



# Male Management

Cobb Europe Technical Training -  
ME Technical Support

# Genetic Selection



- Primary breeders are constantly being challenged to improve broiler performance (growth rate, feed conversion, yield, etc.)
- Broiler selection traits generally are negatively correlated with breeder traits (egg production, fertility, etc.); translation-life's not getting any easier for the Breeder Department!
- Fortunately, Cobb has a “balanced selection program”.
  - Our products are selected for BOTH broiler & breeder performance characteristics

# Cobb500™ Improvement

## SR Broiler 42 Days of Age



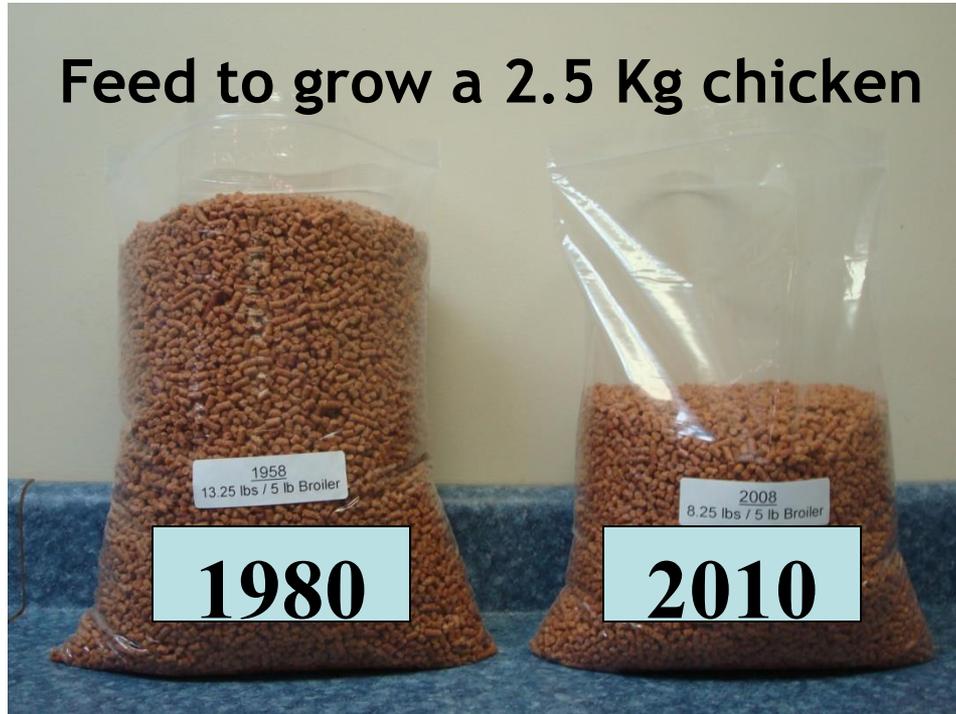
Trait	1980	1990	2000	2010	2020
Wgt (g)	1135	1588	2042	2495	2948
Wgt (lb)	2.50	3.50	4.50	5.50	6.50

# Cobb500™ Improvement

## SR Broiler 42 Days of Age



Feed to grow a 2.5 Kg chicken



Trait	1980	1990	2000	2010	2020
FCR	2.40	2.22	2.02	1.82	1.62

# Cobb500™ Improvement

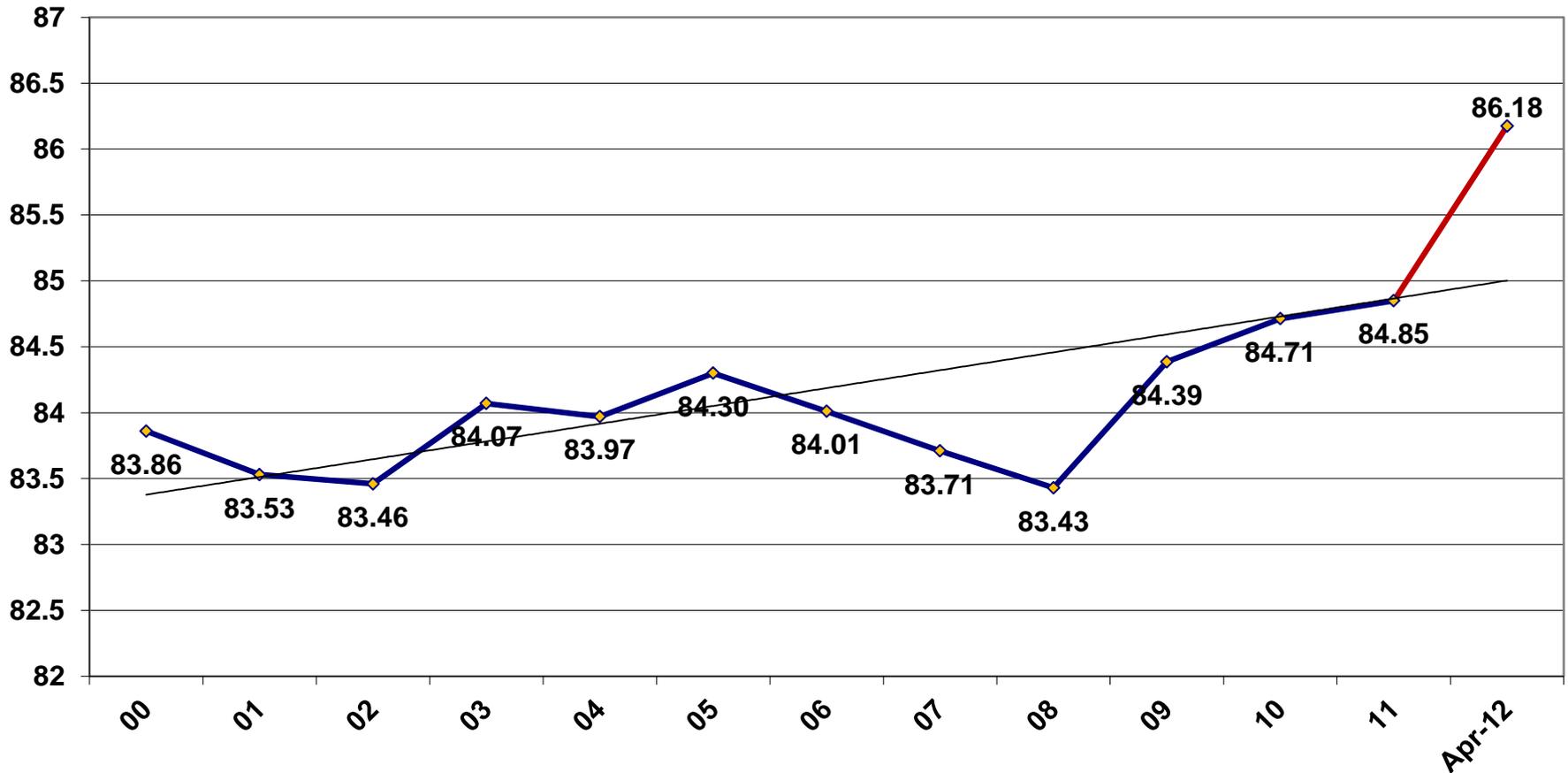
## SR Broiler 42 Days of Age



Trait	1980	1990	2000	2010	2020
Yield%	64.0	67.0	70.0	74.0	78.0
Breast%	12.2	15.2	19.2	23.2	27.2
Fat%	2.10	1.90	1.70	1.50	1.30

