Ruminant Production

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INVESTIGACIÓN Y TECNOLOGÍA AGROALIMENTARIAS

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Objectives

IMPROVING ECONOMIC PERFORMANCE AND COMPETITIVENESS OF RUMINANT ENTERPRISES THROUGH INNOVATION AND TECHNOLOGY

Research

Production Systems

- Animal management and husbandry
- Feeding and nutrition
- Environmental quality
- Intestinal microbiota
- End-product quality

Dairy Replacements

Replacements

Diminishing the unproductive life of a cow has strong positive consequences on total herd profitability

Number of cows x replacement rate x ((1-mortality) x (1-cull rate)) x 2x(first calving/24)

100 x .30 x ((1-.03)x(1-.01)) x 2x(24/24) = 58 -> 38,000 €

100 x .30 x ((1-.03)x(1-.01)) x 2x(28/24) = 67 -> 44,000 €

100 x .30 x ((1-.03)x(1-.01)) x 2x(22/24) = 52 -> 34,000 €

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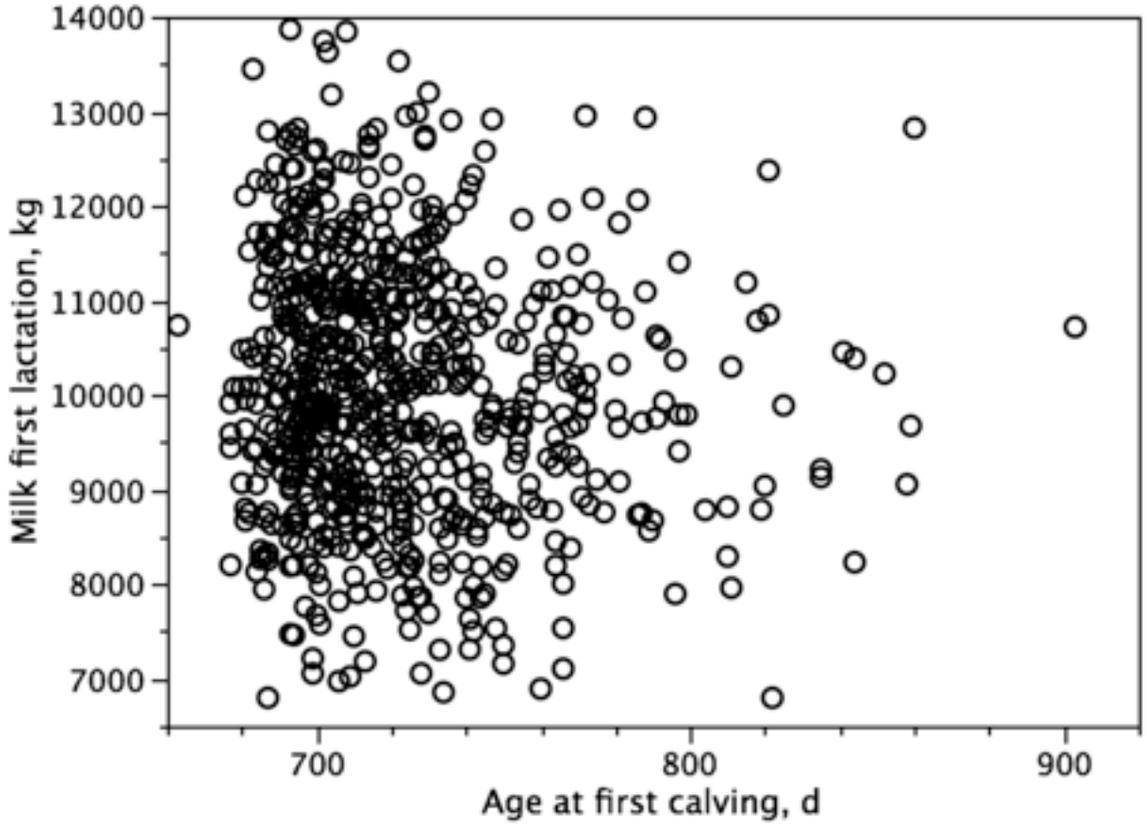
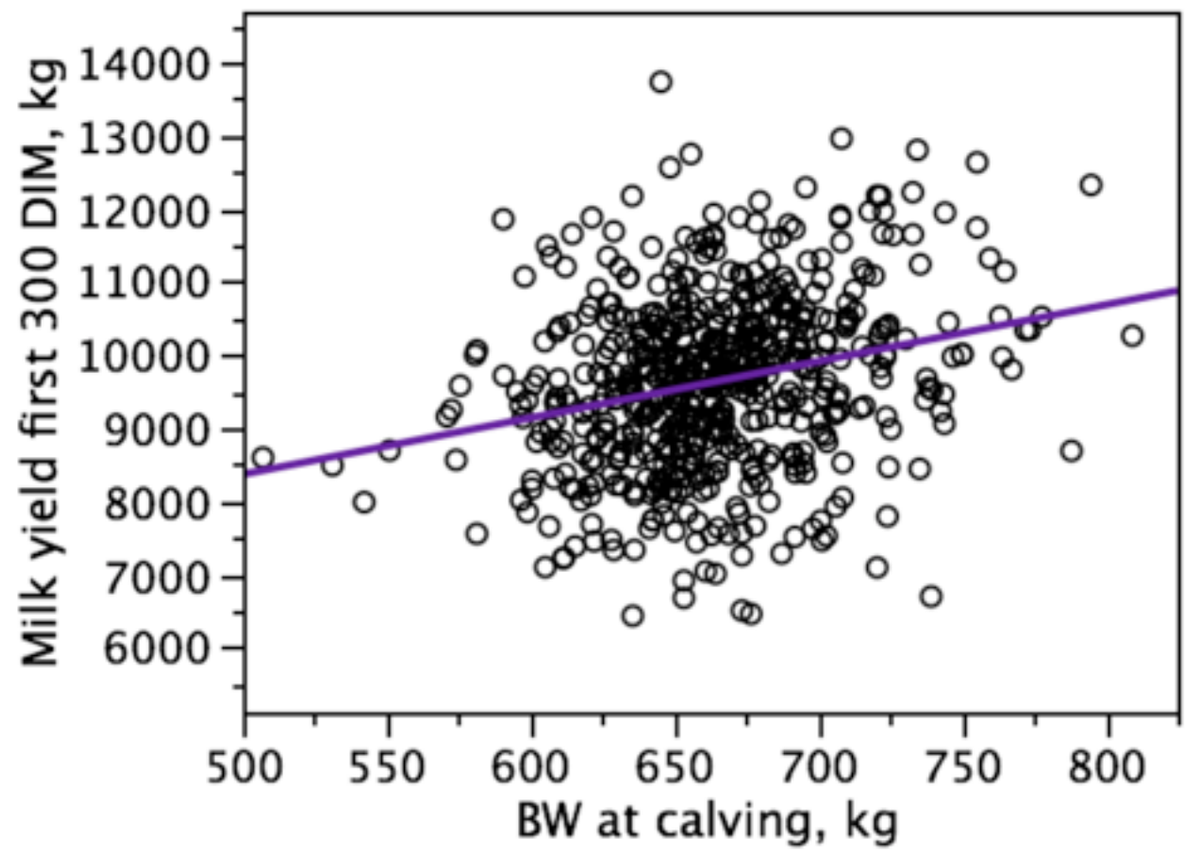
Replacements

- Age at first calving when > 22 months has little impact on milking performance of heifers (Hoffman and Funk, 1992).
- However, BW at calving is correlated with milking performance of heifers.

