Fat Matters: How Body Composition Drives Young Layer Performance

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AGENDA

- History of egg production
- Why body composition is important
- Understanding body composition
- How understanding fat composition improves decision making

HISTORICAL IMPROVEMENTS TO LAYER PRODUCTION

Current Focus: Persistency

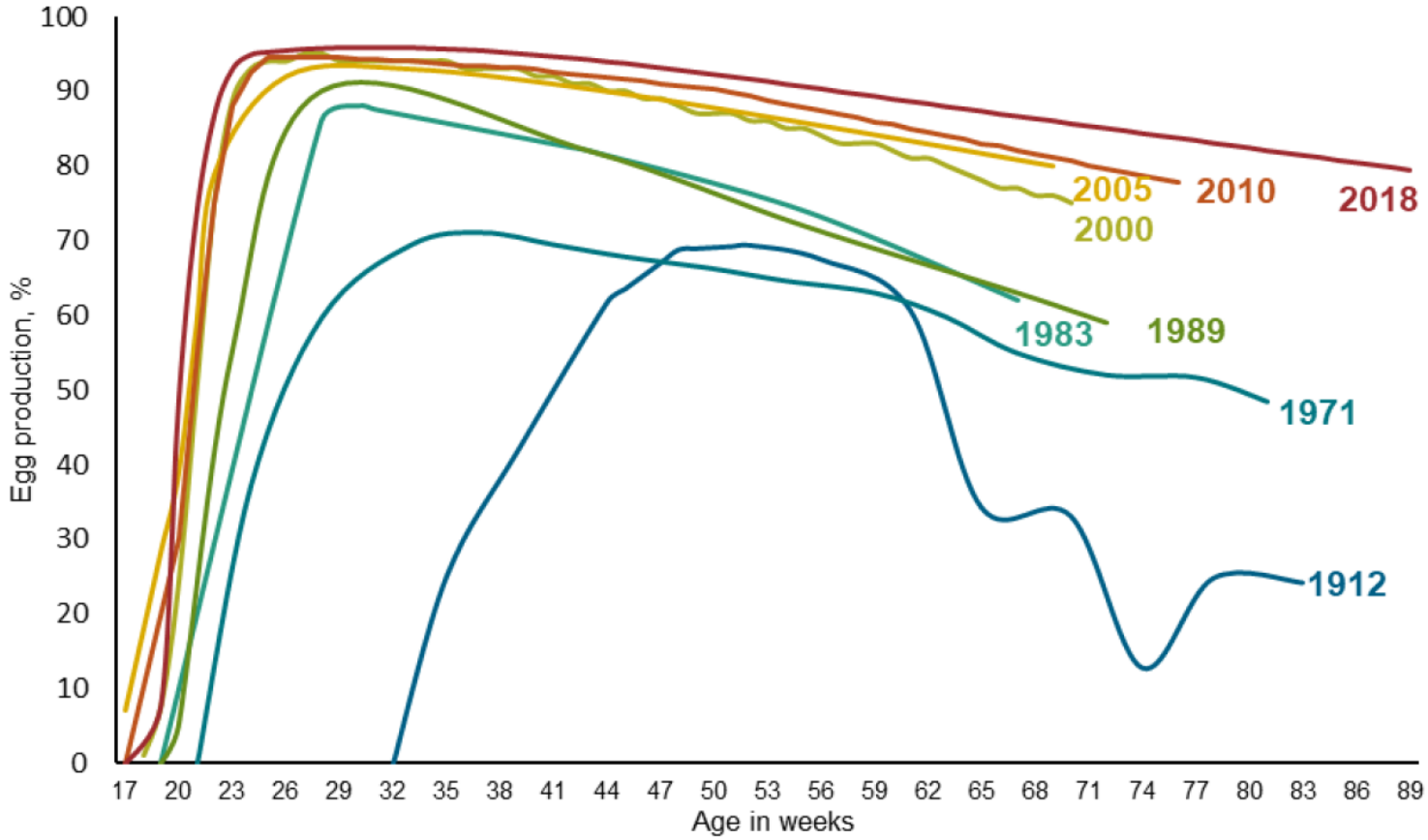
Past years: Great focus on Peak

1989. Higher peak and longer production

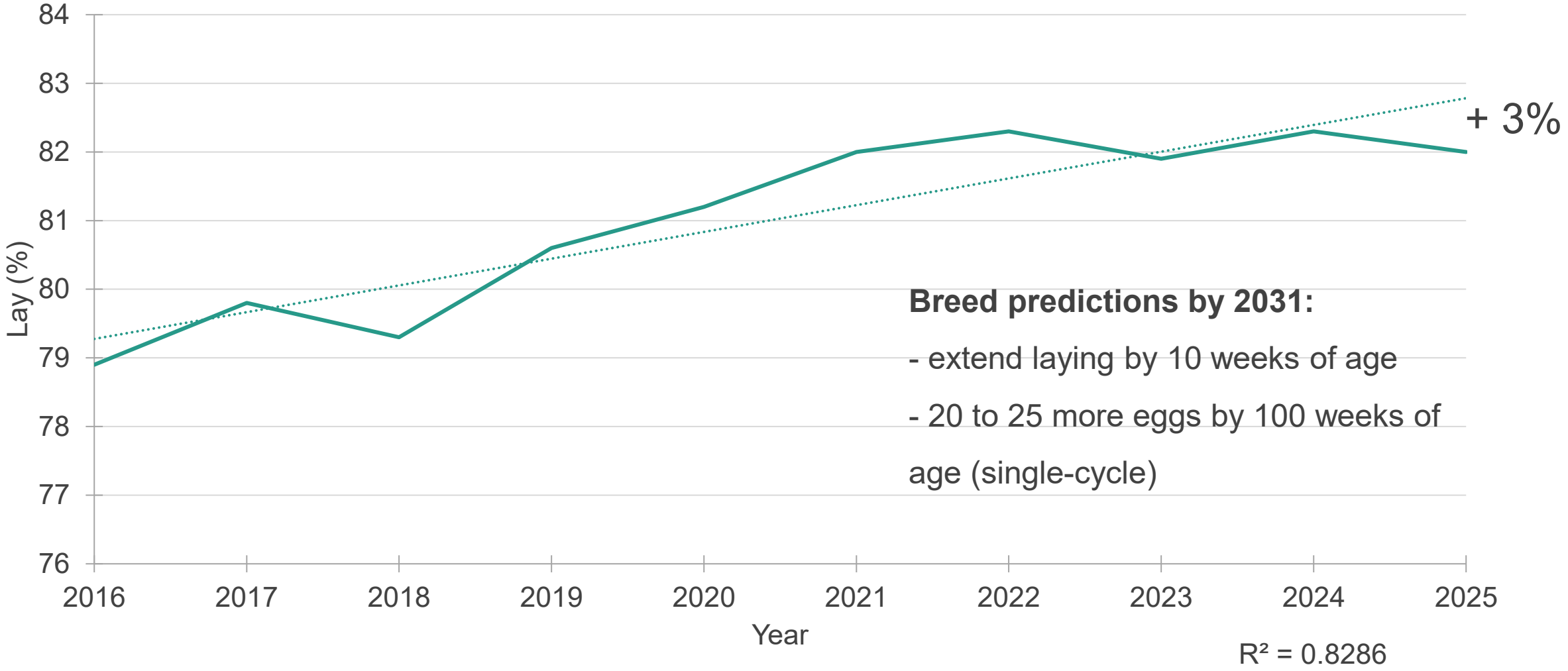
1983. Higher peak production

1971. Early maturation

1912. Seasonal production

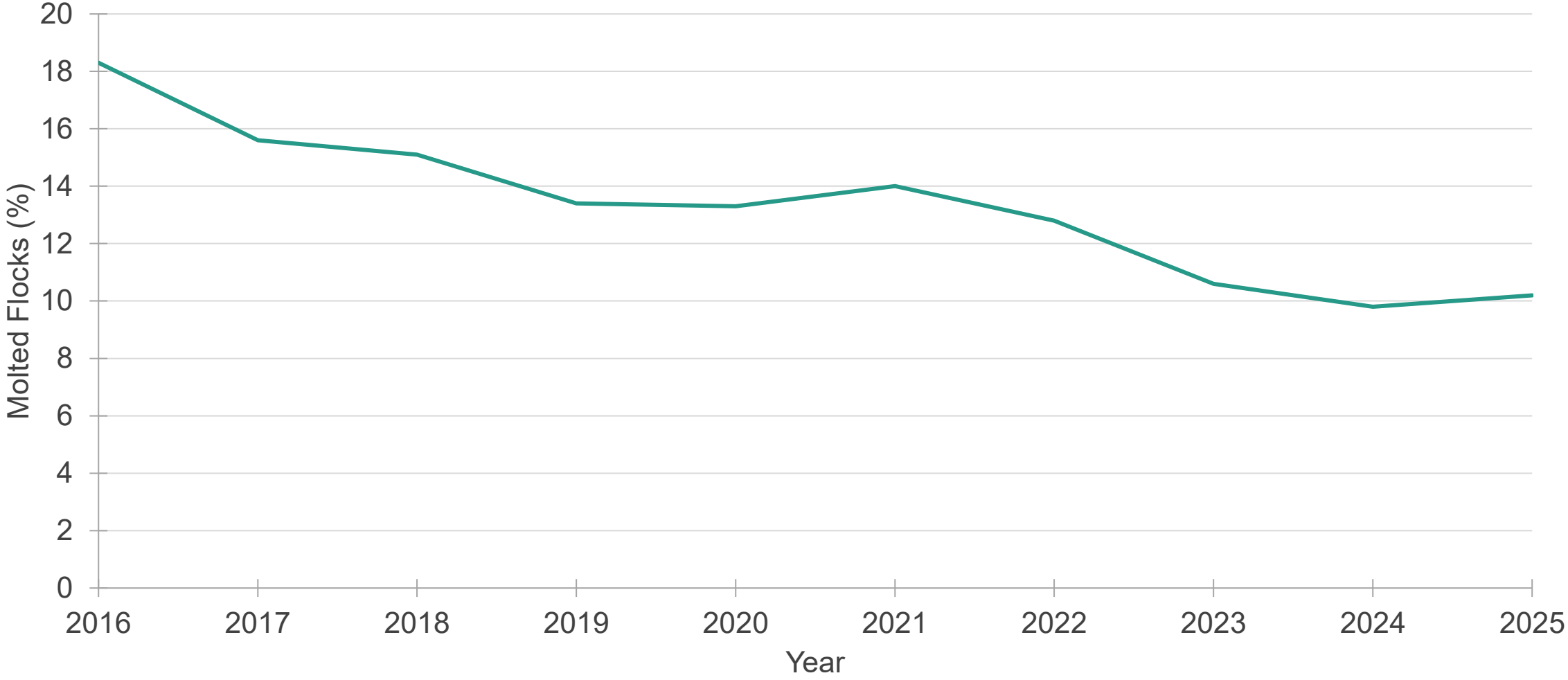


RATE OF LAY: 2016 THROUGH 2025



*USDA NASS Chickens and Eggs

PERCENT OF MOLTED FLOCKS



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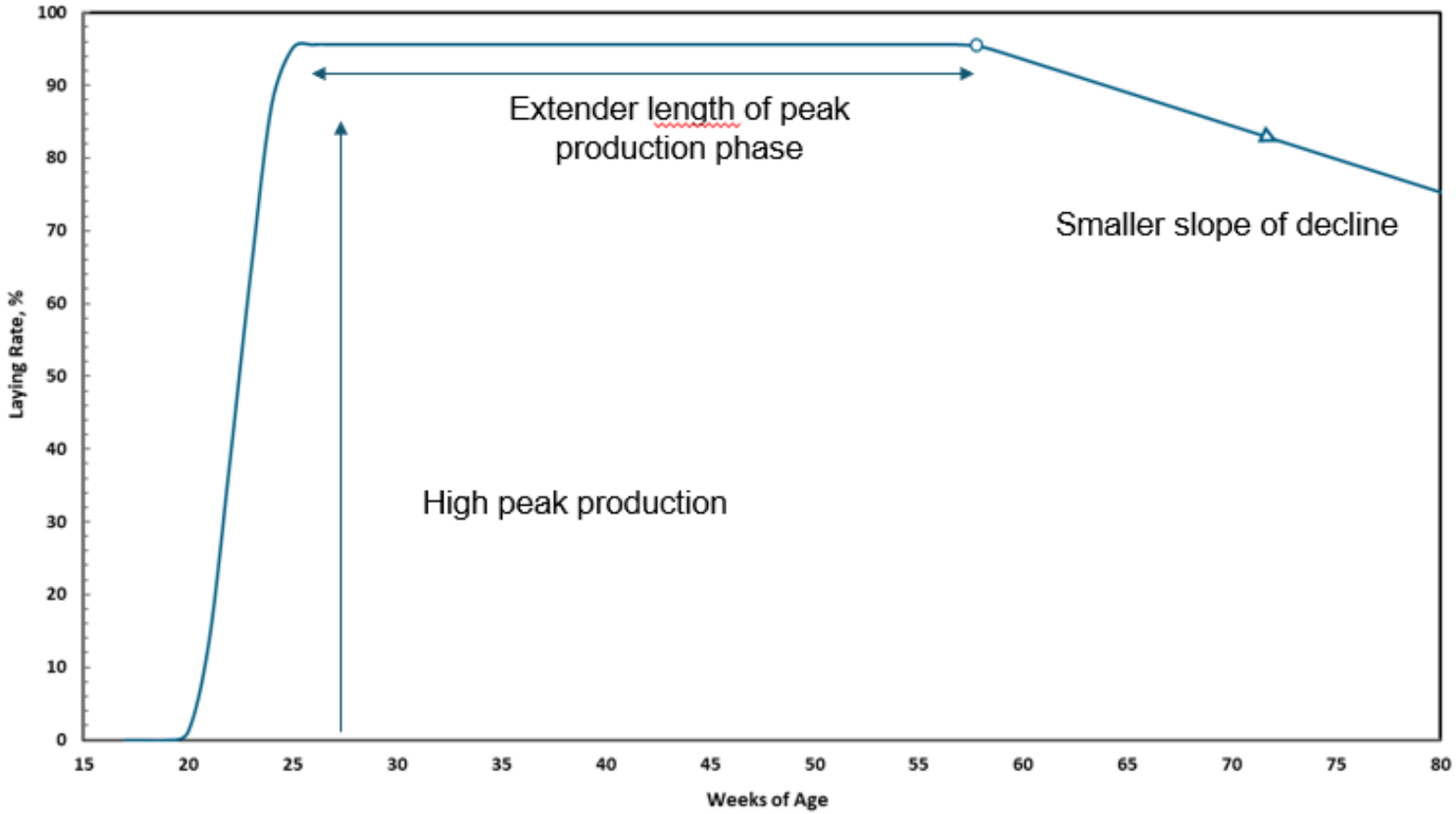
*USDA NASS Chickens and Eggs

WHAT IS PERSISTENCY?

PERSISTENCY = MORE EGGS, FEWER BIRDS, LESS RESOURCES

