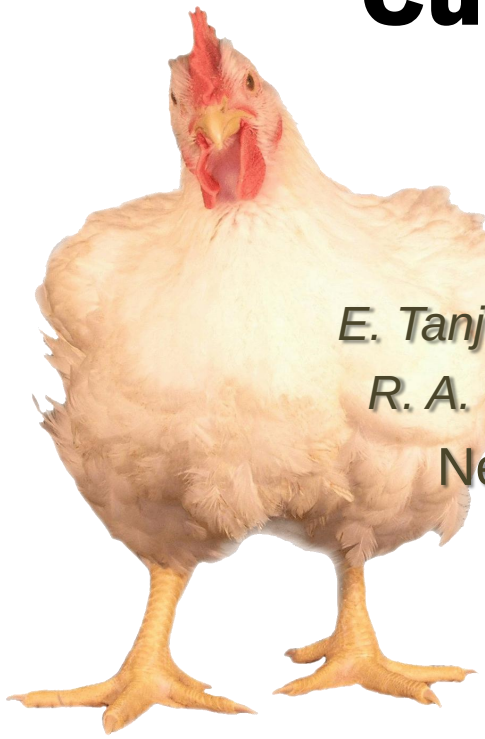


Current Issues in Broiler Breeder Nutrition





Martin J. Zuidhof[1]

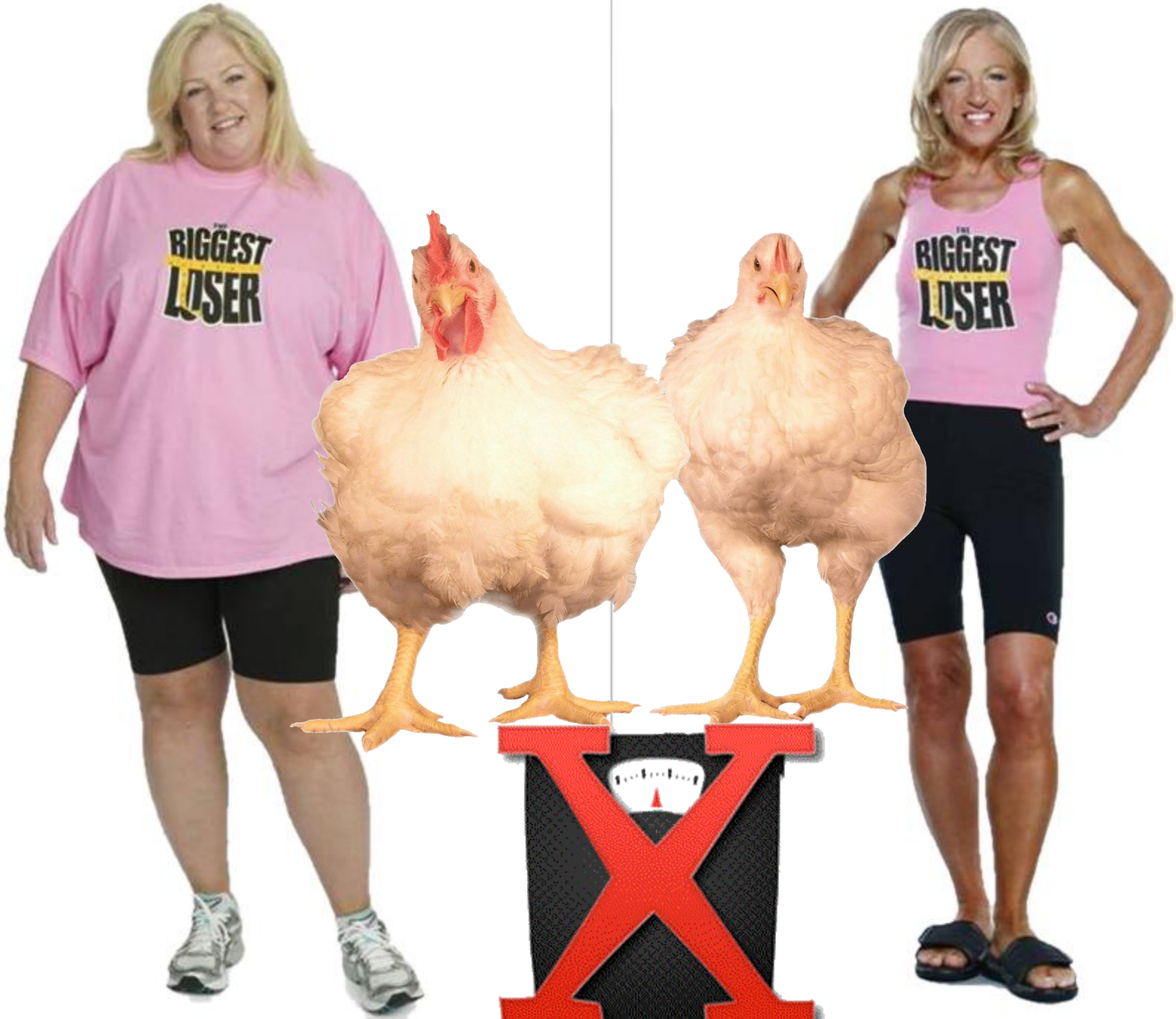
E. Tanjong Mba, D. C. Paul, D. E. Holm, F. E. Robinson, R. A. Renema, Y. Ren, T. Moraes, and A. Pishnamazi

New Zealand Poultry Industry Conference

October 12-13, 2010

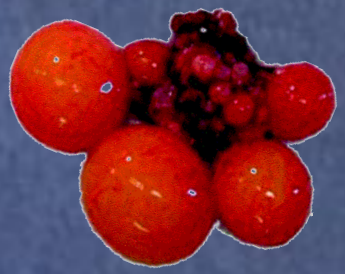
Palmerston North, NZ

[1]martin.zuidhof@ualberta.ca


THE BIGGEST LOSER
THE BIGGEST LOSER

Excessive Follicle Development



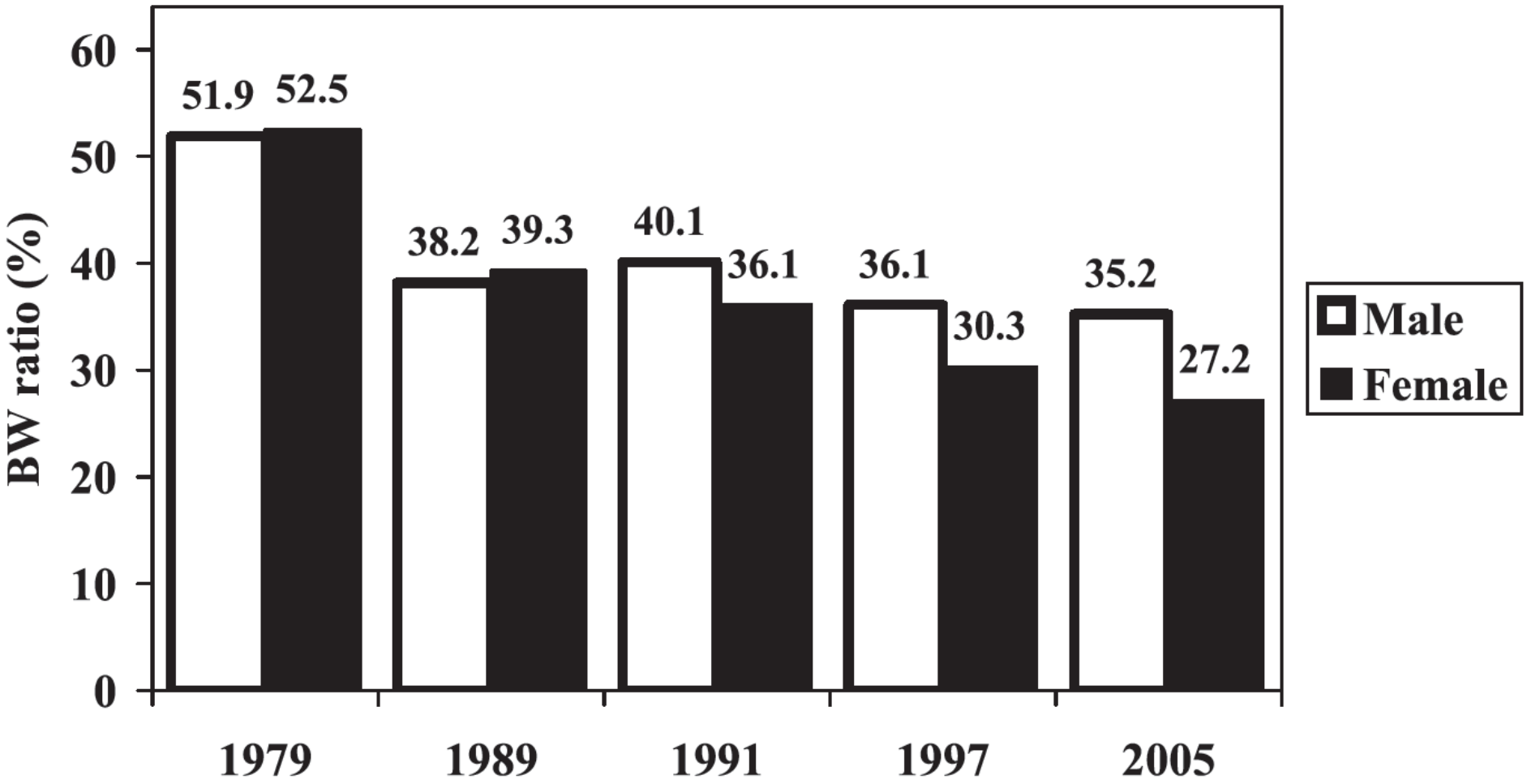


Double Hierarchy





Breeder:Broiler BW ratio* from 1979 to 2005



*6 wk of age

Renema et al. 2007. WPSJ 63:457-472.

