Nutritional Strategies to Ensure Optimal Flock Performance

Sally Duffy
Poultry Nutritionist
25.04.23

Sally.duffy@trouwnutrition.com

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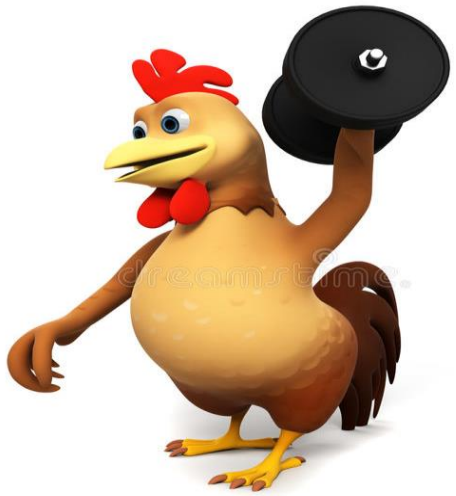
Looking Forward -



100 weeks

Sustainability

Presentation Outline

- Importance of the rear stage
- Pre-lay diet importance
- Gizzard development
- Phase feeding

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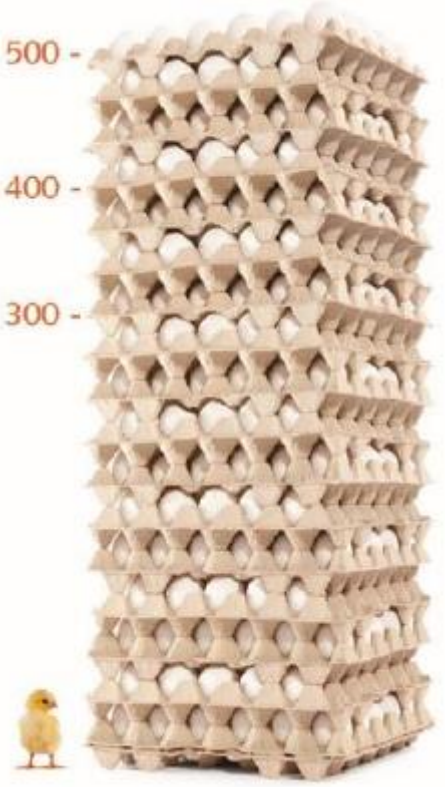
Genetic Improvements

Efficiency and production of laying hens have increased significantly over the years.

Laying hen performance over the years

		1970	2000	2020	% improvement
Brown	Egg numbers hen housed (at 75 weeks)	239	319	361	51%
	Egg numbers hen housed (at 90 weeks)			440	
	Egg numbers hen housed (at 100 weeks)			500	
White	Egg numbers hen housed (at 75 weeks)	250	324	364	46%
	Egg numbers hen housed (at 90 weeks)			444	
	Egg numbers hen housed (at 100 weeks)			505	
	Feed conversion (grams feed/grams egg mass)	3,03	2,18	1,98	-35%

source: Hendrix Genetics



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Importance of the Rear Stage

- The Rearing period is of major importance for economical performance of the flock in later life
- A good quality pullet is essential to achieve the best lay performance
- The productivity of a flock depends to a large extent on the bodyweight development reached from an early age
- Developmental state is predominantly the result of weight NOT age

