



# THE STATE OF DAIRY GENETIC PROGRAMS TODAY

**National Genetics Conference**

**June 26-27 2019 Appleton, Wisconsin**

**Daniel J. Weigel, PhD**

**Zoetis**

**zoetis**

# DHIA Production Certificate

IOWA STATE UNIVERSITY of Science and Technology and IOWA STATE DAIRY ASSOCIATION

award this certificate to:



PHILIP WEIGEL

42-28-0112

R R 2  
EARLVILLE, IOWA



IN RECOGNITION OF THE ACHIEVEMENT OF DEVELOPING A DAIRY HERD COMPLETING  
A TESTING YEAR ENDING APRIL, 1965 WITH THE FOLLOWING AVERAGES:

Cow-Years

27.0

% in Milk

82

Milk per Cow

13,389 lb.

% Test

3.5

Butterfat per Cow

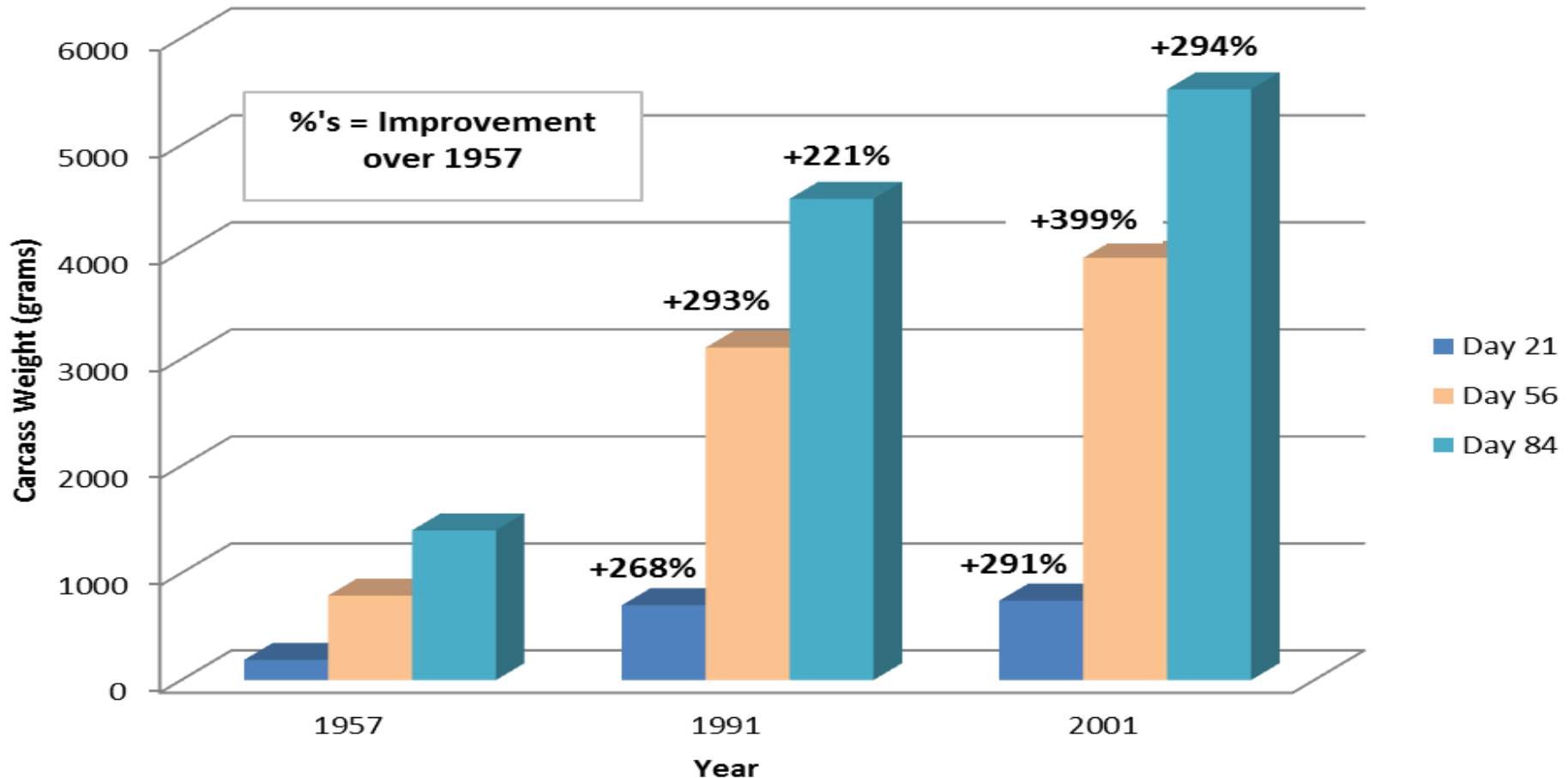
470 lb.

*Donald E. Voelker*

EXTENSION DAIRYMAN

*James G. Lynn*  
FIELD SECRETARY

# GENETIC IMPROVEMENT-POULTRY

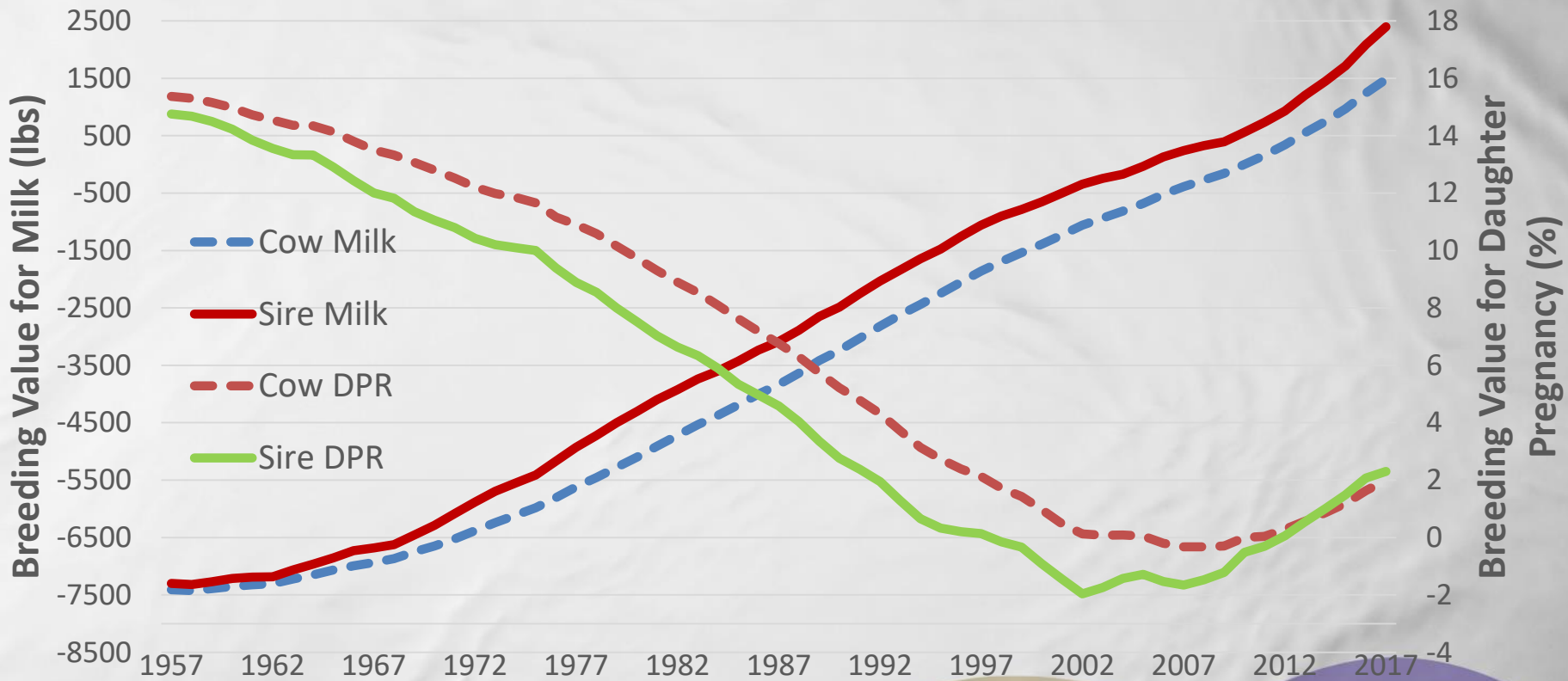


Havenstein GB, Ferket PR, Qureshi MA.

