



PS Male Management
父母代公鸡的管理

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Male “Wish list” at 20 weeks

20周龄公鸡的“愿望清单”

- Good uniformity <75% 良好的均匀度<75%
- Good conformation/fleshing – index 2-3
良好的体形/肌肉评分- 2-3
- Strong straight legs 强壮、挺直的腿部
- Foot pads without any lesion 脚垫无任何损害
- Well feathered 羽毛发育良好
- Active 活泼
- No deformities 没有畸形



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***“Good roosters come
From good cockerels”***
“发育良好的公鸡来自先天良好的小公鸡”

***“Minimizing stress during
Rearing is critical to success”***
“最小化育成期的应激是获得成功的关键”



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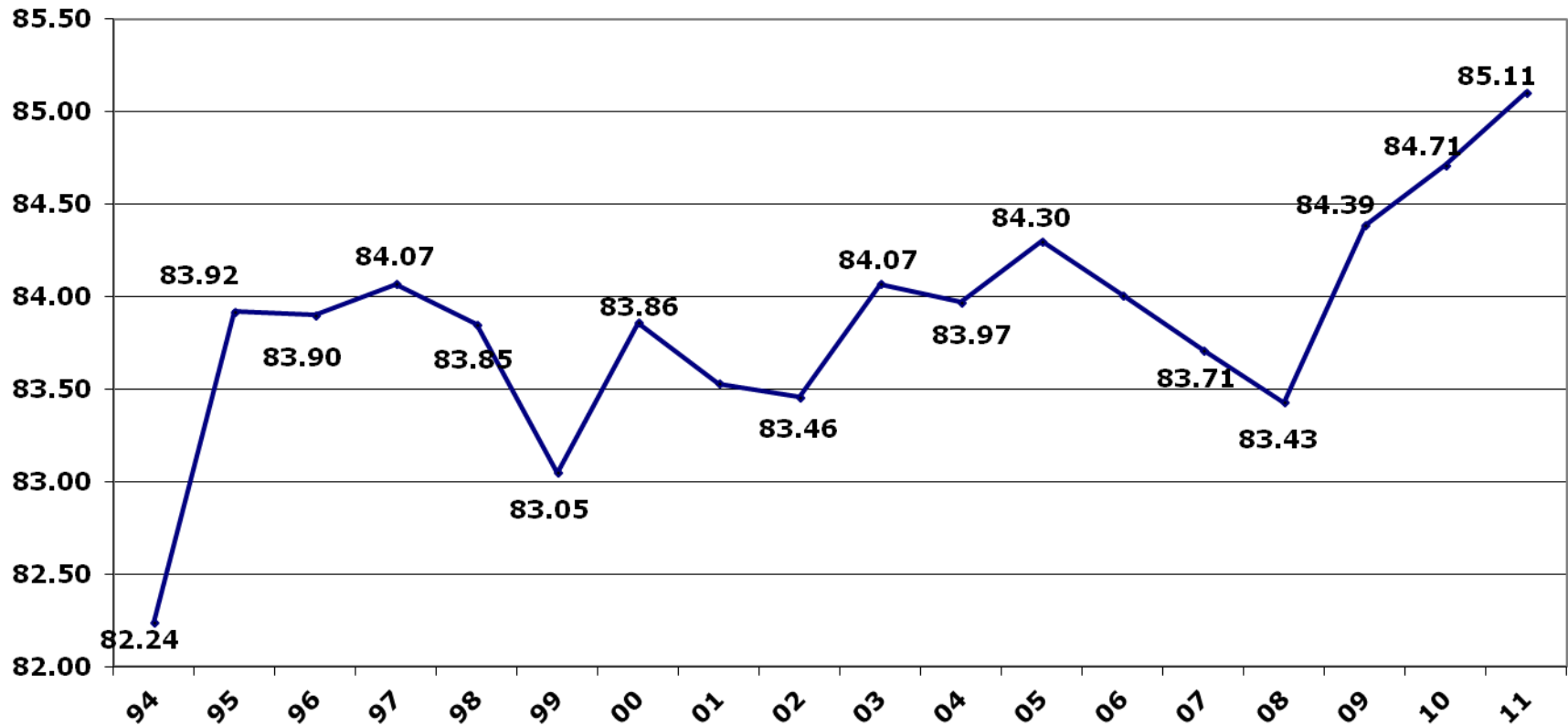


Cobb 500 Hatchability

1994- Apr 2011

科宝**500**的孵化率

1994-2011.4



Regardless of male (不分种公鸡类型)
FF & SF flocks combined (快、慢羽混合)

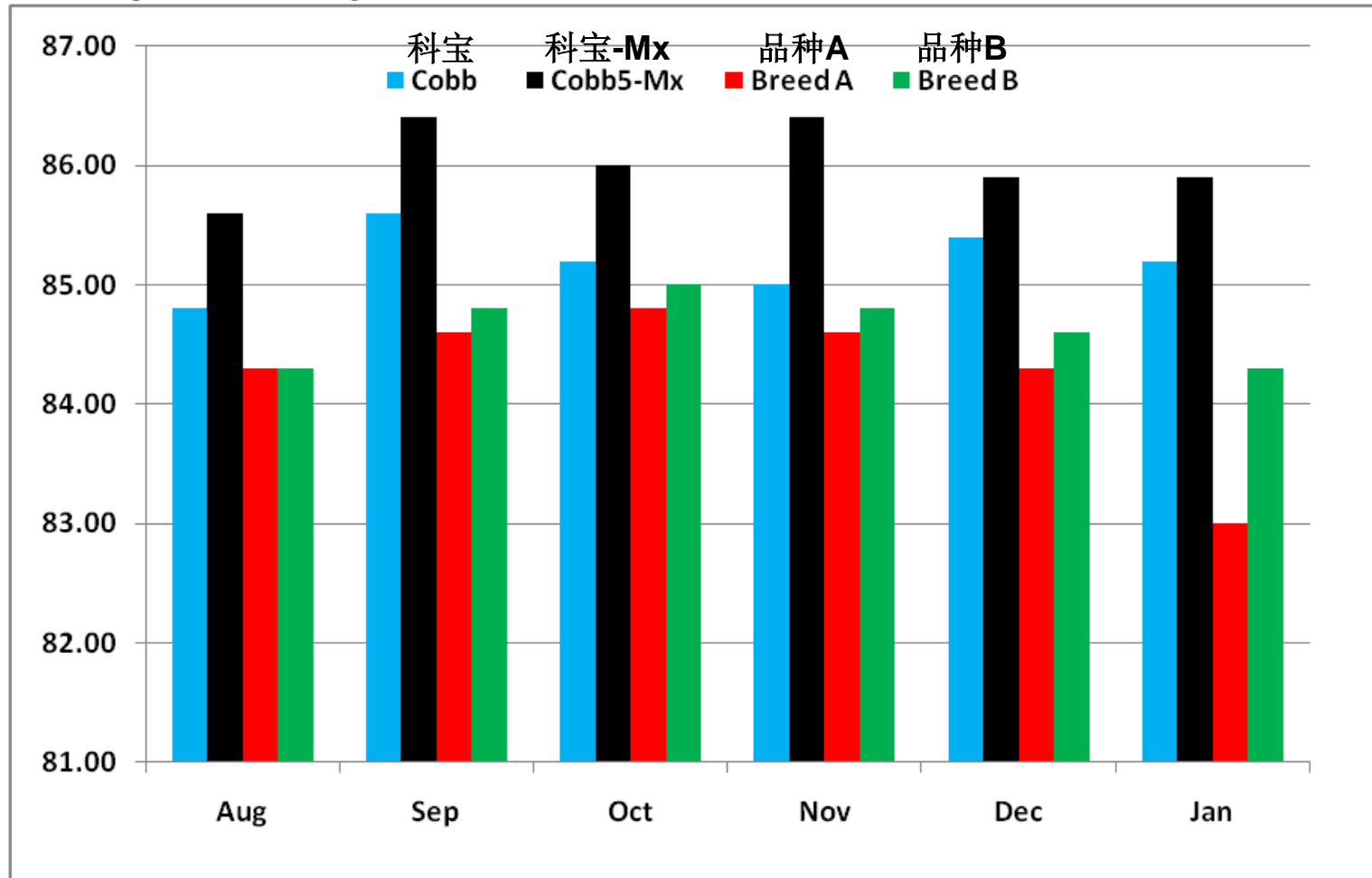


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% Hatchability by Male Breed 公鸡的孵化率%

Agristats- Aug '10- Jan '11 农业统计学期刊-- 8月10日至次年1月11日



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

科宝Mx公鸡的孵化率优于其他品系的公鸡



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Introduction 介绍

- Both the Male and Female can be responsible for contributing to fertility problems.

公鸡和母鸡都会影响受精率

- The impact of the MALE on flock fertility is approximately 10 x' s greater than the female.

其中，公鸡对鸡群受精率的影响比母鸡大**10**倍左右

Male Fertility = Sperm Quality + Mating Efficiency

公鸡受精率=精子的质量+交配效能

- 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.

对肉鸡性状的不断优选，似乎并没有对精子质量产生不良影响。然而，今日公鸡却更易于增重，从而很可能降低交配效能和性欲。



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Primary causes of low peak fertility:

引起高峰期受精率较低的主要原因

- Sperm quality issues 精子质量问题
Problems created during rearing (inconsistent weight gains, poor environmental conditions....)
育成期产生的问题（不一致的体增重、较差的饲养环境...）
- Inadequate male / female interaction 公母鸡交配不充分
 - ✓ Incorrect weight differential 体重差异不恰当
 - ✓ Incorrect sexual synchronization 性成熟不一致
 - ✓ Excessive number of males 公鸡数量过多
 - ✓ Result → Poor hen receptivity 结果→母鸡的接纳能力较差

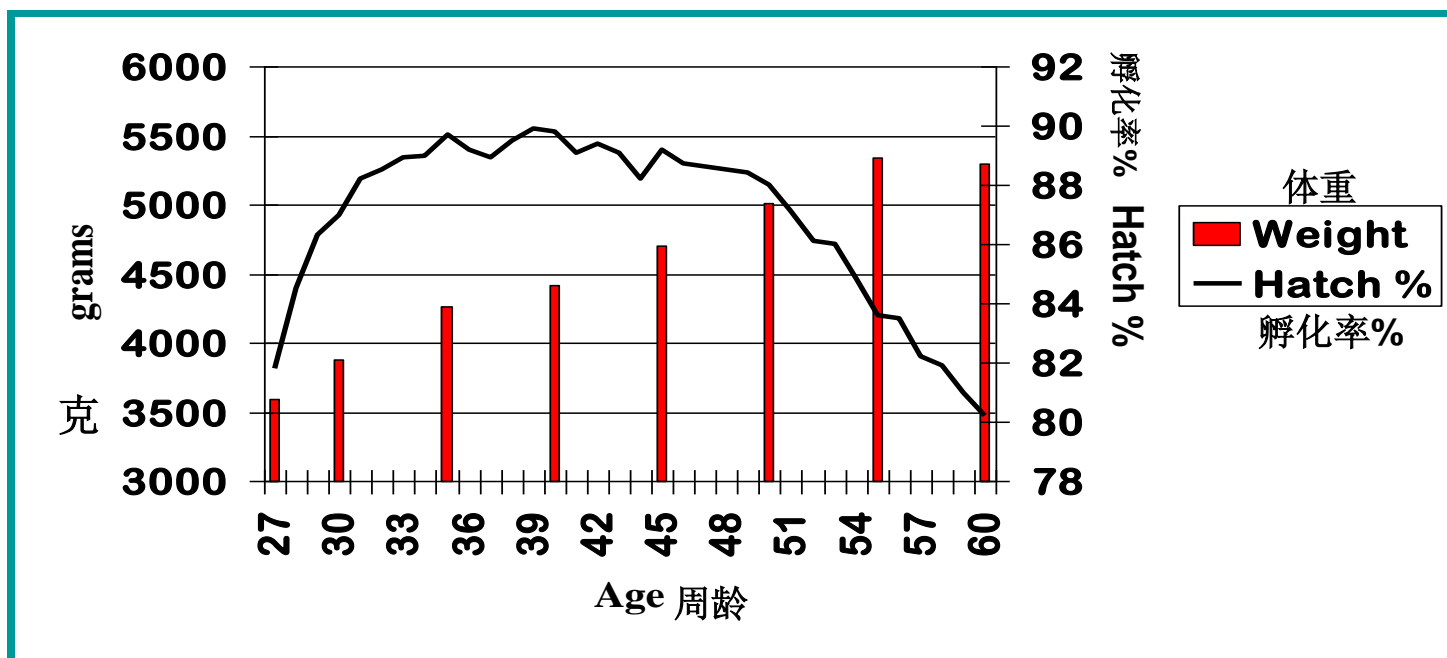


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Poor Persistency is generally more common & can be attributed to: 高受精率的持久性较差通常更加常见，可归因于：