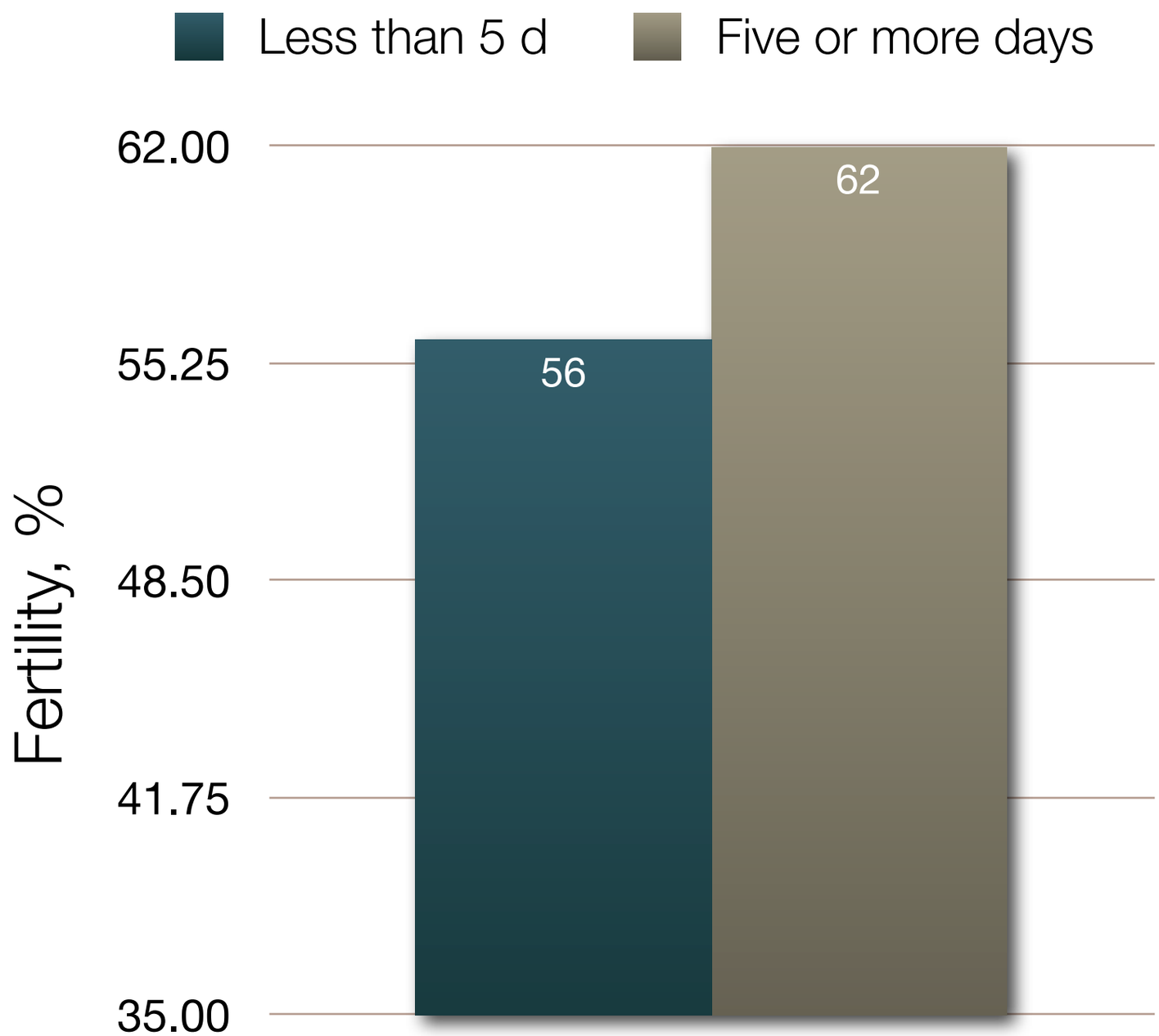




Bach et al., 2008

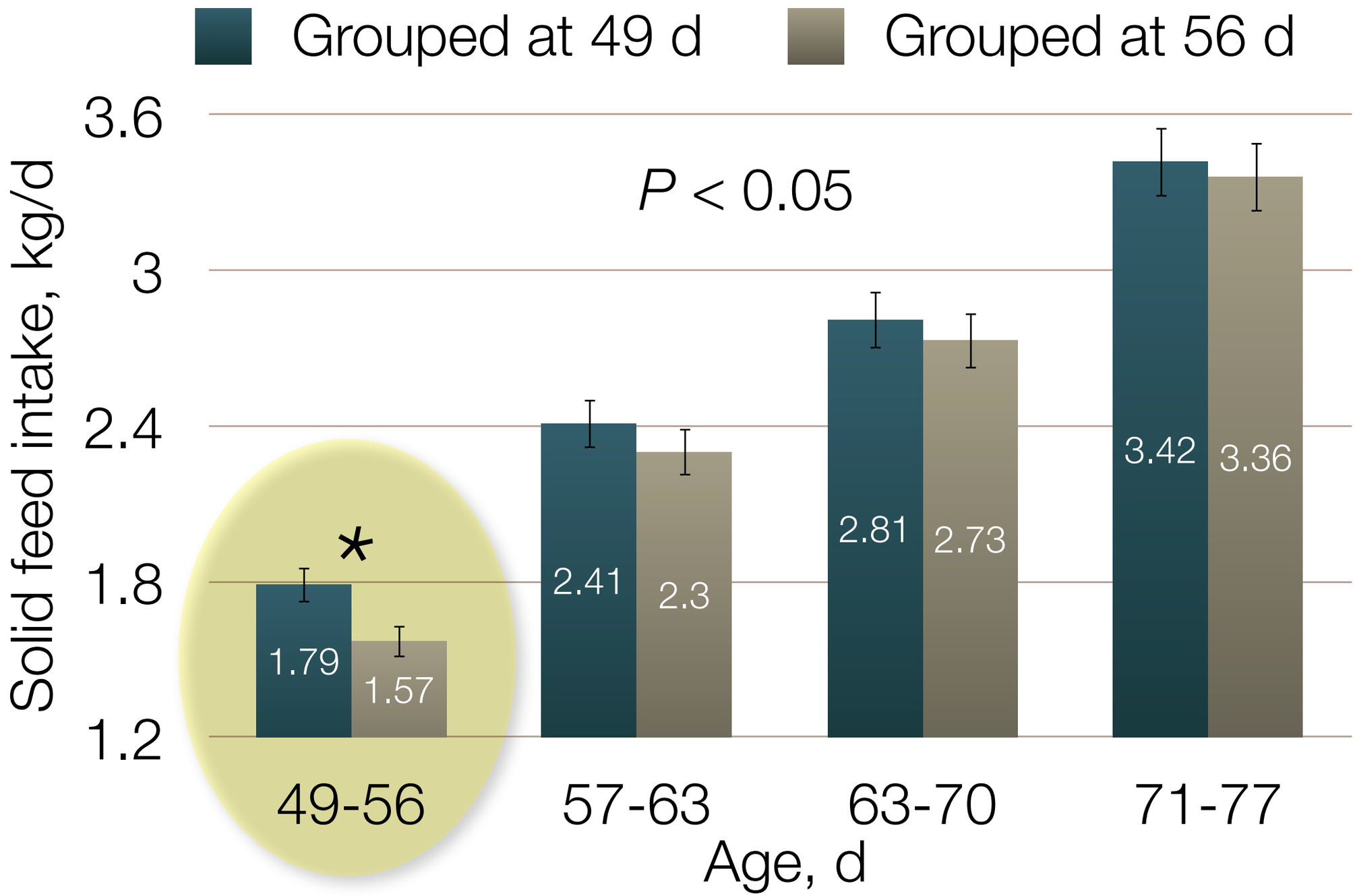
Replacements

- Using the fertility outcome from 4,213 first services and relating it to days since regrouping took place shows that it has a negative impact on fertility



Replacements

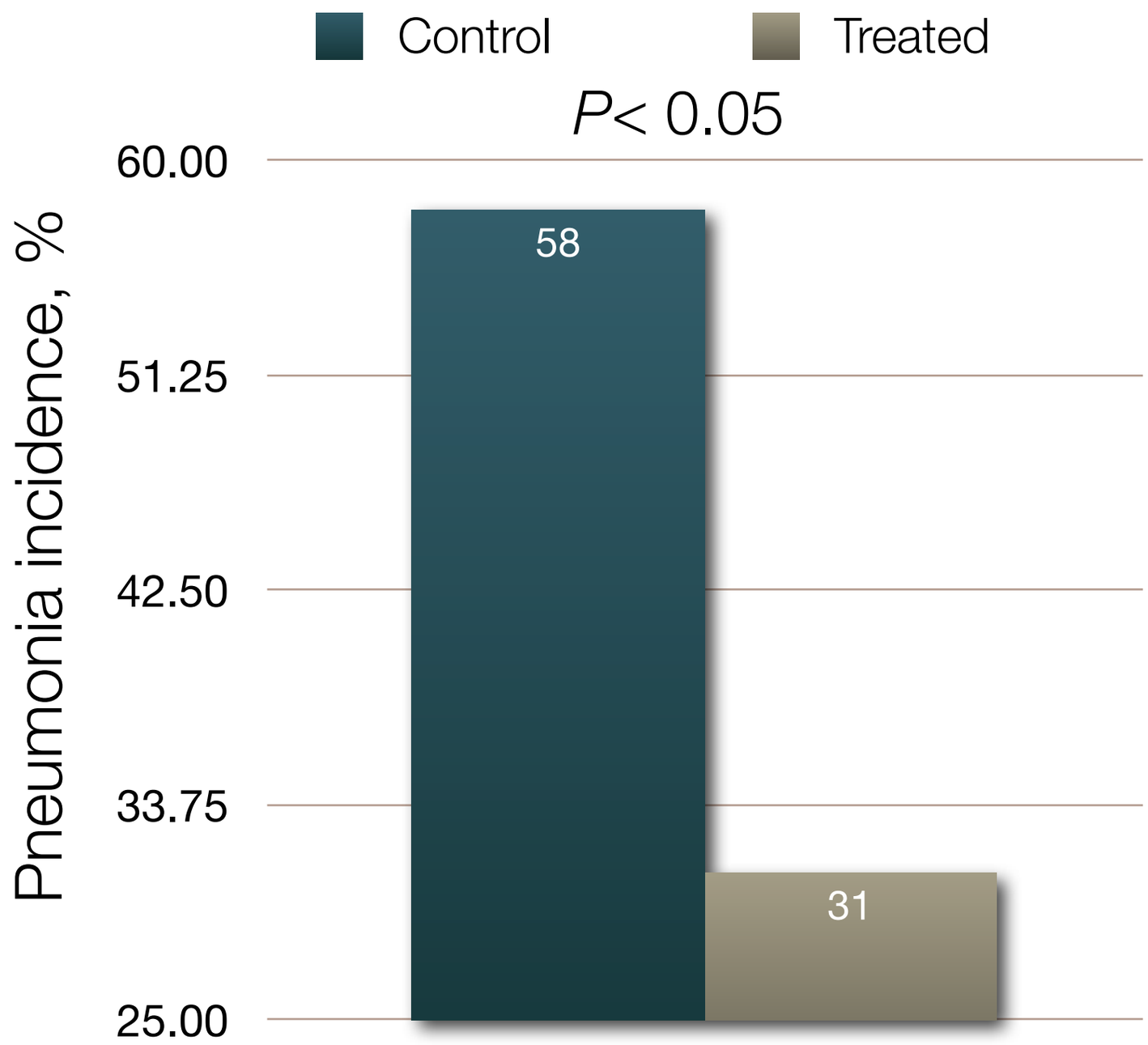
Bach et al., 2010



Grouped calves consumed more solid feed than those individually housed.