Uniformity Issue: Competing for a limited resource



Photo courtesy Philippe Dufour, Cobb-Vantress
Broiler breeder feeding time - Brazil



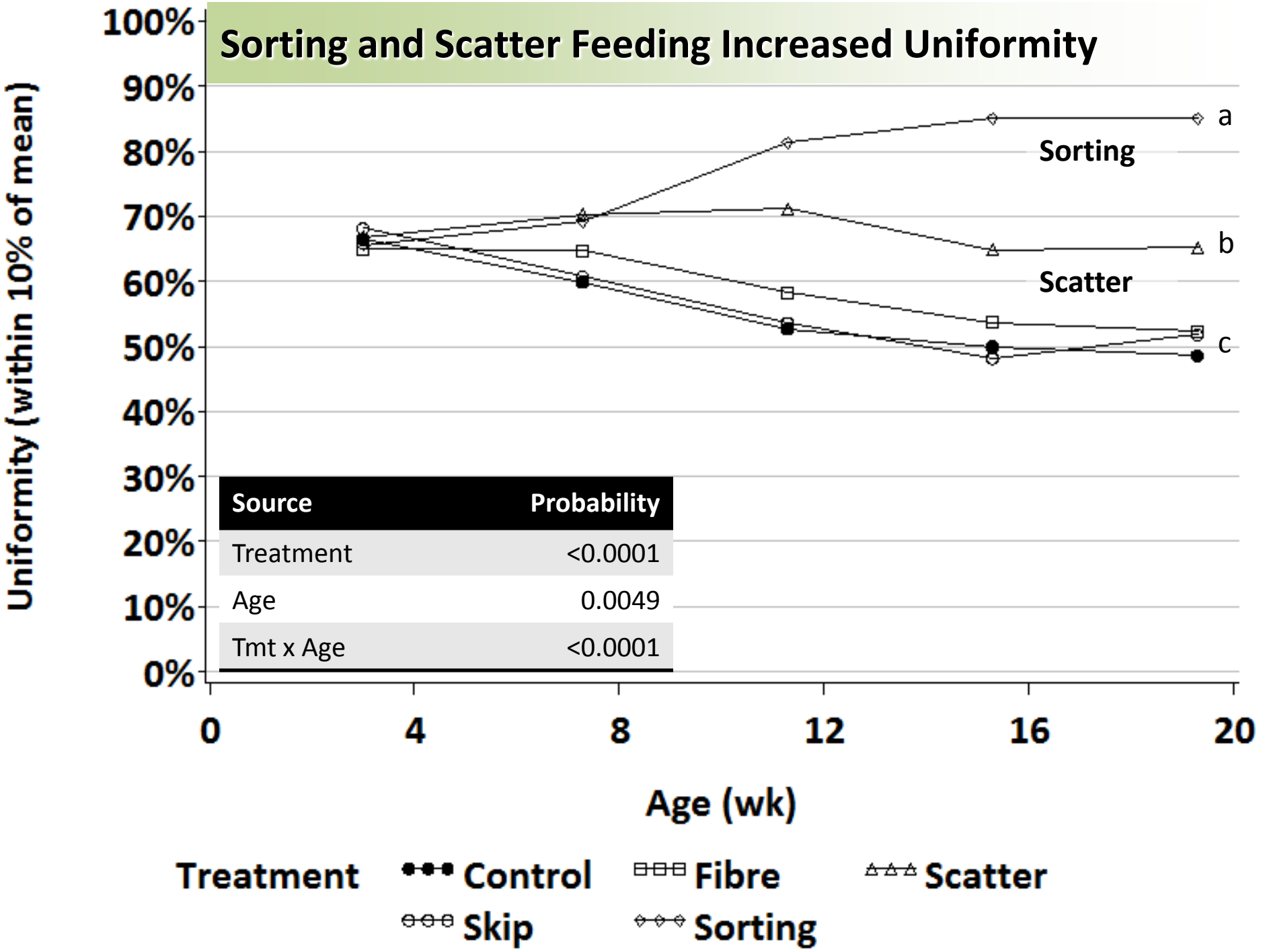
Uniformity at Photostimulation
Ready... Set... GO!



Experimental Design

Treatment	Diet	Form	ME (kcal/kg)	CP (%)	Frequency
Control	Standard	Mash	2,865	15.0	Daily
Fiber Dilute	25% Oat Hulls	Mash	2,200	11.4	Daily
Scatter	Standard	Pellet	2,865	15.0	Daily
Skip-a-Day	Standard	Mash	2,865	15.0	Alternate Days
Sorted	Standard	Mash	2,865	15.0	Daily

Sorting and Scatter Feeding Increased Uniformity





Summary – Uniformity Trial

- **Sorting was best** for uniformity
  - *Practical consideration: help the smallest group by segregating and giving extra feed*
- Scatter feeding and skip-a-day feeding also improved flock uniformity at photostimulation
- **Skip-a-day** feeding
  - increased fat stores
  - reduced breast muscle weight and average egg weight presumably due to metabolic inefficiencies



Feed Management

- Feed composition
- Feed allocation



Feed Composition

- Current recommendations for dietary protein levels may be too high
  - Growth
    - 13 g/d target growth ≈ 4 g/d of dietary protein
  - Maintenance
    - ≈ relatively low

Composition restriction: A new paradigm in broiler breeder feeding

Current research

Feed Allocation

- Change feed allocations gradually
  - Consider the bird's metabolism
  - Consider changing nutrient requirements
    - Goal: Match nutrient supply to nutrient requirements



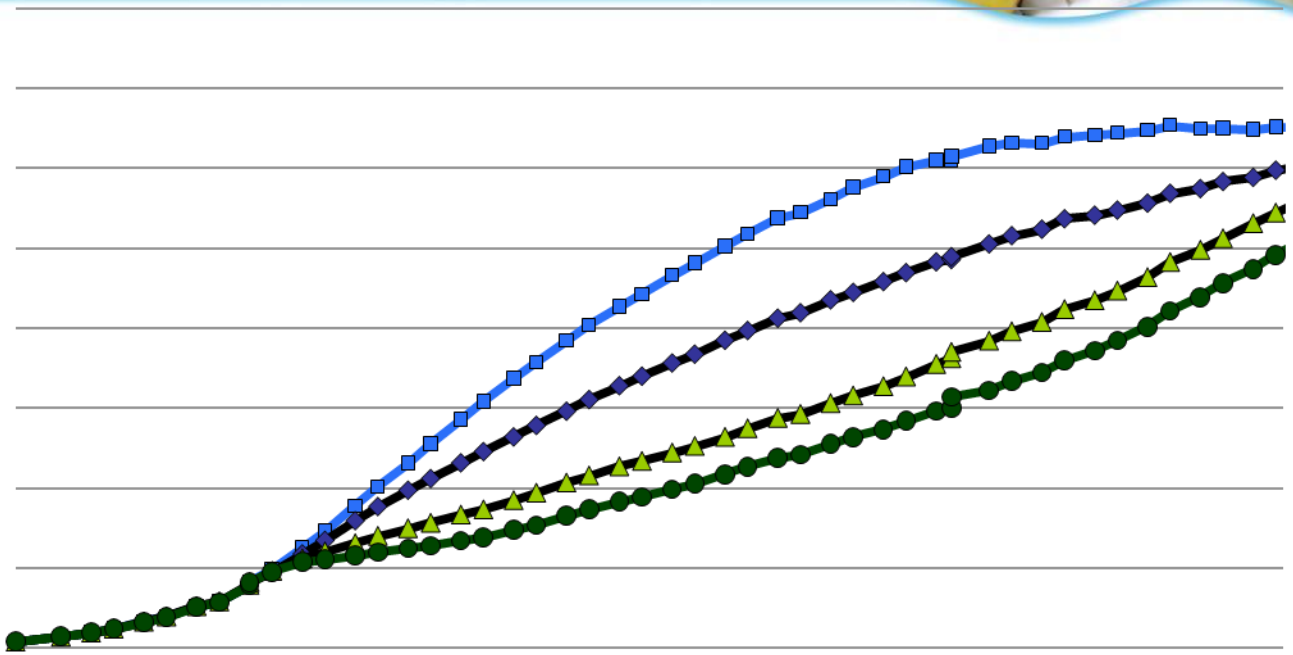
Don't let the bird's metabolism know that you've changed the feed allocation

-- Frank Robinson



Feed Allocation Principles

- Use BW gain as an indicator of metabolic status
- Weigh frequently
- Take the weather into consideration