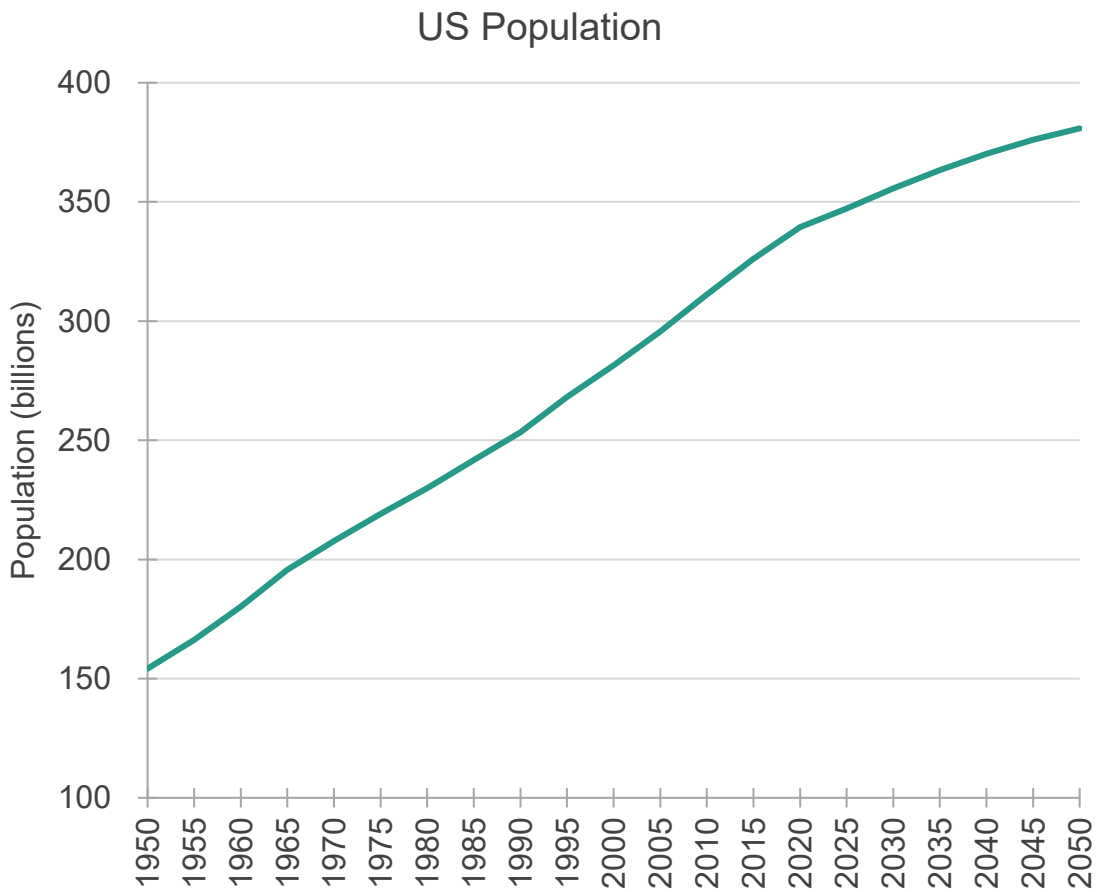


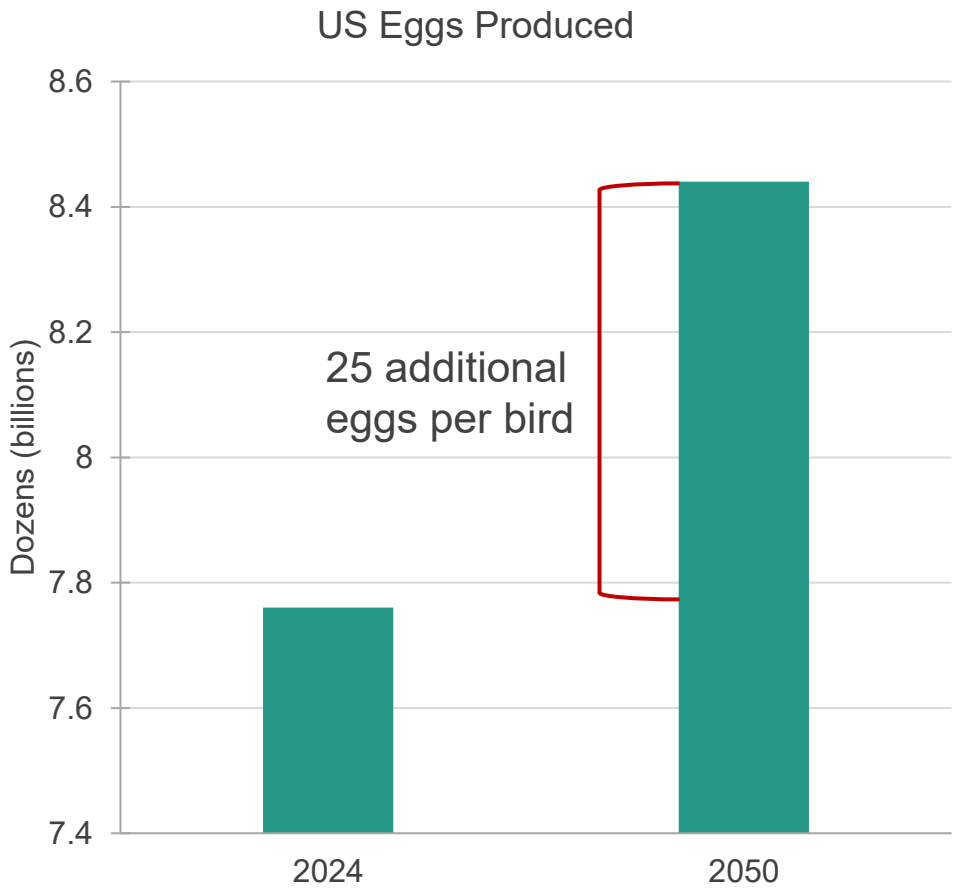
IMPORTANCE OF PERSISTENCY

PERSISTENCY = MORE EGGS, FEWER BIRDS, LESS RESOURCES

INCREASE IN POPULATION AND EGG DEMAND

PERSISTENCY = MORE EGGS, FEWER BIRDS, LESS RESOURCES





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OPTIMAL PERFORMANCE REQUIRES OPTIMAL FUEL

- Not designed for high performance
- Requires standard fuel

- Target is peak performance
- Requires specialized, high-performance fuel

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We need a holistic approach to reach laying persistency

Rearing

- Rearing is an investment for long-term egg production
- Focus on proper development
- **Manage body composition**

Laying

- Stimulate feed intake for proper nutrient intake
- Start during early production phase
- **Nutrition influences the shape of the egg production curve**

