



**Transition Towards The Gut:
La “nuova” nutrizione del ruminante**

Richard Paratte Ph.D

NETAGRO
Like no one else™

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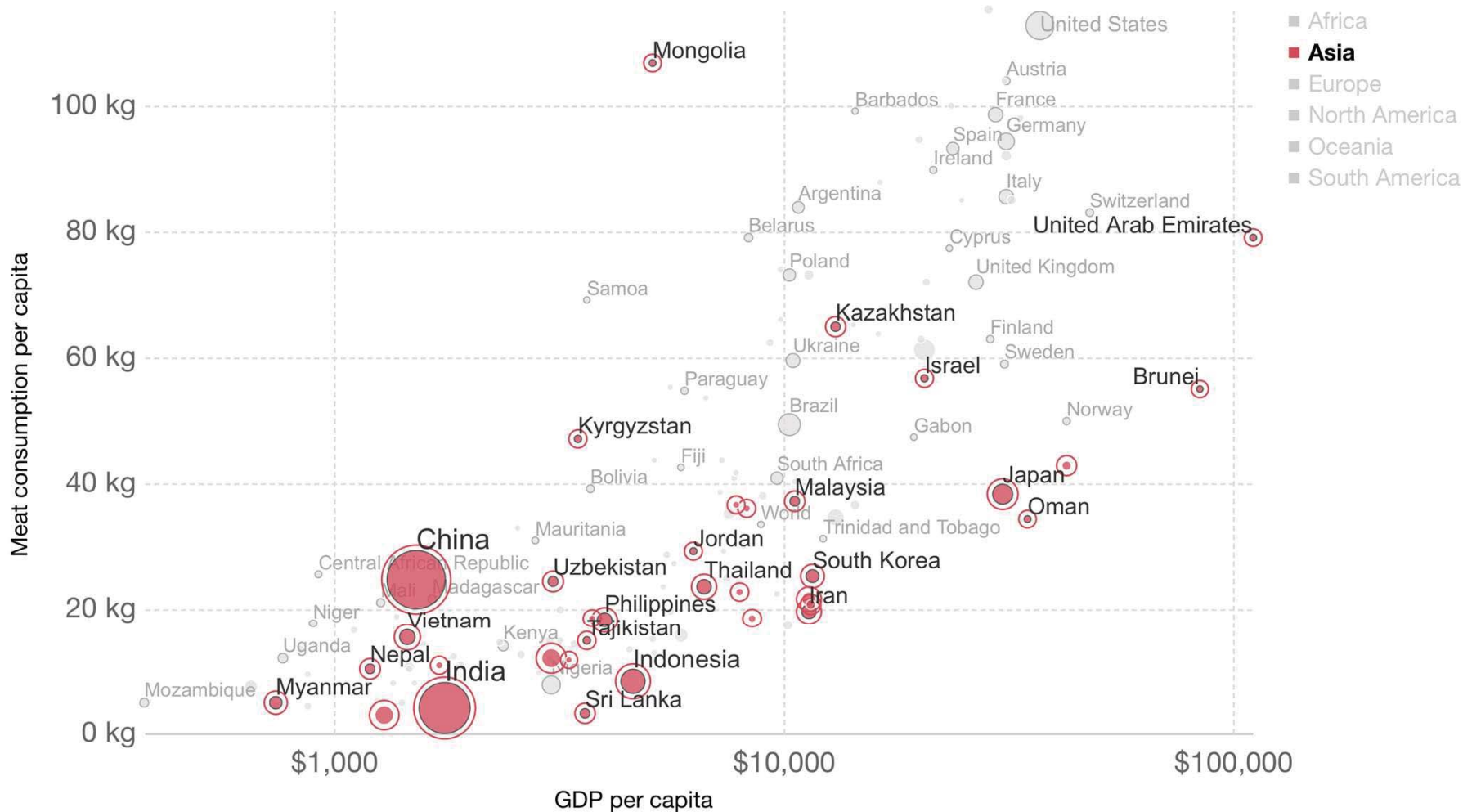
...parlando di sostenibilità sociale...



Da: *World Population Prospects 2019*; population.un.org

Meat consumption vs. GDP per capita, 1990

Average meat consumption per capita, measured in kilograms per year versus gross domestic product (GDP) per capita measured in 2011 international-\$. International-\$ corrects for price differences across countries. Figures do not include fish or seafood.



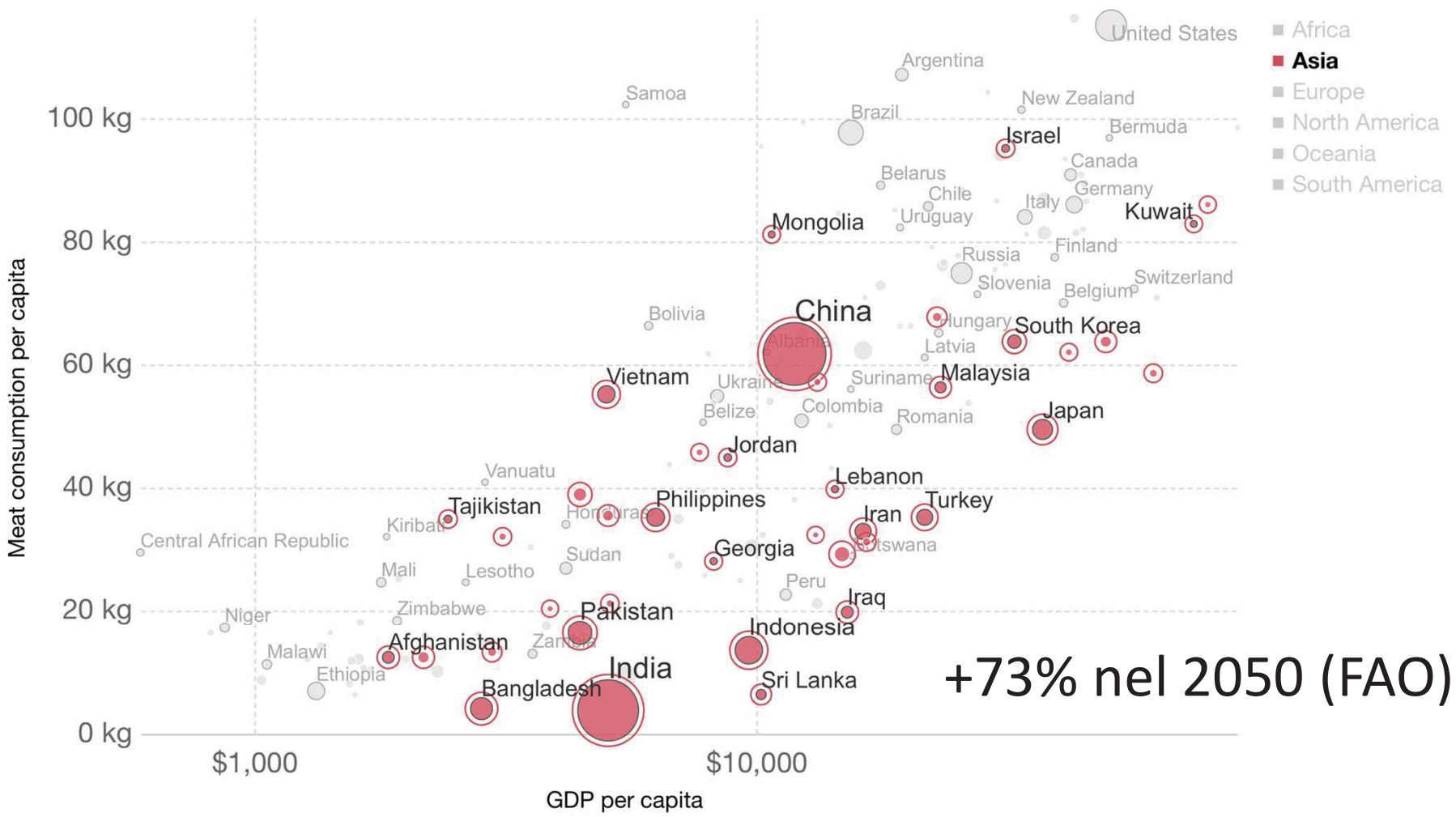
Source: UN FAO; World Bank, World Development Indicators

OurWorldInData.org/meat-and-seafood-production-consumption/ • CC BY

Meat consumption vs. GDP per capita, 2013



Average meat consumption per capita, measured in kilograms per year versus gross domestic product (GDP) per capita measured in 2011 international-\$. International-\$ corrects for price differences across countries. Figures do not include fish or seafood.

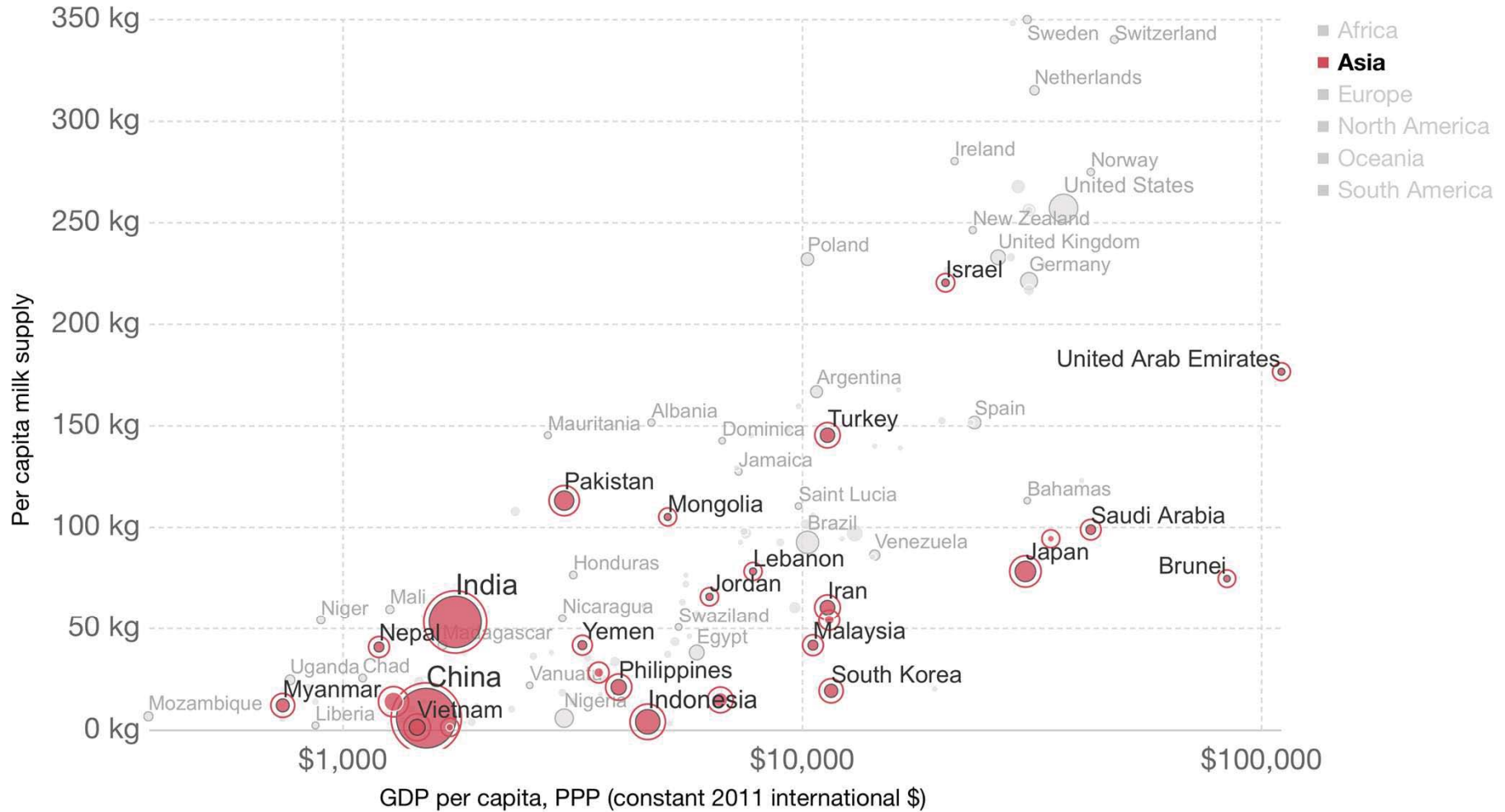


Source: UN FAO; World Bank, World Development Indicators

OurWorldInData.org/meat-and-seafood-production-consumption/ • CC BY

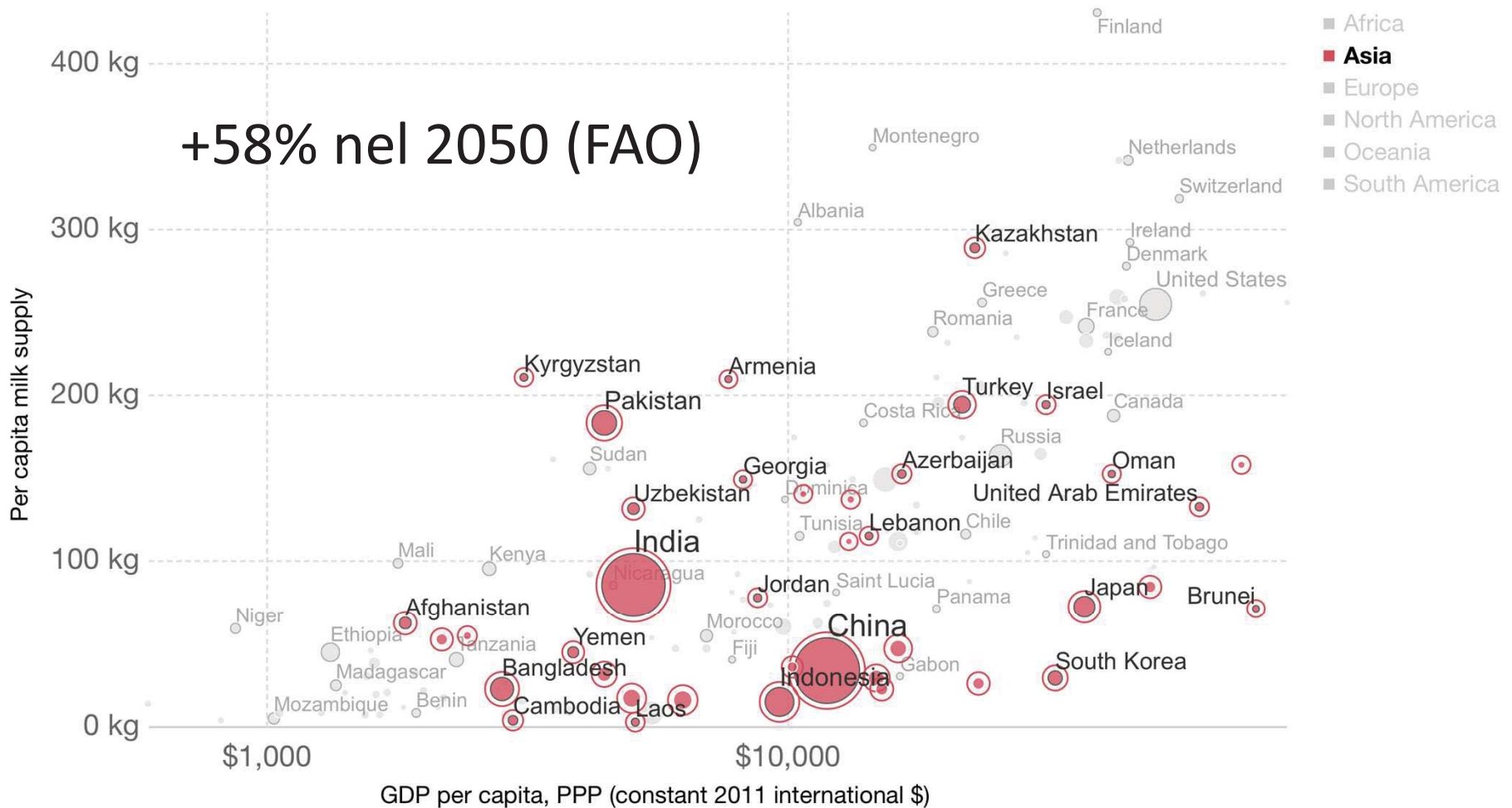
Per capita milk supply vs. GDP per capita, 1990

Average per capita milk supply, measured in kilograms per person per year versus gross domestic product (GDP) per capita, measured in 2011 international-\$. Per capita milk supply represents the average quantity of milk that is available for consumption by consumers; it is the sum of average consumption plus any household/consumption waste.