- > Reduced mating efficiency 交配效率降低
- > Reduced interest (libido) 性欲降低
- > Decline in sperm volume/quality 精子数量/质量降低

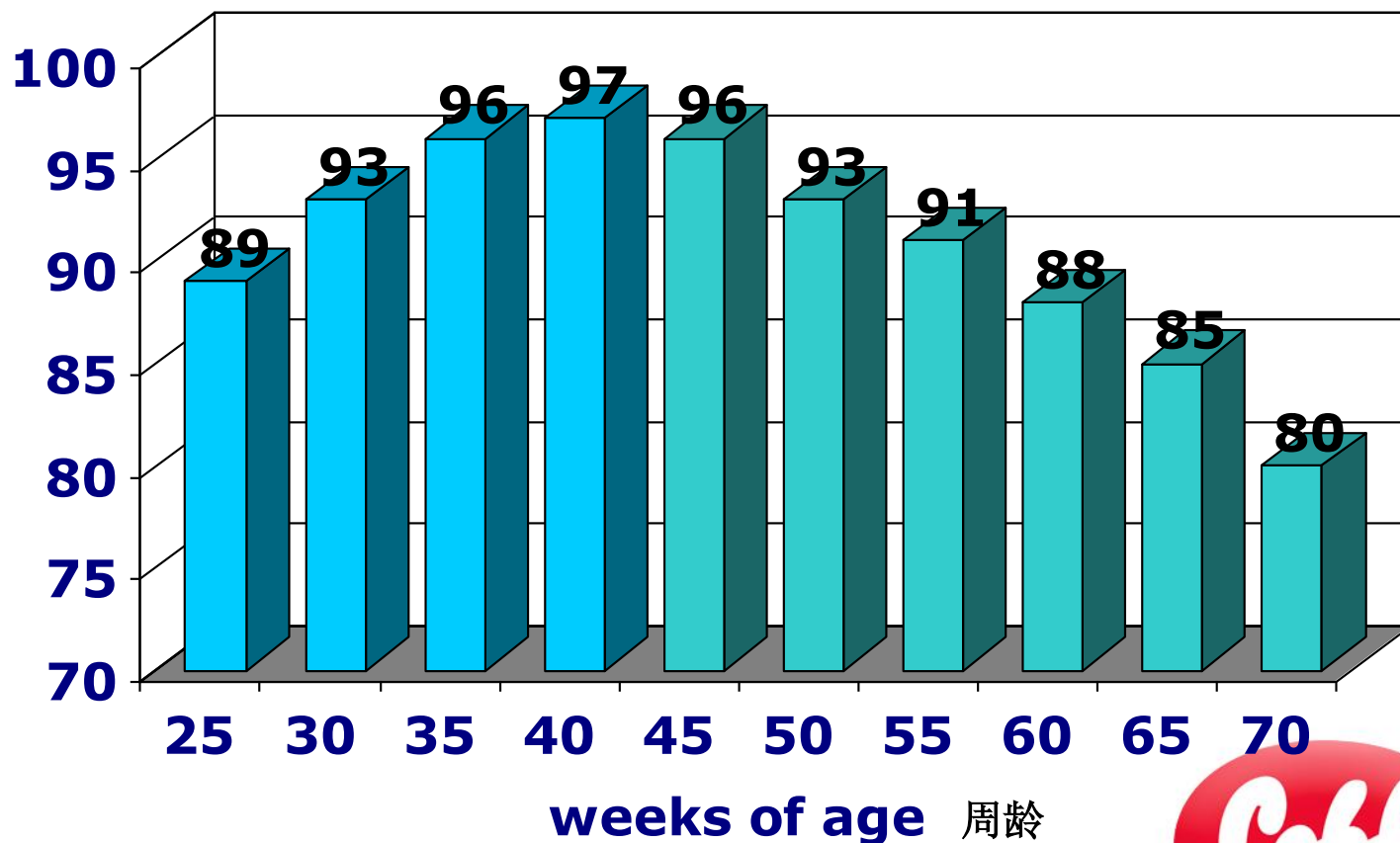


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Lifetime trend in flock fertility

整个生命周期内鸡群受精率的发展趋势



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Why does fertility decline with age?

为什么受精率会随着周龄增大而降低

- There is a natural relationship between bird behavior and physiology.
鸡只交配行为和生理状况之间存在着自然的关系
 - Roosters gradually become less interested in mating & **complete fewer matings**.
公鸡随着周龄的增加而对交配的兴趣逐渐降低，完成交配的次数在减少
 - The hen physiologically needs to be mated more often to sustain the same level of fertility.
随着周龄的增加，母鸡生理上需要更多的交配次数来维持先前水平的受精率
- In other words, the challenge to maintain good fertility in a 40+ week old flock increases as the flock ages. **Management** plays a vital part in maintaining high LOF fertility.
换言之，随着年龄的增加，40周龄以后的鸡群其保持良好受精率的挑战随着周龄的增加而增加。**管理**在维持鸡群生命周期高受精率方面起着至关重要的作用。



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Key Management Points

管理的关键点

- Rearing weights 育成的体重
- Uniformity 均匀度
 - Floor & feeder space 地板和料盘的空间
 - Grading 体重分级
- Selecting the good males 挑选良好的公鸡
- Body Condition 机体状况
 - Body weight control & Testis development
体重控制&睾丸发育状况
- Male mixing 公母混群
- Sexual Synchronization 性成熟的一致性
- Male feeding and body condition during production
产蛋期公鸡喂料和机体状况



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Male Management公鸡管理

Rearing 饲养阶段

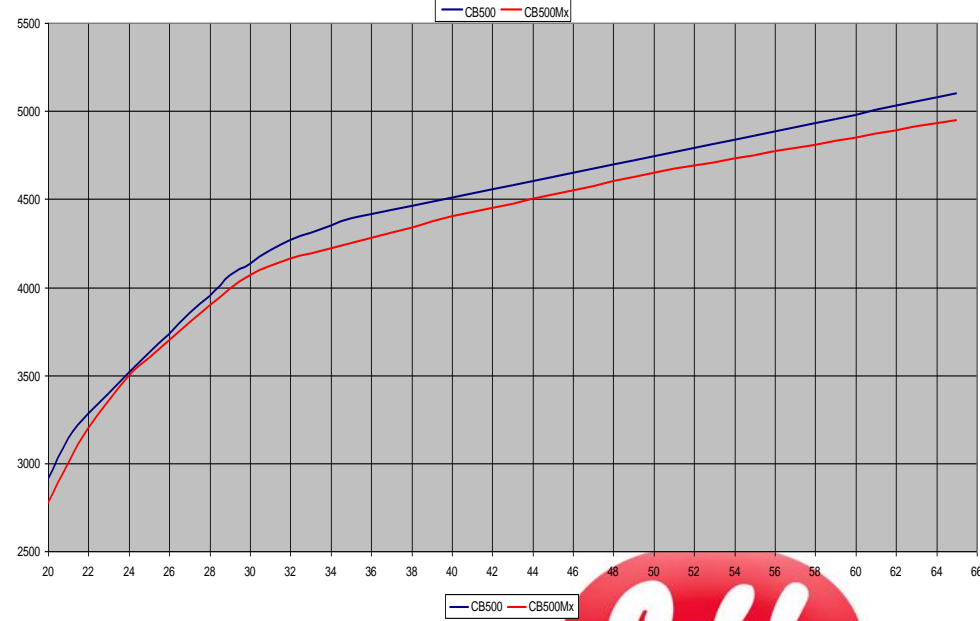
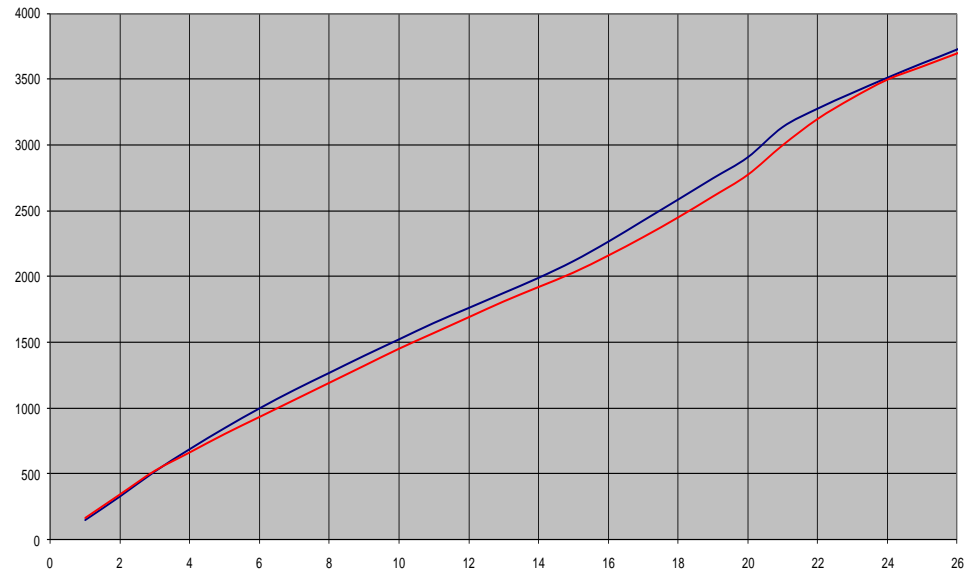
- Rear males separately until 140-154 days.
单独饲养公鸡直至140-154天
- At rearing stages (4-6 weeks) be sure the body weights are at least at standard or slightly above the standard to ensure good start on skeletal development.
在4-6周的饲养阶段，确保体重至少达到标准或稍高于标准以保证骨骼的发育有个良好的开端
- Push the bodyweights of the smaller males and as a minimum, achieve standard bodyweight by 10-12 weeks of age to ensure adequate frame development
 - (90% of the frame-size is set by 12 weeks of age).
促进体重较小的公鸡的发育，使其至少在10-12周龄时达到标准体重以确保其获得充分的骨骼发育
(12周龄时90%的体格大小发育已经完成)



Male Management Supplement breeder

Cobb Male
Cobb Mx Male

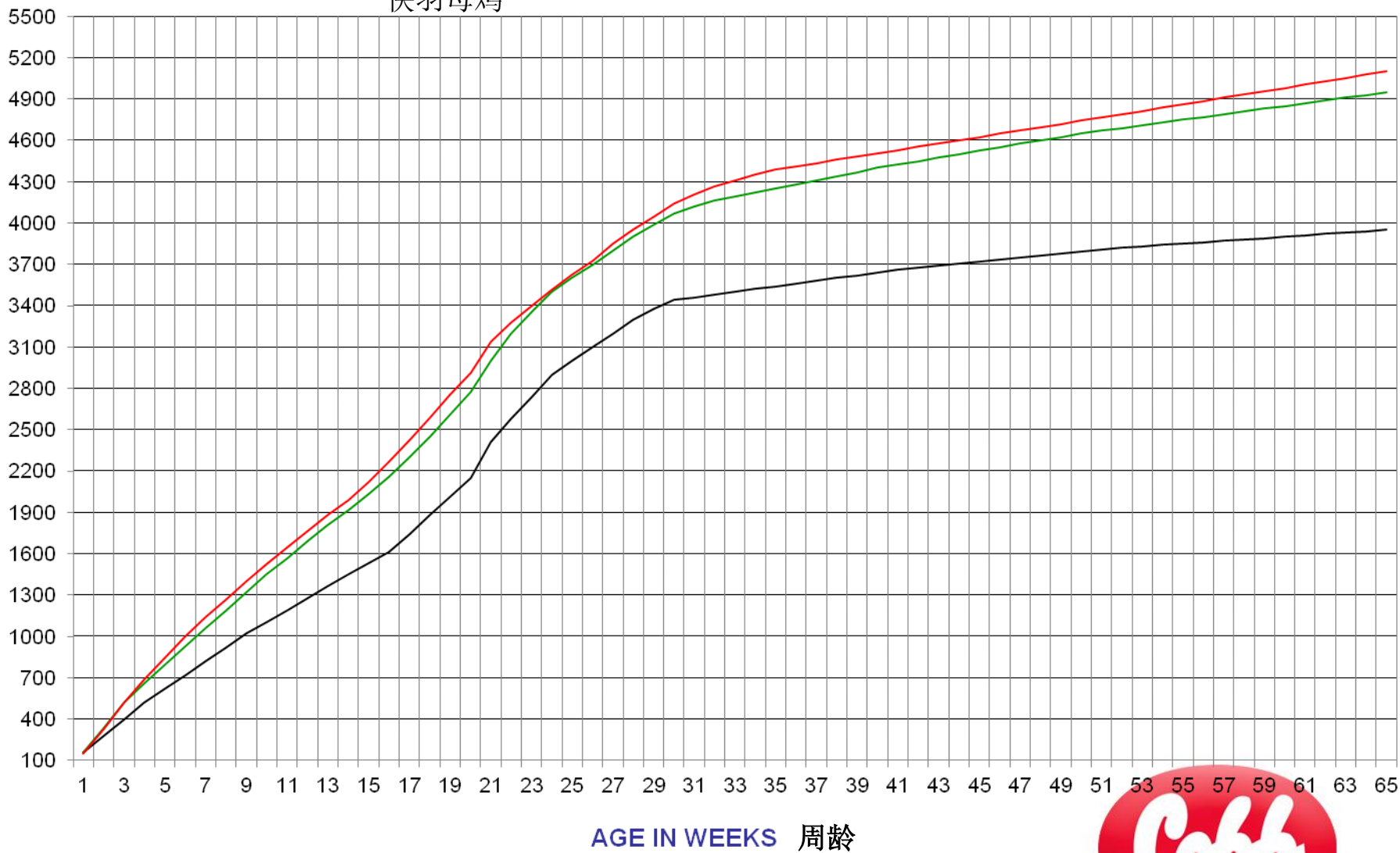
cobb-vantress.com



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— Fast Feathering Female — Cobb Mx Male — Cobb 500 Male
快羽母鸡 科宝Mx公鸡 科宝500公鸡

