



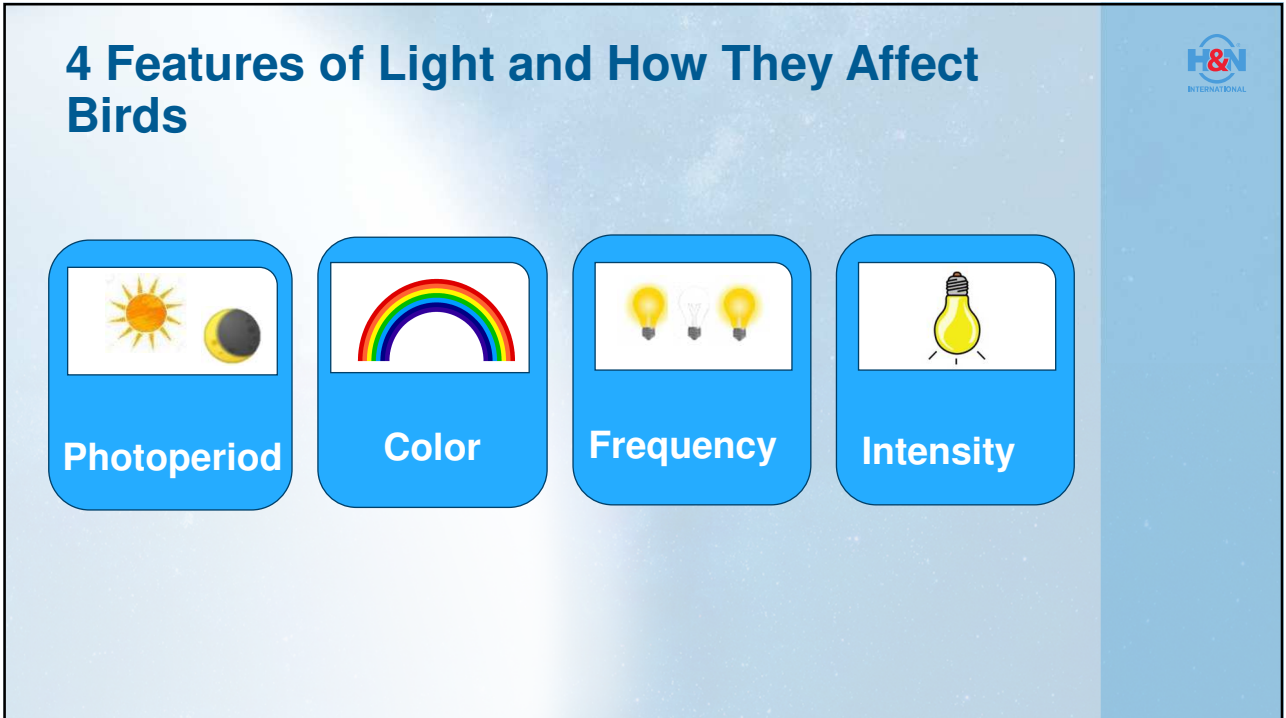
## Lighting programs for commercial layers

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**H&N** Italian Layer Academy 2024

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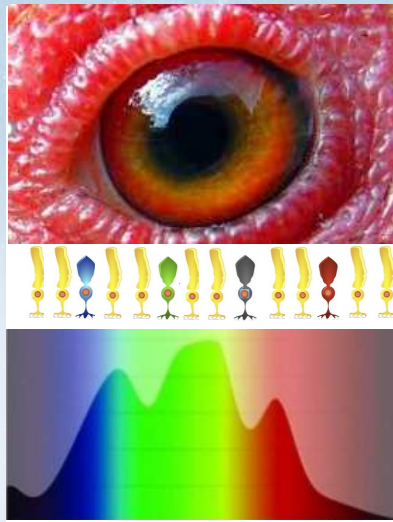
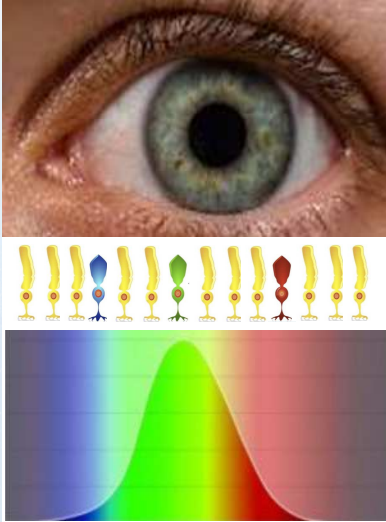
### 4 Features of Light and How They Affect Birds



- Photoperiod
- Color
- Frequency
- Intensity

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# The Photopic Vision Spectrum



4

# Vision frequency and retinal uptake



24 -30 frames per second



150 -220 frames per second



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## Stress caused by the flickering effect



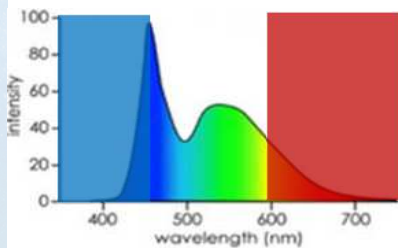
24 -30 images per second



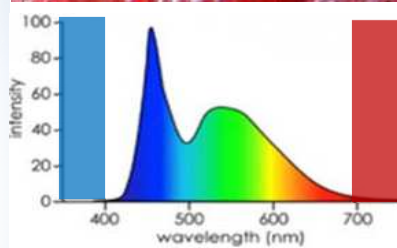
150 -220 images per second



## Measuring light intensity in poultry



Lux



C-Lux

### In nature, production is seasonal

When will grain be available for my chicks?

In spring and summer!

SUMMER

AUTUMN

SPRING

WINTER

INCREASED PHOTOPERIOD  
Lay stimulation

DECREASE IN PHOTOPERIOD  
No lay

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### On farms, production is scheduled