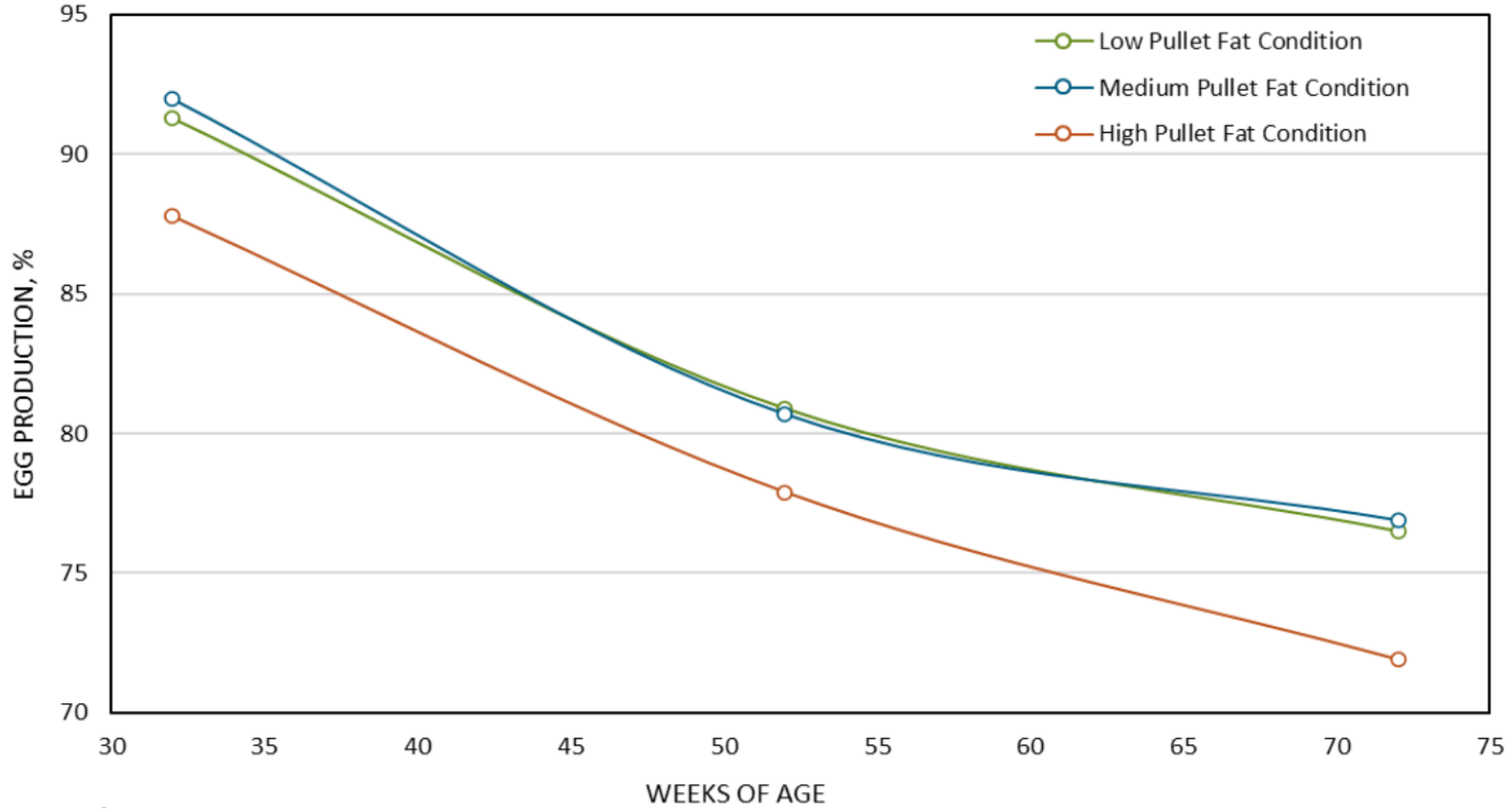
Health

- **Manage body composition at the right ages**
- Support liver functioning
- Focus on gut health

The right body composition at the right time is the key for persistency

PULLET BODY COMPOSITION AND PERSISTENCY

Pullets with high levels of abdominal fat pads may have a negative impact on egg production



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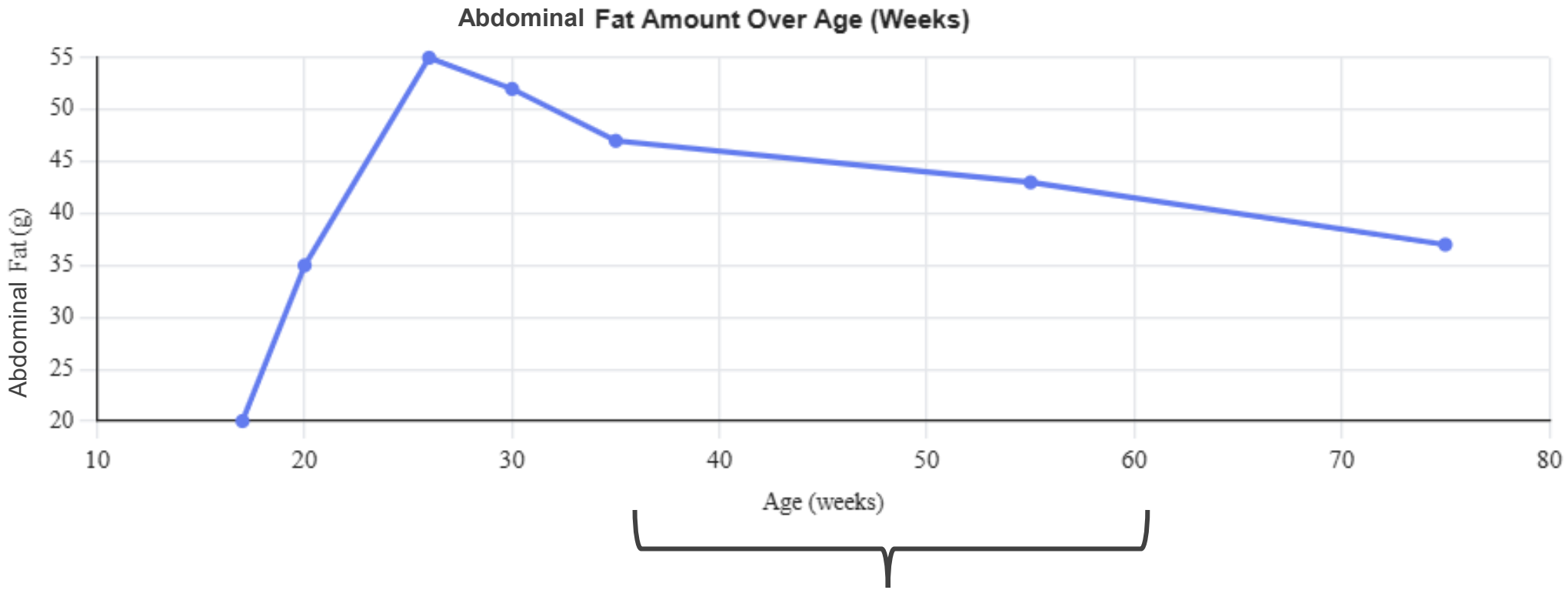
HEALTH: RIGHT BODY COMPOSITION AT THE RIGHT TIME



If not managed properly through nutrition and feeding, abdominal fat pad can drop below a critical level that can negatively impact persistency

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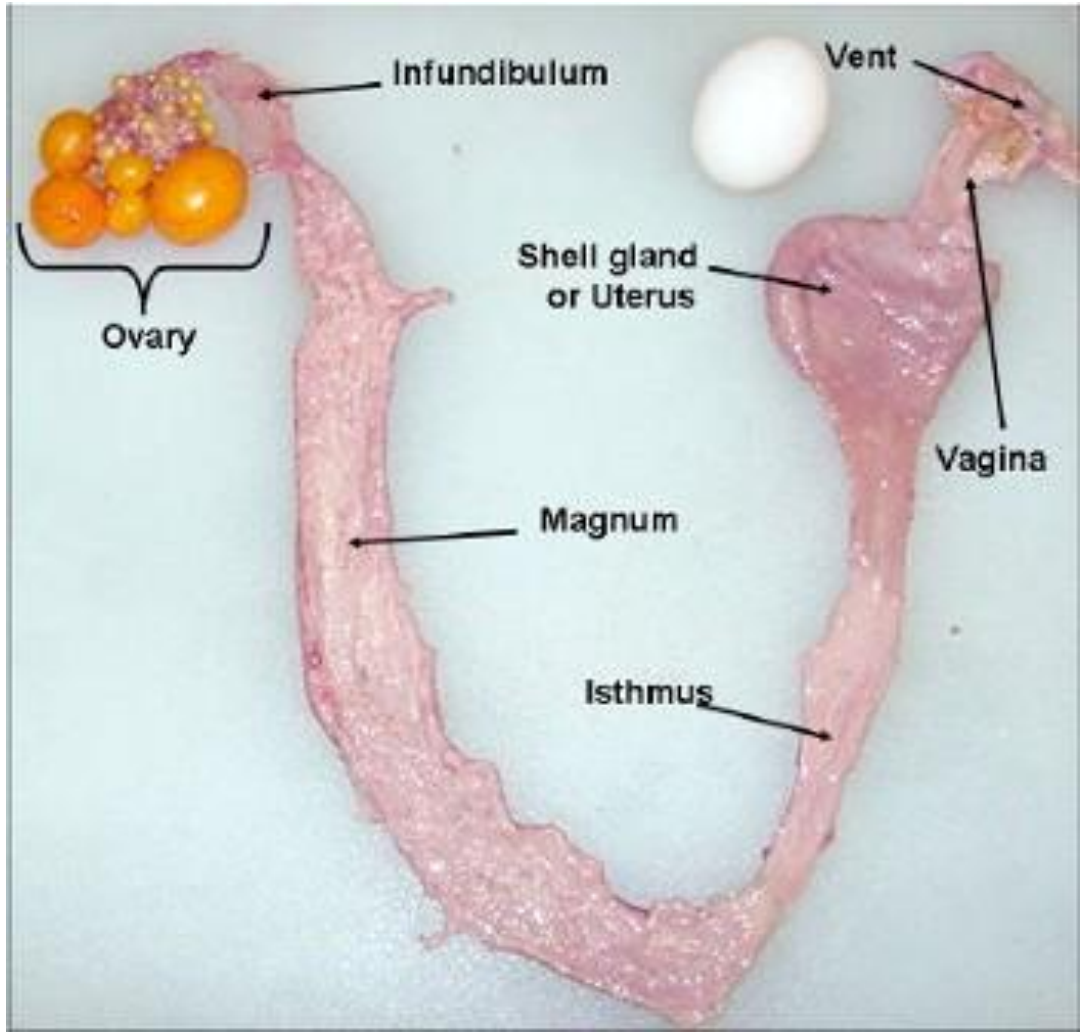
SCIENCE OF EGG PRODUCTION