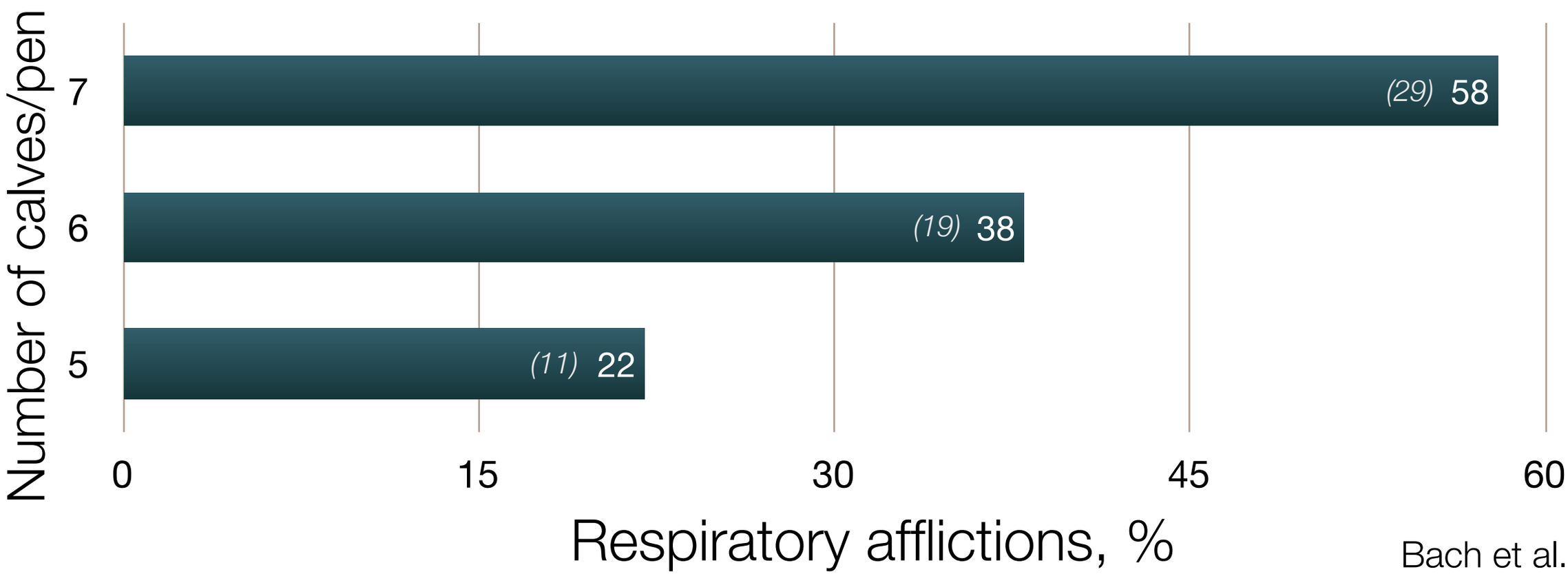
Replacements: Health

- The effects of antibiotic treatment on pneumonia incidence in calves.



Replacements: Health

Item	5	6	7
n	50	60	70
BW entrance, kg	80	79	80
Age entrance, d	80	79	79
BW exit, kg	114	117	113
Age Exit, d	100	100	102
ADG interval, kg/d	0.83	0.89	0.87



Bach et al., 2008

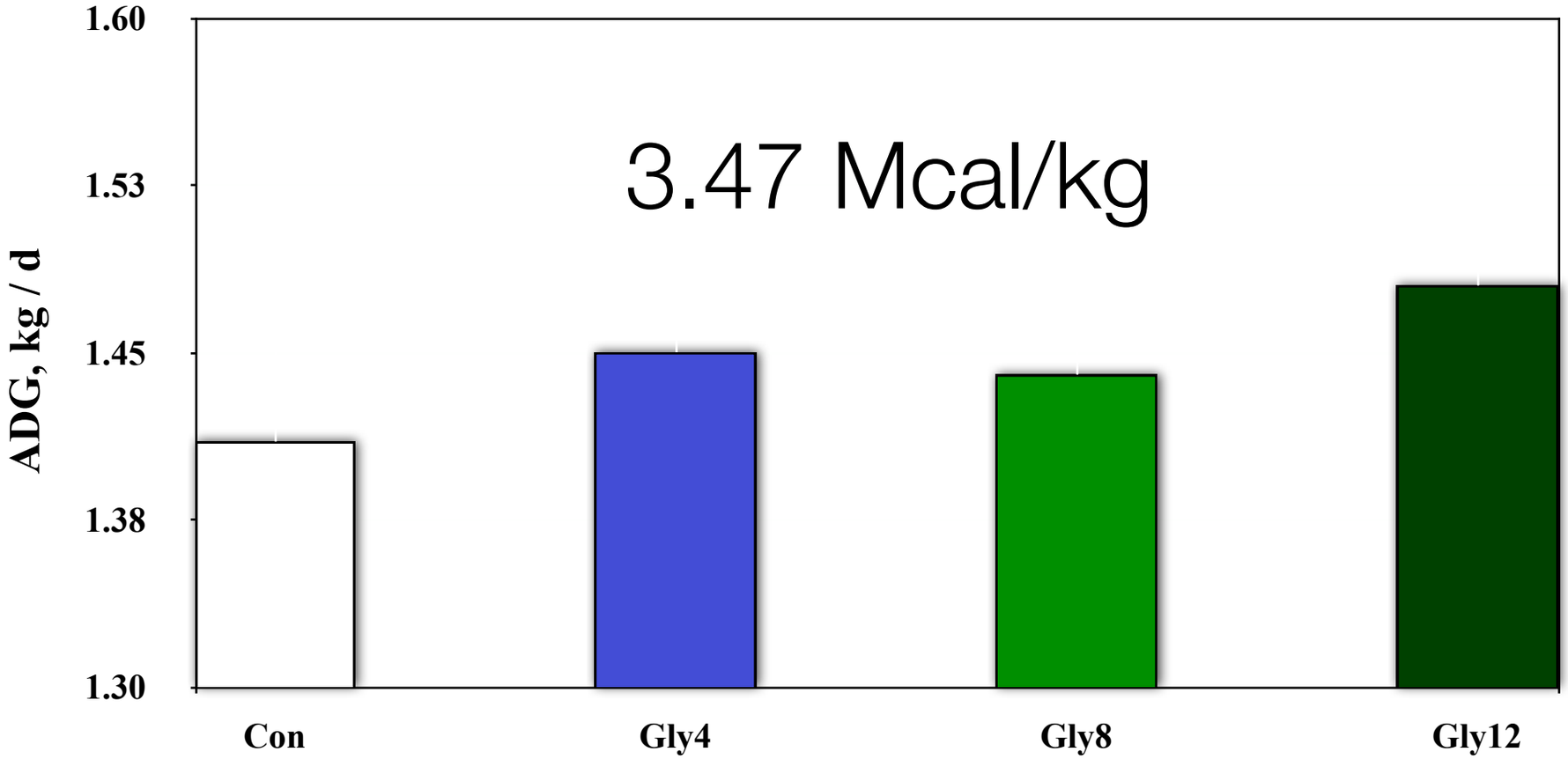
Beef Cattle

Beef Cattle

Beef Cattle

Beef Cattle

- Evaluation of nutritional value of co-products.