Growth, livability, and feed conversion of 1957 versus 2001 broilers when fed representative 1957 and 2001 broiler diets. J Poult Sci. 2003 Oct;82(10):1500-8.

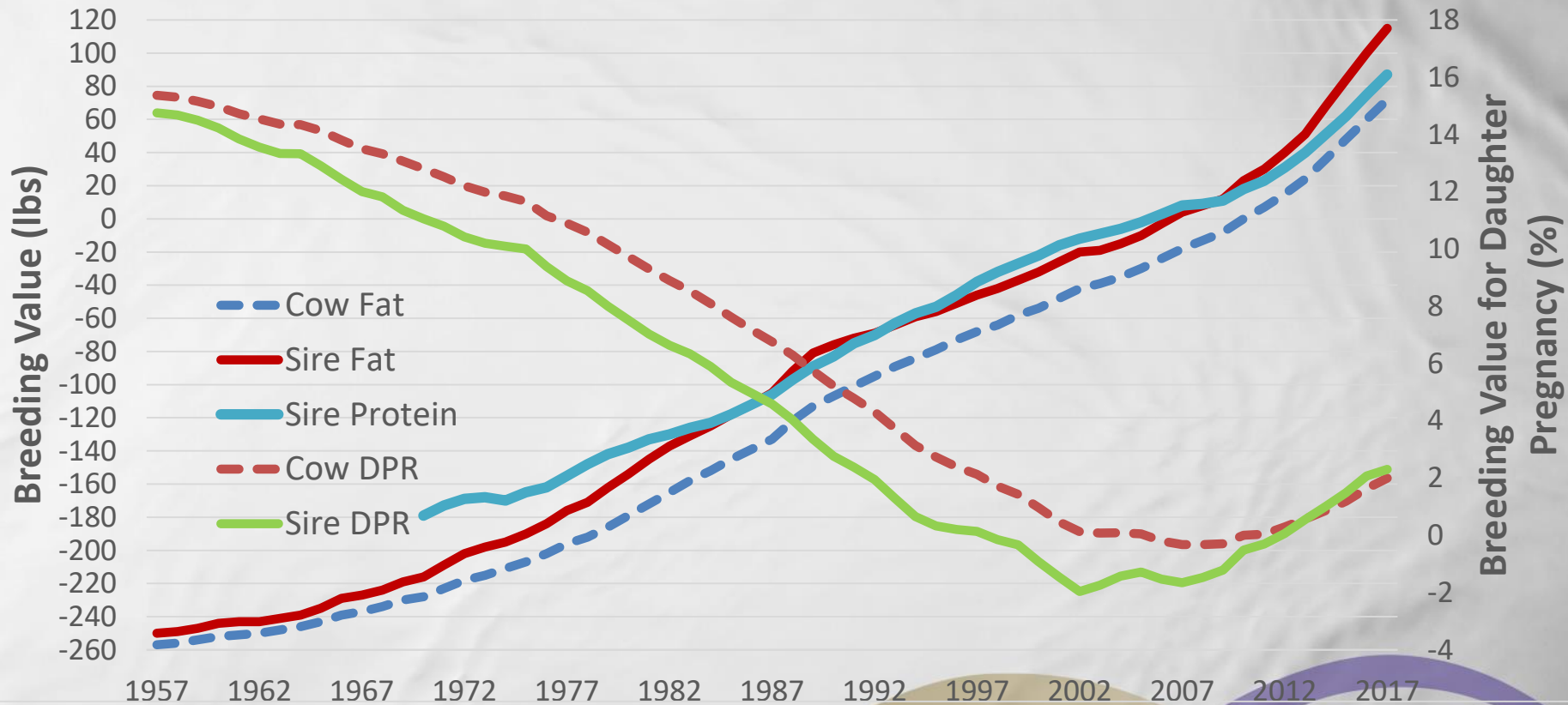
**WHY SELECT ON TRAITS  
WITH LOW HERITABILITY?**

# HISTORICAL GENETIC IMPROVEMENT



Source: [queries.uscdcb.com/eval/summary/trend.cfm](https://queries.uscdcb.com/eval/summary/trend.cfm) Accessed June 1, 2019

# HISTORICAL GENETIC IMPROVEMENT



Source: [queries.uscdcb.com/eval/summary/trend.cfm](https://queries.uscdcb.com/eval/summary/trend.cfm) Accessed June 1, 2019



Mayers Mistress Dark Anna EX-92– 1957 Champion NCC  
-3989 Milk +8.4 DPR



Butz-Butler Gold Barbara-ET EX-95  
+252 Milk -2.8 DPR





Weigeline Digger 1835-ET EX-90

+232 Milk +2.8 DPR

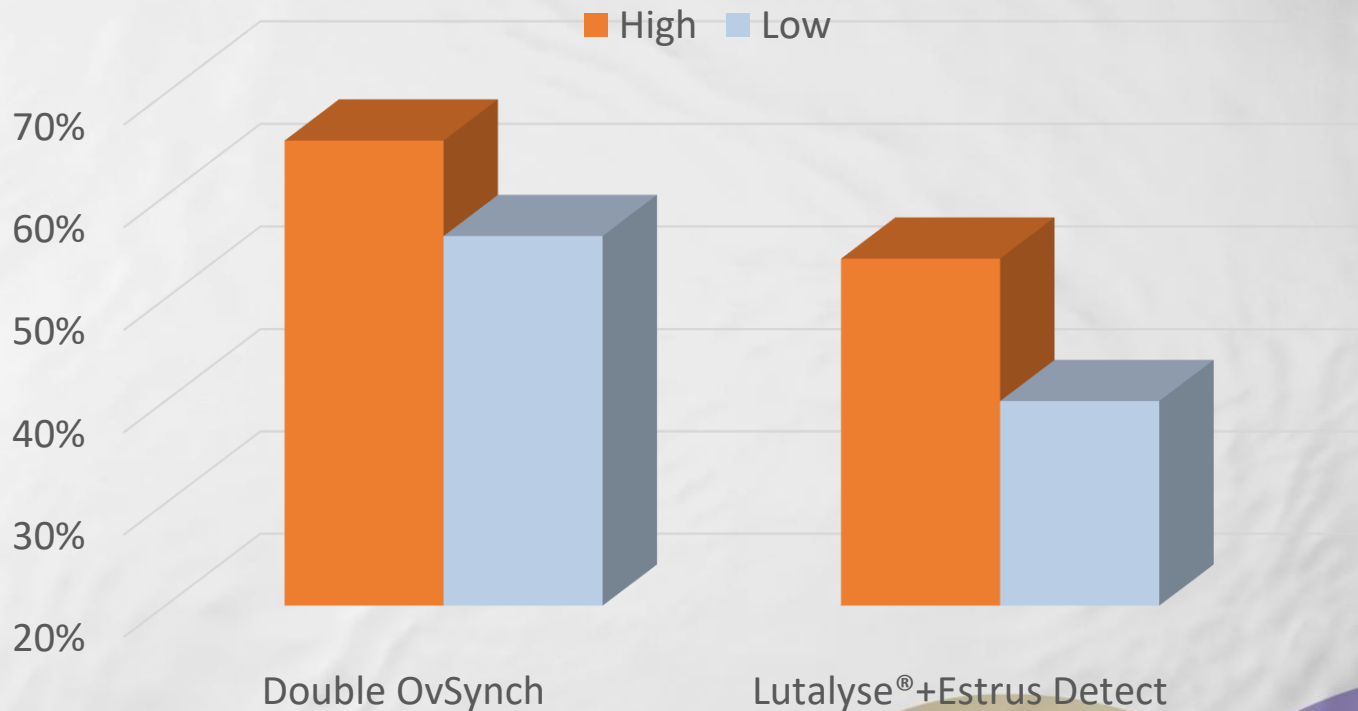


Source: <http://www.holsteinusa.com/services> Accessed June 1, 2019



# MANAGEMENT VS. GENETICS

1st Service Conception Rates for High and Low Fertility Genetic Groups Under 2 Repro Programs (n=~1,400 total)