- Regulated by Follicle Stimulating Hormone (FSH) and Luteinizing Hormone (LH)
  - FSH: growth + maturation of follicles
  - LH: release of follicles

Both high and **low body fat** can lead to imbalances of FSH and LH negatively impacting egg production



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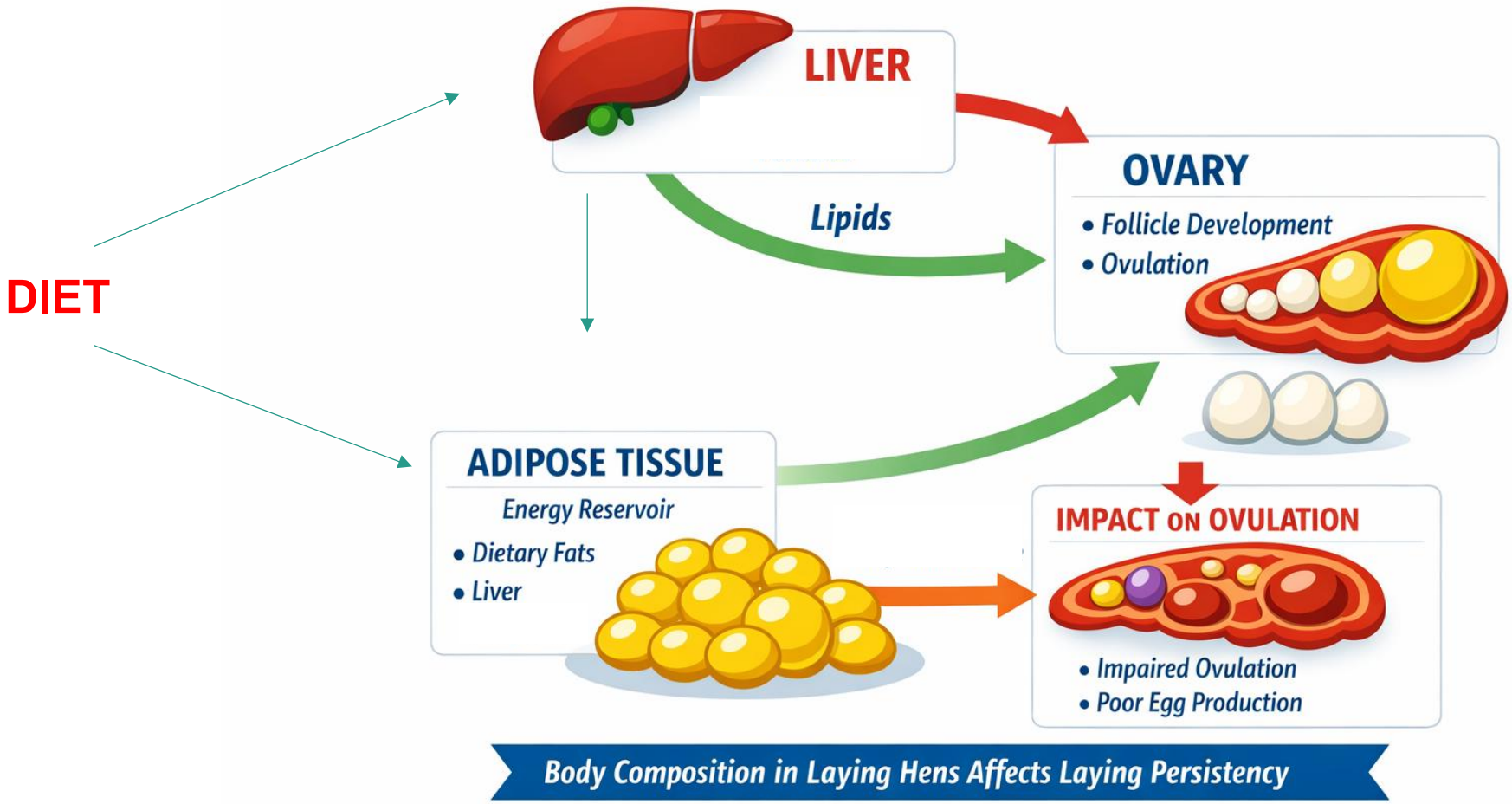
SEVERAL ORGANS INVOLVED IN EGG FORMATION



BODY COMPOSITION IMPORTANT ROLE ON PERSISTENCY

COMPOSITION OF A TABLE EGG

	Water	Protein	Fat	Ash
White	**88**	**11**	**0.2**	**0.8**
Yolk	**48**	**17.5**	**32.5**	**2**
Whole Egg	**65.6**	**11.8**	**11**	**11.7**

The **fat content of the yolk** is roughly **25% from the diet**, **70% from the liver**, and 5% from adipose tissue

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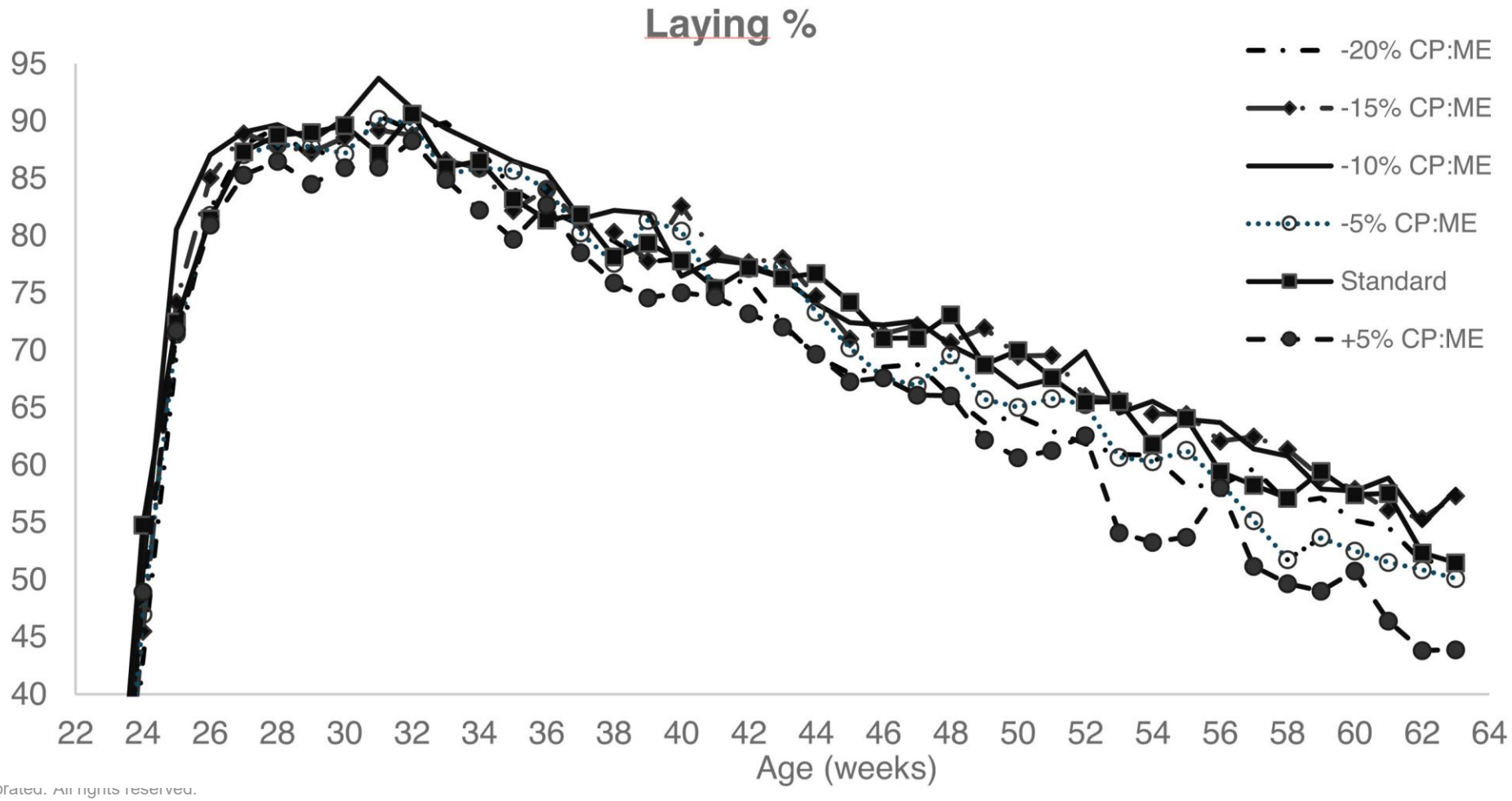
WHAT DO WE KNOW FROM OTHER EGG LAYING BIRDS?

Excess or insufficient fat in broiler breeders has negative impacts on lay rate
We also see an impact on laying when dietary energy is adjusted in relation to CP



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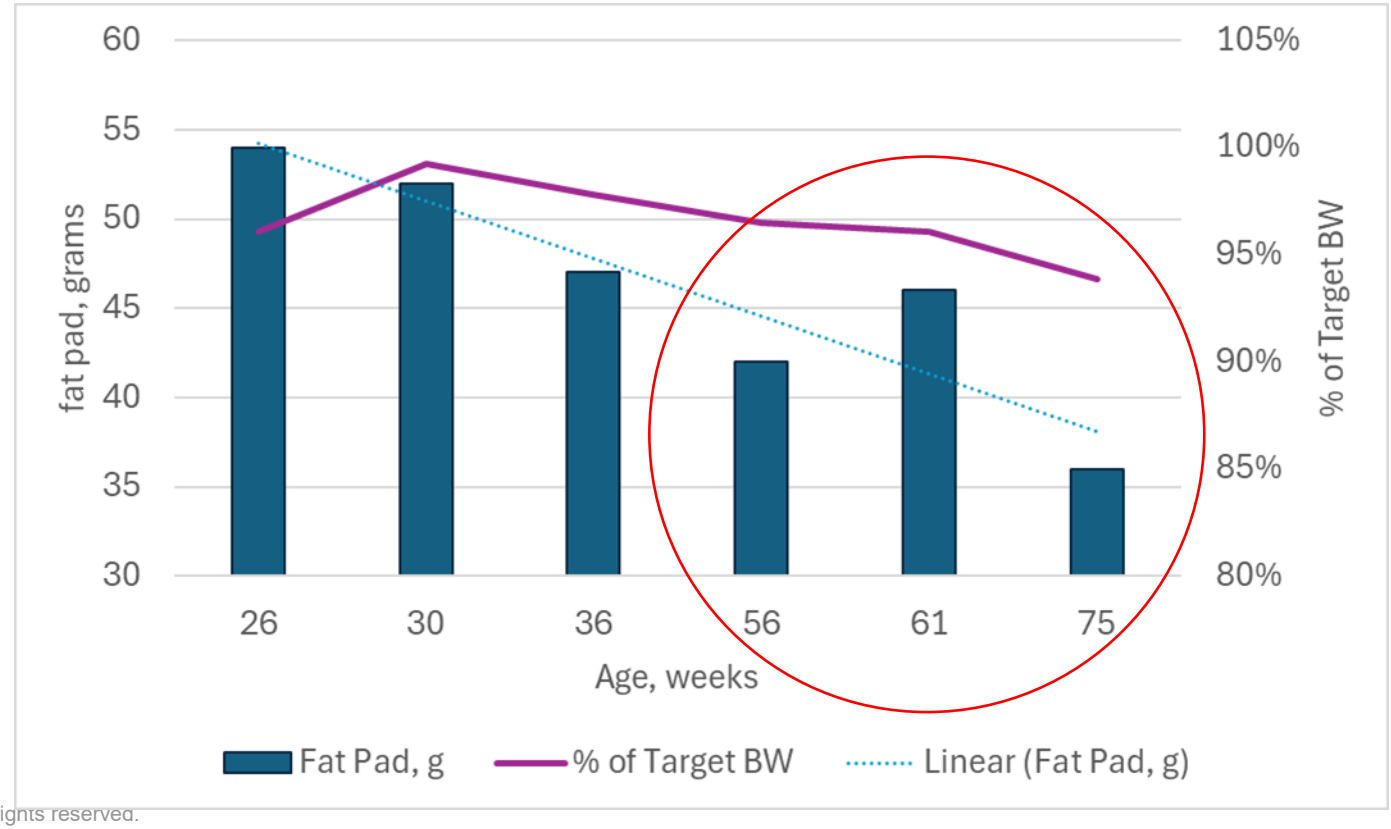
WHY BODY COMPOSITION IS IMPORTANT