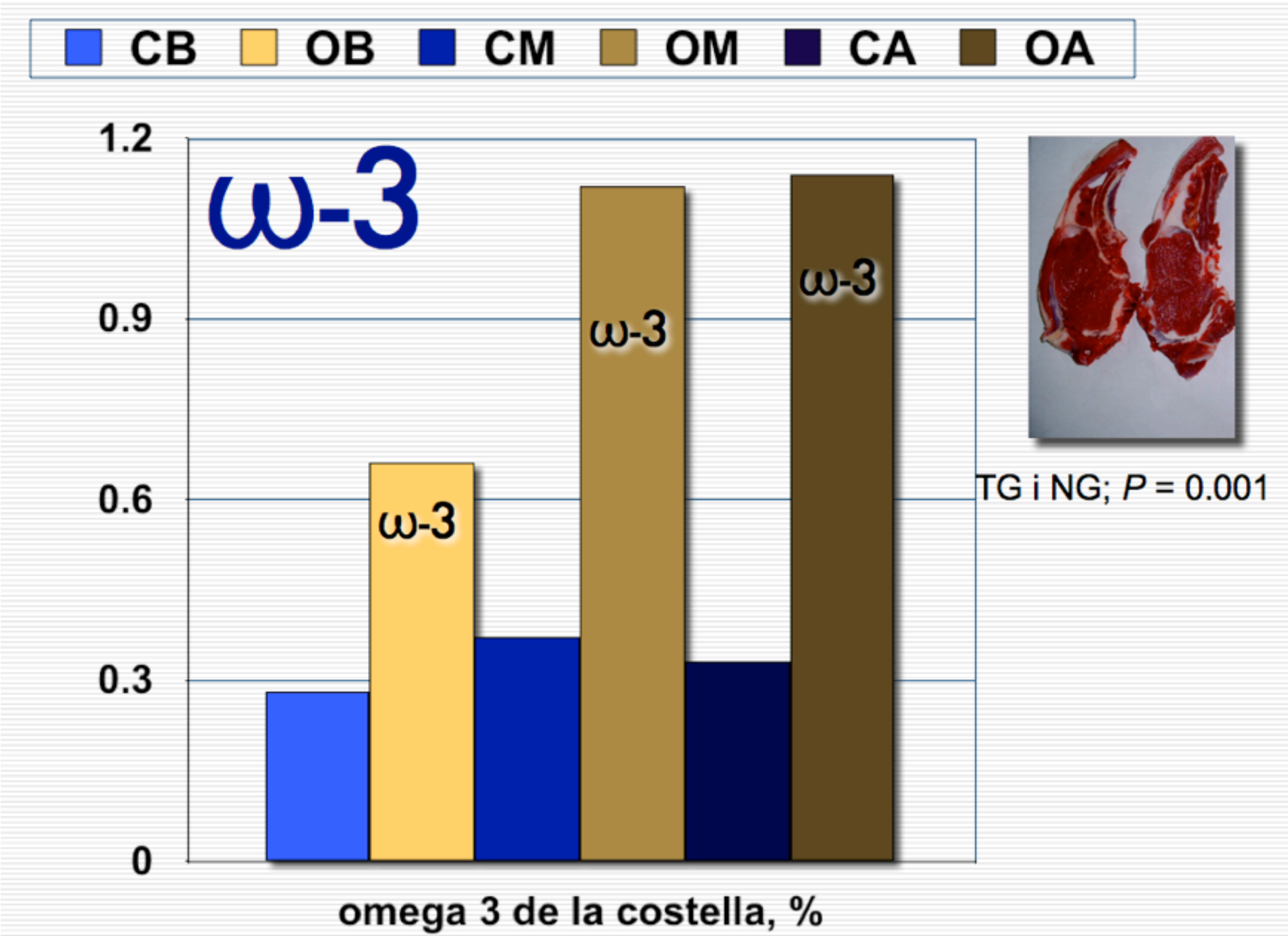
Mach et al., 2009

Beef Cattle

- Evaluation of management factors potentially affecting meat and carcass quality

