Successful rearing for a good production in laying period

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Introduction

- Good layer productivity is strongly influenced by management of birds during laying, including early age
- Achieve good growing performance is only one part of the objectives
- Rearing period should be considered as a training phase for the management technics that should be applied during laying period

Criteria defining high quality pullets

- **A flock of pullets is measured by 6 criteria:**

- **Bodyweight profile during rearing (5 wk and at transfer)**
- **Uniformity of the flock**
- **Quality of beak trimming (where applicable)**
- **Feed intake capacity**
- **Age at sexual maturity**
- **Health status and immunological competence**

The productivity of a flock depends to a large extent on the successful attainment of key targets during rearing

Rearing is the Investment Phase in Layer Production

Outline

Rearing system – adaptability to housing system

Use the same housing system in rearing and production

Rearing

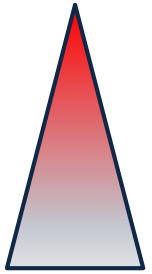
Production

Adaptability

Cage

Floor

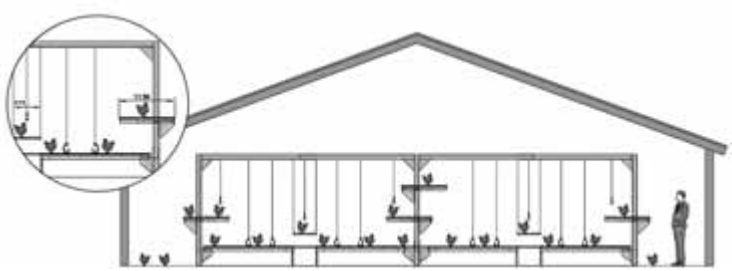
Aviary



Train the birds in rearing

- Floor system : Access to perches before 4 weeks of age

- Aviary : Water management (ex ‘Jump start’ systems)



=> Birds must be able and trained to jump on the system to find nests, drinkers and feeders in production house

Bodyweight control

Why checking the bodyweights?

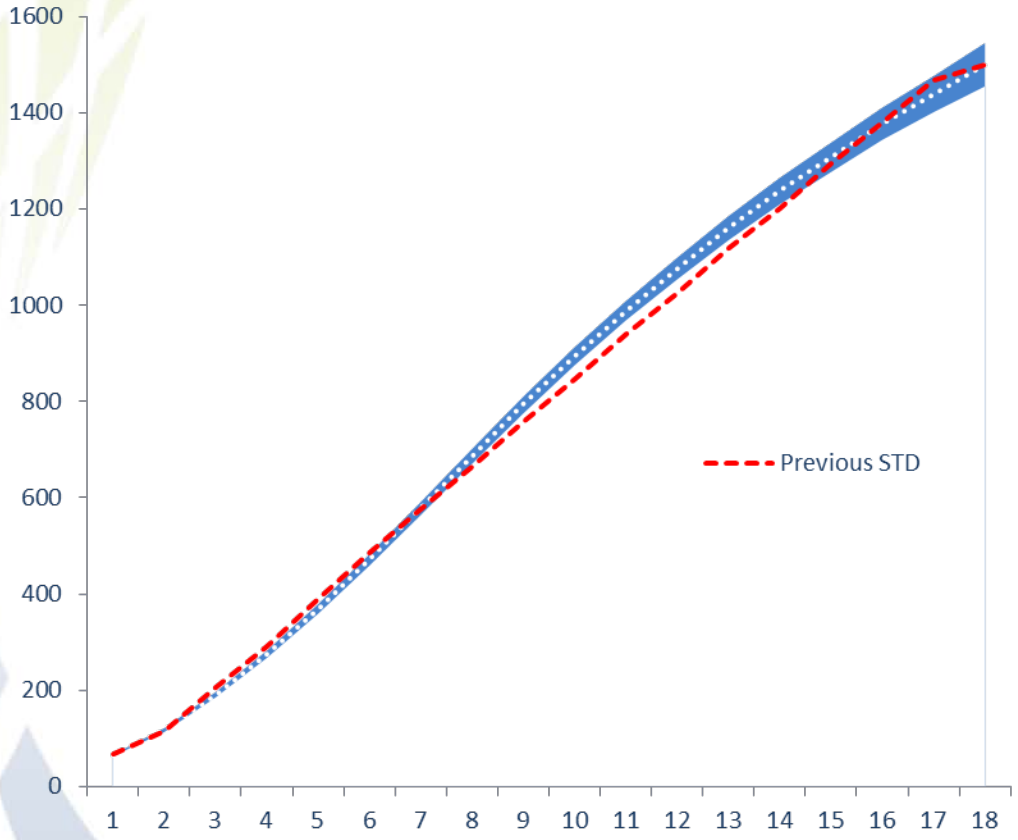
- A weekly bodyweight control is necessary to check the real evolution of the flock : the sooner we detect deviations, the quicker adjustments can be implemented

