



INTERNATIONAL

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# Egg weight in hot climates



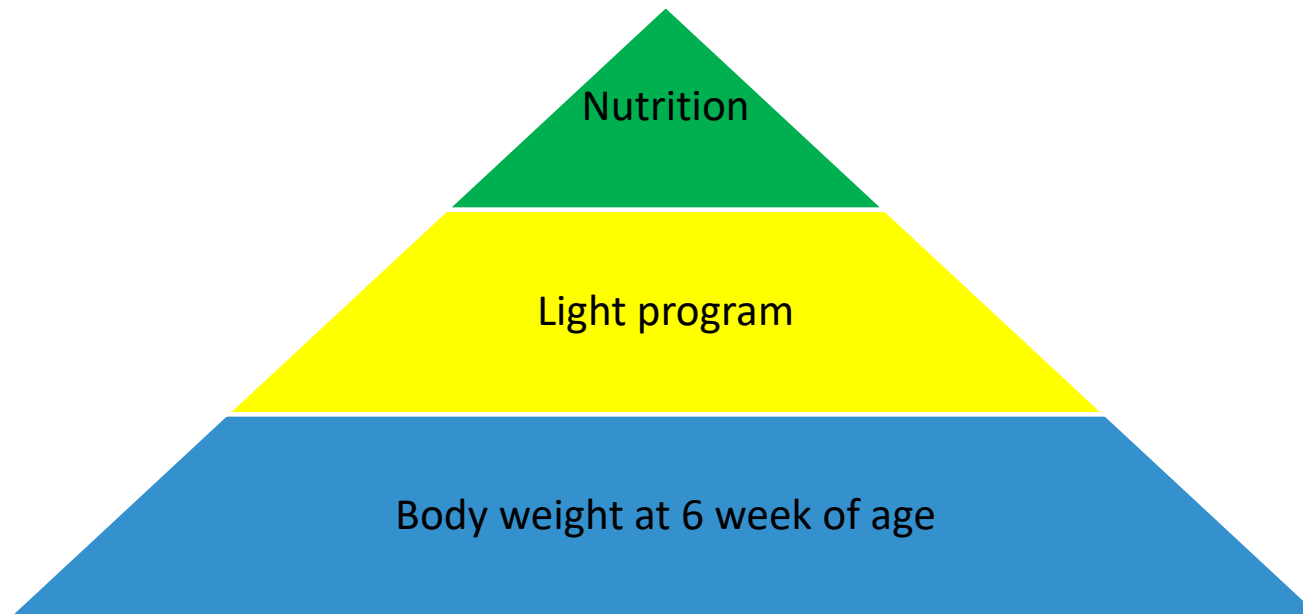
## H&N LAYER ACADEMY

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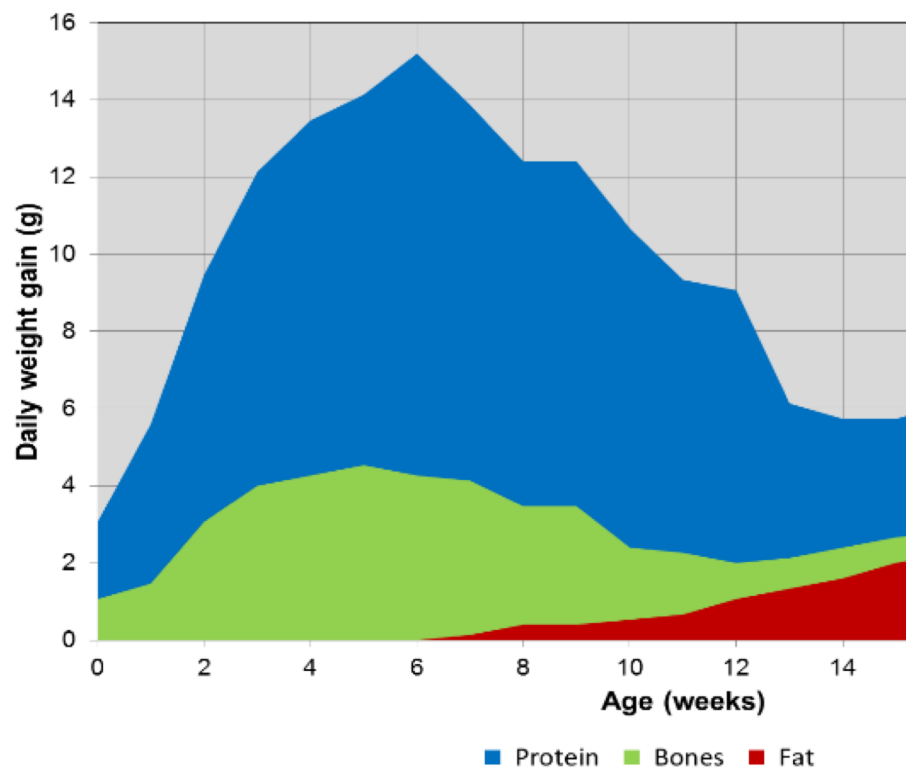
Make use of our multiple-choice poll tool and pick what you think is correct.