# Cobb 500 Hatchability

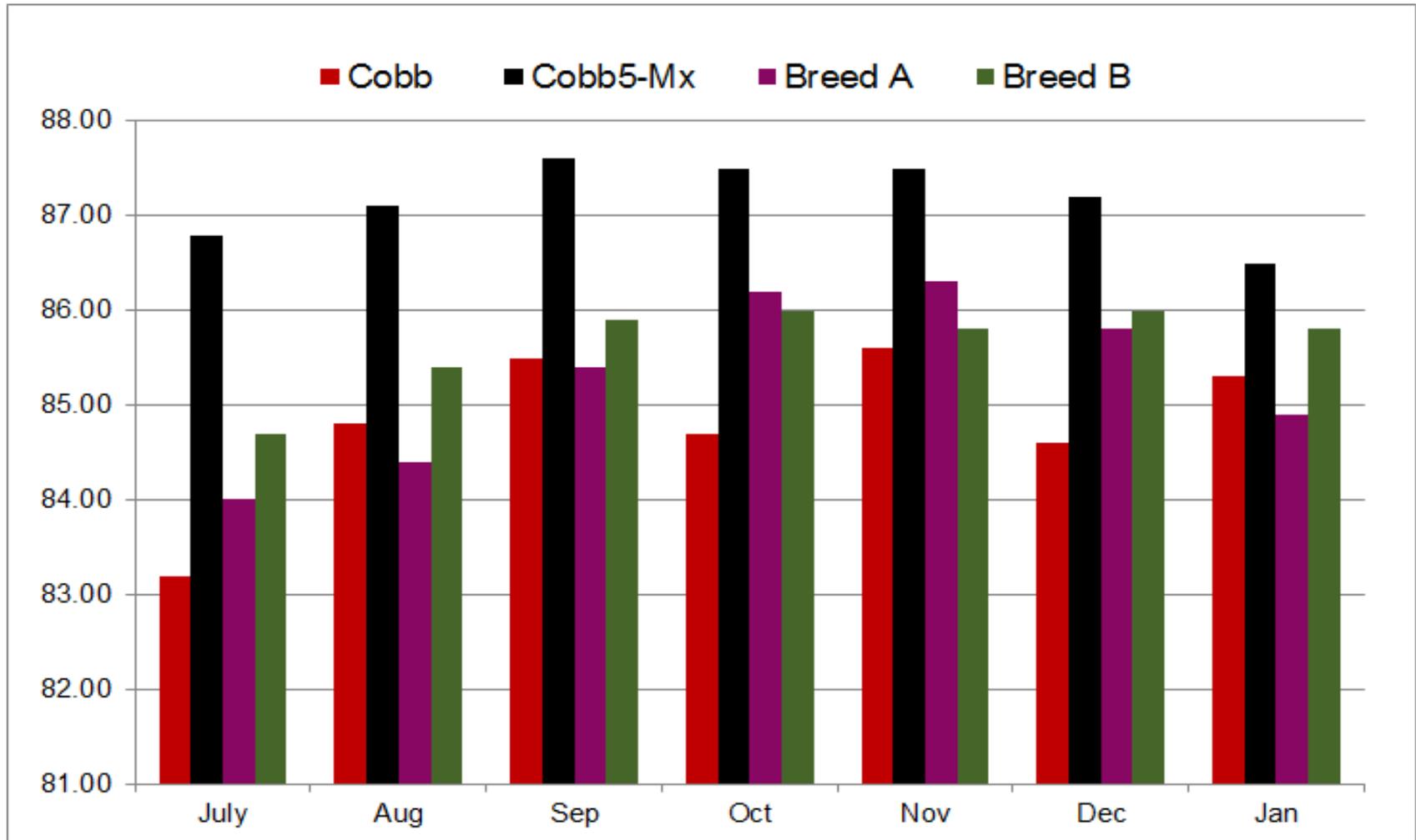
2000- Apr 2012



Apr 2012 data > 18,484,924 M Cobb 500; Avg. sell age 61.17w  
All Male breeds

# % Hatchability by Male Breed Agristats-

July '11- Jan '12



\*The Cobb Mx Male out-hatches all other male strains

# Male Management



- An August 2004 survey conducted by CVI asked the following question of several industry “experts”:
- What are the 4-5 of the most important criteria for managing males (rearing / production periods) to establish & maintain the highest levels of fertility?

# Survey Results- Management Criteria



- Rearing weight profile
- Production weight profile
- Conditioning / fleshing
- Placement density
- Sex ratio
- Uniformity
- Sex-separate rearing
- Spiking program
- Sexual synchronization
- Brooding program
- Feeding program
- Regular culling
- Feed distribution
- Feeder Space
- Ventilation
- Water consumption
- Weight differential
- HH feeding program
- Separate male ration
- Litter management
- Vaccination program

\*Top 5 rated management factors in red

# Introduction



- Both the **Male** and **Female** can be responsible for contributing to fertility problems.
- The impact of the MALE on flock fertility is approximately 10 x' s greater than the female.

Male Fertility = Sperm Quality + Mating Efficiency

- Continual selection for broiler traits does not appear to negatively affect **Sperm Quality**. However, today's males tend to gain weight more easily, potentially leading to reduced **Mating Efficiency and Interest**.

# Fertility



Poor fertility can result from:

- Low peak fertility
- Low persistency
- Generally, a combination of both



## Primary causes of low peak fertility:

- Sperm quality issues
  - Problems created during rearing (inconsistent weight gains, poor environmental conditions....)
- Inadequate male / female interaction
  - ✓ Incorrect weight differential
  - ✓ Incorrect sexual synchronization
  - ✓ Excessive number of males
  - ✓ Result → **Poor hen receptivity**

# Fertility

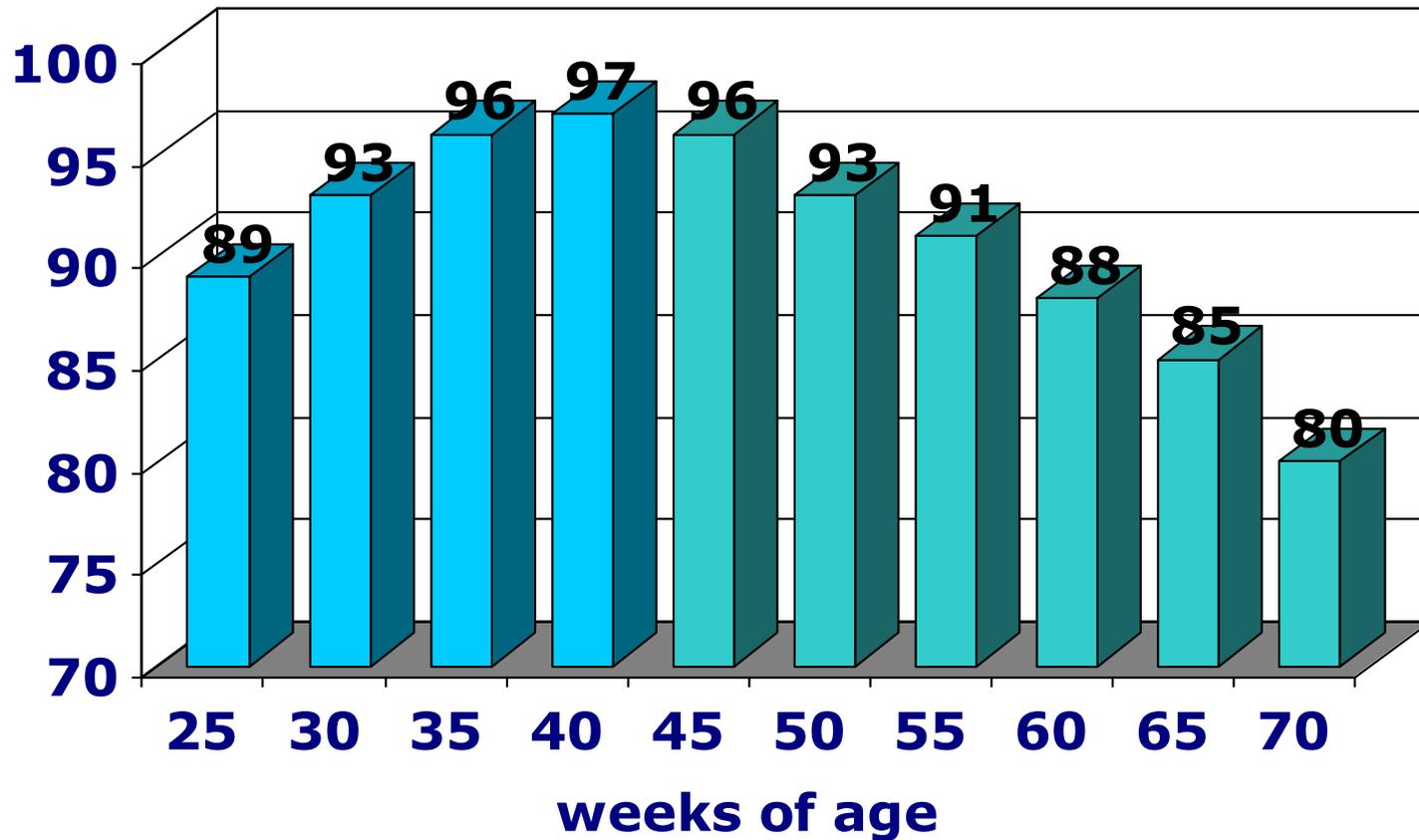


Poor Persistency is generally more common & can be attributed to:

- > Reduced mating efficiency
- > Reduced interest (libido)
- > Decline in sperm volume/quality



# Lifetime trend in flock fertility



# Why does fertility decline with age?



- There is a natural relationship between bird behavior and physiology.
  - Roosters gradually become less interested in mating & **complete fewer matings.**
  - The hen physiologically needs to be mated more often to sustain the same level of fertility.
- In other words, the challenge to maintain early fertility in a 40+ week old flock increases as the flock ages. **Management** plays a vital part in maintaining high fertility.

# Housing & Equipment



- Feeder space
  - Chain Feeder- 7.5” 19.0 cm from 5 wks > depletion
  - Pan Feeder- 1 pan/ 8 males from 5 wks > depletion
  - ALL males must be able to eat simultaneously.

- Placement density
  - 4.3 males/m<sup>2</sup>

- Water space
  - Nipples- 1 nipple per 8 cockerels.
  - Bell Drinker- 1 bell per 60 cockerels.
  - Birds should never have to travel over 3m to reach water.



# Male Physiological Development

(Collaborative research efforts of Kirby-UA, Wilson-UGA,, McDaniel-MSU, Brake-NCS)

