

INTERNATIONAL

*The key to your profit!*



# Egg mass and body weight nutrition in production

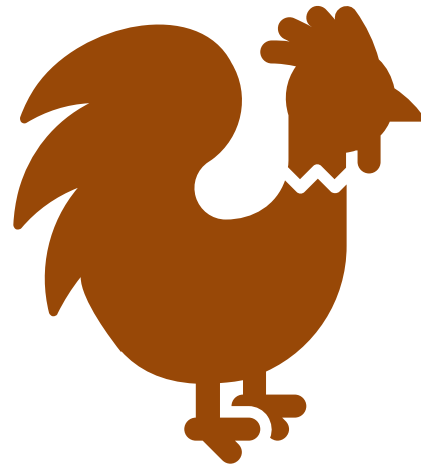
Xabier Arbe, Head of Business Unit

# Layers don't lay number of eggs

kg eggs = Number of eggs x Egg size

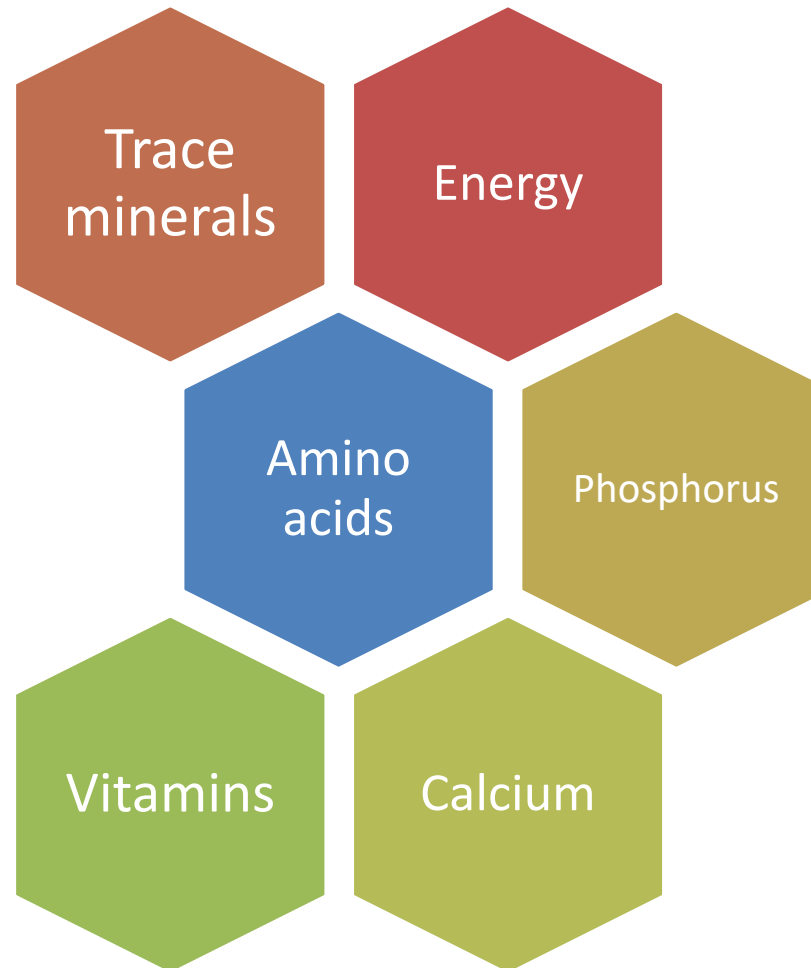
- Lighting program
- Nutrition

# Body weight defines what we need



# Needs

- Maintenance
- Growth
- Production



# How to calculate energy

- Animal research
  - INRA, NRC, FEDNA...
  - Additive suppliers
- Formula
  - $ME = 3.98 \times \text{gr starch} + 3.10 \times \text{gr sugar} + 3.7 \times \text{gr CP} + 8.19 \times \text{gr fat}$