Light Programs - Deseasonalization of egg production

LIGHT PROGRAM IN RECRIA  
No lay

LIGHT STIMULATION PROGRAM  
Lay onset

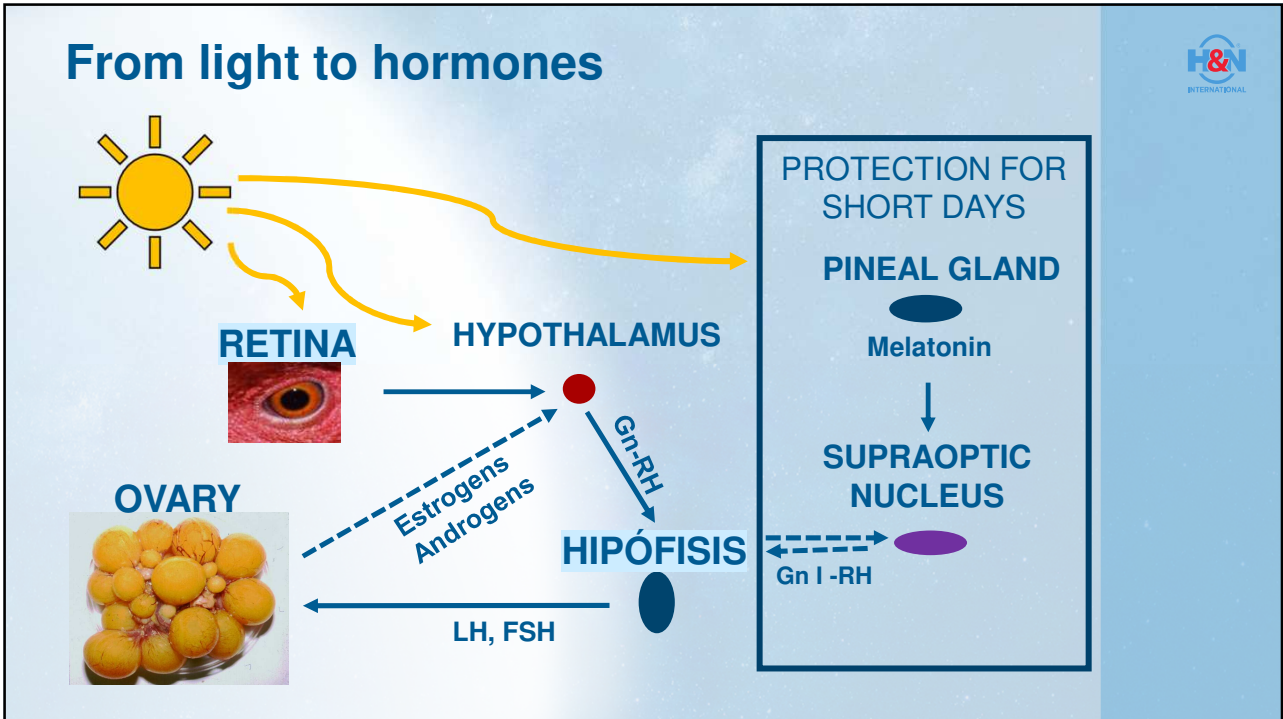
Light hours

Weeks of life

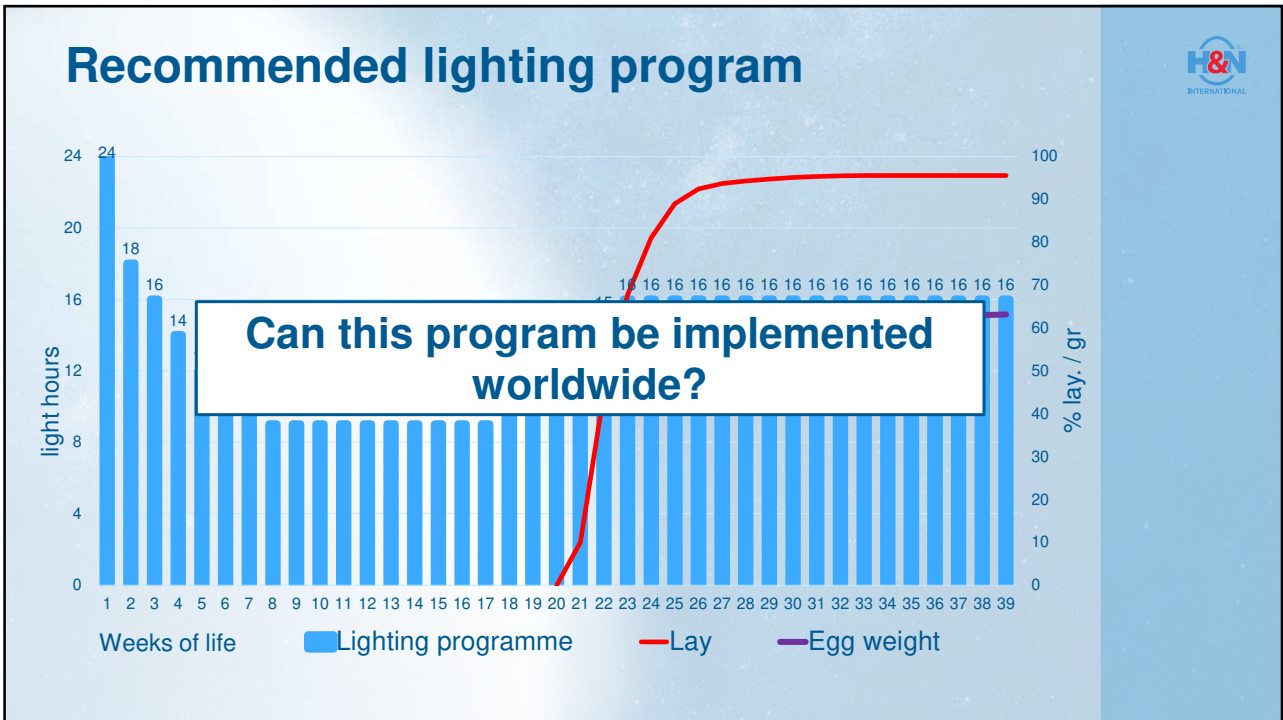
Weeks of life	Light hours
1	24
2	20
3	16
4	14
5	12
6	11
7	10
8	10
9	10
10	10
11	10
12	10
13	10
14	10
15	10
16	10
17	10
18	11
19	12
20	13
21	14
22	15
23	16
24	16
25	16
26	16
27	16
28	16

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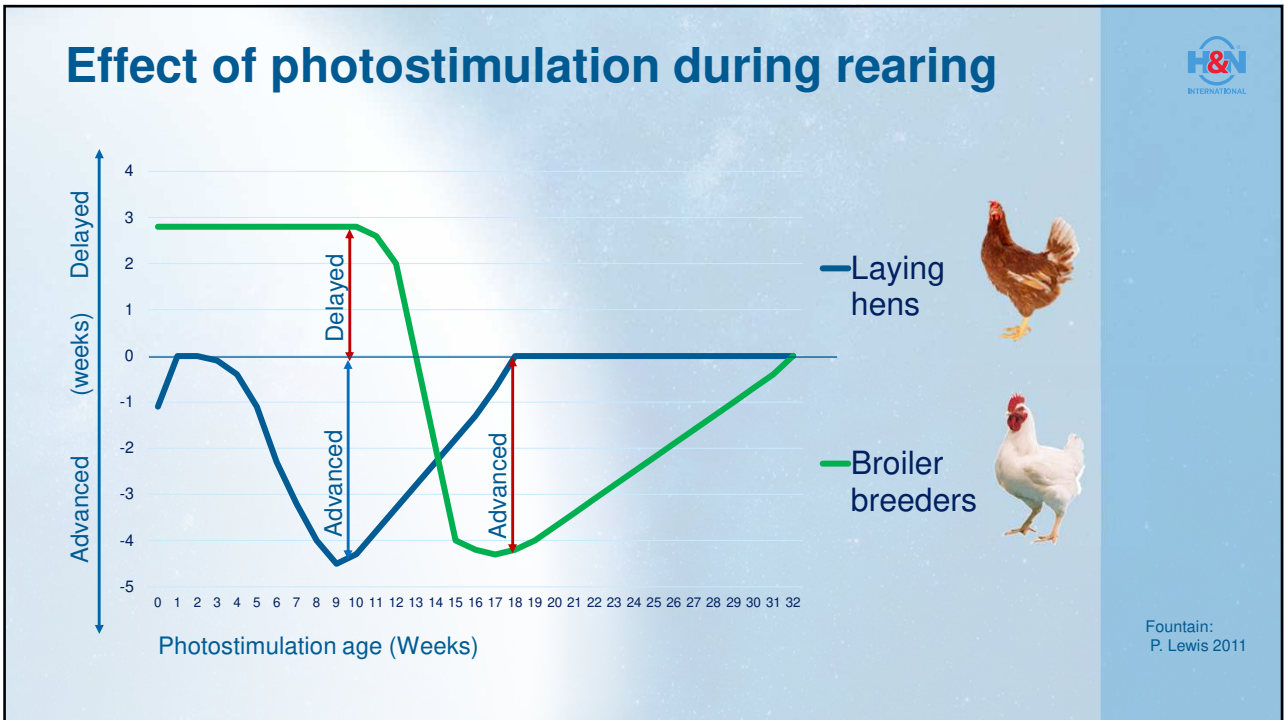


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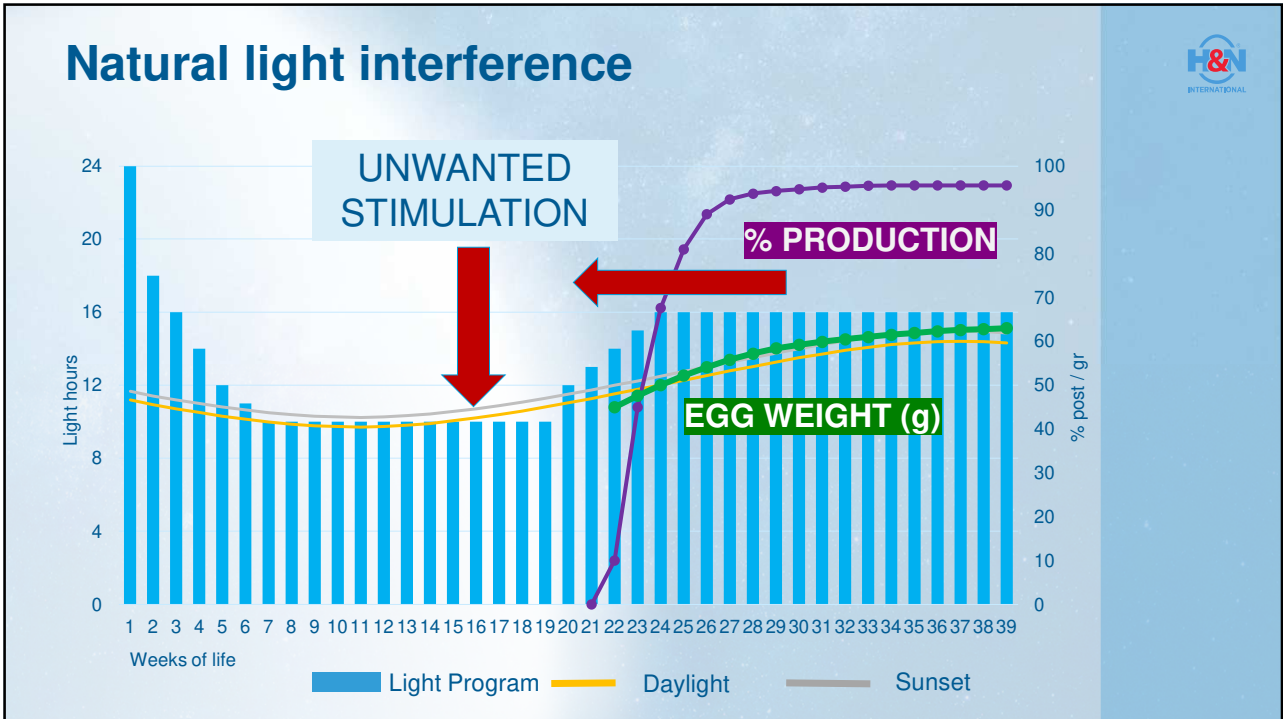
# The same program cannot be used all over the world