Per capita milk supply vs. GDP per capita, 2013

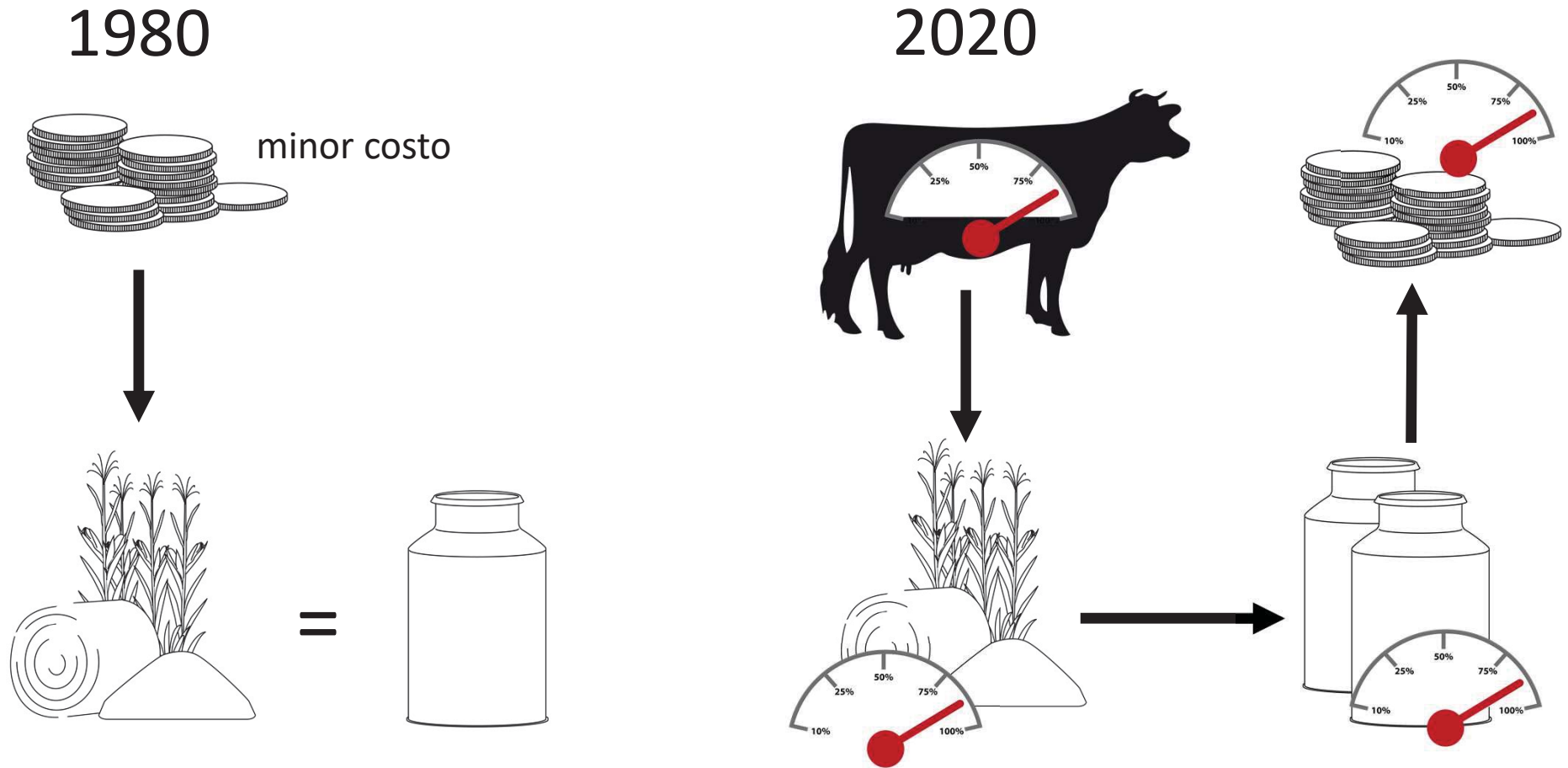
Average per capita milk supply, measured in kilograms per person per year versus gross domestic product (GDP) per capita, measured in 2011 international-\$. Per capita milk supply represents the average quantity of milk that is available for consumption by consumers; it is the sum of average consumption plus any household/consumption waste.



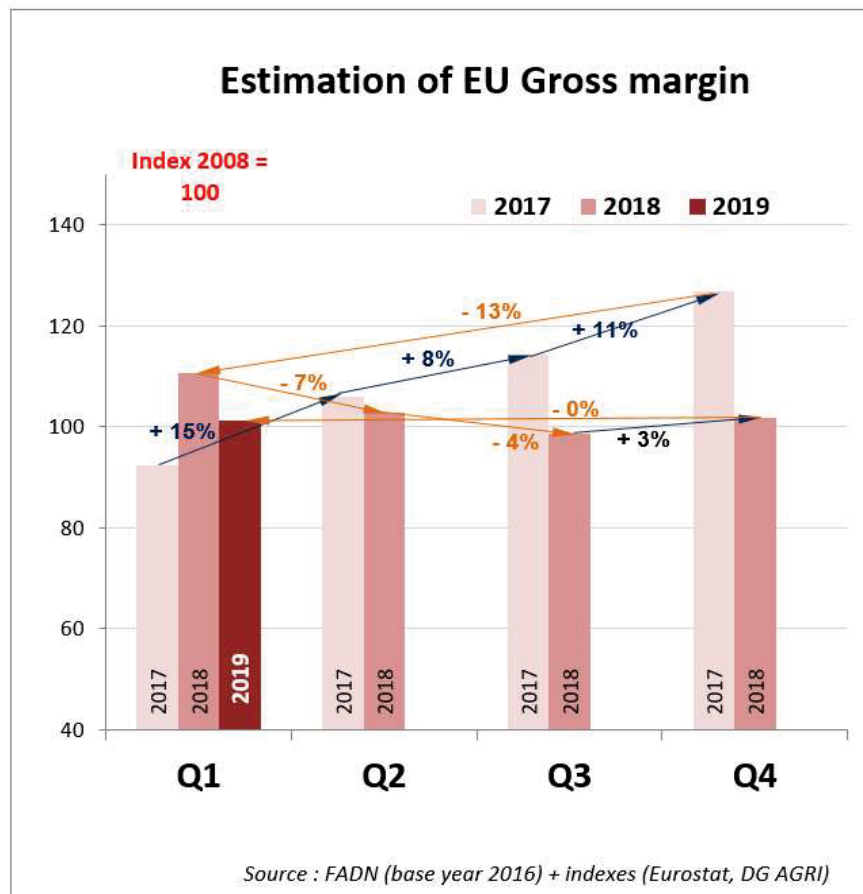
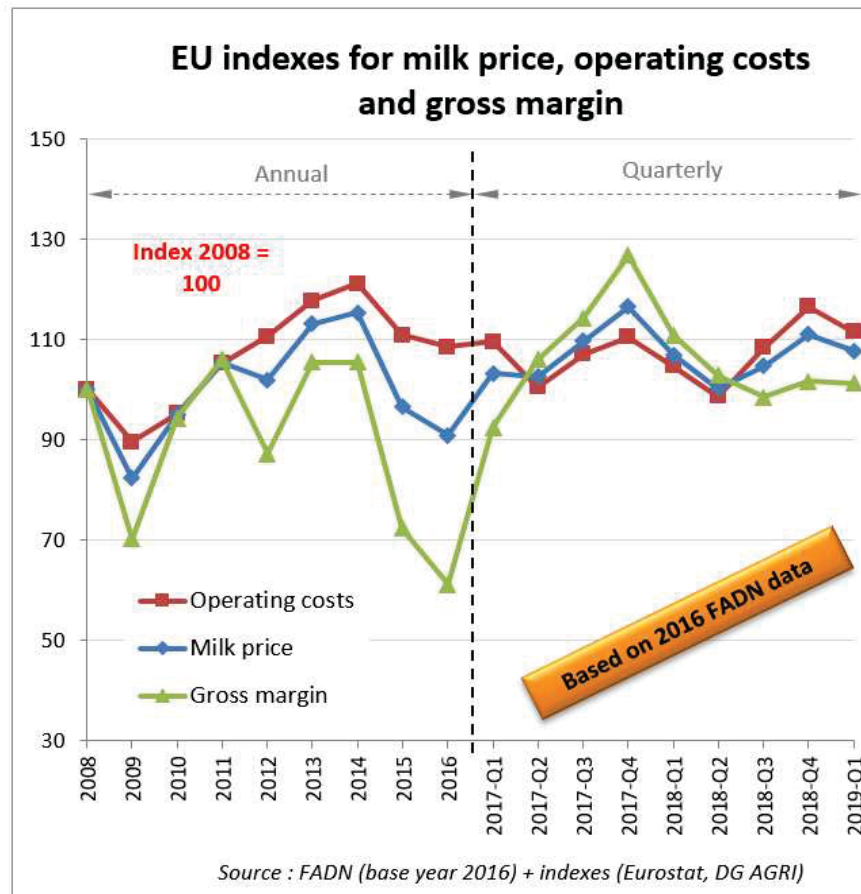
Source: UN Food and Agriculture Organization (FAO); World Bank

CC BY

...parlando di sostenibilità economica...

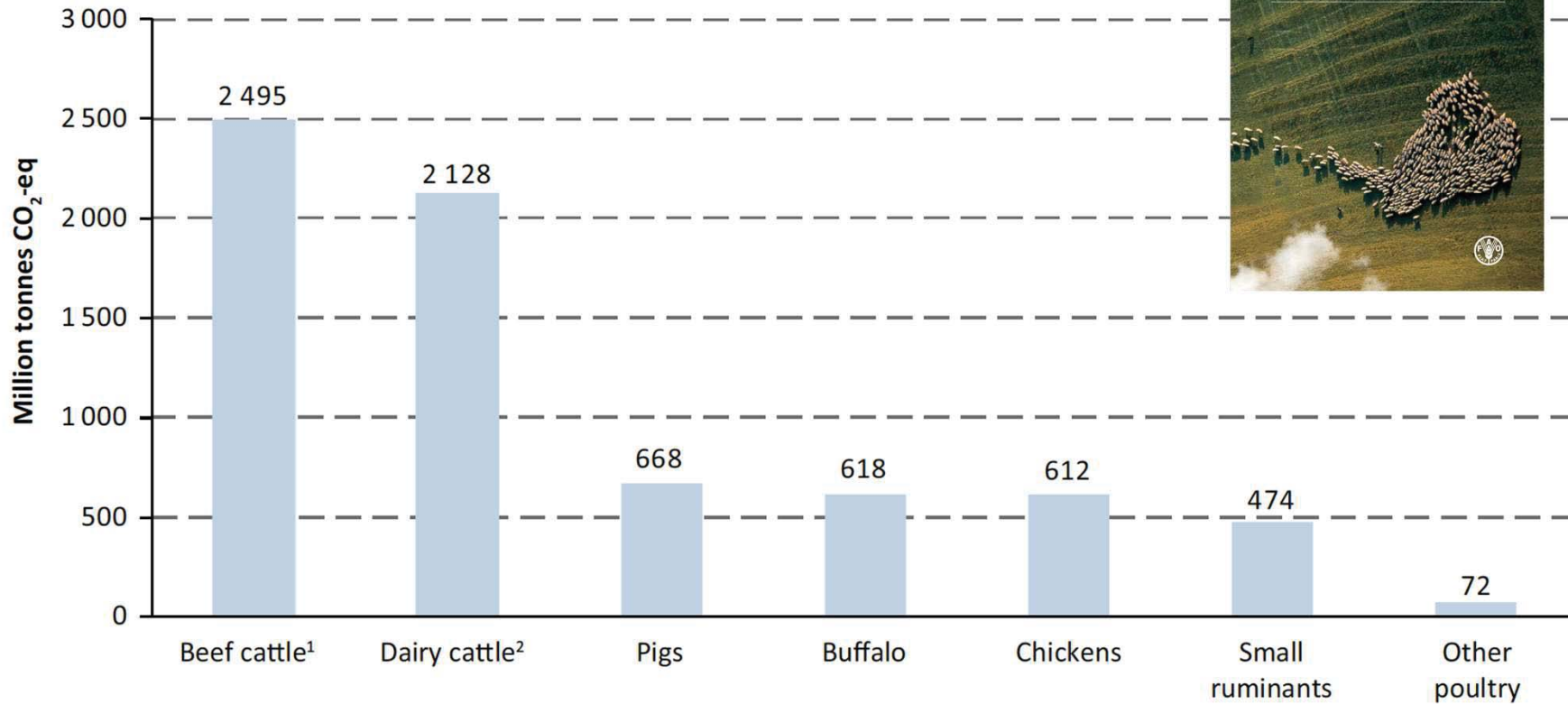


EU GROSS MARGIN (1st Quarter 2019)



...parlando di sostenibilità ambientale...

FIGURE 2. Global estimates of emissions by species*



*Includes emissions attributed to edible products and to other goods and services, such as draught power and wool.

¹ Producing meat and non-edible outputs.