Pullet Development phases

0-5 weeks

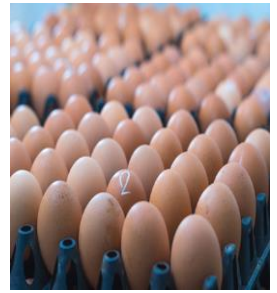
6-11 weeks

12-18 weeks

Early Lay

Mid Lay

Late Lay



Invest in pullet development

Return of Pullet development

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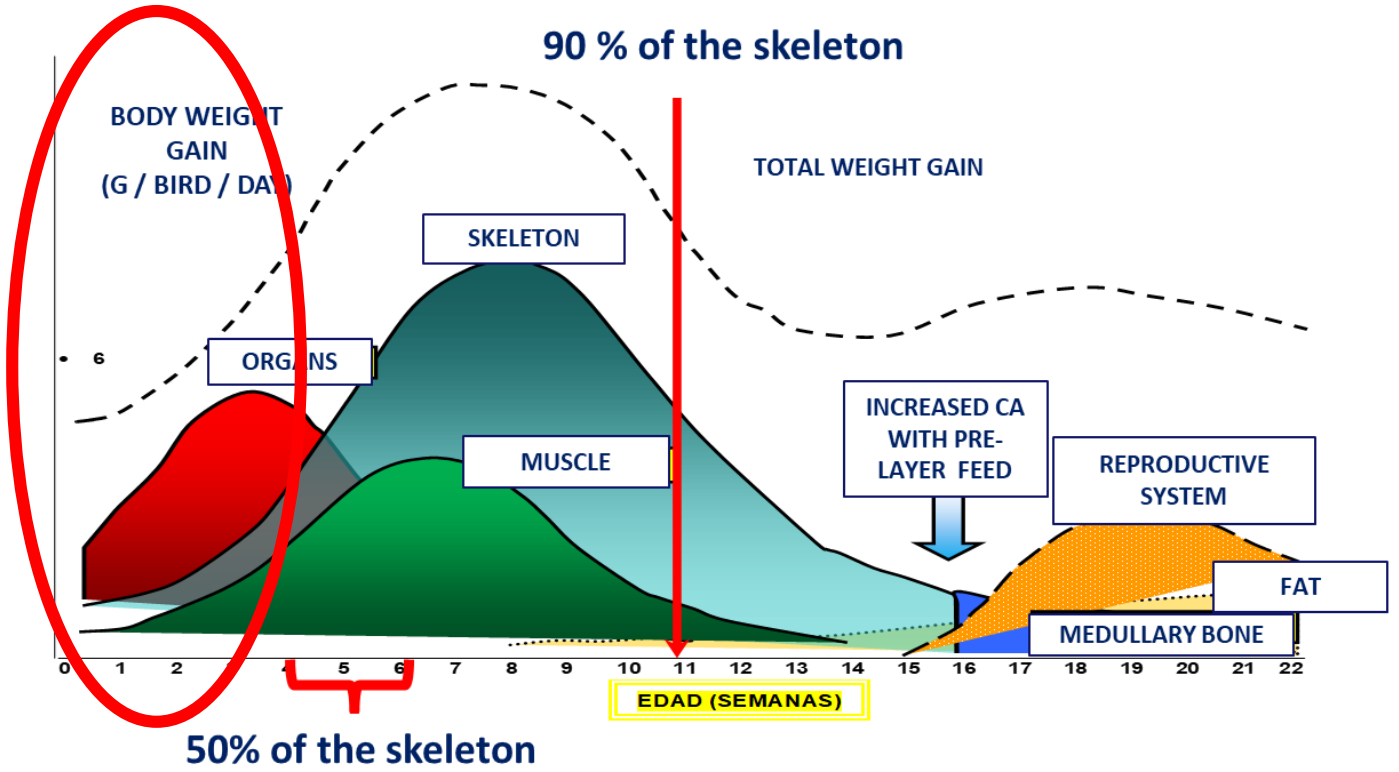
0 -2 weeks

- Growth in this period consists of organ development (mainly intestinal tract)
- Important to stimulate feed intake in this period
- Critical period for flock uniformity, body weight, livability & robustness