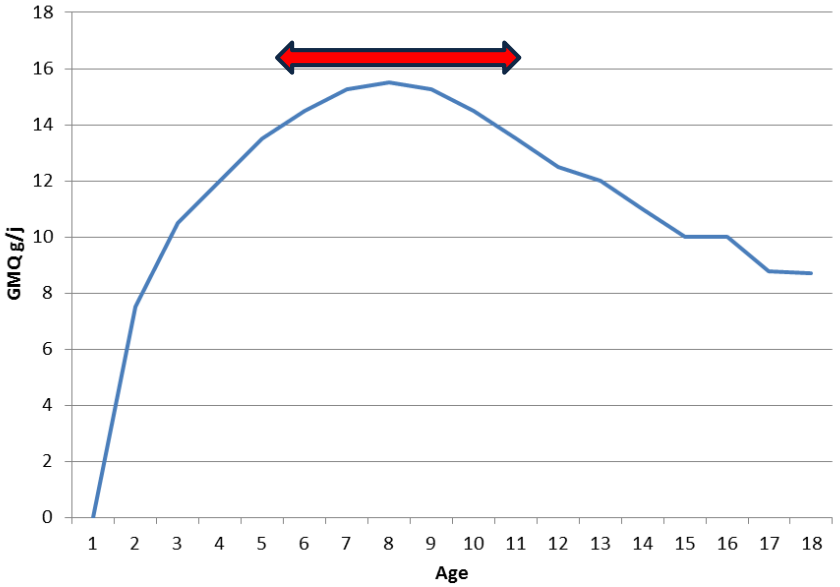
- Feeding technics, with empty feeders once a day, can be correctly implemented only when we know bodyweight evolution.

- Bodyweight evolution at onset of lay is the most reliable indicator of a flock quality

- Minimum frequency to check bodyweight :
  - Weekly from 3 to 26 weeks of age
  - Every 2 weeks between 26 and 35 weeks of age
  - Every 4 weeks after 35 weeks of age