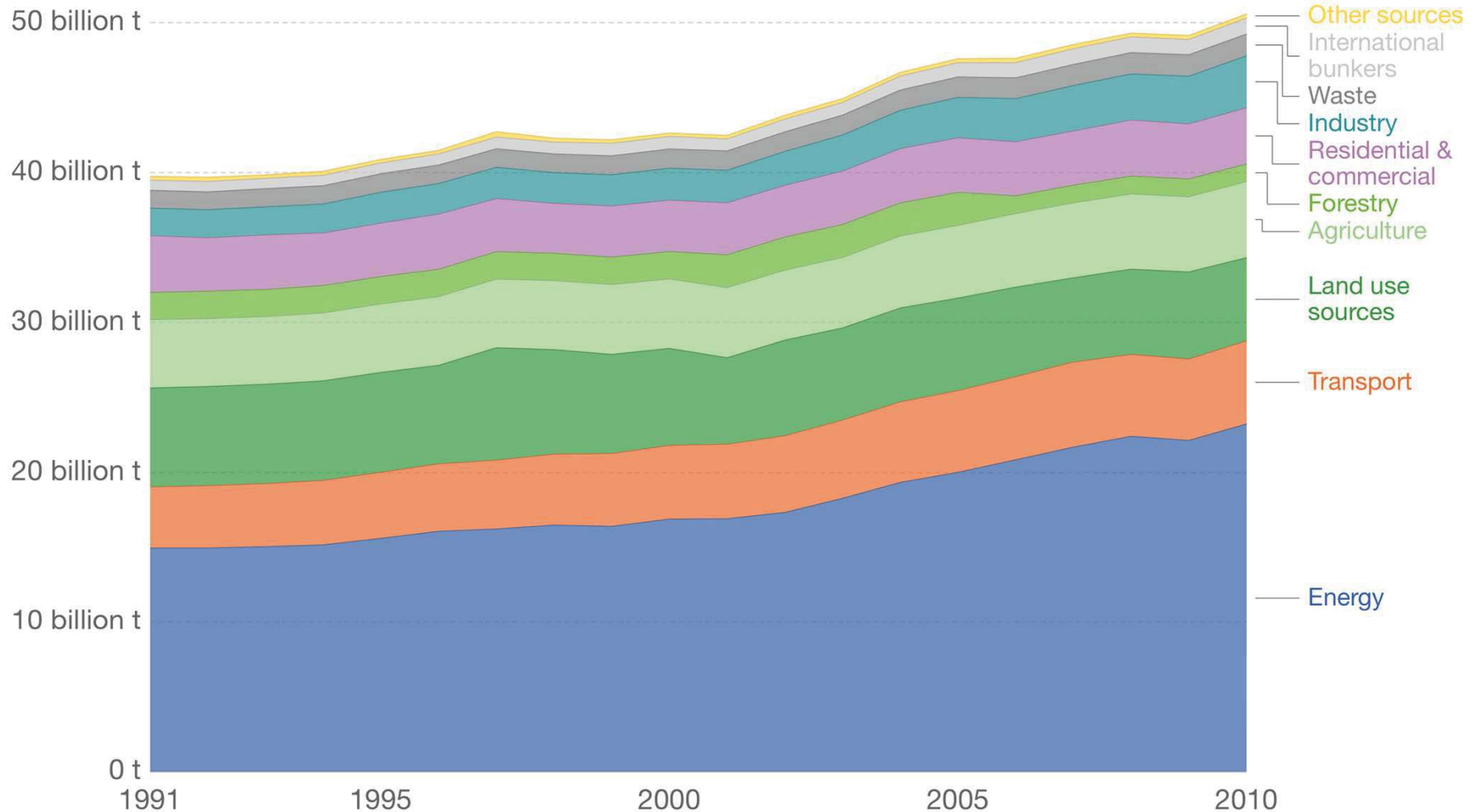
² Producing milk and meat as well as non-edible outputs.

Source: GLEAM.

Greenhouse gas emissions by sector



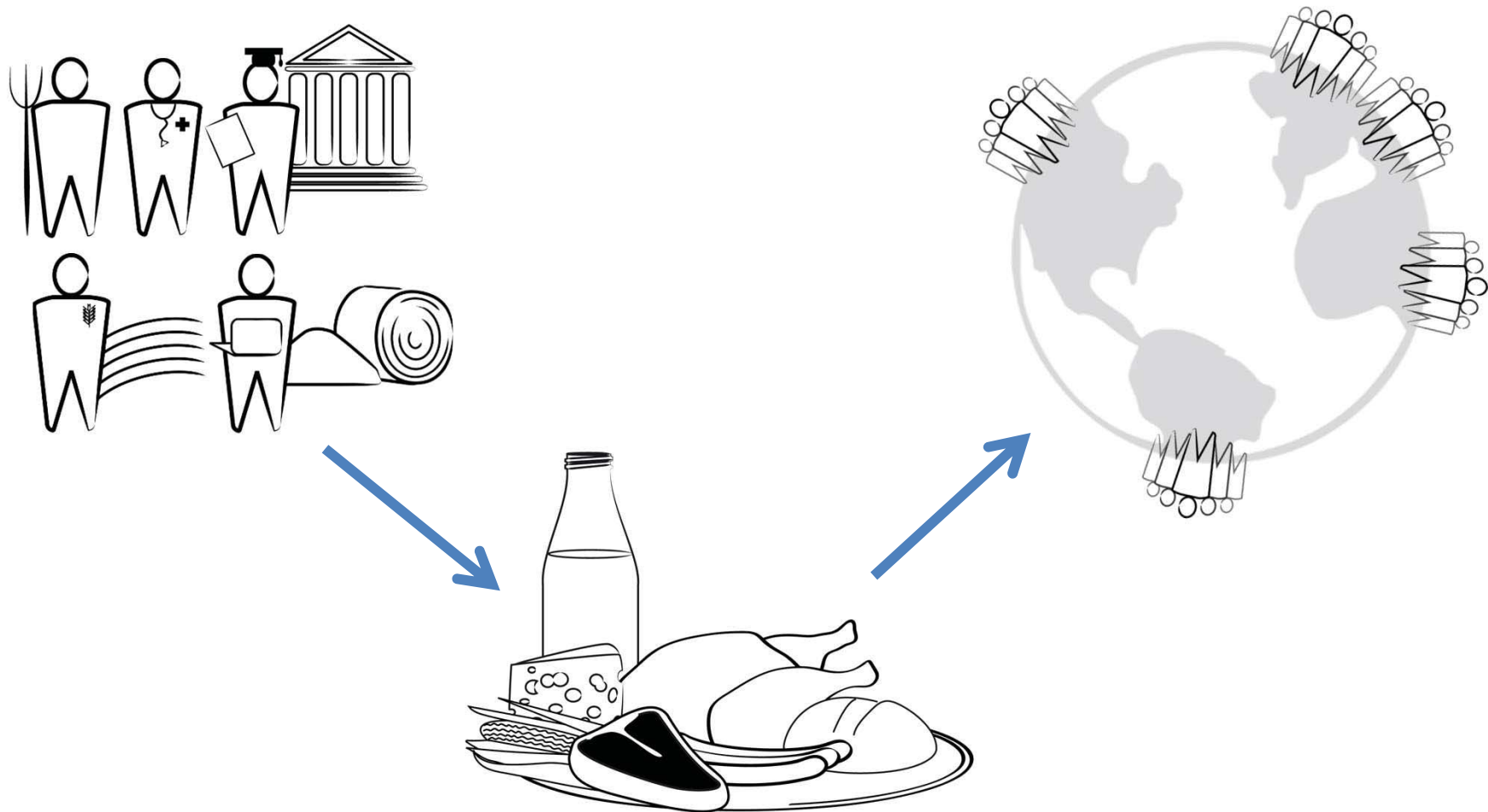
Breakdown of total greenhouse gas emissions by sector, measured in tonnes of carbon-dioxide equivalents (CO₂e). Carbon dioxide equivalents measures the total greenhouse gas potential of the full combination of gases, weighted by their relative warming impacts.



Source: UN Food and Agricultural Organization (FAO)

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions/ • CC BY

...il nostro settore ha un ruolo fondamentale!...



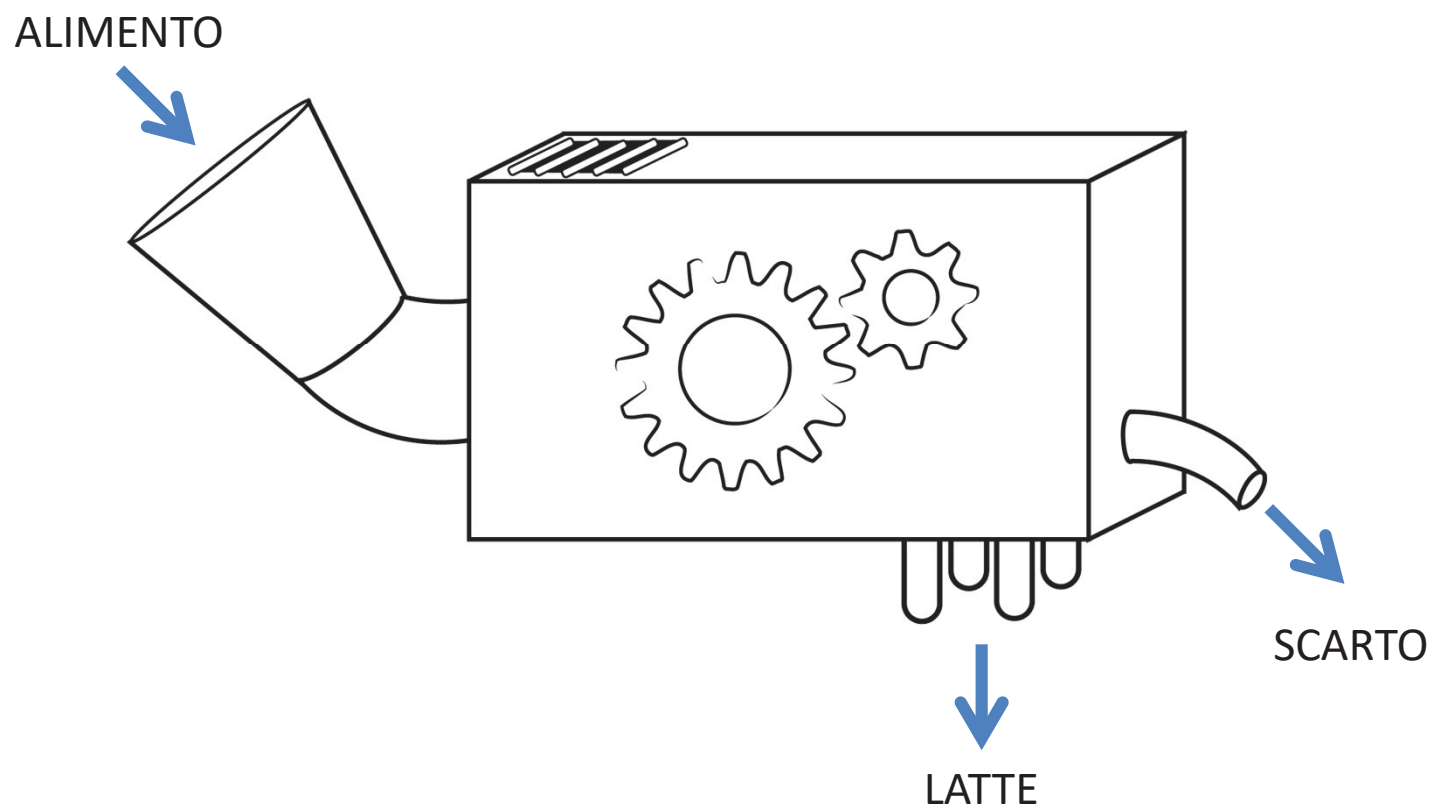
...quale deve essere la chiave di lettura?

EFFICIENZA

...è l'abilità (spesso misurabile) di **evitare lo spreco di materiali, energia, sforzi, soldi, e tempo** nel fare qualcosa oppure producendo un determinato risultato (*Wikipedia*).

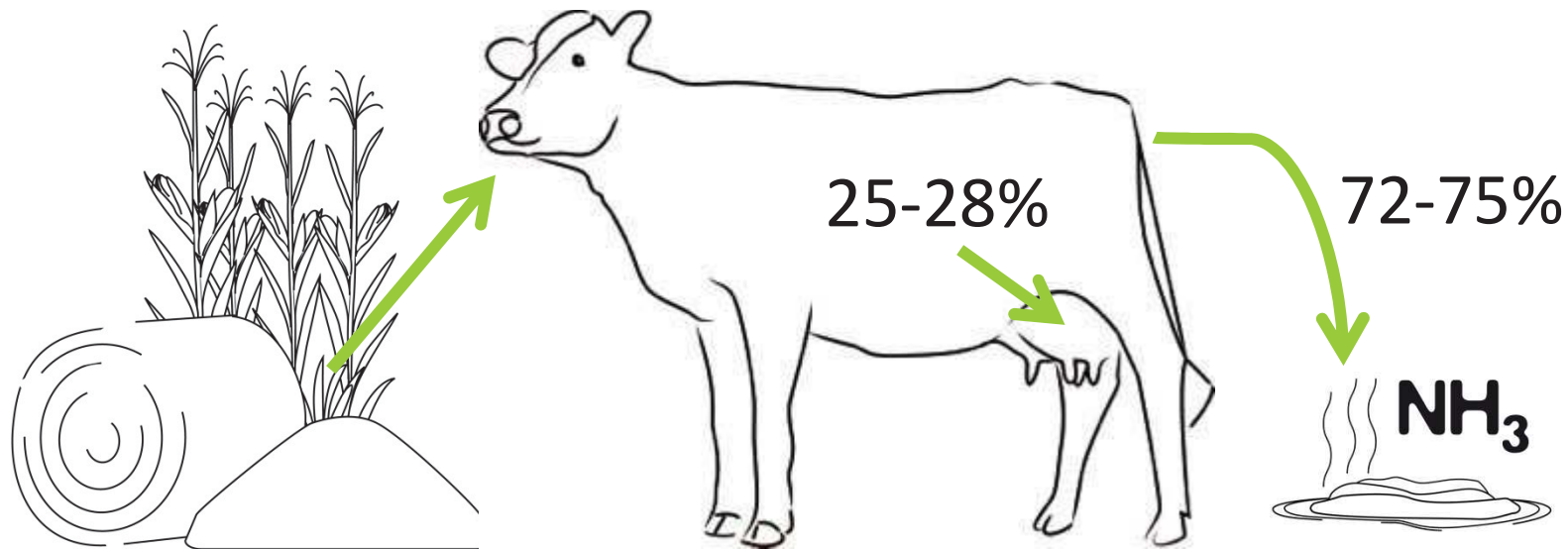
Misura l'abilità di fare le cose bene e con meno scarto possibile.

...la capacità di trasformare alimenti in latte limitando gli sprechi!

