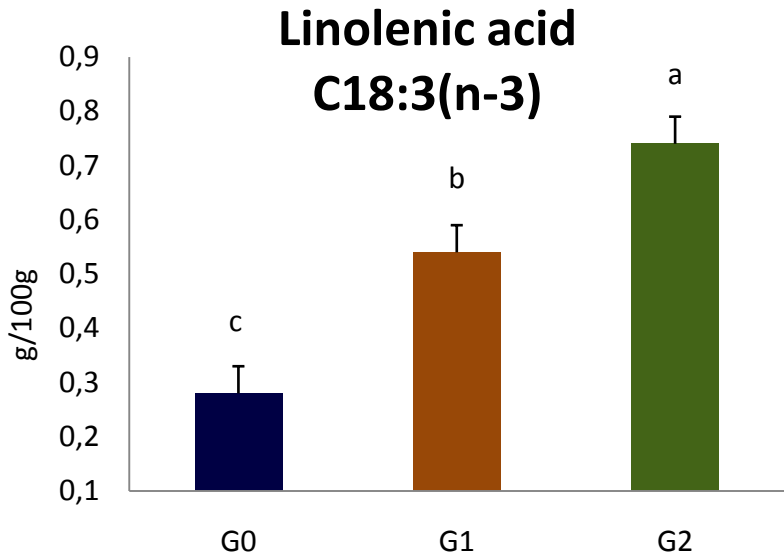
Hours in pasture

G-1 G-2

M. Fajardoetal./LivestockScience181(2015)51–57

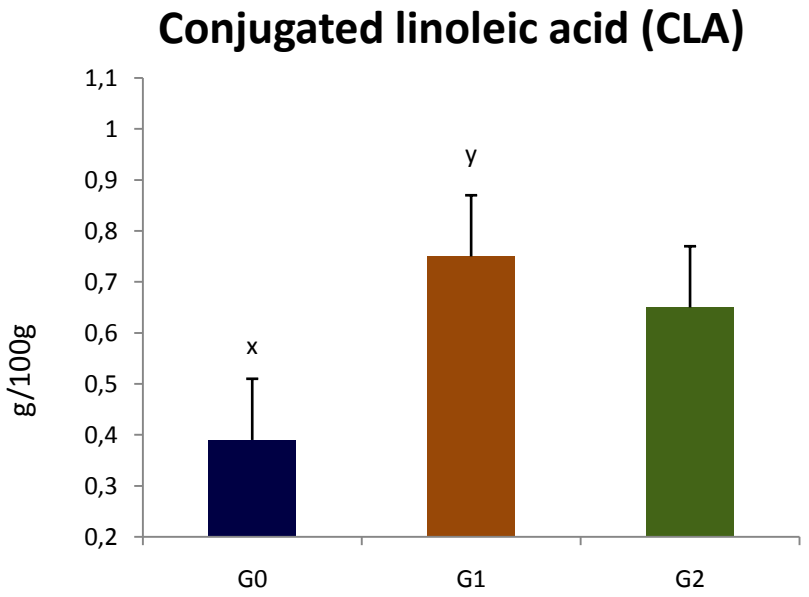
Fatty acid profile in milk: conjugated linoleic acid and omega 3

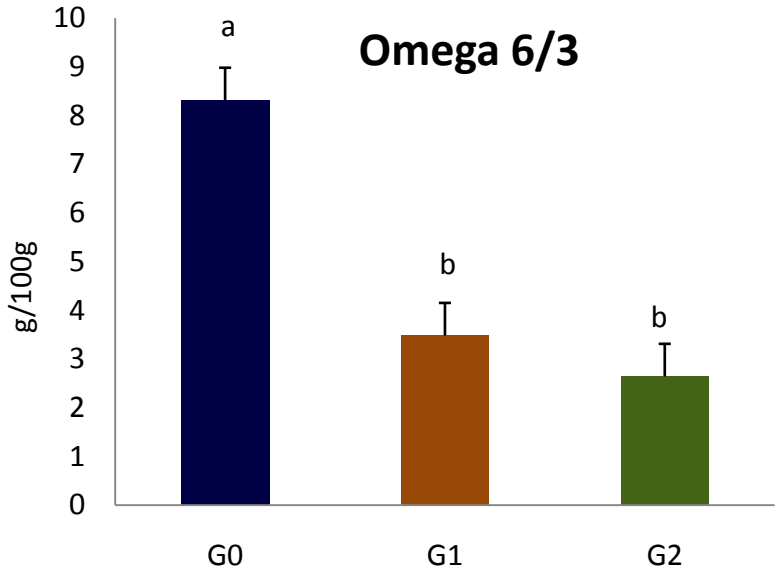




Fresh grass in the diet (30-35% DMI) improves the fatty acid profile in milk for human health.