1. Natural light effect
2. Possibility to adjust the egg weight according to market needs

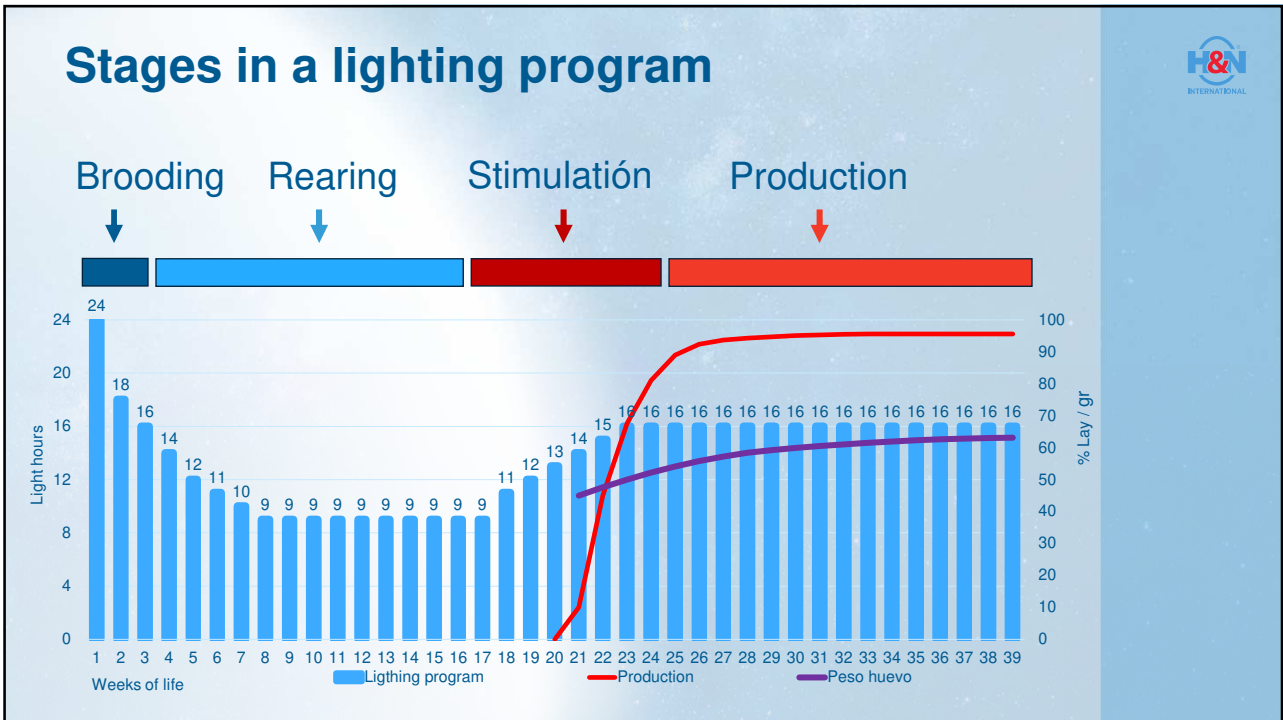
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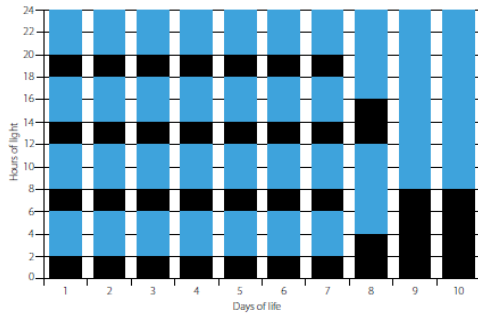
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# Lighting programs for brooding



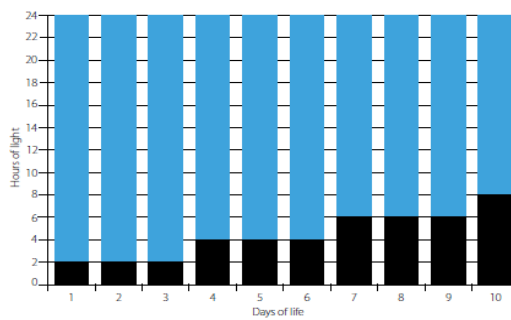
## INTERMITTENT PROGRAM

- Better chick activity
- Better flock visualization



## NON-INTERMITTENT PROGRAM

- Applicable in open houses
- No interruptions in work



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# Designing a rearing lighting program



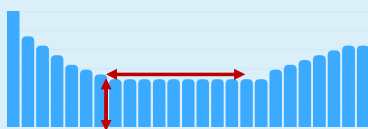
1. Determine if your house is Lightproof



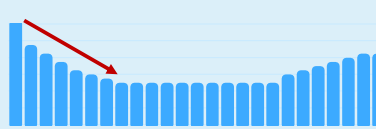
2. Consider the limitation on the lighting program due the house



3. Set the lighting program bottom



4. Set the stepdown to the lighting program bottom



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**1. Determine if your house is Lightproof**

Is this house light proof?



Source: H&N International

H&N INTERNATIONAL

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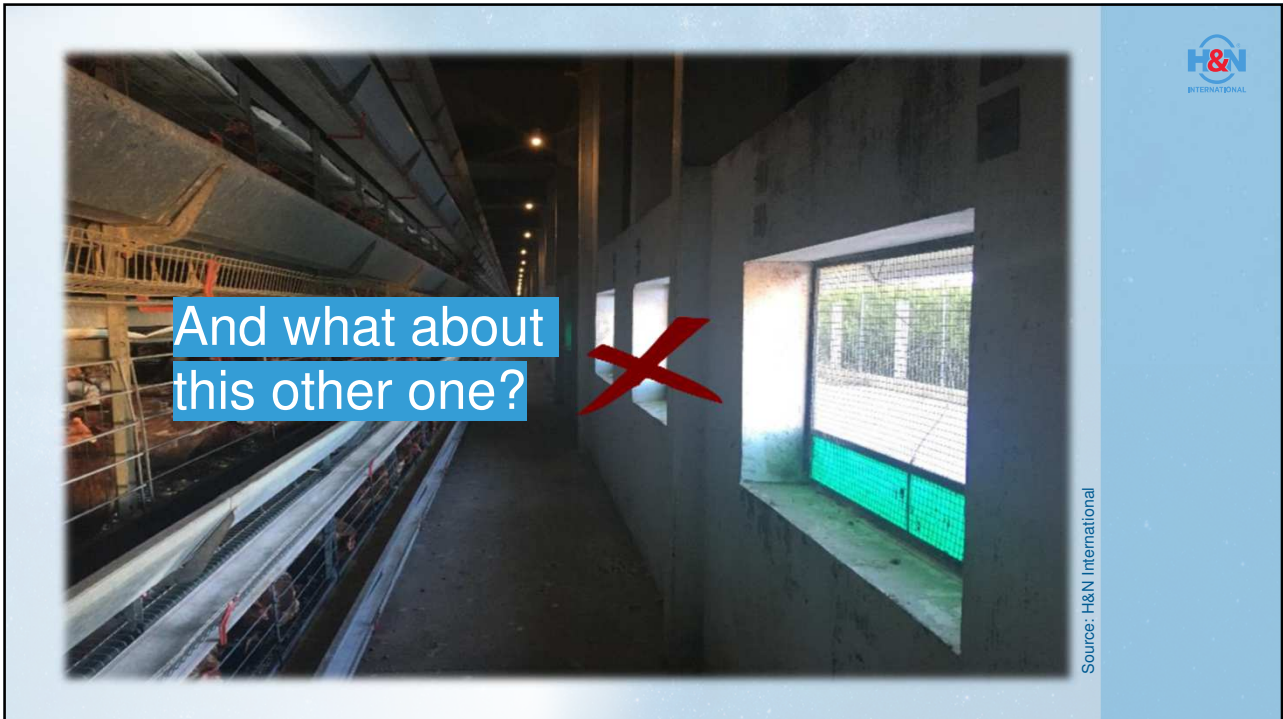
And what about this one?



Source: H&N International

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And now? 