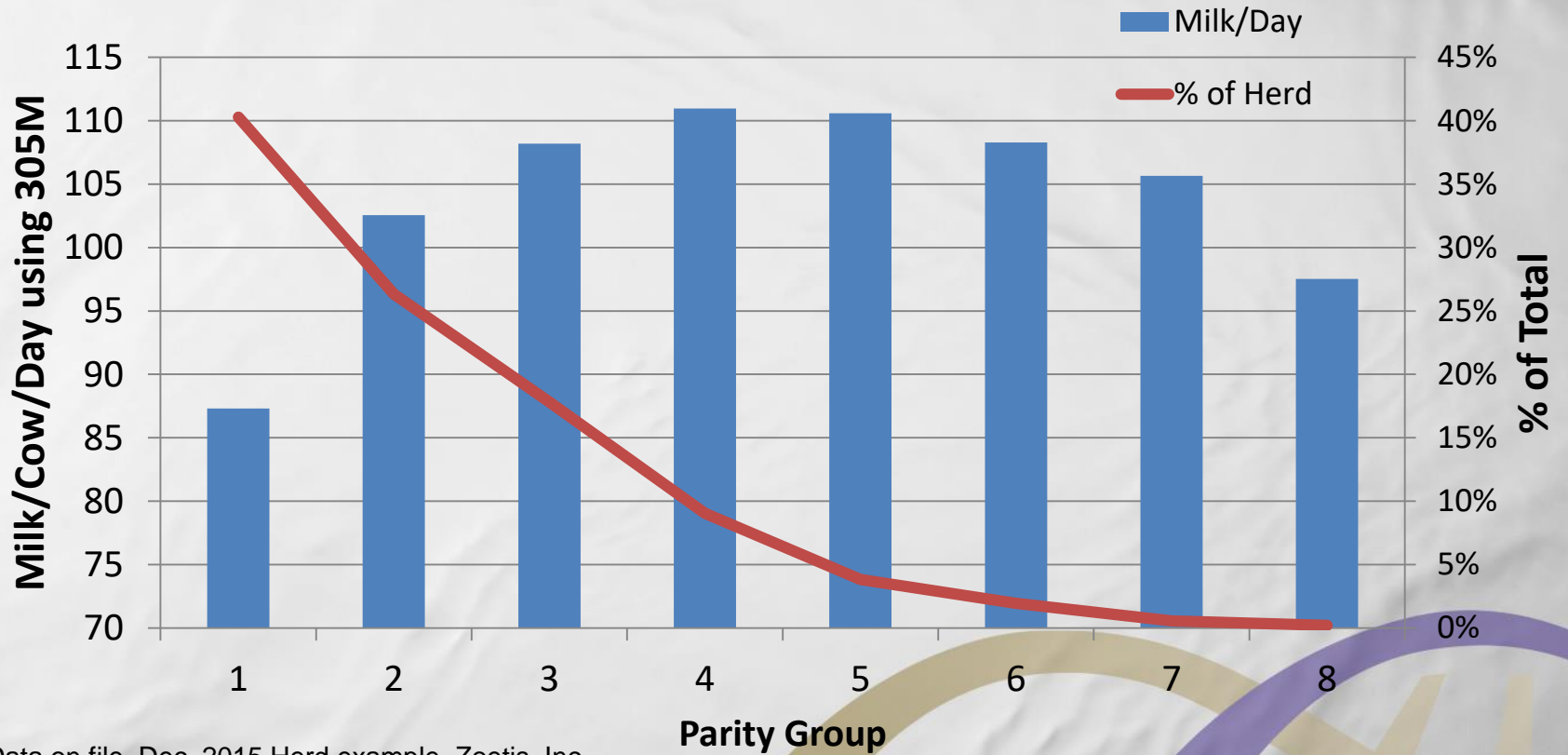


**Genetic Merit for Fertility and Type of Reproductive Management Strategy Affected First Service Reproductive Performance of Primiparous Lactating Holstein Cows 2019 J. Dairy Sci. (Abstr.)**

**E. M. Sitko, M. M. Pérez, G.E. Granados, M. Masello, F. Dicroce, A. McNeel, D. Weigel, and J. O. Giordano**

# LONGEVITY-DRIVEN PROFIT

## Performance and Percent of Herd by Parity Cows >100DIM

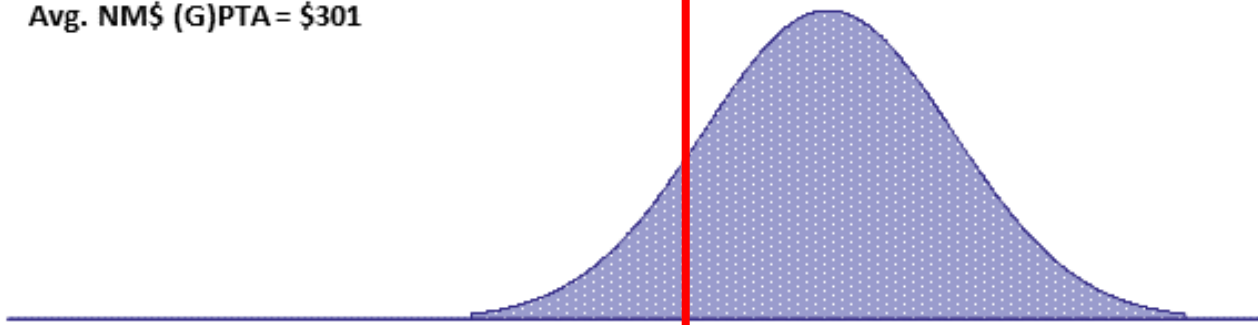


Data on file, Dec. 2015 Herd example, Zoetis, Inc.

# **OPTIMIZING HEIFER GENERATION THROUGH USE OF GENOMICS**

## Heifers

Avg. NM\$ (G)PTA = \$301

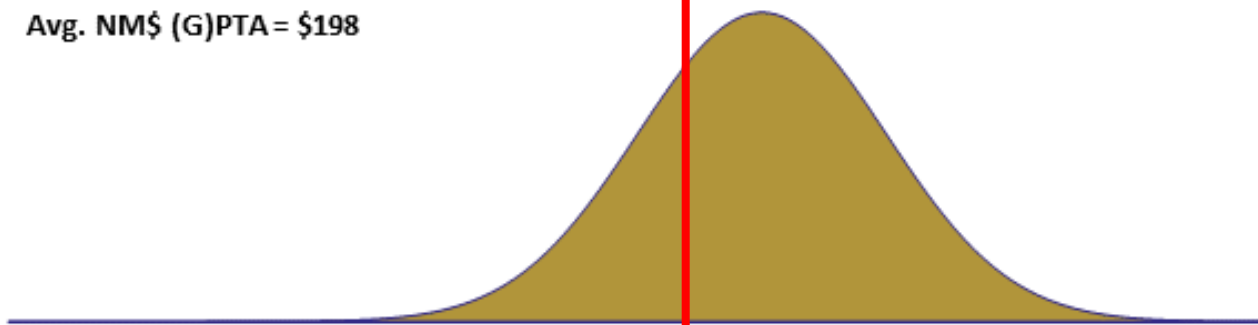


- Donor
- ▒ Select-Breed Dairy
- Select-Breed Dairy
- ▒ Recipient or Select-Breed Beef
- Cull