Follow standard growth curves





Growth is not linear

Growth / nutritional needs maximum between 6-11 weeks

ISA Brown growth curve

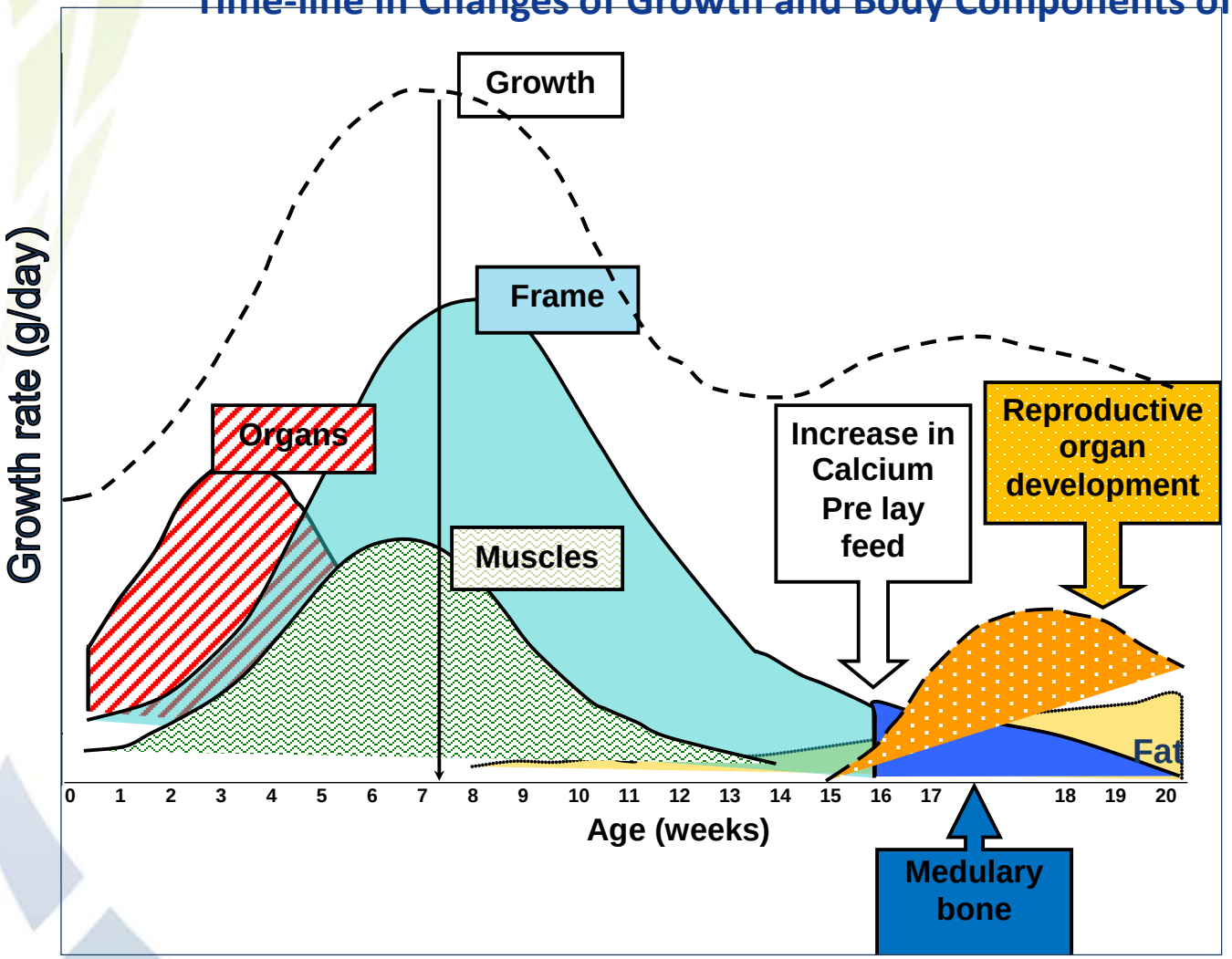
Influence of pullet quality on laying performance

	Bodyweight at 5 weeks old	Bodyweight at 10 weeks old	Bodyweight at 16 weeks old	Uniformity at 16 weeks old
Sexual maturity (% prod 20-24 weeks)	+++ 0,63	+++ 0,59	++ 0,39	0
Prod peristency (% lay 68-72 weeks)	+++ 0,82	0	0	++ 0,46
Production per hen housed (until 60 weeks)	+++ 0,83	++ 0,3	0	+++ 0,54
Production per hen housed (60-72 weeks)	+++ 0,94	0	0	+++ 0,6
Production per hen housed (until 72 weeks)	+++ 0,93	0	0	+++ 0,72
Liveability at 60 weeks	+++ 0,71	0	0	++ 0,4
Liveability at 72 weeks	+++ 0,65	0	0	+++ 0,61

+++ : very good correlation
++ : good correlation
+ : low correlation
0 : no correlation