## Layer hen and egg production

$$\text{Kg eggs} = \text{Number of eggs} \times \text{Egg size}$$



# Body weight matters, no matter the environment



	BW 6 weeks	BW 30 weeks	Egg weight 40 weeks
Crystal Nick	401 g	1,550 g	59.5 g
Nick chick	410 g	1,597 g	60.9 g
Super Nick	418 g	1,660 g	62.7 g
Brown Nick	475 g	1,925 g	63.7 g

(Modified from Ysilevitz, 2007)

# Lighting program – where is the starting point at production?

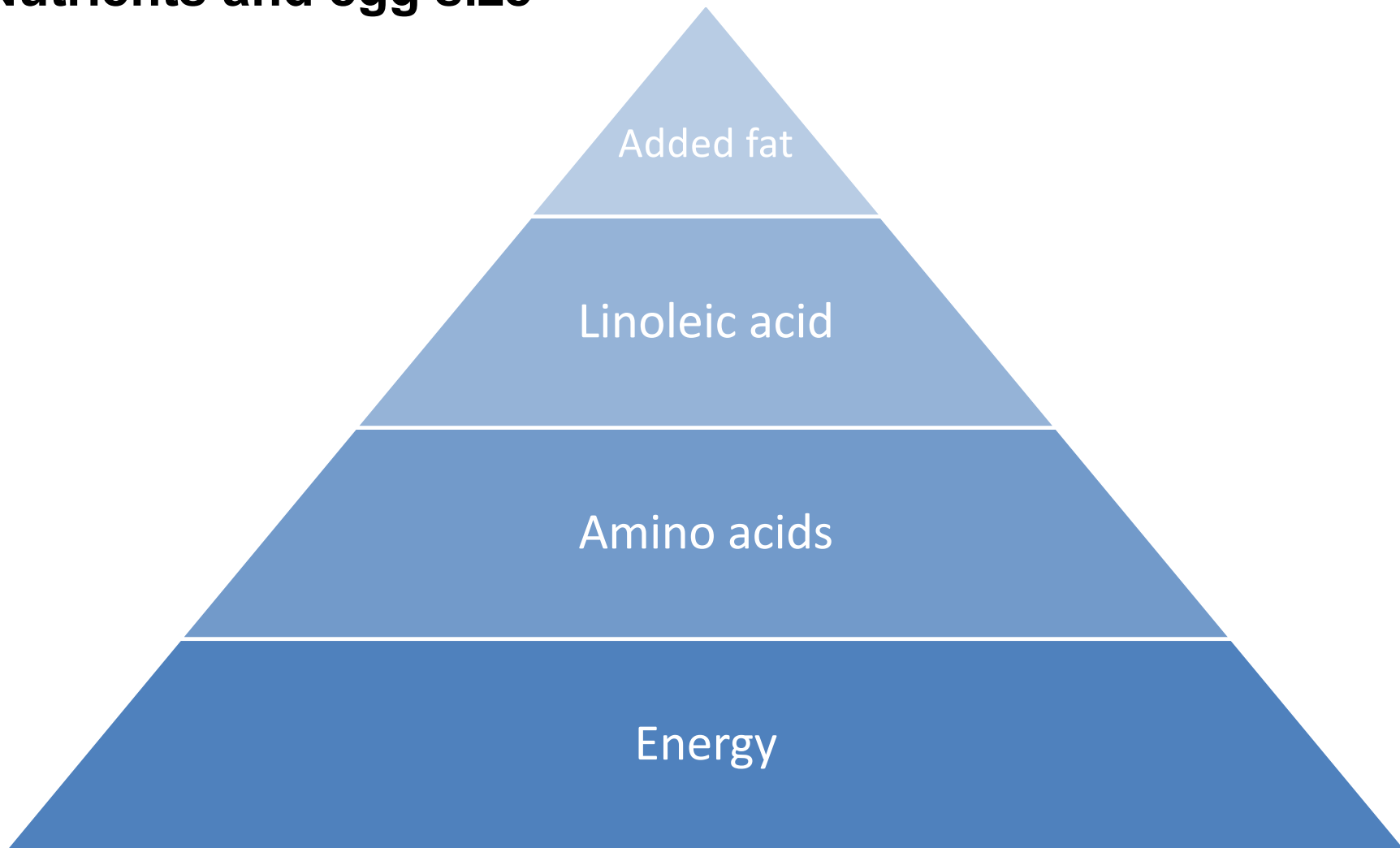
At 100 weeks	EHH	Cum egg weight	Cum Egg Mass
Brown Nick	456 g	64.2 g	29.26 kg