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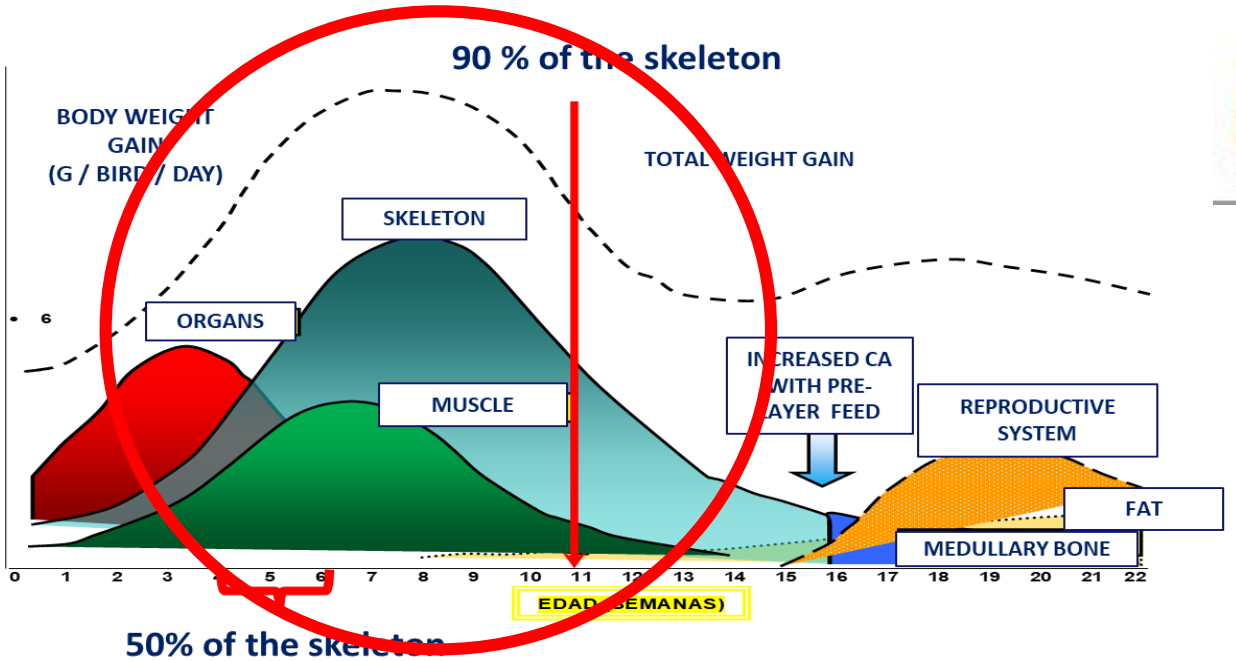
3 – 12 weeks

- Growth in this period consists of frame development (muscles, sensory organs, etc). This is the period where the mature body weight is largely reached.
- When organ development happened optimally, the development during this period is easier.
- Medullary bone development helps Ca turnover throughout the hens life, helping egg shell quality later.



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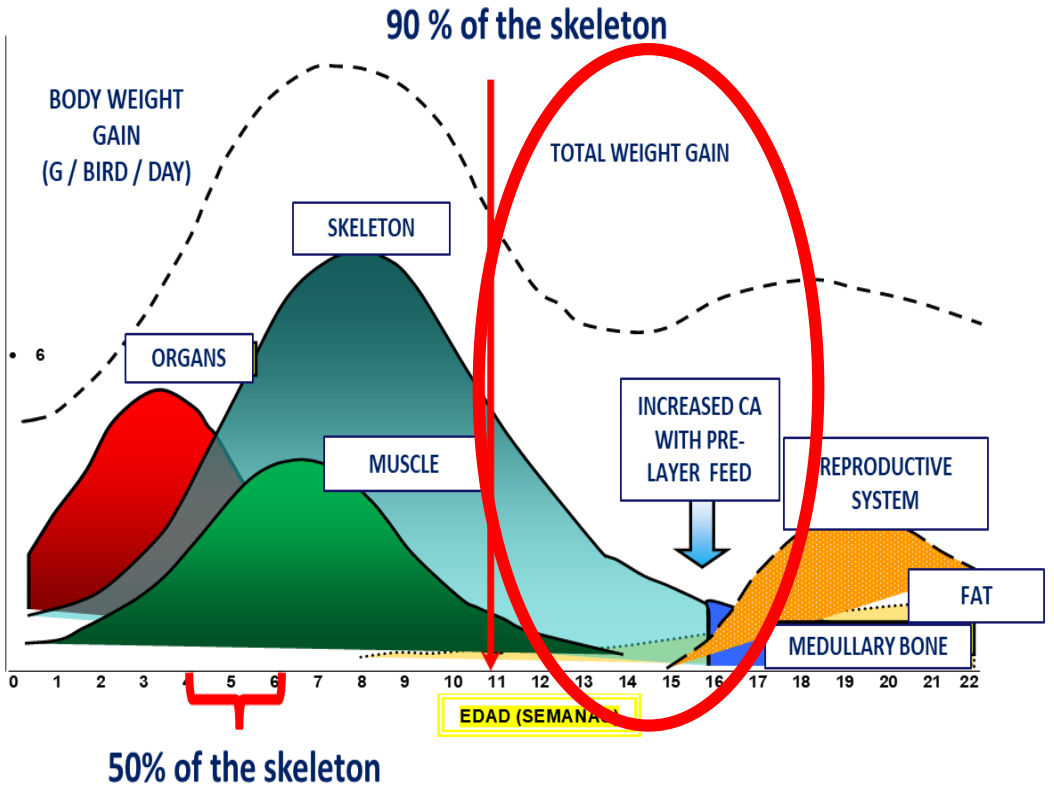
13 – 16 weeks