View of the interior of a house

Lights Off

Ventilation on

Less than 3 lux

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## 2. Limitations due to the type of house



### REARING

### PRODUCTION

### LIMITATIONS



None



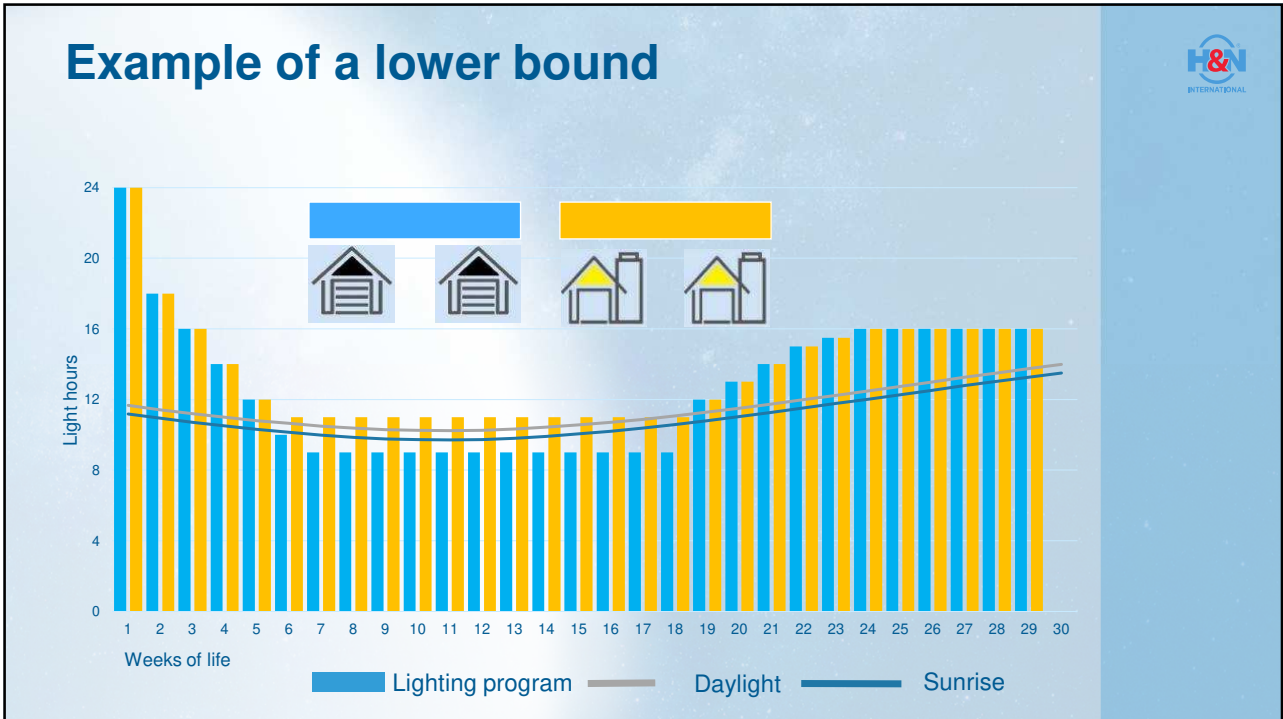
There is no limitation during the period but the photoperiod in the transfer must coincide with the natural length of the day



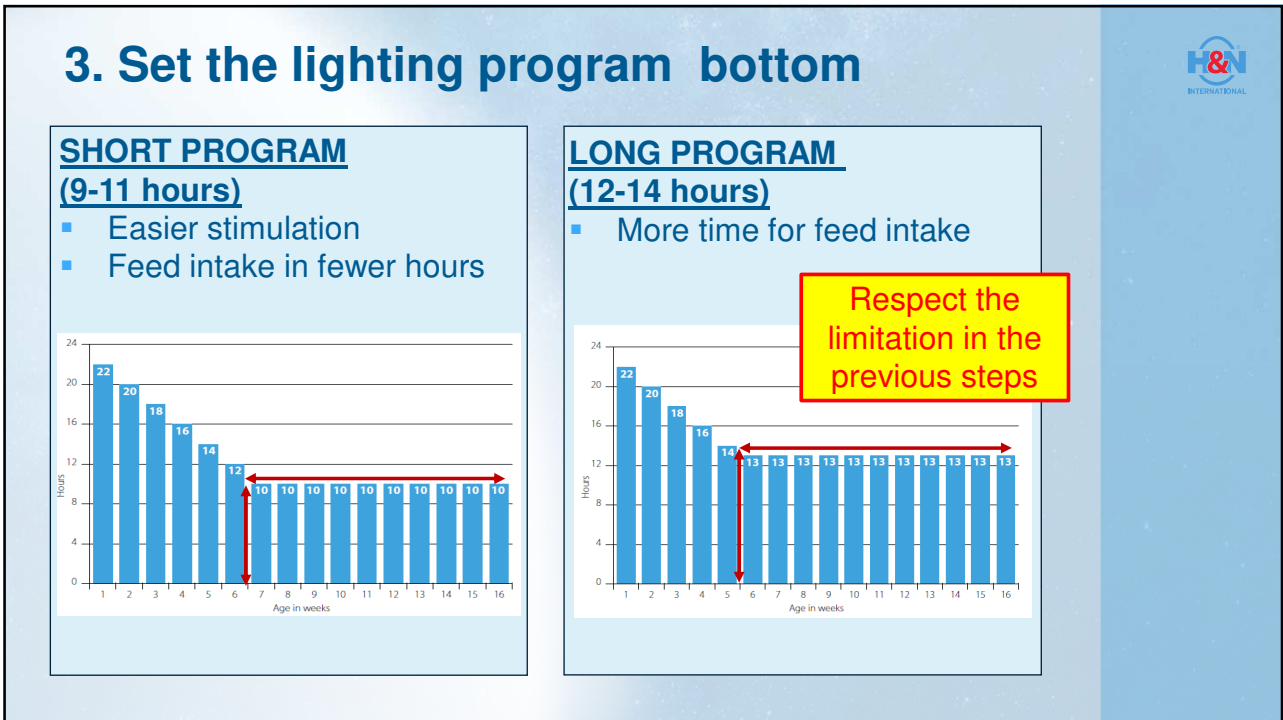
The bottom of the lighting program must be greater than the maximum length of the natural day in the week of scheduled for stimulation.



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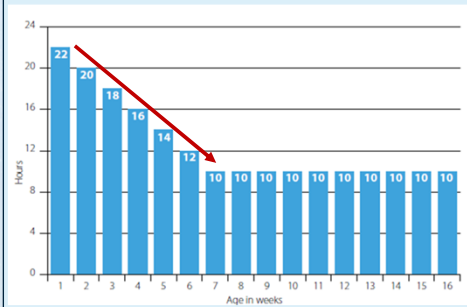
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## 4. Set the stepdown to the lighting program bottom



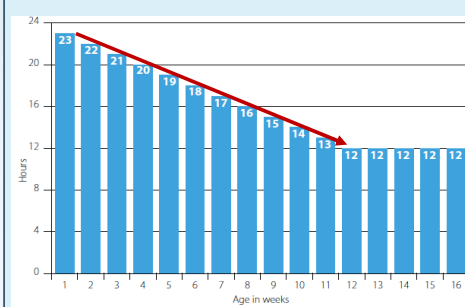
### QUICK STEPDOWN (-2 Hours/week)

- Increased sensitivity to light
- Faster start to production



### SLOW STEPDOWN (-1 Horas / semana)

- Larger egg size
- More time for feed intake



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## What stimulates the hens to start laying?



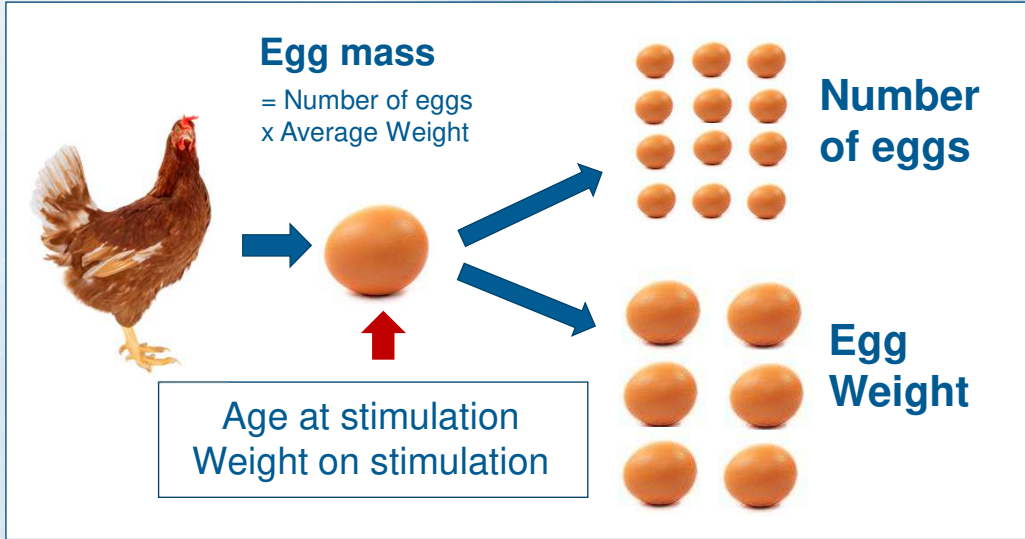
Period of exposure to increasing photoperiod