Manipulating Reproductive Potential: Growth Profile and Photostimulation Age

RECENT RESEARCH

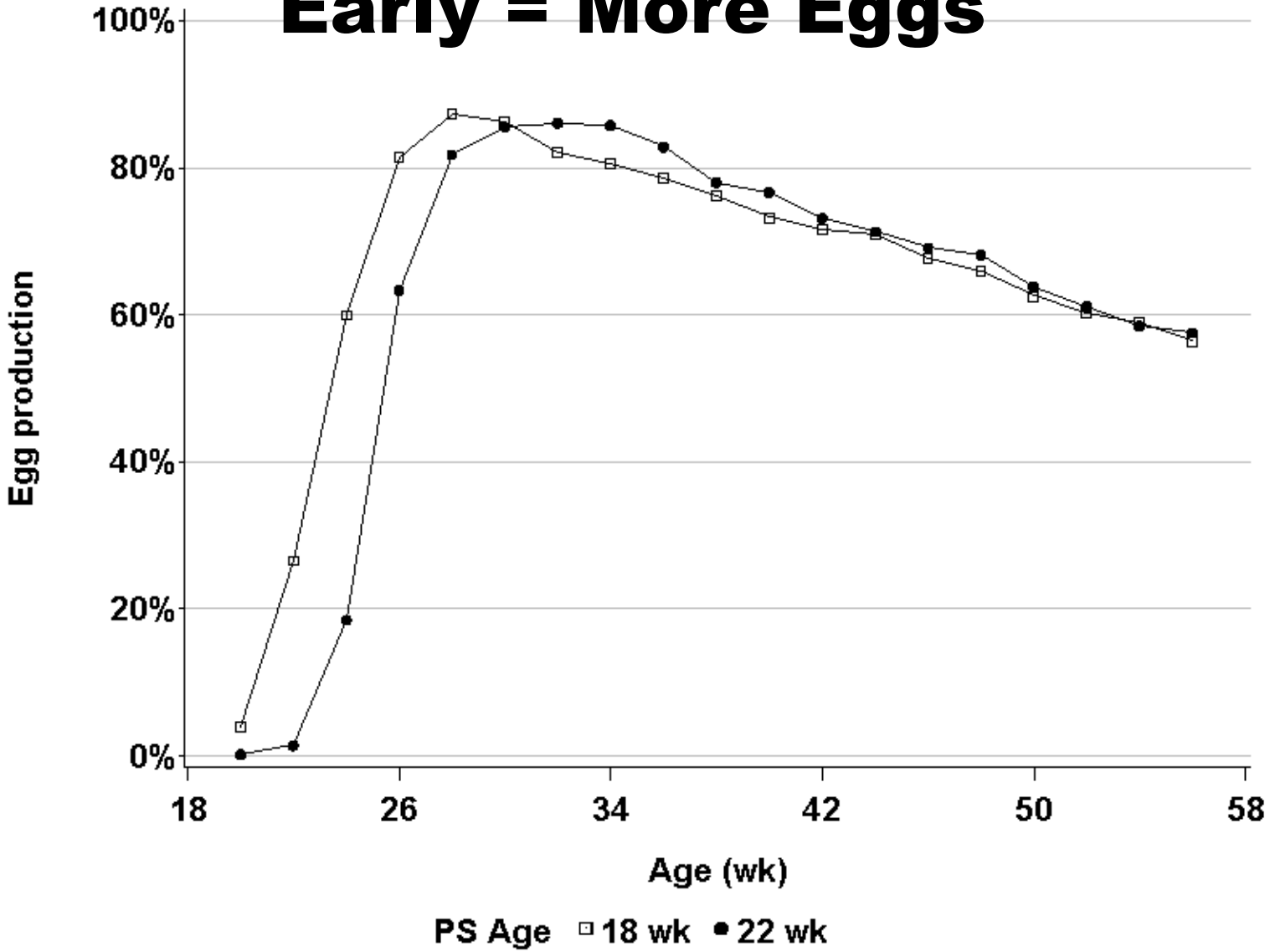


Experimental Design

- 3 commercial strains
- 4 body weight targets
- 2 photostimulation ages
  - 18 wk
  - 22 wk