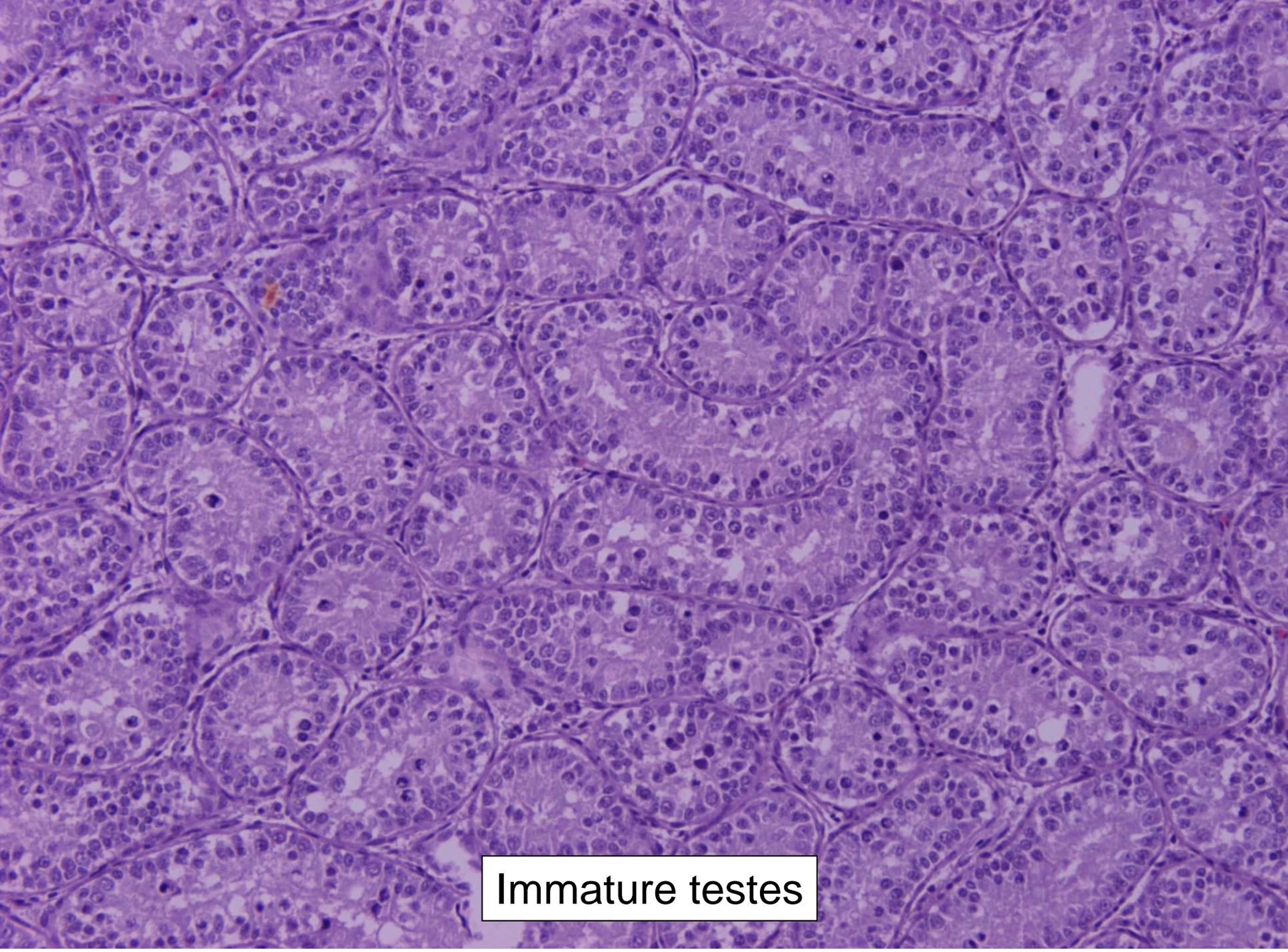


# Male Testes Development



Age Period (wks)	Phase	Important Phenomenon	Approximate testes weight (pair)
0-2	Pre-pubertal	Start of the gonadal development	-
2-12	Pre-pubertal	Multiplication of Sertoli Cells Multiplication of spermatogonias	-
13-20	Puberty	Start of testes development and semen production	0.5-2g
20-24	Puberty	75% of testes development after light stimulation	25-30g
25-30	Sexual Maturity	End of testicular development, maximum semen production	35-45g
40-65	-	Start of testicular regression	25-30g

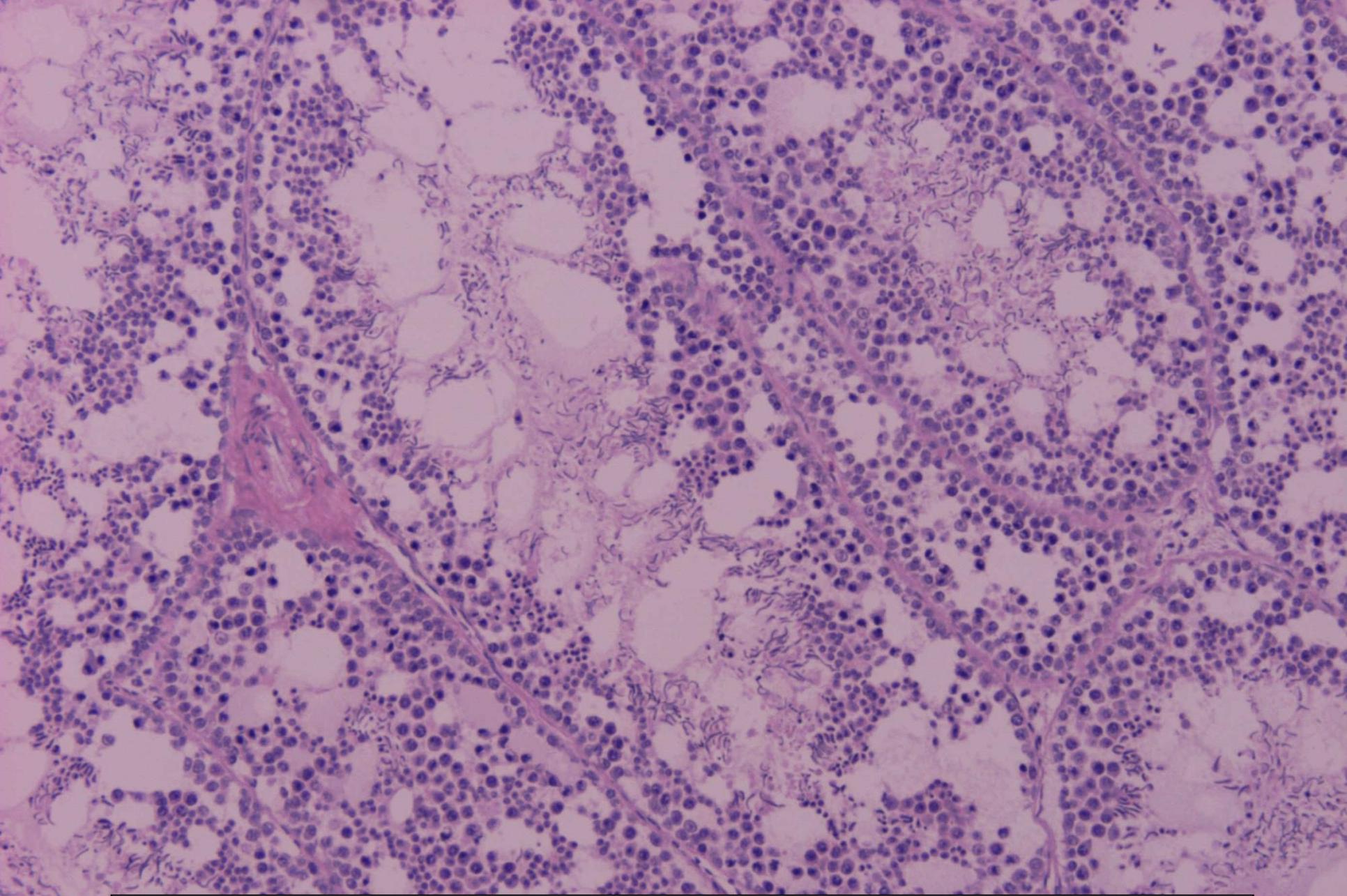
**High Correlation between Sertoli Cell Numbers and semen production. Maximum potential of semen production is established between 8 and 12 weeks of age.**



Immature testes



Testes fully functional and producing spermatozoa



Testes regressing, many vacuoles, few sperm produced



# Male Bodyweight Effect on Testes Weight

Age (wks)	Body Weights (kgs.)			Paired Testes Weights (gm)			% Fertility		
	Light	Average	Heavy	Light	Average	Heavy	Light	Average	Heavy
20	2.40	2.80	3.20	0.8	<b>1.4</b>	2.9			
25	3.10	3.50	3.95	2.6	<b>26.3</b>	34.0			
30	3.95	4.10	4.20	23.6	38.0	41.0	86.3	92.1	95.3
40	4.50	4.60	4.80	33.0	40.1	39.1	90.0	96.3	96.8
50	4.70	4.80	4.95	32.0	36.0	35.0	91.3	93.4	91.5
60	4.80	4.90	5.10	28.0	26.0	24.0	86.1	89.3	82.7
<b>LOF % Fertility:</b>							88.4	92.8	91.6



Feeding & Bodyweight  
Control

# Male Management

## Brooding Period



- Important for skeletal (80% at 8 weeks), organ and feather development
- Keep Males and Females Separate for a minimum of 6-8 weeks IF comingling must be done
- Stocking density 3.6-4.3 males/m<sup>2</sup>
- Ensure birds find feed & water quickly post placement. Maintain light intensity of 20- 60 lux to help locate feed & water
- the type of rearing feeder is important for later training & hen house transition



# Effect of Early Nutrition on BW & Performance



Program	4w Weight (grams)	LOF % Fertility
Full Feed Starter for 4 wks. Co-mingled at 20 wks.	560	91.7
Full Feed Starter for 4 wks. Co-mingled at 10 days.	475	85.0
Full Feed Starter for 4 wks. Co-mingled at day 1.	360	84.2

