Lighting programs for commercial layers

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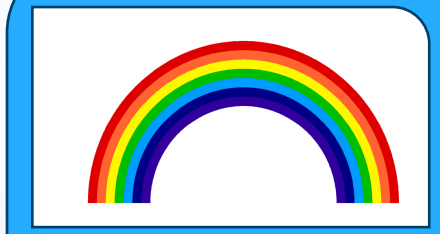
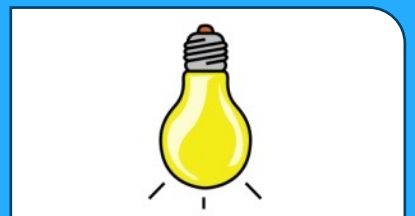
4 Features of Light and How They Affect Birds

Photoperiod



Color

Frequency



Intensity

In nature, production is seasonal

When will grain be available for my chicks?

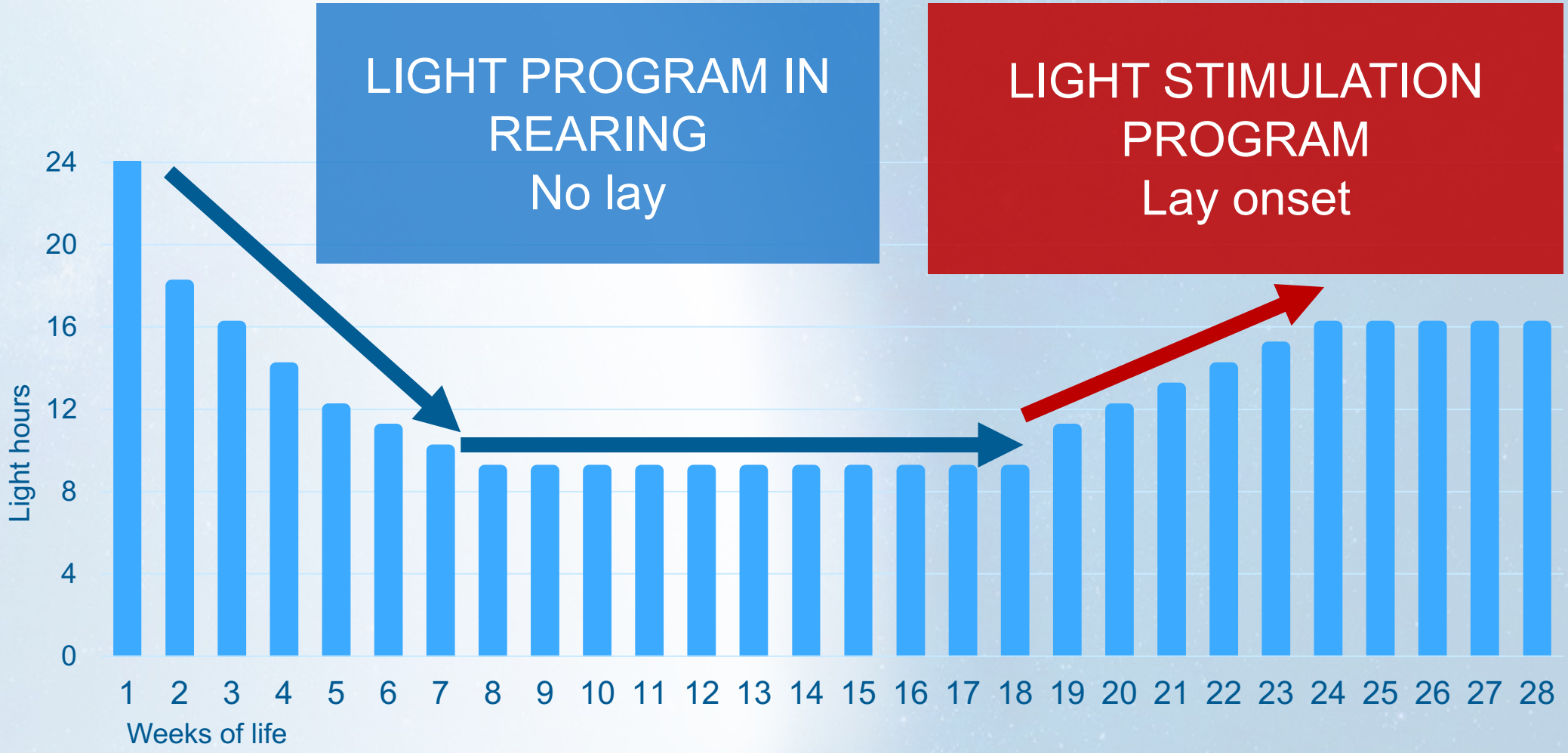
In spring and summer!

INCREASED PHOTOPERIOD
Lay stimulation

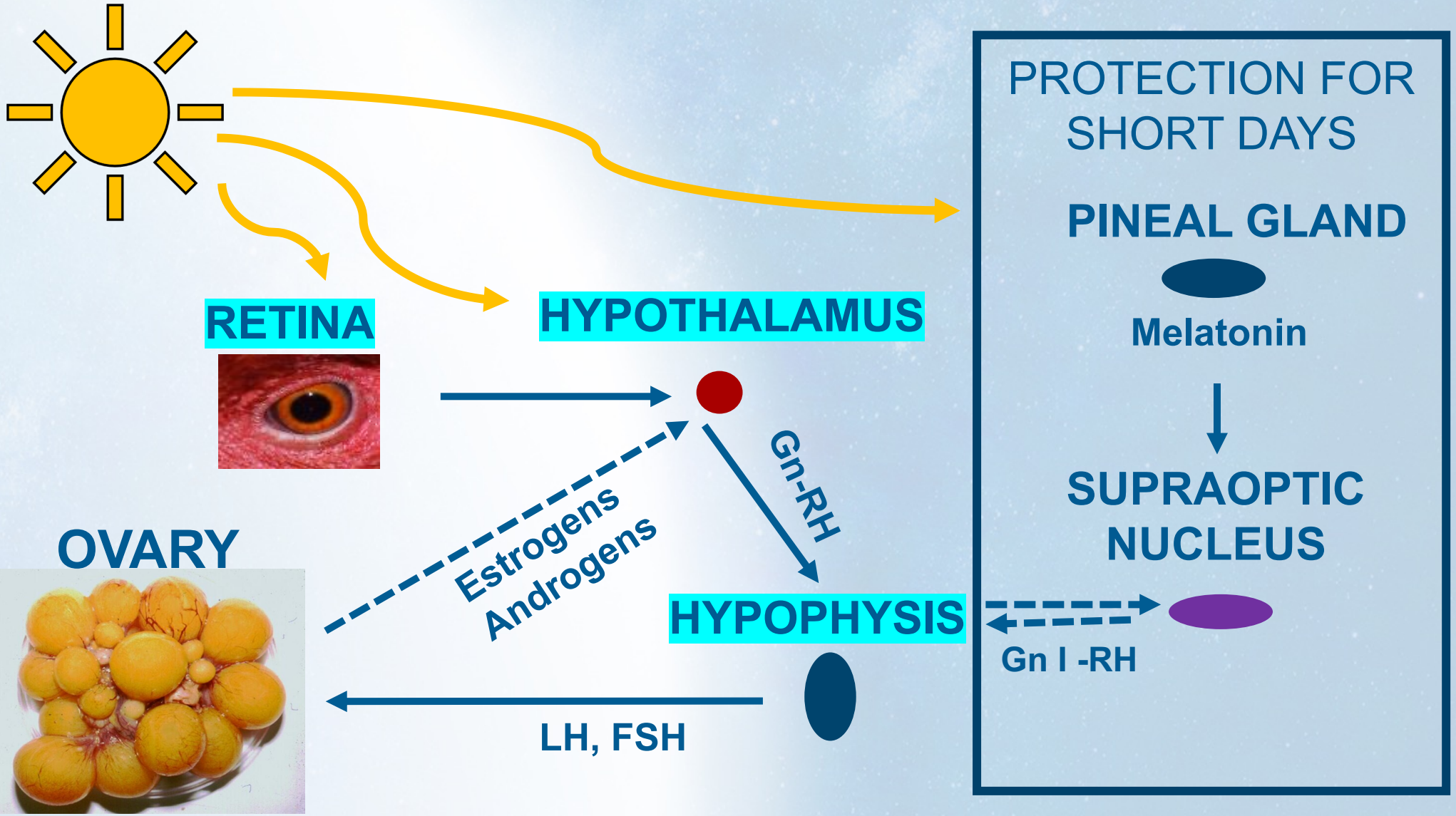
DECREASE IN PHOTOPERIOD
No lay

On farms, production is scheduled

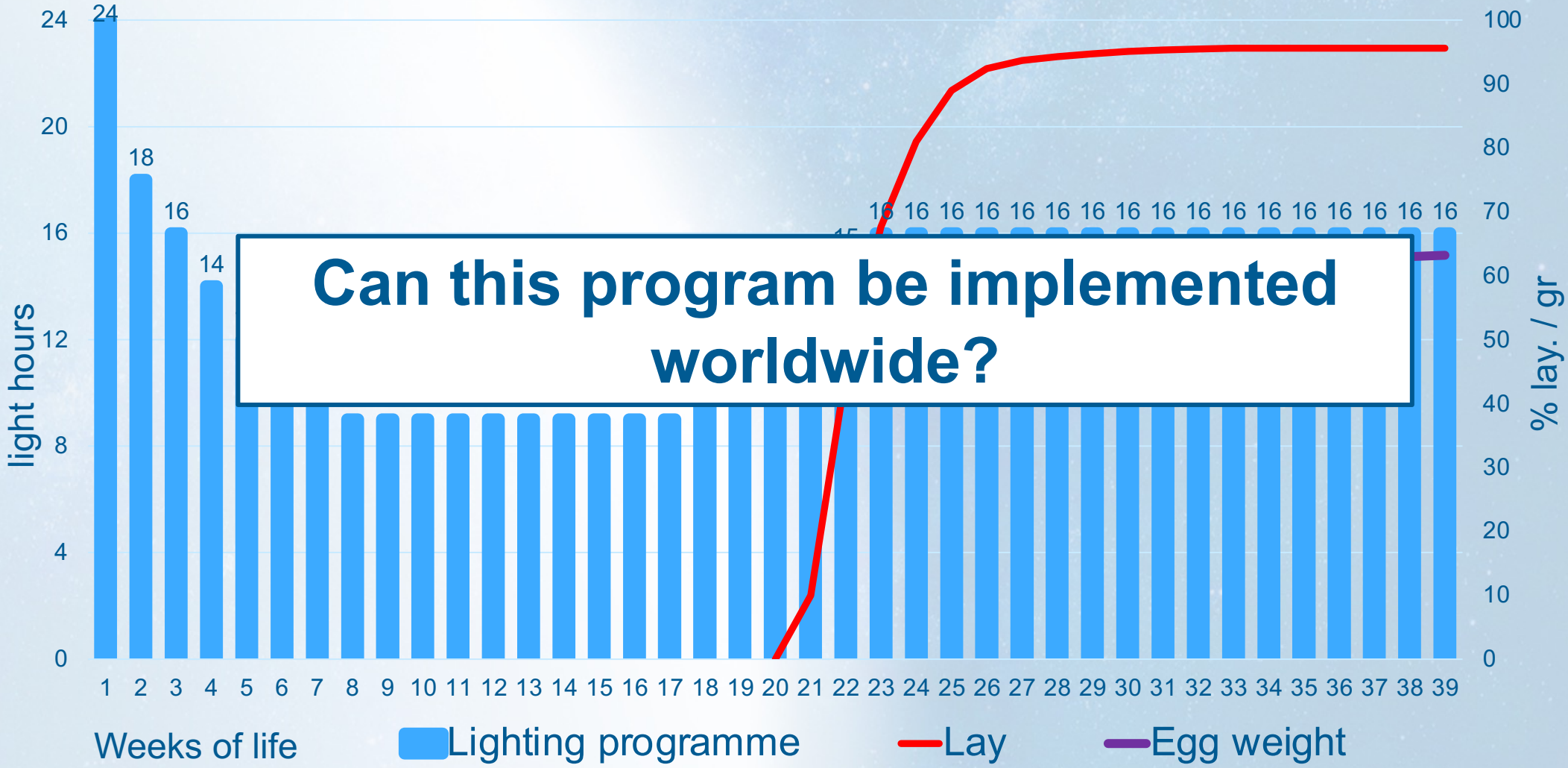
Light Programs - Deseasonalization of egg production