Key anatomical and developmental stages

Time-line in Changes of Growth and Body Components of Pullets



Bodyweight management in end of rearing

- **Uniformity at 16 weeks of age**

- Uniform flocks are much easier to manage
- Light stimulation can be based on bodyweight and not age
- Uniformity is more important than bodyweight

- **Start of lay to peak of production**

- Growth between start of lay and peak of production is very important
- Between 5 and 90% lay, growth must be 300g minimum
- That is essential for a good persistency, eggshell quality and livability

Keypoints bodyweight

Good bodyweight at 4-5 weeks old

+

Good uniformity at 16 weeks old

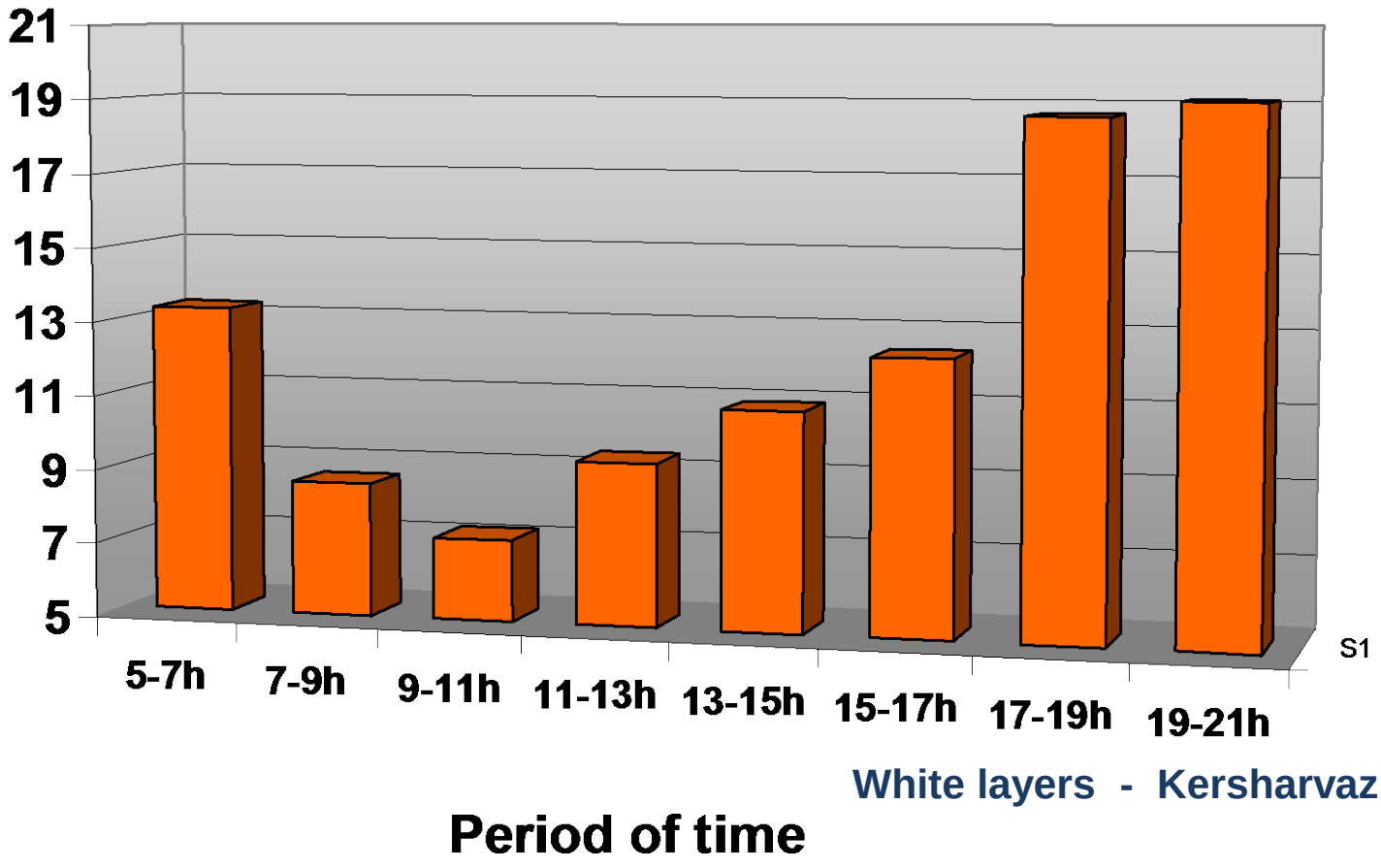
=

Good performance during laying period

Feed the birds for better production

NATURAL FEED CONSUMPTION IN LAYERS

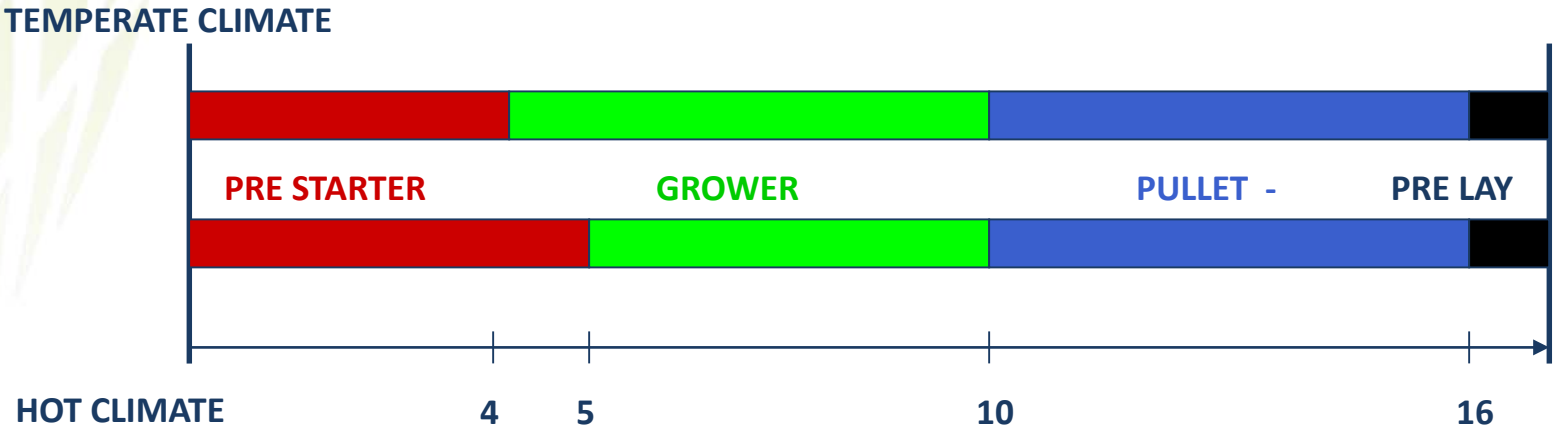
% of daily consumption



White layers - Kersharvaz 1998

60% of the feed is ingested in the last 6 hours of the day

FEED SPECIFICATIONS - BROWN EGG LAYERS



Pre Starter Feed : EM= 2950 / CP = 20-20,5

Grower Feed : EM=2850 / CP=19

Developper Feed : EM = 2750 / CP=16

Pre Lay Feed : EM= 2750 / CP= 16,8

OPTIMUM FRAME DEVELOPMENT

	Quantity of pre starter used (g)	Bodyweight at 4 weeks in % of BW standard
Flock A	0 g	86%
Flock B	300 g	95%

During the first few weeks, live weight of pullets is very dependant on the energy level of the feed

Brown layers experiment

Feed recommendations – feed transition

- Change feed only if birds are at bodyweight target (maximum age planed + 2 weeks)

- Maintain too long high concentrated feed will give small eater birds with feed consumption problems at start of production

Encourage and maintain birds' appetite

- Lot A - Ad libitum
- Lot B with 2 meals (1 in afternoon and 1 in the morning (4 h of empty feeders)