Birds reach maturity weight

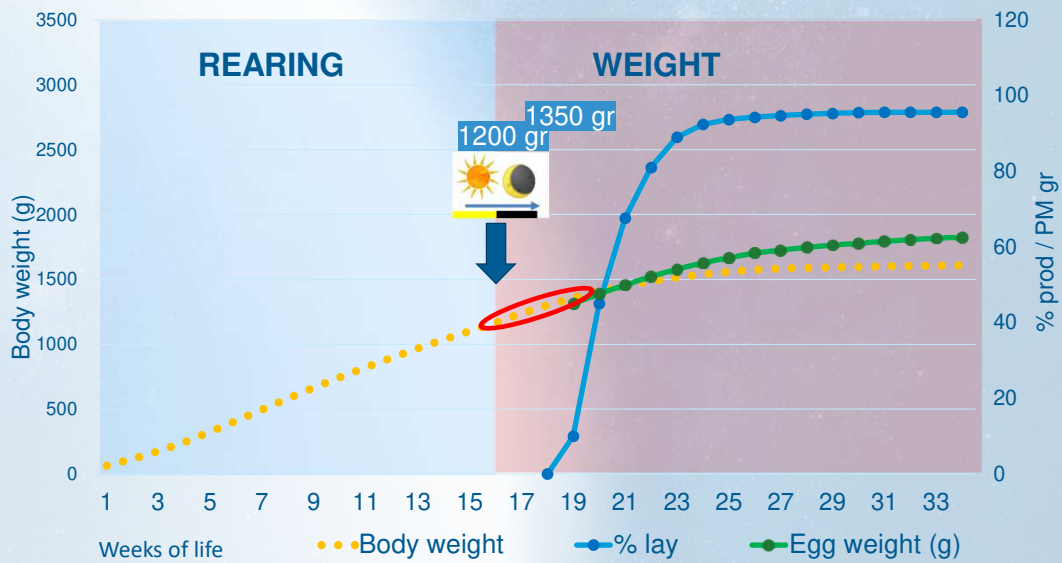
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# Setting the Right Stimulus

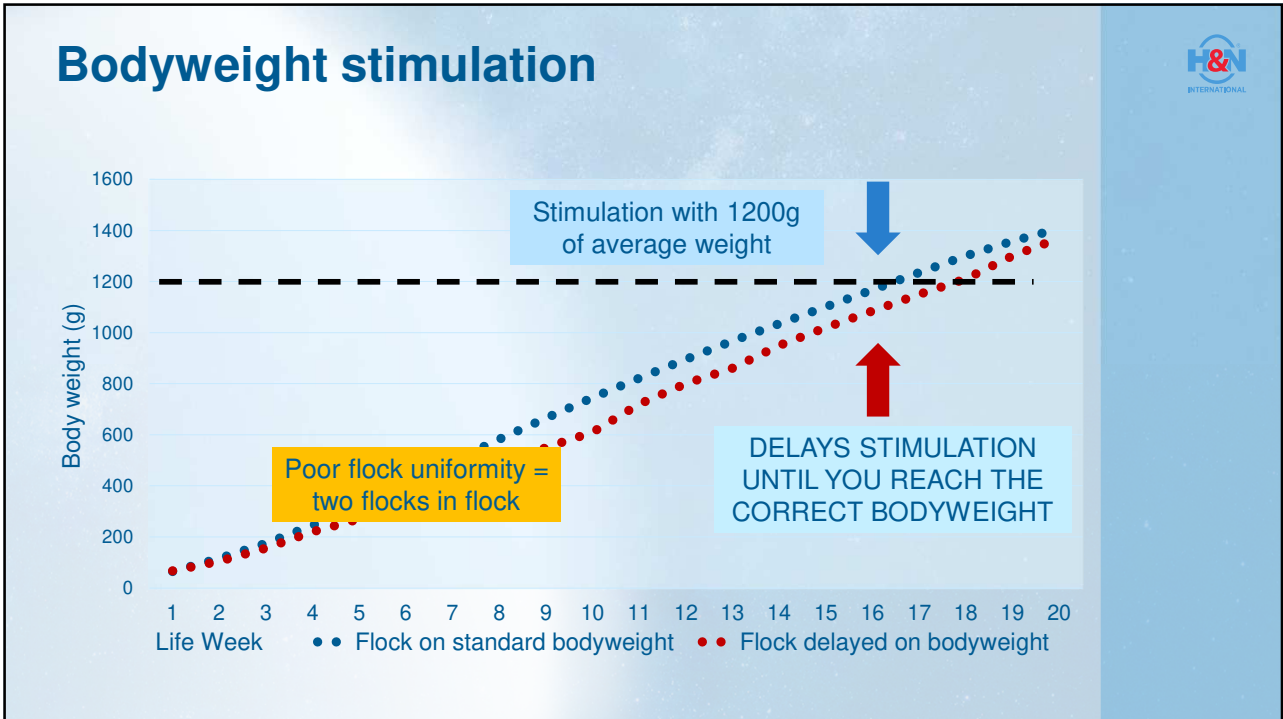


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# What Really Matters: WHEN?



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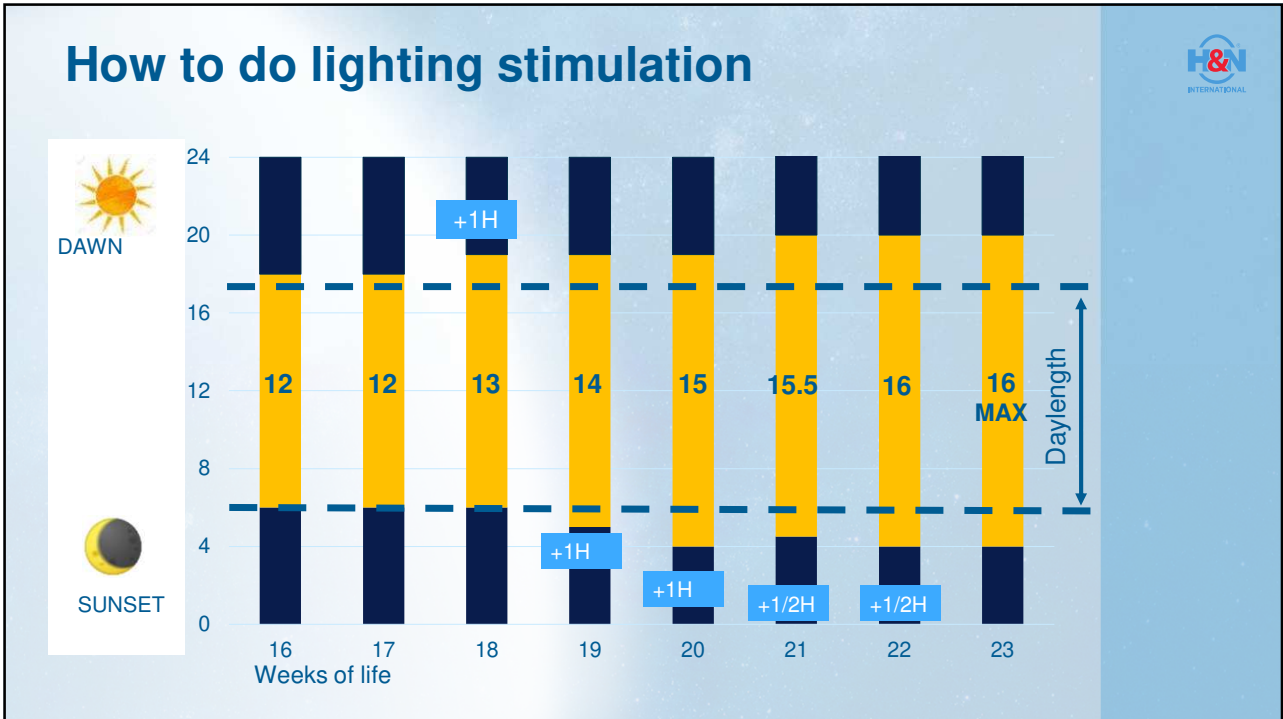


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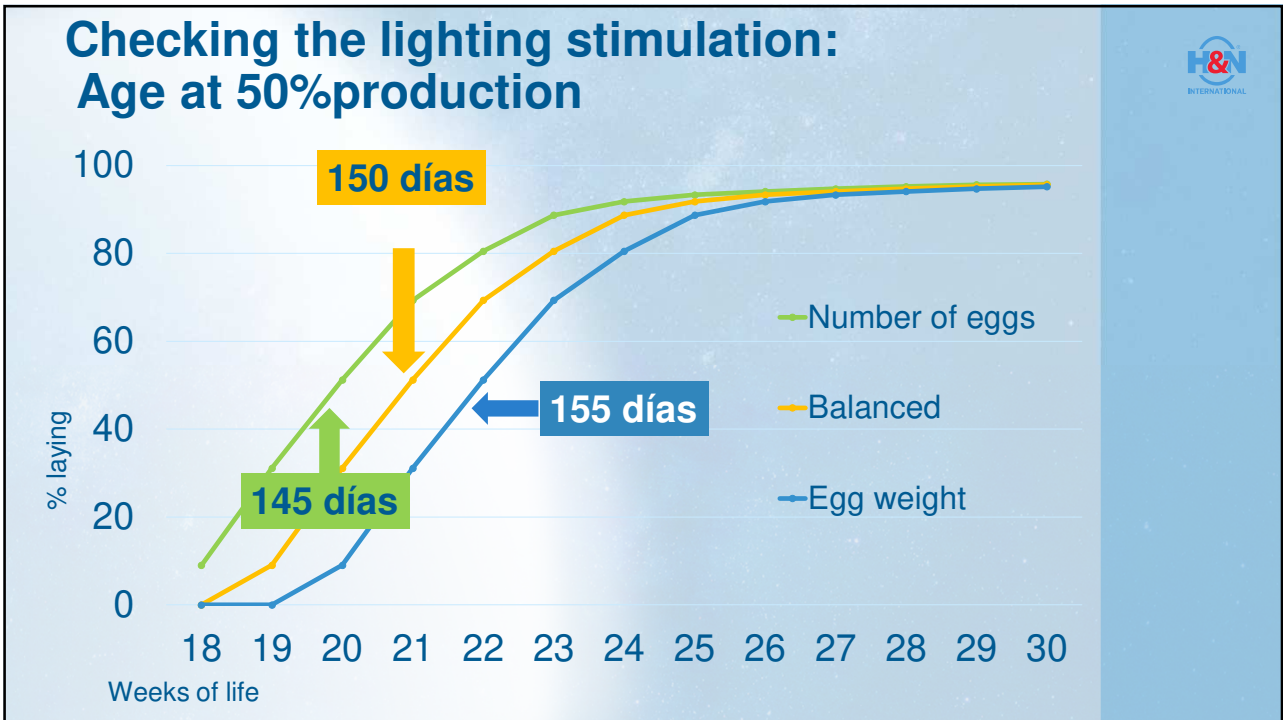
### Stimulation weight for different objectives