From light to hormones



Recommended lighting program

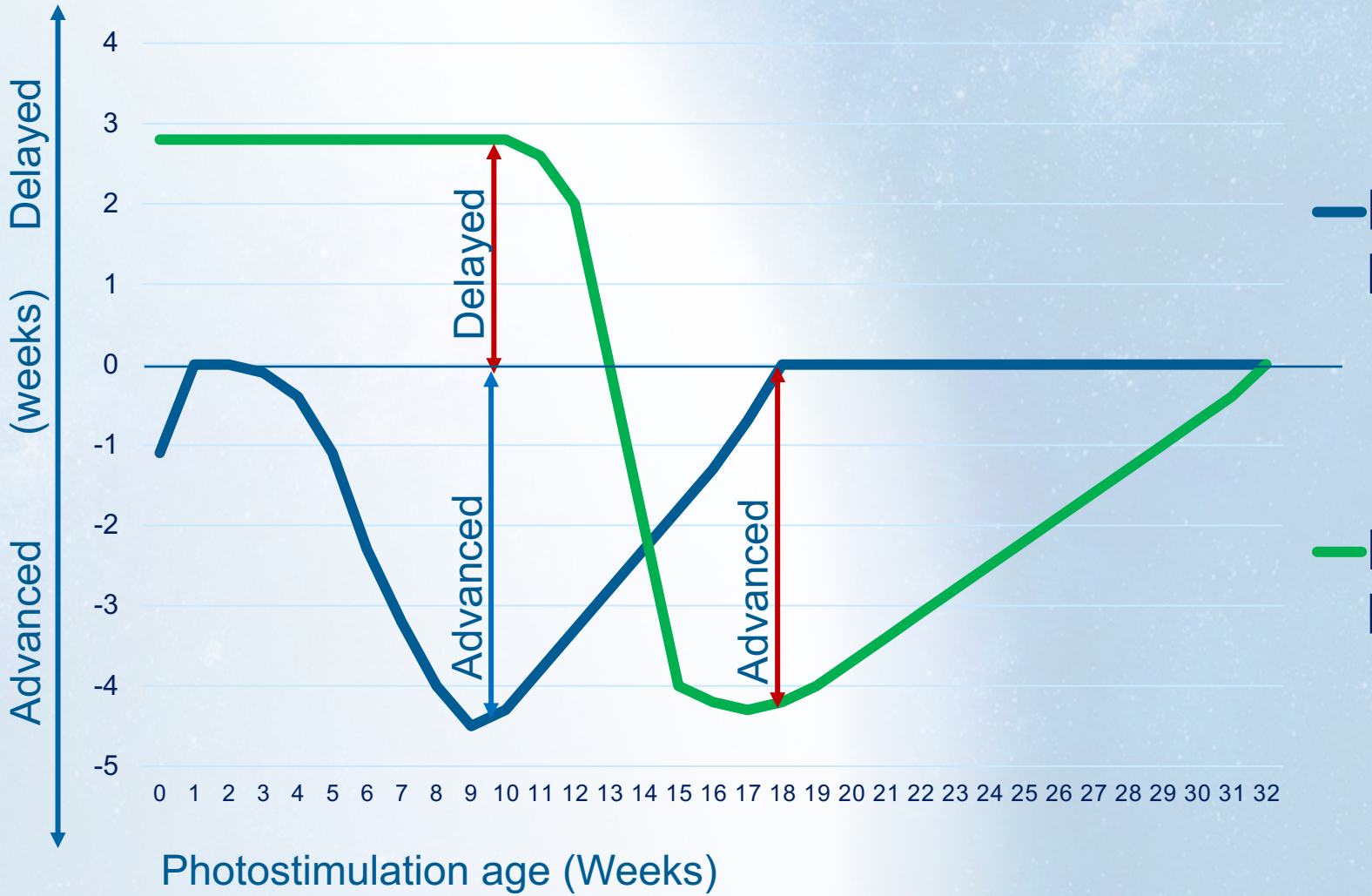


The same program cannot be used all over the world

1. Natural light effect

2. Possibility to adjust the egg weight according to market needs

Effect of photostimulation during rearing

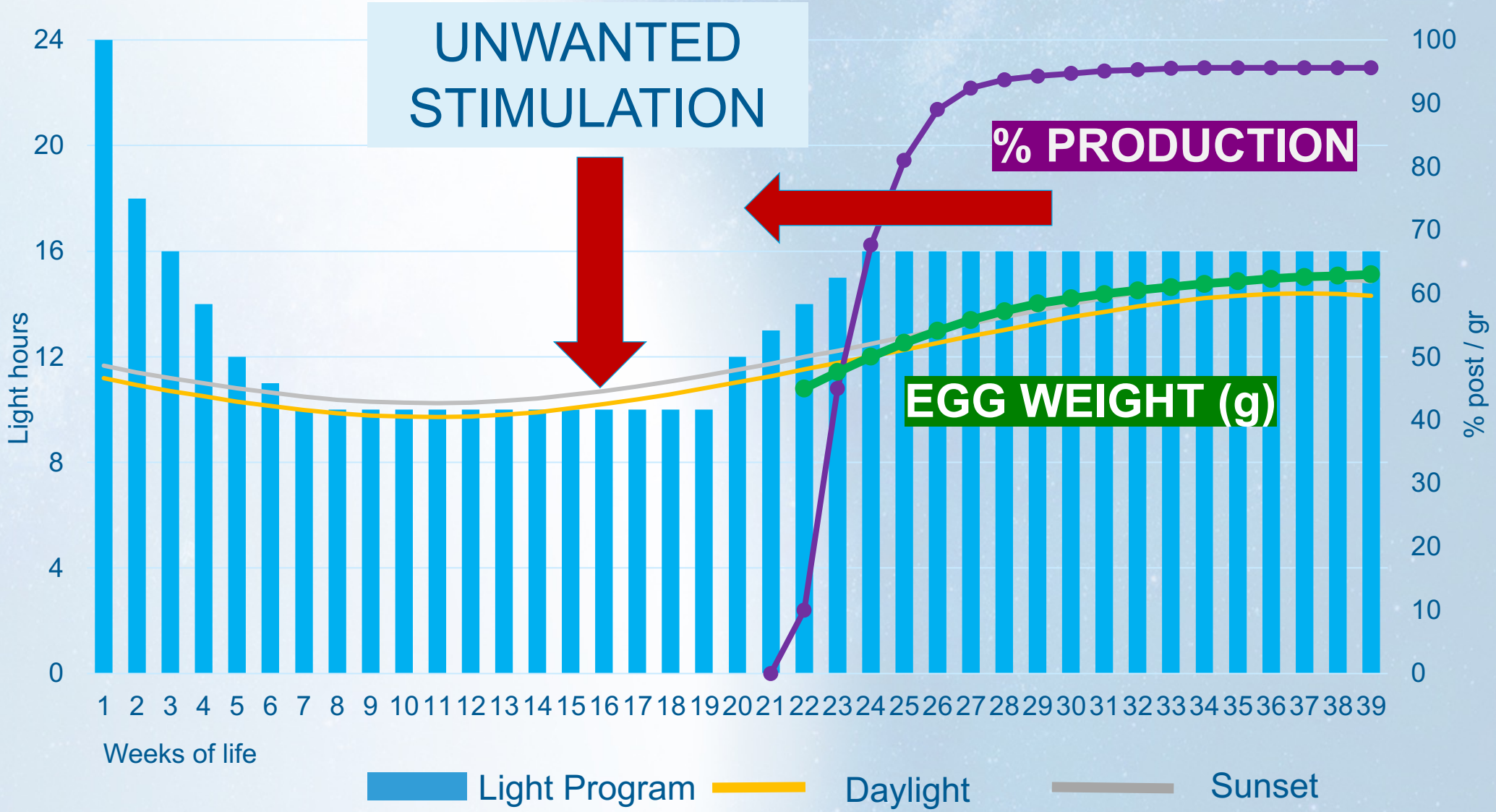


Laying hens

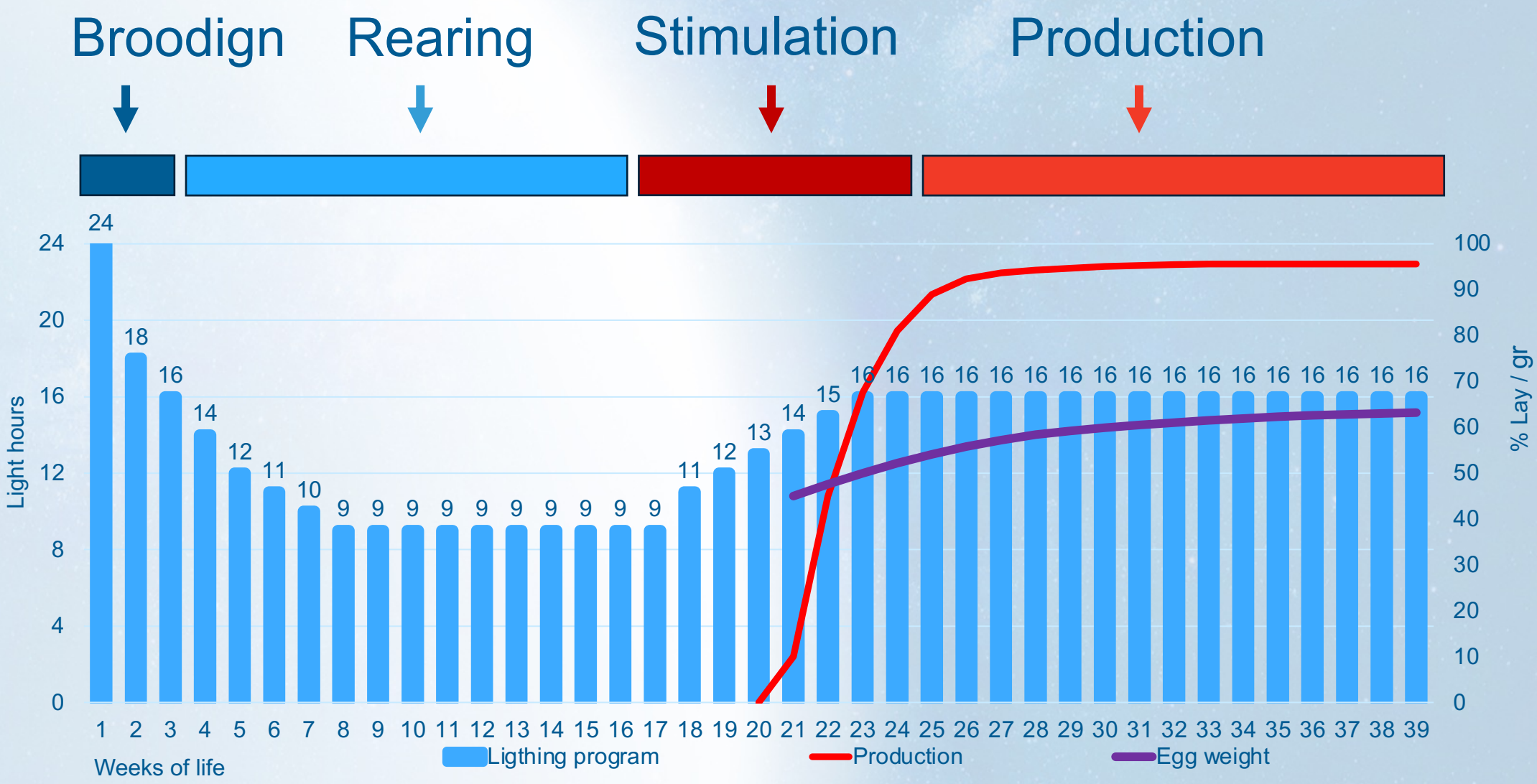
Broiler breeders

Fountain:
P. Lewis 2011

Natural light interference



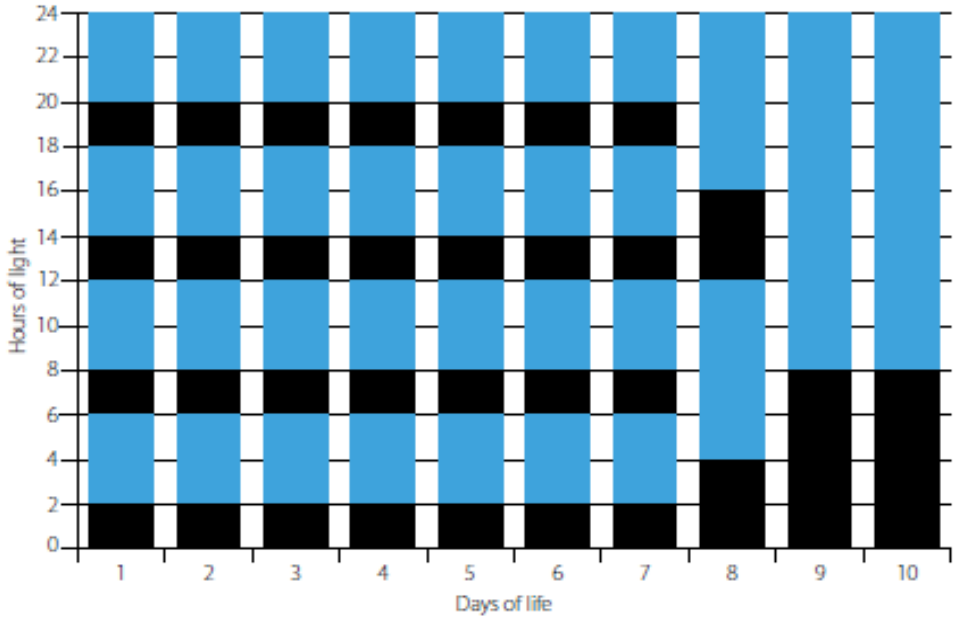
Stages in a lighting program



Lighting programs for brooding

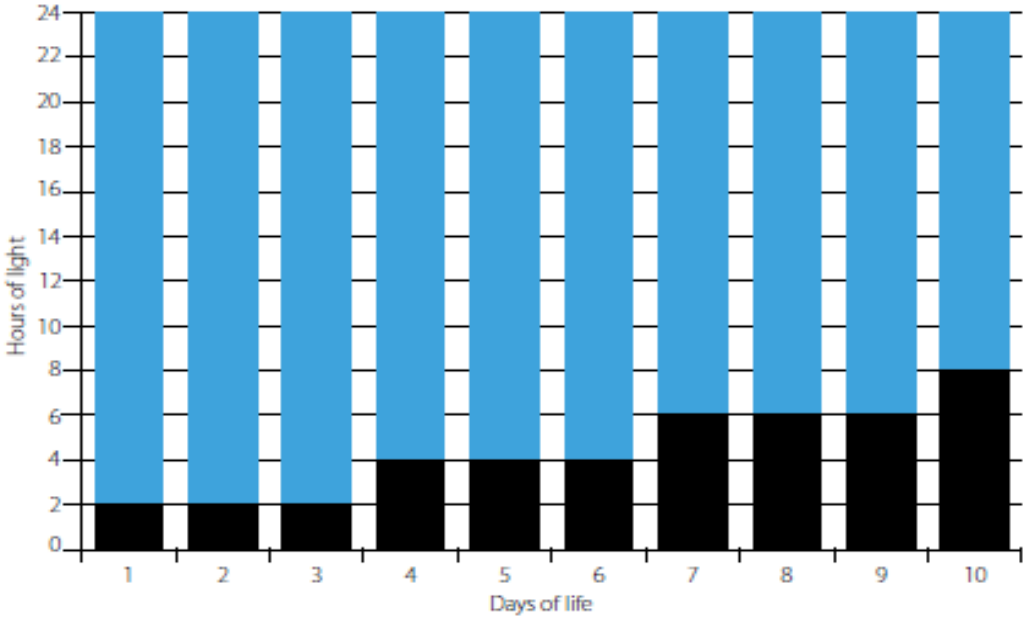
INTERMITTENT PROGRAM

- Better chick activity
- Better flock visualization