- Period often called ‘developer phase’.
- Body frame has largely been formed
- Growth rate slows down
- Lowest density diet needed:

- Risk of fat deposition
- Feed intake capacity should be developed.
- When hens are below target weight there is no opportunity anymore to close the weight gap



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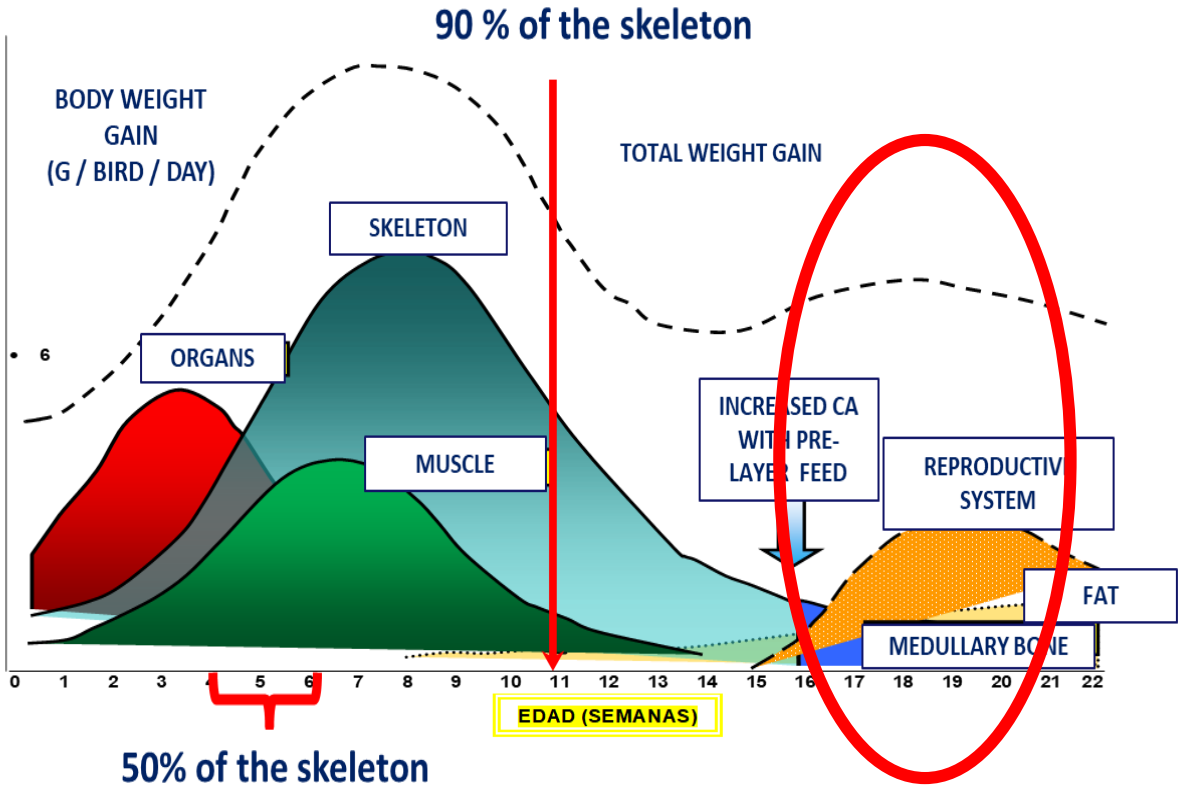
17 – 20 weeks

- Period of maturation & reproductive organ development
- Pullets are moved from rearing house to laying house
- Start light stimulation and first eggs appear
- When body weights are below target the start of lay is delayed, or the flock starts egg production not uniformly. This affects the peak of production negatively