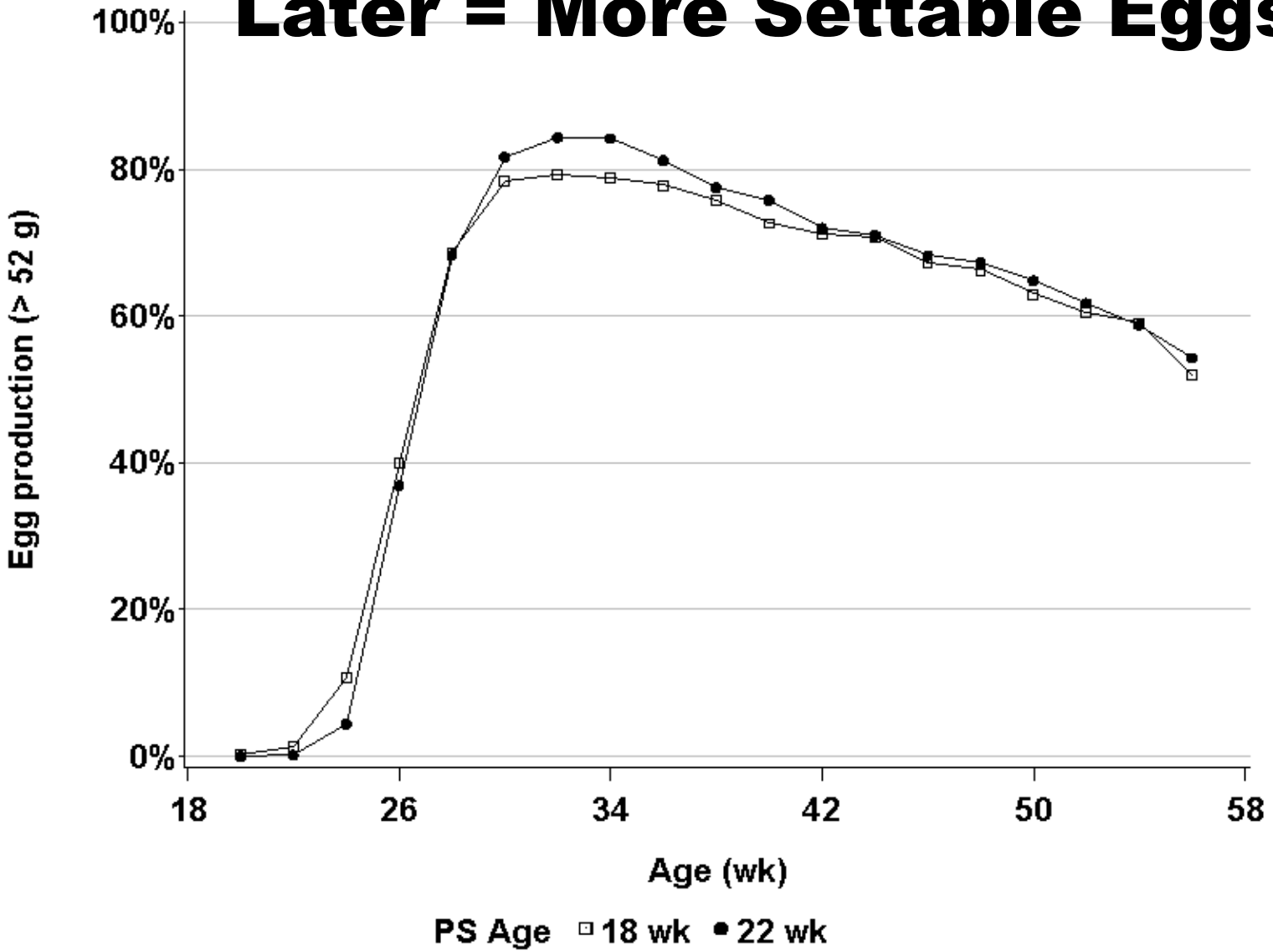


Photostimulation: Early = More Eggs

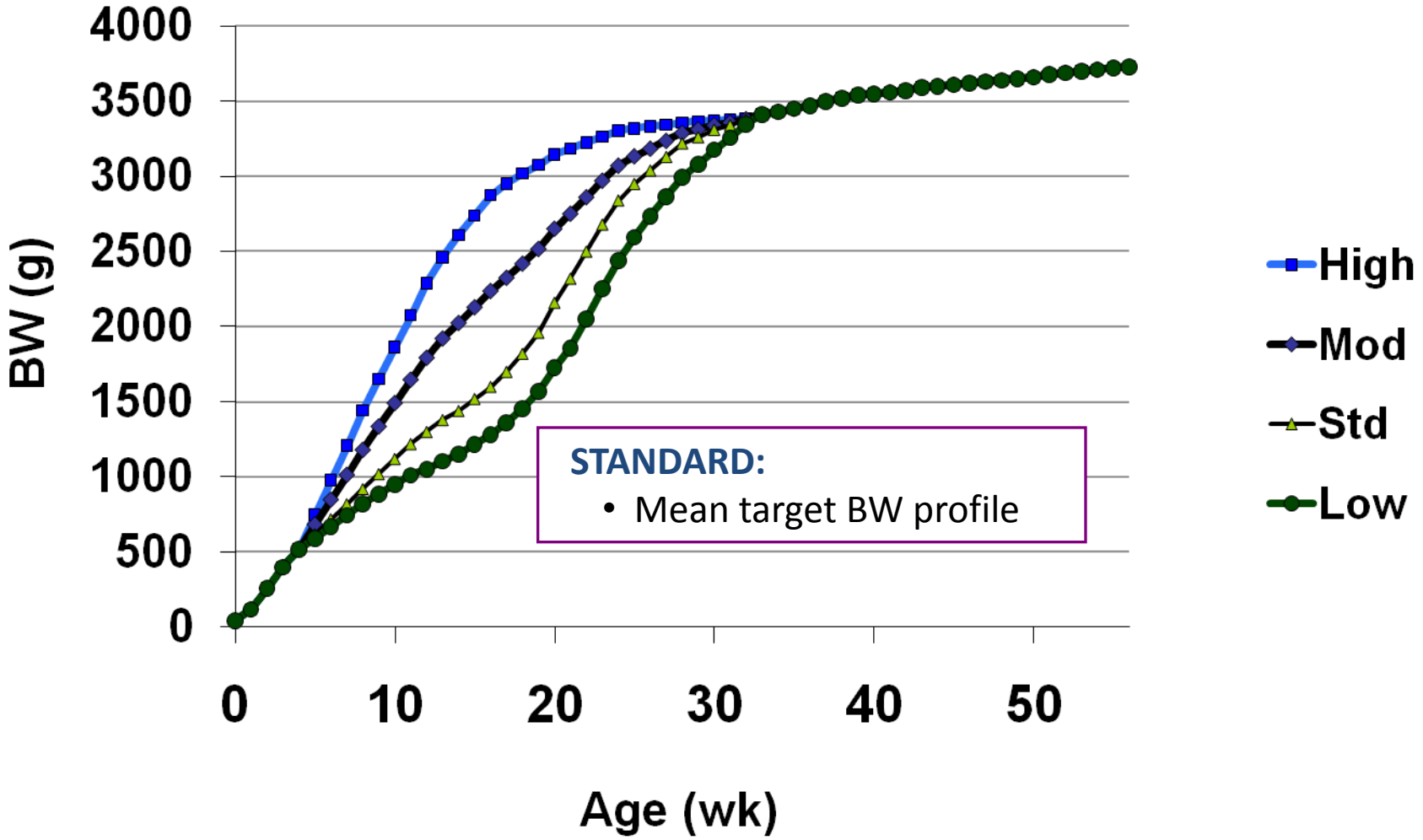




Photostimulation: Later = More Settable Eggs

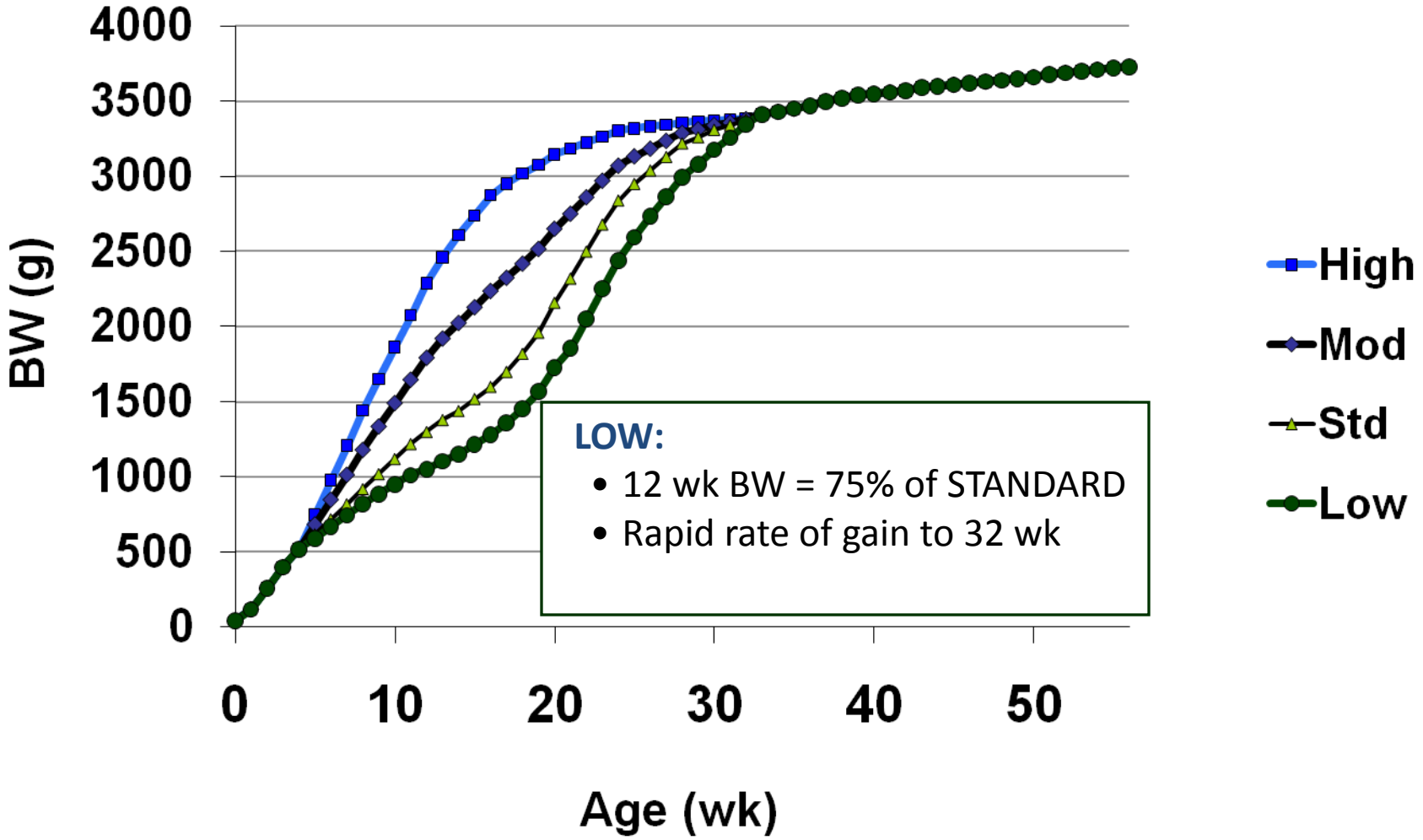


Growth Curve Targets



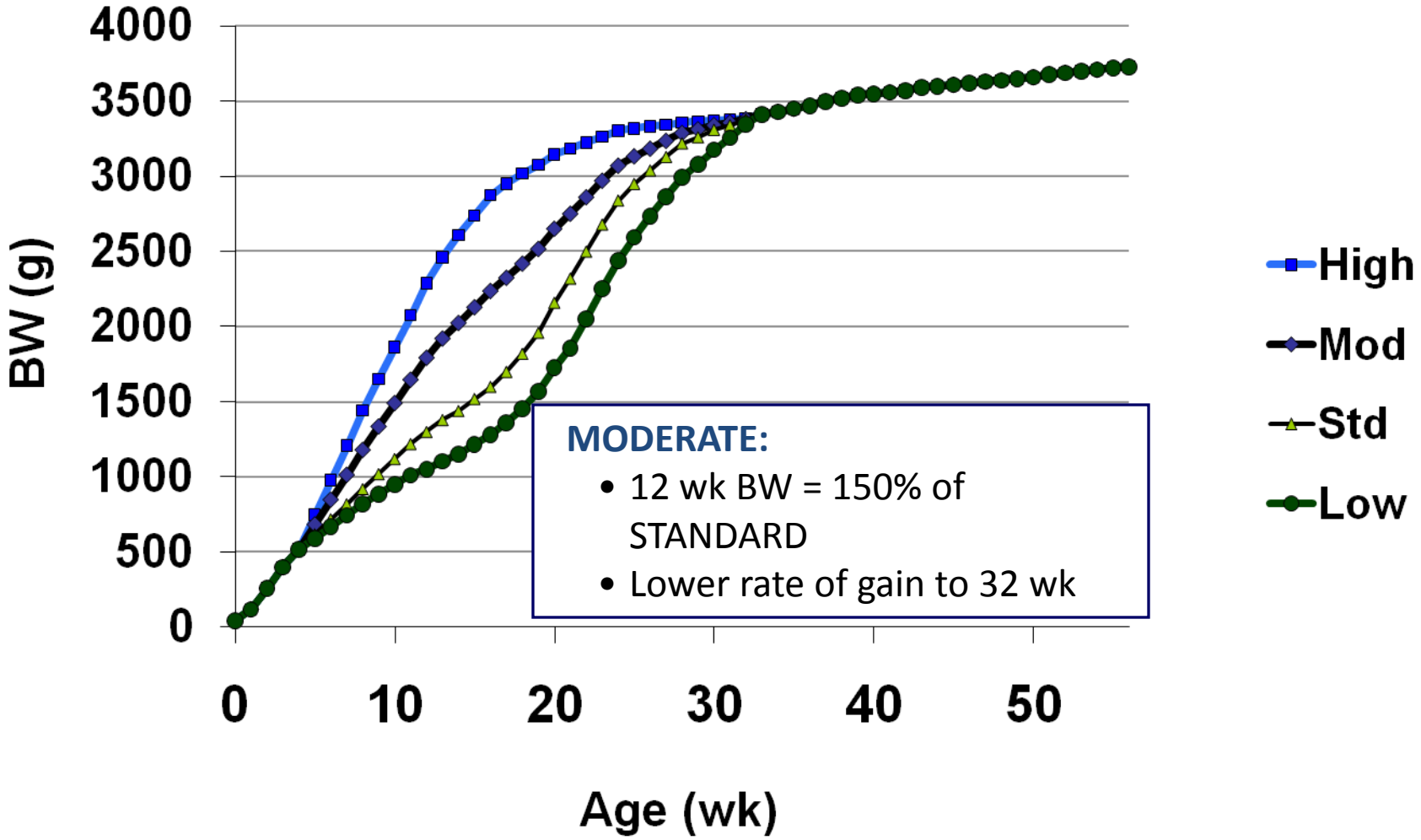


Growth Curve Targets