NON-INTERMITTENT PROGRAM

- Applicable in open houses
- No interruptions in work



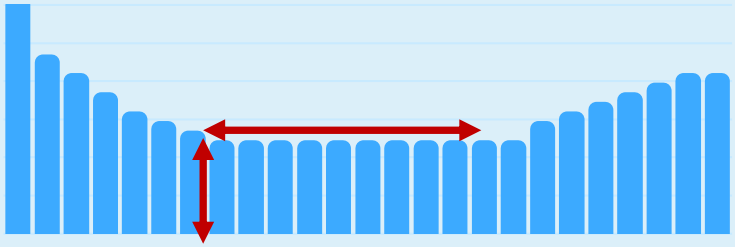
Designing a rearing lighting program

1. Determine if your house is Lightproof

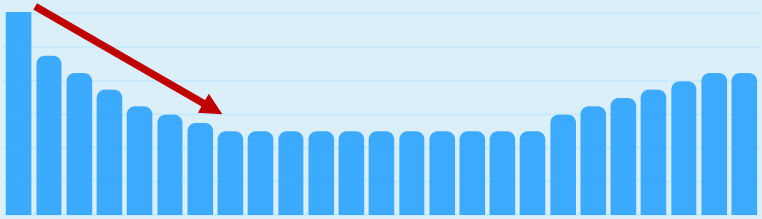
Or

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



1. Determine if your house is Lightproof

Source: H&N International

Source: H&N International

Source: H&N International

And this ?

Source: H&N International

And now?

View of the interior of a house

Lights Off

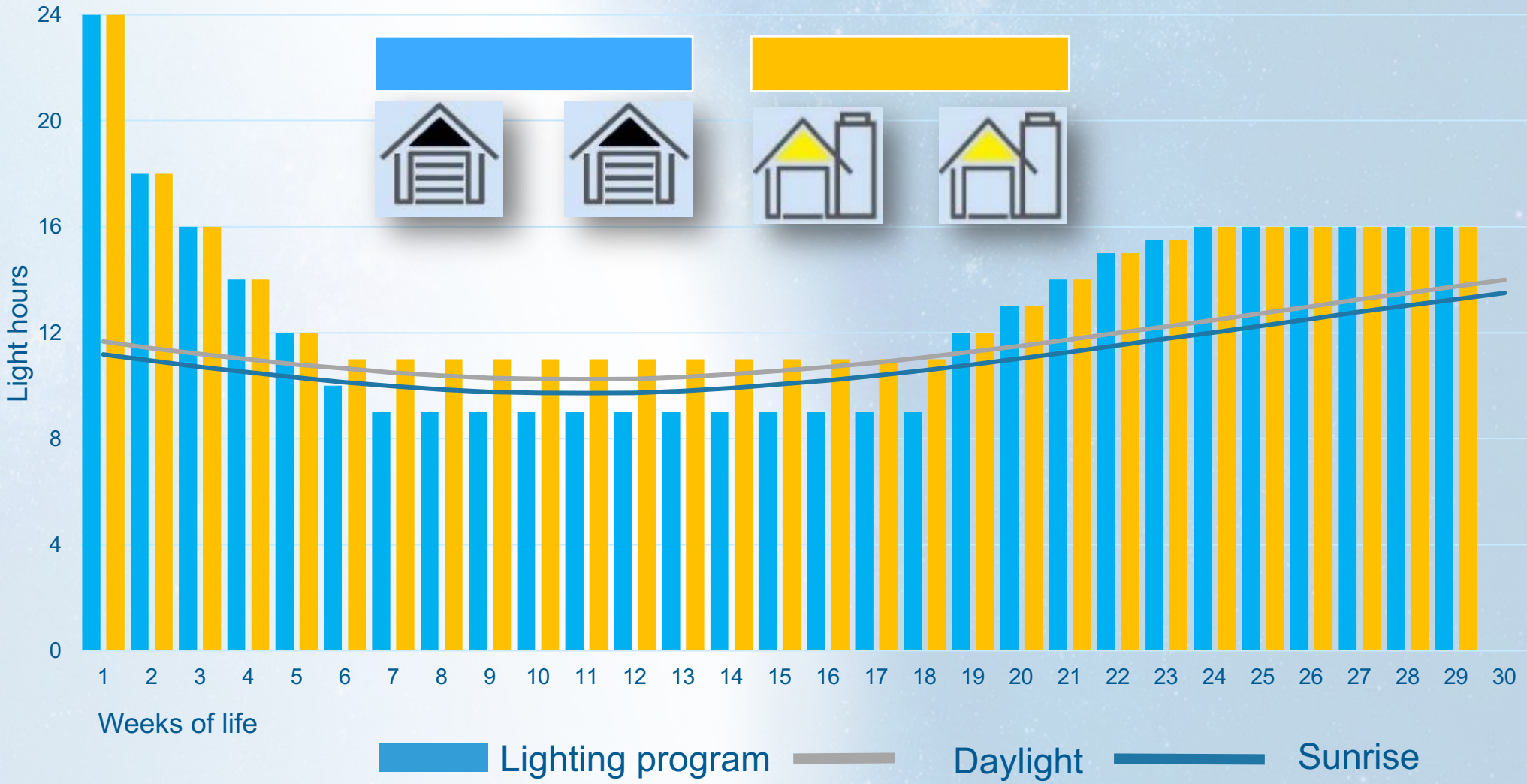
Ventilation on

Less than 3 lux

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.
		