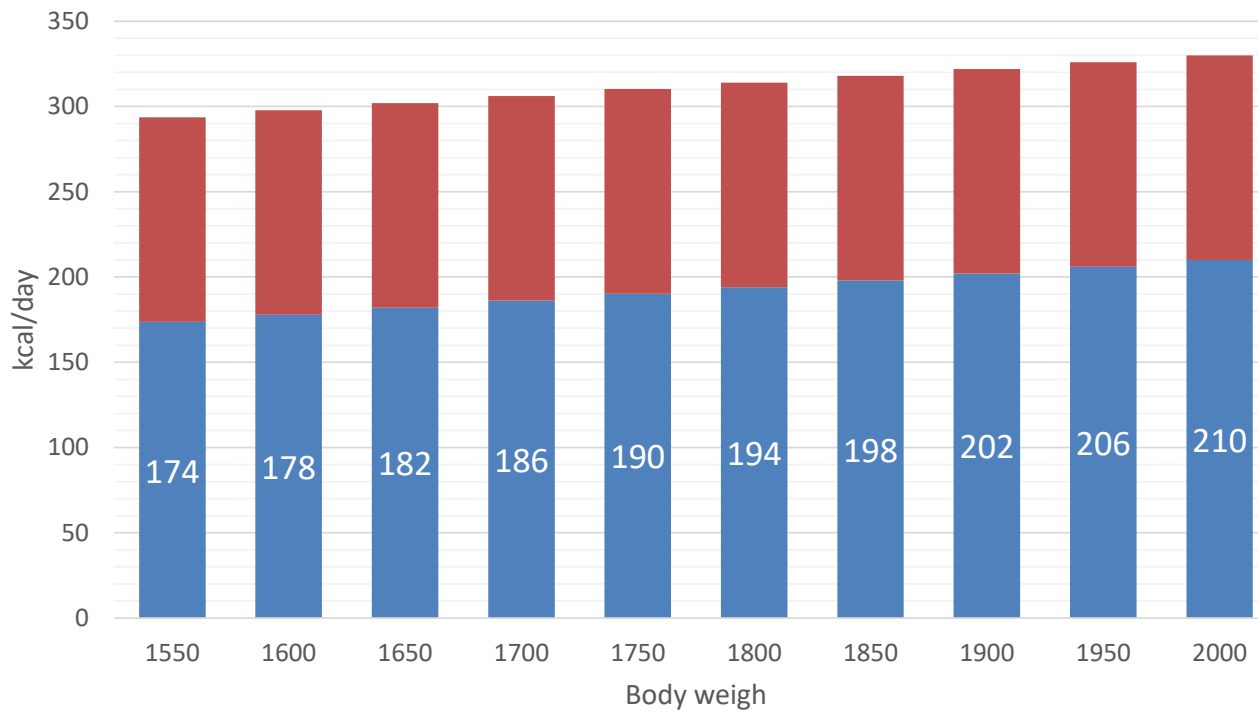
# Energy methods

By the book	ME Value	% in diet	Energy contribution	Total (kcal/kg)
Corn	3300	55	1815	2287
Soya	2360	20	472	