Little correlation between body weight and amount of abdominal fat pad

- Abdominal fat pad is a more precise and sensitive measurement compared to body weight alone



LSL cage-free. Same birds were scanned using Reveal™ Layers and weighed simultaneously

CHALLENGES MEASURING ABDOMINAL FAT PAD

- Very subjective and not a standardized method
- Small database: consist of destroying 3 to 5 birds and in many cases down birds.
- That brings very little comfort to nutritionists that there is a need to adjust energy levels in the diet: costly decisions

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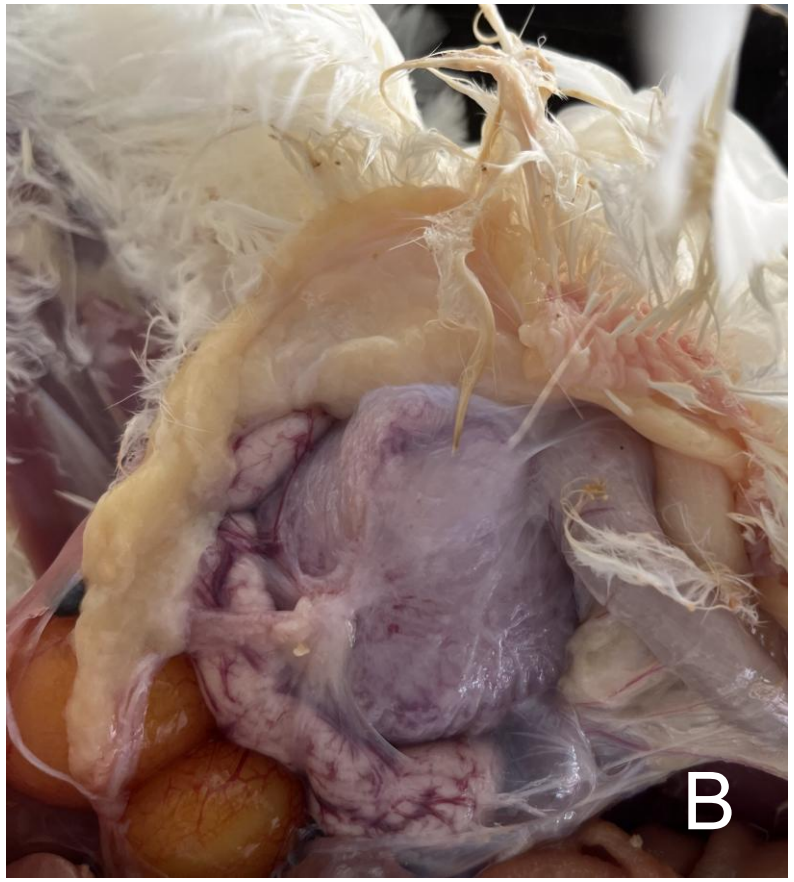
WHAT IS TOO FAT?



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WHAT IS TOO FAT?

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WHAT IS REVEAL™ LAYERS

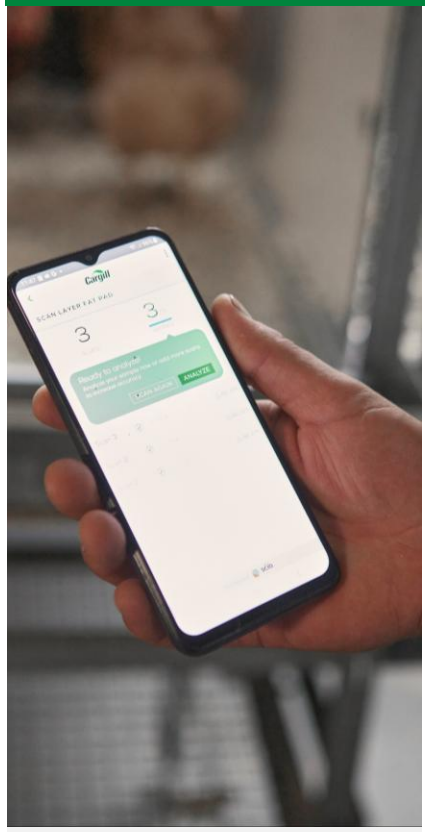
- **Non-invasive hand-held** NIR designed to measure abdominal **fat pad thickness in laying hens** without having to sacrifice birds
- Because no need to destroy birds, can create a **robust database** by continuously **monitoring body composition** to **improve lay persistency** as birds age
- Can use abdominal fat pad measurements with production parameters to make **“real time” nutrition decisions** to improve production

HOW DOES REVEAL™ LAYERS LOOK?

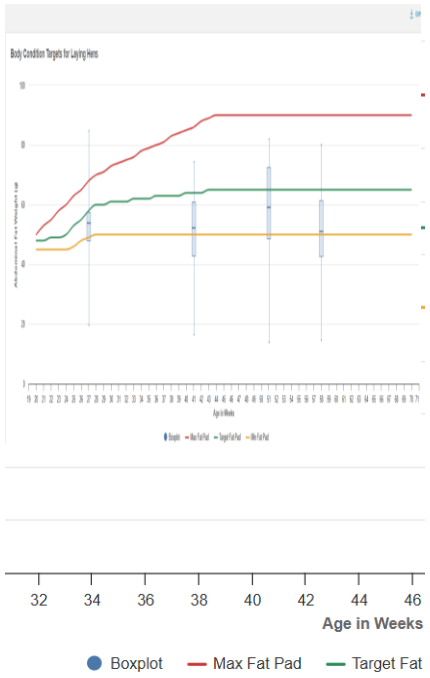
HOW DOES REVEAL™ LAYERS WORK?