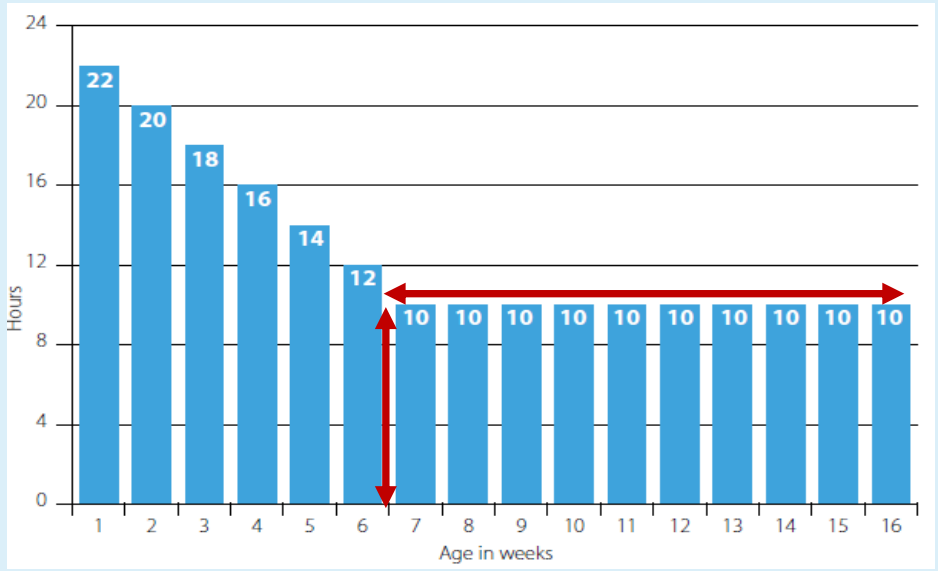
Open rearing house / Open production house



3. Set the lighting program bottom

SHORT PROGRAM (9-11 hours)

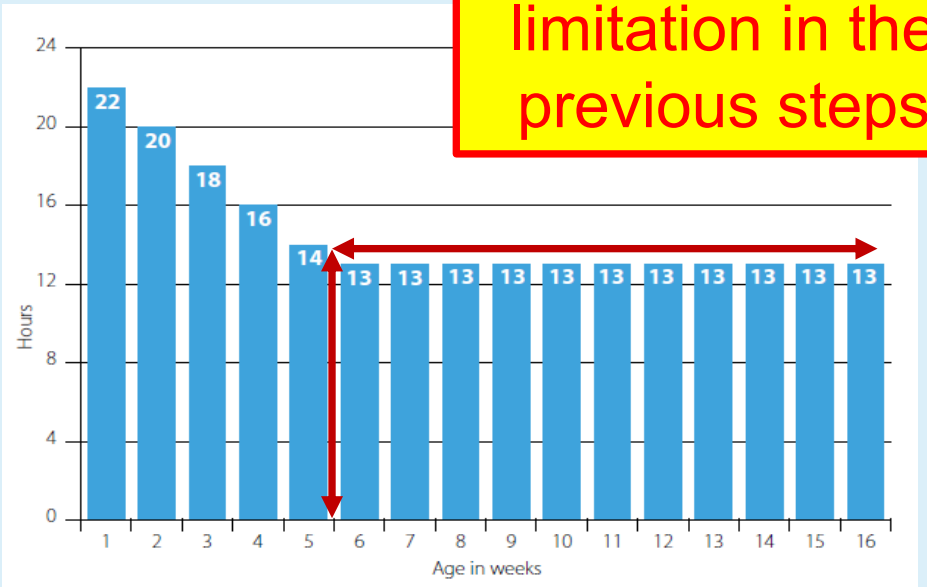
- Easier stimulation
- Feed intake in fewer hours



LONG PROGRAM (12-14 hours)

- More time for feed intake

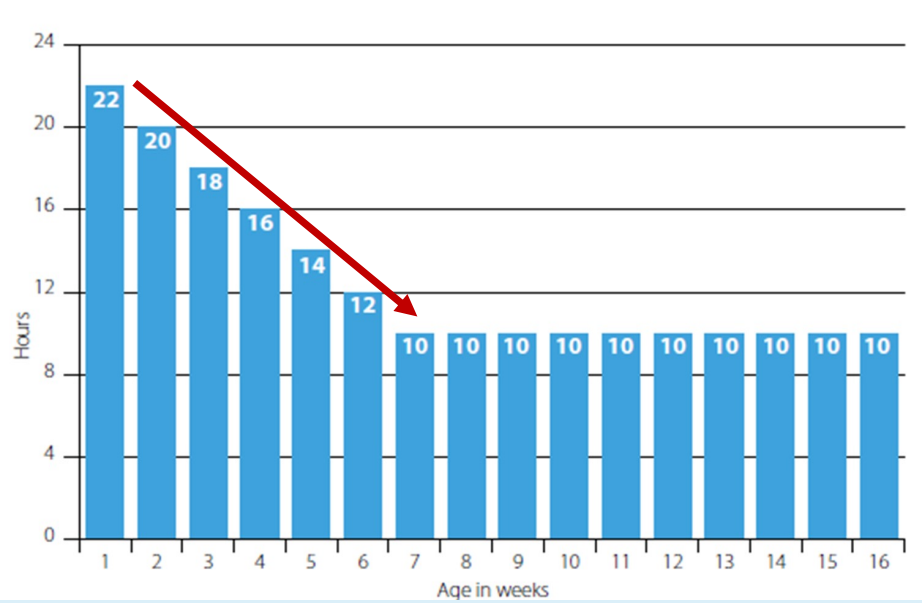
Respect the limitation in the previous steps



4. Set the stepdown to the lighting program bottom

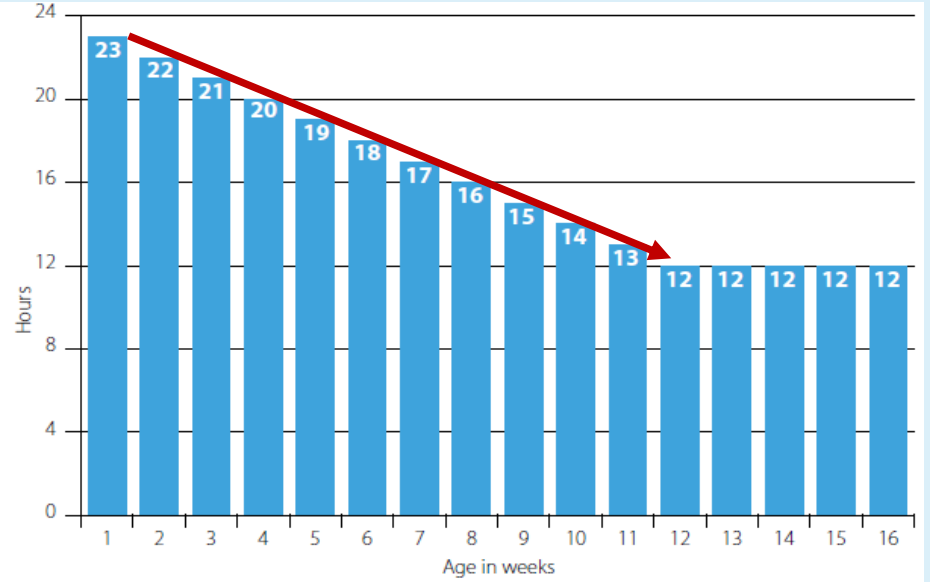
QUICK STEPDOWN (-2 Hours/week)

- Increased sensitivity to light
- Faster start to production



SLOW STEPDOWN (-1 Horas / semana)

- Larger egg size
- More time for feed intake



What stimulates the hens to start production?

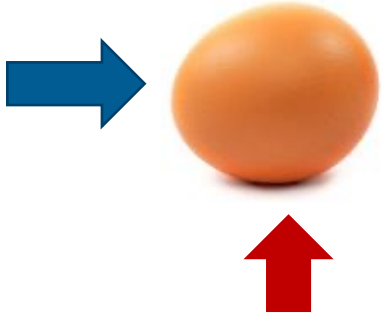
Period of exposure to increasing photoperiod

Birds reach maturity weight

Setting the Right Stimulation

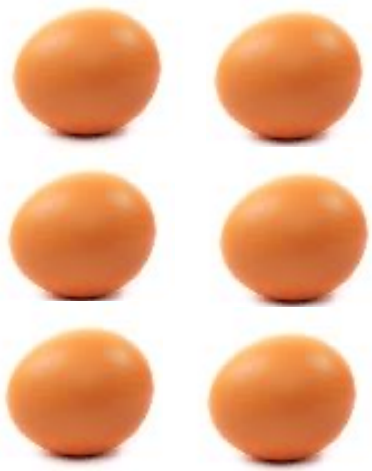
Egg mass

= Number of eggs
x Average Weight



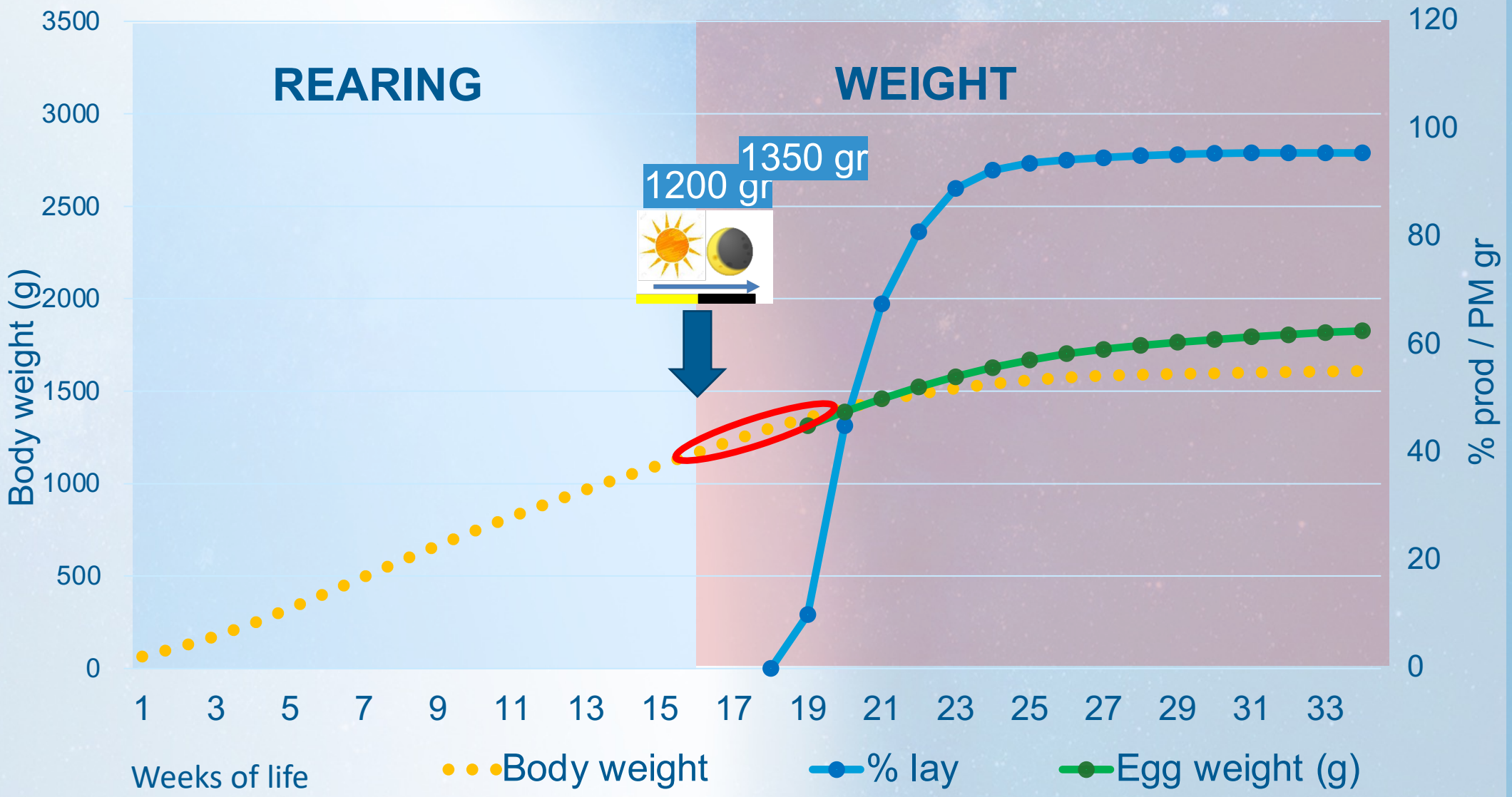
Age at stimulation
Weight on stimulation