Mach et al., 2008

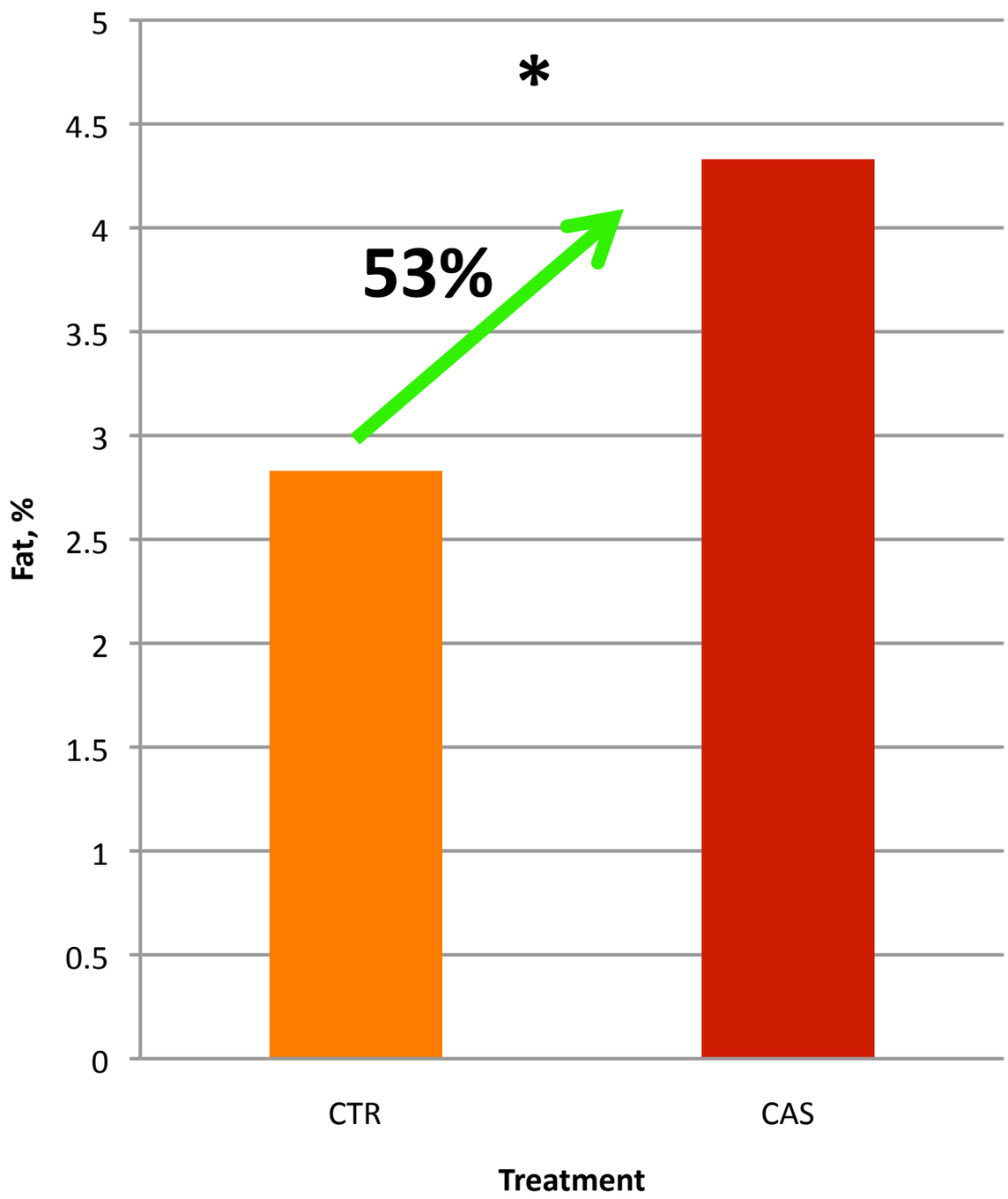
Beef Cattle

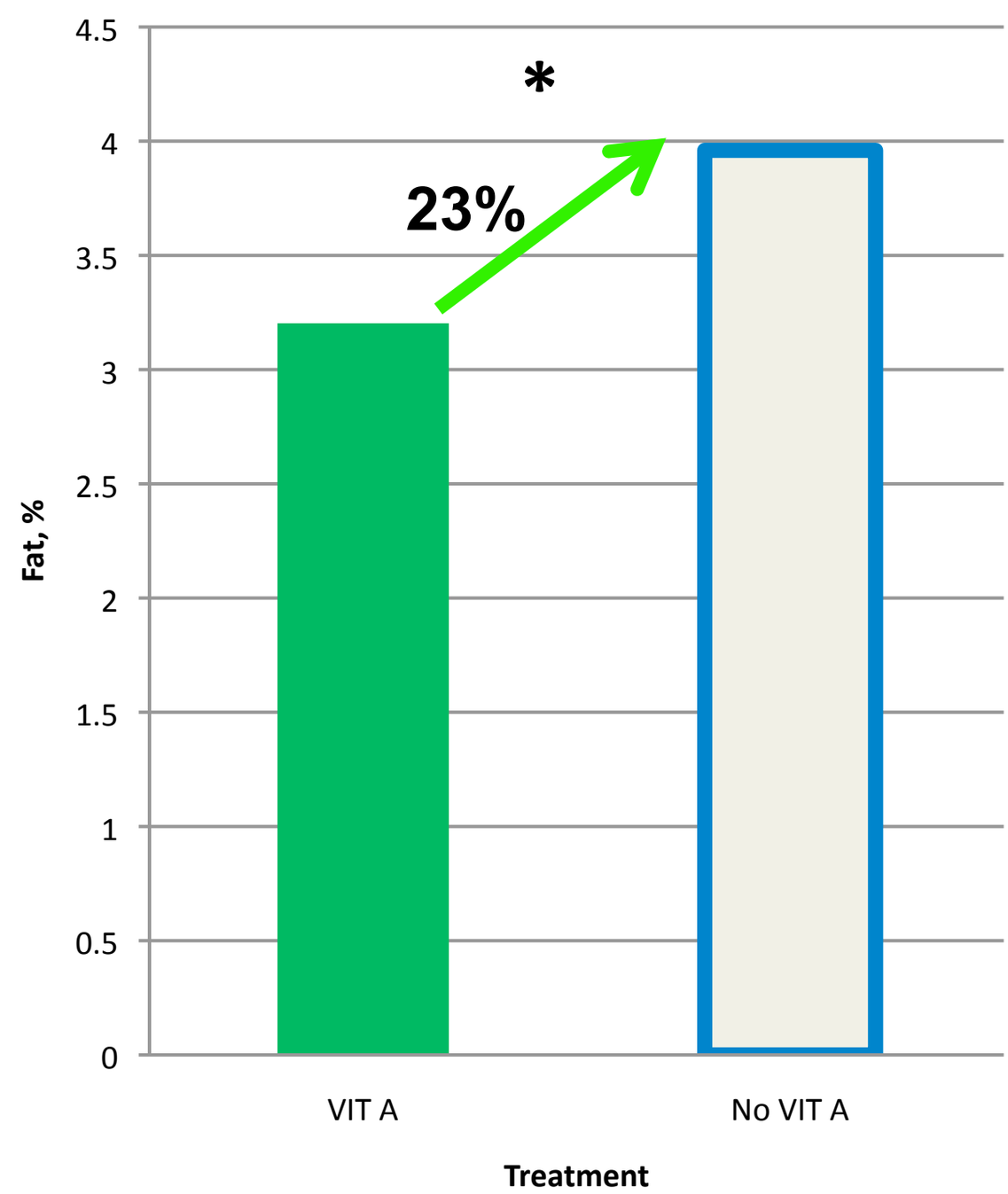


Mach et al., 2006

Beef Cattle

- Effect of castration and vitamin A supplementation

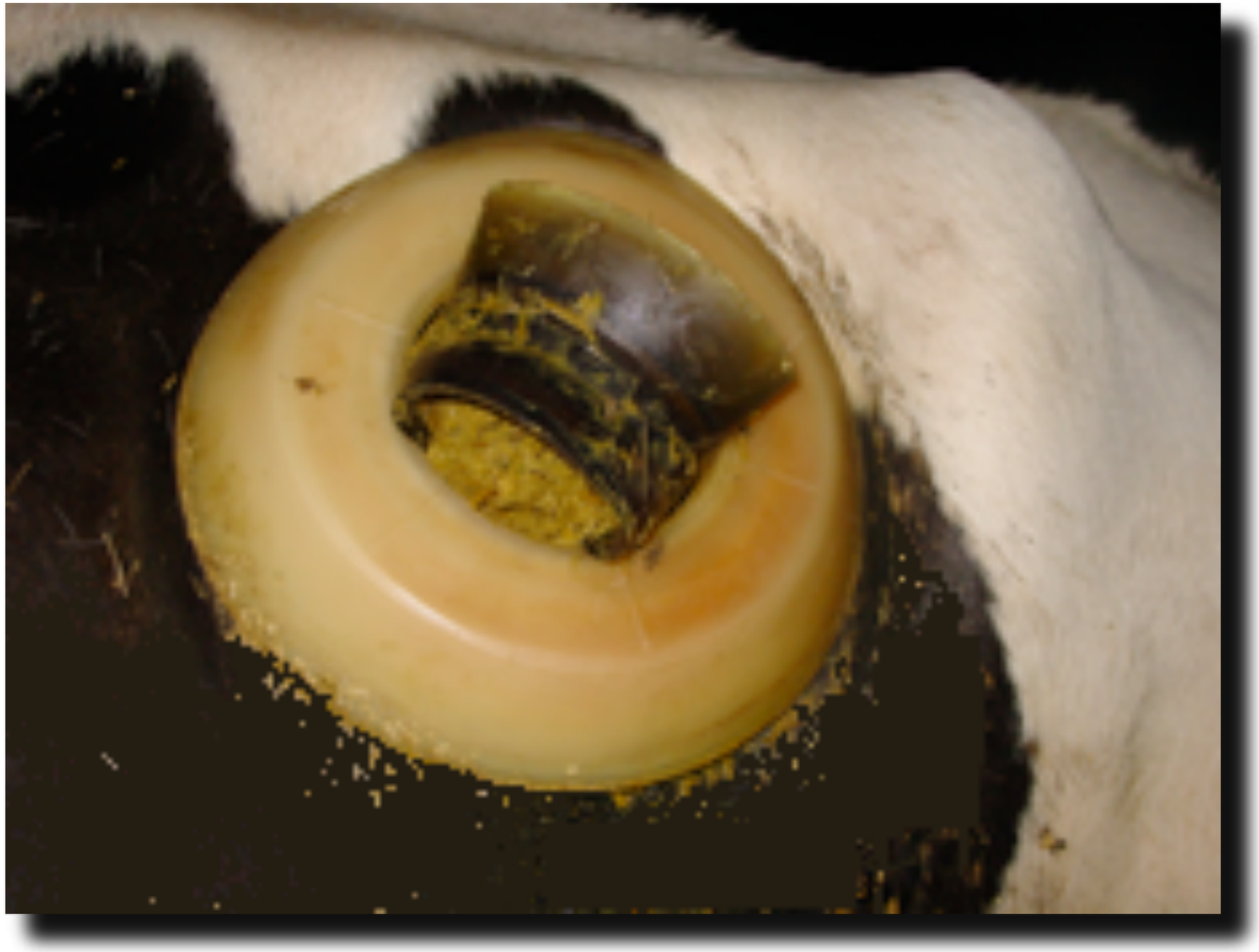