	Flock A	Flock B	Diff B/A
Bodyweight at 8 weeks (g)	580	617	+ 6 %
Bodyweight at 12 weeks (g)	1005	1061	+ 6 %
Bodyweight at 17 weeks (g)	1340	1435	+ 7 %
Uniformity 17 weeks (%)	83	87	+ 4 points
Consumption at 119 d (g)	5780	5947	+ 3 %

ISA 1995

« Essential to empty the feeders once a day and to adapt the timing of feed distribution in order to encourage appetite, growth and rapid feed intake »

Brown layers experiment

Pre-lay diet

Calcium export through the egg

Weight of first eggs	40 g
% shell	13%
% Calcium in the shell	37%
Calcium export per egg	**1.9 g**

Calcium ingested

	2nd age feed	Pre-lay feed
Calcium content	1%	2.5%
Feed cons	85 g/d	85 g/d
Calcium ingested g/d/bird	**0.9**	**2.1**

- **Neccessary for early sexual maturity flocks**
- **Avoid early demineralisation = impact on the shell quality in end of laying period.**

Keypoints feeding

- Use a crumble starter feed during first 4-5 weeks
- Feed the birds by meal from 5-6 weeks of age
- Use empty feeder technic from 6 weeks of age
- Feed the birds during the afternoon to benefit from the natural behaviour of the birds.
- Use a pre-lay diet (2-2,5% calcium) the 2 weeks before start of lay to promote calcium storage in medullary bones

Light stimulation

OPTIMUM FRAME DEVELOPMENT

Long daylengths throughout the rearing period encourage feed intake and, therfore, growth

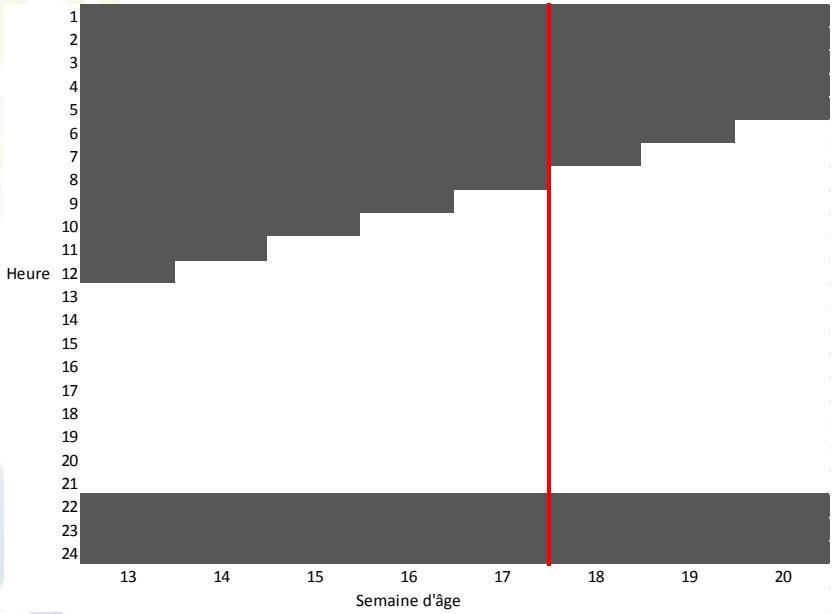
SLOW STEP DOWN L.P.

	Lighting programme	
	Normal (h/d)	Slow step down (h/d)
1st	20	20
2nd	16	16
3rd	12	15
4th	8	14,5
5th	8	14
6th	8	13,5
7th	8	13
8th	8	12,5
BW at 56 days (g)	678 g	731 g