\$301

## 1st Lactation Females

Avg. NM\$ (G)PTA = \$198

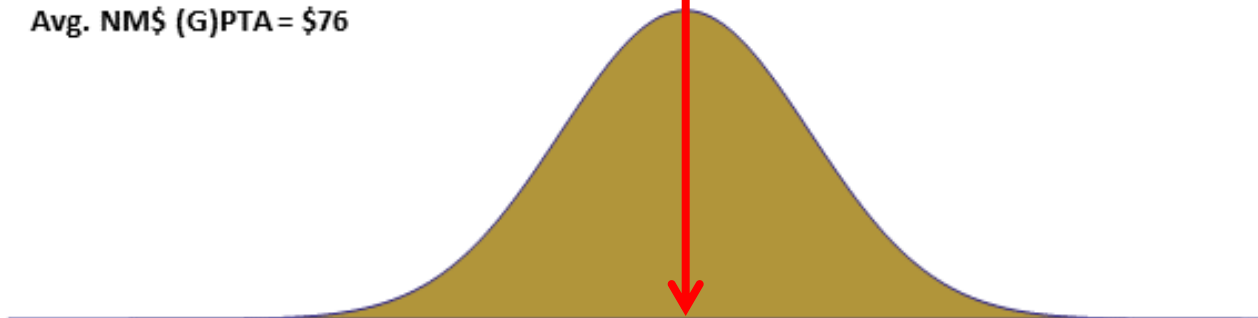


- Donor
- ▒ Select-Breed Dairy
- Select-Breed Dairy
- ▒ Recipient or Select-Breed Beef
- Cull

\$198

## 2nd+ Lactation Females

Avg. NM\$ (G)PTA = \$76



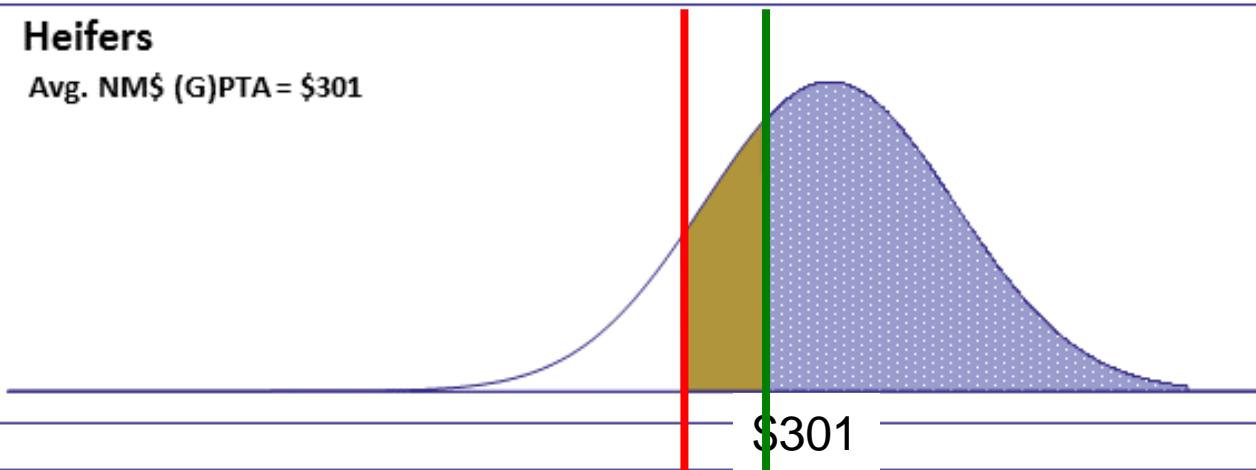
- Donor
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\$76

### Heifers

Avg. NM\$ (G)PTA = \$301

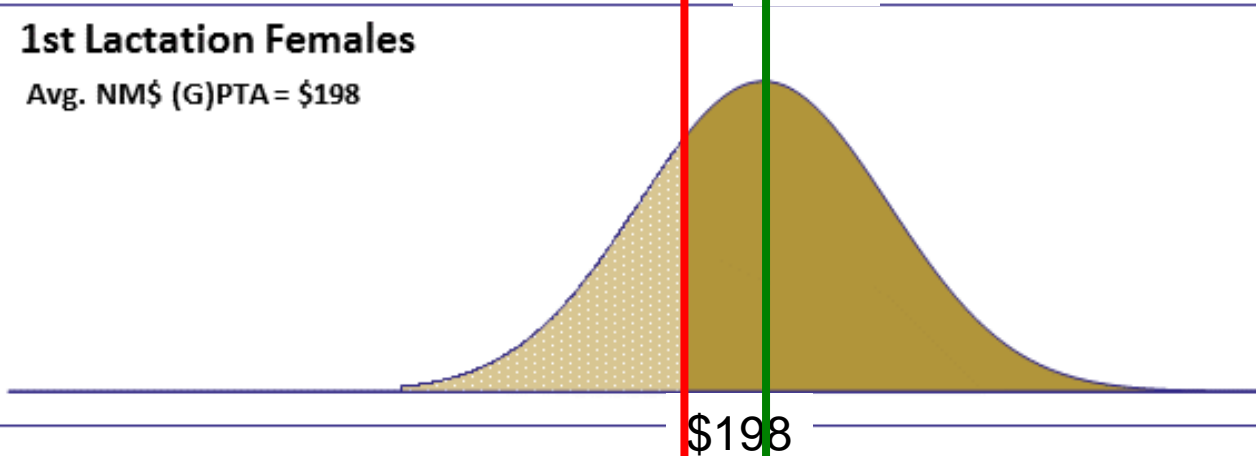
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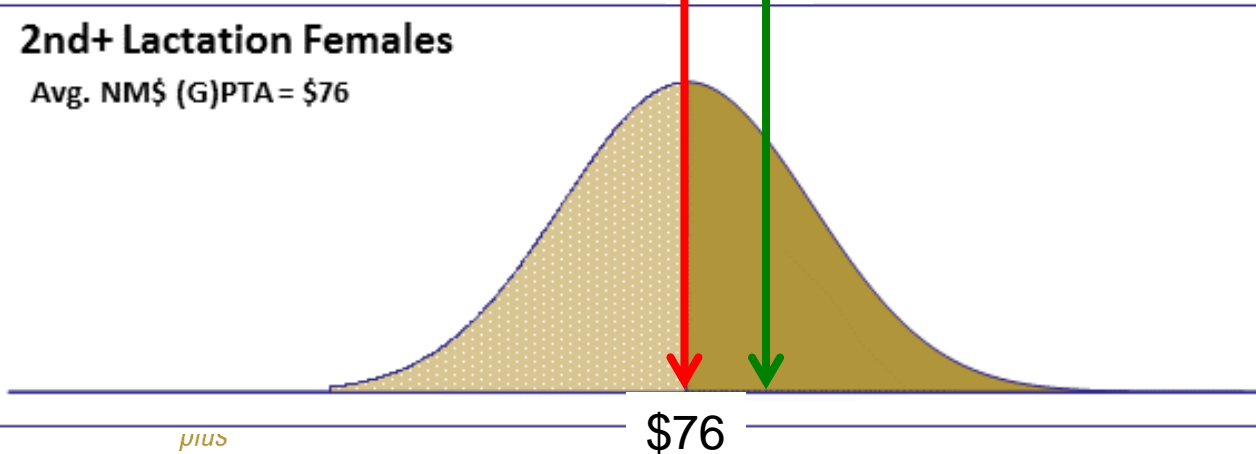
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### 2nd+ Lactation Females