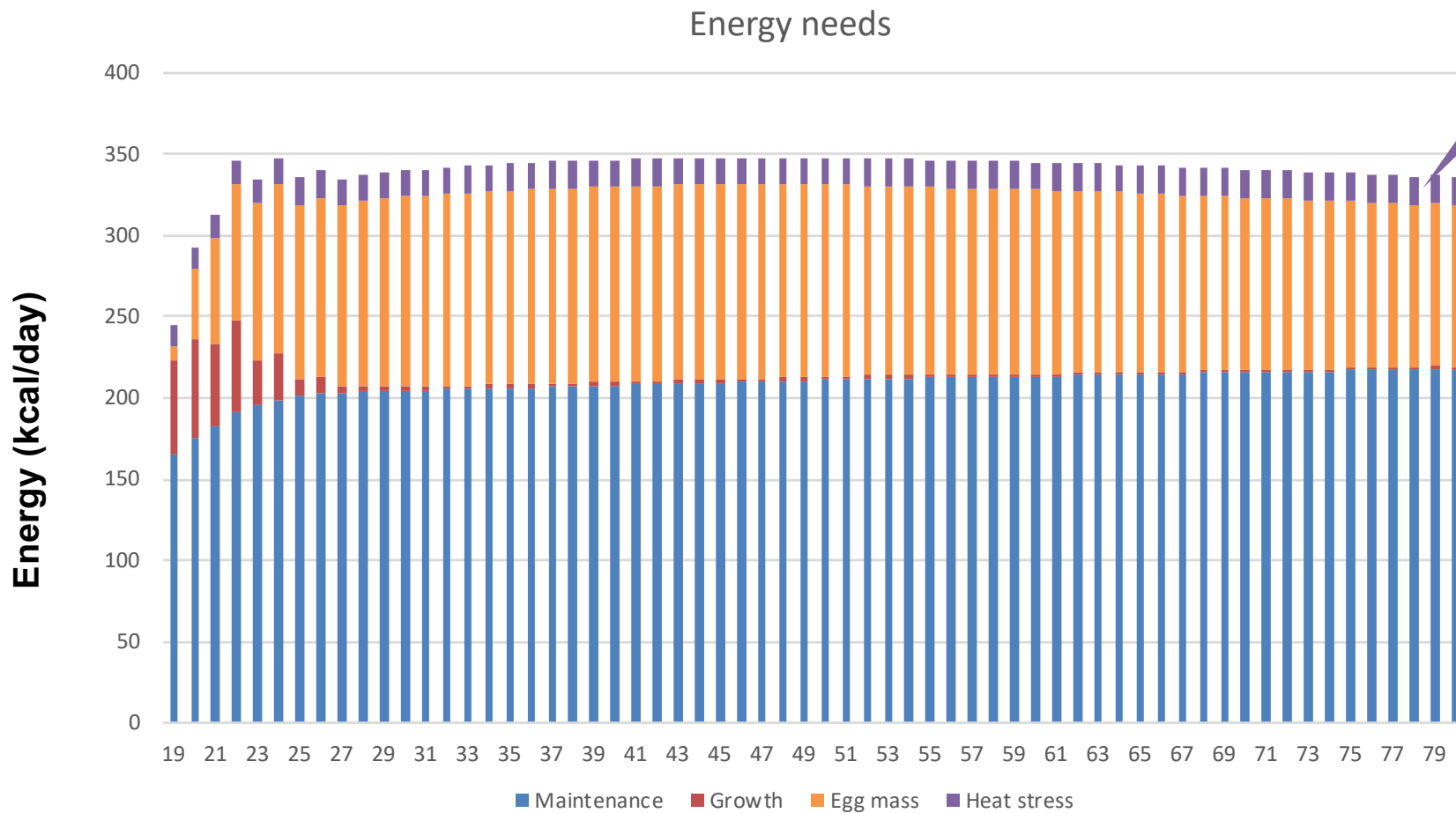
## First take home message

1. Body weight of the pullet in early stages is a must when we think about egg weight.
2. Light program controls body weight at start of production and how long the bird has for laying the egg mass potential.