Number of eggs

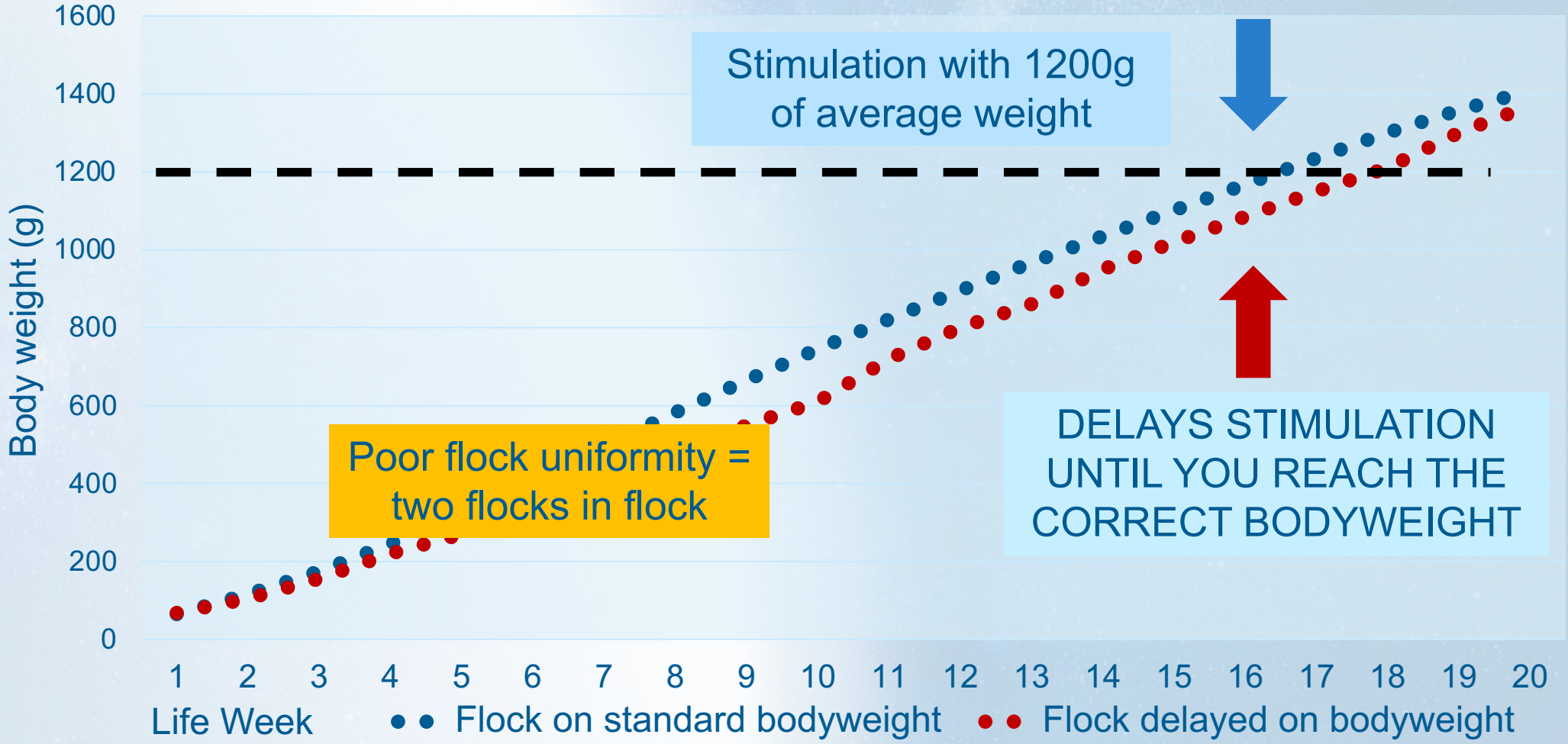


Egg Weight

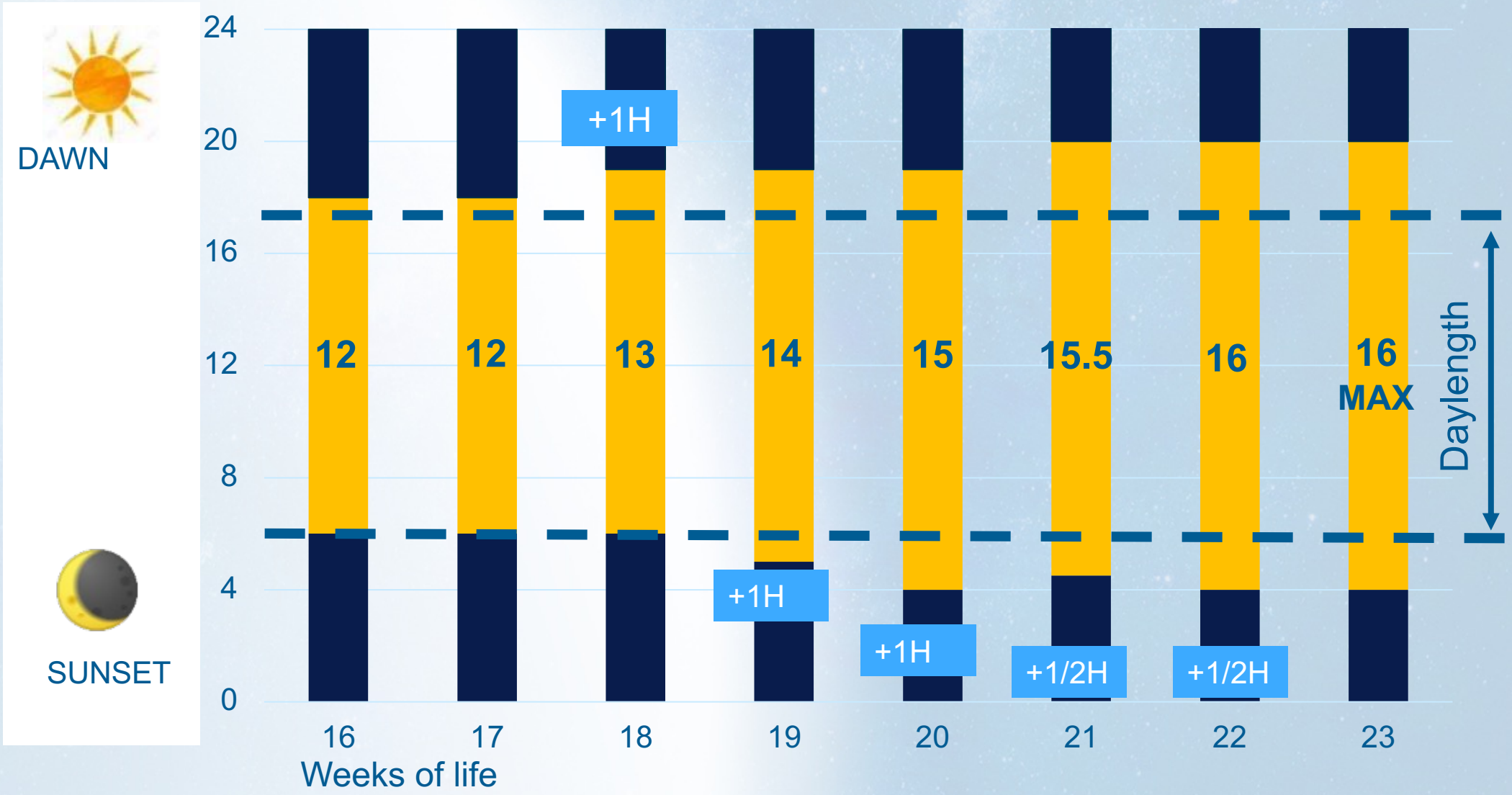
What Really Matters: WHEN?