	Standard	Egg number	Egg size
 Brown Nick	1440 gr	1350 gr	1600 gr
 Nick Chick	1260 gr	1190 gr	1360 gr

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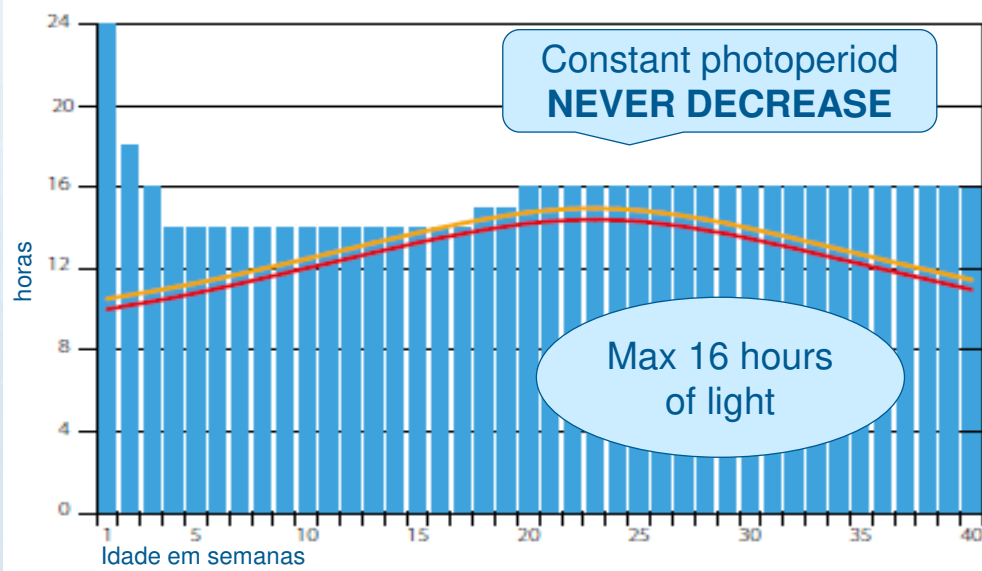
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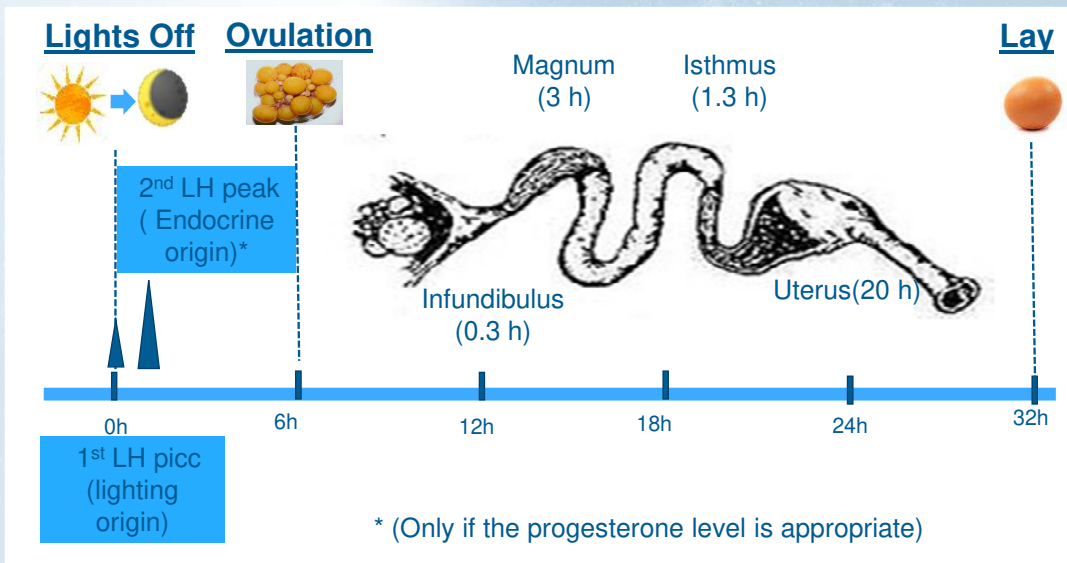


## Light program in production



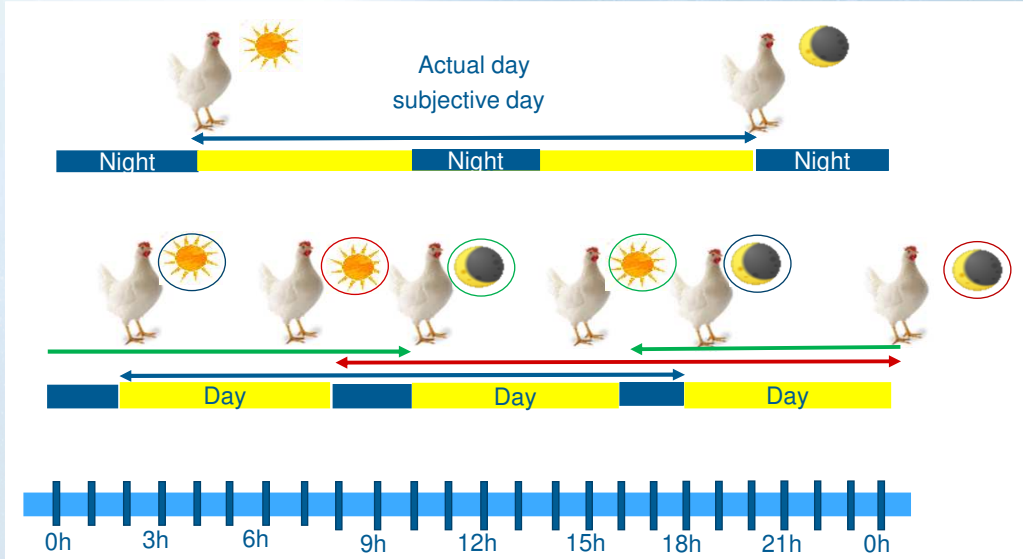
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## Dusk and ovulation



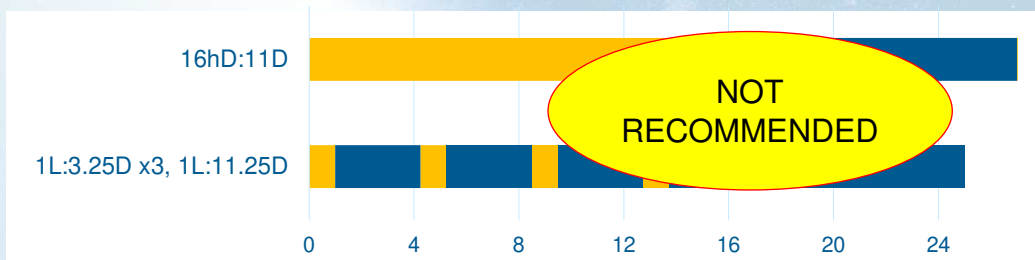
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## Subjective day in hens