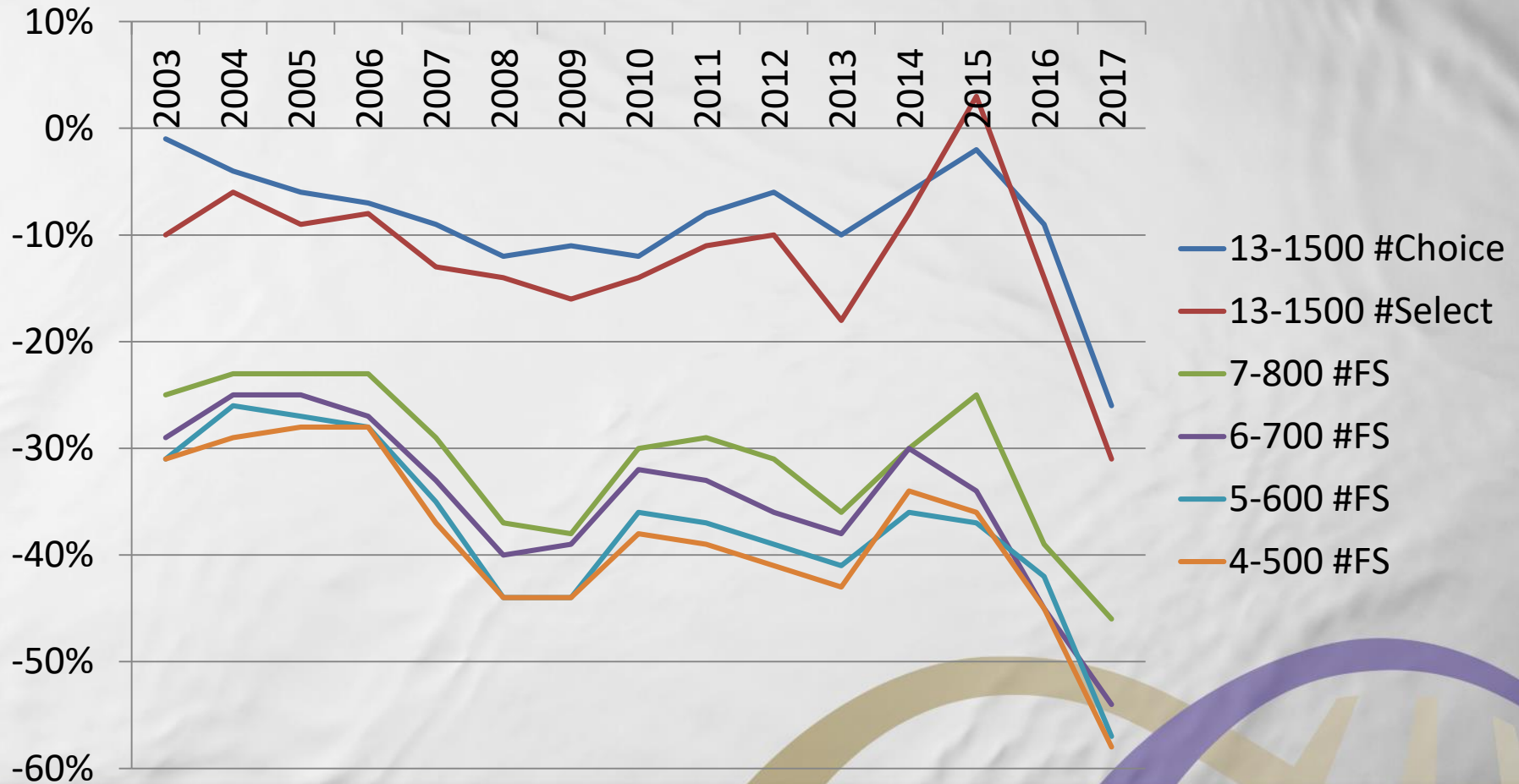
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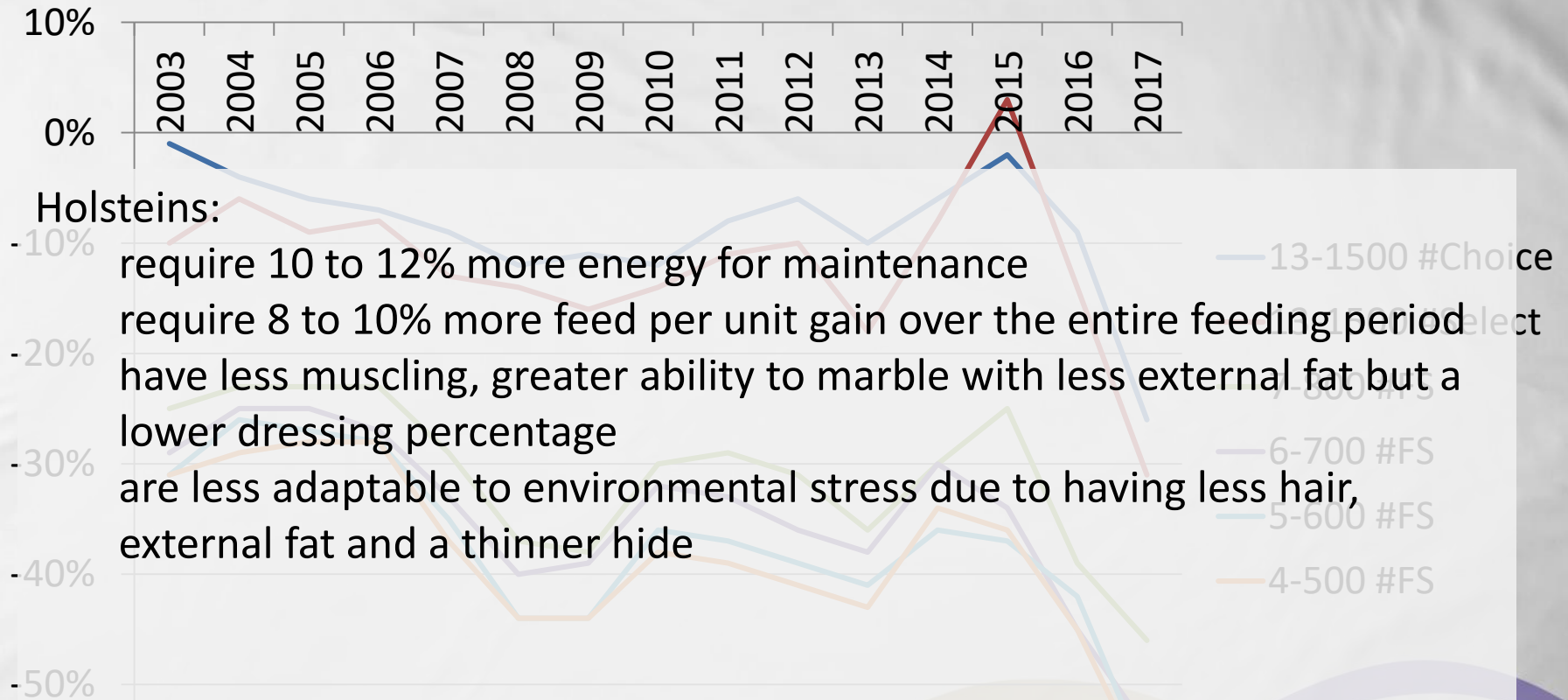
# BEEF FROM THE DAIRY HERD

## Discount on Holstein Steers to Beef Steers, Annual Average



# BEEF FROM THE DAIRY HERD

## Discount on Holstein Steers to Beef Steers, Annual Average



**Holsteins:**  
 require 10 to 12% more energy for maintenance  
 require 8 to 10% more feed per unit gain over the entire feeding period  
 have less muscling, greater ability to marble with less external fat but a lower dressing percentage  
 are less adaptable to environmental stress due to having less hair, external fat and a thinner hide