Barca, Tesis MSc., 2016

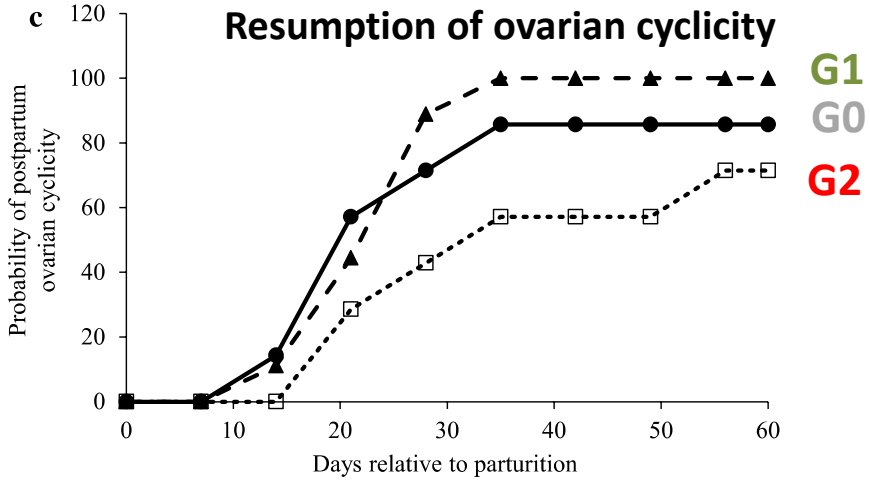


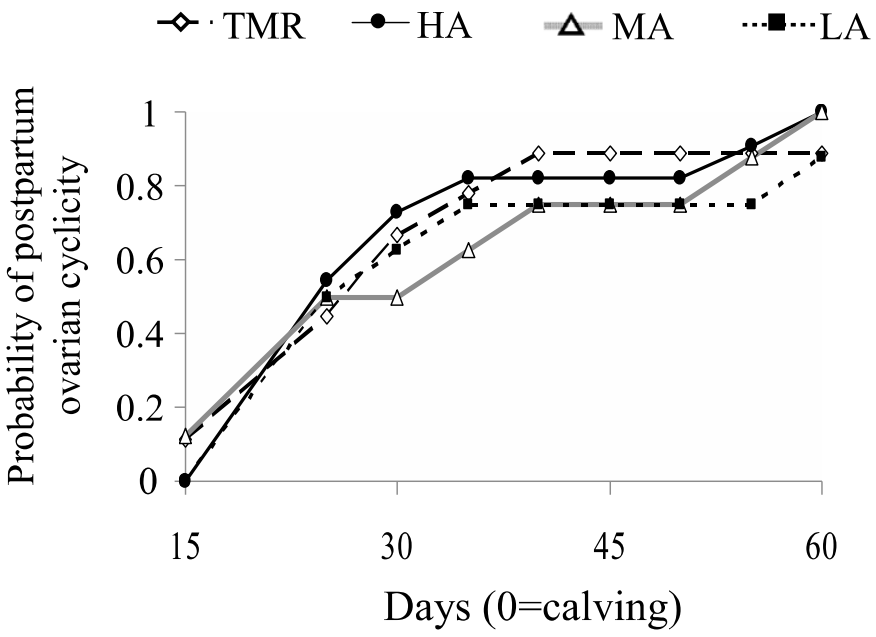


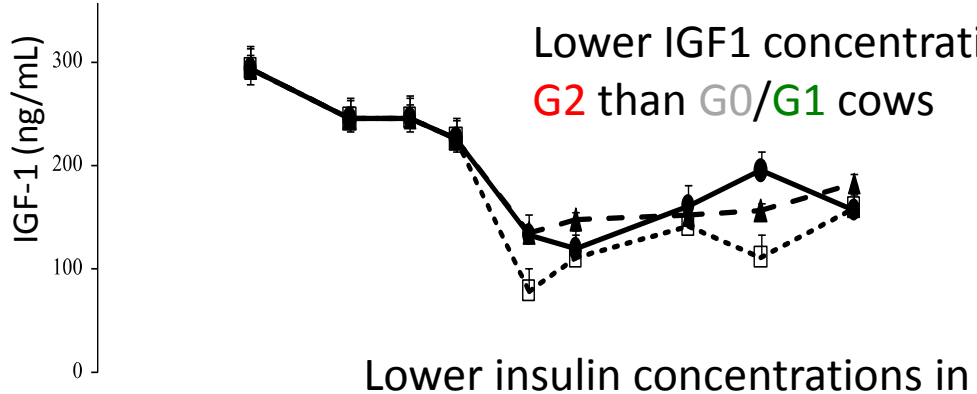
Functional dairy products

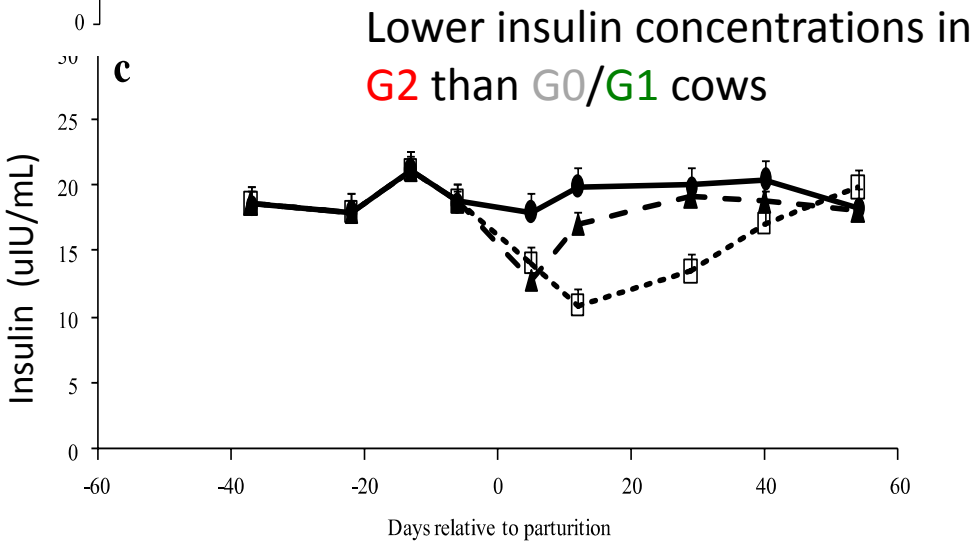
Regions	Change 2000/ 2015
Western Europe	26%
Easter Europe	57%
NorthAmerica	138%
SouthAmerica	136%
Asia	181%
Middle East and Africa	94%
Oceania	81%
Total	89%

PM Food & Dairy Consulting 2014, adaptaded from Sepúlveda 2014









Adaptado de Astessiano et al., 2016.
Acta Veterinaria Scandinavica, 57 (1):70

Margin over feeding: comparison TMR vs partial TMR

	TMR			Partial TMR		
	Ratio milk price/feed cost					
Milk production Difference	1.3	1	0.7	1.3	1	0.7
	Margin over feeding cost (U$S/cow/day)					
10 %	6.5	3.7	0.9	7.4	5.9	4.4
20 %	6.5	3.7	0.9	7.2	5.9	4.5
30 %	6.5	3.7	0.9	6.3	5.1	4.0

Milk production TMR=	37 l/cow/day
Milk price=	0.35 ctv U$S/l
Proportion of grazing=	35 % total DMI
Conversion eff. TMR=	1.4 l milk/kg DMI
Conversion eff. Mix diet=	1.5 l milk/kg DMI