Dr. John Brake, NC State

# Effect of Early Nutrition on BW & Performance

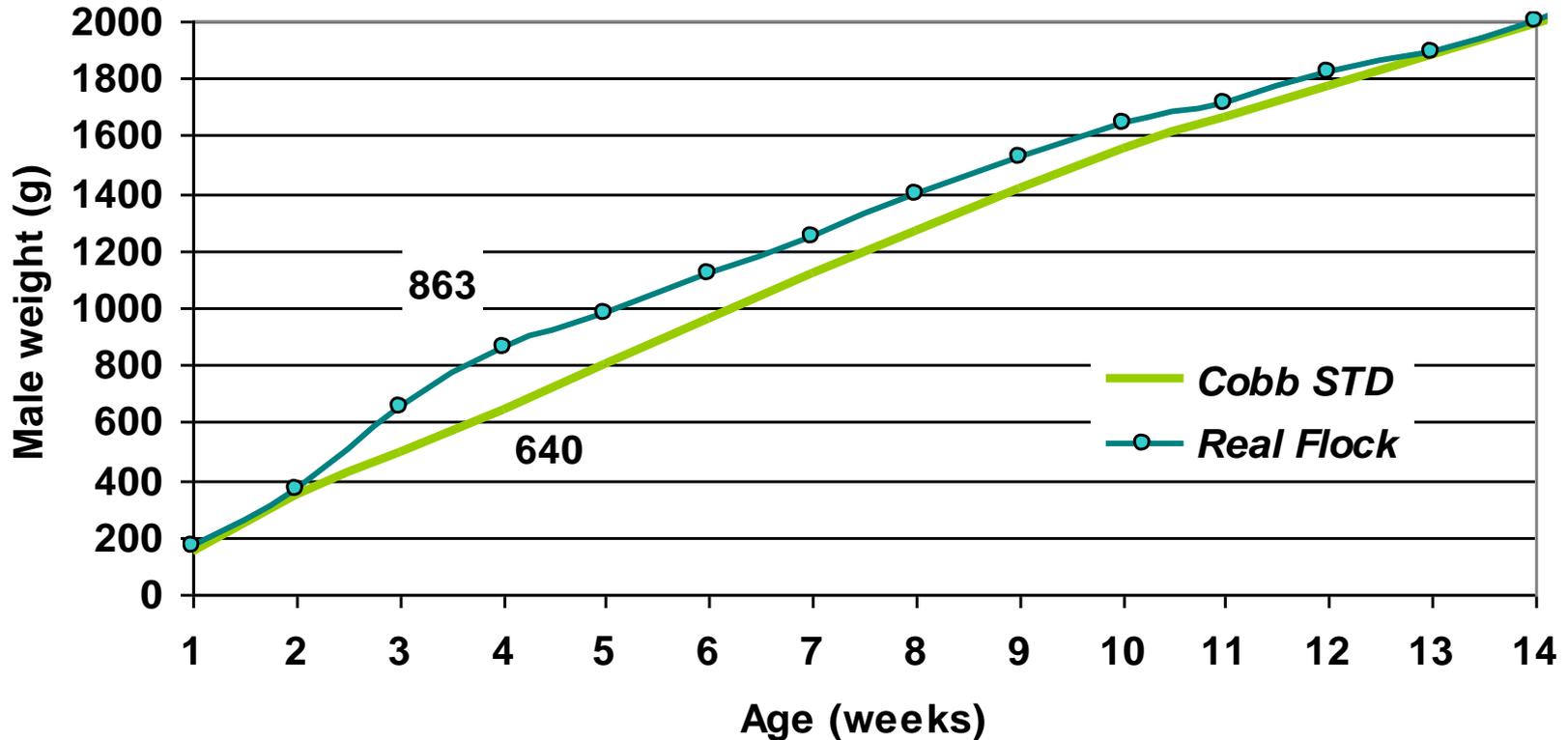


4 Weeks		20 Weeks		LOF % Fertility
Weight	Shanks	Weight	Shanks	
560	7.1 cm	2910	12.9 cm	91.7
475	6.9 cm	2700	11.1 cm	85.0
360	6.4 cm	2530	10.4 cm	84.2

Dr. John Brake, NC State

# Male Management

Growth Profile in Rearing - Excessive early growth



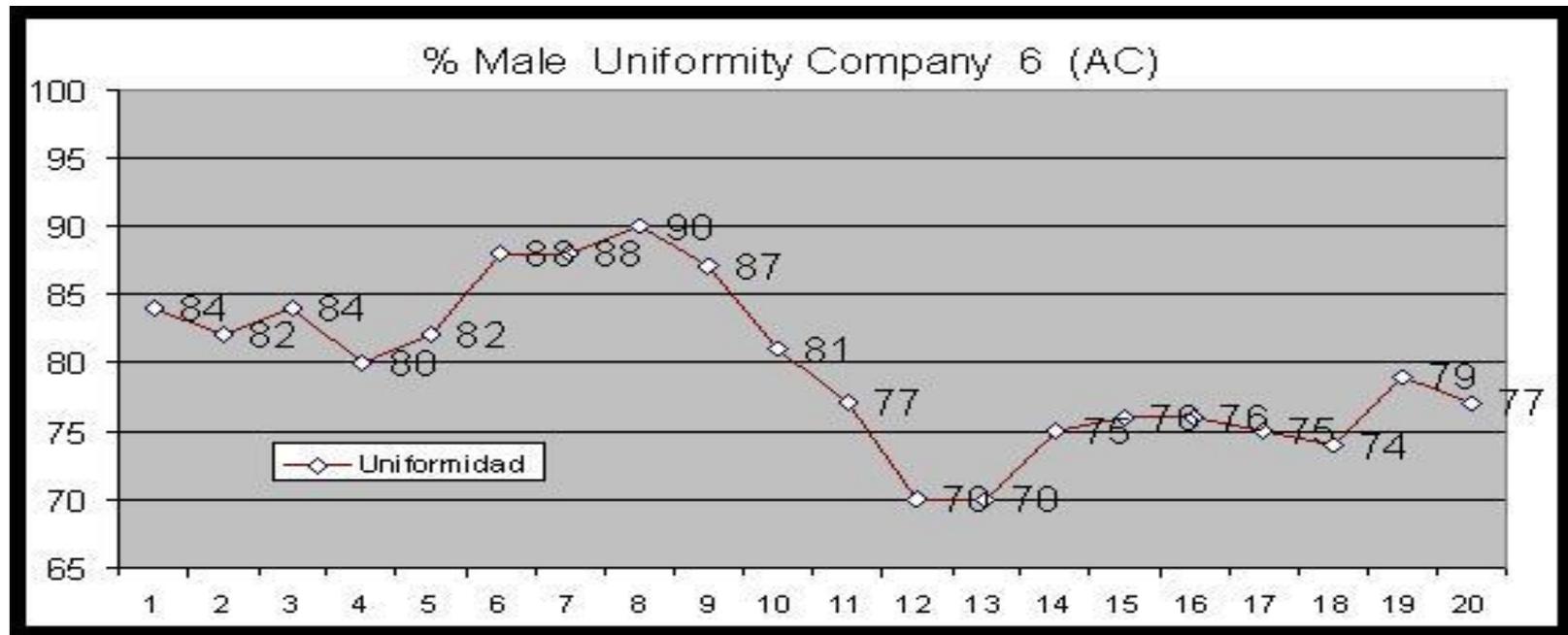
Avoid excess early growth, start restriction as needed

# Male Management

## Uniformity in Rearing



- Aim at keeping the males over 75% uniformity
- Keep a “small bird pen” per house
- Grade at 4 weeks by weight 100% of birds
- At 8 and 20 weeks of age - phenotypic selection for defects (crooked toes, legs, roach back, etc.)







# Male Management

## Separate Sex Feeding - Training Males



- Males need to identify their feeders.
- Same type of male feeder in rearing and production.
- Other options:
  - Decoy feeders in the rearing house.
  - Transfer according to the table below.

Sex	Feeder Type		Action
	Rearing	Production	
Male	Pan	Pan	Move females first
Female	Pan	Chain	
Male	Chain	Pan	Move males first
Female	Chain	Chain	
Male	Pan	Pan	Move males and females at same time
Female	Chain	Chain	
Male	Chain	Pan	Move males first
Female	Pan	Chain	

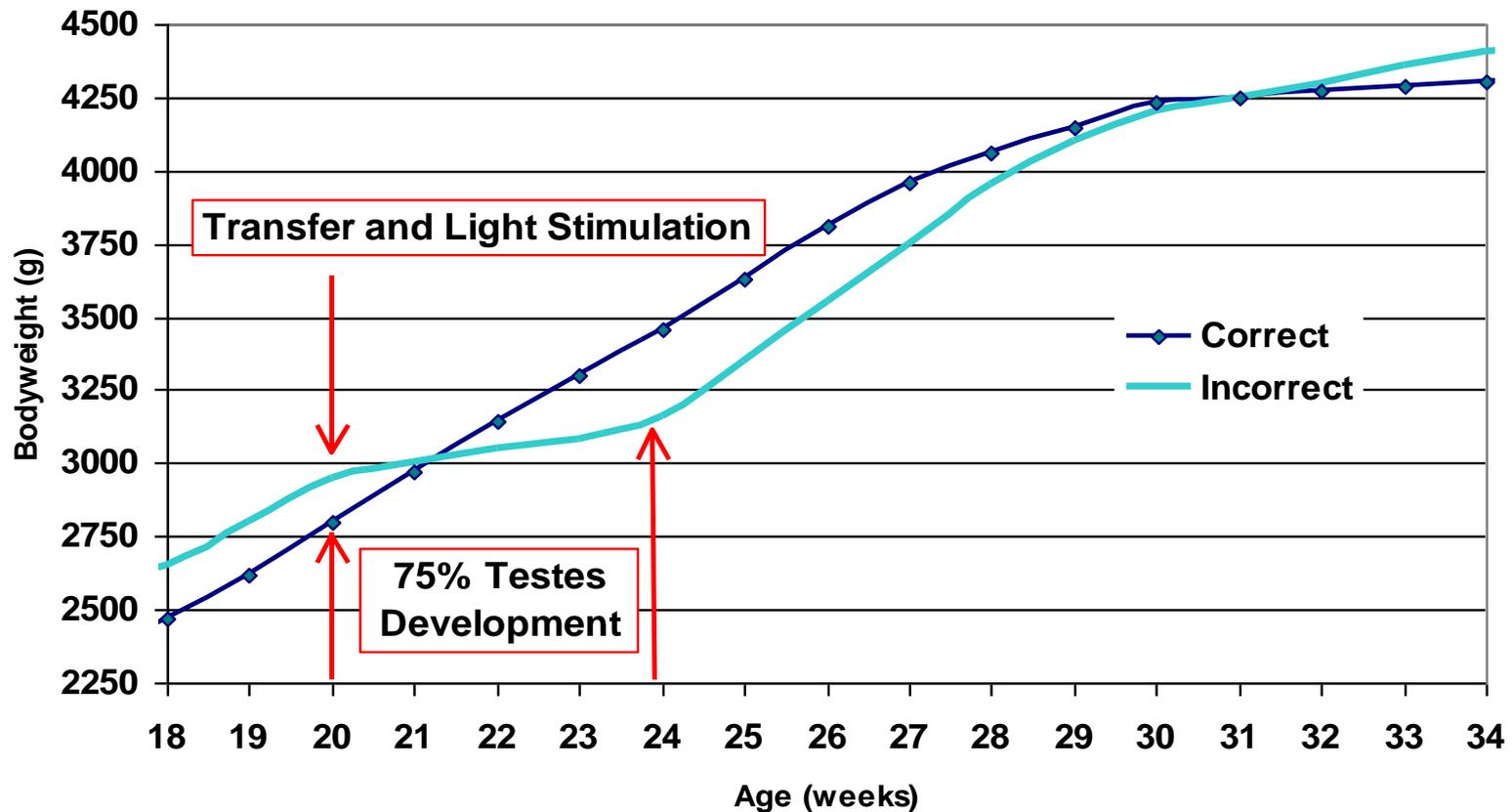
- Start the male feeders first.