1. Scan Hens

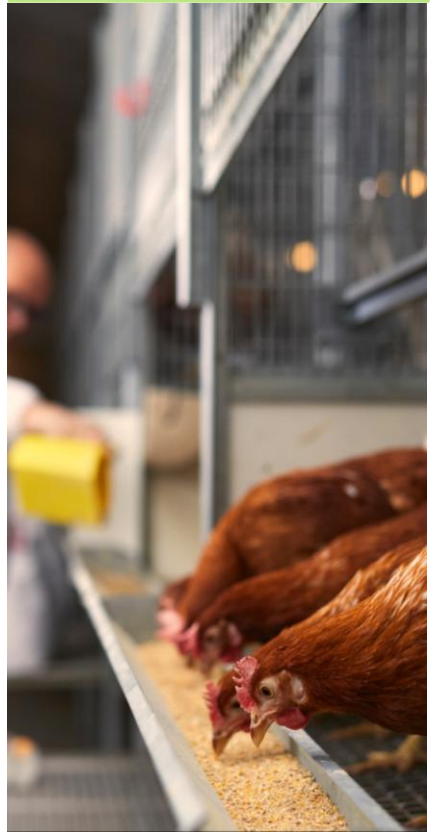
2. Collect Results



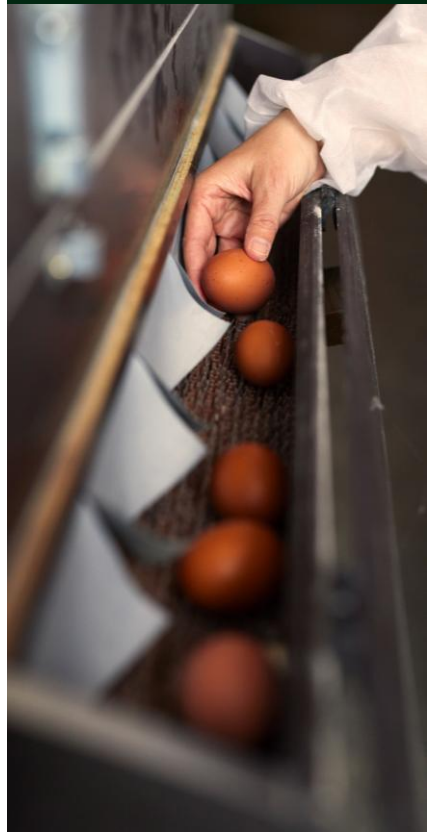
3. Upload & Analyze



4. Right Nutrition Strategy



5. Efficient egg production



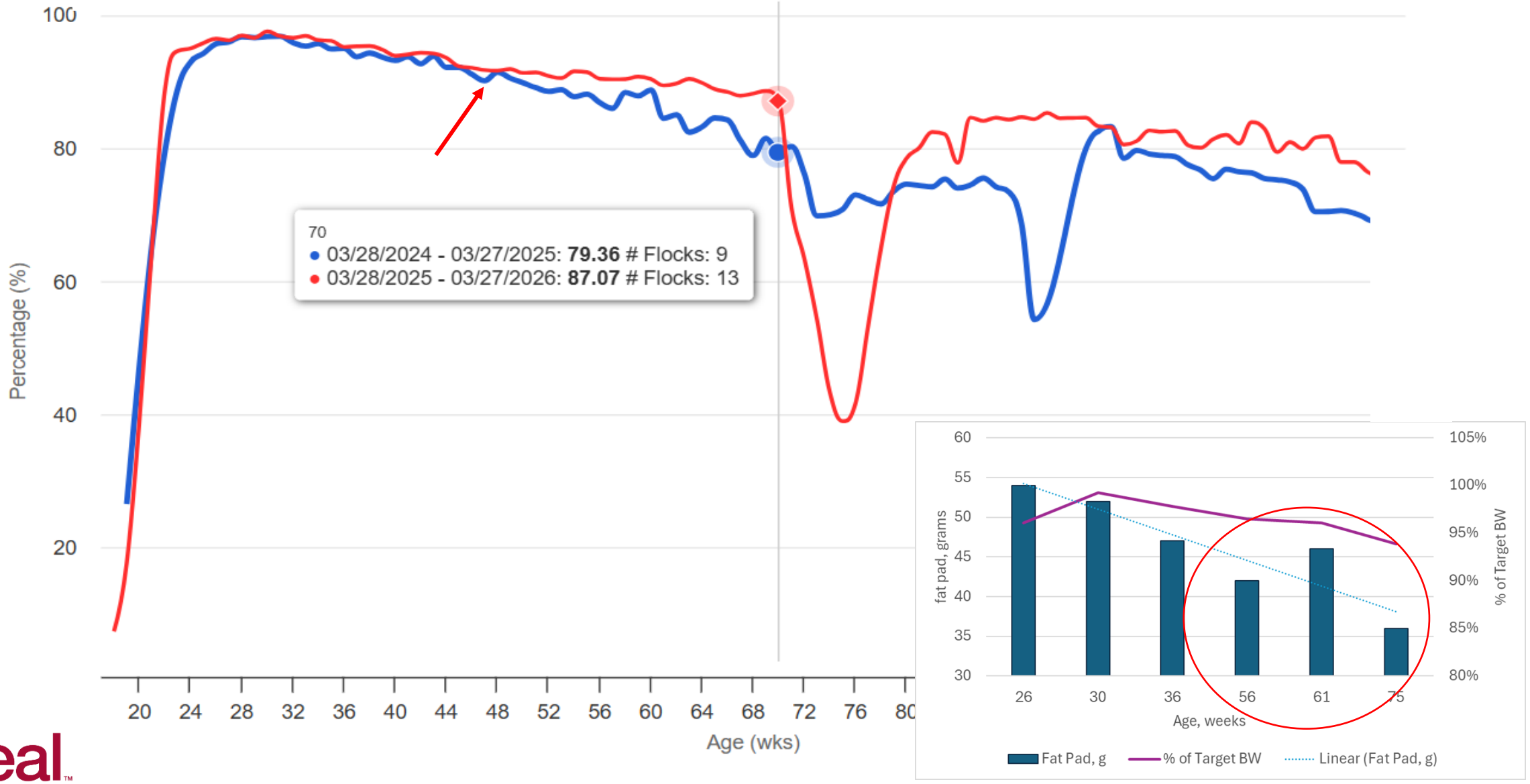
HOW UNDERSTANDING FAT COMPOSITION IMPROVES DECISION MAKING

CUSTOMER CHALLENGE 1

- **Improve persistency after 50 weeks of age on cage-free LSL flocks**
- Peaking at 98%
- Egg Production above 90% until 50- 55 weeks and then started dropping

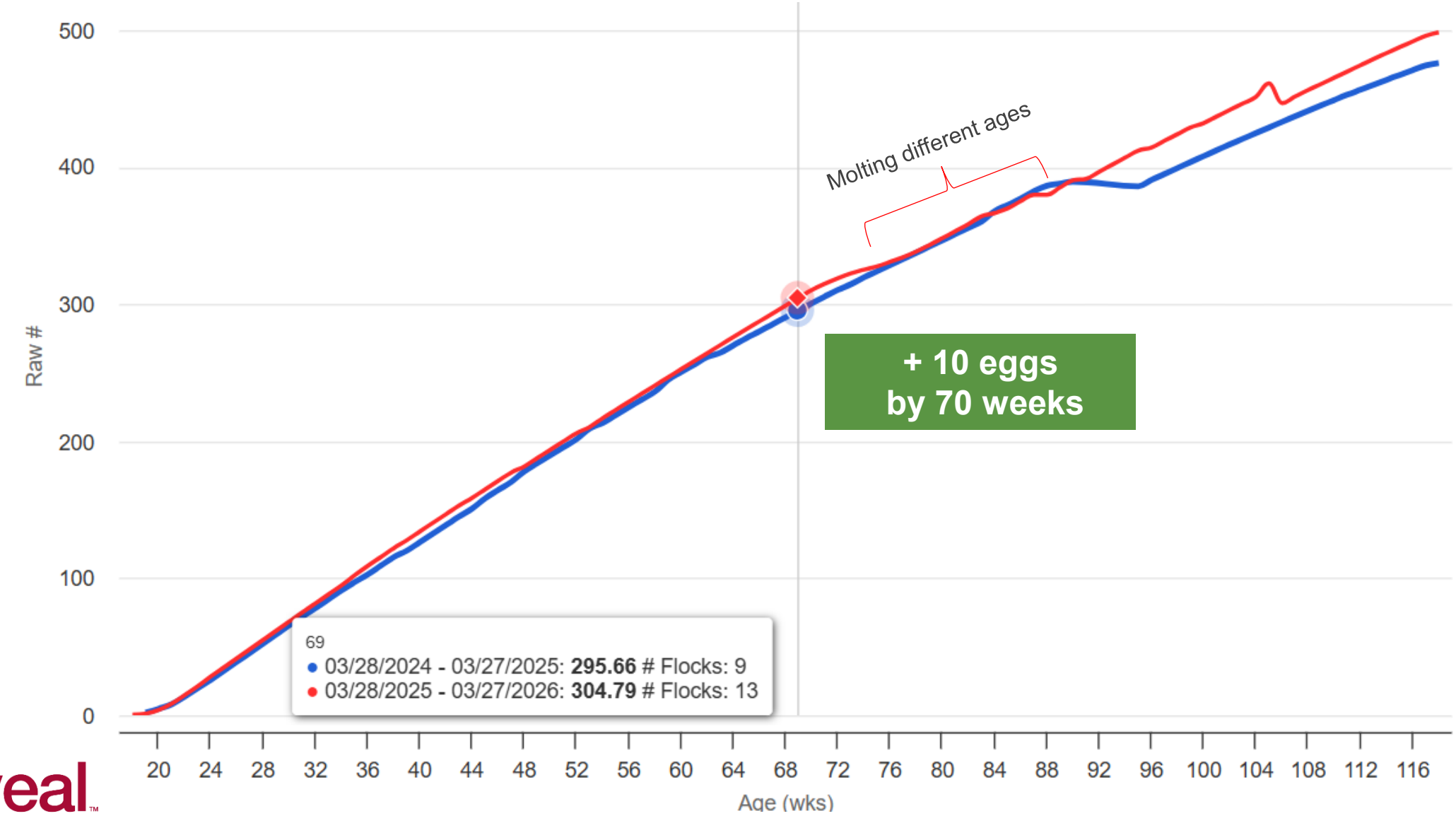
Egg Production improved after Reveal™ Layer insights

1.7MM Cage-Free Hens – 47 flocks



EHH improved after Reveal™ Layers insights

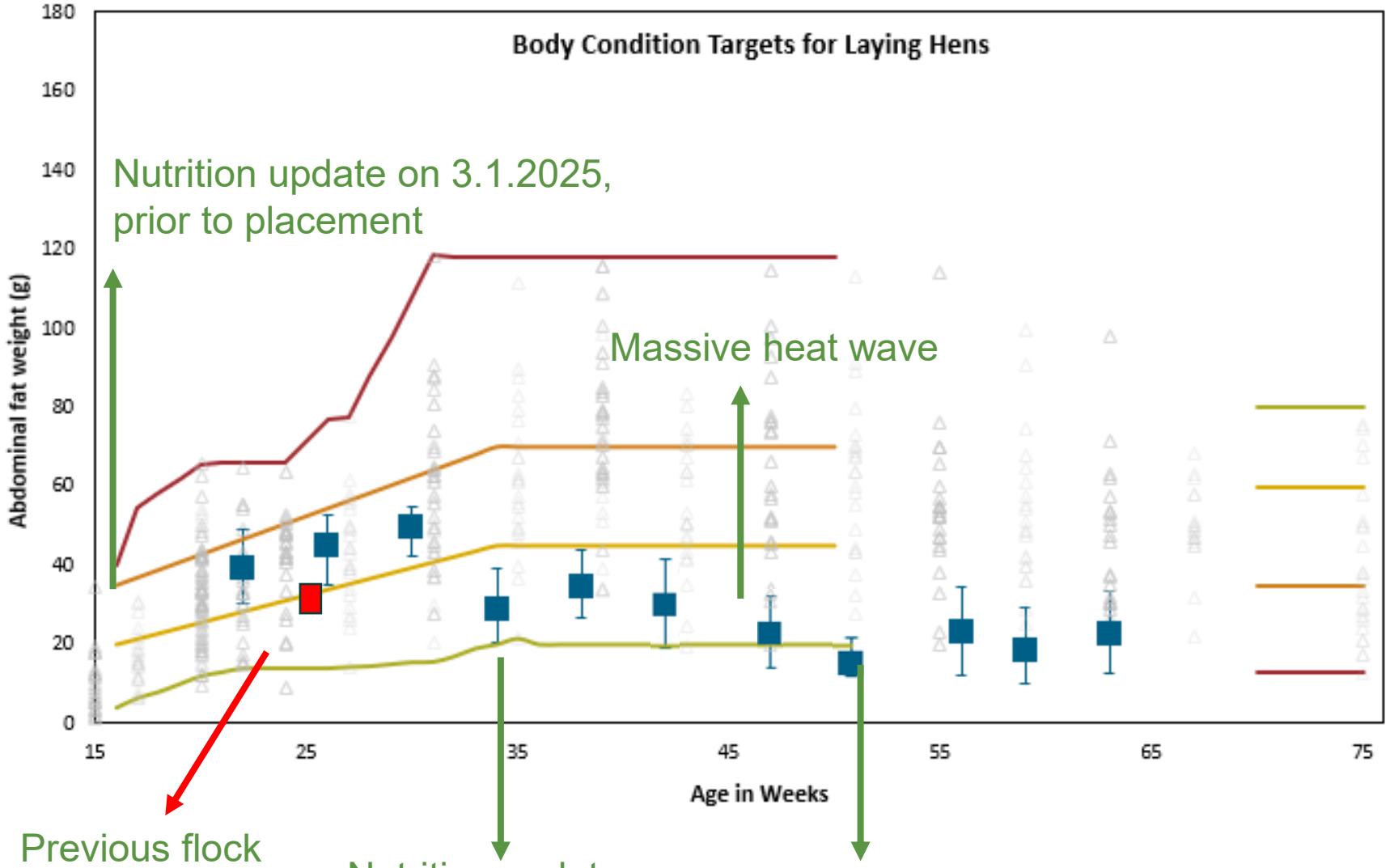
1.7MM Cage-Free Hens – 47 flocks



A CASE STUDY: CAGE FREE WHITE LAYERS (MI)