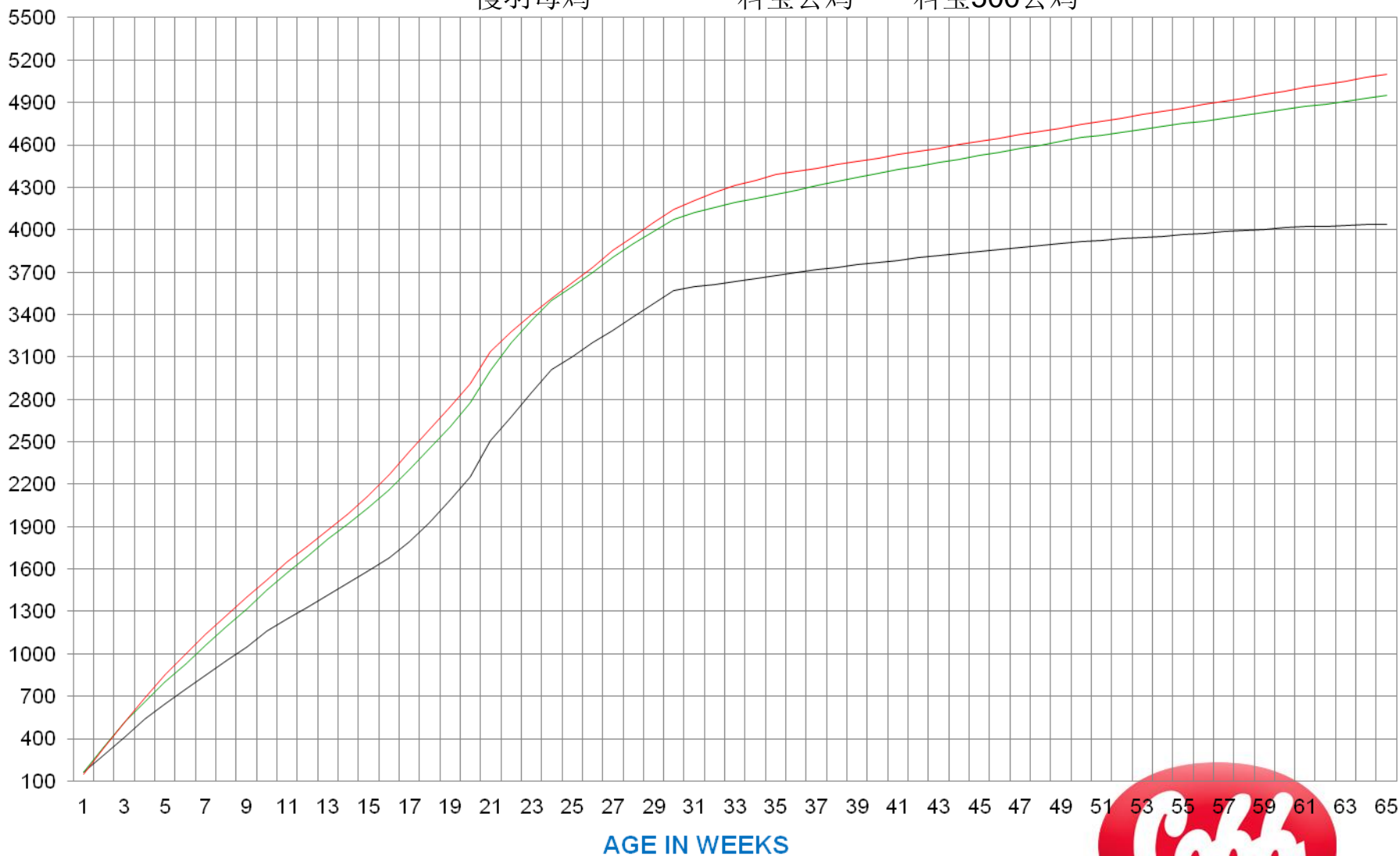


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— Slow Feathering Female — Cobb Mx Male — Cobb 500 Male
慢羽母鸡 科宝公鸡 科宝500公鸡



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A large flock of white chickens, likely a broiler breed, is shown in a farm setting. The chickens are densely packed, filling the frame. They have white feathers and prominent red combs. The ground is covered with a layer of straw or wood shavings. In the background, there are some red feeders hanging from the ceiling. The overall scene depicts a typical commercial poultry farming environment.

Feeding & Bodyweight
Control

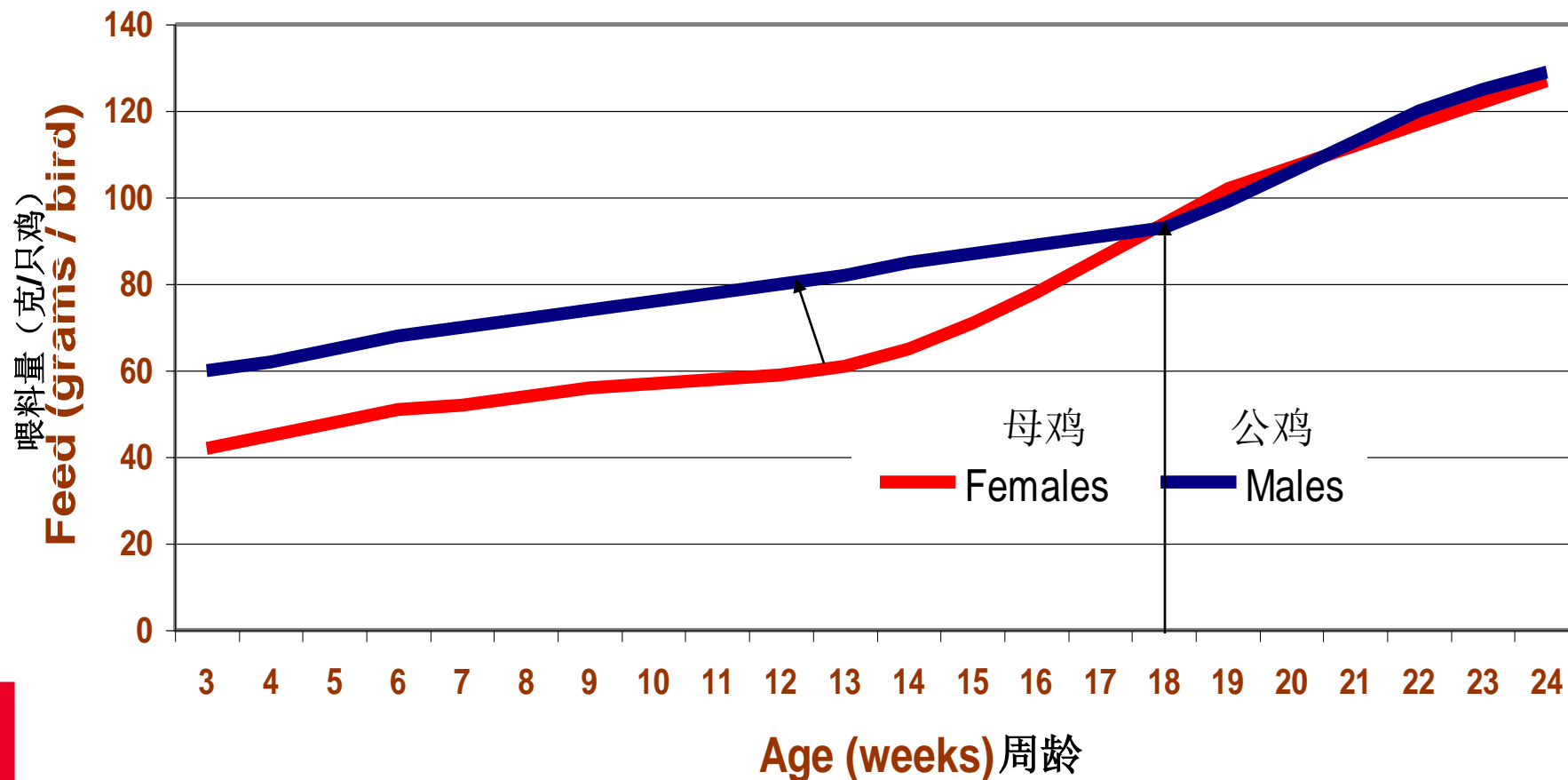
饲喂&体重控制

Sex Separate Management?

公母分饲管理

2003 Cobb Feed Recommendations

2003 科宝推荐的喂料量

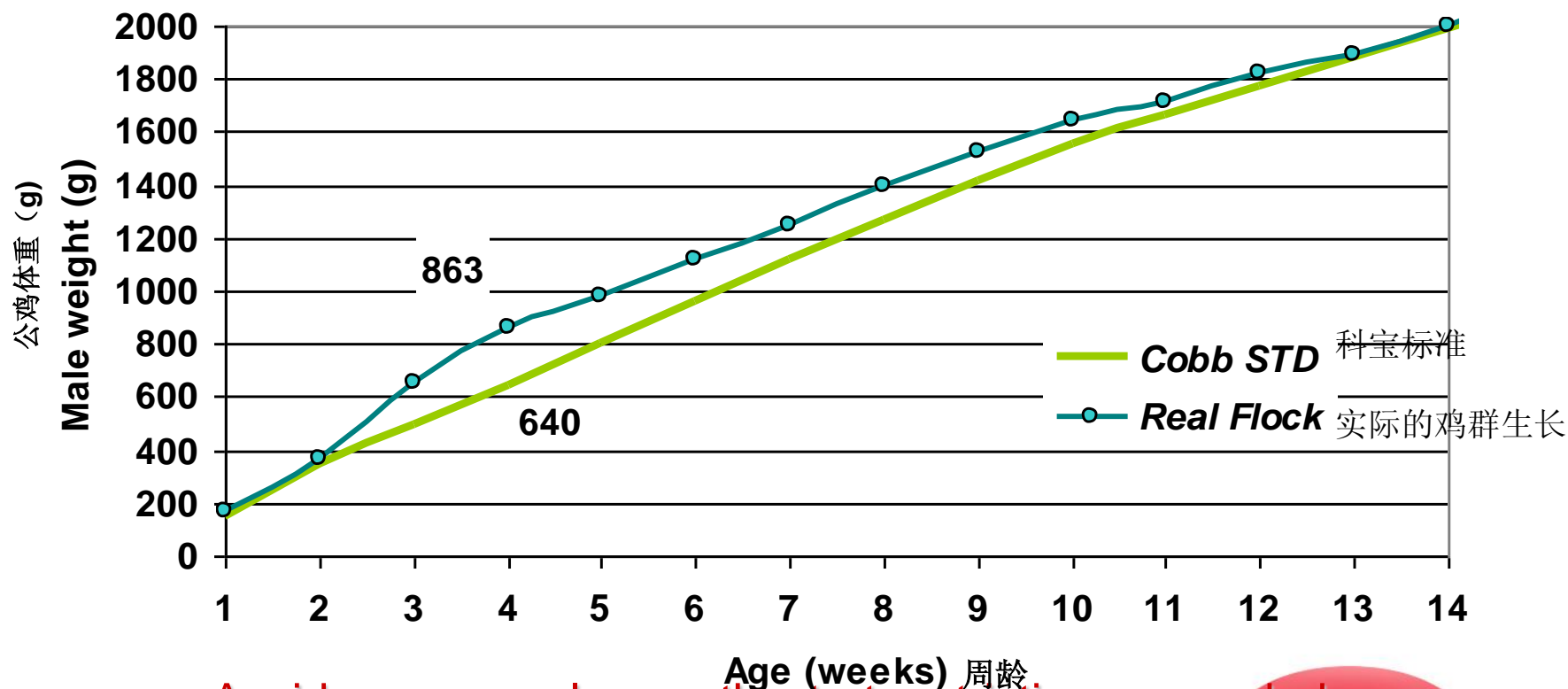


Male Management

Growth Profile in Rearing – Excessive early growth

公鸡管理

饲养期间的生长状况-早期的过度生长



Avoid excess early growth, start restriction as needed

避免早期的过度生长，如有需要开始限饲



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Male Management

公鸡管理

Brooding Period

育雏阶段

- Important for skeletal (80% at 8 weeks), organ and feather development 早期的骨骼（第8周的时候能达到80%）、器官和羽毛的发育很重要
- Keep Males and Females Separate for a minimum of 6-8 weeks IF comingling must be done 混群前最少要保持公母分饲6-8周
- Stocking density 3.6-4.3 males/m² (2.5-3.0 ft.²/male) 饲养密度： 3.6-4.3个公鸡/m²（2.5-3.0平方英尺/只公鸡）
- Ensure birds find feed & water quickly post placement. Maintain light intensity of 20- 60 lux to help locate feed & water 进鸡后确保雏鸡能很快找到饲料和饮水。维持光照强度为20-60lux以帮助雏鸡能锁定饲料和饮水。
- the type of rearing feeder is important for later training & hen house transition 料盘和开食盘的类型对后续的鸡只训练&母鸡舍转群是很重要的



Male Management 公鸡管理

Uniformity 均匀度



- Uniformity of males is considered more important than in females
公鸡的均匀度比母鸡的均匀度更加重要
- Increased uniformity of males results in:
提高公鸡的均匀度有利于:
 1. Uniform frame size (relative to effective copulation)
均匀的体格大小（这与有效的交配有关系）
 2. Proper (testes) development
正常的睾丸发育



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***Male Management* 公鸡管理**

***Uniformity – Strategy* 均匀度-策略**

- The Cobb male is sensitive in rearing to bird density and feed distribution.