## Nutrients and egg size



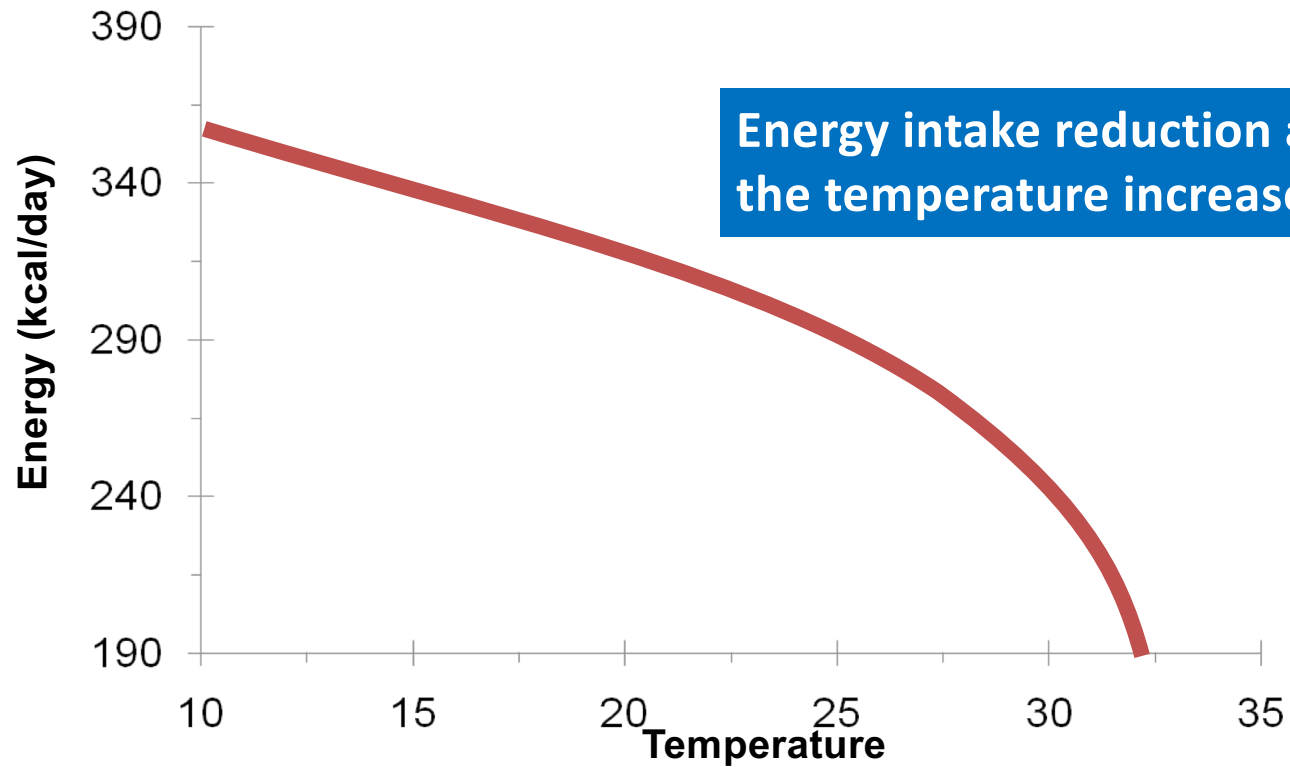
# In hot climates we need more energy



Heat stress requires energy



## Effect of the temperature

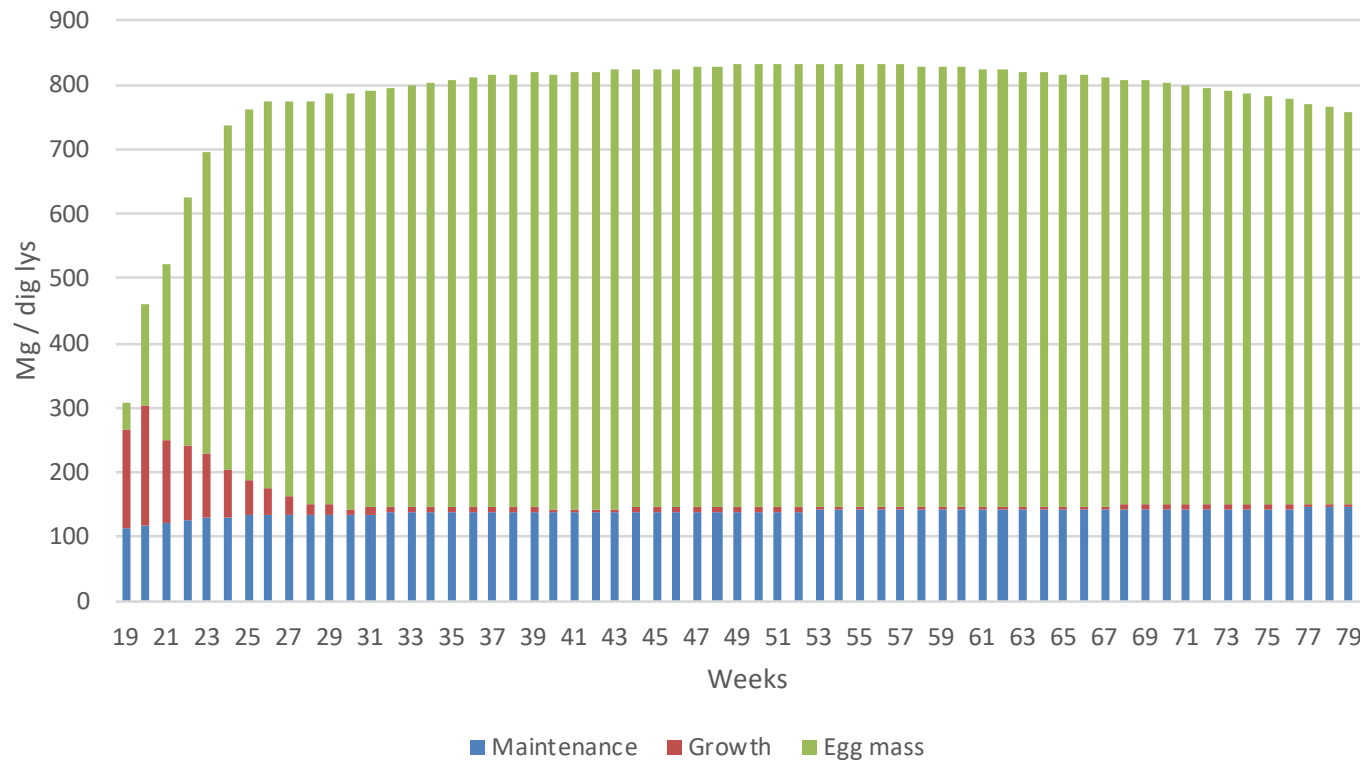


*Adaptaded from Leeson (2012)*

## Nutrient intake is a priority if we want to keep egg size

	Need / bird / day	105	110	115