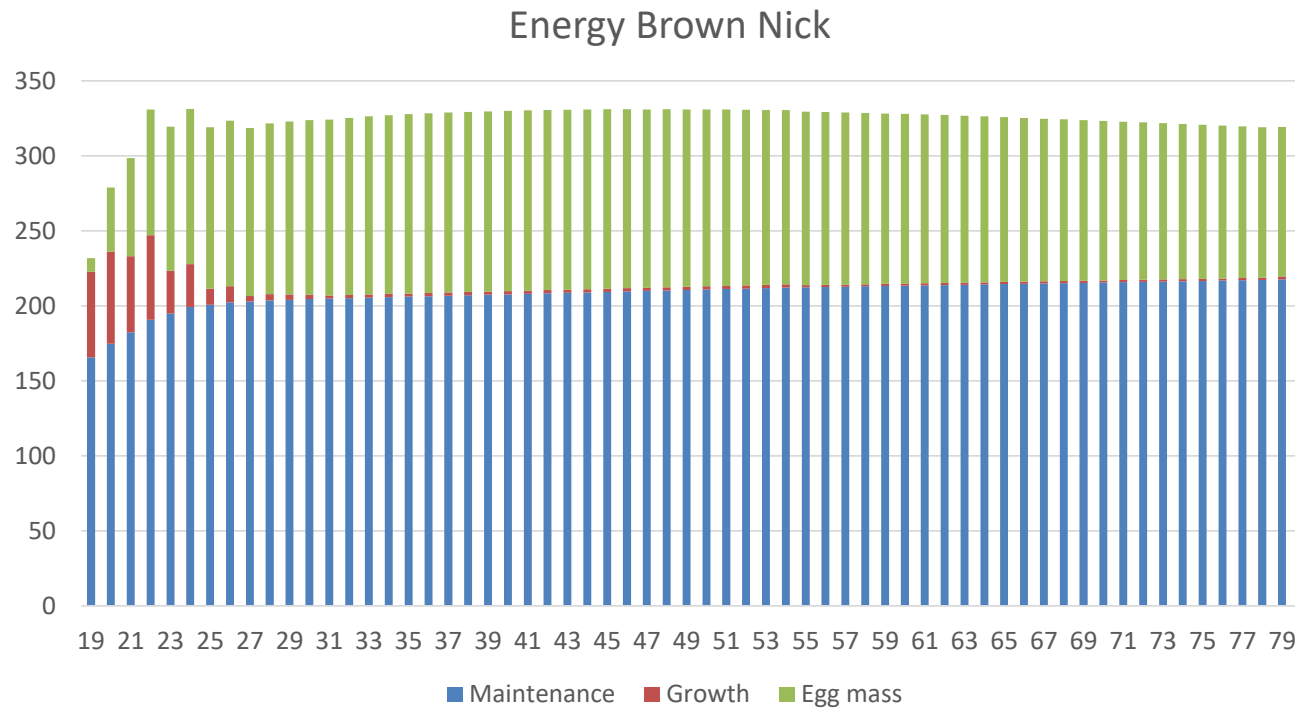
By the formula	ME Value	% in diet	Energy contribution	Total (kcal/kg)
Corn	3104	55	1707	2149
Soya	2210	20	442	