24 th+H4 RST Eike

Brown layers experiment

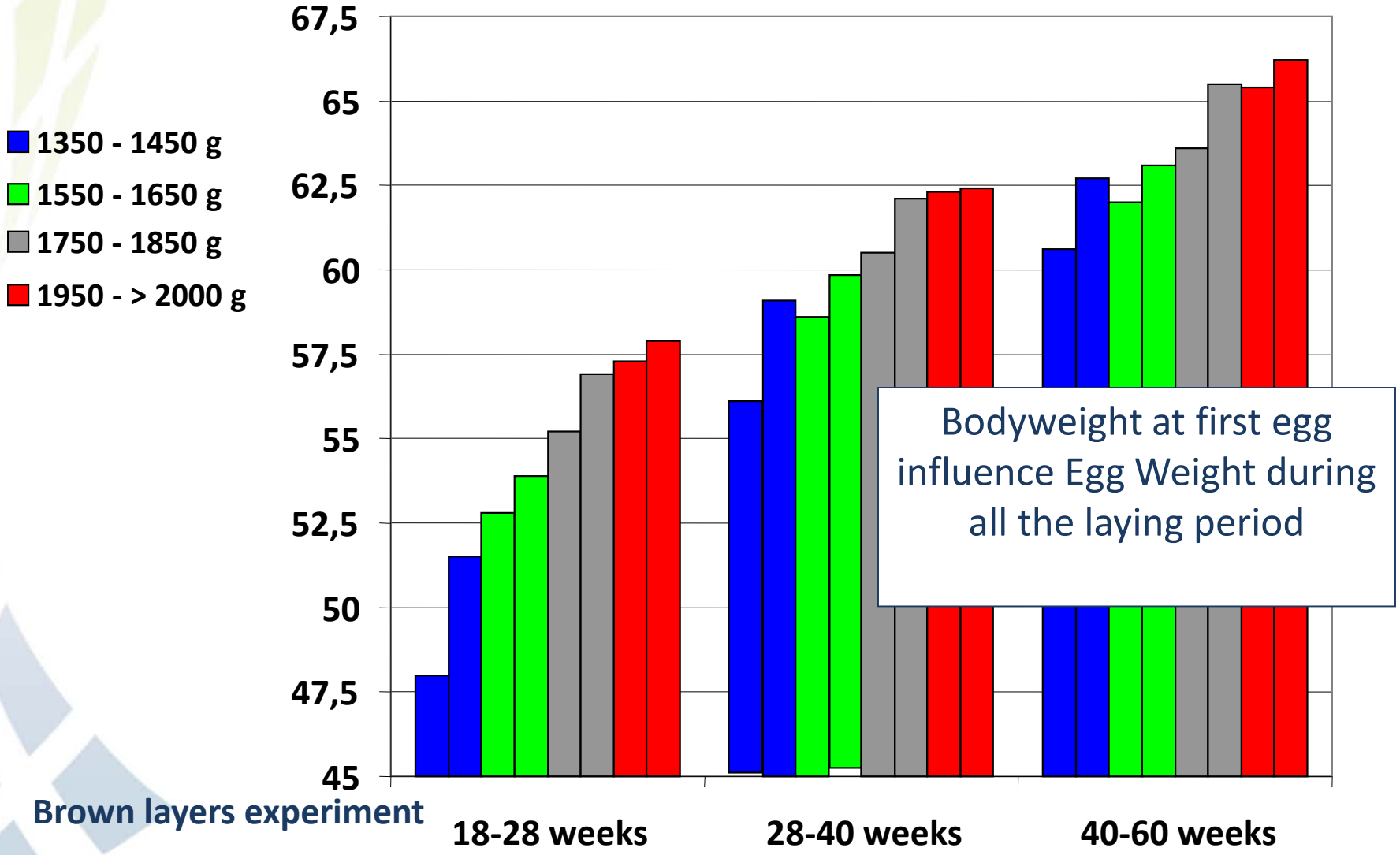
Adequation of light off times between rearing and production house (open house / dark house)



- When transfering birds from rearing to production : keep lights off at night the same as in rearing
- Increase light in the morning

Continuous lighting program

BODYWEIGHT AT SEXUAL MATURITY & A.E.W.