科宝公鸡对饲养密度和饲料分布较为敏感

- These males develop properly when the density is kept below 4 males per m² throughout the rearing period

在整个育成期间，当饲养密度维持在每平方米4只公鸡以内，这些公鸡将会发育的很好

- Rearing density - 4 /m²; at 10w 3.5 /m²

饲养密度– 4 /m²

- It is essential you have fast (<3 minutes) and uniform feed distribution to achieve high uniformity

将饲料快速（<3分钟）均匀地分散开来将会使鸡群获得很高的均匀度



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Male Management 公鸡管理

Uniformity - Strategy 均匀度-策略



- Feeder space (in rearing) 料位（育成期间）
 - Chain Feeder 0-10w (10cm) 10-15w (15 cm) 15w-culling (20-25 cm)
链式料槽-0-10周 (10cm) 10-15周 (15 cm) 15周-淘汰 (20-25 cm)
 - Pan Feeder- 1 pan/ 8-9 males
料盘-1个料盘/8-9只公鸡
- Water space 水位
 - Nipples- 1 nipple per 8 cockerels
每8只小公鸡1个乳头.
 - Bell Drinker- 1 bell per 75 cockerels.
每75个小公鸡1个钟式饮水器



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***Male Management* 公鸡管理**

***Uniformity – Strategy* 均匀度-策略**

- Separate the lightest and heaviest males beginning at 3-4 weeks of age.
从3-4周龄开始将体重最轻的和最重的公鸡分开饲喂
 - Smaller males must be fed more feed so they can achieve proper frame size before 10 – 12 weeks of age.
较小的公鸡必需要饲喂更多的饲料以便于它们能在10-12周龄前达到正确的体格大小
 - Feed supplementation = % under the standard
补充的饲料=%低于标准
 - Average and large males have same feed amount
平均大小的和较大的公鸡饲喂相同量的饲料



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Male Management 公鸡管理

Male testes development 公鸡睾丸的发育

Age Period (wks) 周龄	Phase 阶段	Important Phenomenon 重要的表现	Approximate testes weight (pair) 一对睾丸的大致重量
0-2	Pre-pubertal 青春前期	Start of the gonadal development 性腺开始发育	-
2-12	Pre-pubertal 青春前期	Multiplication of Sertoli Cells Multiplication of spermatogonias 塞尔托利细胞和精原细胞开始增殖	-
13-20	Puberty 青春期	Start of testes development and semen production 睾丸开始发育并开始产生精子	0.5-2g
20-24	Puberty 青春期	75% of testes development after light stimulation 加光后75%的睾丸发育完成	25-30g
25-30	Sexual Maturity 性成熟	End of testicular development, maximum semen production 睾丸细胞发育完毕，精子产能达到最大	35-45g
40-65	-	Start of testicular regression 睾丸开始退化	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.

塞尔托利细胞的数目和精子的产能之间存在高度的相关性。8到12周龄时精子最大产能的潜能得到确立



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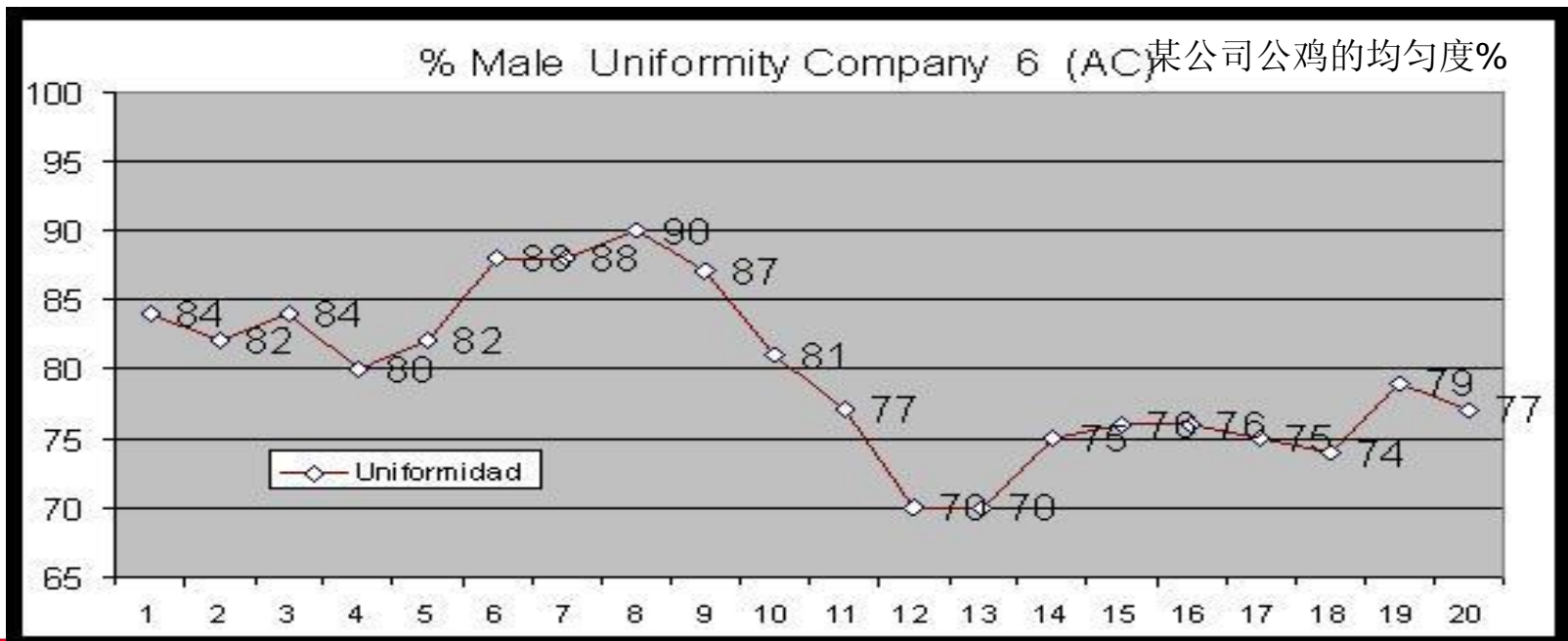
Male Management

公鸡管理

Uniformity in Rearing

均匀度

- Aim at keeping the males over 75% uniformity 目标是保持公鸡的均匀度超过75%
- Keep a “small bird pen” per house 每栋鸡舍要有用于放置体重较小公鸡的围栏
- Grade at 4 weeks by weight 100% of birds 第4周时将公鸡全群称重并分栏
- At 8 and 20 weeks of age - phenotypic selection for defects (crooked toes, legs, roach back, etc.) 8到20周龄-根据表型筛选有缺陷的公鸡（弯曲的脚趾、腿，拱形的背部等）



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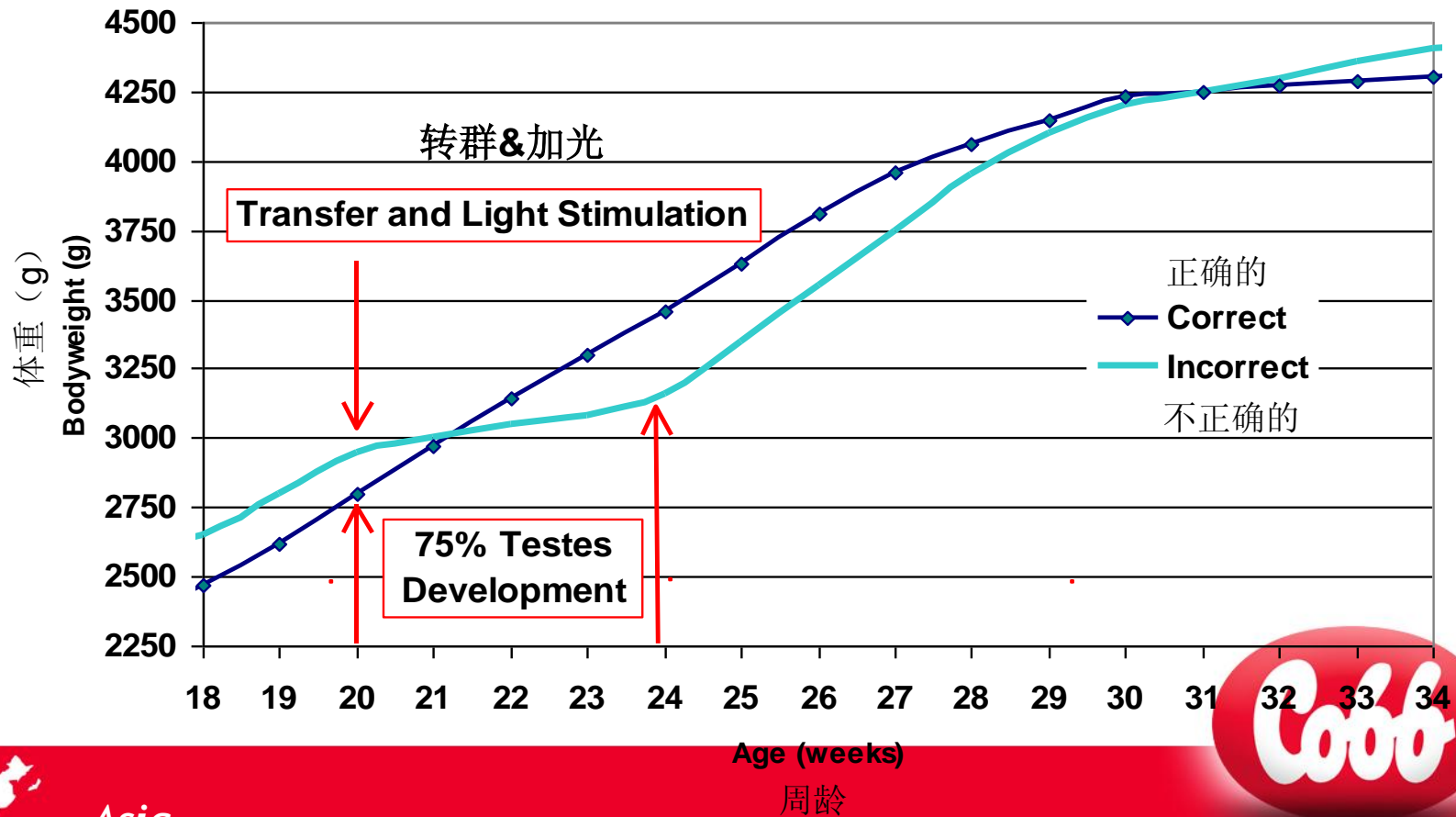
Male Management 公鸡管理

Sexual Maturation. 16-24 weeks.