Devant et al., 2009

Dairy Cattle

Rumen Fermentation



Rumen Fermentation

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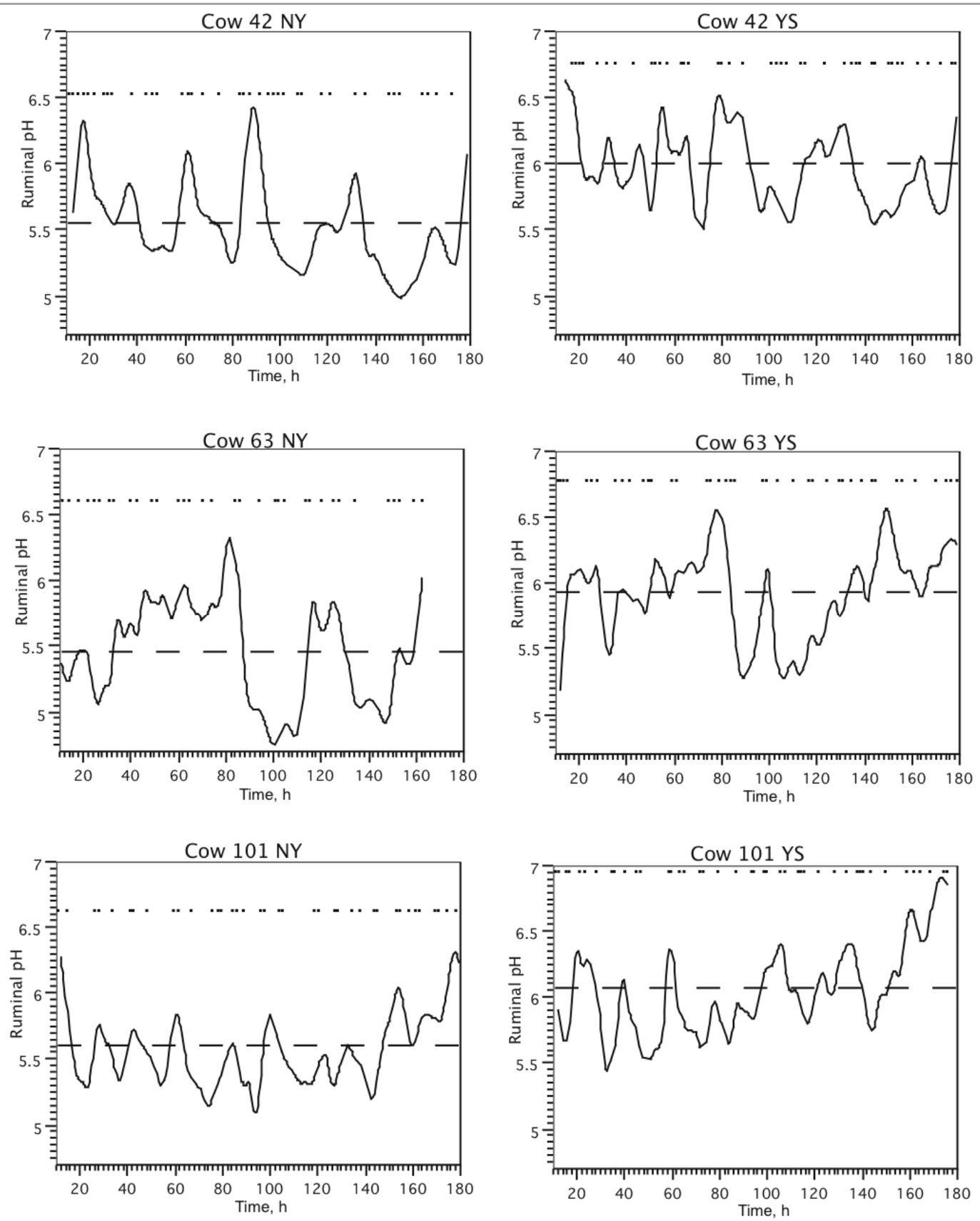
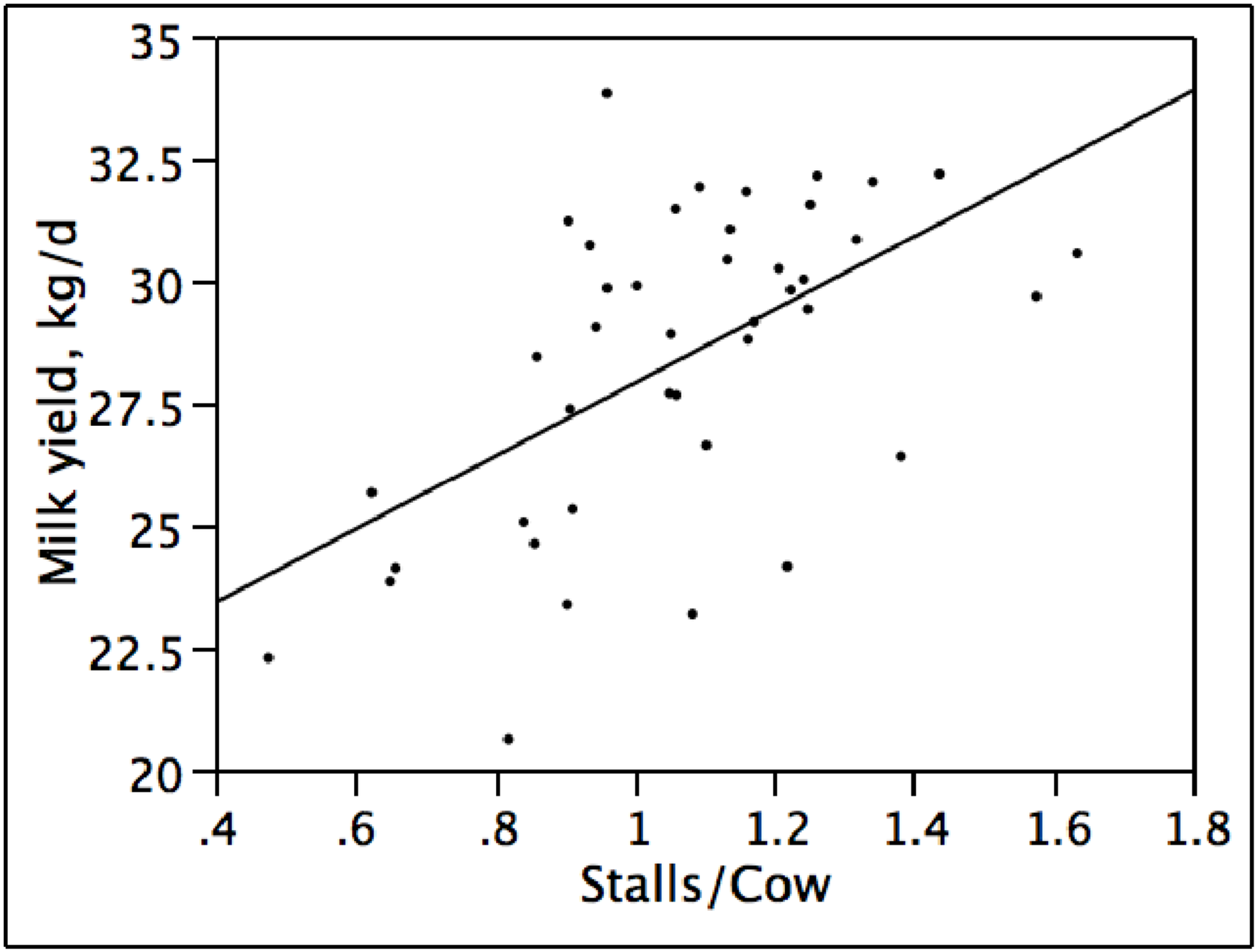