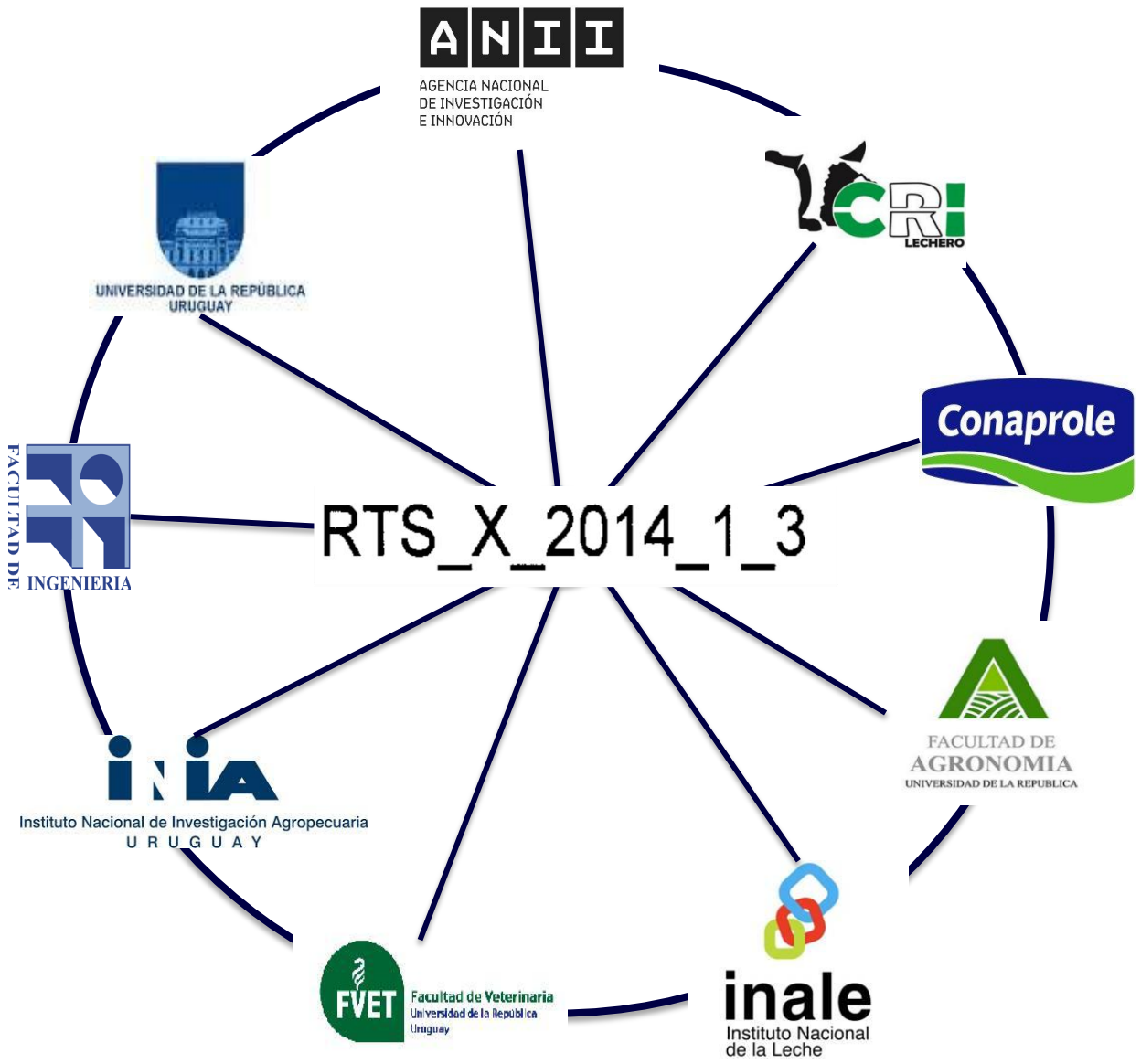
Margin over feeding: comparison TMR vs partial TMR

	TMR			Partial TMR		
	Ratio milk price/feed cost					
Milk production Difference	1.3	1	0.7	1.3	1	0.7
	Margin over feeding cost (U$S/cow/day)					
10 %	4.6	2.6	0.7	5.1	4.0	2.9
20 %	4.6	2.6	0.7	5.2	4.2	3.2
30 %	4.6	2.6	0.7	4.5	3.7	2.8

Milk production TMR=	37 l/cow/day
Milk price=	0.25 ctv U$S/l
Proportion of grazing=	35 % total DMI
Conversion eff. TMR=	1.4 l milk/kg DMI
Conversion eff. Mix diet=	1.5 l milk/kg DMI

It is important what you do but also how do you do it …..

Global competitiveness, sustainability and simplicity: the challenges for a pasture based dairy industry



SPL_uy

Uruguay

Low cost

Reproduction

Health

Productivity
Soil - pasture

Productivity
herd

Mead field:
Well integrated chain value

Knowledge

Talent

Human health

Proyecto Producción Competitiva