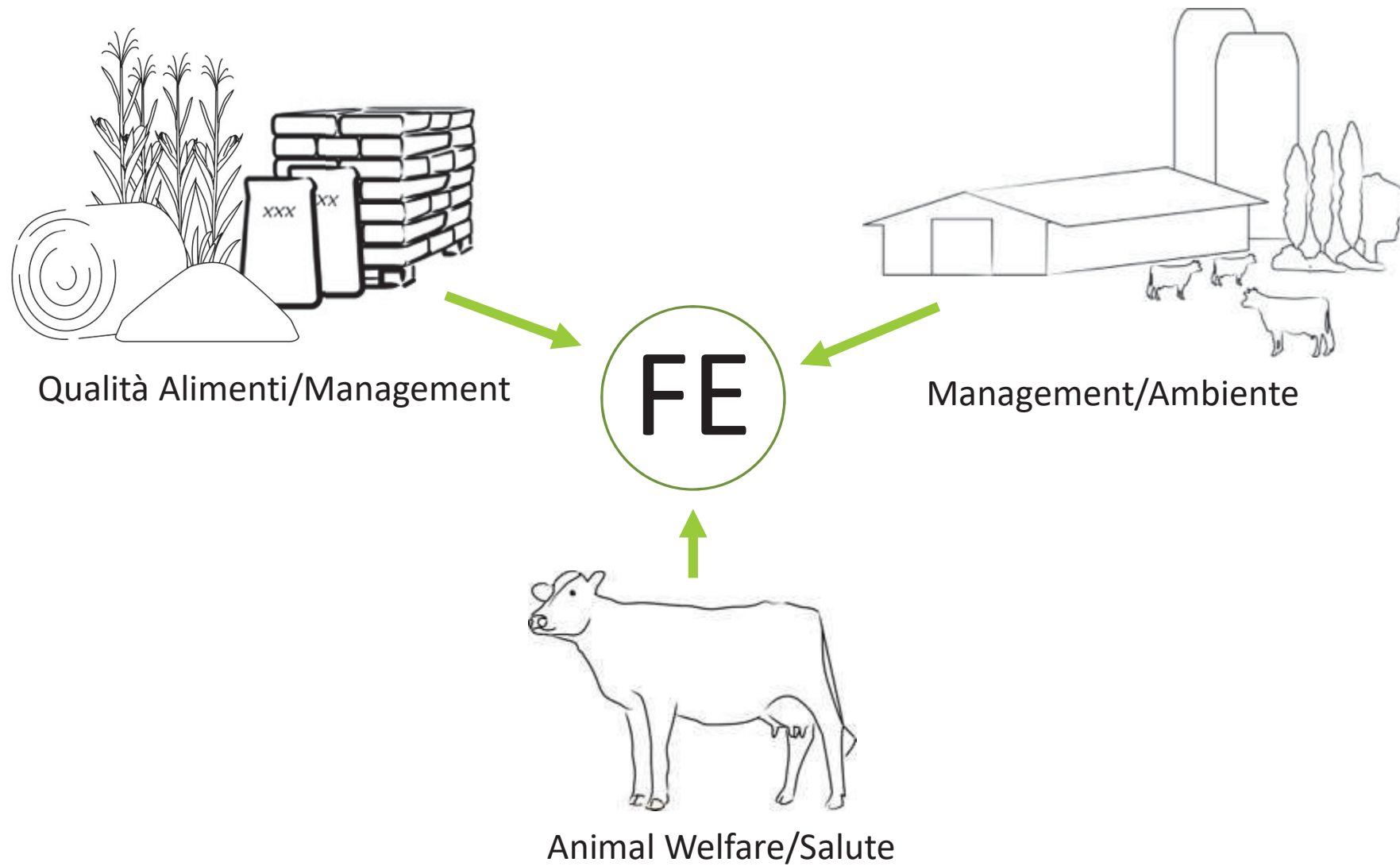


...parlando di sostenibilità ambientale...

Il **25-28% dell' azoto** ingerito dalla vacca da latte
viene convertito in proteina del latte, il resto viene escreto con le urine e le feci!
(Tamminga, 1992; Chase, 1994; Hristov et al., 2004; Castillo, 2001)



Cosa può modificare l'efficienza alimentare...



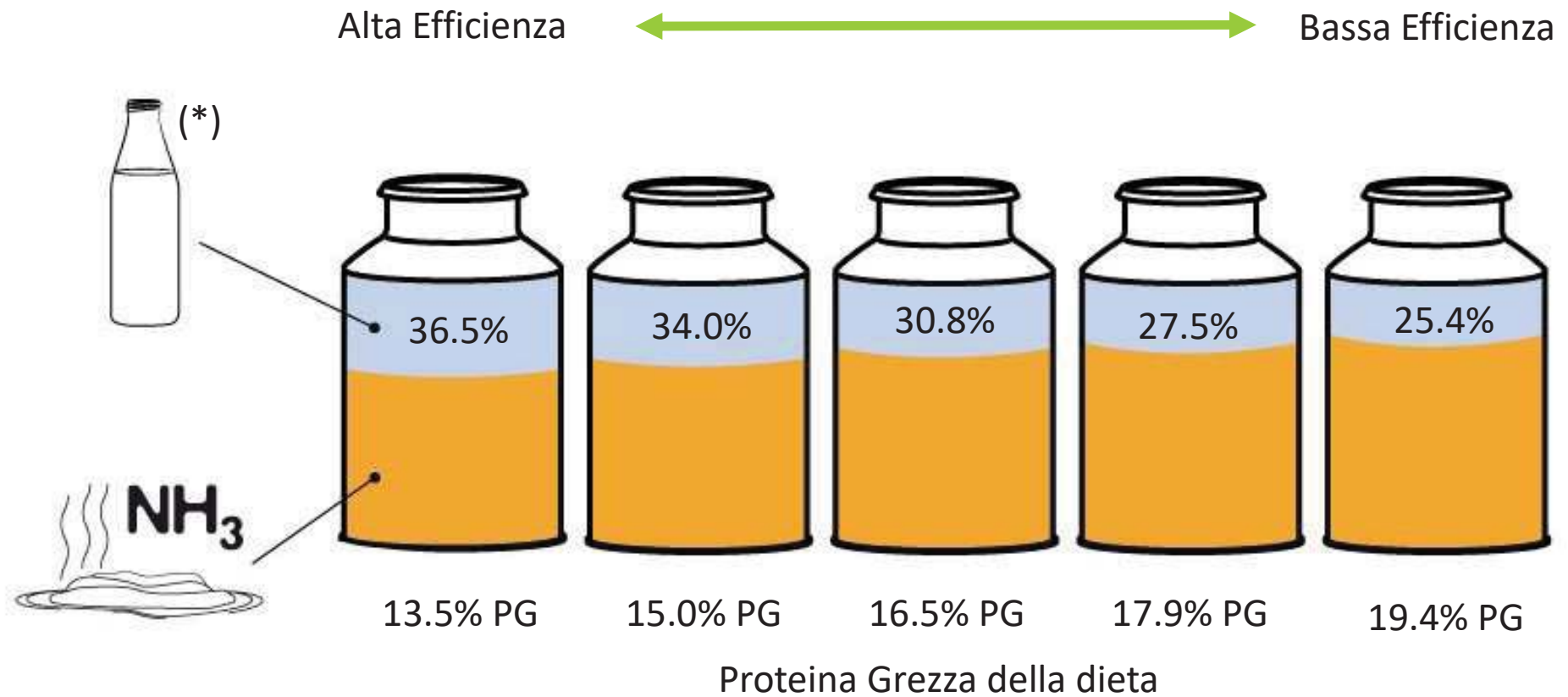
...la soluzione migliore per aumentare l'efficienza...

Aumentare la produzione di latte mantenendo la DMI...



...il costo dell'animale viene spalmato su più litri di latte.
La vacca risulta energeticamente ed economicamente più efficiente.

Livello di PG in razione e spreco di N



(*)% N proteico del latte/ % N ingerito

Modificato da:

J.J.O. Colmenero and G.A. Broderick et al., JDS 89:1704-1712 (2006)

...Migliore è l'efficienza alimentare minori sono gli scarti...

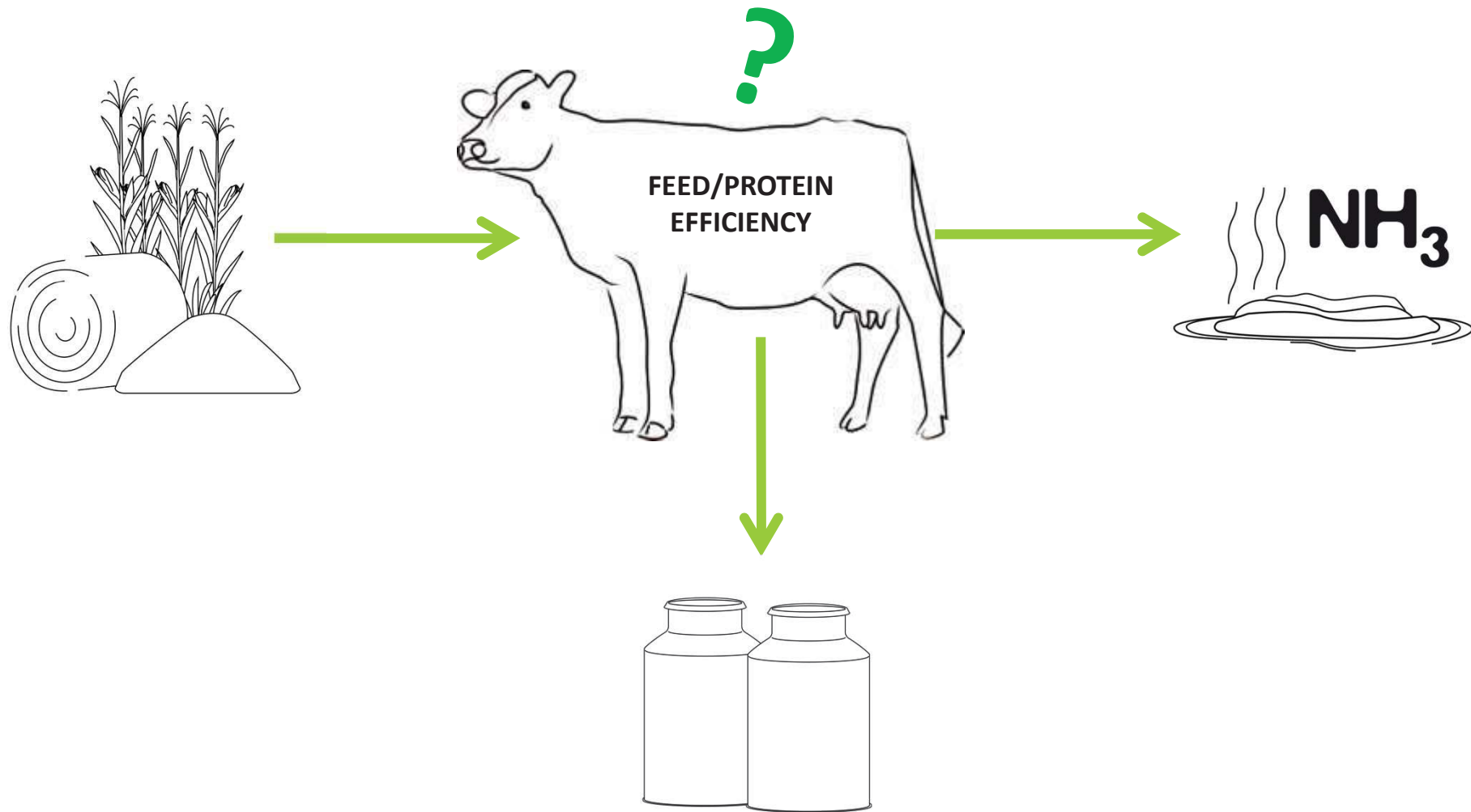
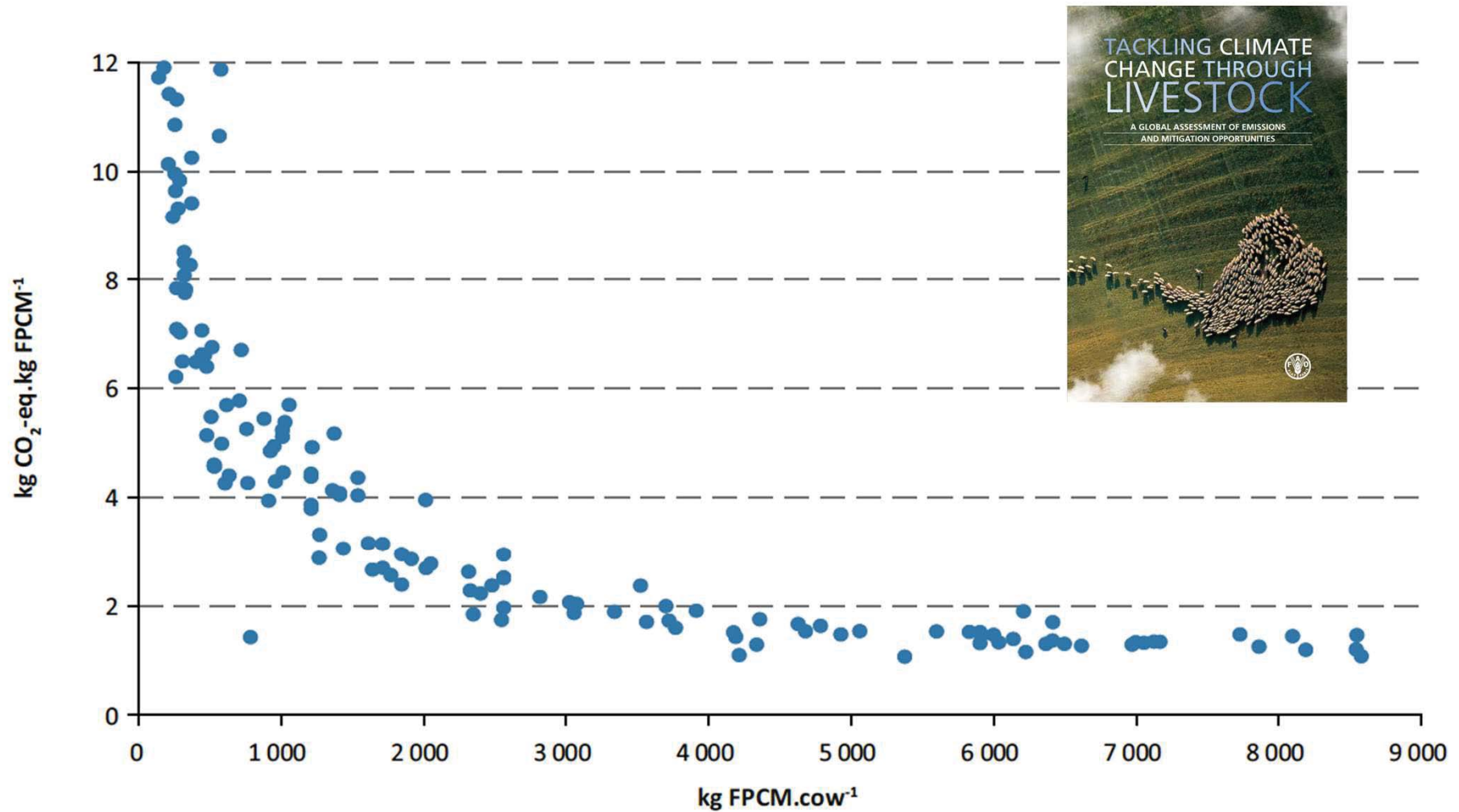
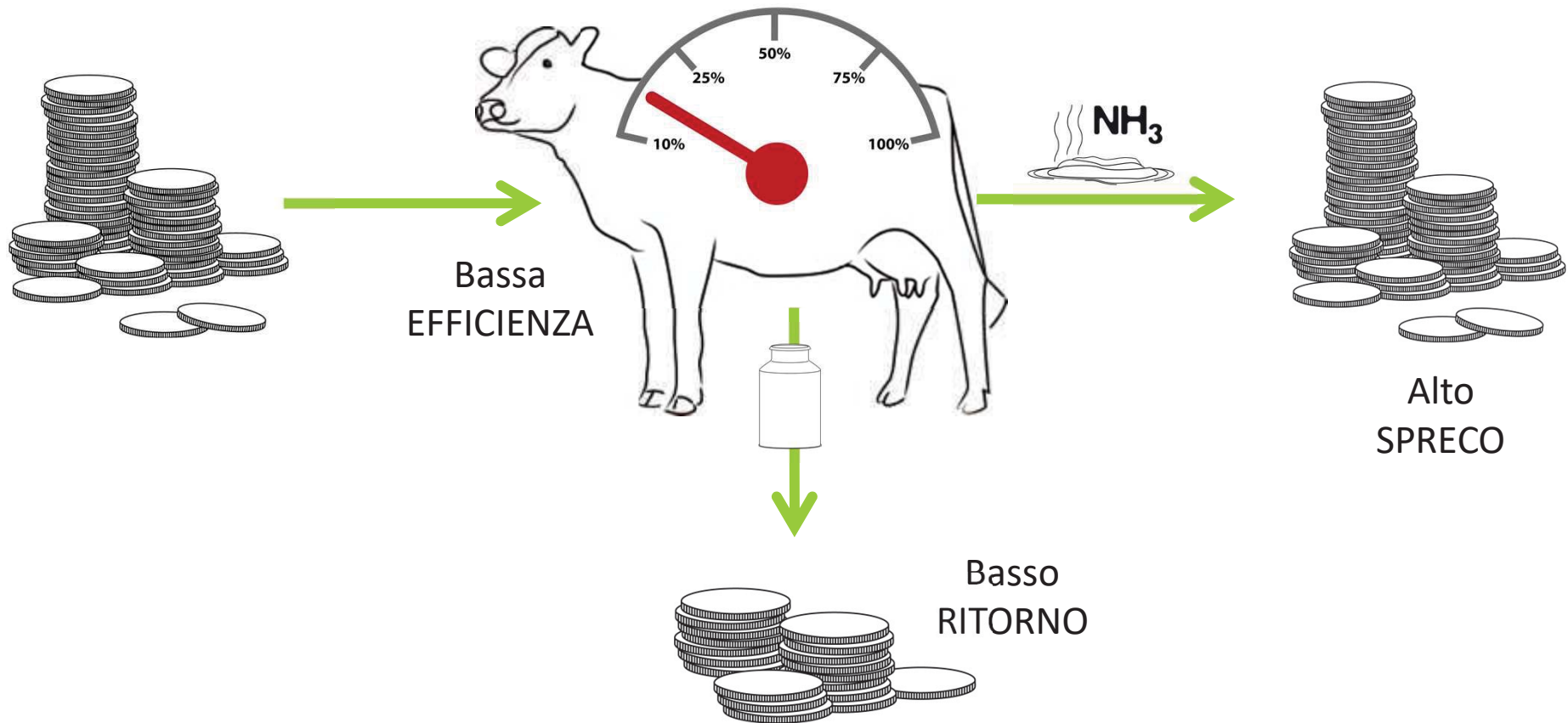