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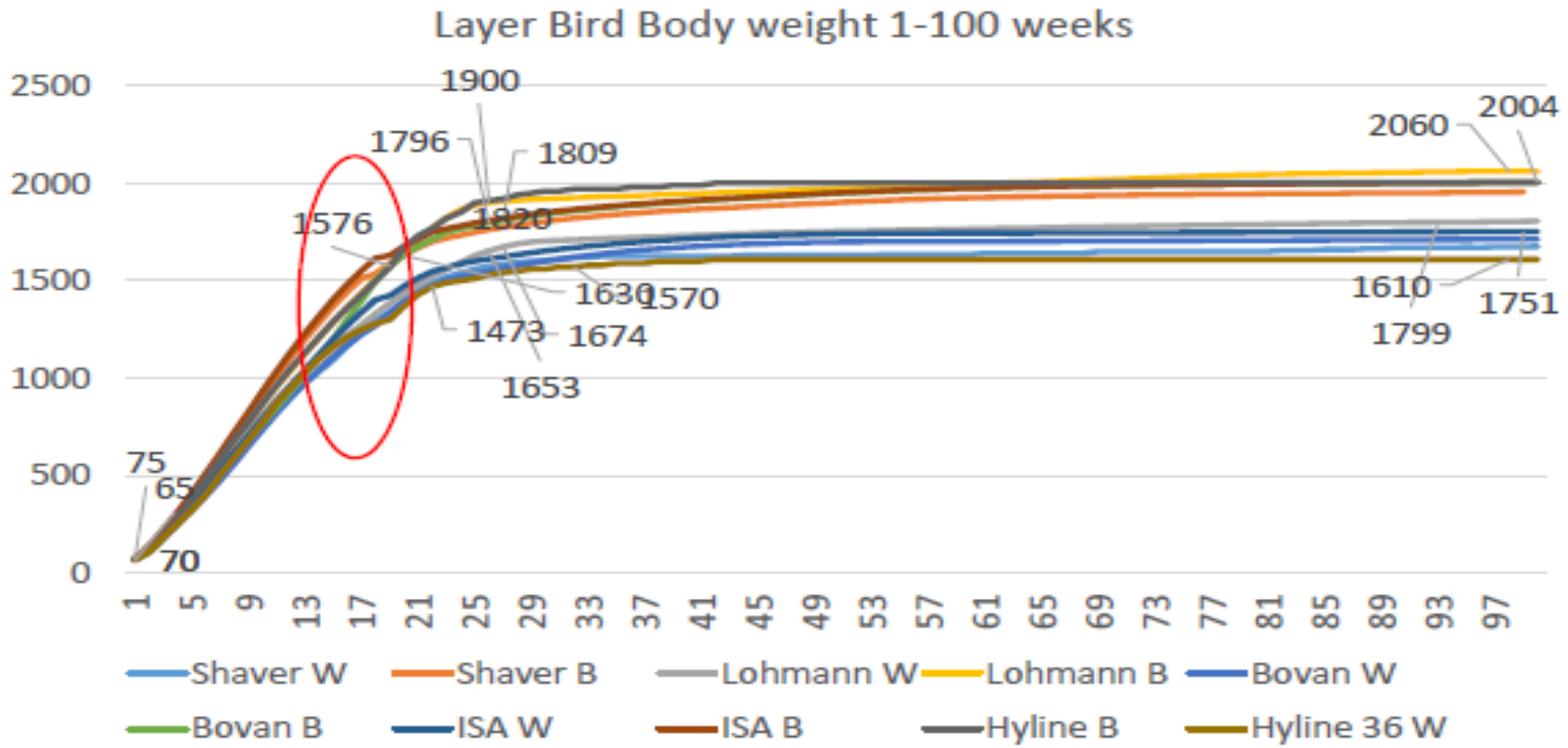
Body weight

Body weight development is key for optimal production and farm profitability.



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Pullet rear summary

Pullet condition at point of lay

Condition includes

- Bird size
- Evenness >80 uniformity
- Skeletal development
- Immunity levels.

Without a good quality pullet genetic potential cannot be achieved

The in-lay feeding programme and management must be modified to take account of pullet condition which if poor can be hard to compensate for!