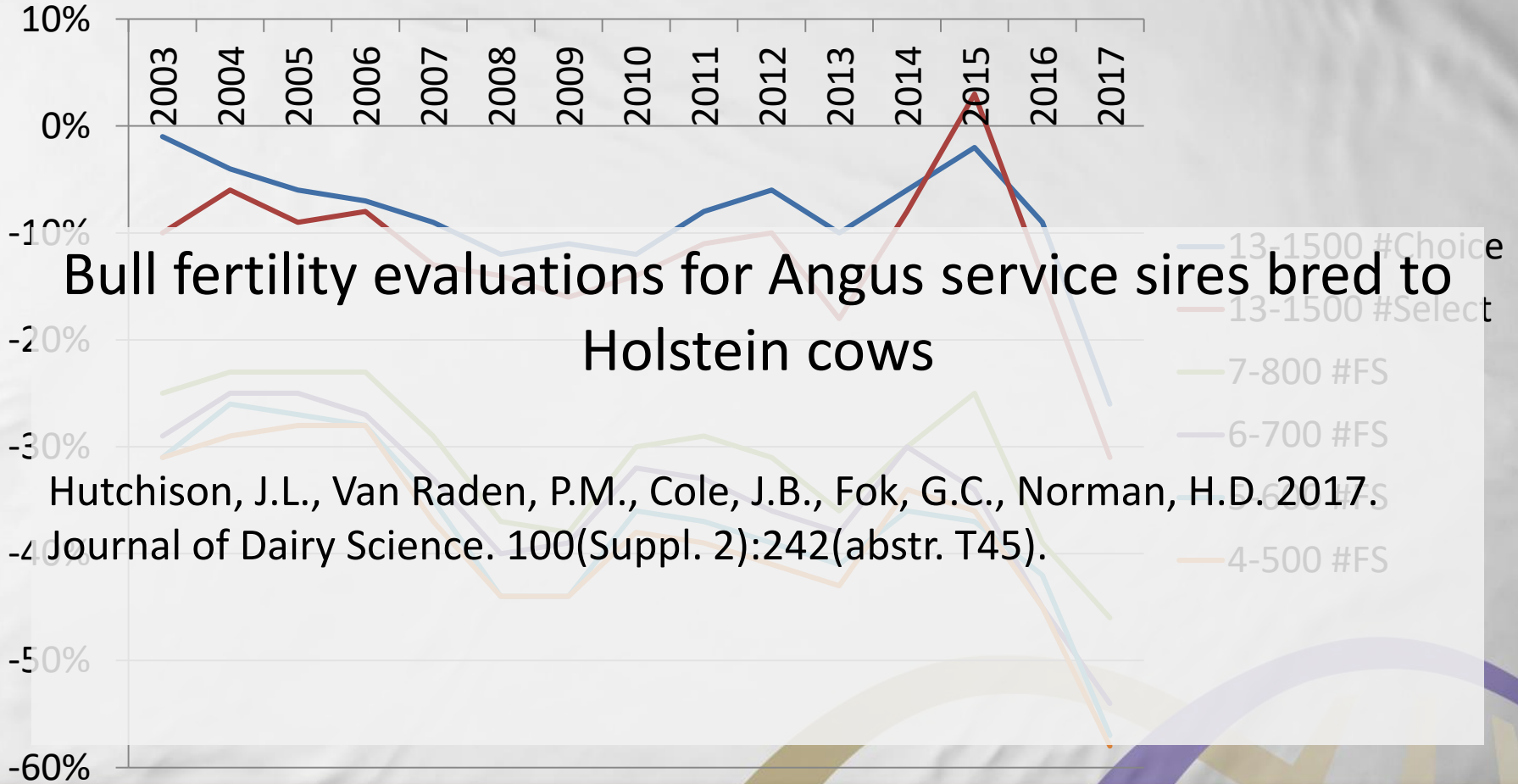
Beef Management Update Issue 35, February 1996. Extension Services, Department of Animal Science, University of Minnesota

[www.extension.umn.edu/agriculture/beef/components/docs/holstein\\_feeding\\_programs.pdf](http://www.extension.umn.edu/agriculture/beef/components/docs/holstein_feeding_programs.pdf)



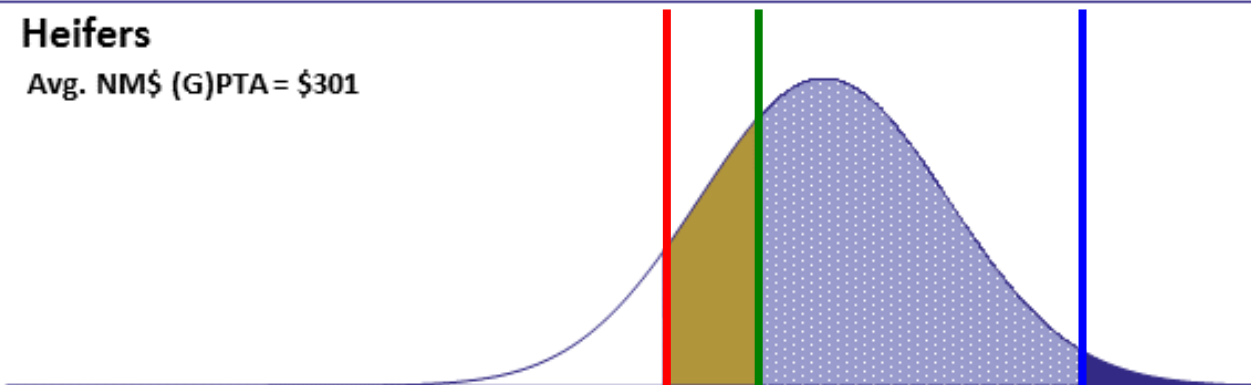
# BEEF FROM THE DAIRY HERD

## Discount on Holstein Steers to Beef Steers, Annual Average



### Heifers

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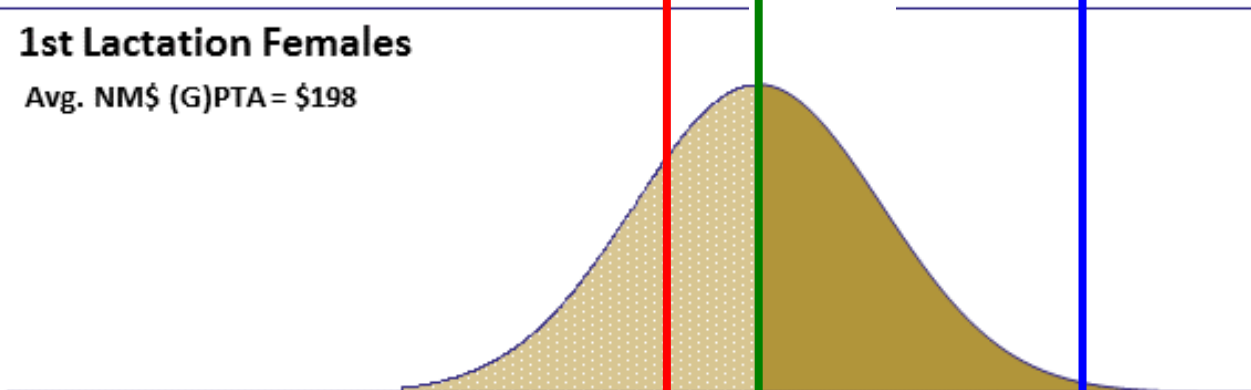


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\$301

### 1st Lactation Females

Avg. NM\$ (G)PTA = \$198

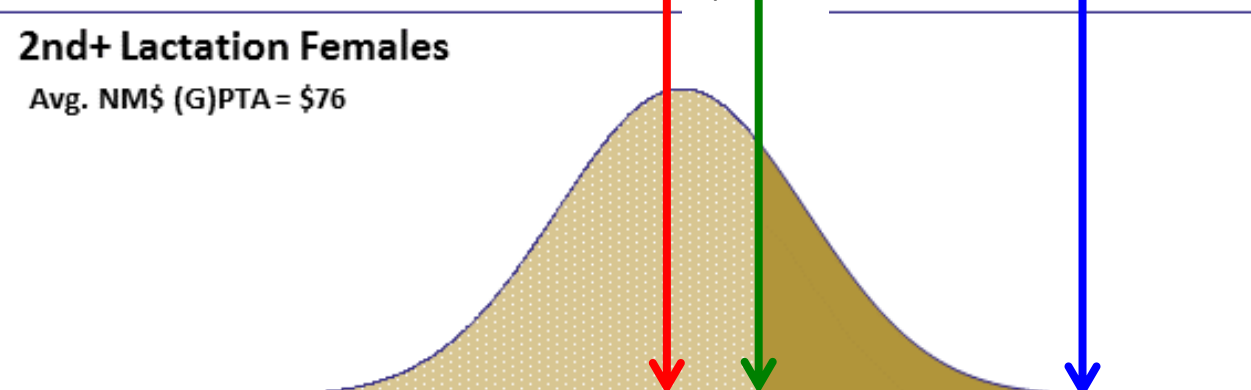


- Donor
- ▒ Select-Breed Dairy
- Select-Breed Dairy
- ▒ Recipient or Select-Breed Beef
- Cull