FIGURE 23. Relationship between productivity and emission intensity of milk (country averages)

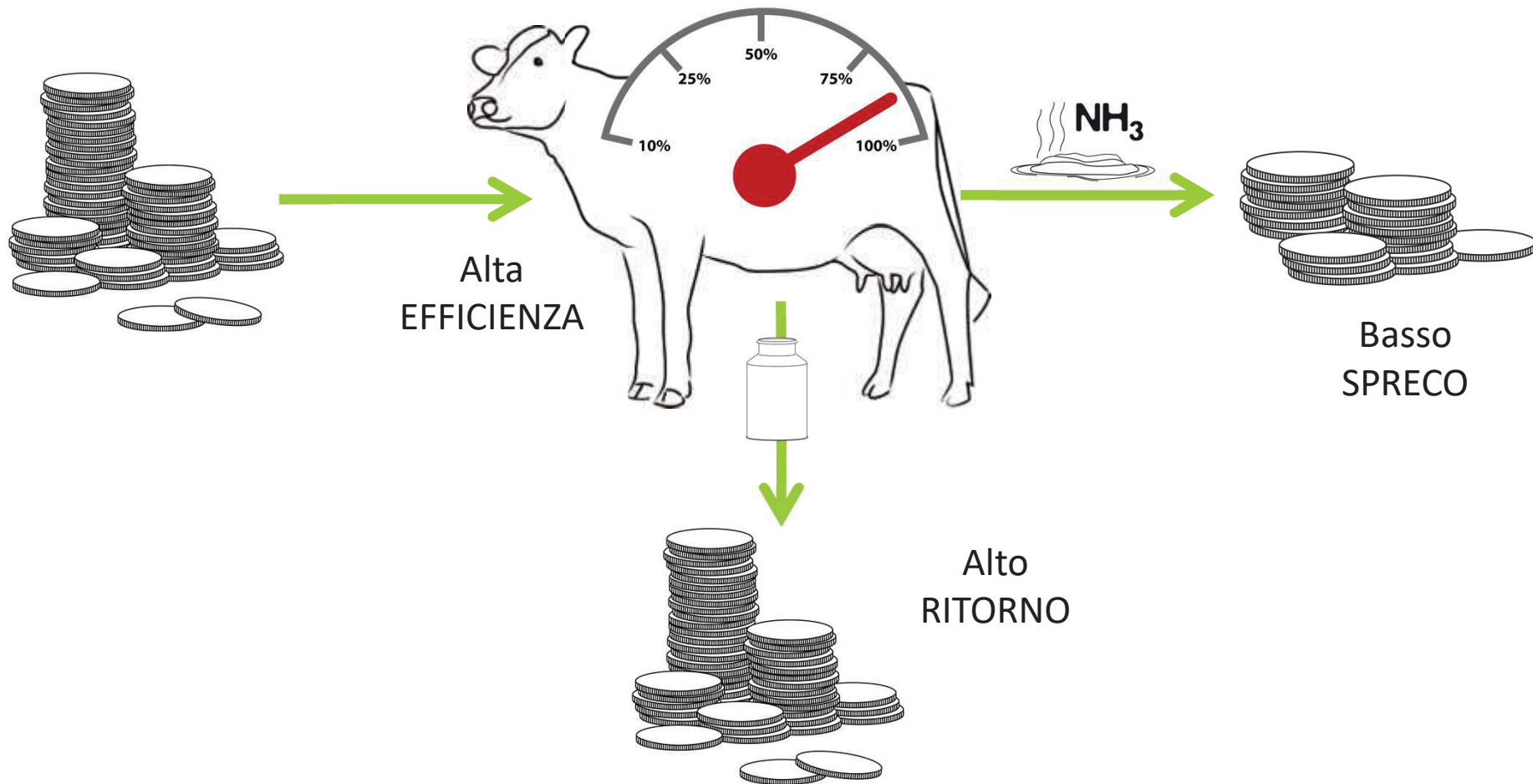


Source: Gerber *et al.*, 2011.

...bassa efficienza = basso guadagno



...alta efficienza = alto guadagno



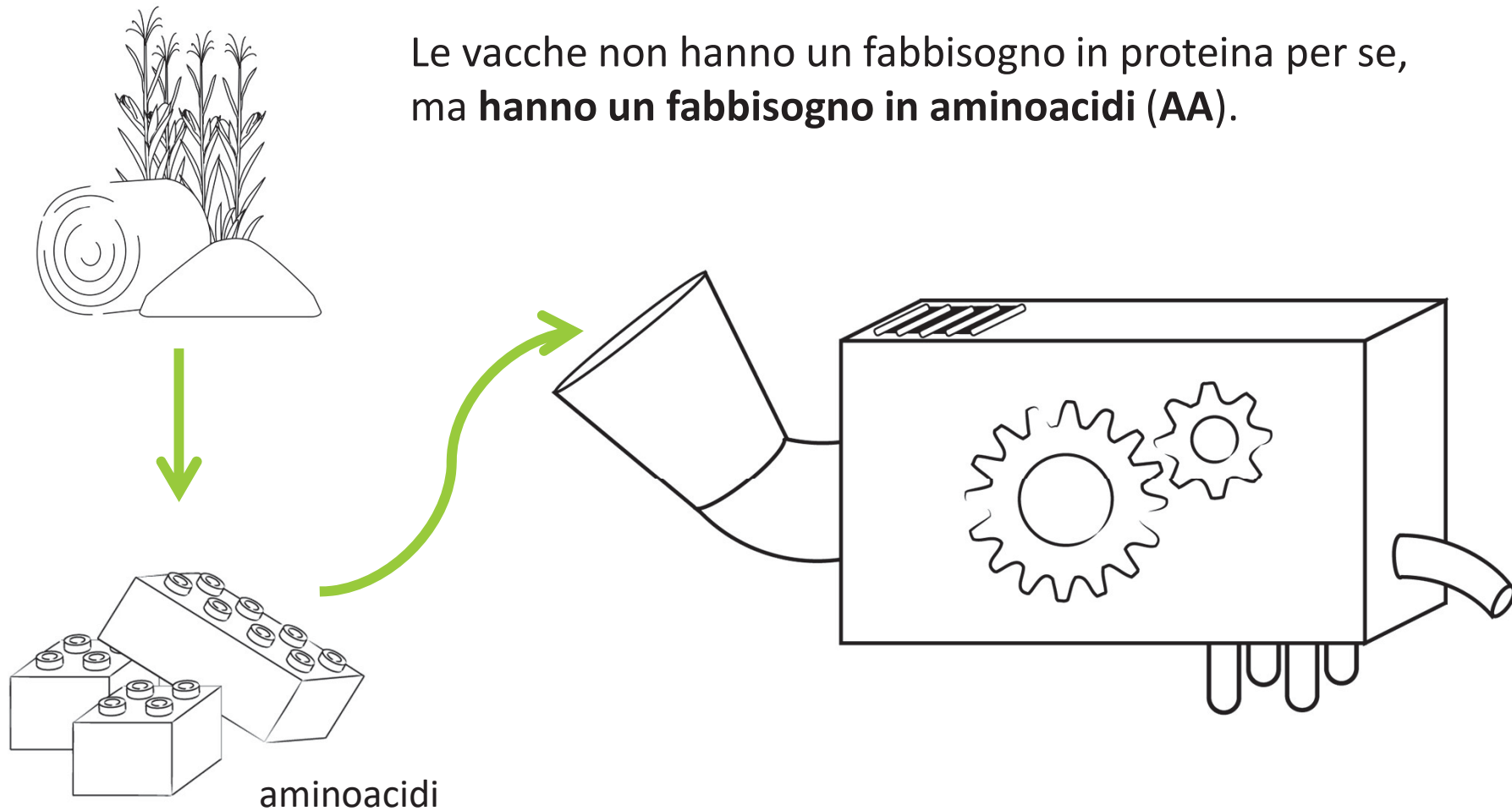
...quindi è chiaro che l'efficienza...

...diventa maggiormente **importante**
nei periodi di basso profitto...



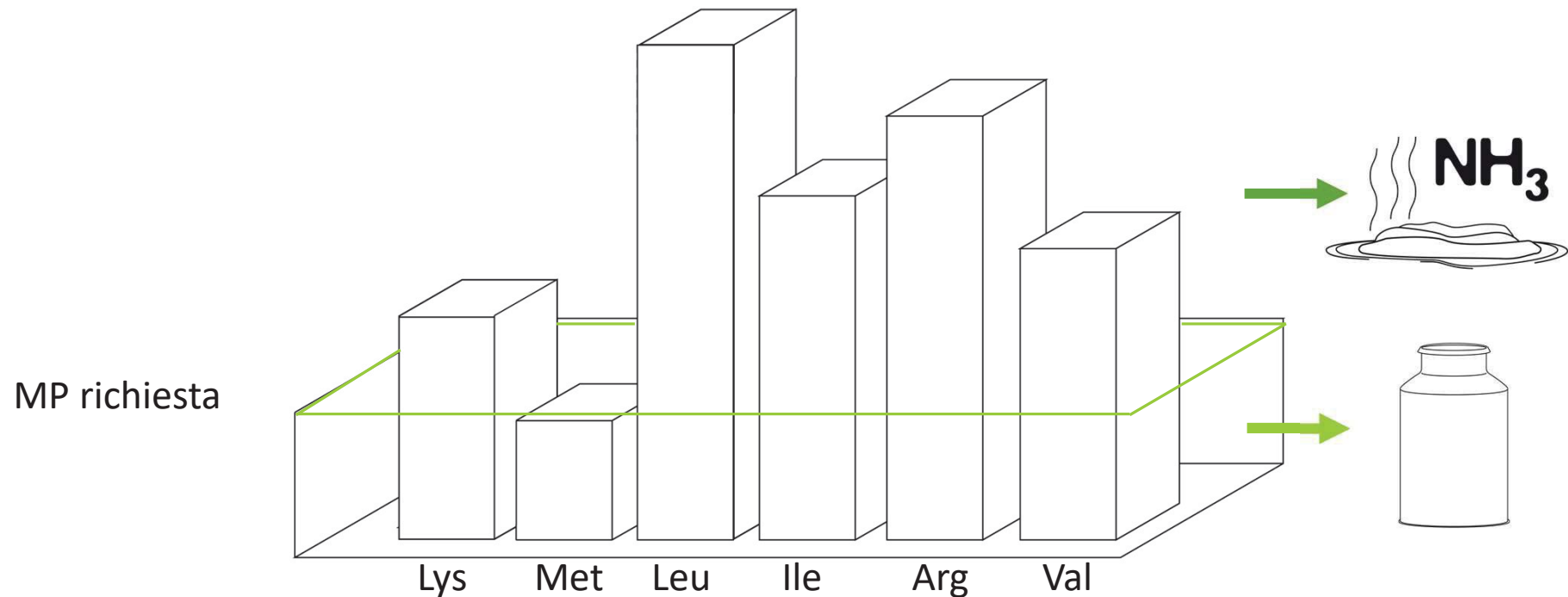
Quanta PG serve per essere efficienti?...

Le vacche non hanno un fabbisogno in proteina per se, ma **hanno un fabbisogno in aminoacidi (AA)**.



Quanta PG/MP stiamo usando?...

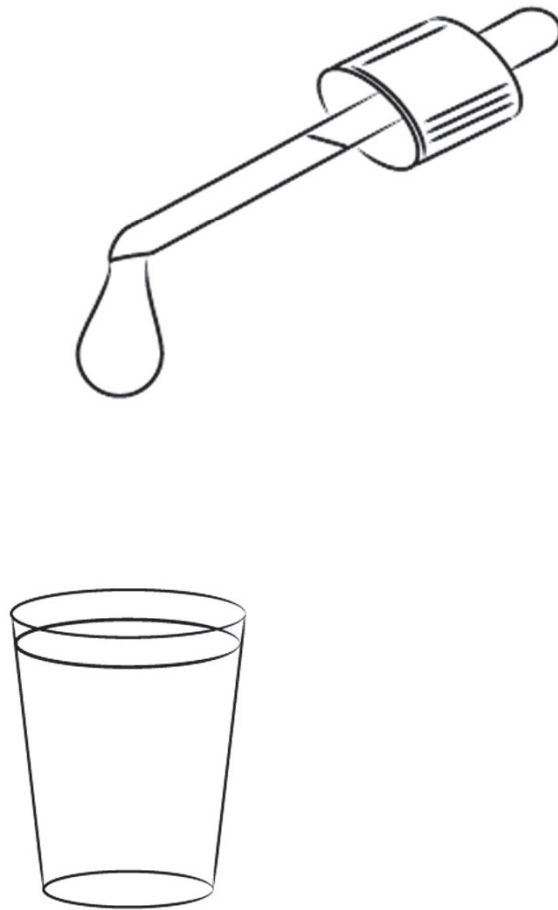
Formulare diete con PG/MP in eccesso per coprire i fabbisogni significa aumentare lo spreco e ridurre l'efficienza! L'obiettivo è coprire i fabbisogni aminoacidici con basse concentrazioni di PG.