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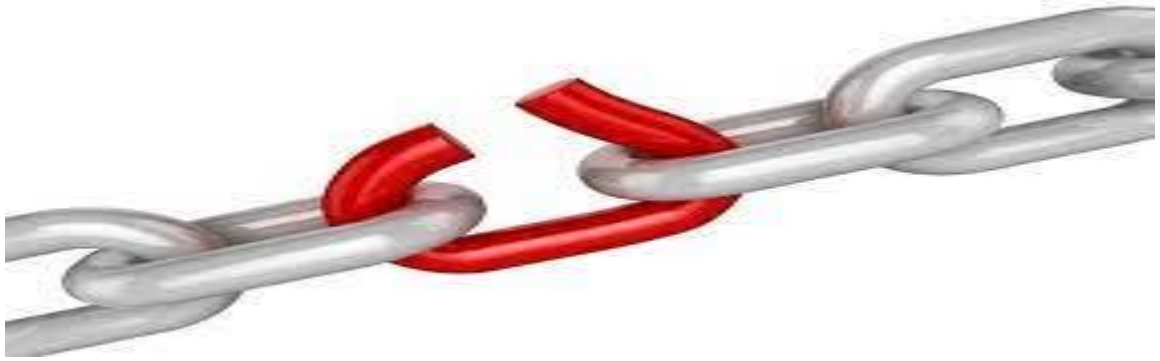
Body weight at POL

- Problems involving under-achieving flocks are linked to low POL bodyweight
- Under-weight (under-developed) birds are not physiologically capable of sustaining a prolonged high output

They are the weakest link !!



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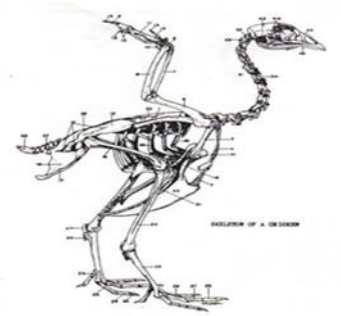
Trouw Nutrition Innovation

- Currently investigating a tool to measure Fat and muscle density in live birds
- Portable scanner
- Research trials to determine the effect optimal muscle to fat ratios to achieve top performance



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Gizzard Development

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Gizzard Development

A well-developed gizzard results in a cascade of positive responses in the bir

- Reduce gizzard pH,
- Increase pepsin activity
- Longer retention of feed particles in the foregut (Hetland et al., 2002; Svihus et al., 2005).

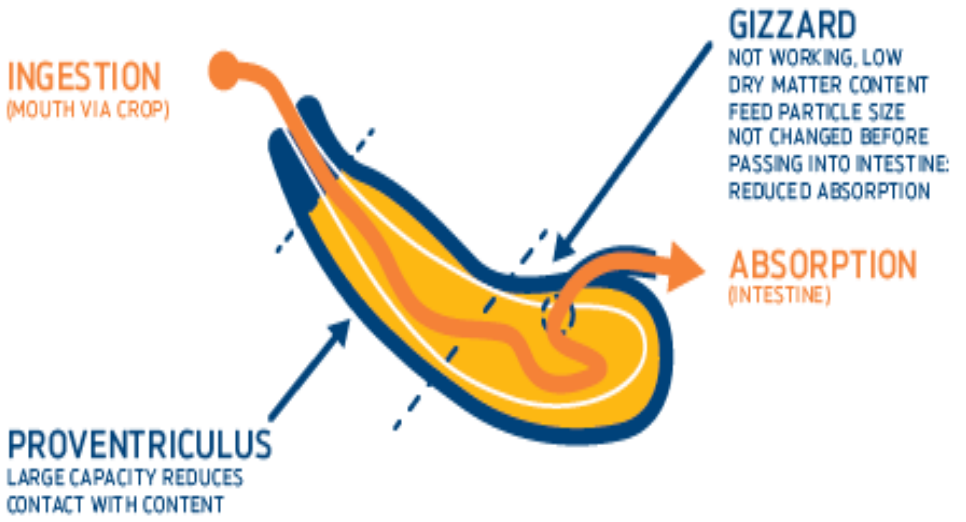
Powerful muscular contractions of a well-developed gizzard will-