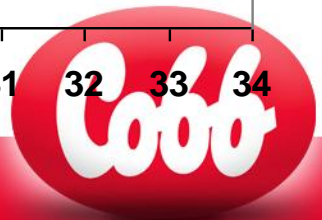
性成熟 16-24周龄

Need Positive growth first 4-wks after light stimulation

加光后的头4周需要鸡群需要积极地生长



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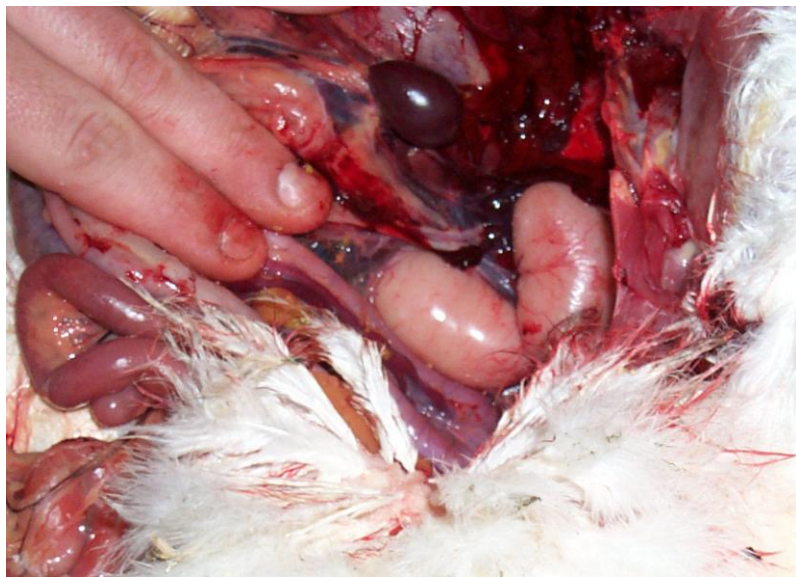


Male Management 公鸡管理

Male testes development – Photo stimulation Response

公鸡睾丸的发育-加光后的反应

- The greatest period of testes growth occurs 2-3 weeks after light stimulation.
加光后2-3周是睾丸生长最快的时期
- Too much feed restriction during 18-23 weeks has been shown to permanently impact semen production. 18-23周限饲太多会对精子的产生带来永久性的影响
- Males need to have positive growth post light stimulation
加光后公鸡需要积极地进行生长



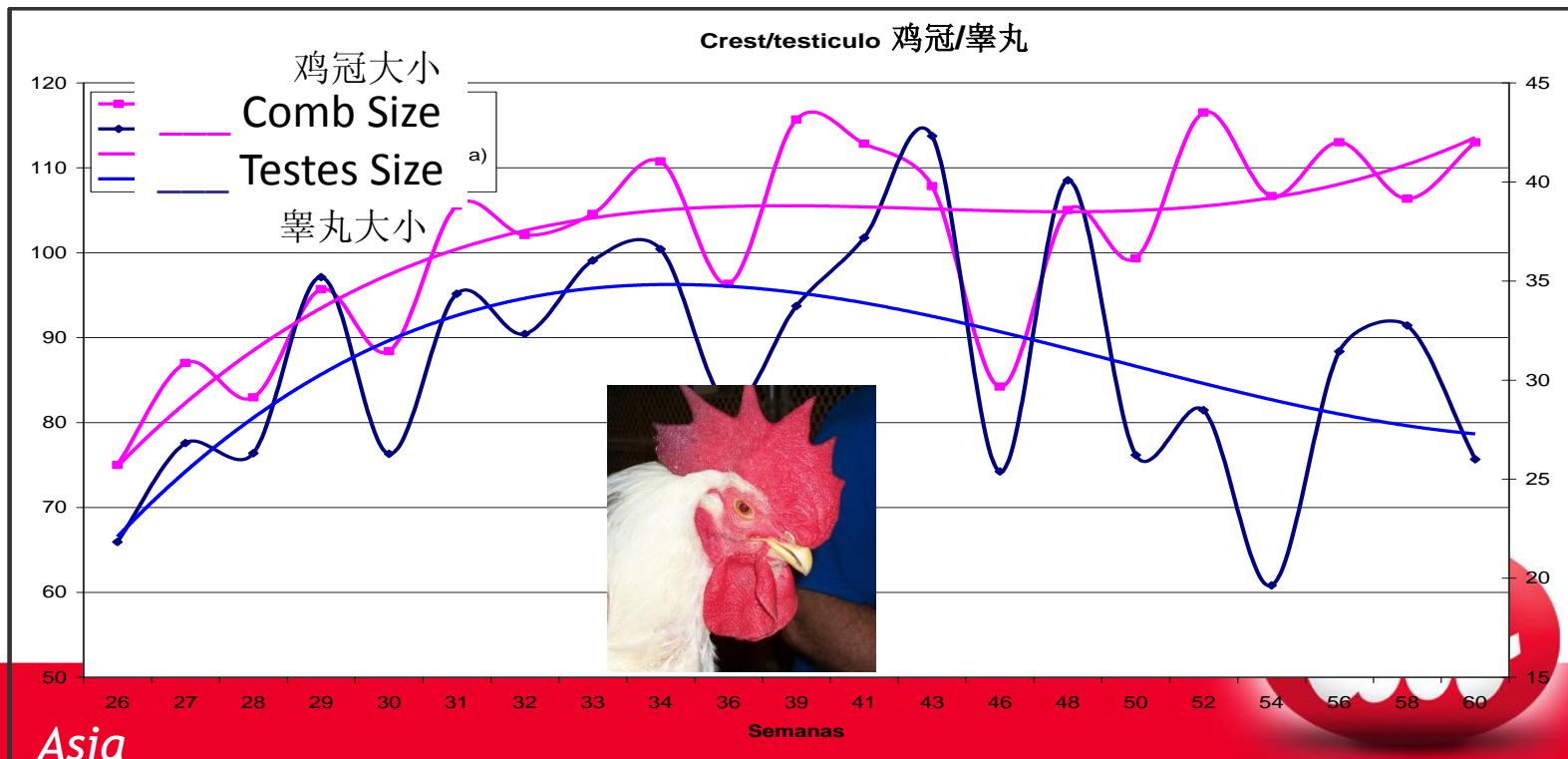
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Male Management Phenotypic Selection

公鸡表型的选择管理

- Comb size & body weight are positively correlated with testes size up to sexual maturation (35wks) 鸡冠的大小和体重与35周达到性成熟的睾丸大小存在着正相关性
- Shank length is not correlated with testes development but is with mating ability 胫骨长度与睾丸的发育不存在相关性，但是与交配能力存在相关性



Condition of Feet and Legs

鸡脚和鸡腿状况

- Maintain good litter quality
保持良好的垫料质量
- Cut only the dew claw
仅切除
- Control body weight.
控制好体重
- **Handle with care during vaccinations and weekly weighing.**
免疫和每周称重时抓鸡要小心
- Maintain a healthy house environment
维持一个健康良好的鸡舍环境
 - Ventilation 通风
 - Slat condition 条板状况
 - Feed equipment 喂料设备



Nice long male shank length of around 135 mm
良好的公鸡胫骨长度大约是135mm



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Body Weight vs. Condition

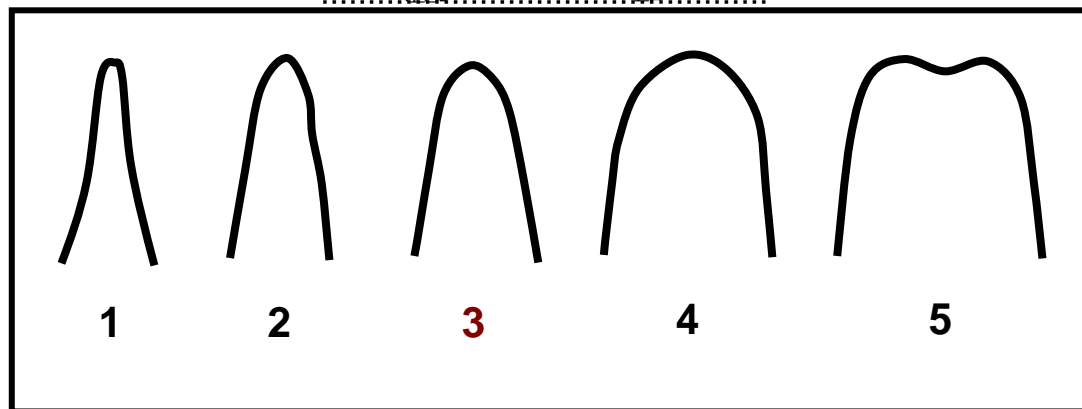
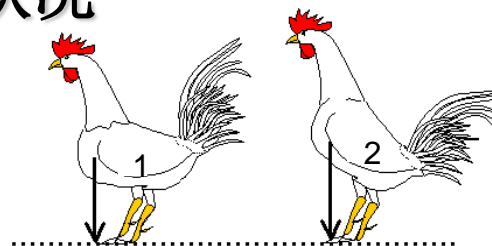
体重vs机体状况

- “Bodyweight” is one tool to help gauge the progress of a flock.
“体重”是用来衡量鸡群发育状况的一个良好的工具
- Equally important “tools” are **Flock Uniformity & Condition** (breast confirmation & fleshing).
同等重要的“工具”还有：鸡群均匀度和机体状况（即胸形&胸肉）
 - Handle males on a regular basis. 经常有规律地触摸鸡只检查
 - Flocks can have similar average weights, but have a different body composition.
鸡群内体重相接近的鸡只，其机体状况存在着差异



Male Management 公鸡管理

Male body condition 公鸡的机体状况



Breast shape evaluation = field estimate of body condition. At 30 weeks we want indexes between 2 and 3. By 60 weeks the male should not be more than a 4.

胸肌形状评估=田间用于估计机体发育状况
30周龄时我们要获得的胸肌指数为2-3。
60周龄时公鸡的胸肌指数应大于4



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Fleshing score # 2
胸肌指数 2分



Fleshing score # 3
胸肌指数 3分



Male-Female Interaction

公母交配

- The onset of the male's mating activity is a critical time (>23 weeks)
公鸡出现交配行为的时间很关键 (>23周)
- Possible receptivity problems can start between 24-28 weeks and remain for the rest of the flock's life.
24-28周可能会出现公母鸡的纳受性问题，在接下来的生产过程中仍然存在
- A good male-female interaction depends on:
一个良好的公母交配过程依赖于：
 - Sex ratio 性别比例
 - Weight differential 体重差异
 - Sexual Synchronization
性成熟的一致性



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Male Management 公鸡管理

Mixing with Females - Mating Ratio 与母鸡混群-交配率



- In general, a good Mating Ratio should be in the range of 8.5- 10.5%.(GOOD MALES)
一般说来，良好的交配比例应该在8.5-10.5%之间（公鸡发育良好）
 - Too high ratio leads to increased **male-male aggression** resulting in:
比例太高导致**公鸡之间**争斗增加从而导致：
 - Male mortality
公鸡较死亡率较高
 - **Mating interference**
交配过程受干扰
 - Too high a ratio leads to increased **male-female aggression** producing:
比例太高也会导致**公母间的争斗**增加从而产生：
 - Female mortality
母鸡死亡率较高
 - **Unreceptive hen** (forever?)
母鸡的纳受性降低（永远？）
- Generally, hatch begins to be affected when ratios fall below 6.0%.
一般说来，当公母比例小于6.0%，孵化率就开始受影响

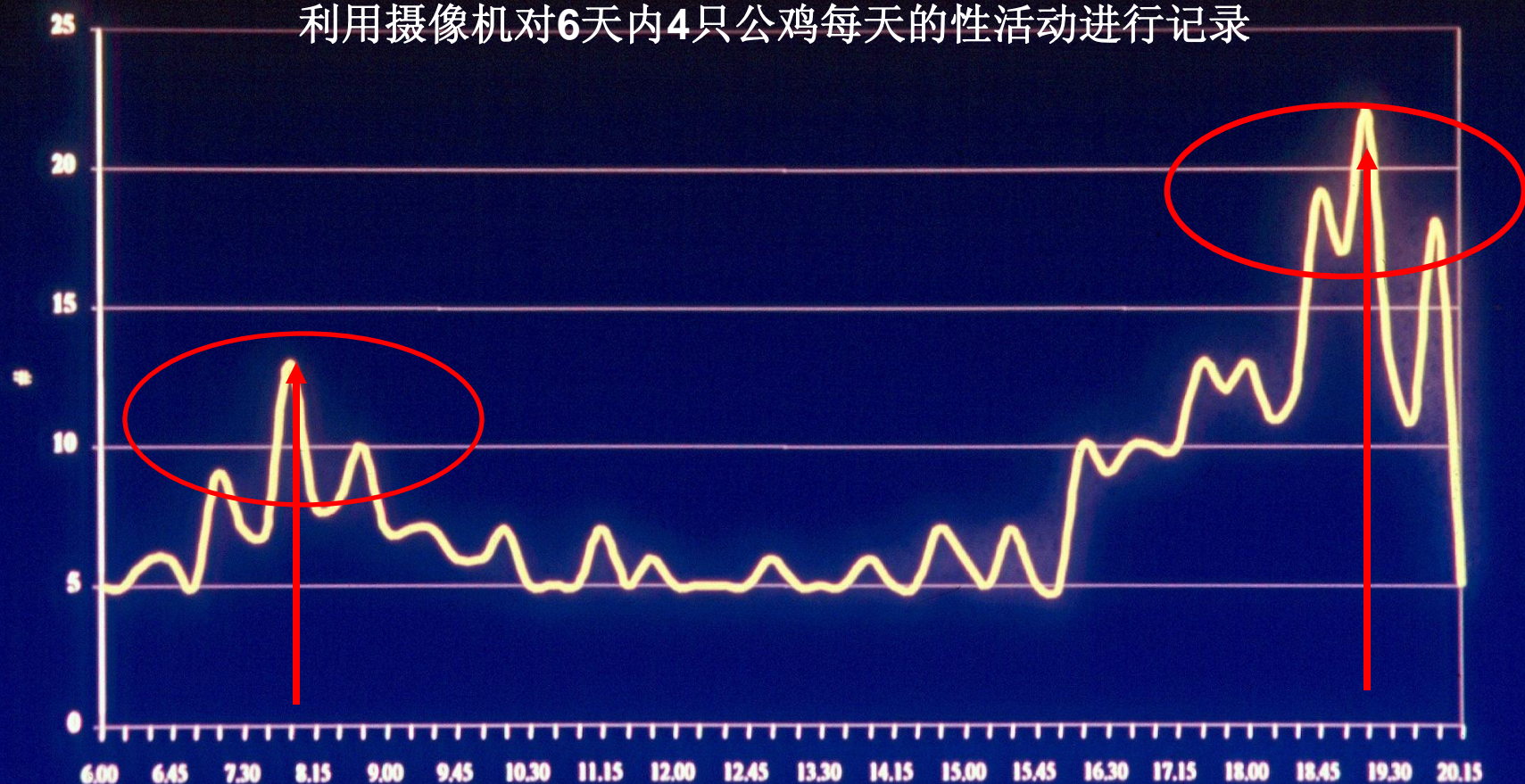


Distribution of Sexual Activity of the Rooster along the Day

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

白天公鸡性活动分布示意图

利用摄像机对6天内4只公鸡每天的性活动进行记录



Time 时间

Bodyweight Differential

体重差异

- Sexual synchronization between males and females is largely determined by their **weight differential**.