# Male Management

Sexual Maturation. 16-24 weeks.



Need Positive growth first 4-wks after light stimulation

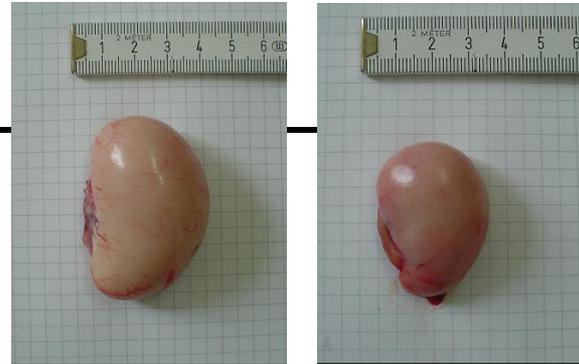


# Male Management

## Weight loss



Field Trial (UK) trying to recuperate overweight males by slimming them down in separate pens (20 males per group) - Goal: loose 500g in 5 weeks



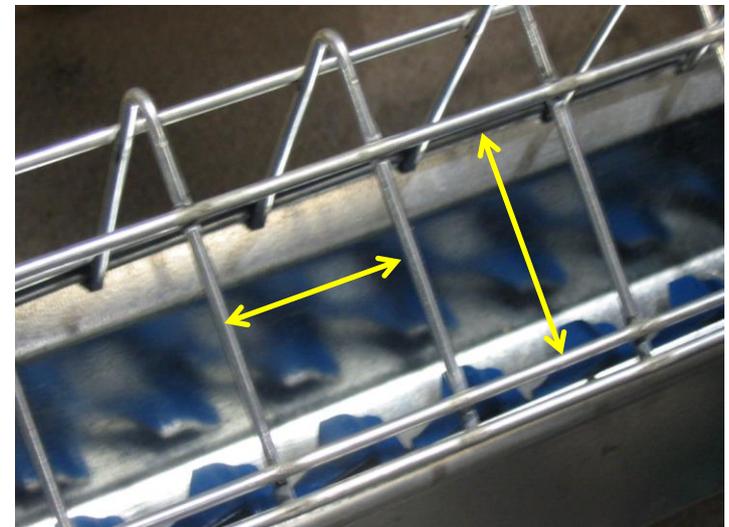
<b>Weight loss</b>	<b>Results over semen quality and production</b>
<b>Very slight</b>	<b>Sperm quality goes down</b>
<b>&gt;100g in 5 weeks</b>	<b>Sperm quality and volume go down</b>
<b>&gt;500g in 5 weeks</b>	<b>Sperm production stops and in some cases it is never recovered</b>



# Male Body Weight Control

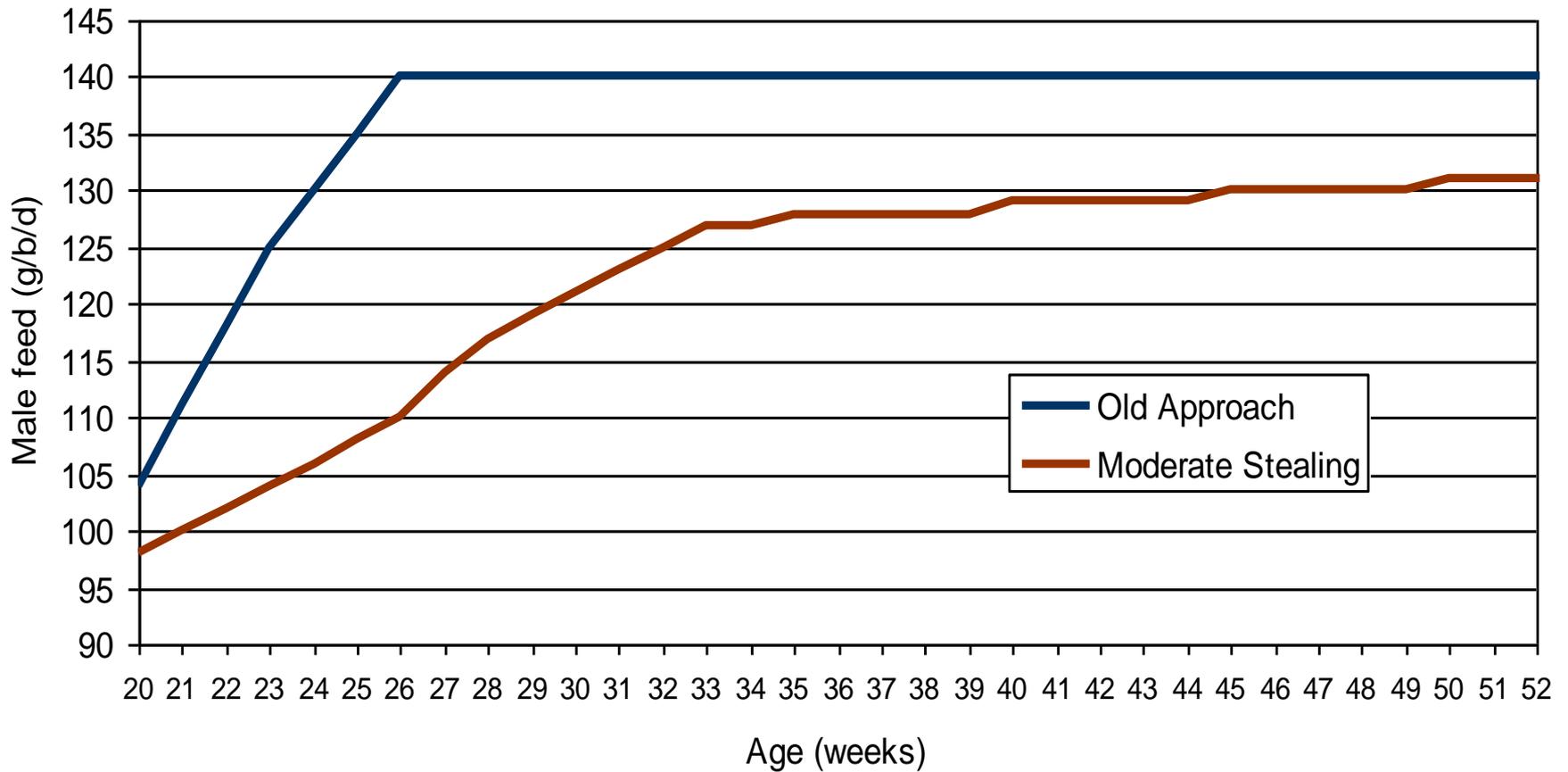
## Key: Feed Restriction

- Female only Grill (FOG)
  - Grill horizontal width of 44mm
  - Grill vertical height of 60-65 mm
- NO dubbing of males
- NOZ-bones
- Prevent females stealing from males.
  - Keep male feeders 45-50 cm high