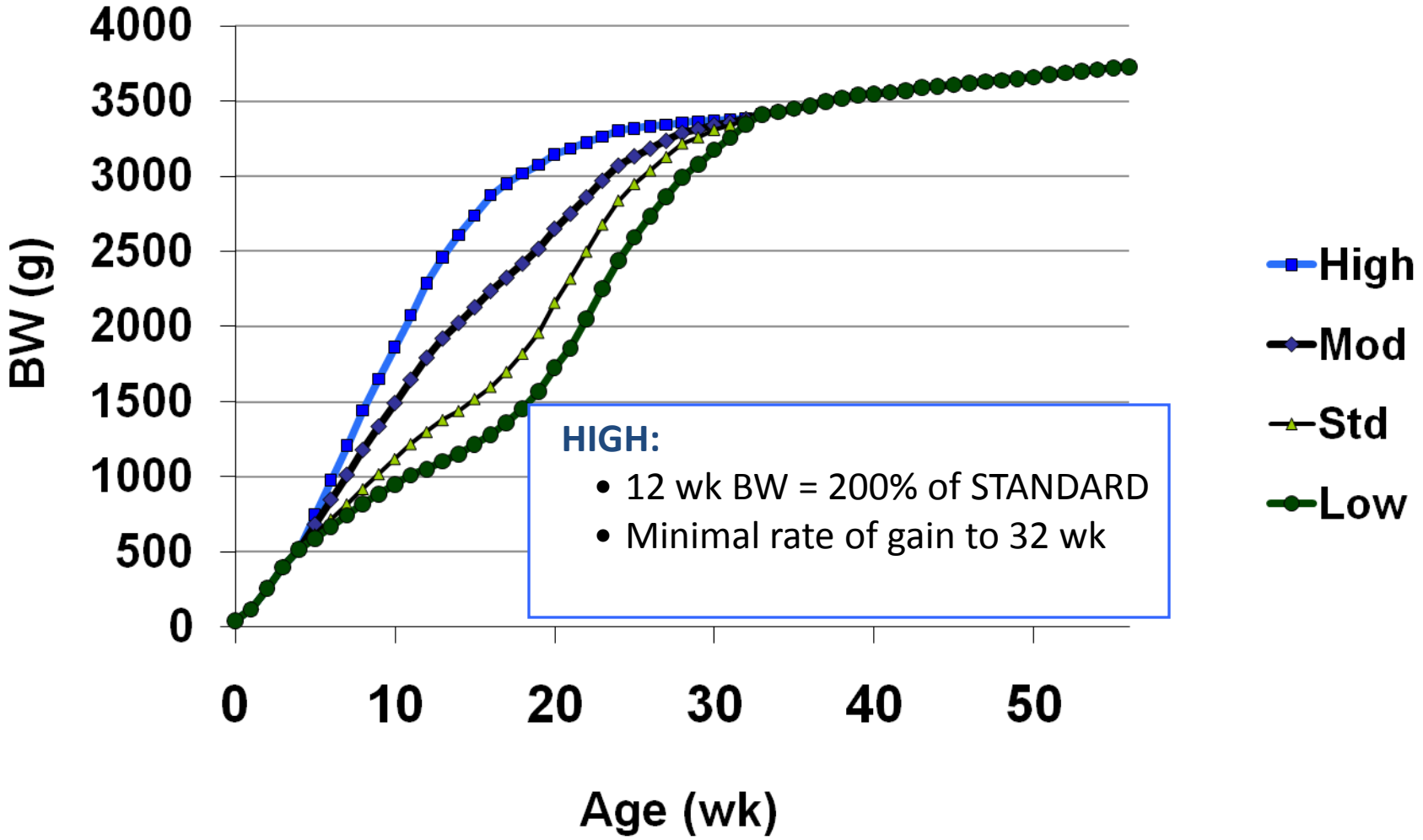


Growth Curve Targets

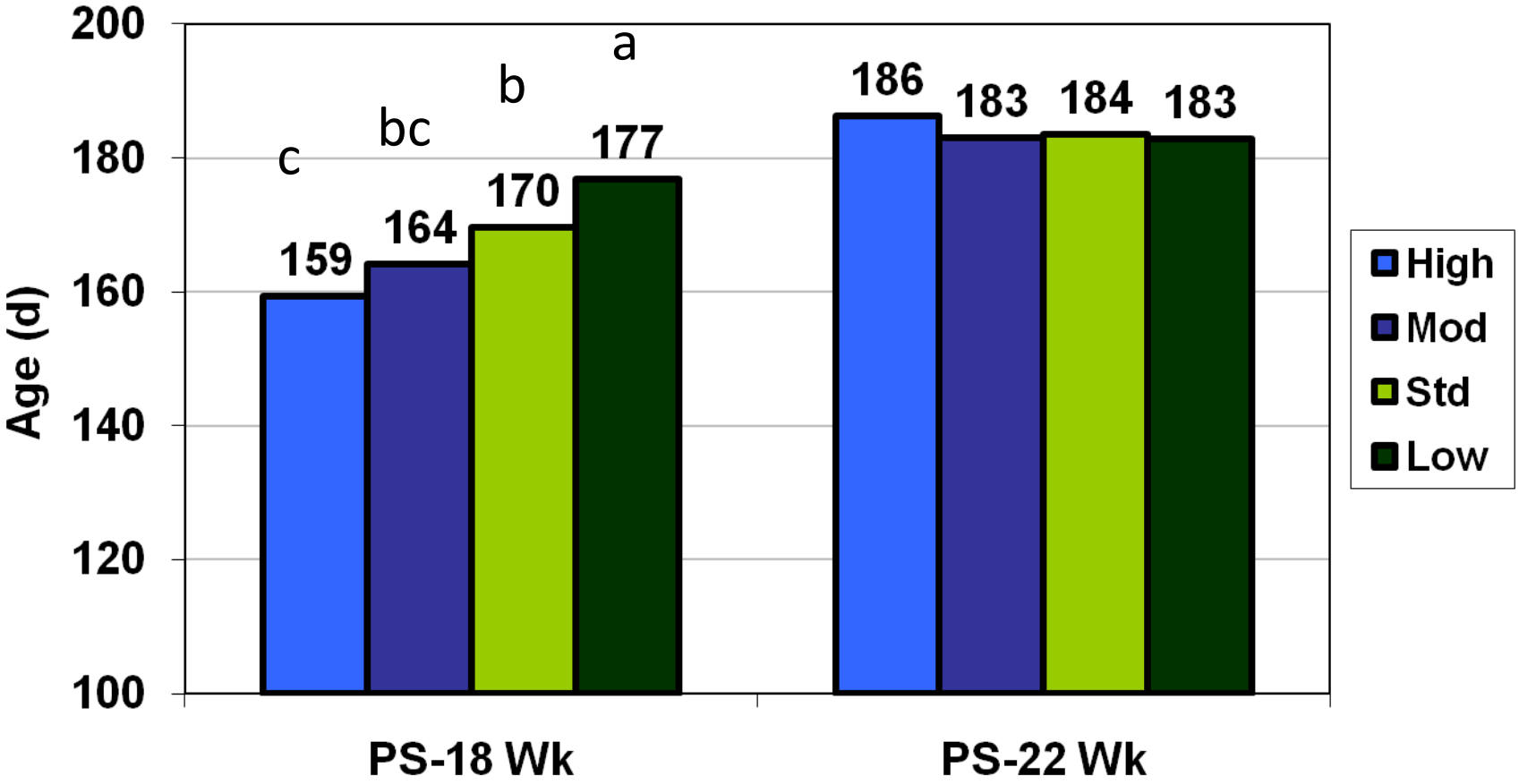




Growth Curve Targets

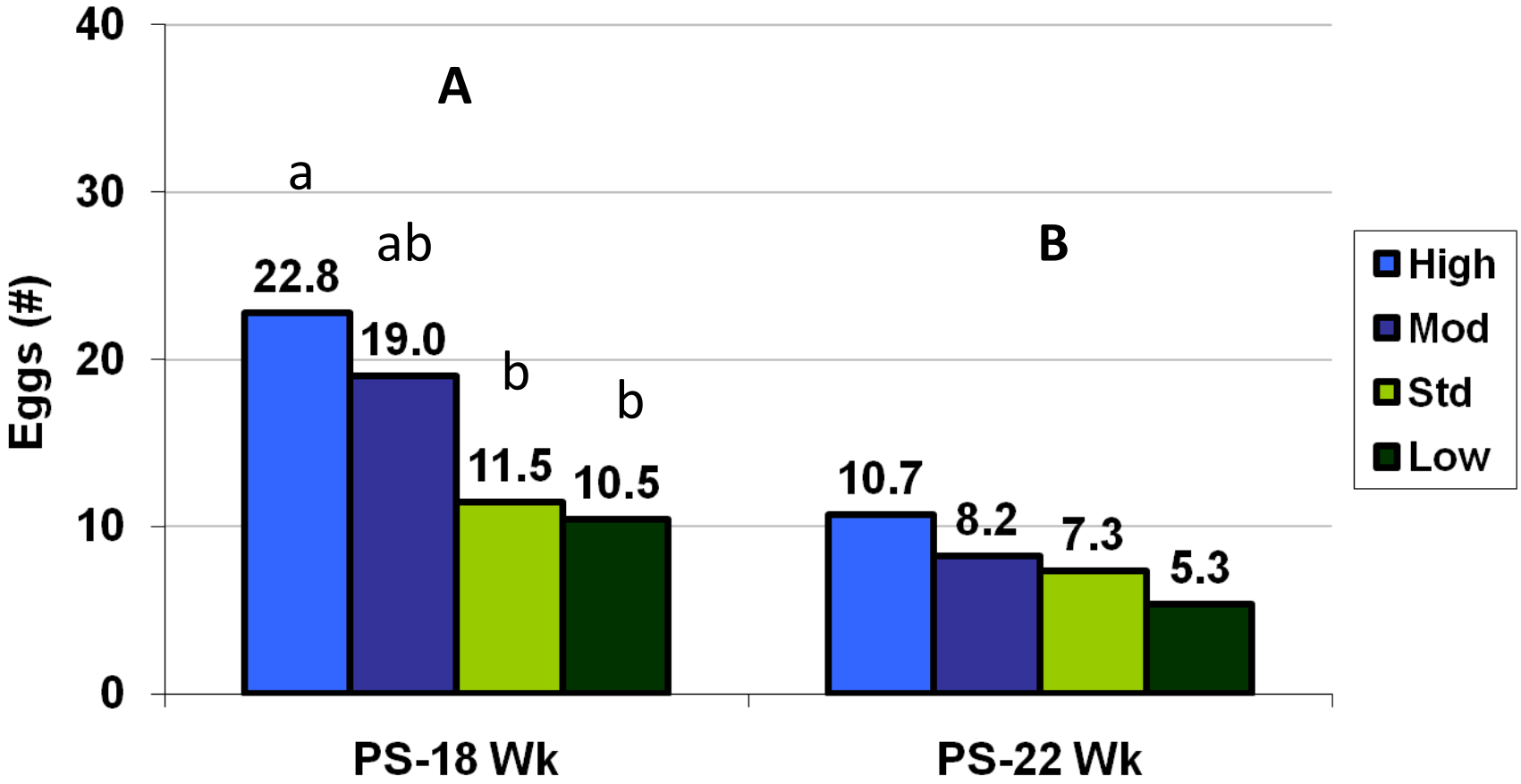


Age at First Egg

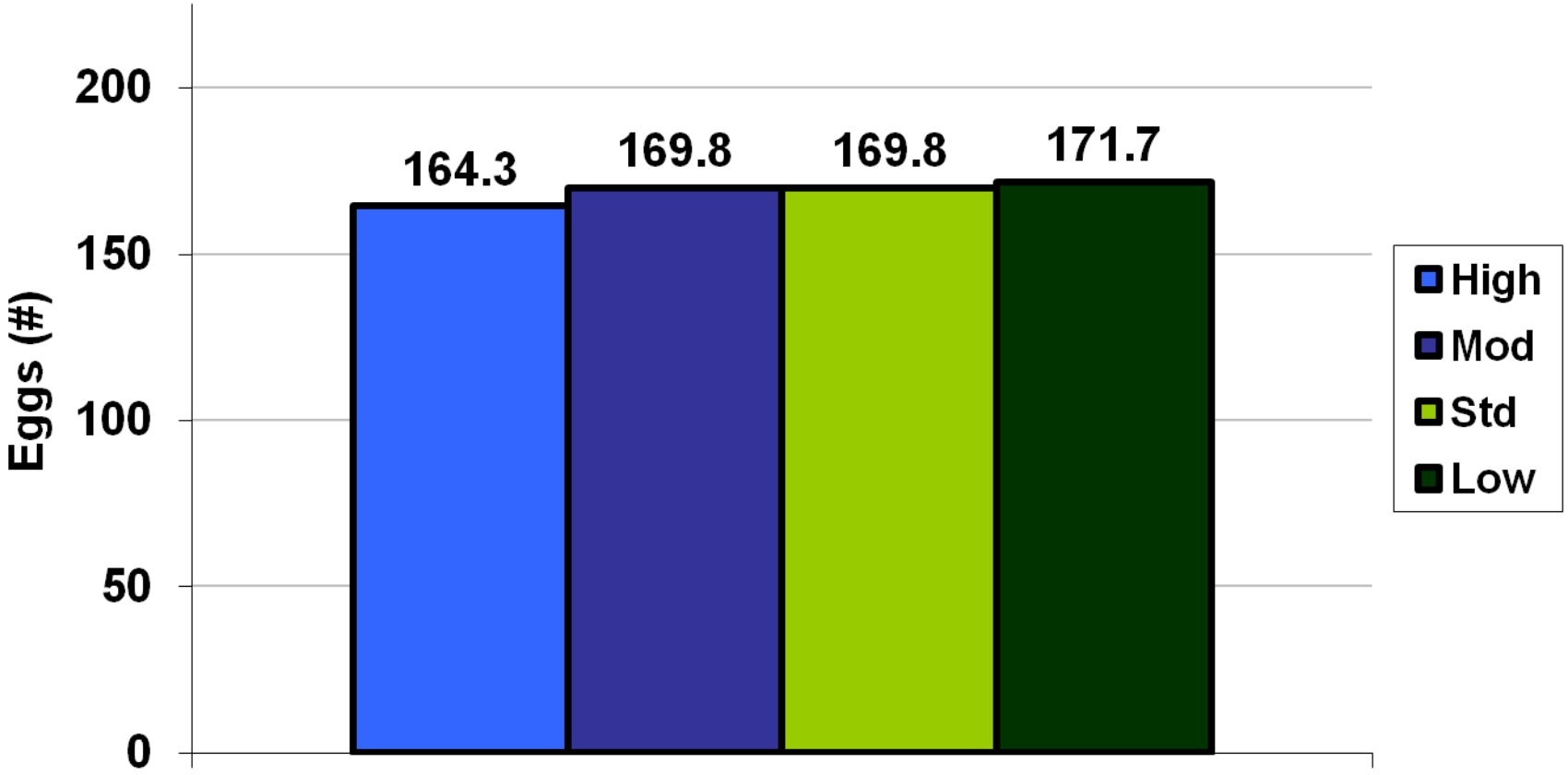


P-values: Strain=0.29 Feed=0.0047 PS age<0.0001

Small Eggs (< 52 g)