\$198

### 2nd+ Lactation Females

Avg. NM\$ (G)PTA = \$76



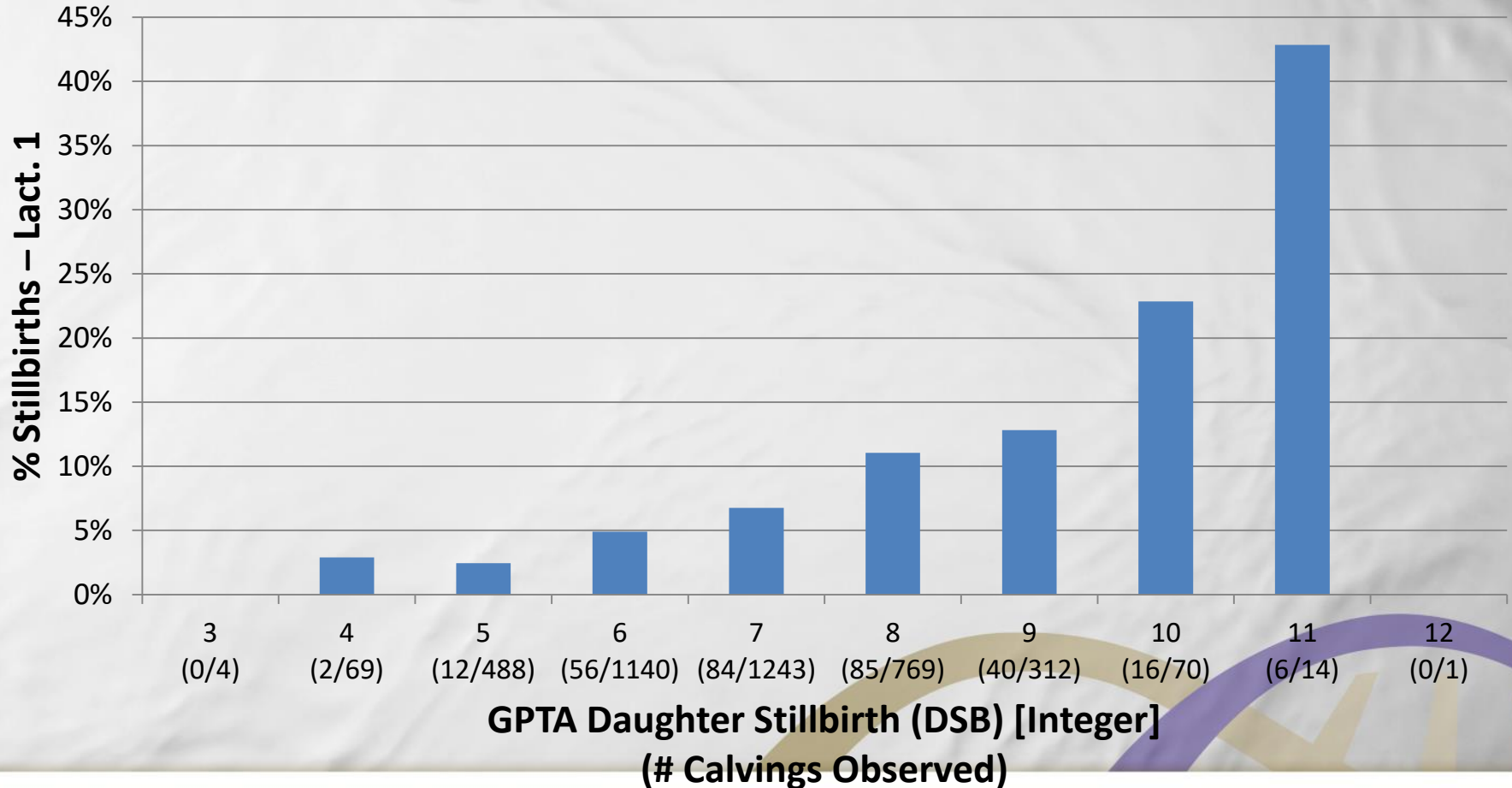
- Donor
- ▒ Select-Breed Dairy
- Select-Breed Dairy
- ▒ Recipient or Select-Breed Beef
- Cull

\$76

**TOO MANY TRAITS?**

# GPTA DAUGHTER STILLBIRTH (DSB) VS. % STILLBIRTHS 1ST CALVING

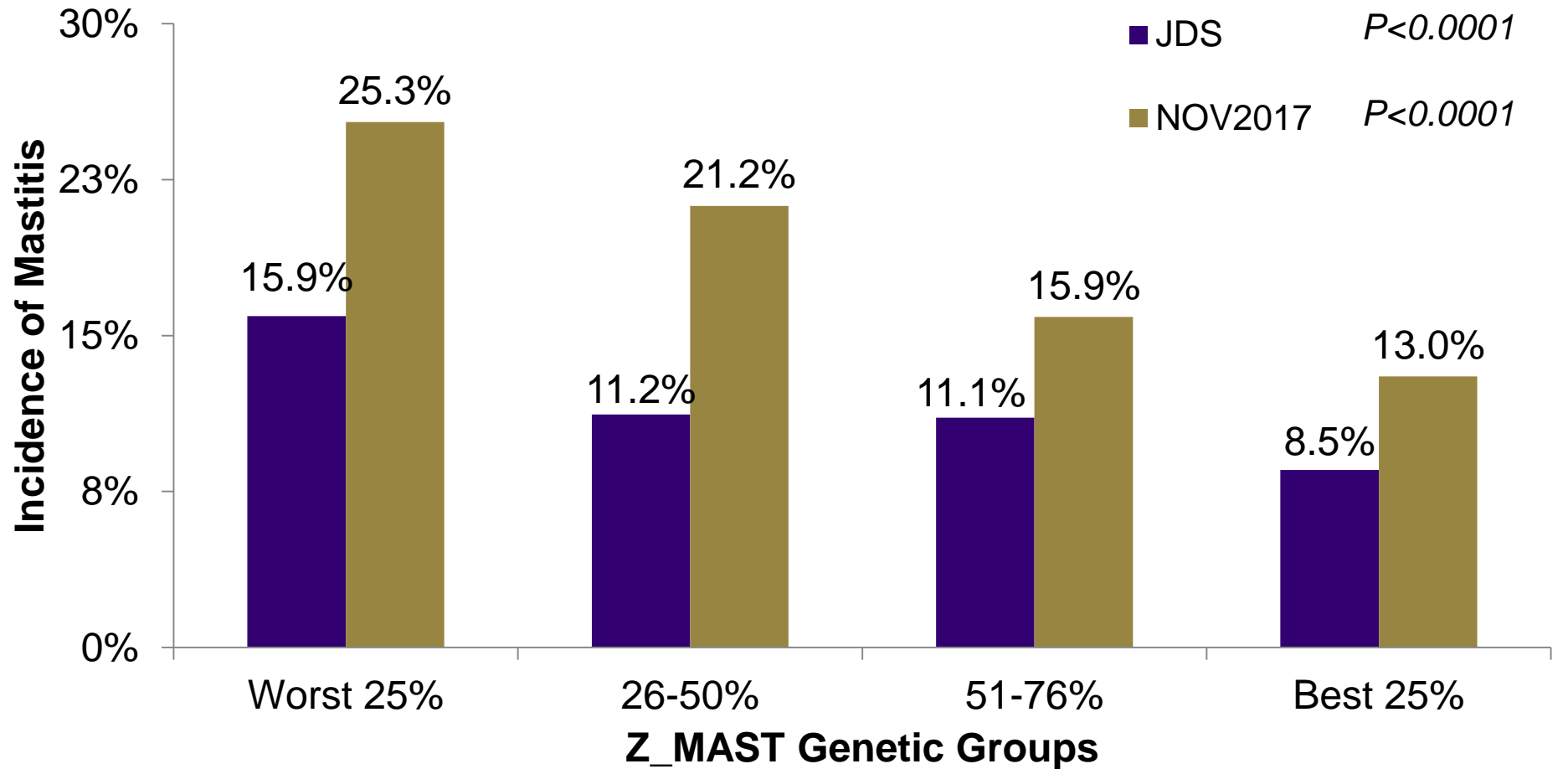
## GPTA DSB vs. Percentage Stillbirths 1st Calving