# Male Management

Separate Sex Feeding – Feed Program for Males



# Male Management

## Separate Sex Feeding - Male Stealing

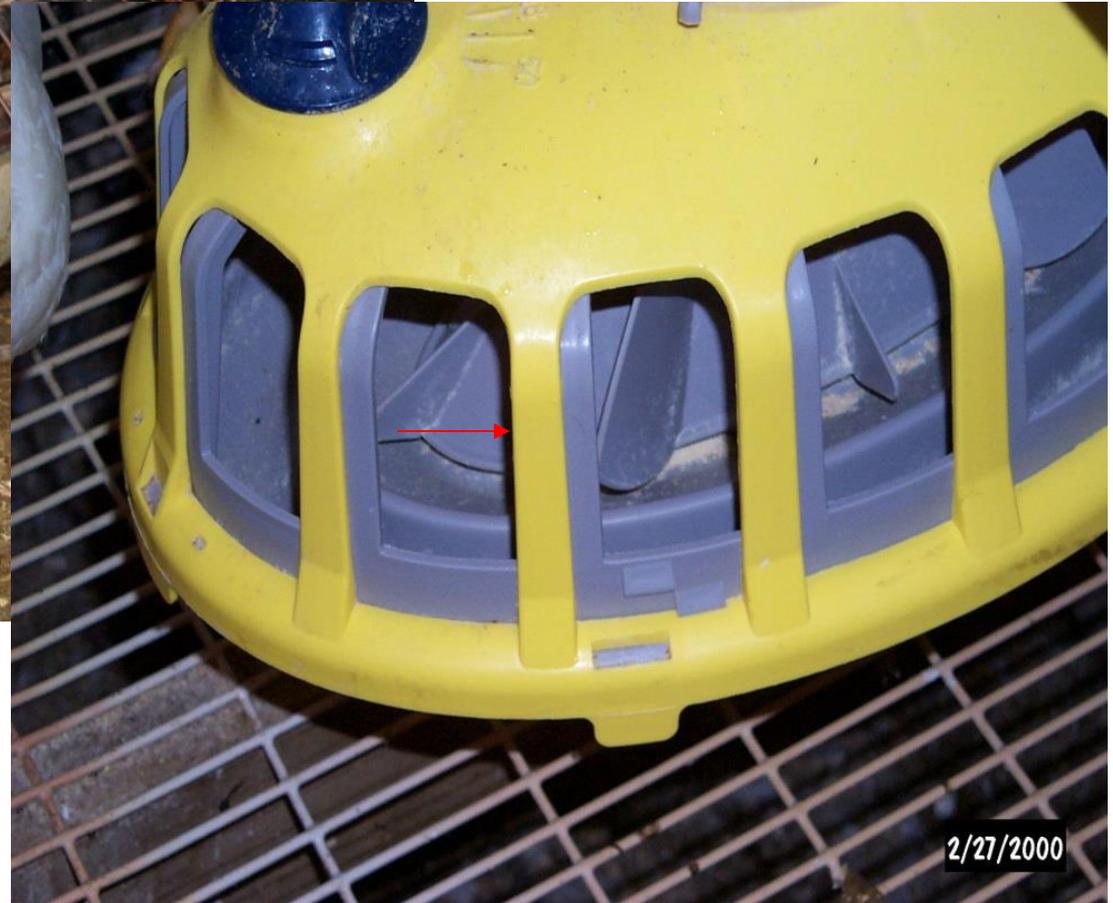


➤ Full exclusion does not start until combs are completely developed (26-27 weeks of age or bodyweight > 3.80 kg.). Males may be able to steal until then and it is important to take this into account when calculating male feed rate.





# Restriction Techniques

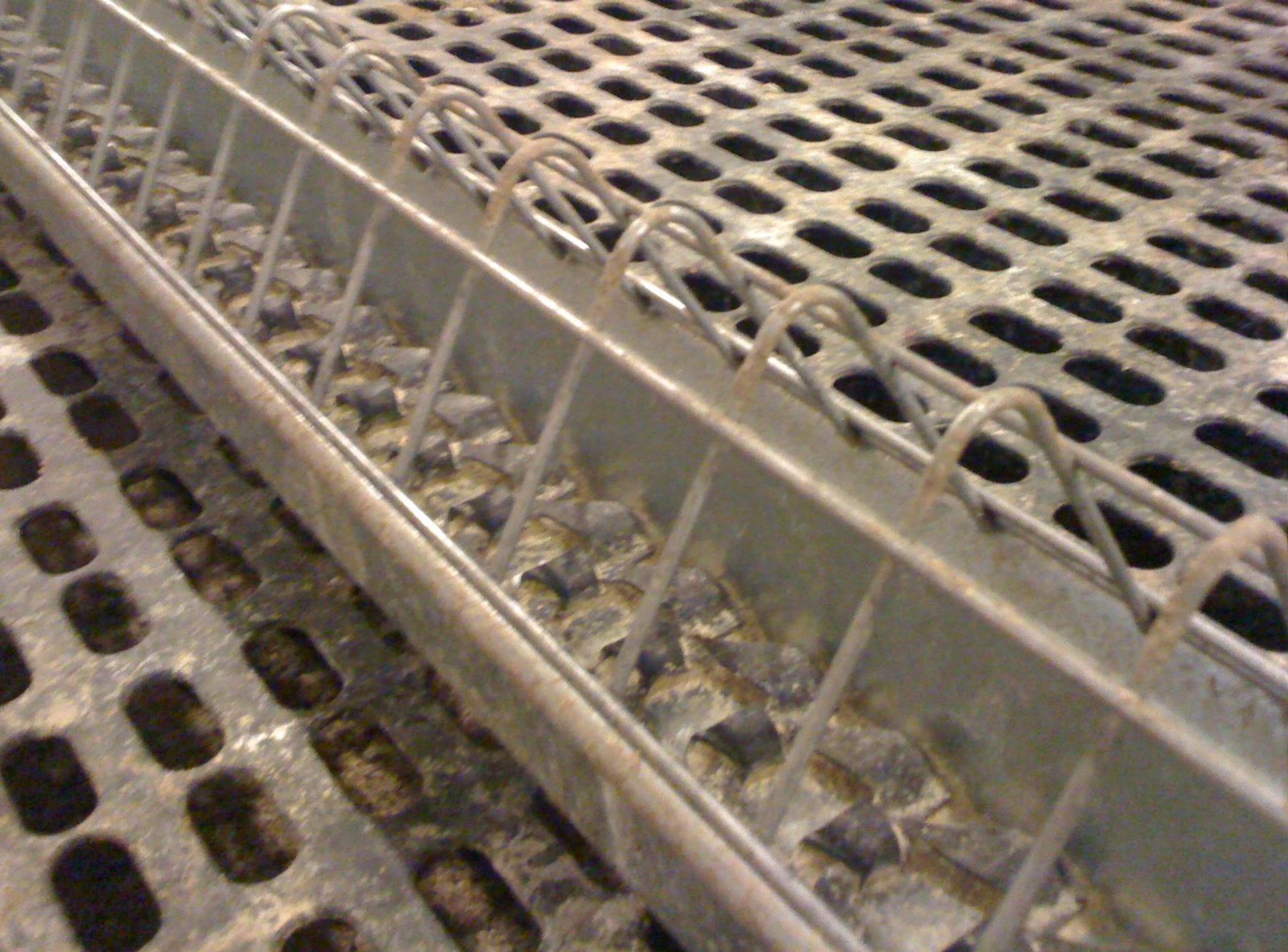


2/27/2000





**Restrict Males from the  
Female feeder**



# Restriction Techniques



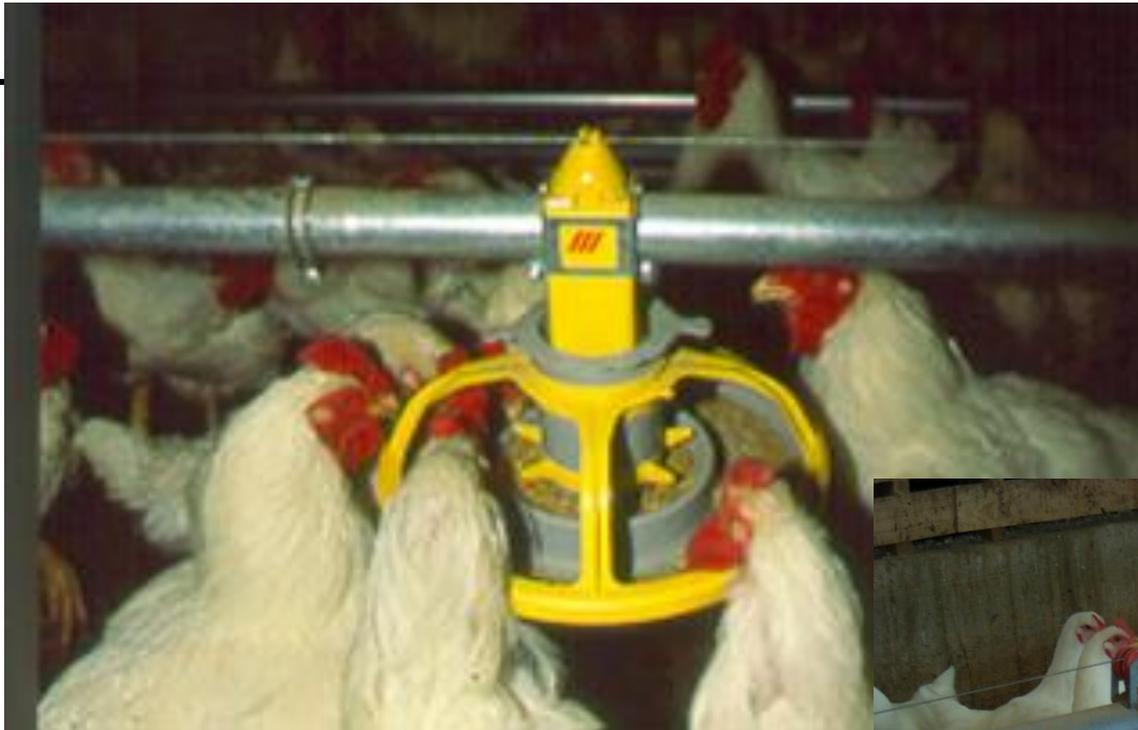
**Station Feeding** is NOT recommended. Stations can work but are stressful for the males and require a lot more management.

Stations need to be adjusted in length, closed or opened according to male weights every two weeks (when the weights show a clear trend).

Stations usually end up as small as 2-3 cm/bird to control weight. This makes feeding very stressful.