Difference  
6.4%

# Energy recommendation based on BW



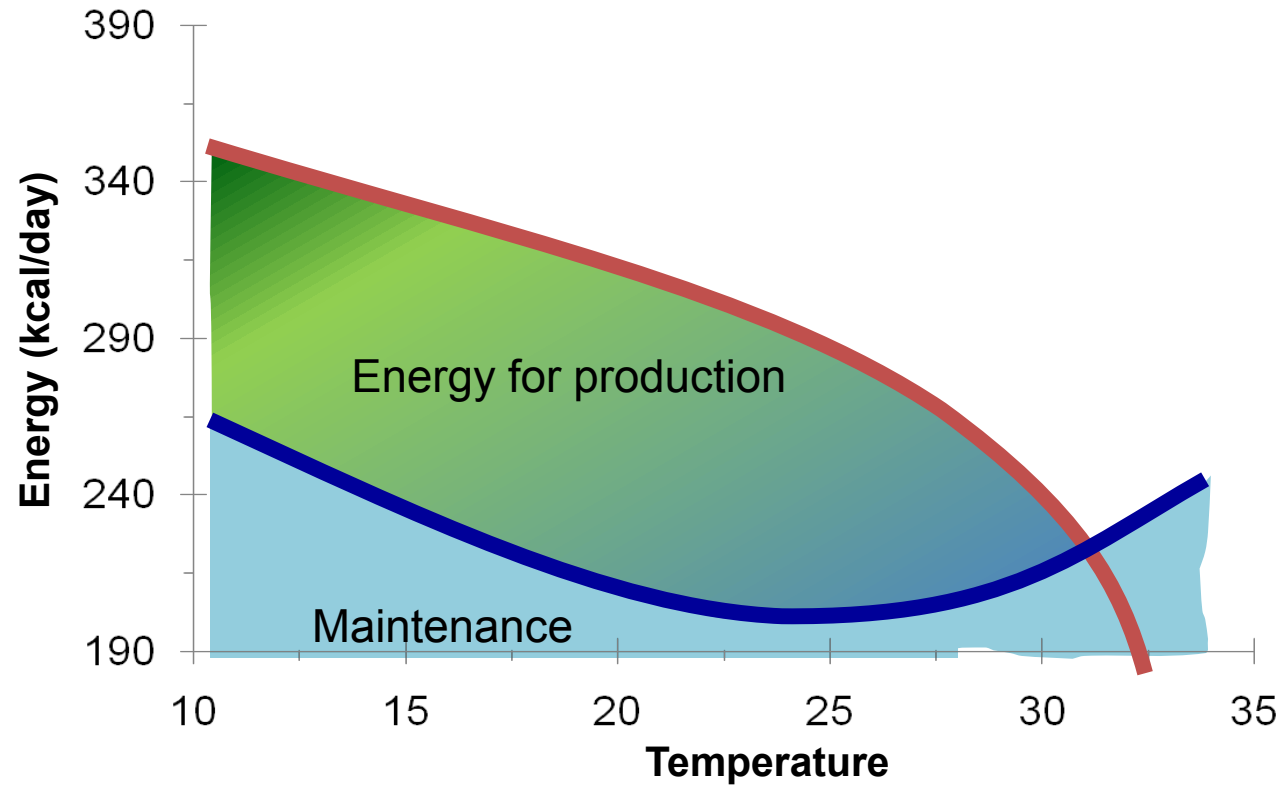
# Energy needs



**Maintenance 64%** Growth 2% Egg mass 34%

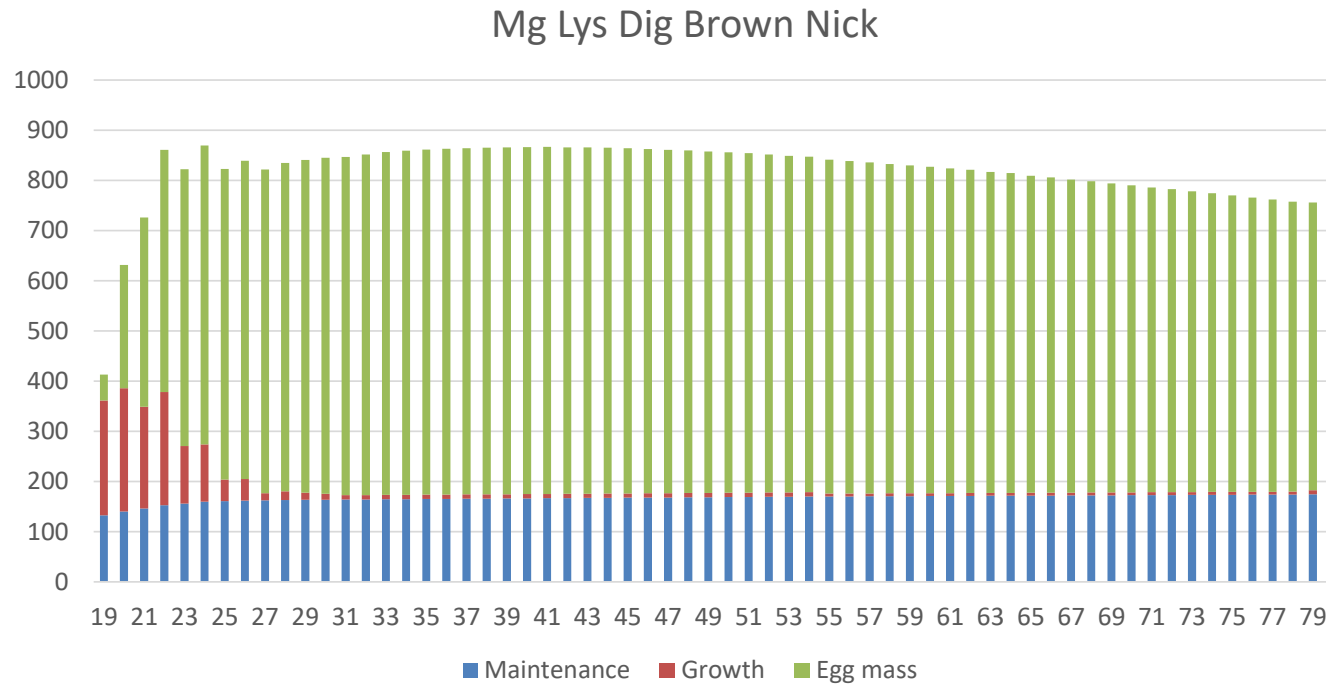


# Effect of the temperature



Adaptaded from Leeson (2012)

# Amino acid needs



Maintenance 20% Growth 1% **Egg mass 79%**

# Make formulation based on egg mass and body weight

## Egg mass 60-58

	301 kcal / hen / day			
	17.5 gr / hen / day			
	mg / hen / day	100	105	110
MEn				
CP				
Dig Lysine	810	0.810	0.771	0.736
Dig Methionine	405	0.405	0.386	0.368
Dig Met + Cys	729	0.729	0.694	0.663
Dig Threonine	567	0.567	0.540	0.515
Dig Tryptophane	178	0.178	0.170	0.162
Dig Isoleucine	648	0.648	0.617	0.589
Dig Valine	709	0.709	0.675	0.644
Dig Argenine	844	0.844	0.804	0.767

## Egg mass 57-55

	295 kcal / hen / day			
	17.2 gr / hen / day			
	mg / hen / day	100	105	110
MEn				
CP				
Dig Lysine	780	0.780	0.743	0.709
Dig Methionine	390	0.390	0.371	0.355
Dig Met + Cys	702	0.702	0.669	0.638
Dig Threonine	546	0.546	0.520	0.496
Dig Tryptophane	172	0.172	0.163	0.156
Dig Isoleucine	624	0.624	0.594	0.567
Dig Valine	683	0.683	0.650	0.620
Dig Argenine	813	0.813	0.774	0.739