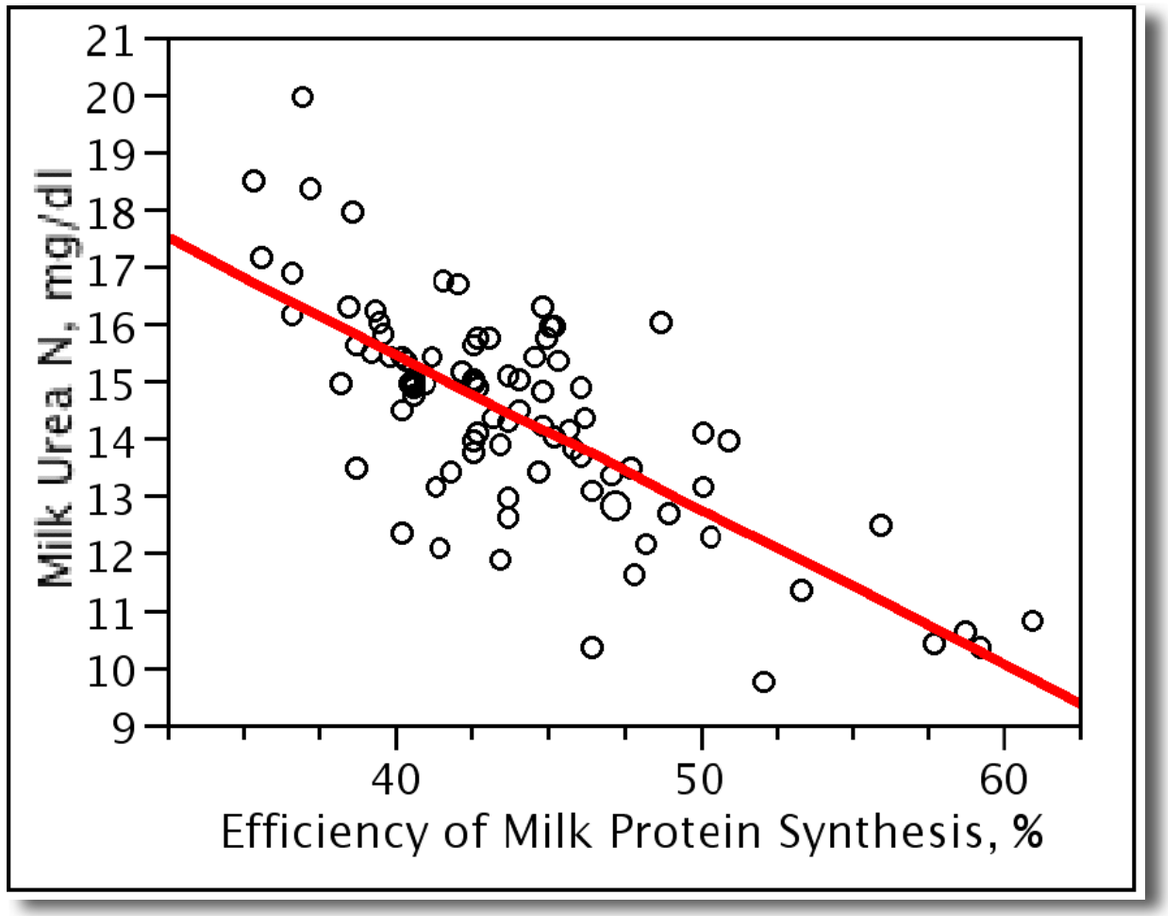
Bach et al., 2007

Milk Production and Milk Quality



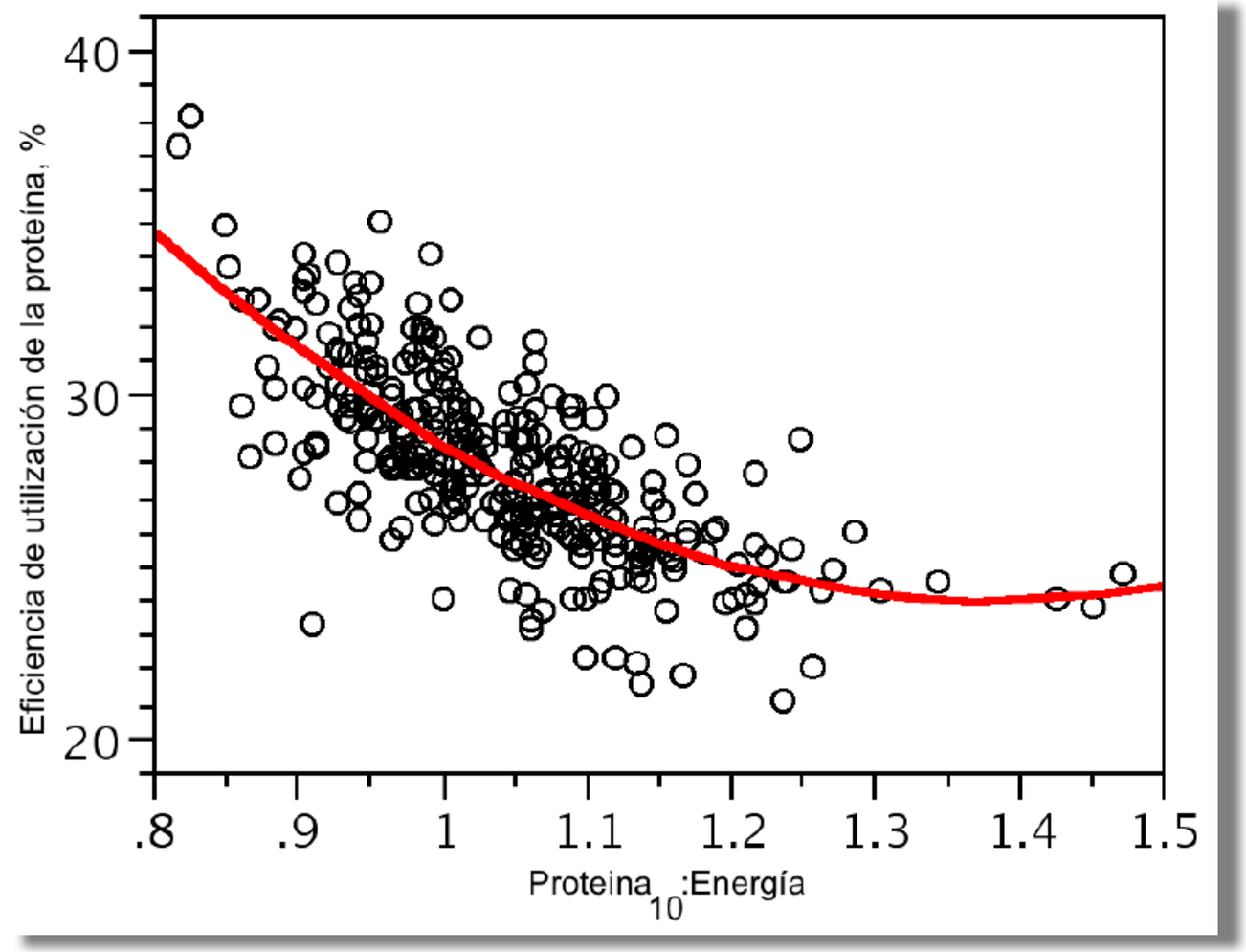
Bach et al., 2008

Milk Production and Milk Quality



For every Mcal of NEl/kg, 10% of protein should be fed

Rations with 1.65 Mcal/NEl, should supply16.5% of CP



Bach et al., 2006

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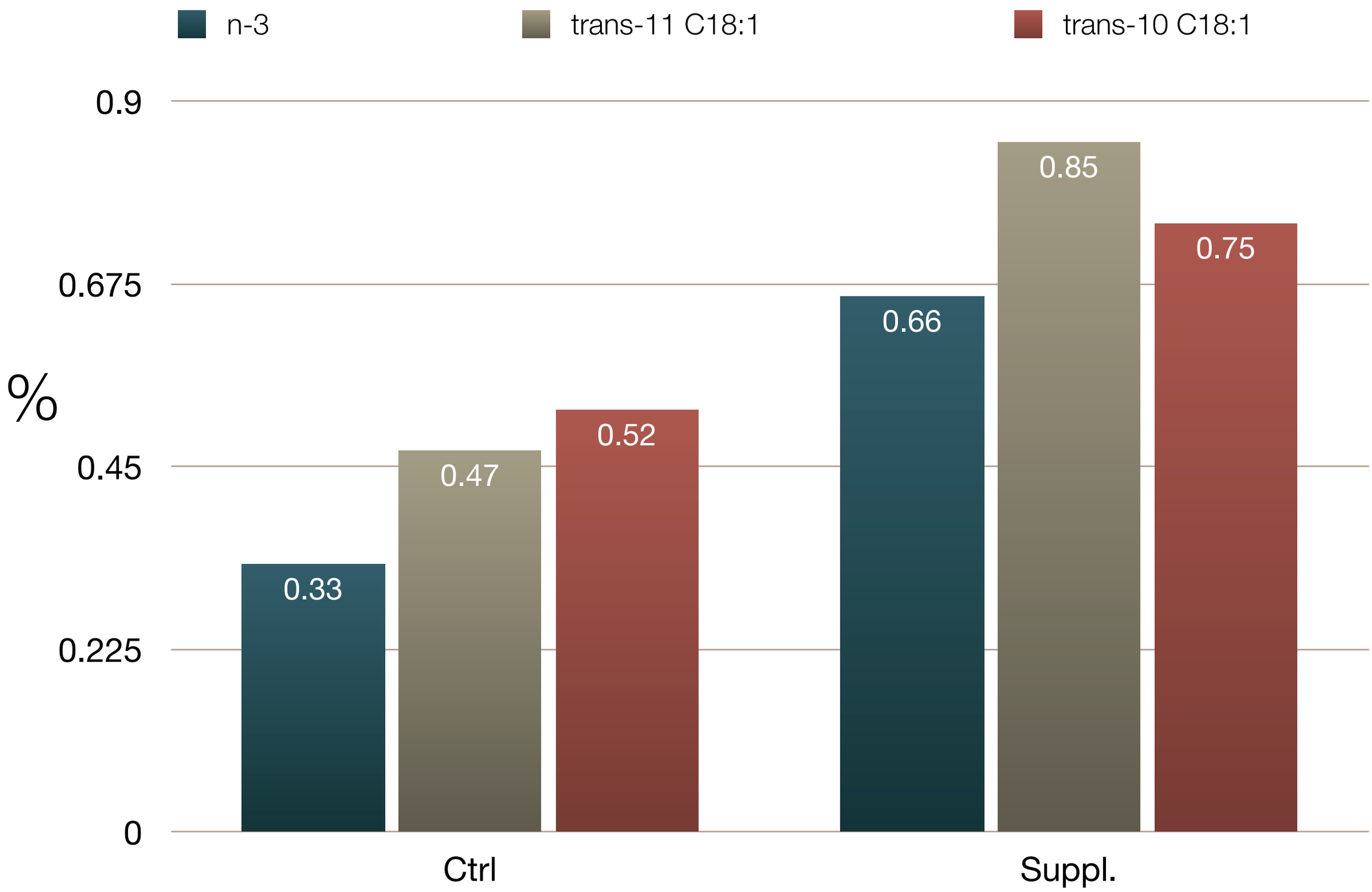
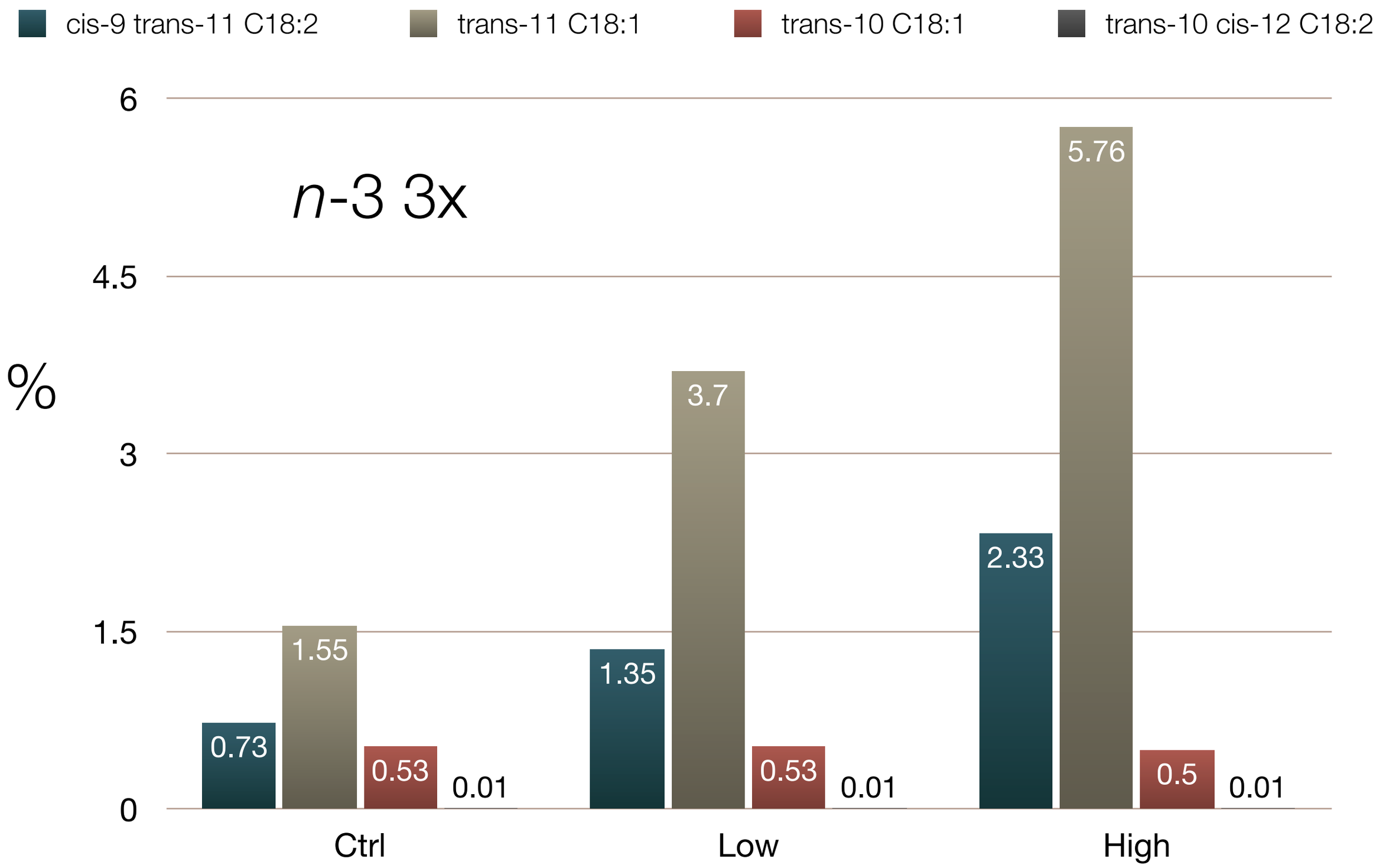