“Noz Bones”



**Male Feeder Height**  
(45-50 cm.)

# Male Management

## Feeding Uniformly - IDEAL Feeder Design?



- Immediate/ accurate feed distribution
- Sufficient space to allow 8 males with full combs to eat comfortably
- 100% accessibility
- Bird friendly; prevent injuries
- Stable



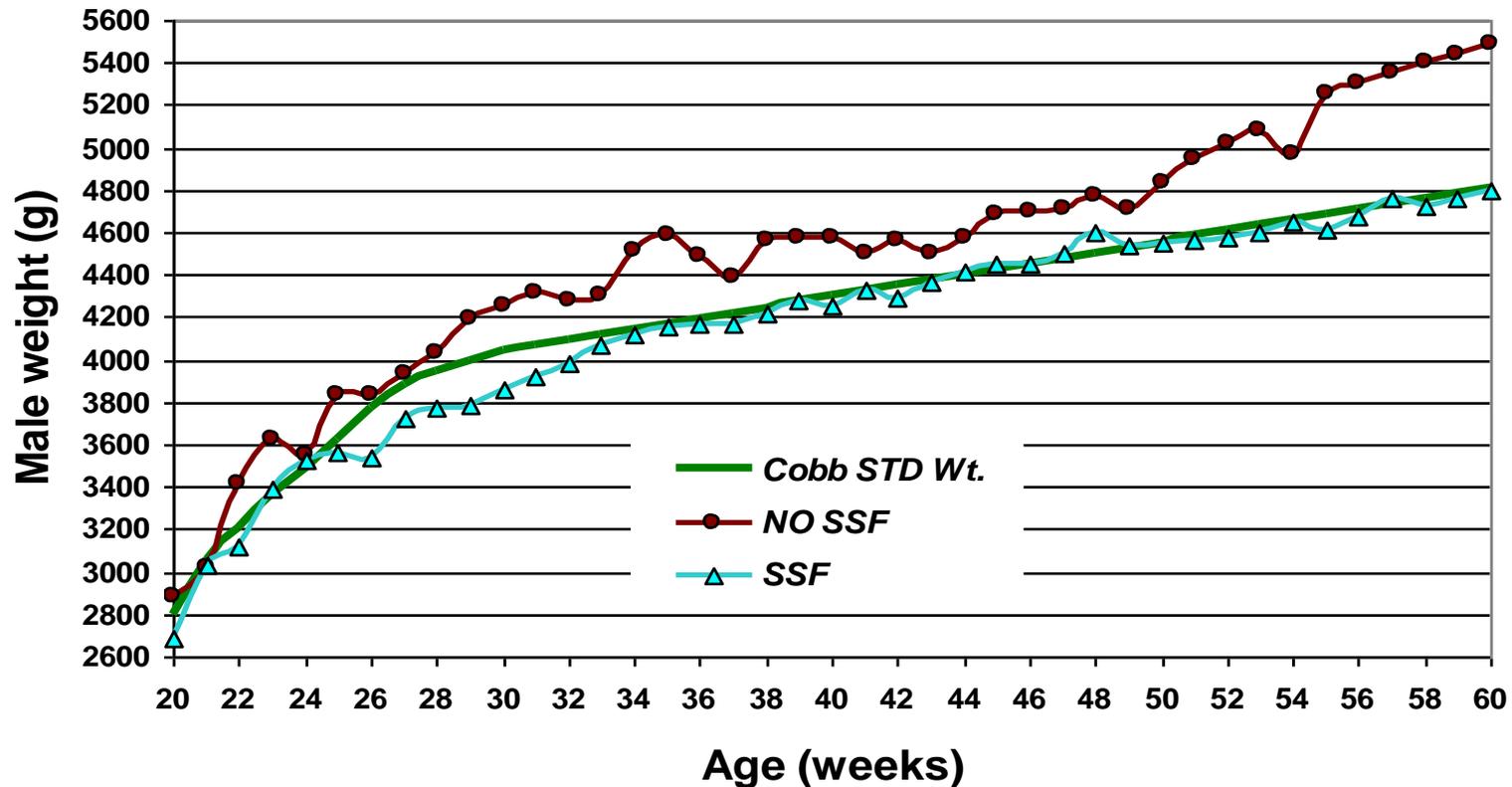






# Male Management

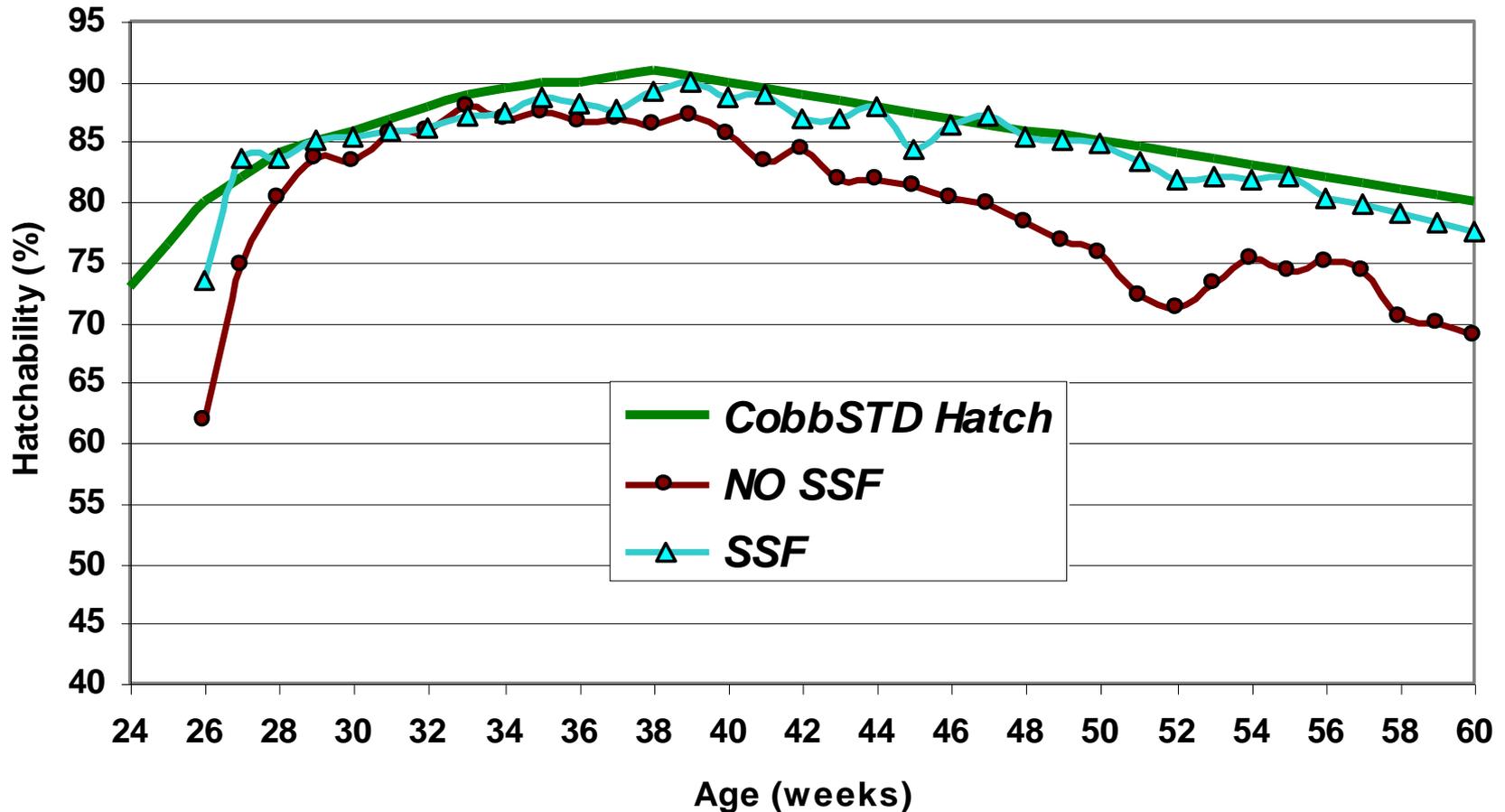
Separate Sex Feeding- Does it work?



SSF = Better control of male weights + Less stress  
= >2% better hatch?

# Male Management

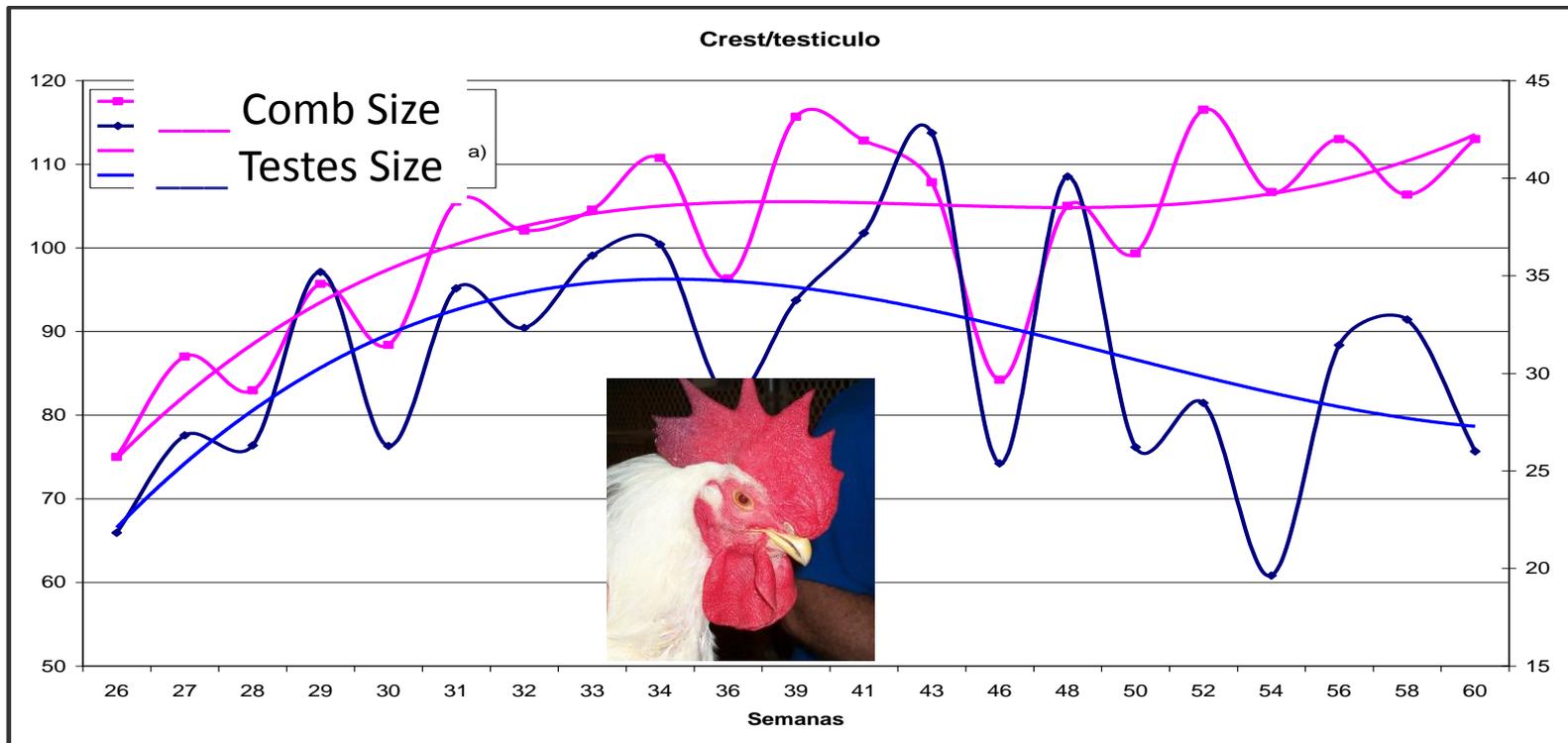
Separate Sex Feeding – Does it work?