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## Ahemerals programs



### ADVANTAGES

- Higher egg weight
- Better shell quality

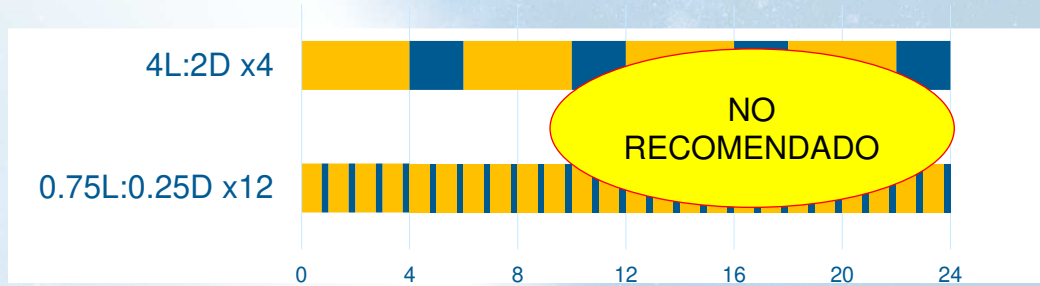
### DISADVANTAGES

- Fewer eggs per bird housed
- Work management
- Setting time changes every day

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## Intermittent programs



### ADVANTAGES

- Higher egg weight
- Better shell quality
- Reduced energy costs

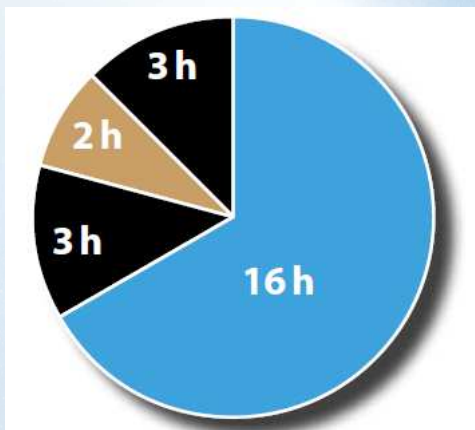
### DISADVANTAGES

- Fewer eggs per bird housed
- Work Management
- Laying spread throughout the day
- Animal welfare

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## Midnight Snack



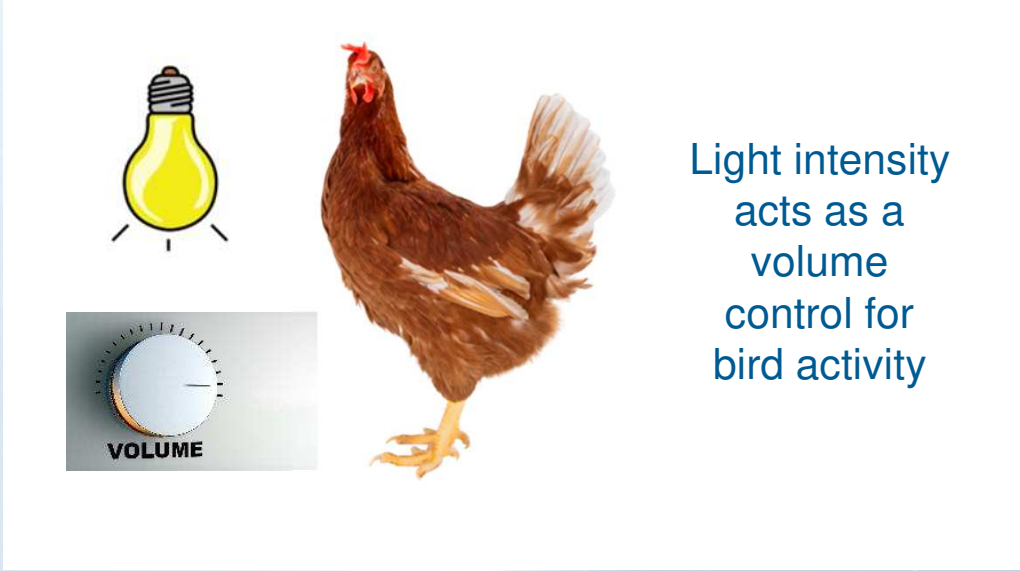
■ LIGHT ■ DARKNESS

### ADVANTAGES

- Increased feed intake
- Improvements in the quality of the shell
- Decreases bone decalcification

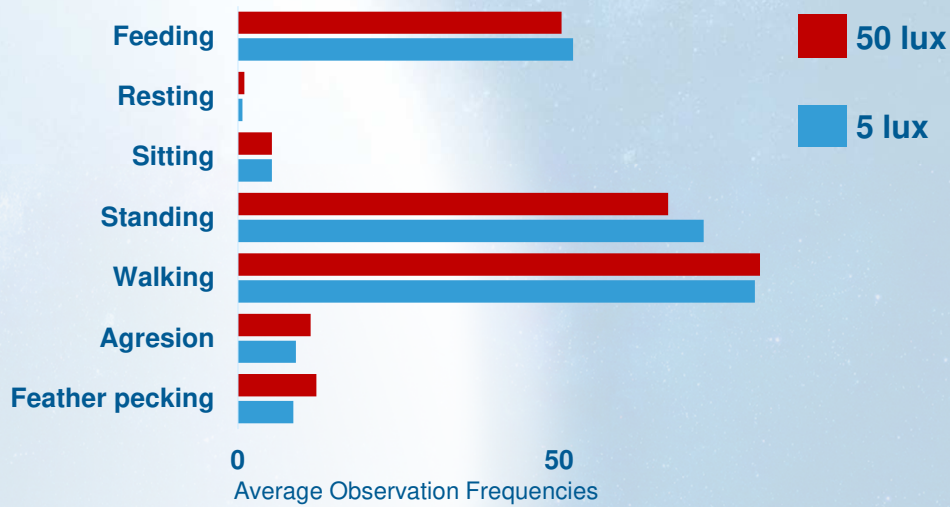
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## Effect of light intensity on hens



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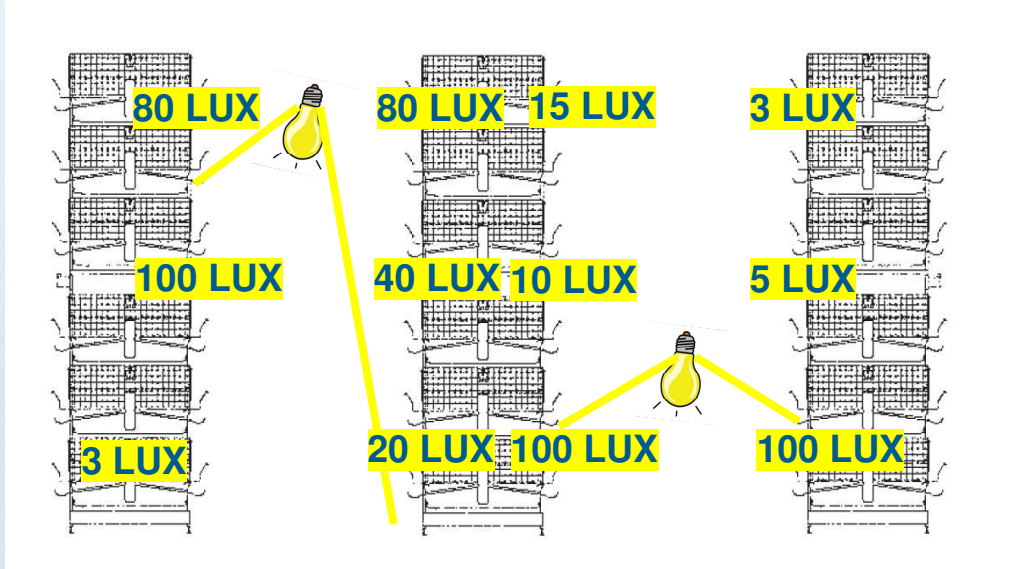
## Frequency of observation of behaviors in brown hens in cages



Source: Mohammed 2009

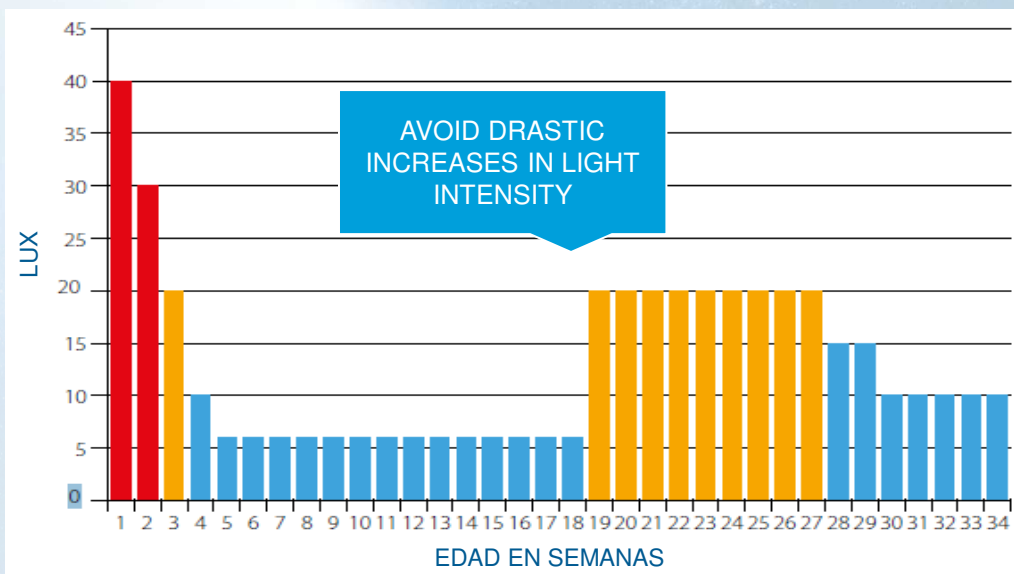
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# Ligth intensity is not homogeneous feature