公母鸡性成熟的一致性很大程度上是由其体重差异决定的

- The target weight differential for maximum receptivity between males and females at 20 weeks is **1.5 lbs.(680 grams)**.

20周龄公母鸡之间达到最大容纳性的目标体重差异是1.5磅（680克）

- For optimal fertility, male weights should remain approximately **20%** heavier than hen weights at 25 weeks of age (Cobb 500 package). 为达到最佳的受精，**25周龄的公鸡体重仍然要比母鸡重约20%**

- Rooster weights should remain 15-20% above hen weights throughout the production period. 在整个生产期间内公鸡的体重要始终比母鸡中15-20%
- Generally, poor receptivity of females toward males and poor mating efficiency can be expected if the weight differential exceeds 40%.

一般说来，如果体重差异超过40%，母鸡对公鸡的容纳性和交配效率就会降低

- Results in poor fertility, hatchability & persistency
导致较差的受精率、孵化率和生产持久性



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Sexual Synchronization

性成熟的一致性

Females must be ready to accept males 母鸡必须做好接纳公鸡的准备

- Underweight females will not respond to photo stimulation or to males. This results in:

低于标准体重的母鸡对于加光或公鸡不会做出反应，这将会导致：

- Poor production and lower peak
较差的产蛋性能和较低的产蛋高峰
- Poor fertility 较差的受精率
- Increased hen mortality 母鸡死亡增加

- Problem situations存在的问题：

- Males too heavy (or females too light) 公鸡太重（或母鸡太轻）
 - Male aggression / increased mortality 公鸡争斗/死亡率增加
 - May be influenced by breed. 或许受品种的影响
- Males too light (or females too heavy) 公鸡太轻（或母鸡太重）
 - Female dominance over males resulting in “**social castration.**”
母鸡主导公鸡从而导致“社会阉割”
 - Increased male to male aggression. 增加公鸡间争斗



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“Working Males” “交配能力良好的公鸡”

Vent Check 翻肛检查



Red and moist



Pale and dry
苍白干燥

1/11/2000



ASIA

红润

“Working Males”
“交配能力良好的公鸡”
Feather Wear被毛



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Male Management 公鸡管理

Effect of weight loss during Production VS Sperm Quality & Quantity

产蛋期体重减少对精子质量和数量的影响

Weight Loss 体重减少	Results on Quality/Quantity of Semen 对精子数量/质量的影响
Slight 轻微	Sperm quality declines 精子质量降低
100g in 5 weeks 5周内减少100克	Sperm quality and volume decline 精子质量和数量降低
500g in 5 weeks 5周内减少500克	Semen production stops and, sometimes, it is not recovered 精子生成终止，有时不再恢复



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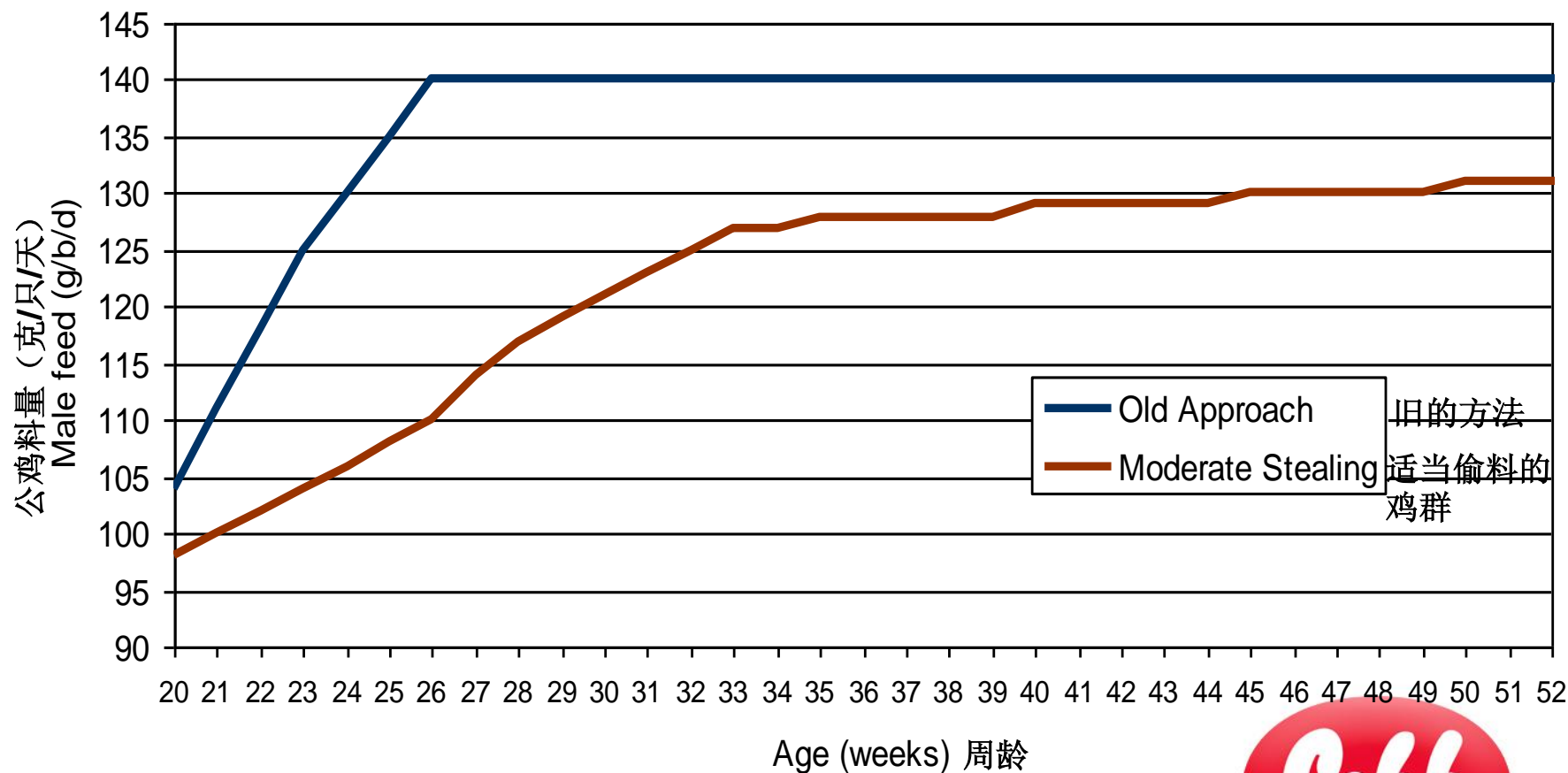
5 grams at 32 weeks
32周龄的重量为5克

25 grams at 32 weeks
32周龄的质量为25克



Male Management 公鸡管理

Separate Sex Feeding – Feed Program for Males 公母分饲-公鸡的喂料方案



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Male Management 公鸡管理

Feed amounts – +20 weeks of age 20周之后的喂料量

- Male feed amounts should be based on the Male's Conformation (Body Mass in Relation to Frame Size) rather than body weight alone.
公鸡的喂料量应该基于公鸡的体形（体重与体型相关）而不仅仅是体重大小
- At move, (20-21 weeks), where males are normally receiving 100 - 110 grams of feed through the male feeder. Check first the conformation of the males before making any adjustments to the male's feed amount.
20-21周龄混群时，公鸡通常从料盘内摄取的饲料量为100-110克。公鸡料量调整前要先检查公鸡的体形。
 - Perform a very good random check of the conformation of the males (possibly a twice weekly basis from 20-25 weeks of age).
对公鸡体形的检查要随机进行（**20-25周后每周检查两次**）
 - After performing this step we will have a very clear idea on the average conformation and condition of your males.
开展该步骤后，我们对公鸡的体形和机体状况会有一个清晰的了解
 - After making this random check, then make a decision if any adjustments to the male's feed amounts are needed. 随机抽查后，确定公鸡料量是否需要调整
- Do not make any feed amount decisions based on body weights alone as conformation is a much better indication if adjustments to the male's feed amounts are necessary.
- 不要仅靠体重来进行饲喂量的调整，因为调整料量时体形是一个更好的衡量指标



Male Management 公鸡管理

Separate Sex Feeding – Male Stealing 公母分饲-公鸡偷料

➤ 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.