Brown layers experiment

Light stimulation

- Light stimulation should be according to bodyweight and not age
- It is key to determine according to egg weight target at what age layers should be stimulated
- For brown layers, many trials showed a bodyweight modification of 80g at sexual maturity induce an eggweight variation of 1g
- The bigger is the first step, the higher will be the feed intake increase

Feed consumption during night lighting

Period	Consumption			Ratio water/Feed
	in g	%	g / h	
4h30 – 8h35	20	17	4,6	1,9
8h35 – 14h20	27	23	4,7	2,9
14h20 – 19h45	50	44	9,3	1,7
0h – 1h30	18	16	11,9	0,6
Total	115	100	6,4	1,83

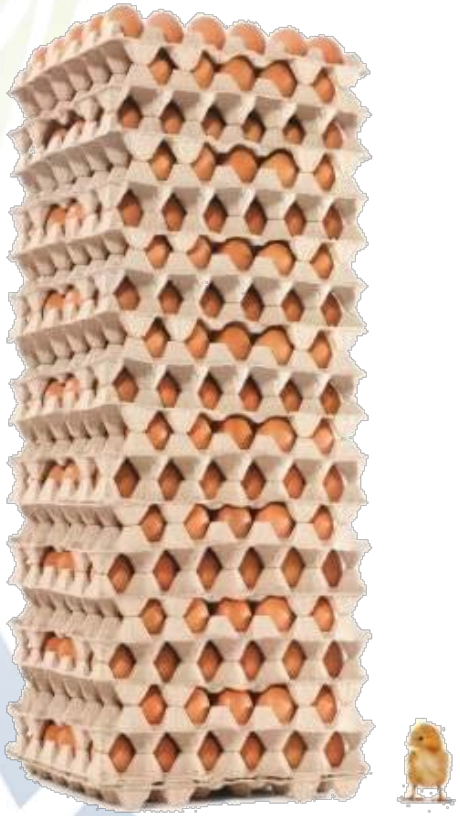
2 hours light during night allows the birds to feed during the more fresh period of the day and limits feed low consumption due to high temperature

Keypoints lighting

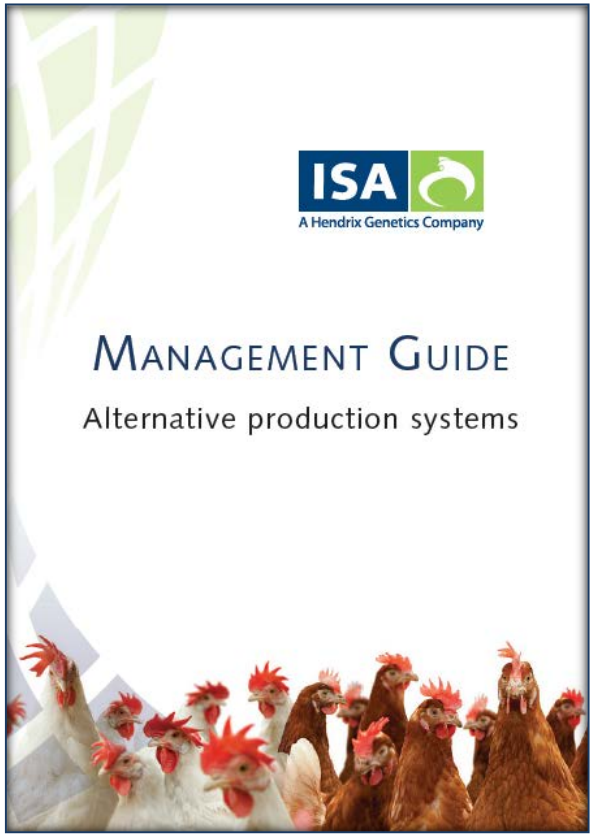
- Adapt daylength decrease depending on growth target
- Initiate light stimulation depending on bodyweight
- Give midnight lighting to compensate low feed intake
- Get continuity between rearing and production house.

Conclusion

- Train the birds in during rearing period is key to avoid any adaptation trouble at start of lay
- Apply good feeding technics and light stimulation is key to get the best expression of genetic potential of the layers



Thank you for your attention



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