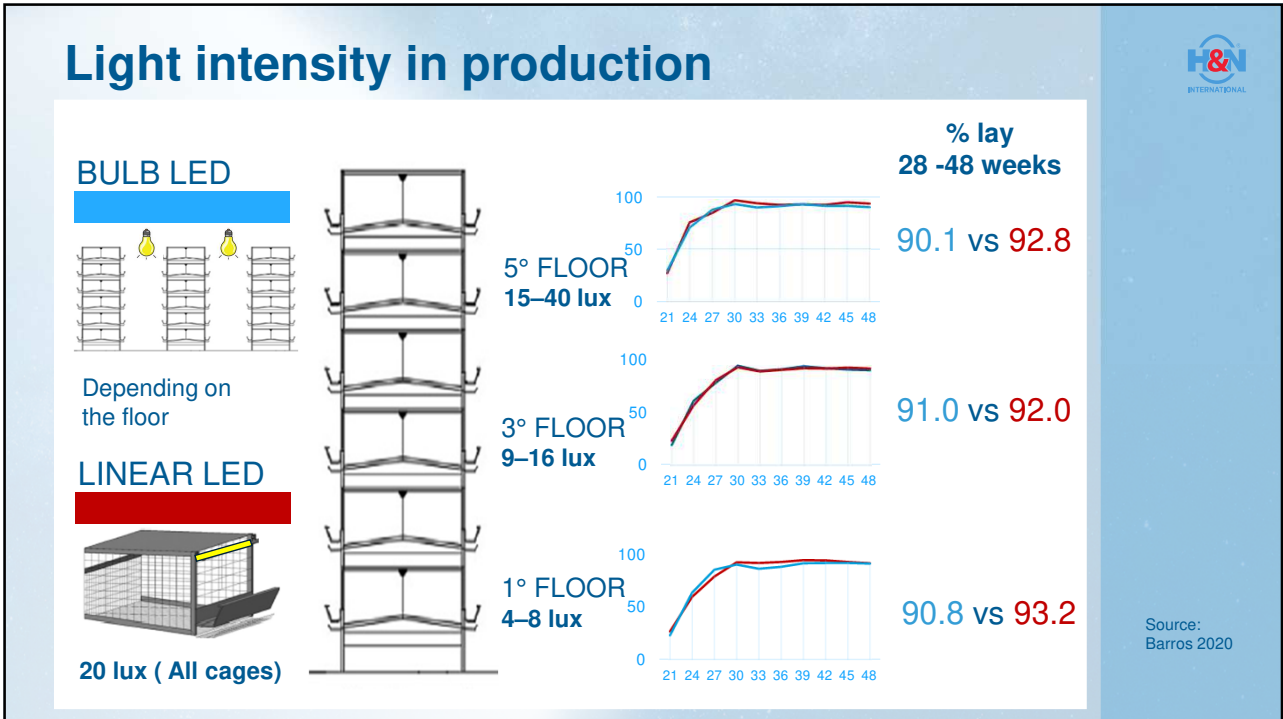


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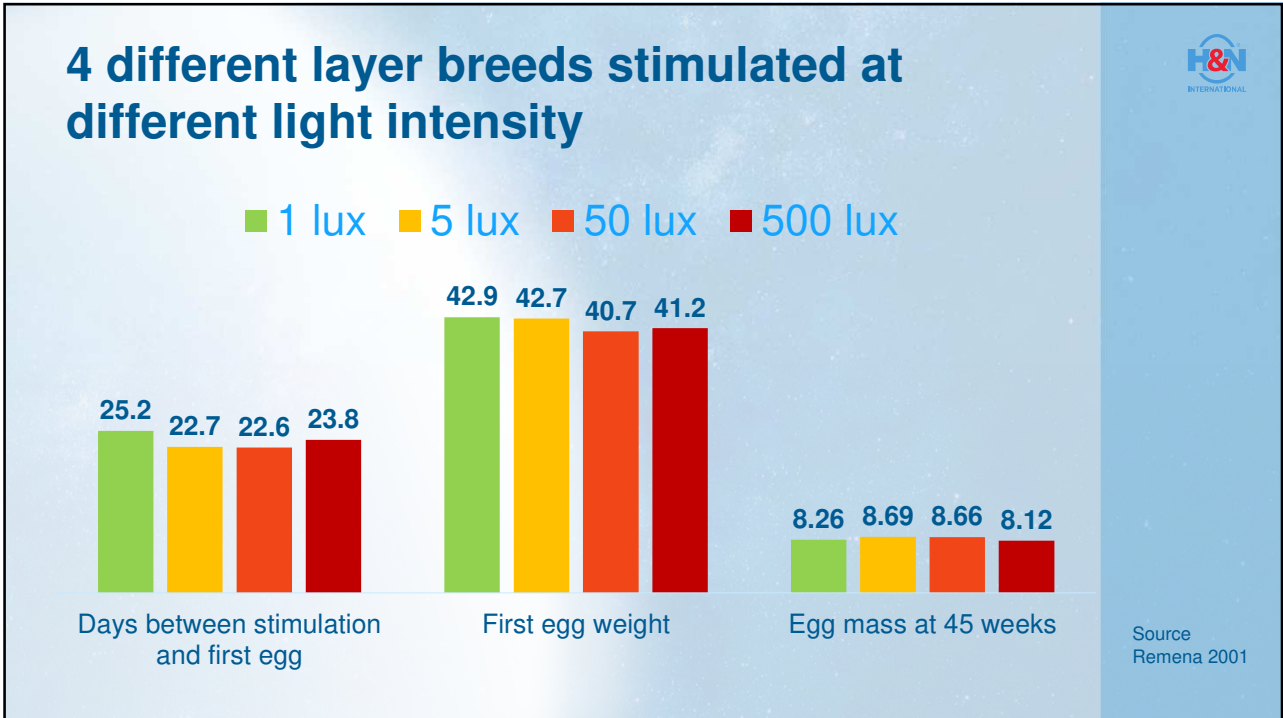
# Minimum lighting intensity ideal for layers in cages



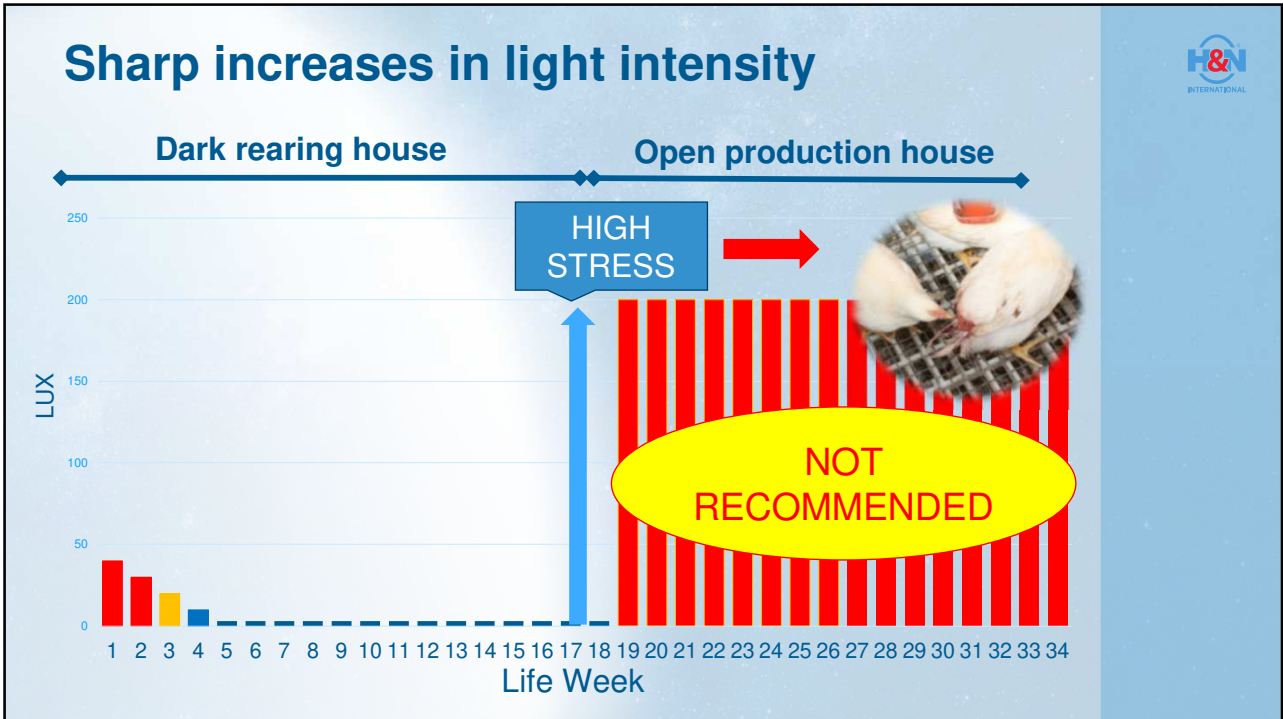
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