For every 50 grams,  $\pm$  4 kcal / bird / day



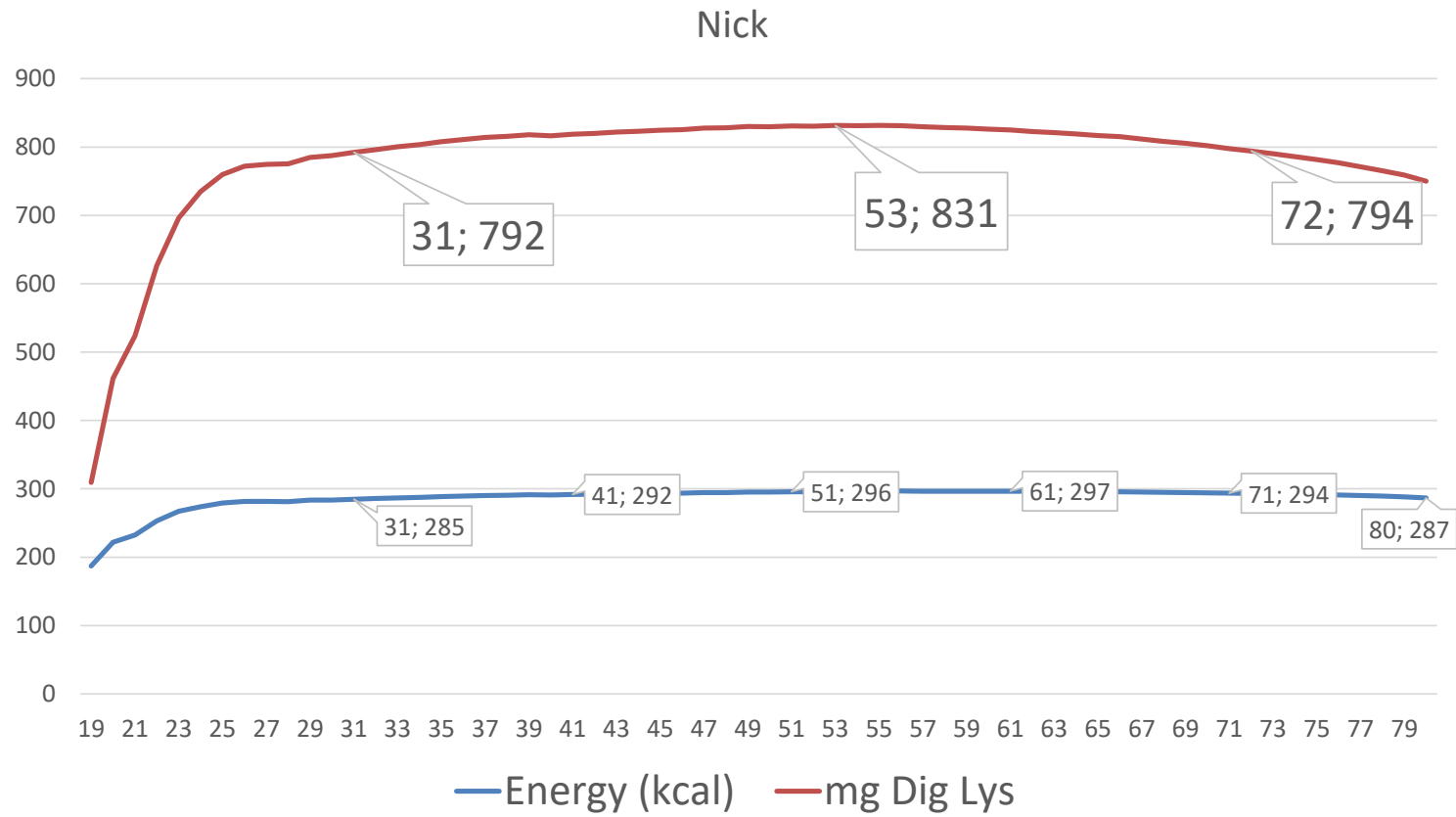
# Egg size controlled by ALL the amino acids

Pullet same size at 17 weeks, same energy feed and production from 22 to 50 weeks

Protein (%)	Fat (%)	Lay (%)	Egg size (gr)	Egg mass
18.5	1.8	91.6	65.2	59.7
17.5	1.8	92.4	64.9	60
16.5	1.8	92.3	64.3	59.3

Perez-Bonilla et al 2011b

# Need / day



# Change of feed vs bird needs

Needs	Age	mg / bird / day	D Lys in feed (%)	Feed intake (gr/bird)
D Lys	31	792	0.75	106
	53	831	0.72	115

- What does it happen if feed intake doesn't increase?
  1. Drop of body weight
  2. Lost of feathers
  3. Increase of unspecific mortality
  4. Lost of production

# Feed intake

	Needs / bird / day	105 / 23	110 / 24	115 / 25
EM	314	2990	2855	2730
D Lys	830	0.790	0.755	0.722
D Met	415	0.395	0.377	0.361
D M+C	747	0.711	0.679	0.650
D Thr	581	0.553	0.528	0.505
D Trp	183	0.174	0.166	0.159
Ca	4.1 gr	3.90	3.73	3.56
Av P	420 mg	0.40	0.38	0.36

# Summary

- Body weight defines energy needs.
- Egg mass defines amino acid needs.
- We need to know the target feed intake to make the feed.
- Don't change energy and amino acid intake unless the body weight or egg mass are changing.



**Thank you for your attention!**