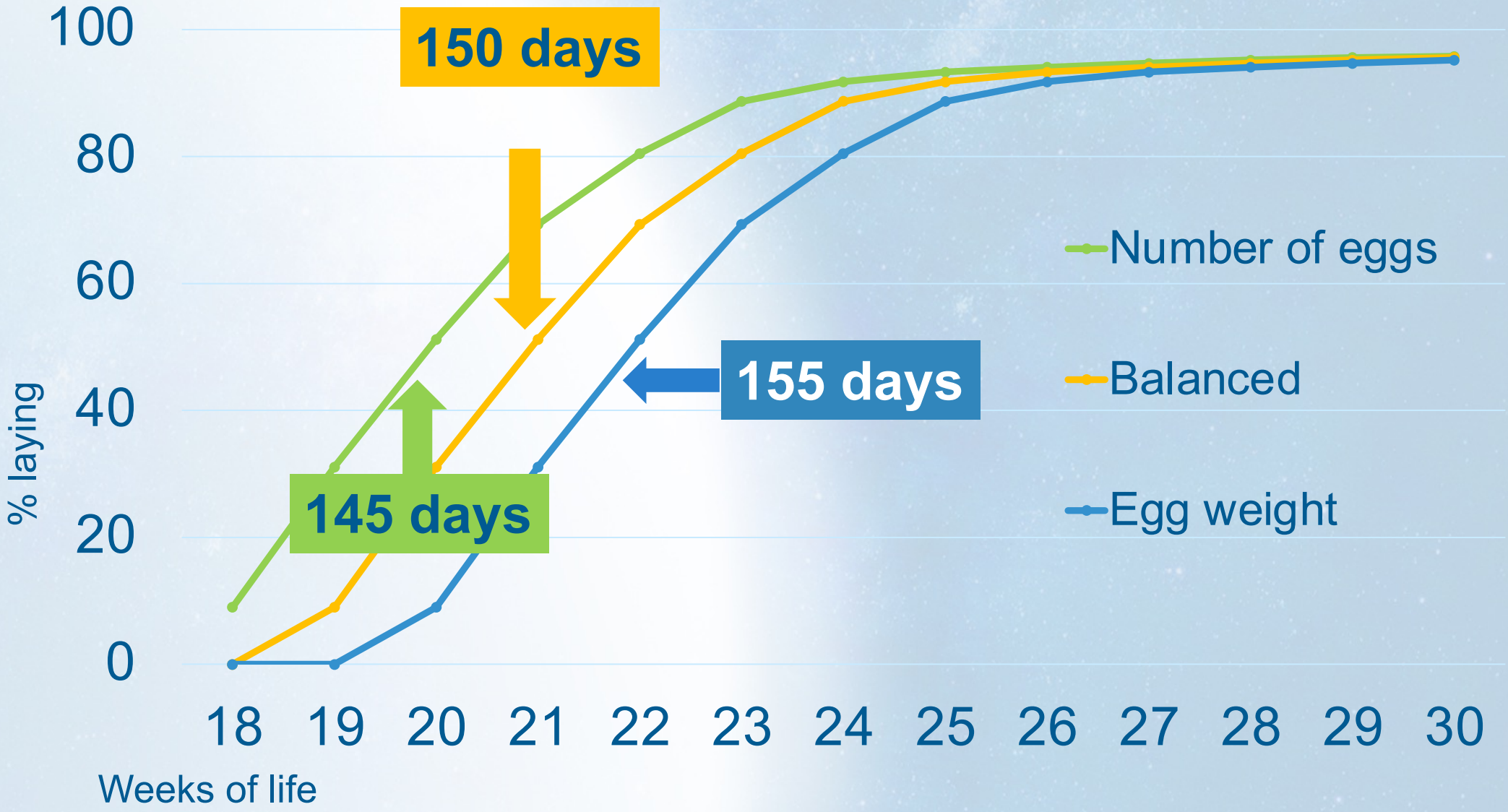
Bodyweight stimulation



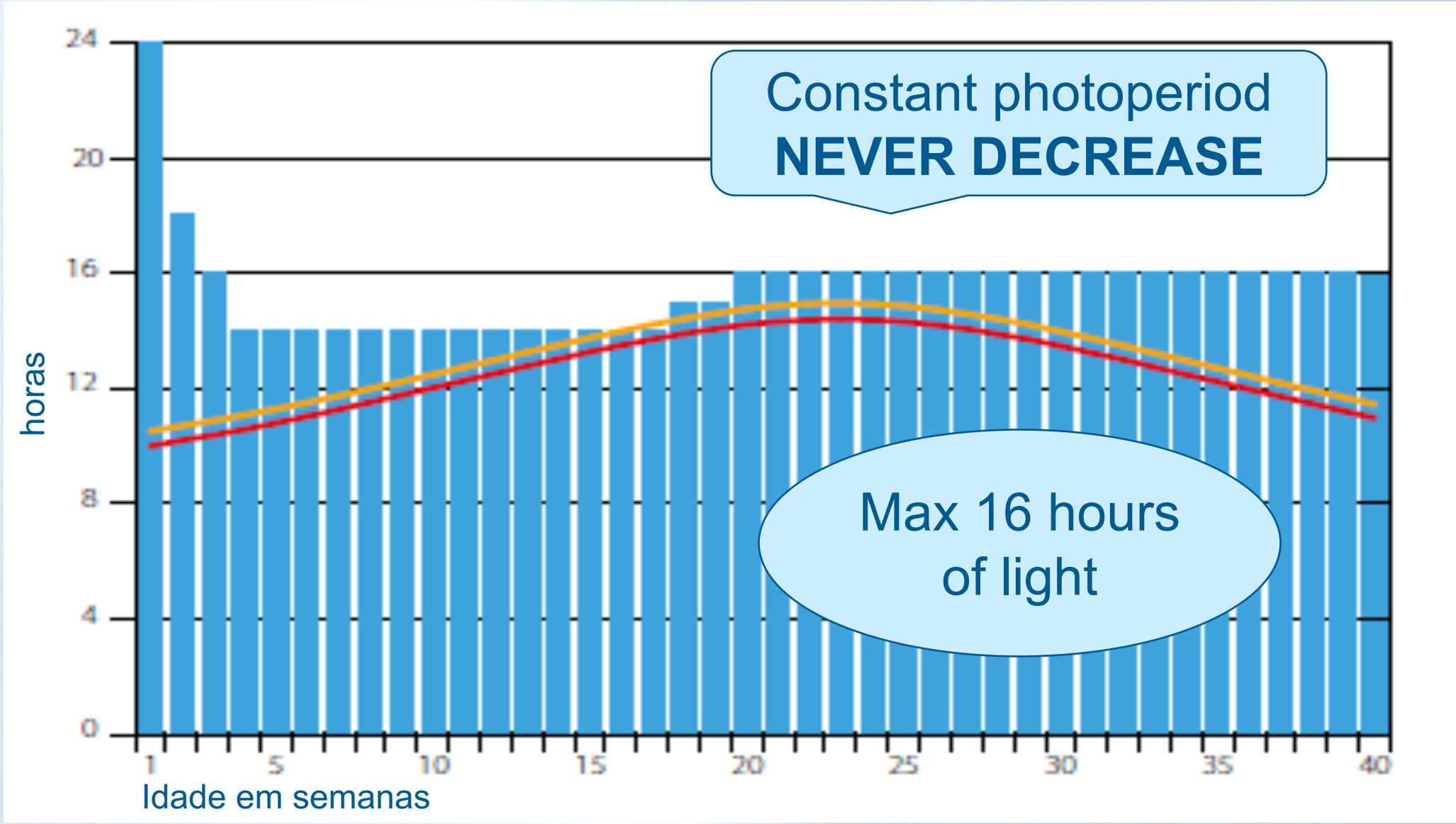
How to do lighting stimulation



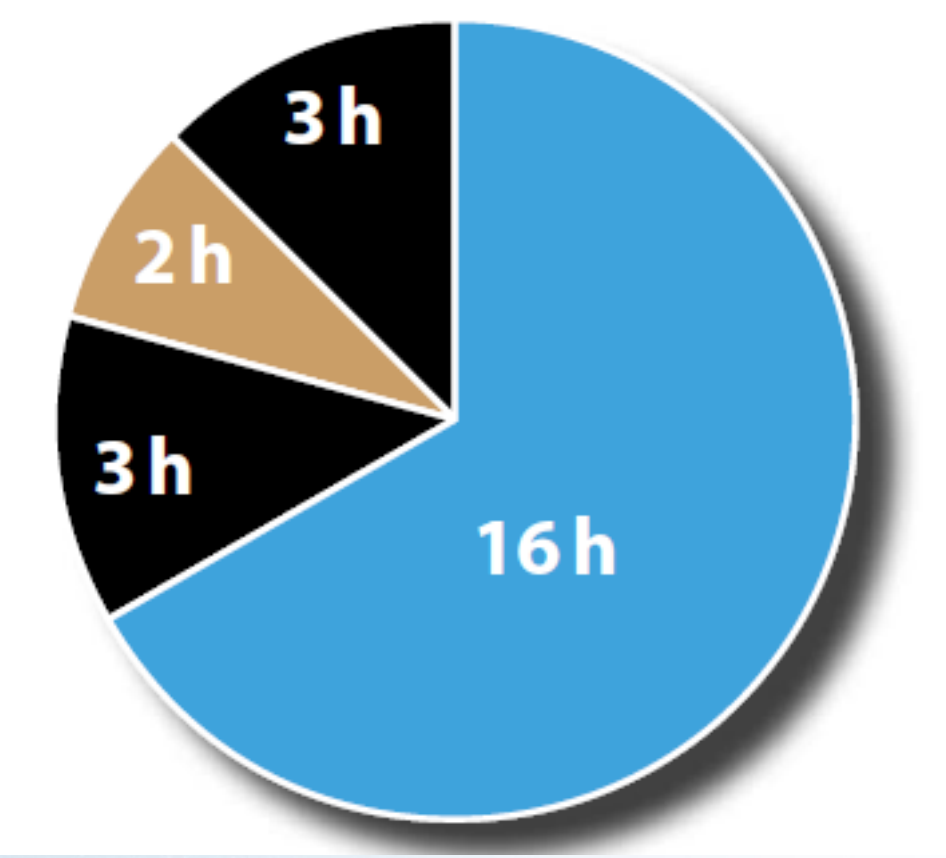
Checking the lighting stimulation: Age at 50%production



Light program in production



Midnight Snack

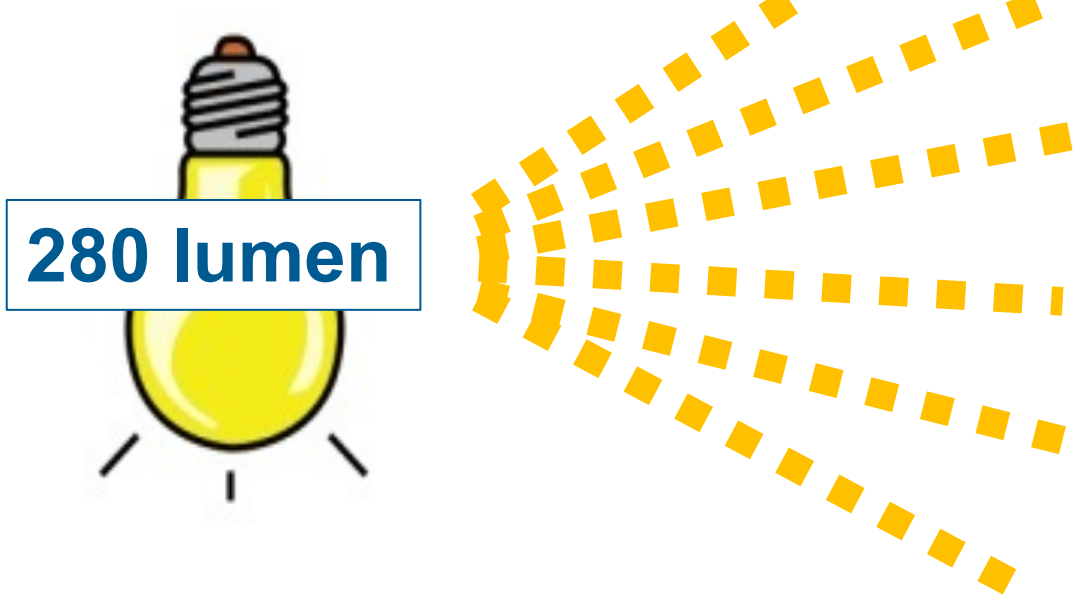


ADVANTAGES

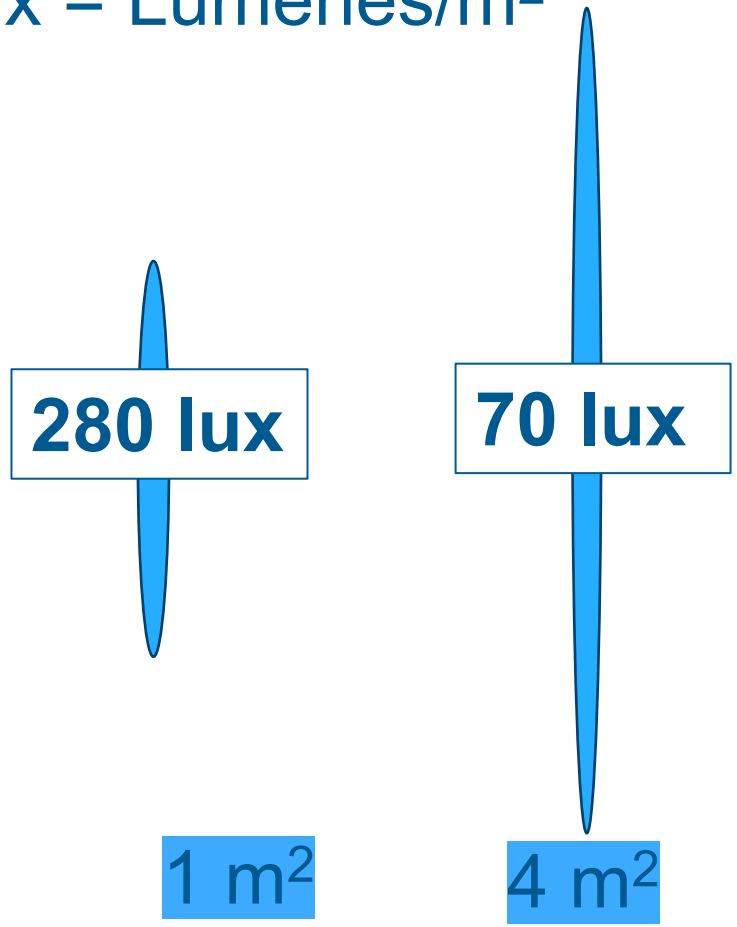
- Increased feed intake
- Improvements in the quality of the shell
- Decreases bone decalcification