Luna et al. (2008)

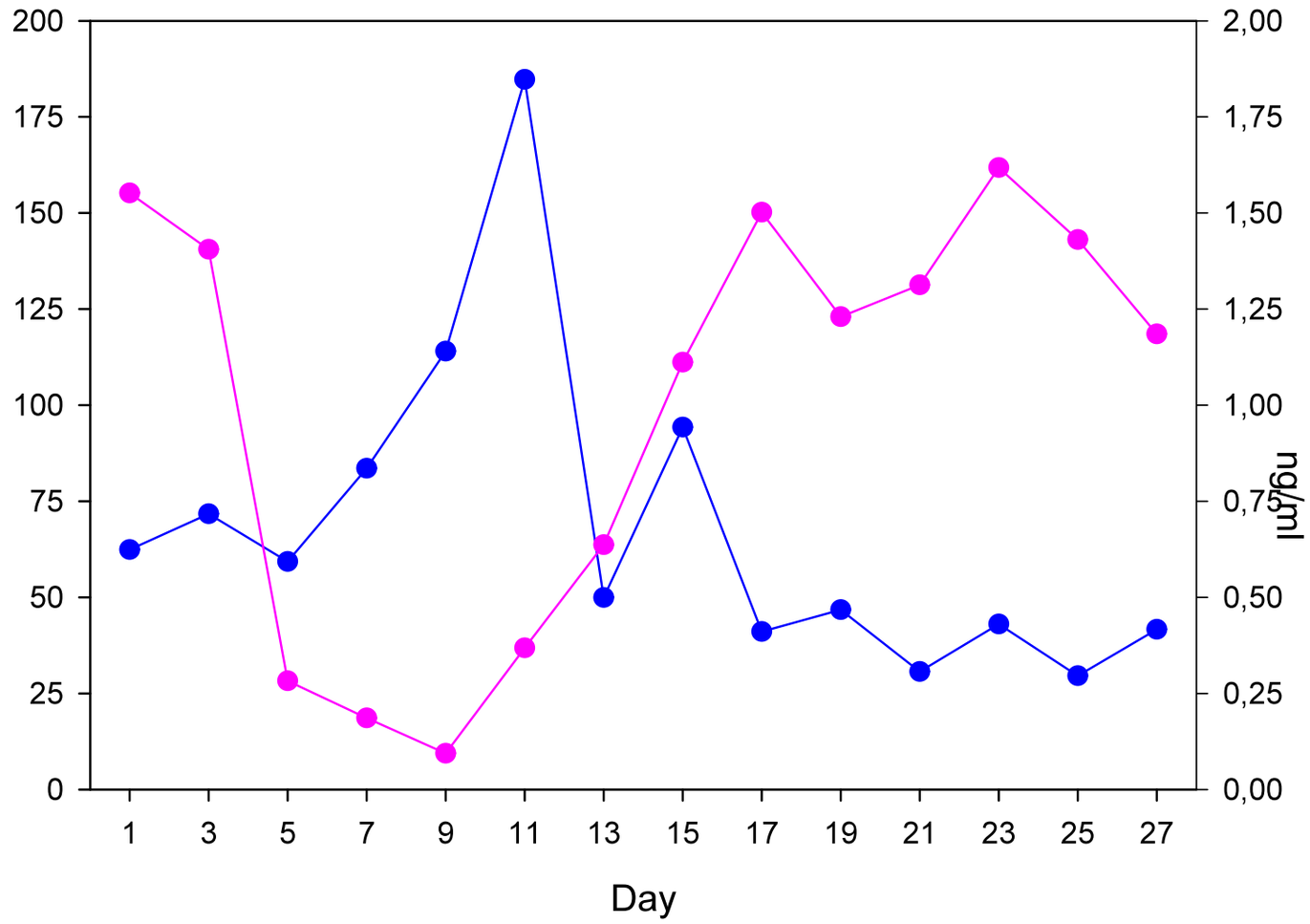
Milk Production and Milk Quality

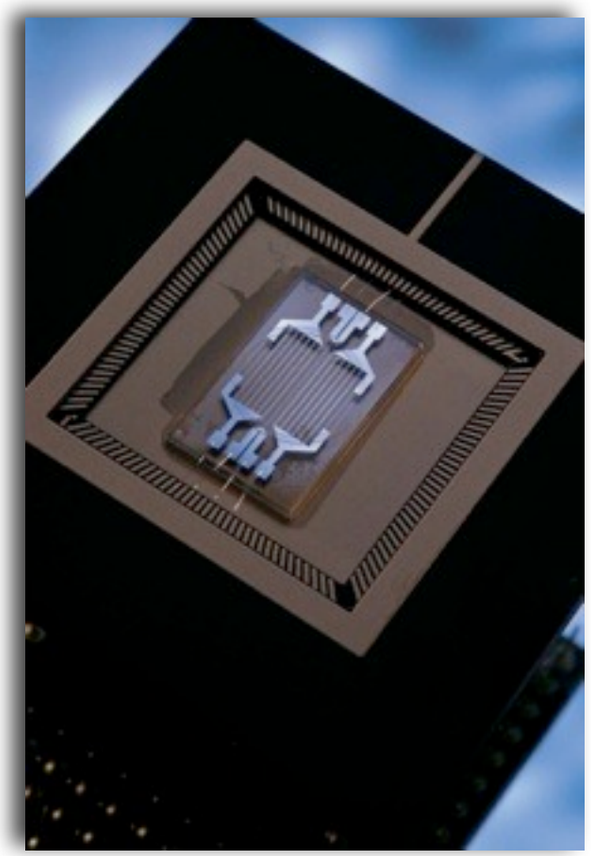


Gomez et al. (2009)

Management

- Heat detection through on-line milk quantification of reproductive hormones.





Serrano et al., 2009

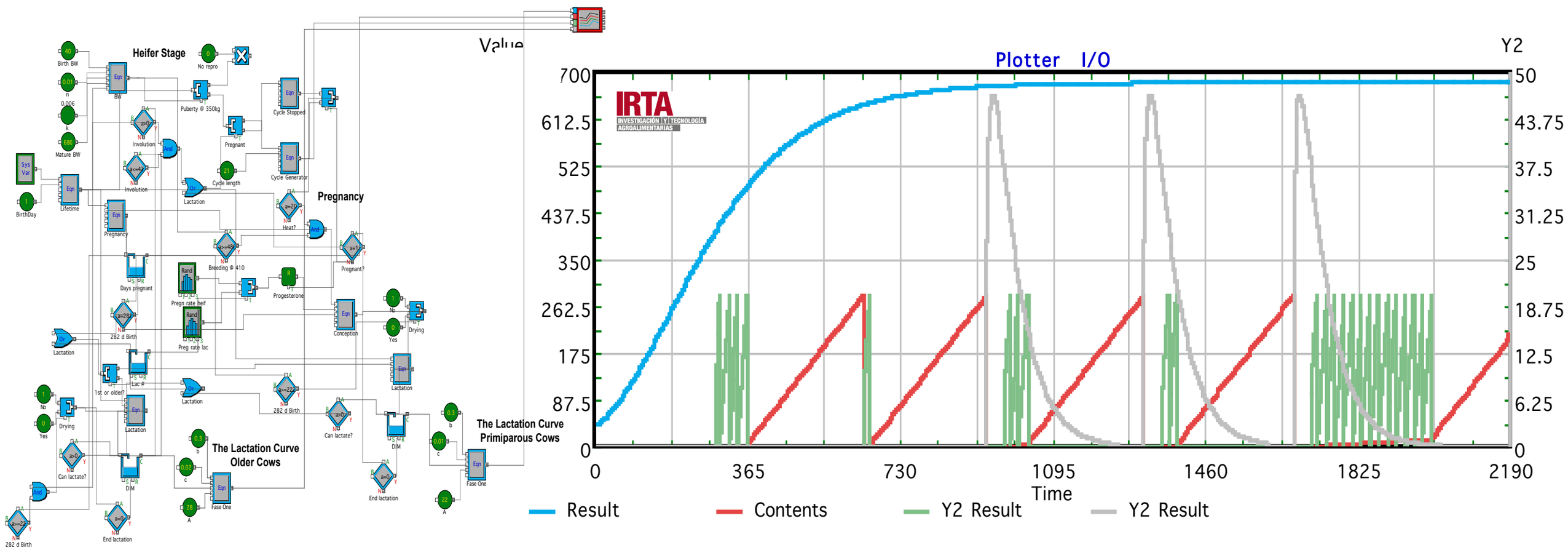
Dairy Cattle: Intake regulation

	# of assays	Preferred	No differences
Wheat	7	6	1
Sorghum	7	5	1
Corn	7	4	1
Barley	7	4	0
Wheat middlings	7	3	1
Oats	7	1	2
Rice	7	1	1
Corn gluten feed	7	0	1

Montoro et al., 2009

All species: Systems Modeling

- Production models
- Health models
- Feed additive models
  - On-farm knowledge-assisted decisions




Thank you