- Optimal mixing of digesta and motility patterns (Lentle, 2004; Sacranie et al., 2008).
- Improved mixing, modulation of flow into the duodenum
- Optimise enzyme/substrate interaction
- Improved digestion and absorption, and reduces he potential of microbial colonization

- Whole Grain Inclusion – Improved performance (Hetland et al., 2003; Ravindran et al., 200

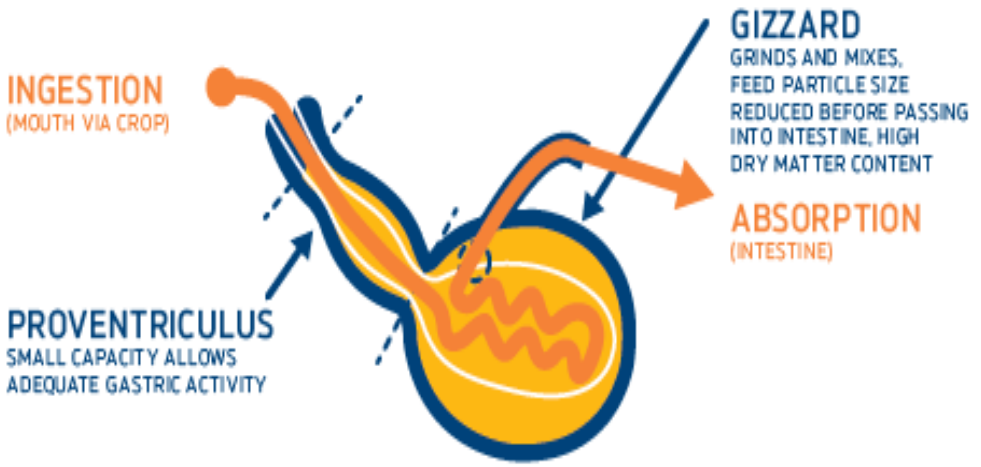
Gizzard Function

Functioning stomach



Absence of structure in feed reduces stomach stimulation, development and function

Non-functional stomach



Coarse structural feed components stimulate stomach development and function

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1. APPEAR AS ONE ORGAN

DIFFERENTATION

5. TWO DISTINCT

Prelay Stage

Moving on from the rear stage into the pre lay stage –

- Transport
- New equipment
- New Environments (microbial populations)
- Light stimulation
- Start of production
- Feed composition

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Prelay Diets

Pre-lay (very critical period):

- Transfer to first egg
- Usually 7-10 days (1kg)
- Transition diet from grower to production
- 2.5% Ca
- Higher Phos
- Aimed at promoting medullary bone development (Ca store)
- Stimulates ovary development
- Not a production diet!!

Stages of Production

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Phase Feeding

Concept to –

- To adjust nutrient intake in accordance with the rate of egg production
- Essential to control egg profile and ensure longer longevity of layers
- **LONG LIFE LAYERS**

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Early lay

Most critical period

- POL pullet :
- ↑ Egg production from zero to peak (85-95% production)

- ↑ body weight
- 1500grms at 18 Wks to 1950grms 30 Wks
- ↑ egg size
- 48grms at 20Wks to over 61.5grms at 30Wks

- FEED INTAKE IS CRITICAL

Mid Lay

- Period after 30W of age when the hens attained mature body weight
- This period ranges from 30-55W of age
- Egg size established
- Maintain Production

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Late Lay

- Period after 55Wks of age when egg production and shell quality is in decline
- Ca reserves are in decline
- Period to maintain shell quality

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Diet Changes

1

Do gradually over a few loads

2

Make decision based on

- FI
- Production
- Egg profile
- Bodyweight

3

Single diets generally struggle to meet the needs of the modern hen especially as stage of lay advances

Summary

EXTREME PRESSURE ON EFFICIENT PRODUCTION

REAR STAGE IS CRITICAL TO SET THE BIRD UP FROM THE START TO ACHIEVE OPTIMAL PRODUCTION FROM YOUR FLOCK

GIZZARD DEVELOPMENT IS CRITICAL

PHASE FEEDING TO SUPPLY CORRECT NUTRITION AT THE CORRECT STAGE OF LIFE & REDUCE ECONOMIC COST OF PRODUCTION

Thank you!

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