Definition of light intensity

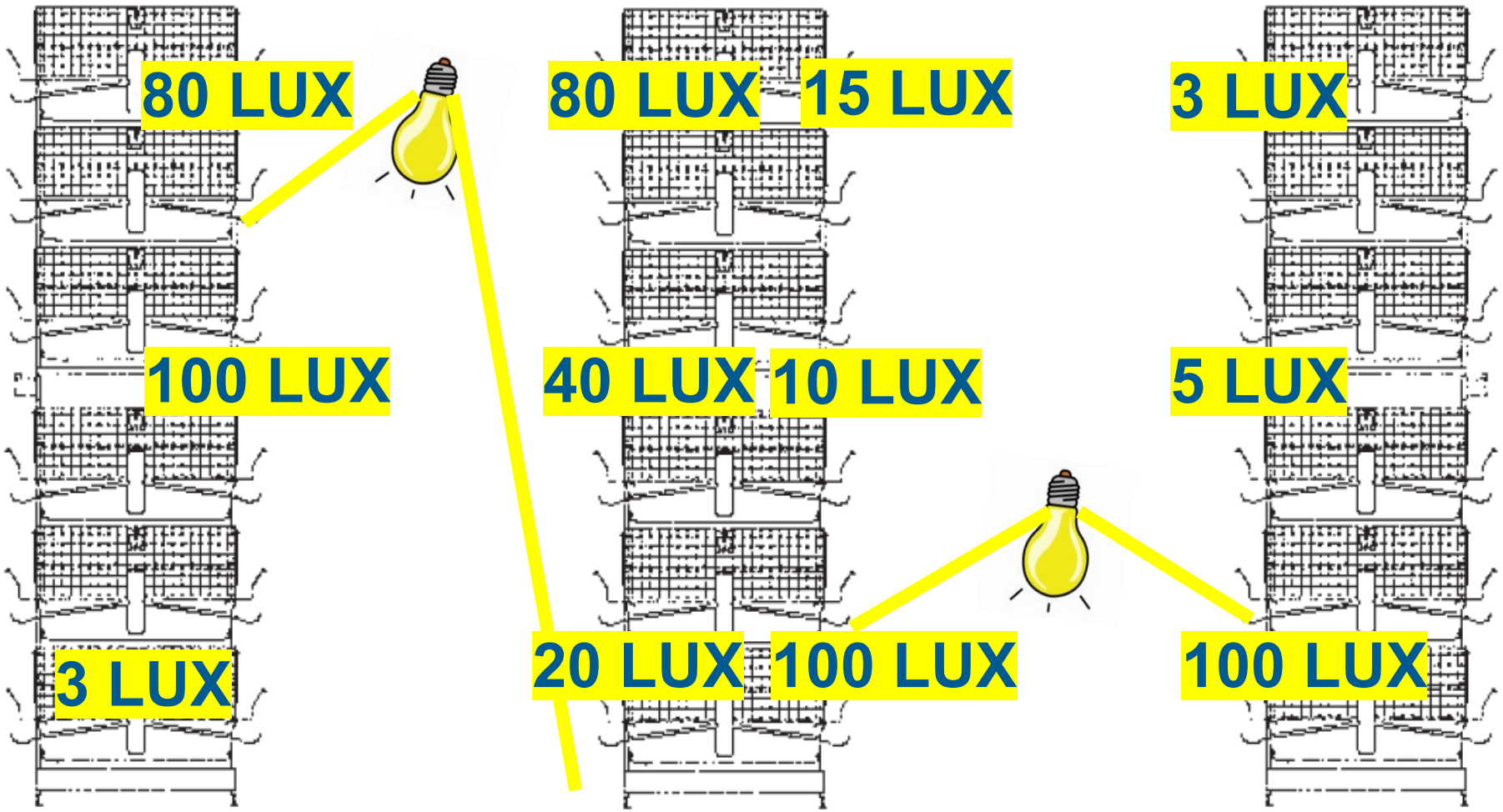
LIGHT INTENSITY
Lumen



ILLUMINATION
Lux = Lumenes/m^2



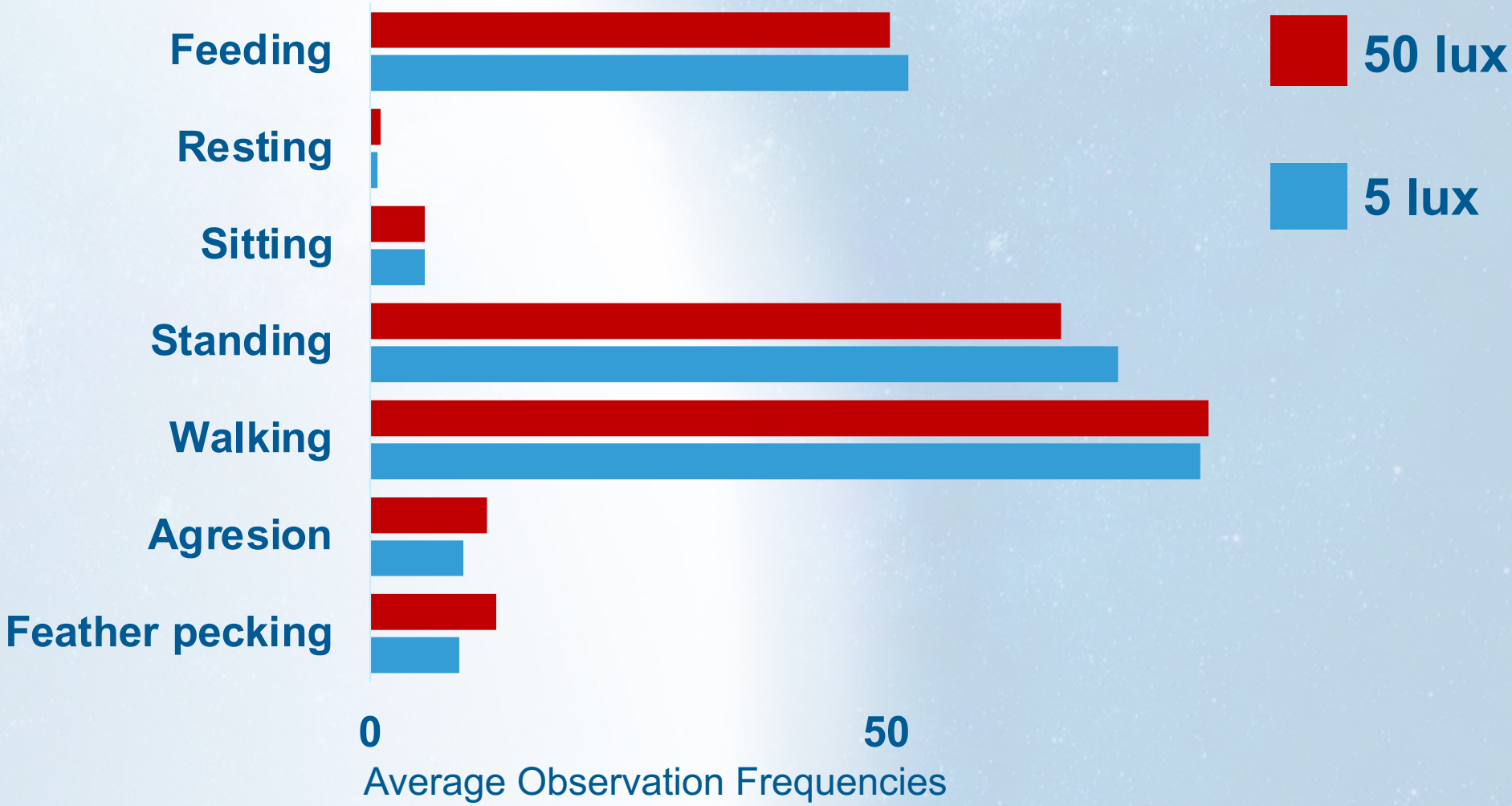
Ligth intensity is not homogeneous feature



Effect of light intensity on hens

Light intensity acts as a volume control for bird activity

Frequency of observation of behaviors in brown hens in cages



Source:
Mohammed 2009

Intensity of the different light sources

20000 -100000 lux

200 -10000 lux

? Lux

Source: distance and lumens

Dealing with the intensity of natural light

Source: H&N International

Sunlight rays entering directly into the house

Source: H&N International

Irregular sunlight distribution in the house

Controlling the intensity of light

STEP 1: Moving to work with semi-dark houses

Shades

Source: H&N International

Light Traps

Source: H&N International

Being able to decide the intensity of the light indoors of the house

Controlling the intensity of light

STEP 2: Be able to measure light intensity

Luxmeter

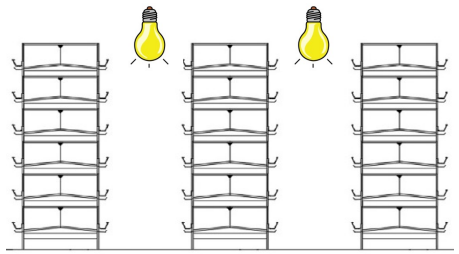
Source: H&N International

Source: H&N International

Measure intensity at feeder levels without shadow interference

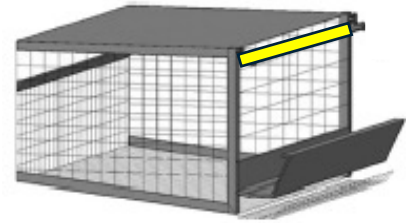
Light intensity in production

BULB LED



Depending on the floor

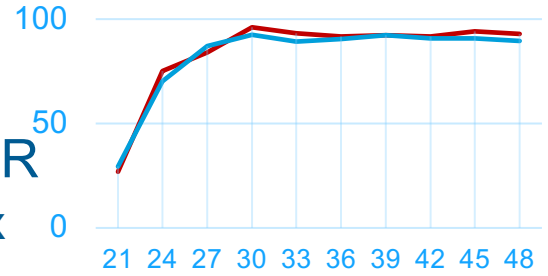
LINEAR LED



20 lux (All cages)