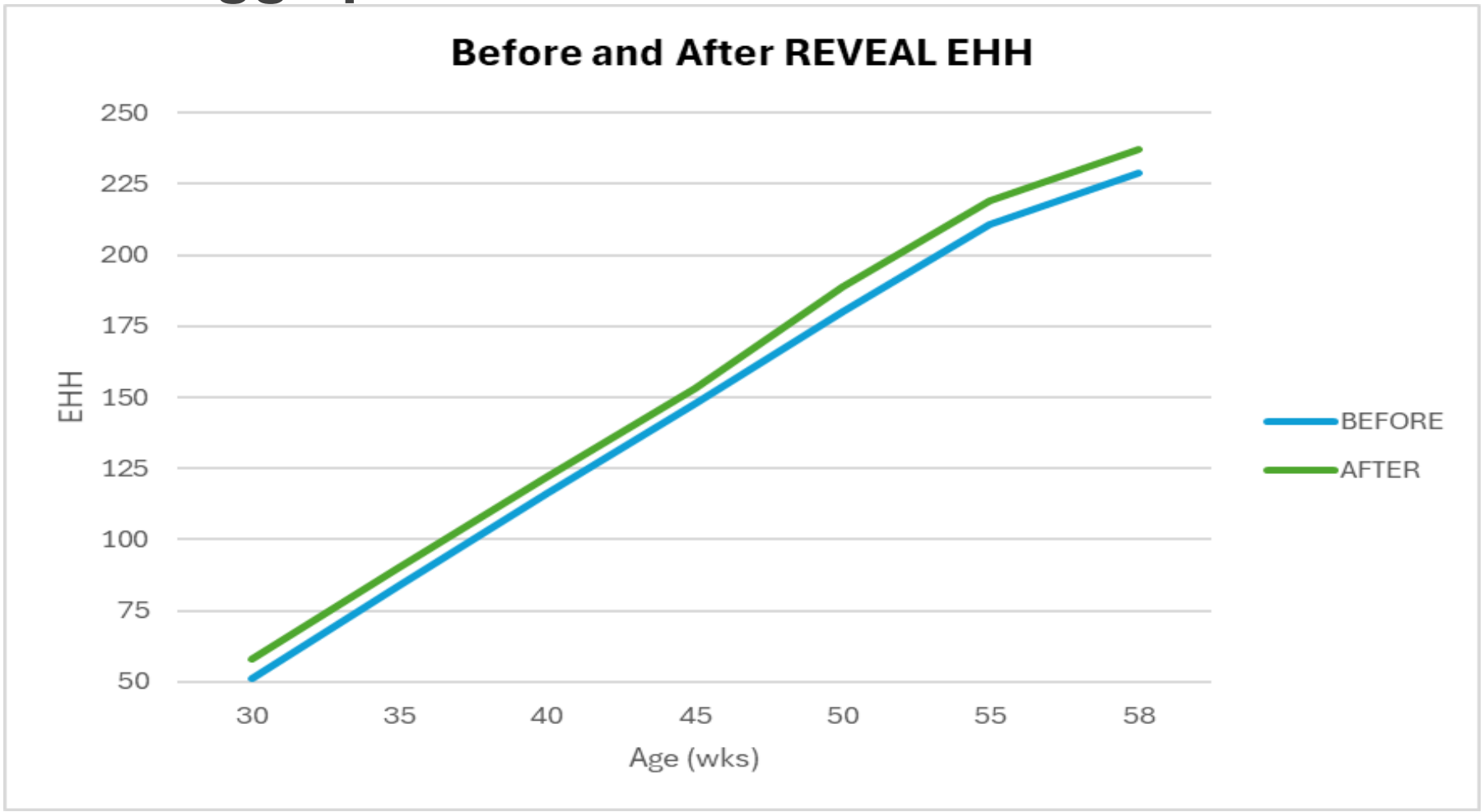
- Post cage free mandate in MI, experienced consistent **issues with low peaks, light birds and decreased persistency**
- Preliminary scans of a flock to evaluate body composition
  - Birds had **little to no fat pad** on necropsy/scan
  - **Nutrition program** updates and **management** changes to **improve body composition**
- Followed-up on subsequent flocks to **proactively update nutrition** throughout the life of a flock

22 – 63 WEEKS OF AGE – REVEAL SCANS ANALYSIS



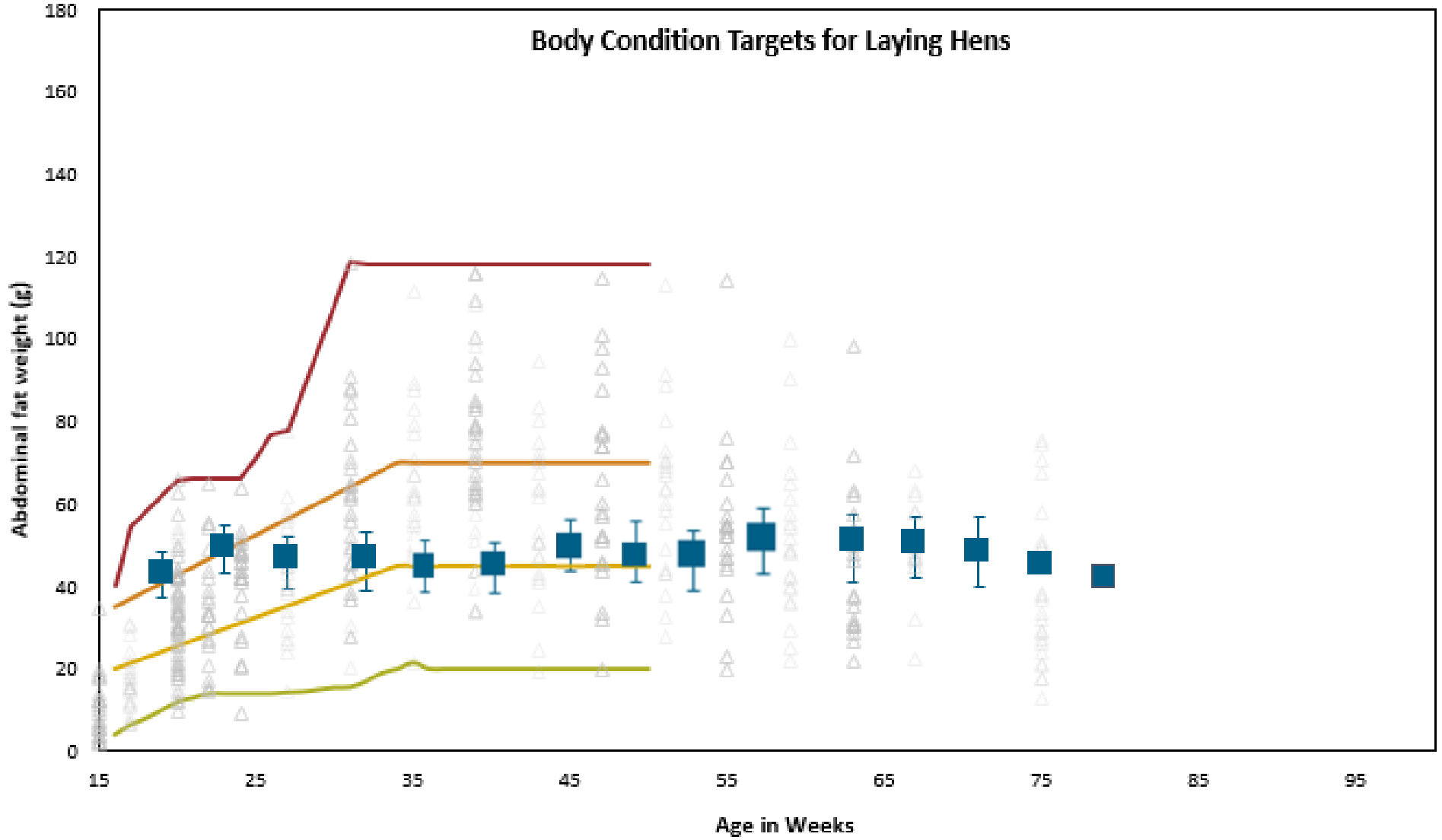
BEFORE AND AFTER REVEAL™ LAYERS

Impact on eggs per hen housed



On average, 5-9 eggs gained per hen housed, depending on age

19-80 WEEKS OF AGE – REVEAL SCANS ANALYSIS



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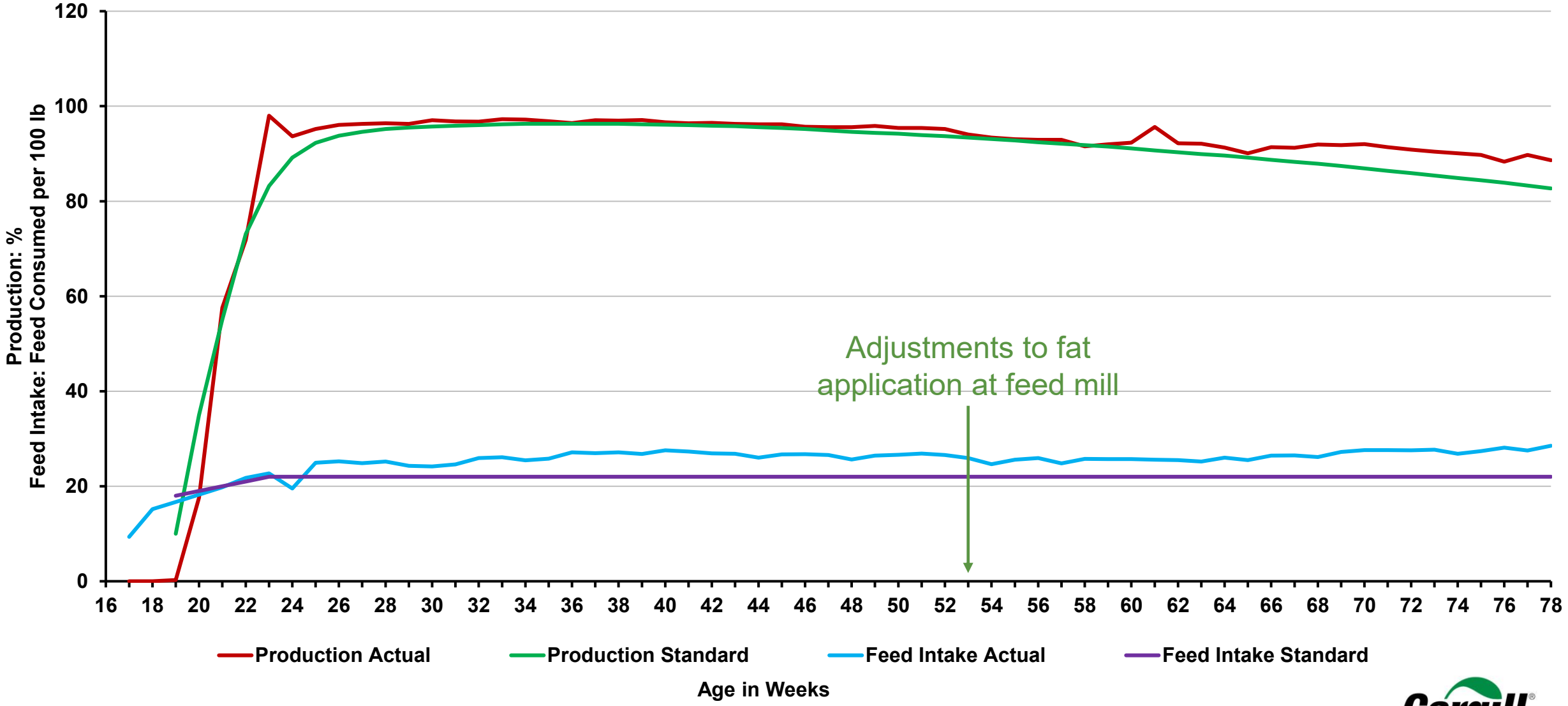
PRODUCTION AND FEED INTAKE VS BREED STANDARD