# Male Management Phenotypic Selection

- Comb size & body weight are positively correlated with testes size up to sexual maturation (35wks)
- Shank length is not correlated with testes development but is with mating ability



# Condition of Feet and Legs



- Maintain good litter quality
- Control body weight.
- **Handle with care during vaccinations and weekly weighing.**
- Maintain a healthy house environment
  - Ventilation
  - Slat condition
  - Feed equipment



**Nice long male shank length of around 135 mm**

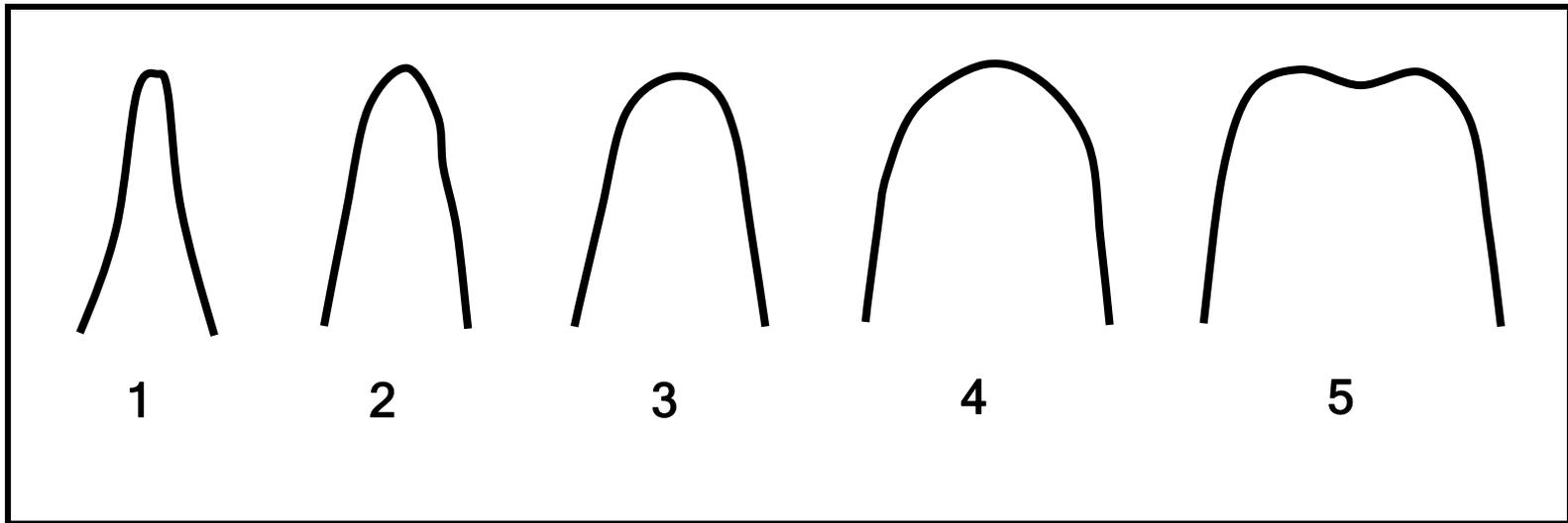


# Body Weight vs. Condition

- “Bodyweight” is one tool to help gauge the progress of a flock.
- Equally important “tools” are **Flock Uniformity & Condition** (breast confirmation & fleshing).
  - Handle males on a regular basis.
  - Flocks can have similar average weights, but have a different body composition.



# Fleshing Evaluation



**Breast shape evaluation = field estimate of body condition**

**Fleshing score # 2**



**Fleshing score # 3**



# Male-Female Interaction



- The onset of the male's mating activity is a critical time (>23 weeks)
- Possible receptivity problems can start between 24-28 weeks and remain for the rest of the flock's life.
- A good male-female interaction depends on:
  - Sex ratio
  - Weight differential
  - Sexual Synchronization



# Considerations in determining ratio:



## 1) Male condition at housing

- Excellent condition- 7- 8 males/100 females
- **Good condition- 7.5- 8.5 males/100 females**
- Fair condition- 8.0-10 males/100 females
- Poor condition- 9-12 males/100 females

## 2) Male aggression level

- May be attributable to weight and /or breed
- Results in mortality, slating, over-mating, interference during mating.



## 3) Synchronization with female

- Place fewer males if the male weight exceeds the female weight by more than 30%.

## 4) Spiking program

- Early spiking (prior to 40w), with no intention for a second spiking, usually requires a higher male ratio to maintain an adequate male # for a prolonged period of time.

# If Male Ratio is too high-



- Slating of hens- learn to run/avoid males
- Poor fertility
- Injury, high culling, high mortality
- High competition among males for feed... and females
- Results in fewer functional males to make it through the entire production period
- **Higher incidence of floor & slat eggs!**

# If Male Ratio is too low-



- Low fertility due to low mating frequency  
This problem can be fixed if more males are available
- Early fertility and hatch can be lost if the problem is not corrected early

# Distribution of Sexual Activity of the Rooster along the Day

Total of 4 roosters x 6 days x 14.5 h camera recording/day



# Bodyweight Differential



- Sexual synchronization between males and females is largely determined by their **weight differential**.
  - The target weight differential for maximum receptivity between males and females at 20 weeks is **630-650 grams**.
  - For optimal fertility, male weights should remain approximately **20%** heavier than hen weights at 25 weeks of age (Cobb 500 package).
    - Rooster weights should remain 15-20% above hen weights throughout the production period.
    - Generally, poor receptivity of females toward males and poor mating efficiency can be expected if the weight differential exceeds 40%.
      - Results in poor fertility, hatchability & persistency

# Sexual Synchronization



## Females must be ready to accept males

- Underweight females will not respond to photo stimulation or to males. This results in:
  - Poor production and lower peak
  - Poor fertility
  - Increased hen mortality
- Problem situations:
  - Males too heavy (or females too light)
    - Male aggression / increased mortality
    - May be influenced by breed.
  - Males too light (or females too heavy)
    - Female dominance over males resulting in “social castration.”
    - Increased male to male aggression.

# Monitoring Rooster condition



While weighing roosters, look at-

Feet and legs for signs of problems that might implicate that the birds are too heavy, slats in poor repair, litter too rough or scratch wet with caked litter

Vent area to determine if the rooster is mating, open vent, pink to red color, vent feathers worn all suggest that the rooster is mating

Feathering

Comb, Wattles, Eyes, Beak trim

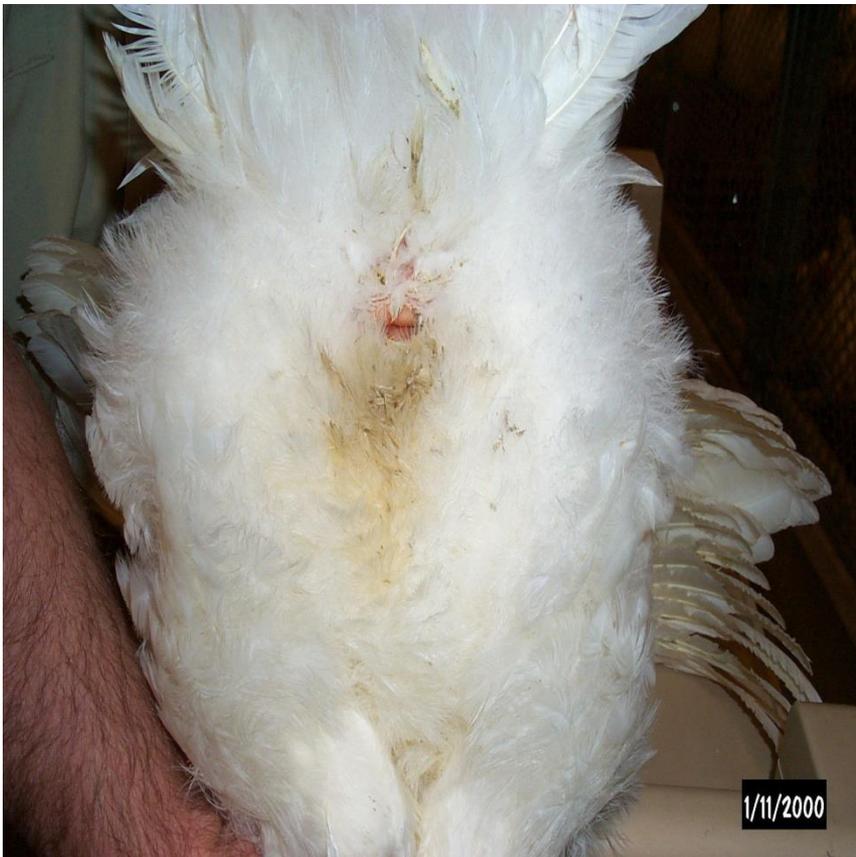
Handle with care during vaccinations and weekly weighing



# “Working Males” Vent Check



# “Working Males” Feather Wear





**Thank You!**  
**We appreciate your**  
**business!**