Total Egg Production*



*to 58 wk of age



So What?

- We may have more flexibility than we sometimes think when manipulating growth curves

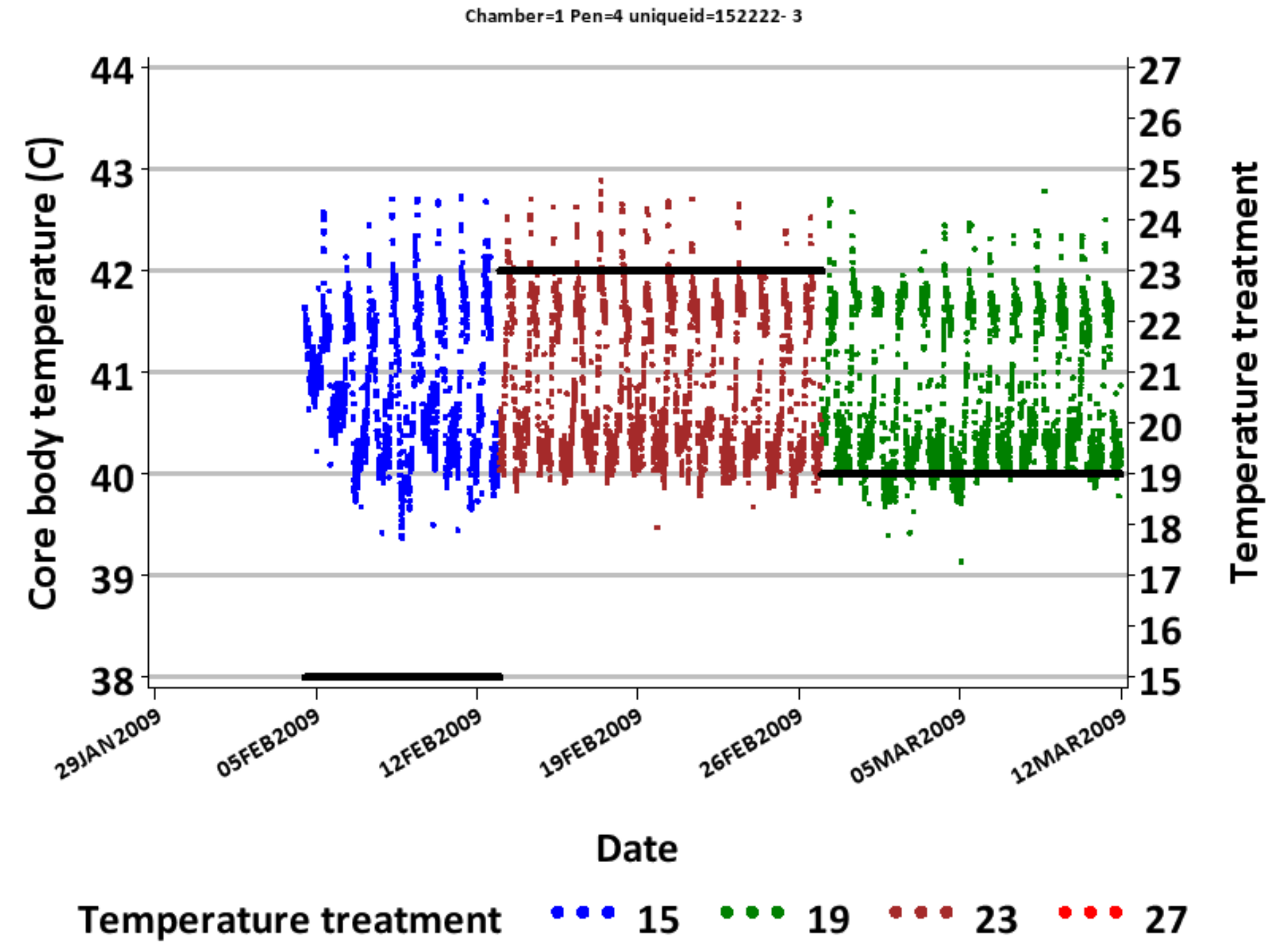


When broiler breeders start to lay, they are highly motivated to repartition nutrients away from growth, and toward egg production.