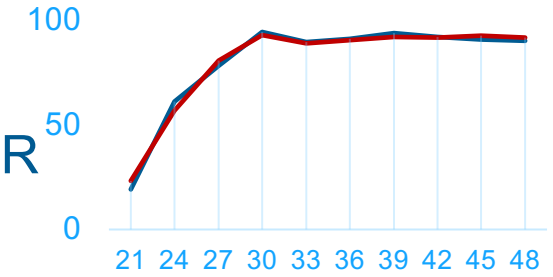
% lay
28 -48 weeks

5° FLOOR
15–40 lux



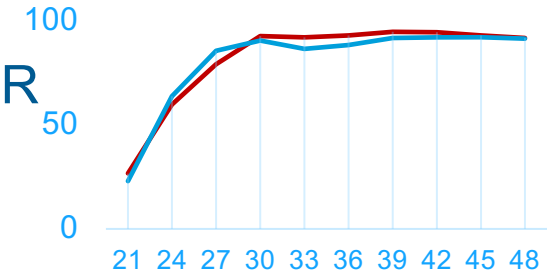
90.1 vs 92.8

3° FLOOR
9–16 lux



91.0 vs 92.0

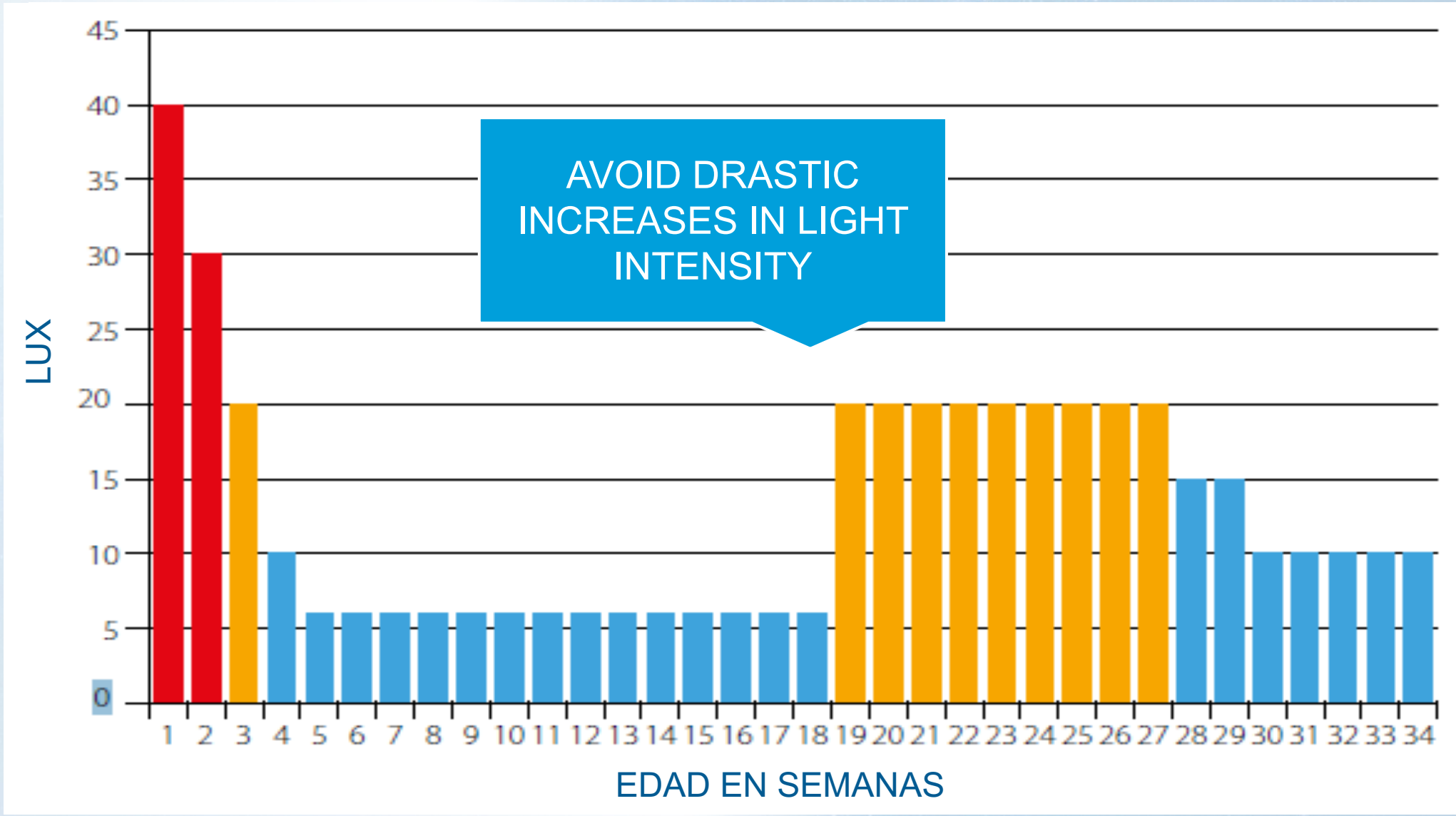
1° FLOOR
4–8 lux



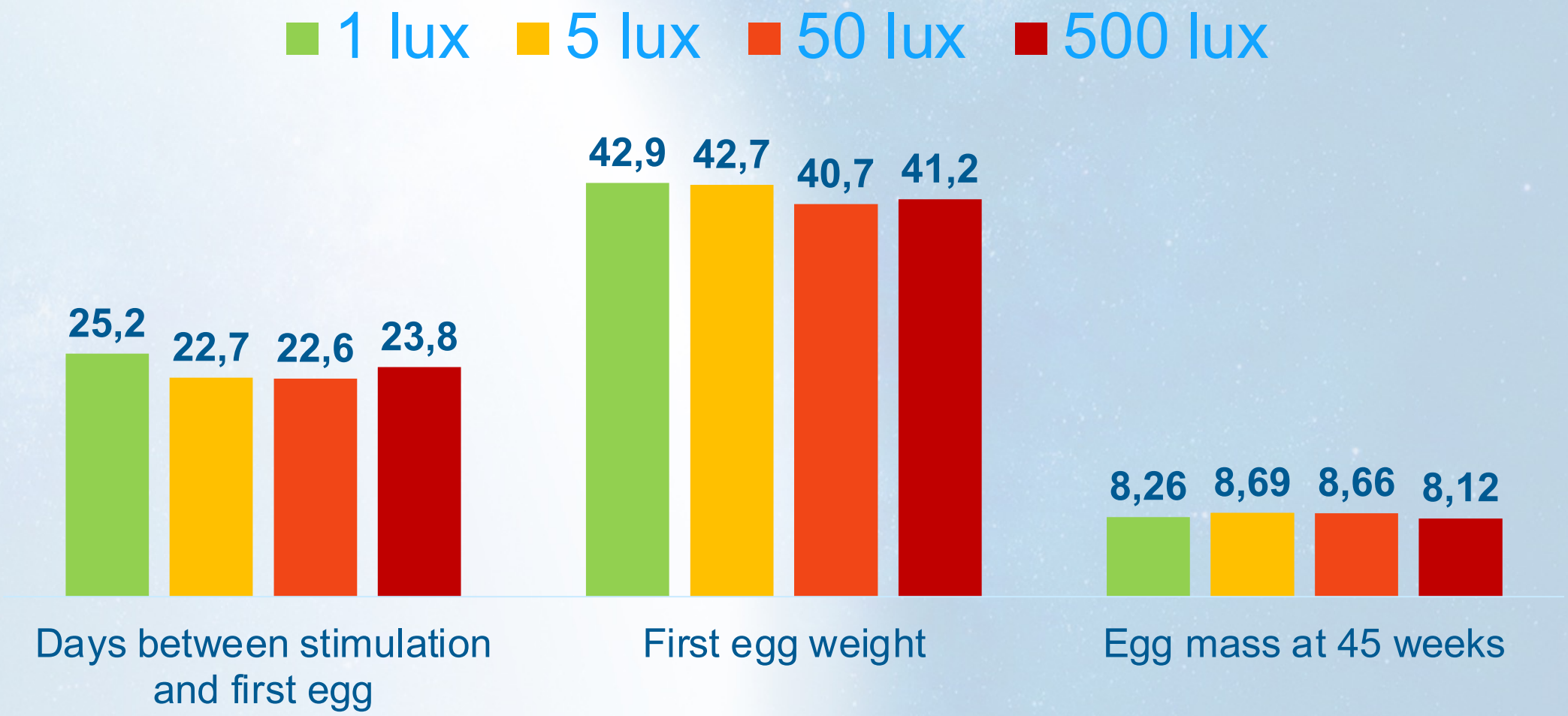
90.8 vs 93.2

Source:
Barros 2020

Minimum lighting intensity ideal for layers in cages

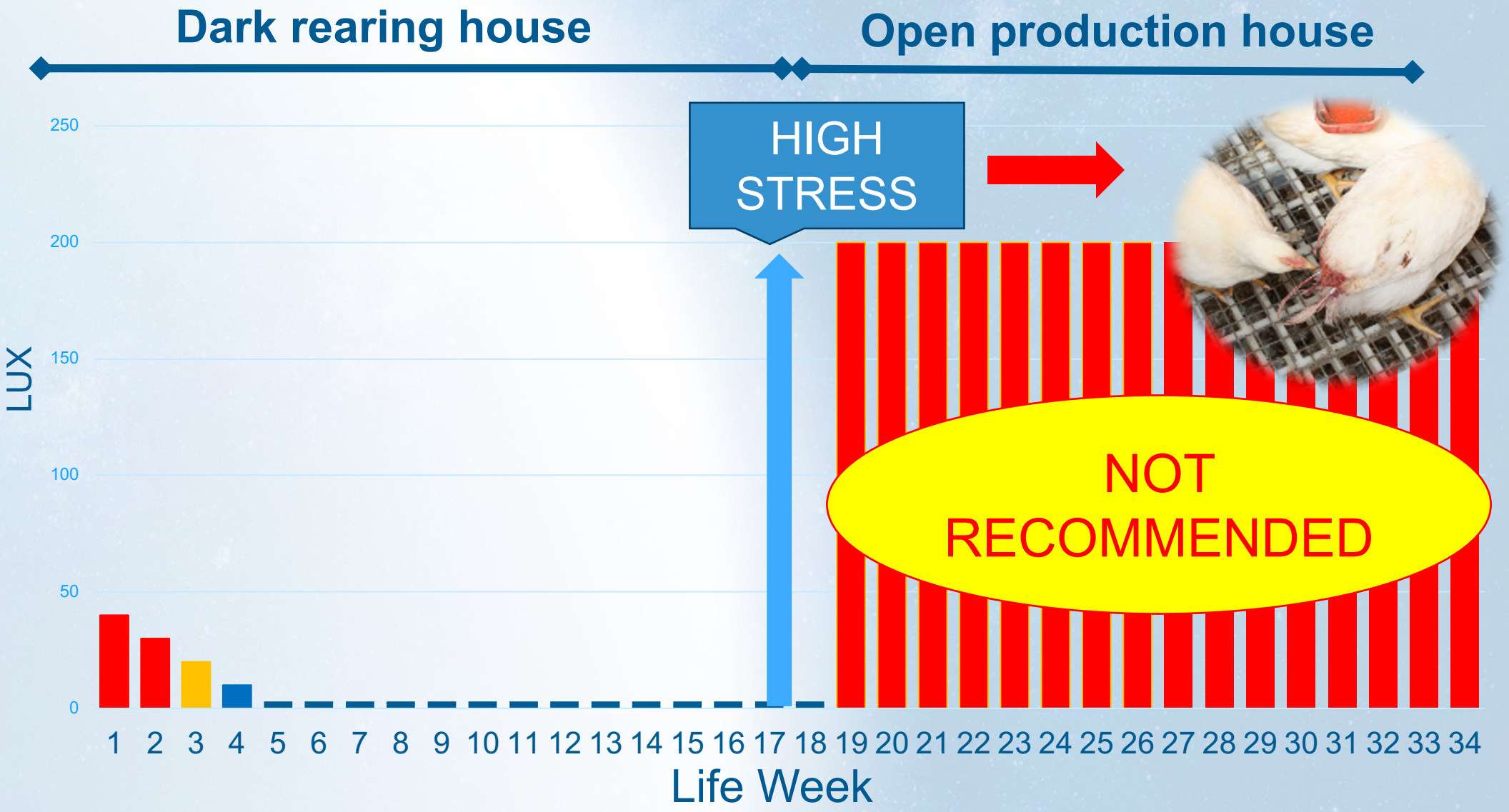


4 different layer breeds stimulated at different light intensity

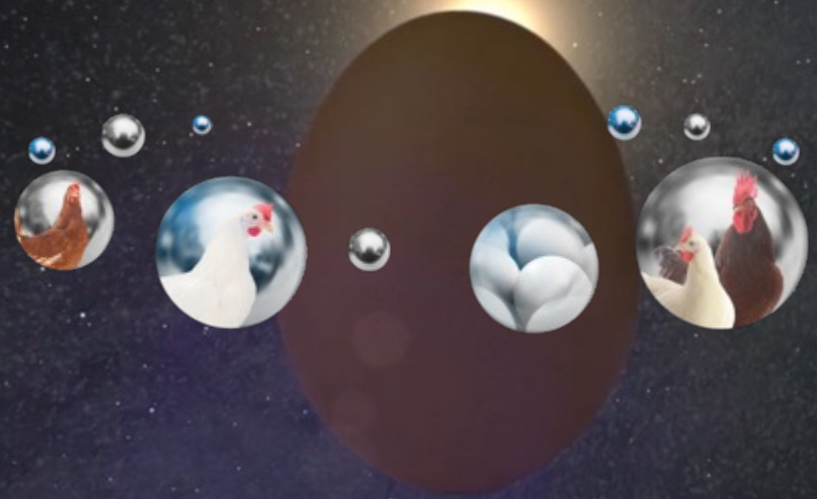


Source
Remena 2001

Sharp increases in light intensity



Thank for your attention



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