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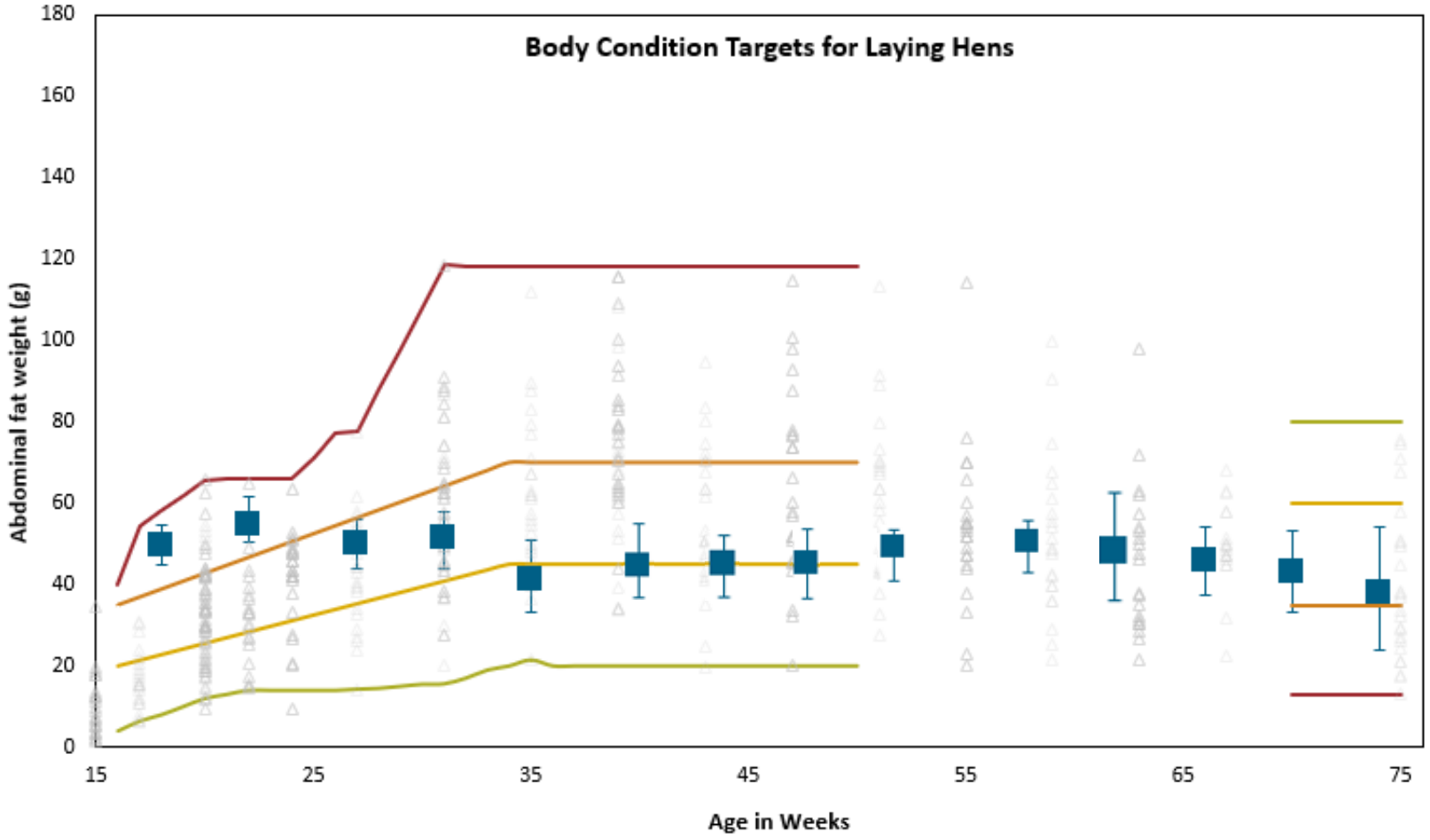
18-75 WEEKS OF AGE – REVEAL SCANS ANALYSIS



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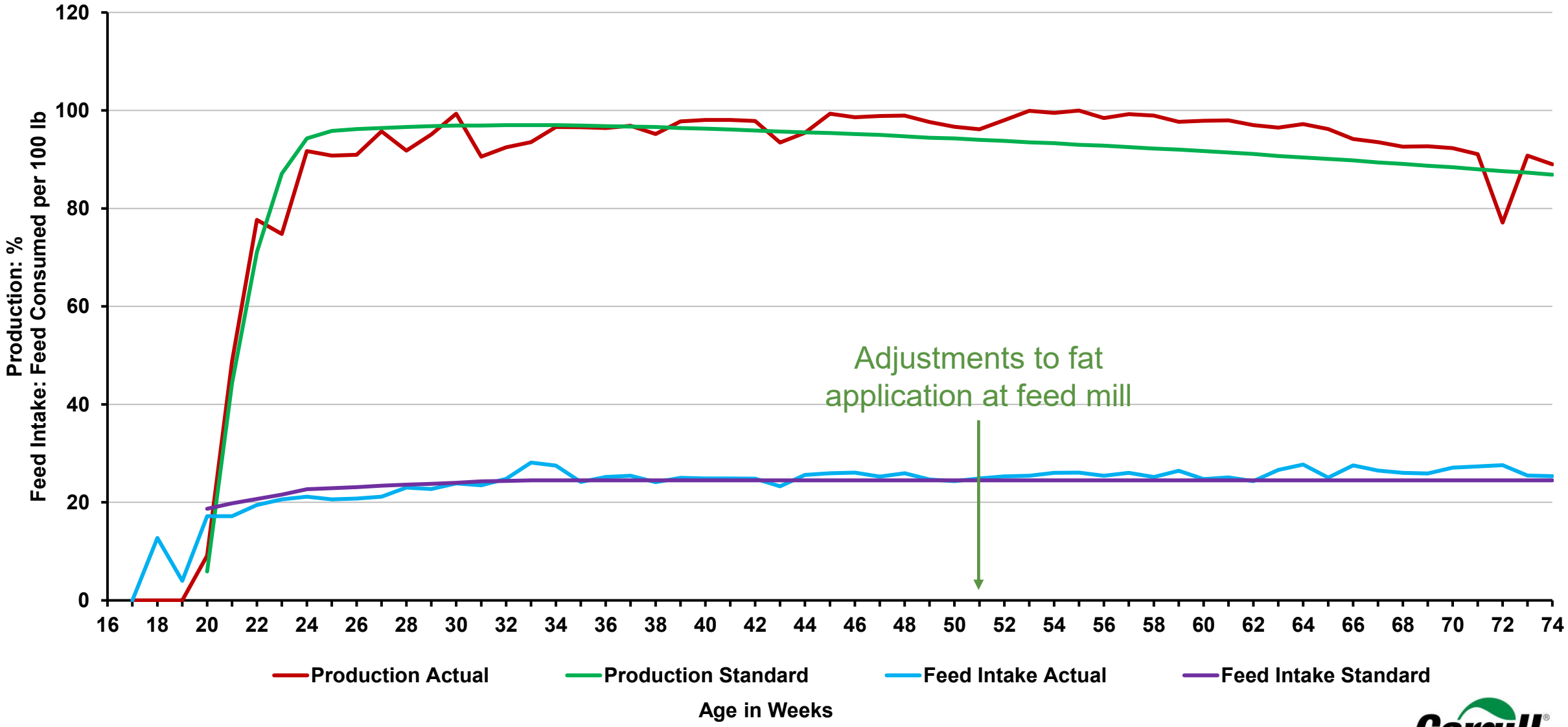

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Production Actual at 71.6 wks: Egg counter issue

Better Understanding of Fat Composition and Improvements to EHH and EP

Locations	Breed	Age	Production Type	Geography	EHH (compared to Brd Std)	Avg EP, % (compared Brd Std)
Customer A	LSL	70	Cage	NA	(+12)	(+1)
Customer B	Dekalb	70	Cage	NA	(+14)	(+2)
Customer C	Dekalb	55***	Cage-Free	NA	+9	+2.1
Customer D	LSL	70	Cage-Free	NA	+3	+4.7
Customer E	?	76	Cage-Free	Europe	(+21)	
Customer F	?	72	?	Europe	+6	
Average					**+6 (+11)**	**+3.4 (+1.8)**

**If not breed comparison: Year over year 08/01/23 to 07/31/24 x 08/01/2024 to 07/31/25 or older active flocks prior to testing Reveal
***On-going evaluation

WHAT DO WE DO WITH THE RESULTS FROM REVEAL

- Allows us to change nutrition programs to achieve more optimal fat composition
  - Are pullets coming in on the light side?
  - Is there a certain point post peak where we start to see hens get excessively fat?
  - Are we seeing a lot of prolapses or fatty liver in flocks?

- Are there management areas we can help improve the bird's fat composition?
  - Using midnight feedings or stirs to promote feed consumption in light birds
  - Using temperature setting and feeding times to reduce feed intake in over conditioned birds

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HOW DO WE FEED FOR PERSISTENCY?

IT IS A HOLISTIC APPROACH

Pullets: Everything starts with a good foundation

- **Veterinarians:** help support **health**
- **Nutritionists:** help feed the proper **balance of energy and amino acids** and **blend of vitamin and minerals** to support growth rate, organ development, skeletal development, and the desired **body composition**
- **Managers:** help setting up the stage by practicing management of body weight, feeding practices, lighting, etc.

Uniformity: important because we are not feeding individuals but a flock and this is how we ensure they are behaving as one unit, not falling behind to optimize performance.

HOW DO WE FEED FOR PERSISTENCY?

IT IS A HOLISTIC APPROACH

Layers: in addition to the bird, we are feeding the follicles.

- **Veterinarians:** Hens need to be healthy to absorb nutrients
- **Nutritionists**: appropriate amount of energy and amino acids to support and maintain hen **body composition to "feed" the follicles** that will become the eggs in a very simplistic way
    - Right blend of minerals to support and **maintain eggshell quality**
- **Management:** provide the right amount of feed to ensure proper **nutrient intake**
- **Tools:** With our body composition tool **Reveal™ Layers,** we have identified **ages and amounts of abdominal fat pad** where nutritionists or managers must intervene so it doesn't drop below an amount that can negatively impact egg production.