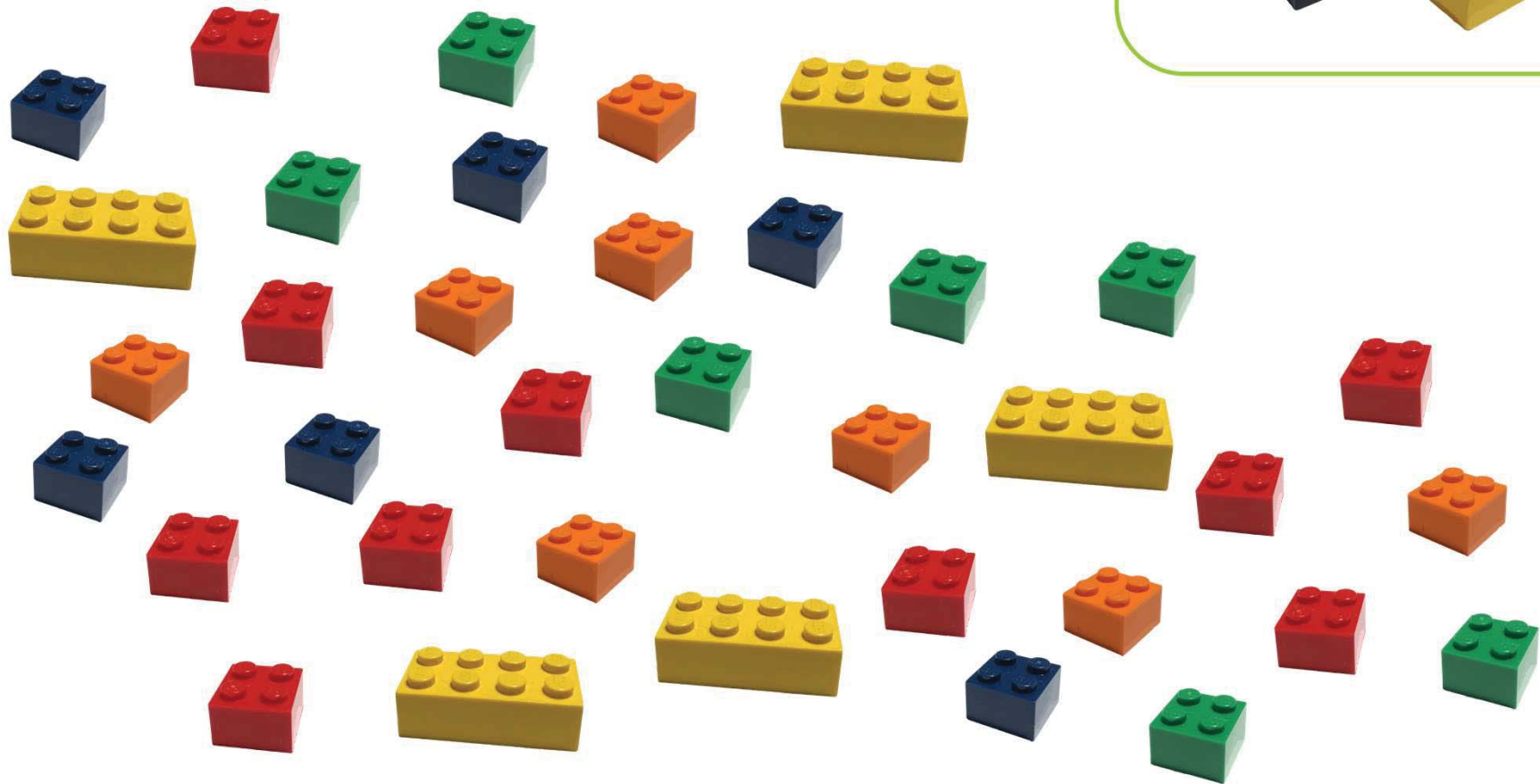
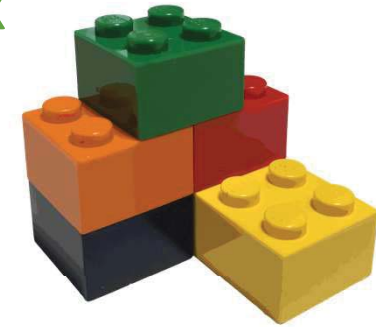
...è questo il “precision farming”?...

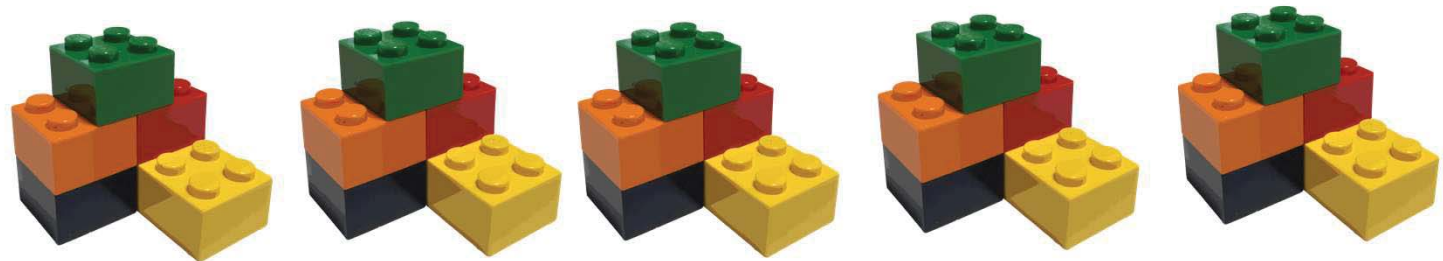
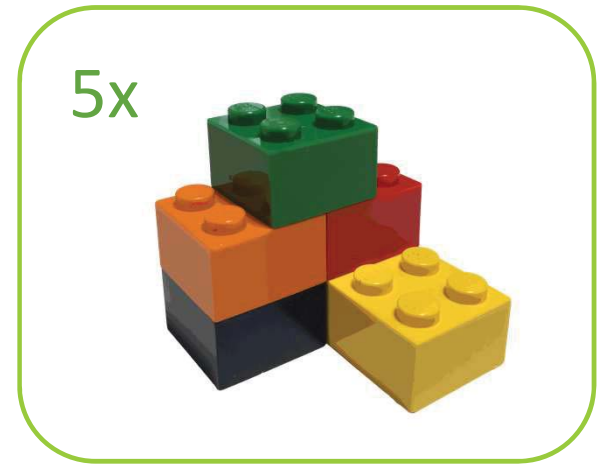
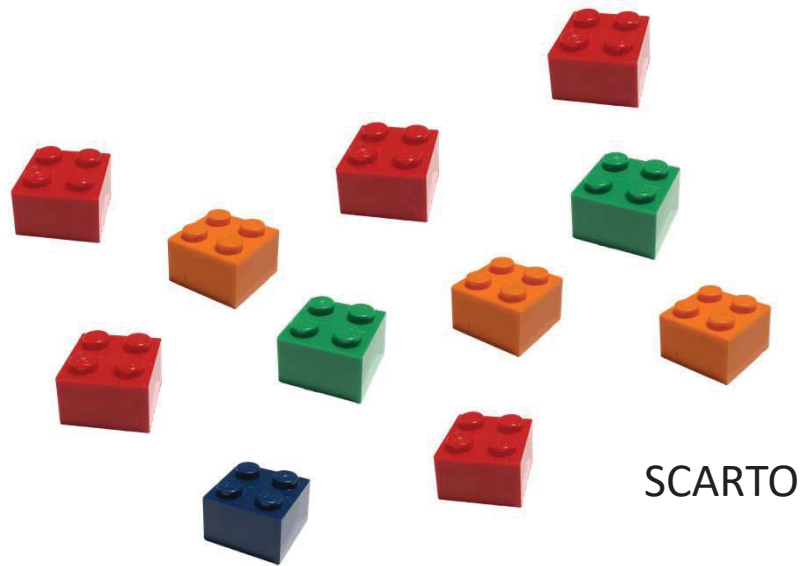


...oppure questo?...

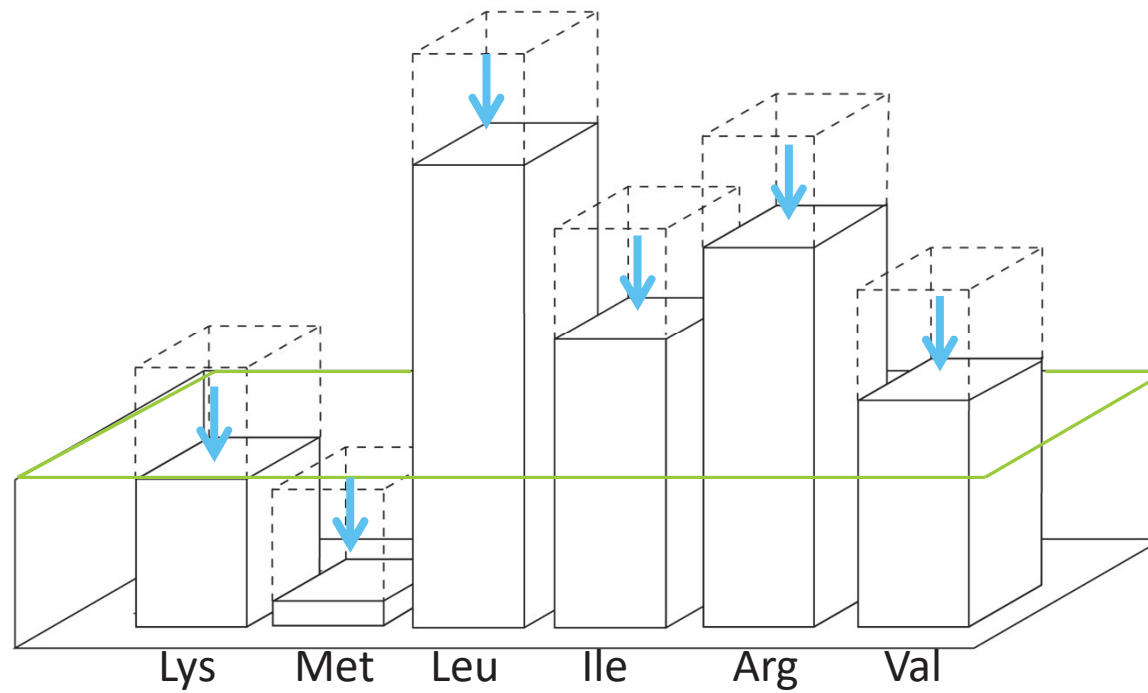


5x

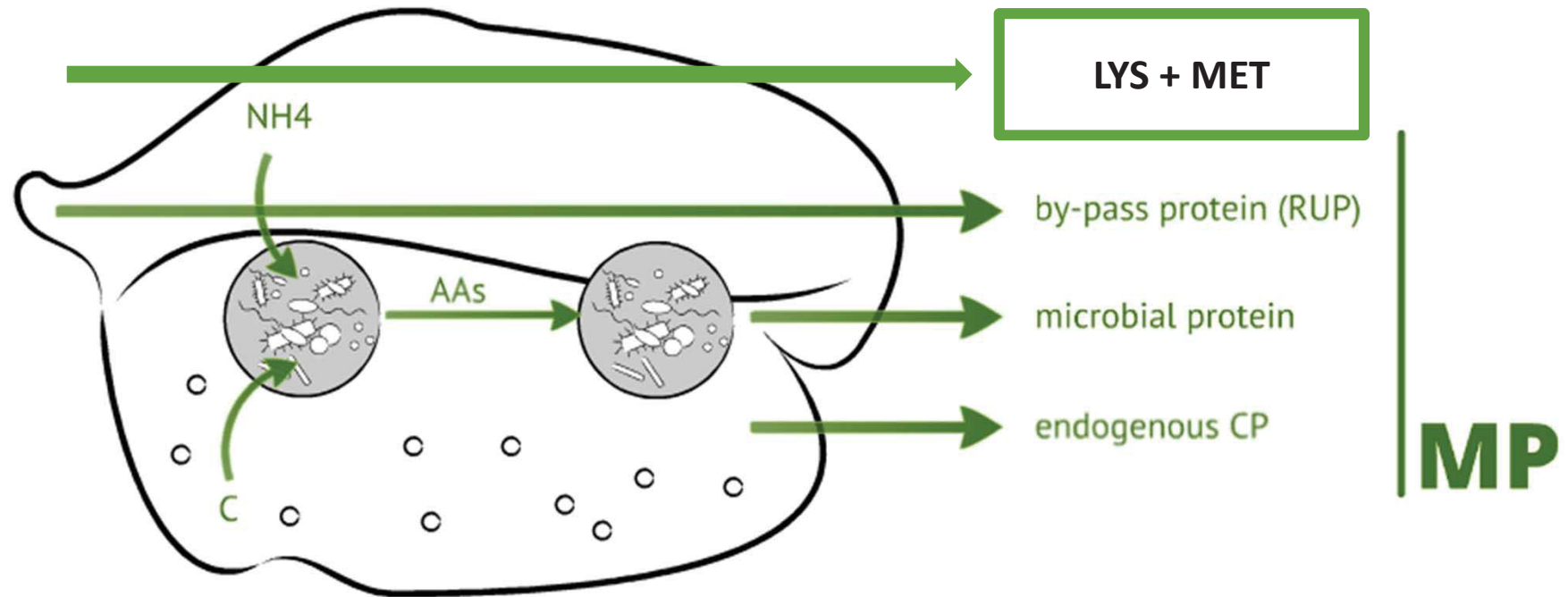




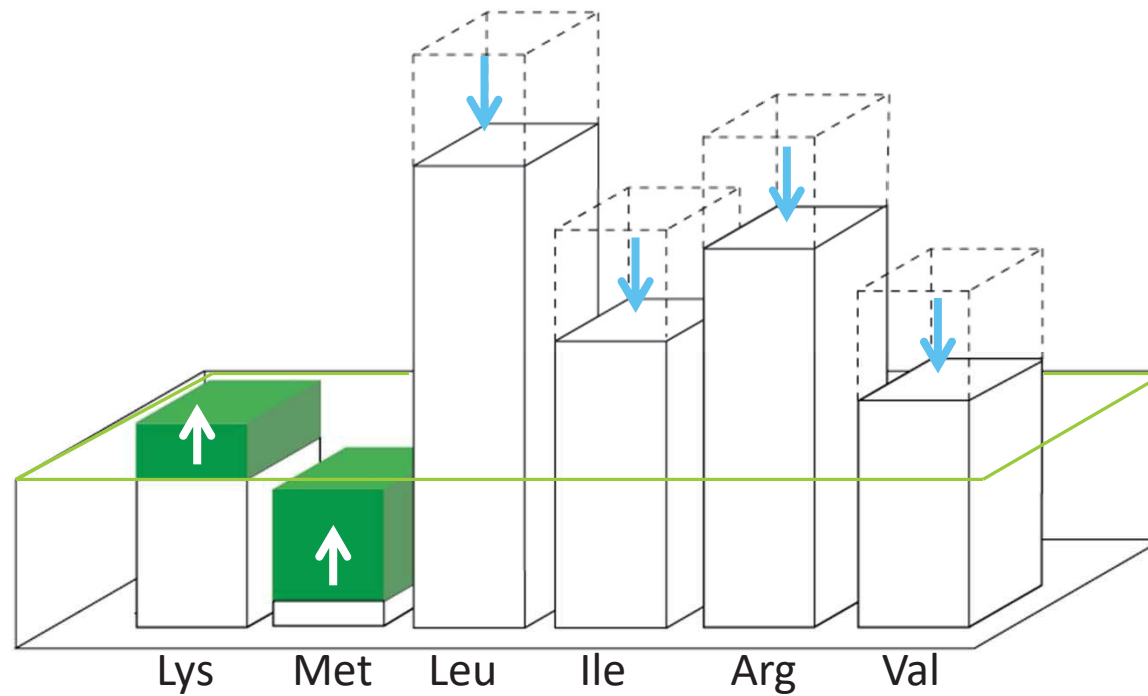
Ridurre la PG nella dieta...