ME	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

# Layer amino acid needs



Maintenance 20% Growth 1% Egg mass 79%



## Egg size controlled by ALL the amino acids

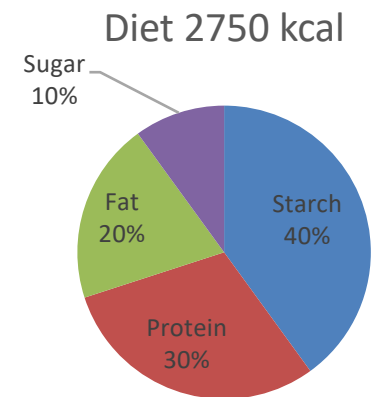
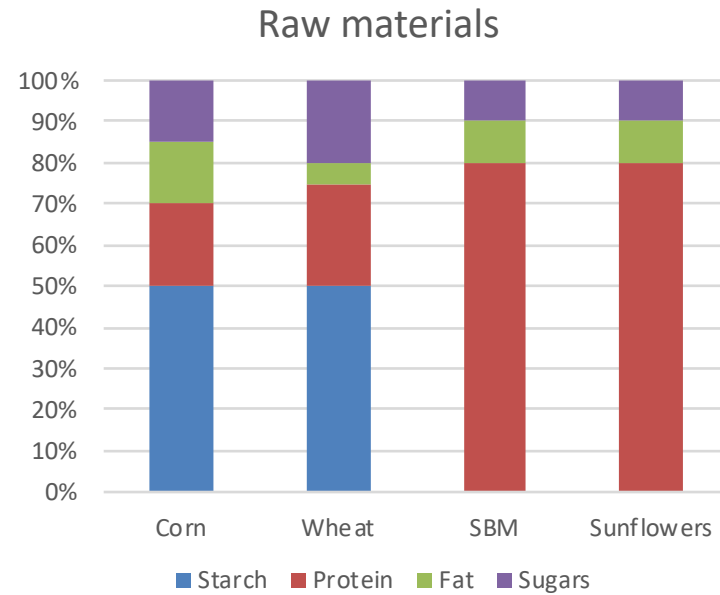
Pullet same size at 17 weeks, same energy feed and production from 22 to 50 weeks

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

## Energy vs Amino acids

- The layer hen first will cover the maintenance needs
- Whatever amino acids are left, they will be used for building the egg.