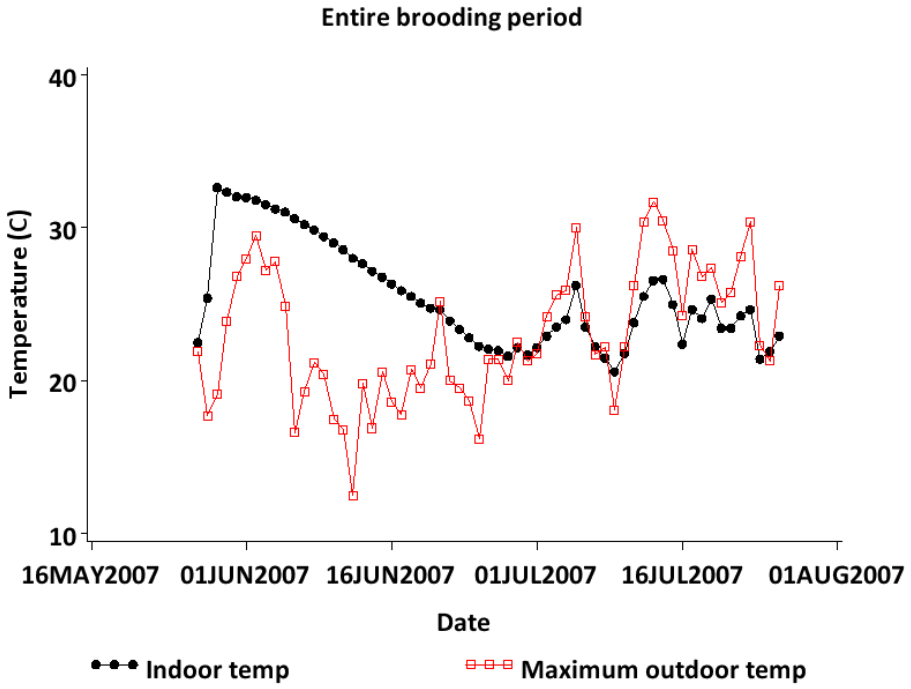
Effect of environmental temperature on maintenance energy requirements of broiler breeders

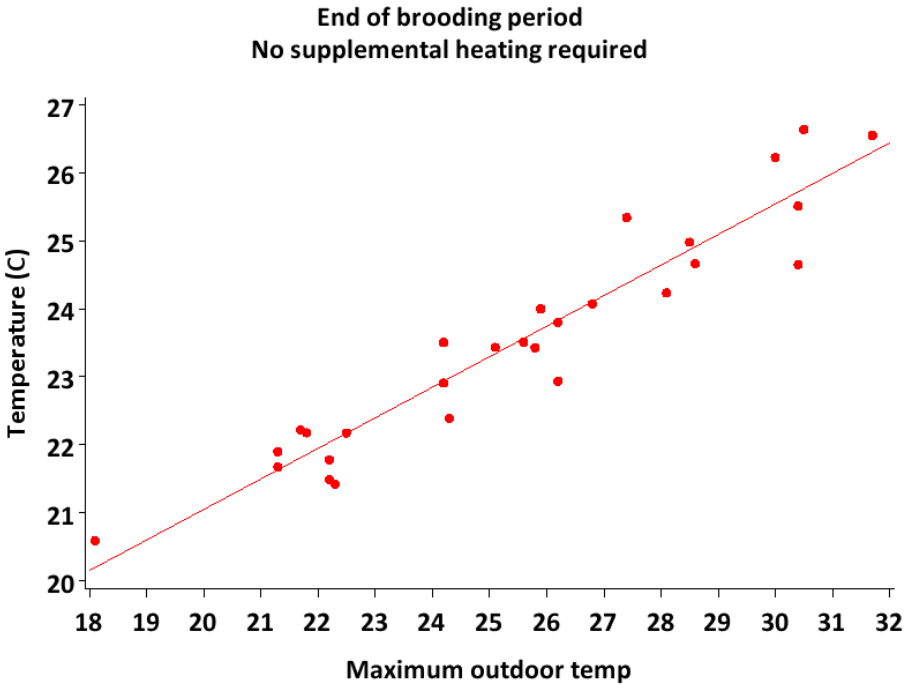
RECENT RESEARCH


Chamber=1 Pen=4 uniqueid=152222- 3
Core body temperature (C)
44
43
42
41
40
39
38
Temperature treatment
27
26
25
24
23
22
21
20
19
18
17
16
15
29JAN2009
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Date
Temperature treatment
15
19
23
27

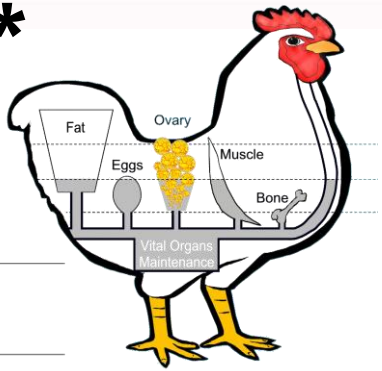
Feed Allocation Principles

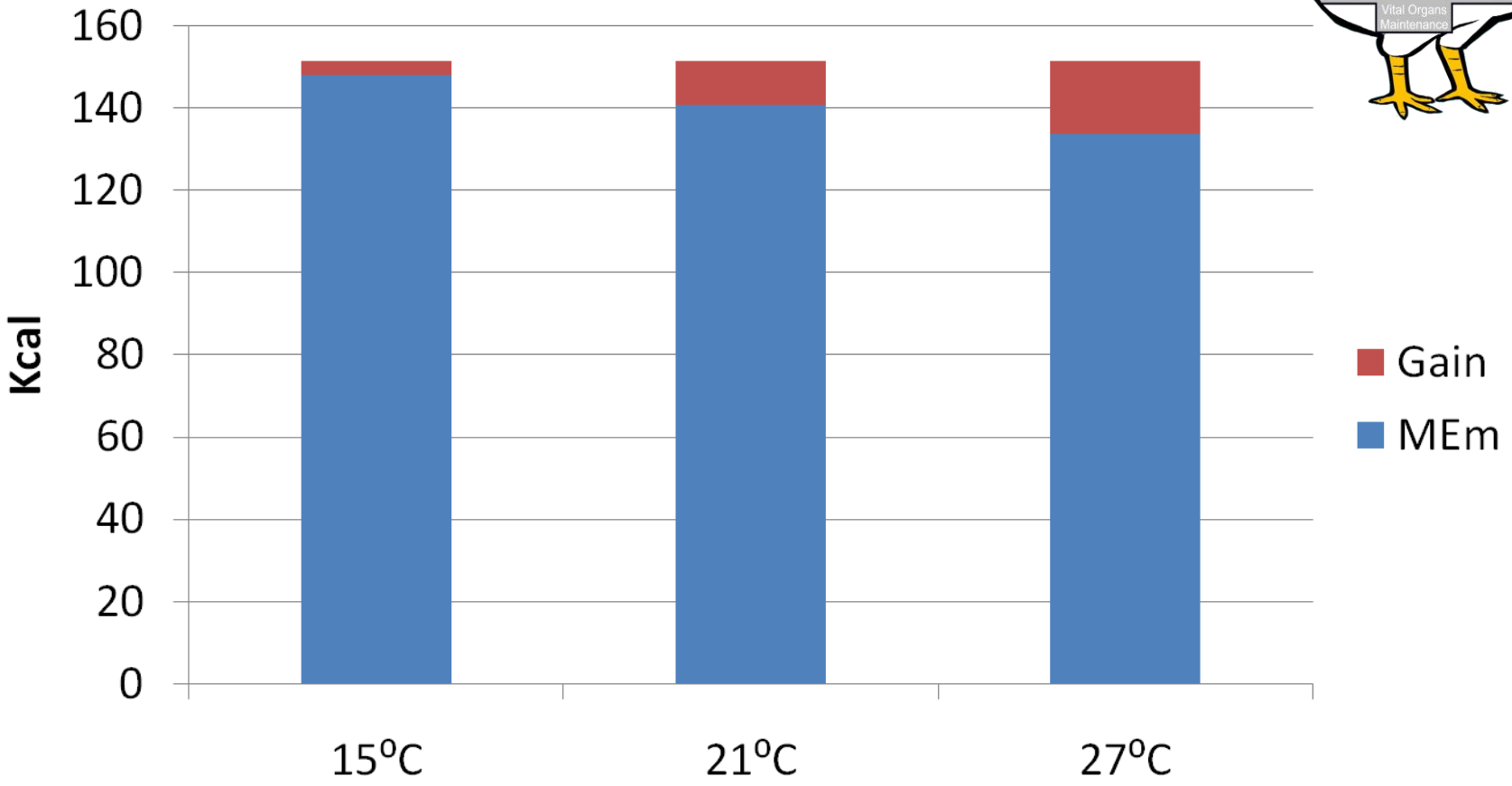
- Use BW gain as an indicator of metabolic status
- Weigh frequently
- Take the weather into consideration