Source: Zoetis Data on File – Oct. 2014; n = 4110



# ASSOCIATION BETWEEN Z\_MAST STA GROUPS AND MASTITIS EVENTS

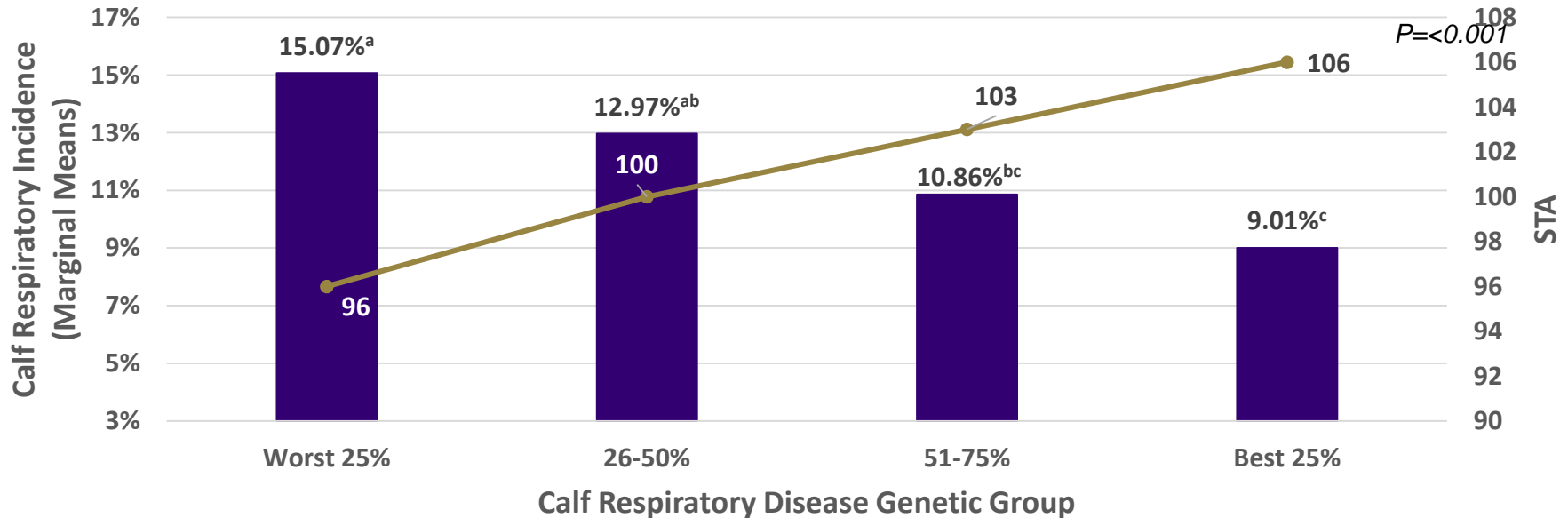


JDS = McNeel AK, Reiter BC, Weigel D, Osterstock J, Di Croce FA. Validation of genomic predictions for wellness traits in US Holstein cows. *J Dairy Sci.* 2017;100:9115–9124.

NOV2017 = Data on file, Zoetis internal data, February 2018, Zoetis Inc.



# ASSOCIATION BETWEEN CALF RESPIRATORY STA GROUPS AND CALF RESPIRATORY EVENTS

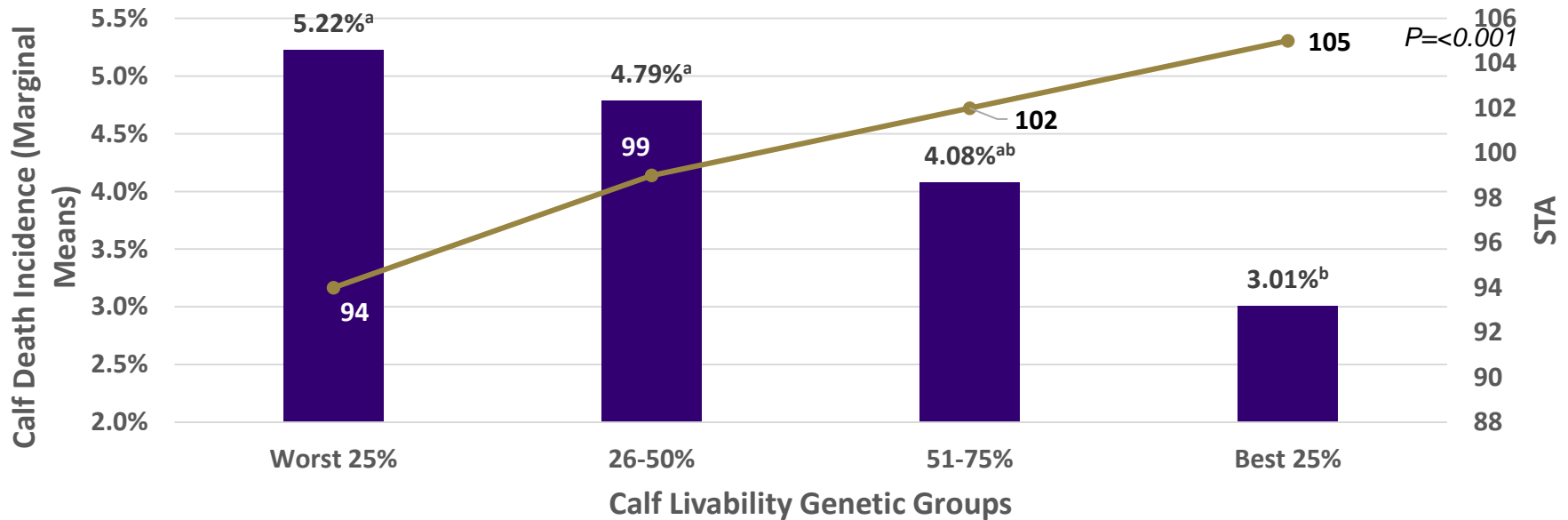


<sup>abc</sup> Marginal means with different superscripts differ

- Calves in the Best 25% for calf respiratory had 40% improved performance for calf respiratory disease when compared to the Worst 25%

NOV2018 = Data on file, Zoetis internal data, February 2018, Zoetis Inc.

# ASSOCIATION BETWEEN CALF LIVABILITY STA GROUPS AND CALF DEATH EVENTS



<sup>ab</sup> Marginal means with different superscripts differ

- Calves in the Best 25% for calf livability had 42% improved performance for calf death when compared to the Worst 25%

NOV2018 = Data on file, Zoetis internal data, February 2018, Zoetis Inc.

# SUMMARY

- » Producers understand genetic differences can translate to real performance differences
  - Are 'must have' to remain competitive
  - Genomic predictions are especially useful for low heritability traits
  
- » There are significant benefits to breeding for fertile, healthy COWS
  - Allow for more mature milk production
  - Lower treatment and replacement costs
  - Precision use of females for replacements and capturing crossbred calf premiums



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