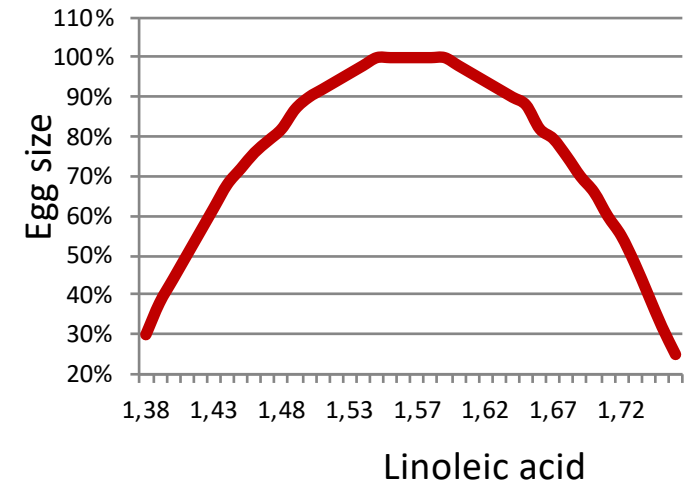
## Amino acids



- The amino acids availability will limit the egg size.
- If any of the amino acids is missing, egg size will decrease.

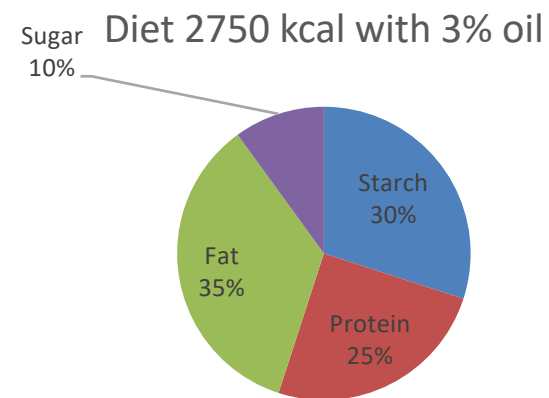
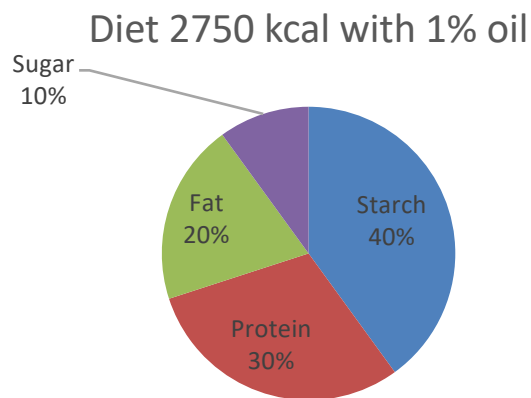
## Linoleic acid

- The linoleic acid limits the yolk size.
- The yolk size limits the egg size.
- There is a minimum of linoleic acid needed, once we achieve the requirement, more of it will not have any impact in egg size.



## Addition of oil/fat in the diet

- Adding fat in the diet has two effects in the diet:
  - Spare effect of the amino acids
  - Better structure of the feed
- Hot climates has additional advantage of reducing endogenous heat production