在公鸡鸡冠发育完全前（26-27周龄或体重>3.80kg）不用完全防止公鸡偷料。在这之前公鸡一直能够偷料，在计算公鸡喂料进度时要加以考虑，这很重要。

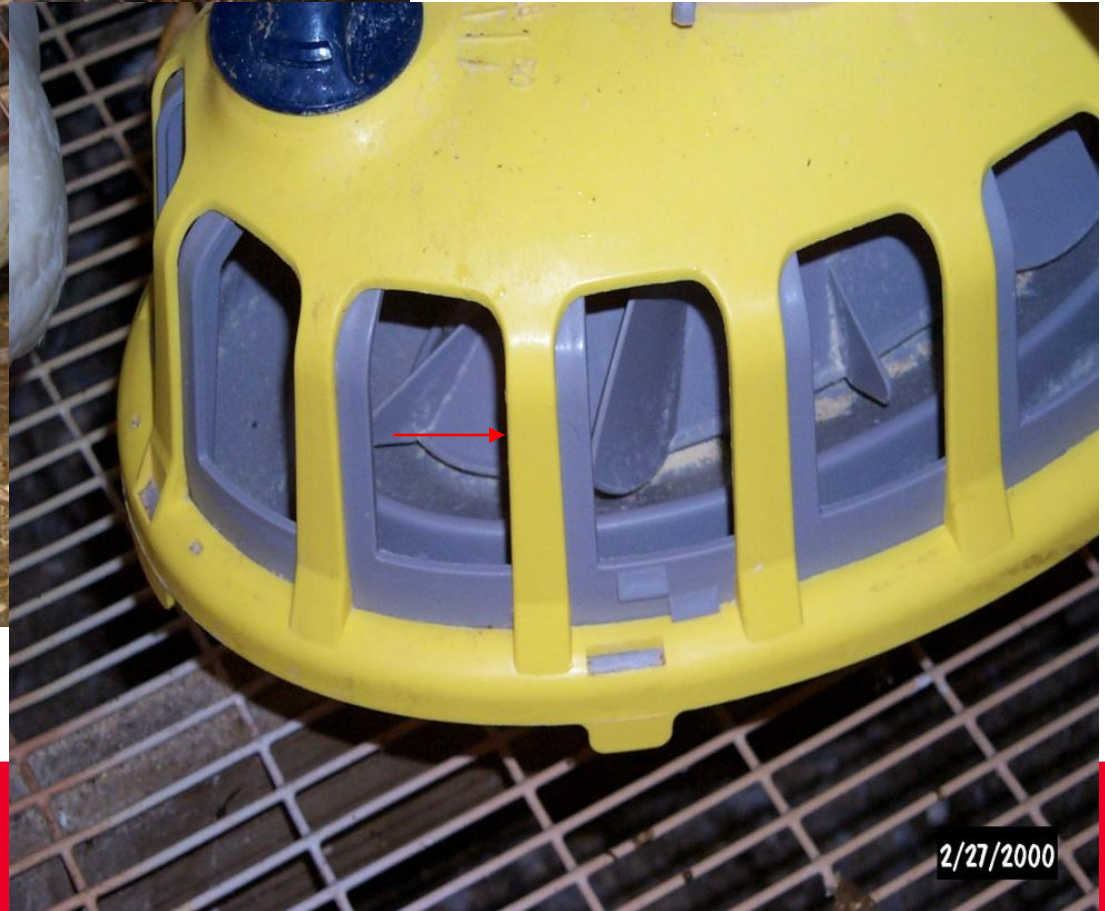




Restriction Techniques 防止偷料的手段

Roxell Kixoo Hen Pan Feeder

Roxell Kixoo 母鸡料盘



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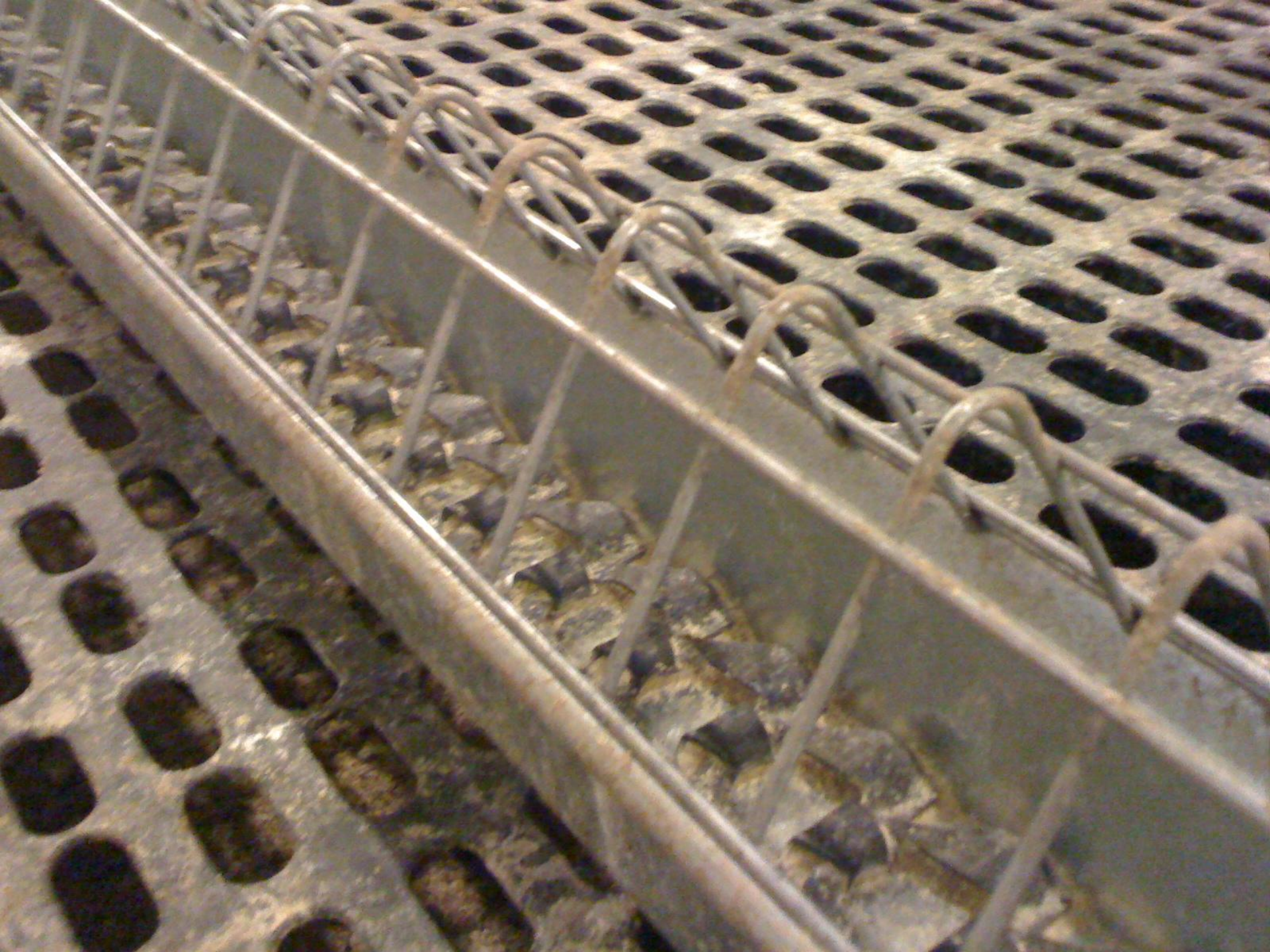
2/27/2000





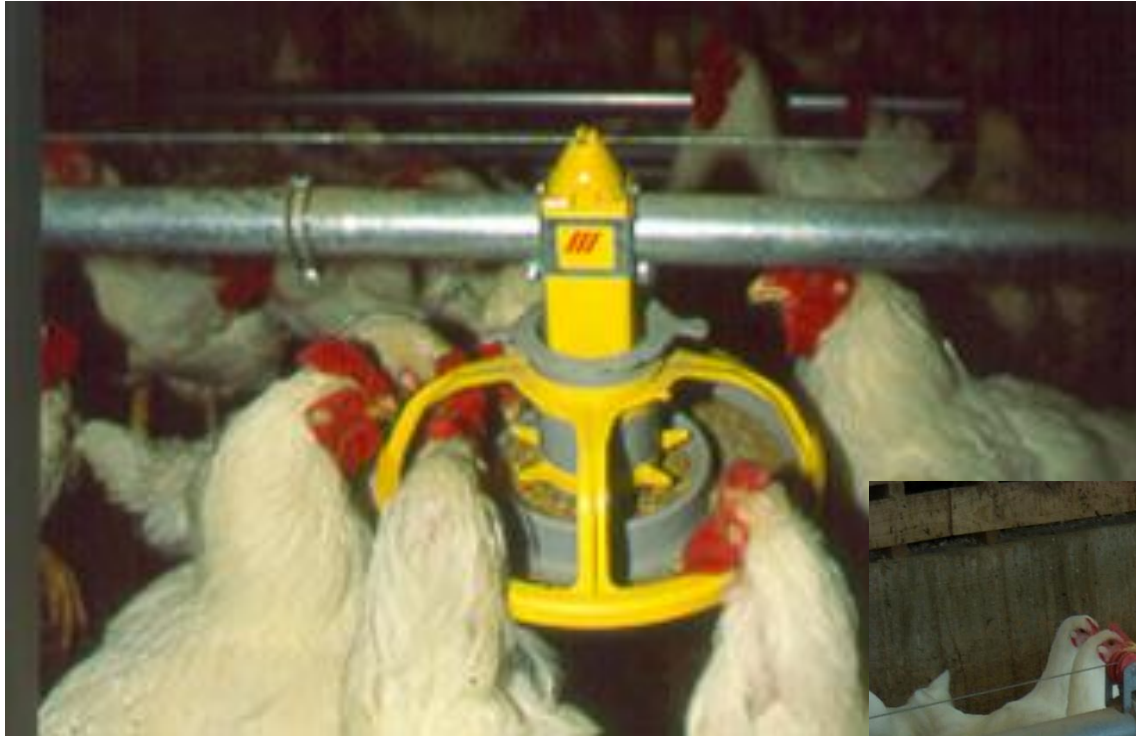
Restrict Males from the
Female feeder

公鸡不能接触到母鸡料
槽内的饲料





“Noz Bones”
“鼻笠”



Male Feeder Height
(45-50 cm.)
公鸡料盘的高度 (45-50厘米)



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1/12/2000



1/12/2000

Male Management 公鸡管理

Feeding Uniformly – IDEAL Feeder Design?

均匀地喂料-料盘设计的是否理想？

- Immediate/ accurate feed distribution
快速/精确的饲料分配
- Sufficient space to allow 8 males with full combs to eat comfortably
有充足的料位保证**8**只鸡冠发育完全的公鸡舒适地吃到饲料
- 100% accessibility
鸡群**100%**地能摄取到饲料
- Bird friendly; prevent injuries
鸡只之间彼此友好相处，防止受伤
- Stable
料盘要稳固



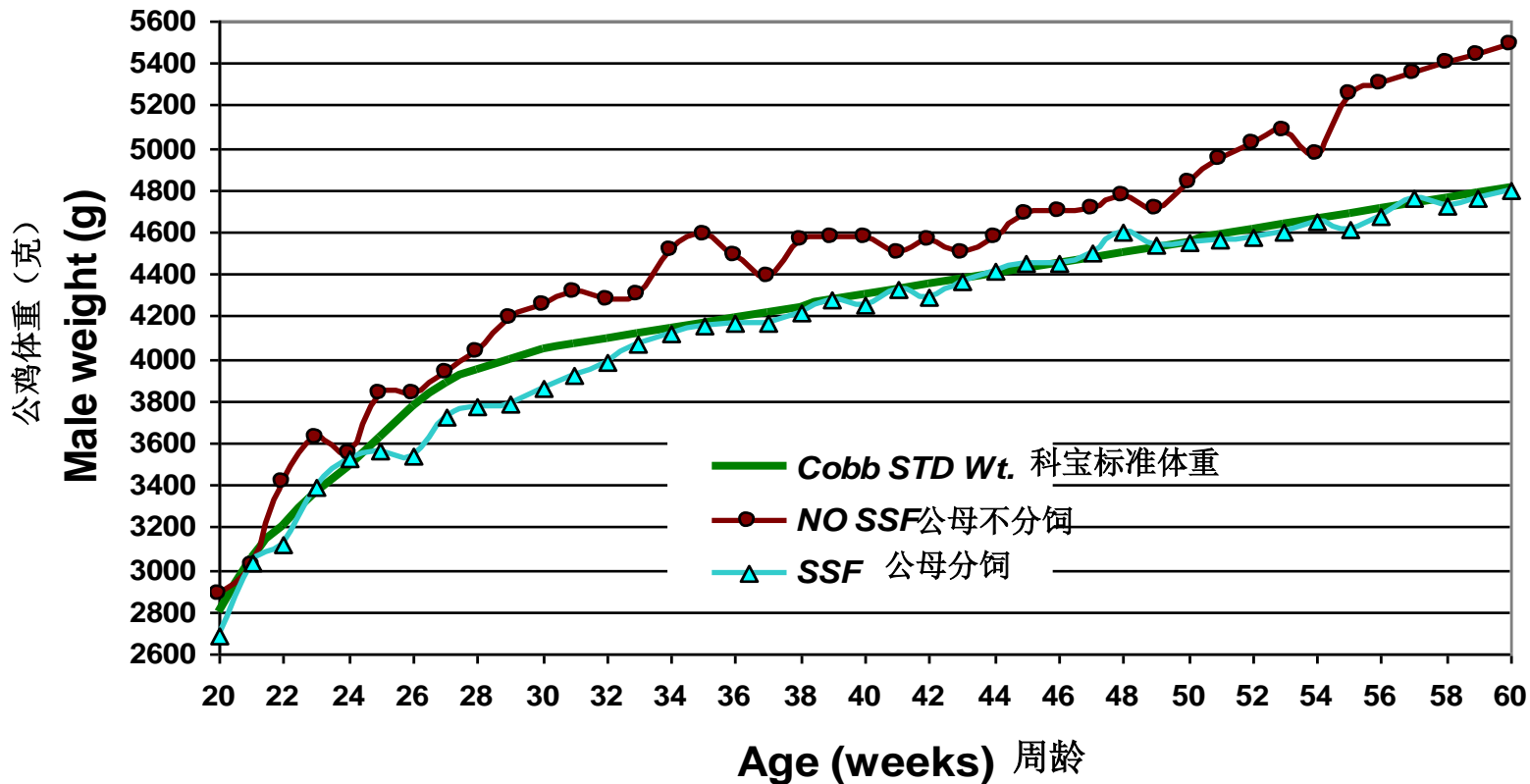






Male Management 公鸡管理

Separate Sex Feeding- Does it work? 公母分饲-会有作用吗?