...bilanciando per Met e Lys...



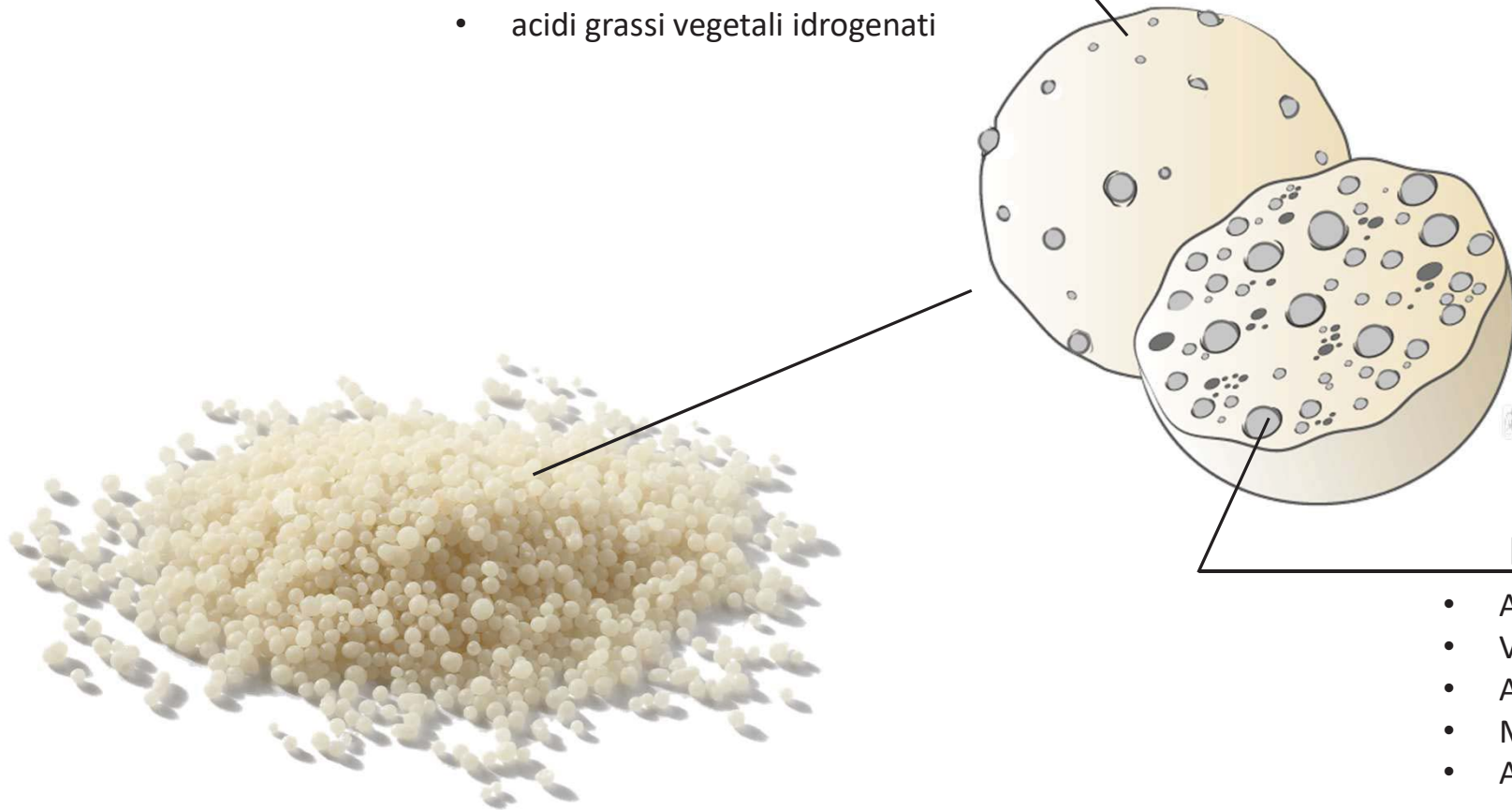
...coprendo i fabbisogni della vacca da latte...



La tecnologia...

Matrice protettiva

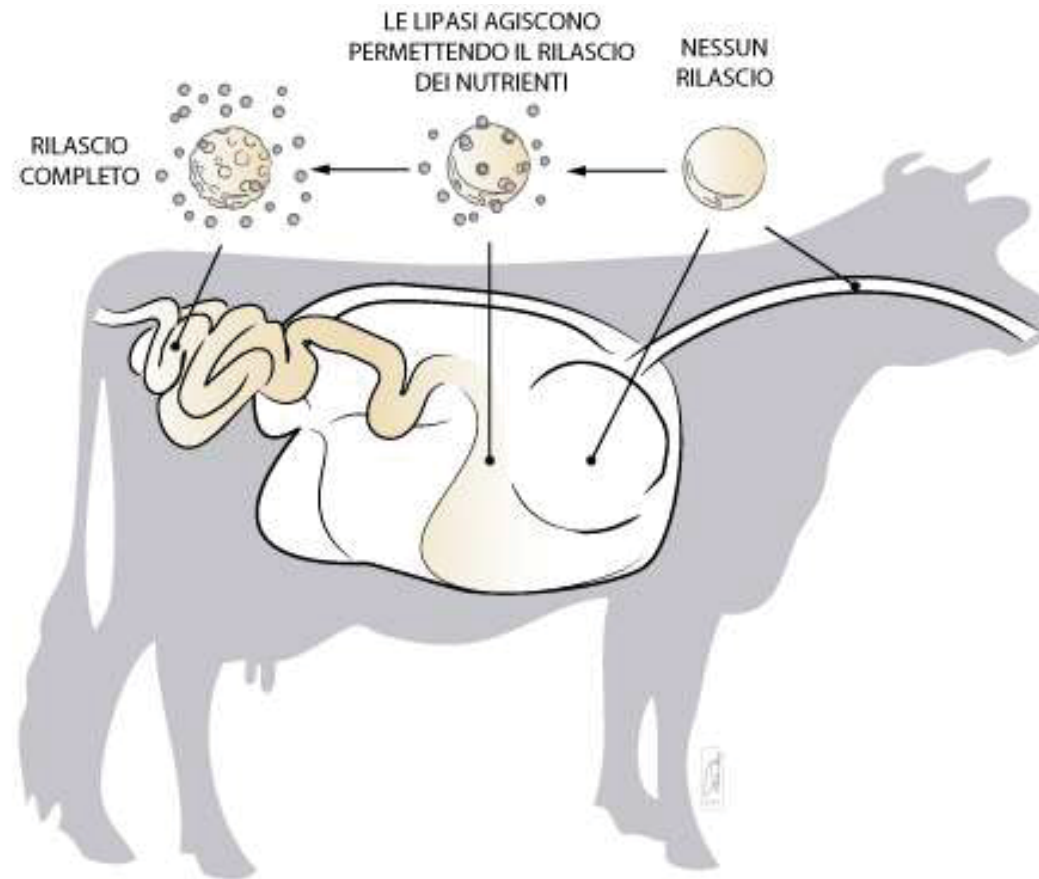
- 50%
- acidi grassi vegetali idrogenati



Nutriente

- Aminoacidi
- Vitamine
- Acidi Organici
- Minerali
- Acidi Grassi

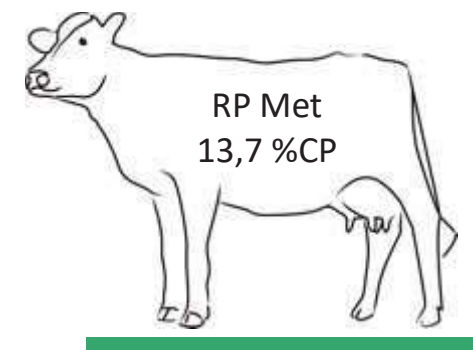
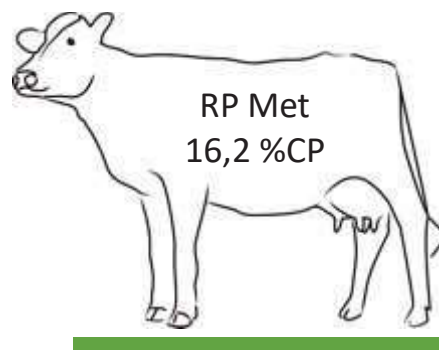
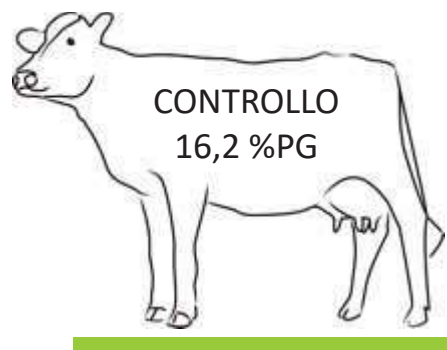
La tecnologia...



...bilanciando per metionina

Evaluation of rumen-protected methionine products for lactating dairy cows fed two concentrations of dietary crude protein.

William H. Miner Agricultural Research Institute, Chazy NY (USA)



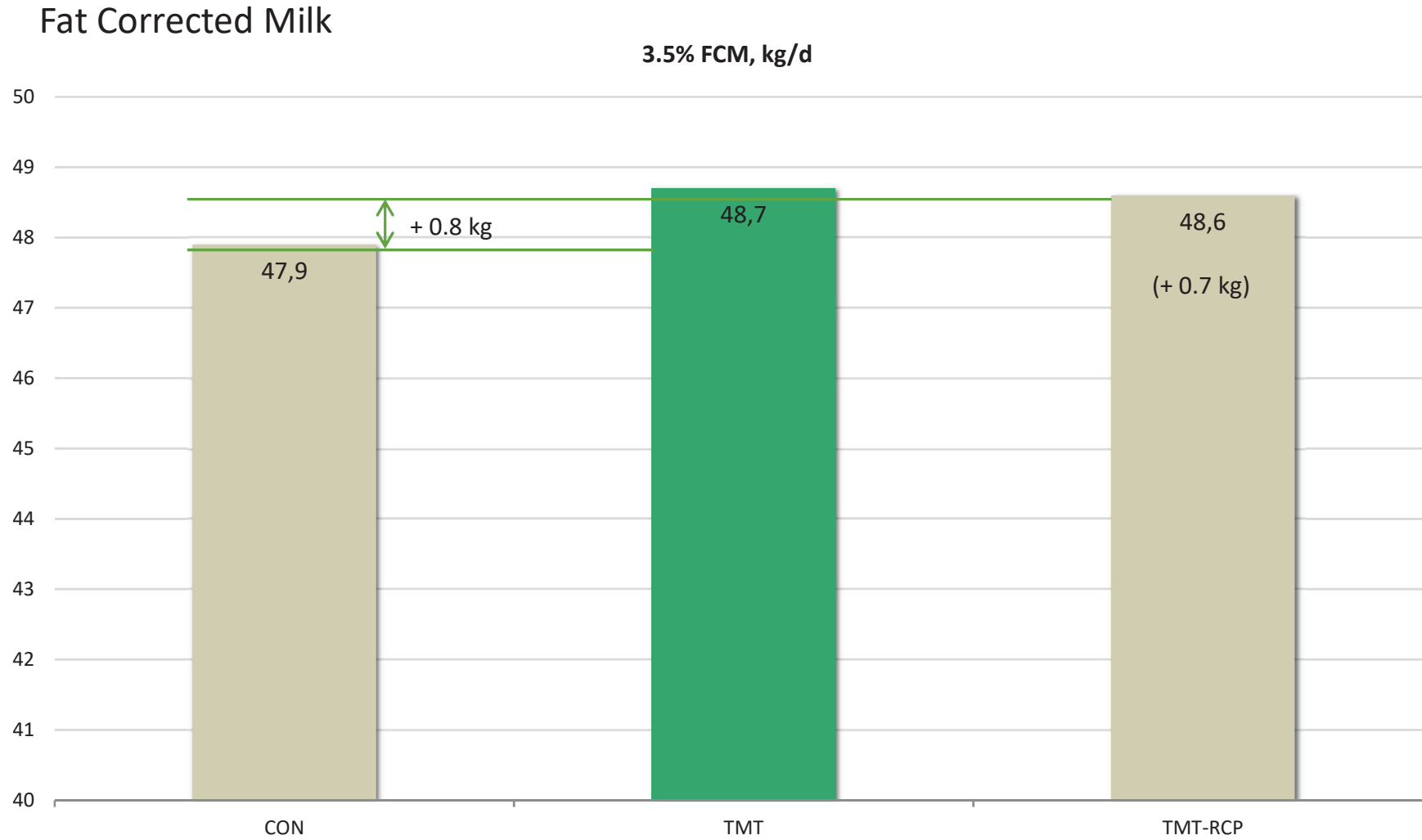
...bilanciando per metionina

Model predicted protein supply and balance

Item	CON	TMT	TMT-RCP
Protein supply and balance, g/d			
MP supply	3350	3366	3282
MP requirements	3115	3115	3123
MP balance	235	251	159
MP balance, % of requirement	108	108	105
Lys and Met supply and balance, g/d			
Metabolizable Lys from RUP	142	143	138
Metabolizable Lys supply	260	260	259
Metabolizable Lys required	199	199	199
Metabolizable Lys balance	61	61	60
Metabolizable Met from RUP	44	55	54
Metabolizable Met supply	82	94	94
Metabolizable Met required	71	71	71
Metabolizable Met balance	12	23	23
Lys: Met supply ratio	3.17	2.77	2.76

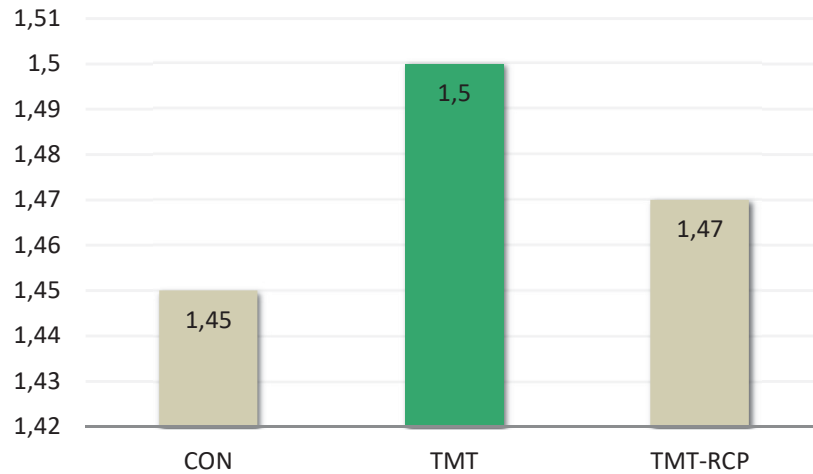
RDP, RUP, and MP supply and balance were predicted using the Nutritional Dynamic System (version 3.8.8.10) utilizing the Cornell Net Carbohydrate and Protein System (version 6.5).