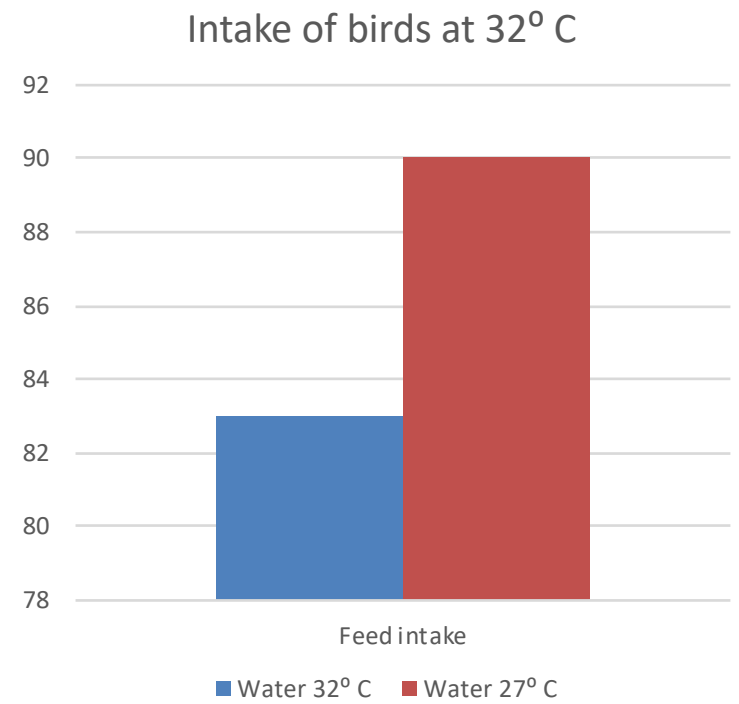
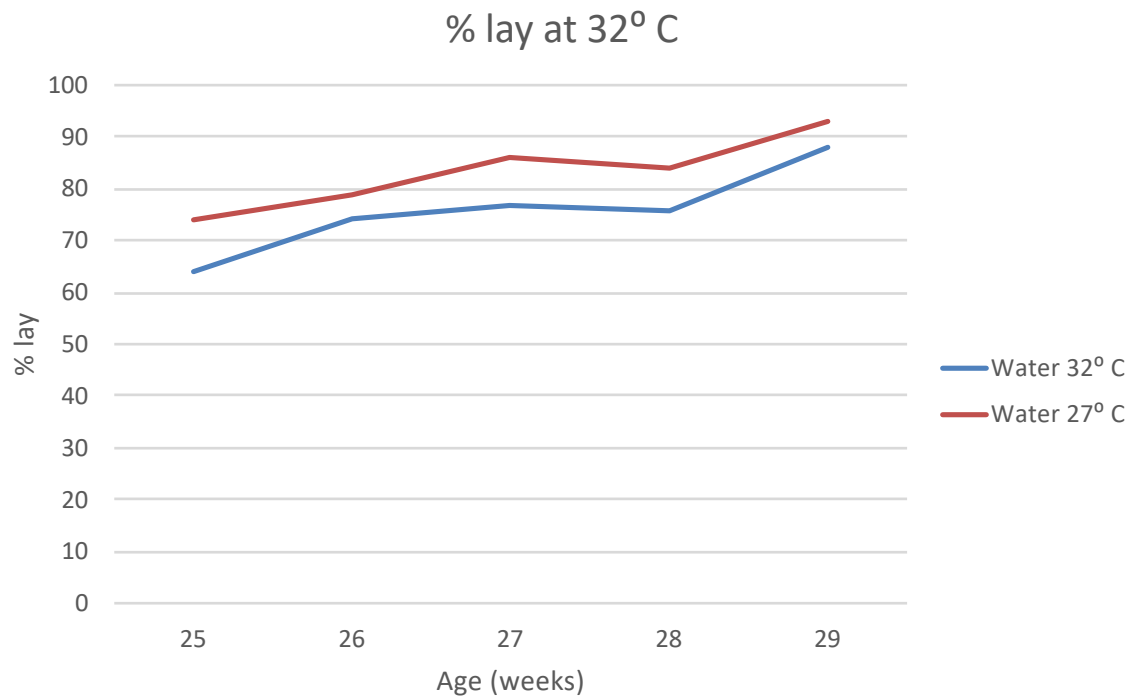




## Misleading effect of linoleic acid

- A demand of linoleic acid can be done by:
  - Corn
  - Oil
- In the European wheat based diets, soya bean oil has been used as source of linoleic acid.
- The research shows that we can get same results at lower levels of linoleic but keeping same added fat amount.

# No water no feed



## SECOND – Take home message

1. Nutrient intake is the challenge when keeping the egg size in the hot climates.
2. The availability of amino acids makes the egg big, so energy intake and formulation need to manage it.
3. In hot climates the water temperature will help in having enough nutrient intake.



## H&N LAYER ACADEMY

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