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



SSF=公鸡体重控制的更好+更少的应激，从而孵化率可以至少提高2%

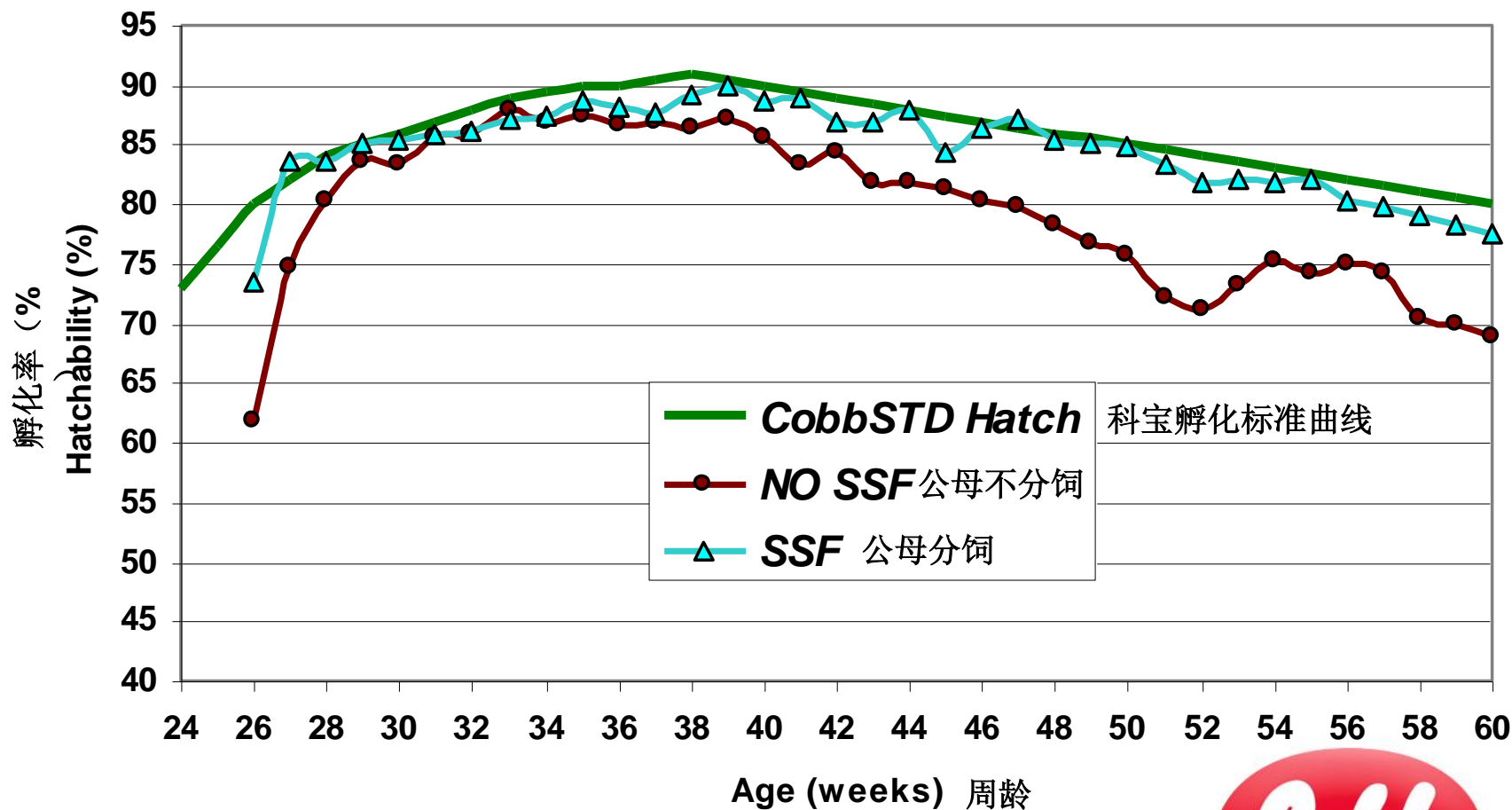


Male Management

公鸡管理

Separate Sex Feeding – Does it work?

公母分饲-会有作用吗？



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Trouble-Shooting Hatch Issues

孵化问题解答

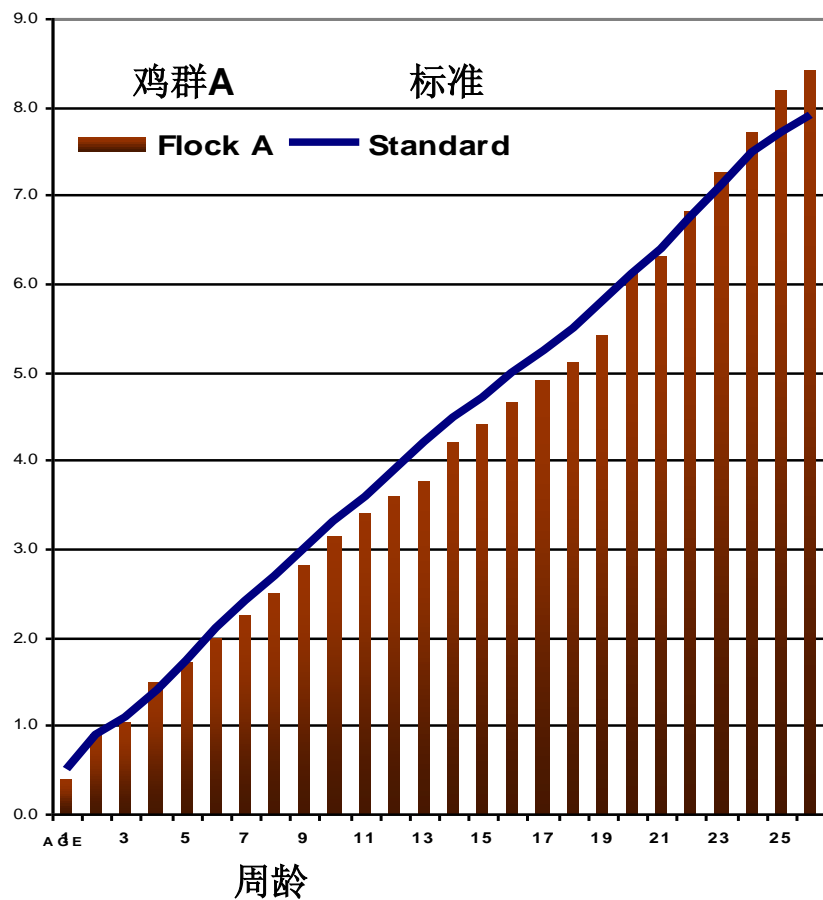
LOF Hatch= 82.64%

BODYWEIGHT (LBS)

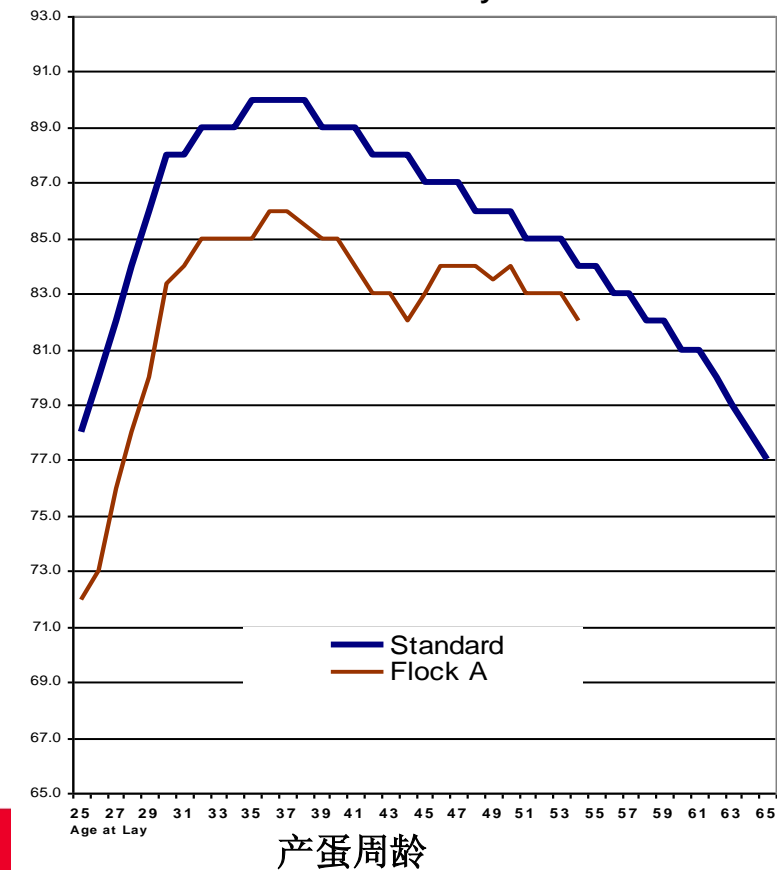
小公鸡的体重

Cockerel Weights

体重（磅）



Hatch % 孵化率%
Hatchability



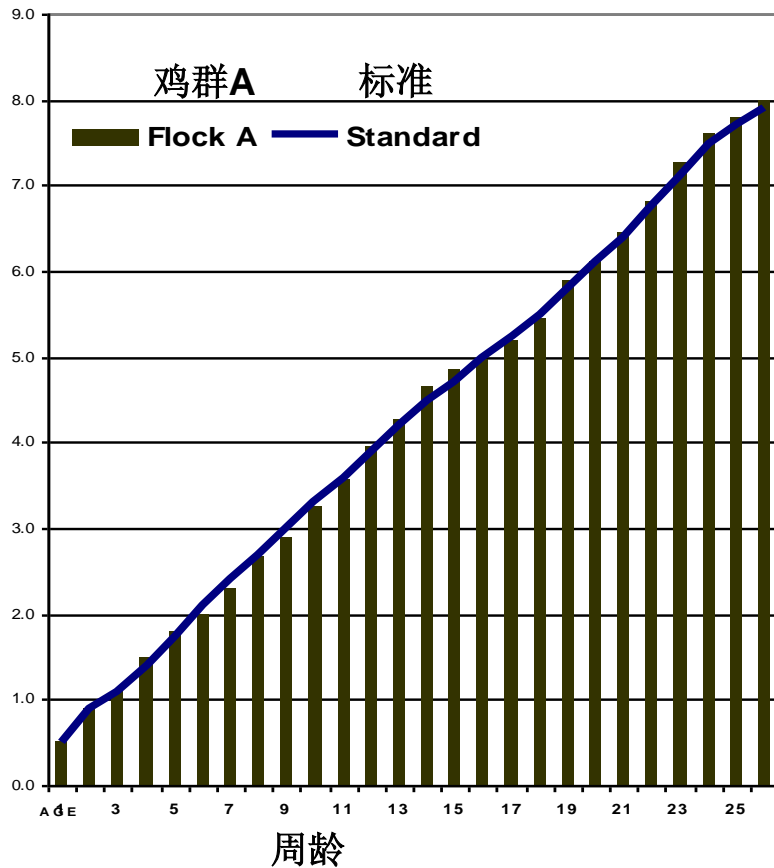
Trouble-Shooting Hatch Issues

孵化问题解答

LOF hatch=86.87%

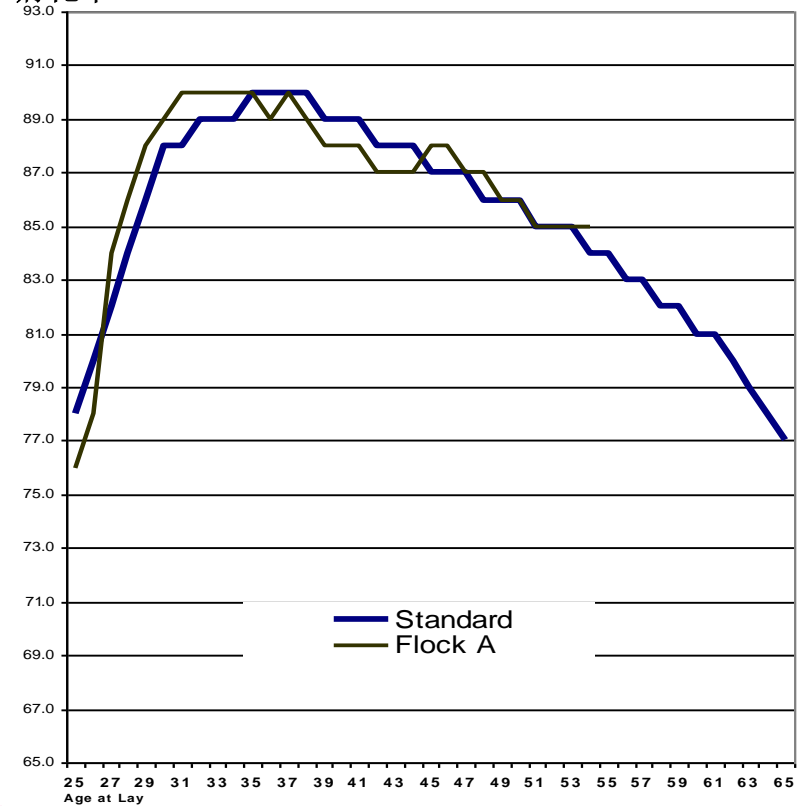
BODYWEIGHT (LBS)

小公鸡体重
Cockerel Weights



Hatch %

孵化率
Hatchability



产蛋周龄

Summary总结

- At 4-6 weeks be sure the body weights are at least at standard or slightly above the standard to ensure good start on skeletal development.
4-6周龄的体重要确保至少达到标准或轻微高于标准以确保骨骼发育有个良好的开端
- Provide the Cobb male with enough floor space; feeder space and fast distribution.
给科宝公鸡足够的地面空间，料位和快速分布的条件
 - Avoid stress condition from 2-12 weeks
2-12周要避免应激
- Select good males
选择发育良好的公鸡
- Body weight control and sex separate feeding
体重控制和公母分饲
- Synchronize the male & female maturity
使公母成熟同步
- Feed amounts/increase base on the body conformation of the males
料量/料量的增加要基于公鸡的体形



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Thank You!
We appreciate your business!
谢谢！
我们为您辉煌的事业感到荣耀