...bilanciando per metionina

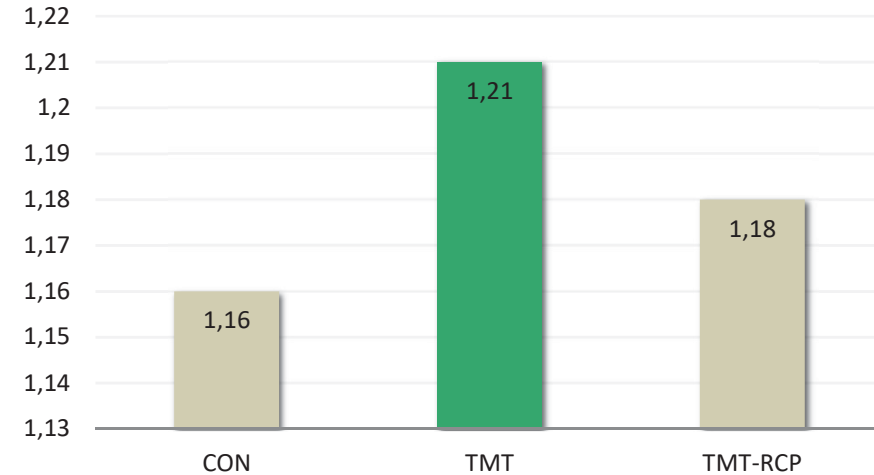


...bilanciando per metionina

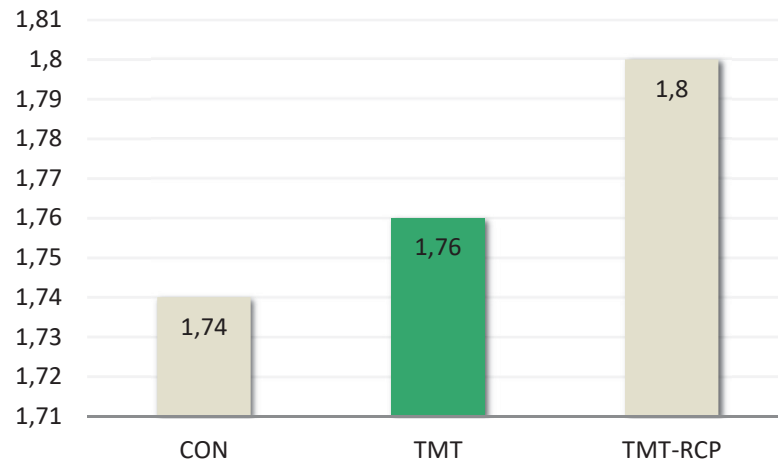
True protein, kg/d



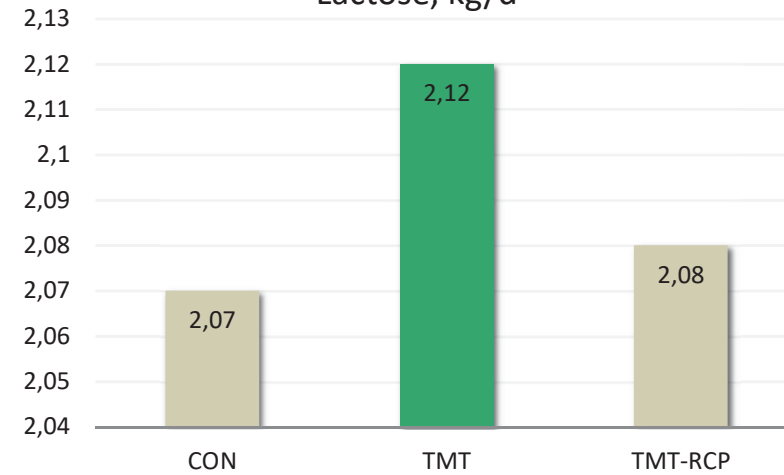
Casein, kg/d



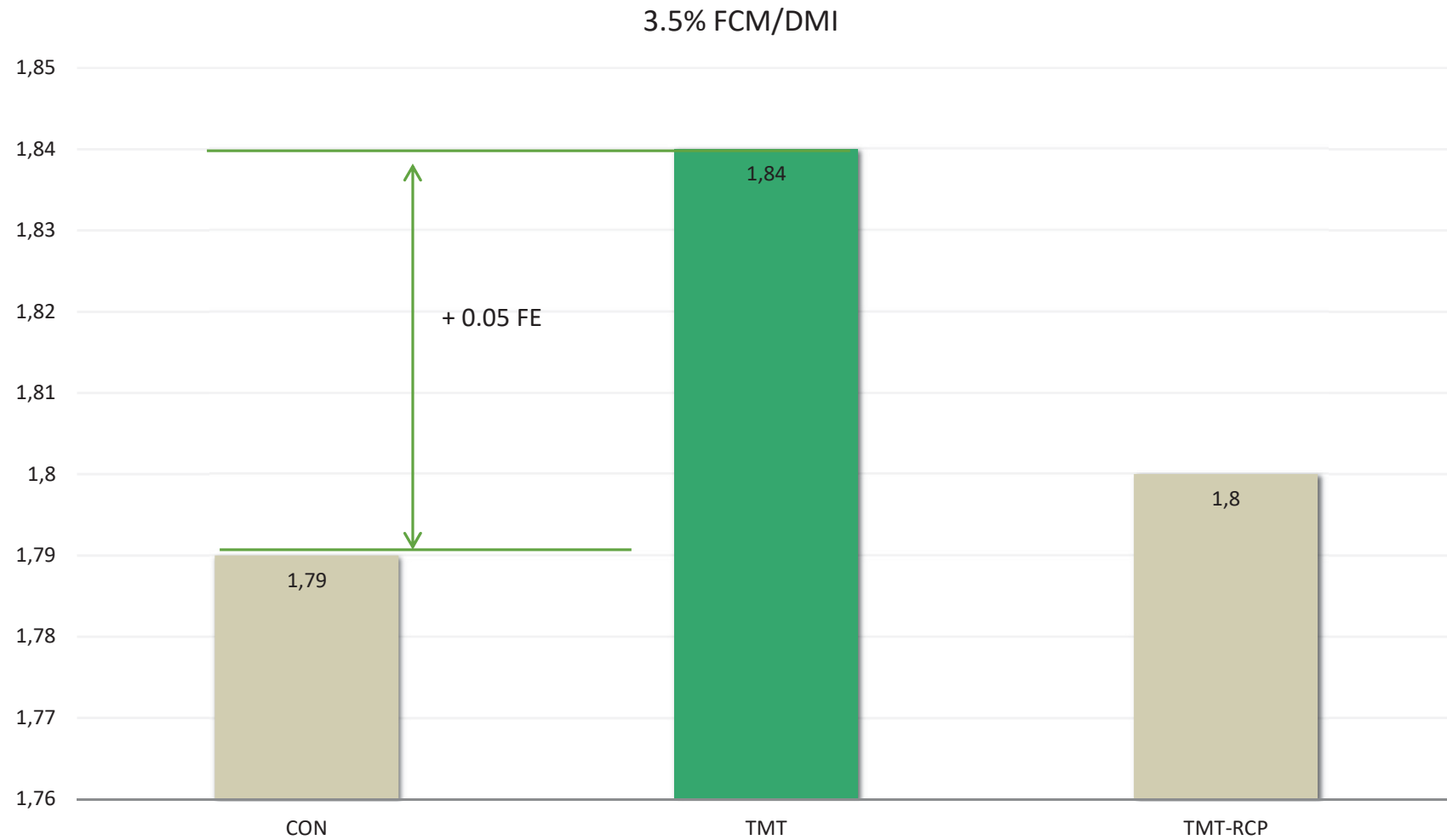
Fat, kg/d



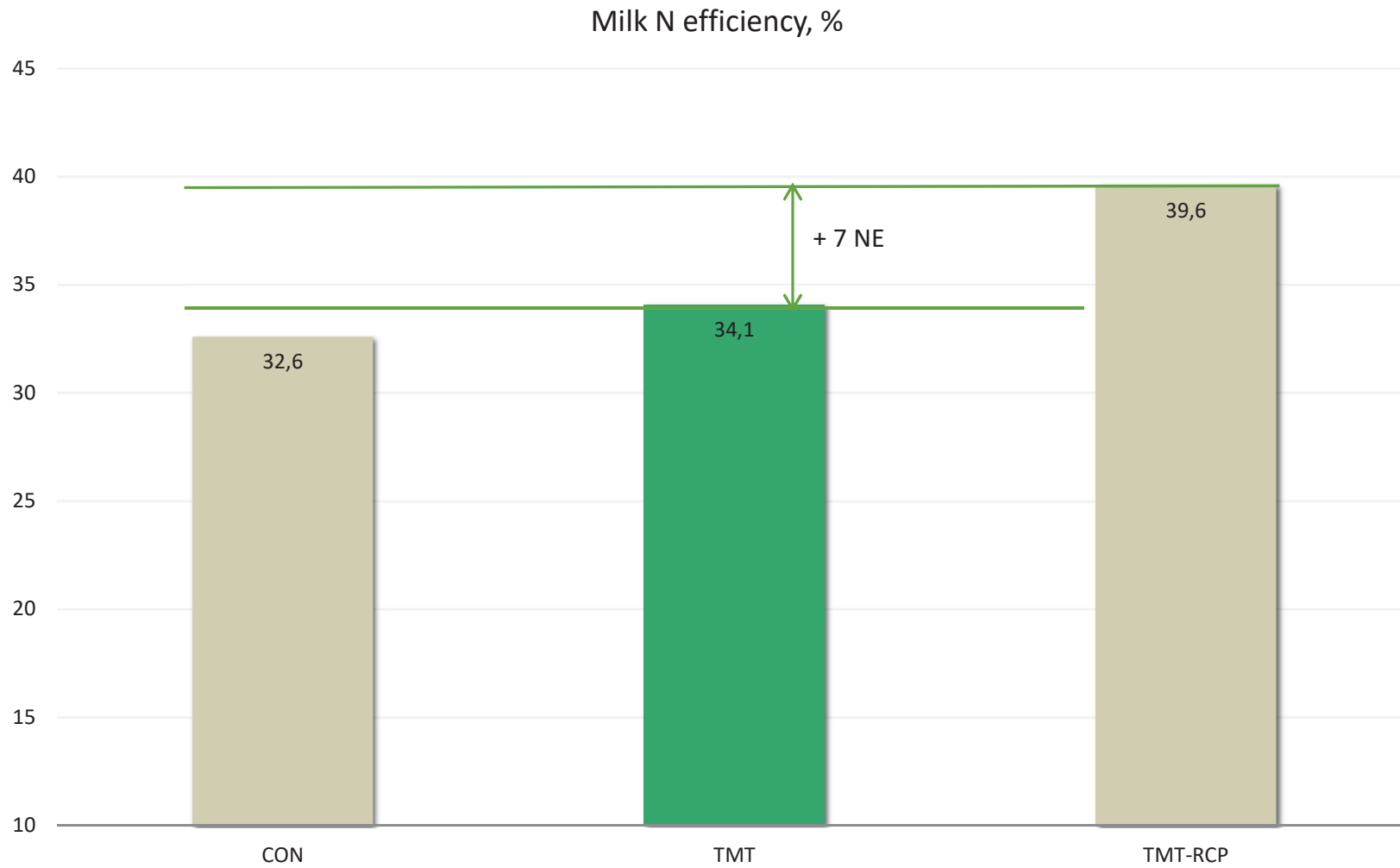
Lactose, kg/d



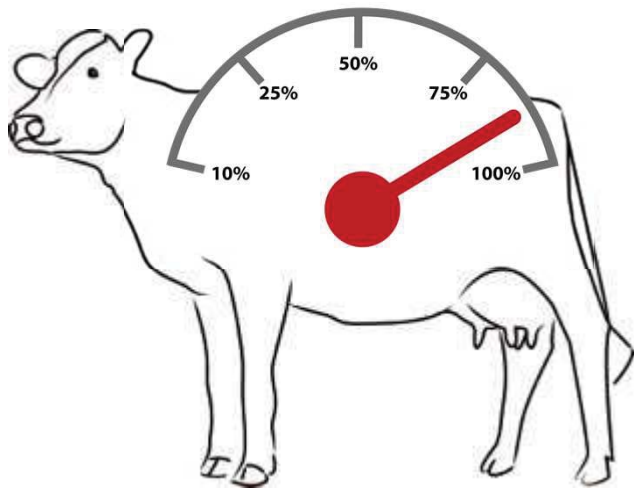
...bilanciando per metionina



...bilanciando per metionina



Non solo latte...



Produzione di latte
Qualità del latte
Immunità
Resilienza
Salute
Fertilità
Longevità
...



...il nostro mercato...

...non siamo pagati abbastanza!

...il prezzo del latte è basso!

La mia stalla è troppo piccola!

Le mie vacche non sono di alta genetica!

...non siamo negli USA...

...non c'è mercato per il formaggio!

...devo comprare tutti i foraggi...

...se continua così tra un mese chiudo!...

...cosa ricordare...

In qualsiasi situazione o scenario
NON CI SONO SCUSE PER NON MIGLIORARE
Efficienza Alimentare ed Efficienza Riproduttiva!

EFFICENZA = SOLDI

...per concludere...

“Greater efficiency of any system usually leads to improved economics, lower environmental impact, and more food to meet societal demands, thus addressing all three pillars of sustainability. In conclusion, sustainable intensification of animal production means increasing efficiency of converting feed into high quality animal products, increasing profit, with high standards of animal welfare and minimal environmental impact.”

P. Garnsworthy

Sustainable intensification of animal production: what does it mean?
EAAP 70 th Annual Meeting, Ghent 2019

Ringraziamenti



GRAZIE PER L'ATTENZIONE