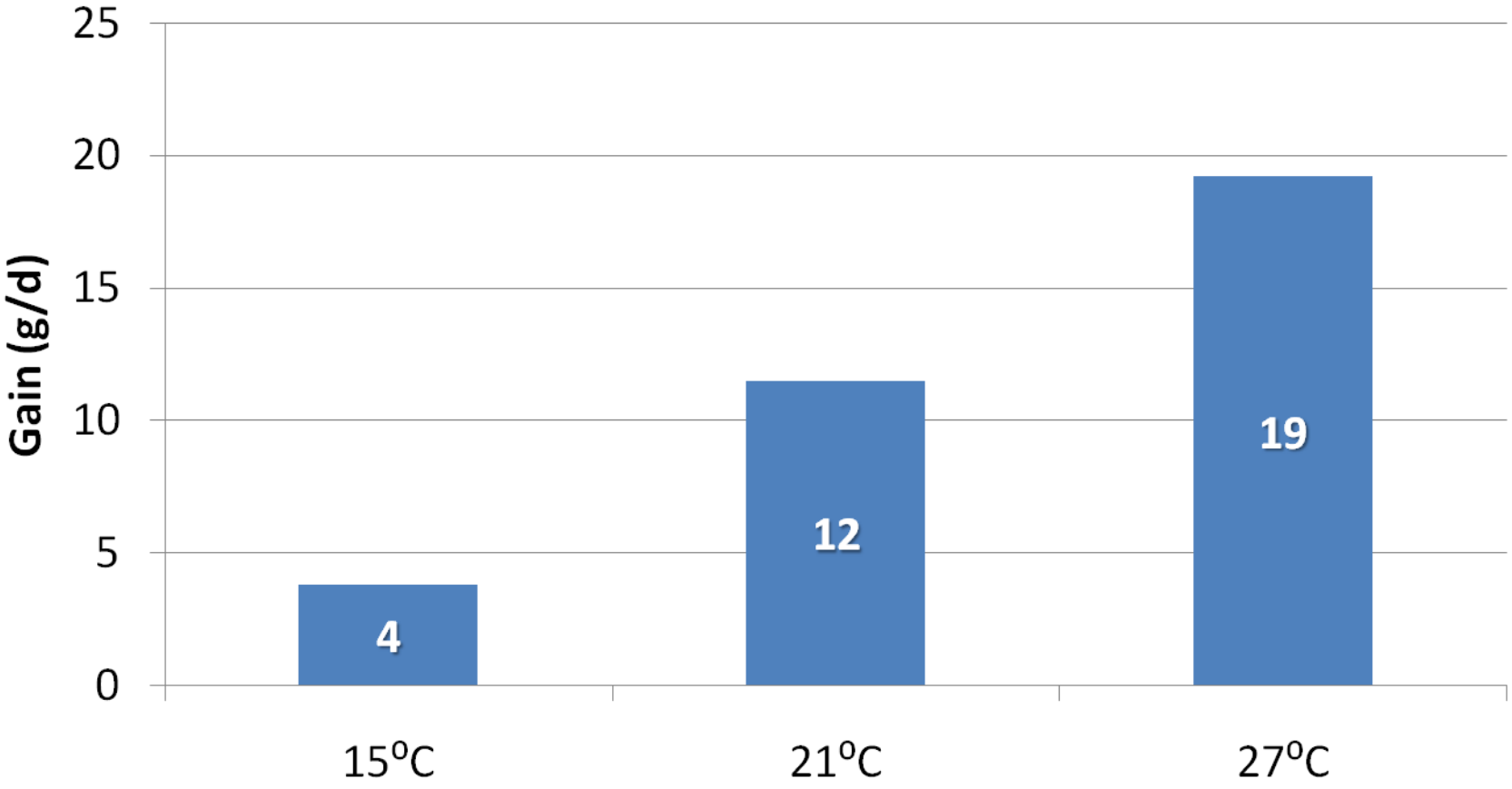
Partitioning of 55 g of Feed* (2,750 kcal/kg)





*1.3 kg pullet

Gain per 55 g of Feed (2,750 kcal/kg)



*1.3 kg pullet

*assuming requirement for gain of 0.928 kcal/g



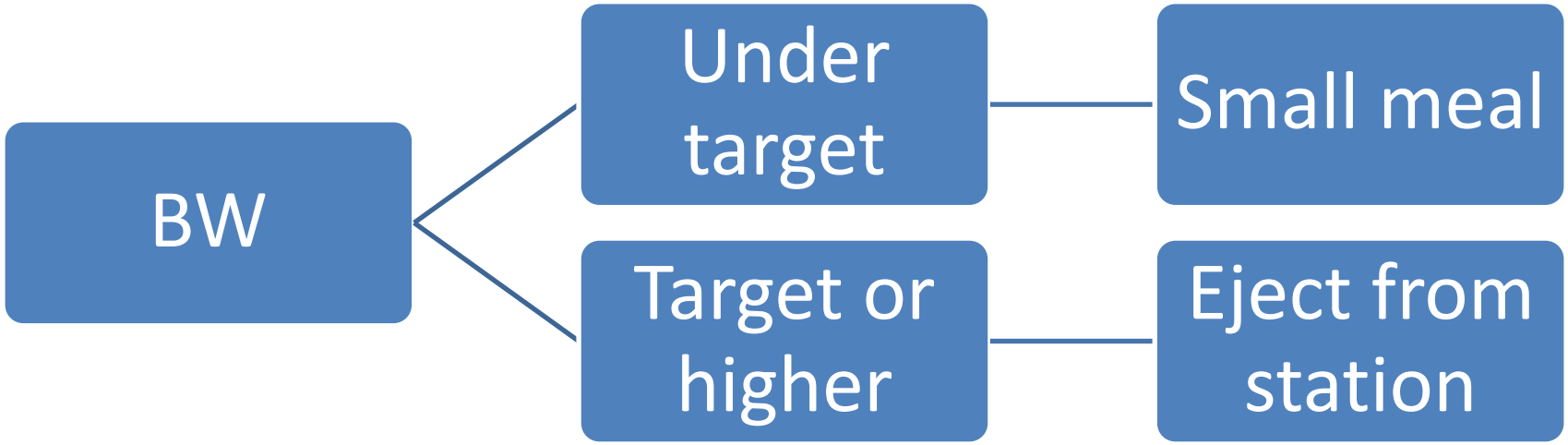
Precision management of individual broiler breeders

THE FUTURE



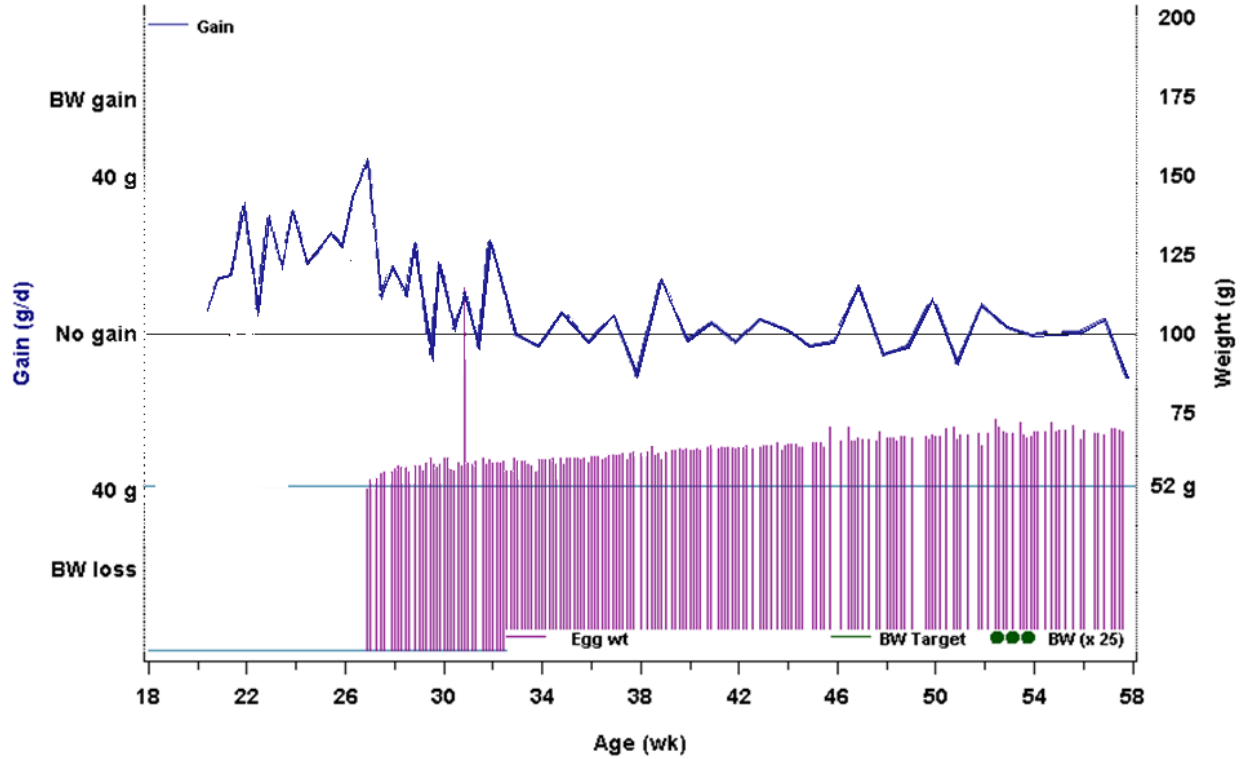
Managing Individual Hens

- Providing the right amount of feed to the right bird at the right time



Decreasing Post-peak Feed Allocations

- Keep birds <u>growing on target</u>
- Birds in a positive energy balance will prioritize nutrients toward egg production





Principles of Breeder Management

Feed allocation: SLOW and STEADY wins the race

Make feed increases as small and as frequent as possible

Use BW GAIN for feed allocation decisions



Principles of Breeder Management

Stimulate sexual maturity by changing daylength (not feed)

Support the necessary body weight gain needed with feed



Principles of Breeder Management

Don't let the bird's metabolism know that you have changed the feed allocation





Don’t forget……

you are managing something you can’t see!



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