Changes in the U.S. Cowherd: Implications for Cow Efficiency

Florida Beef Cattle Short Course

May 9, 2018

David Lalman, Adam McGee, Aksel Wiseman, Claire Andresen

Where we are now

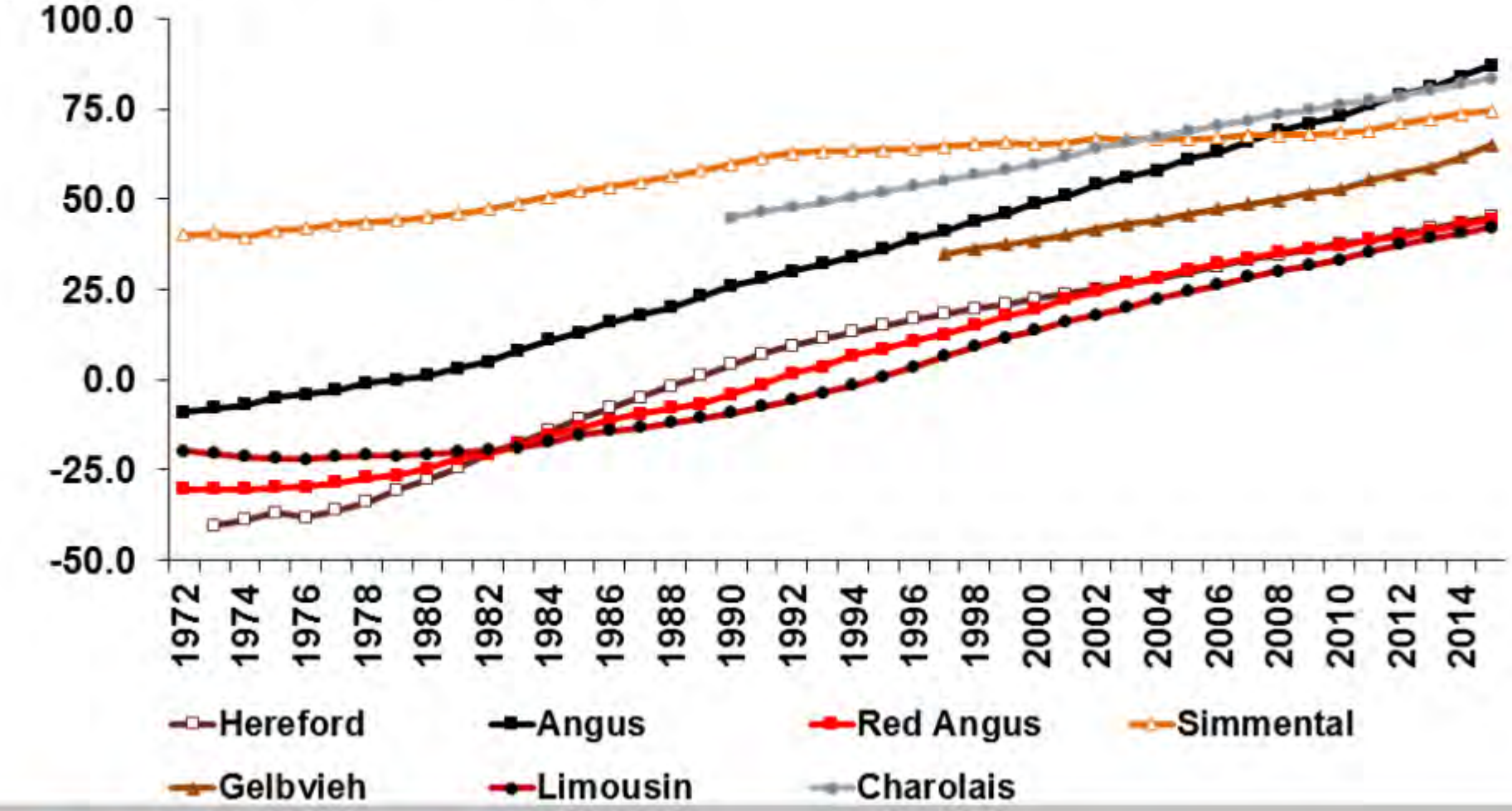
Photo Courtesy of Oklahoma State University

Post-weaning Perspective

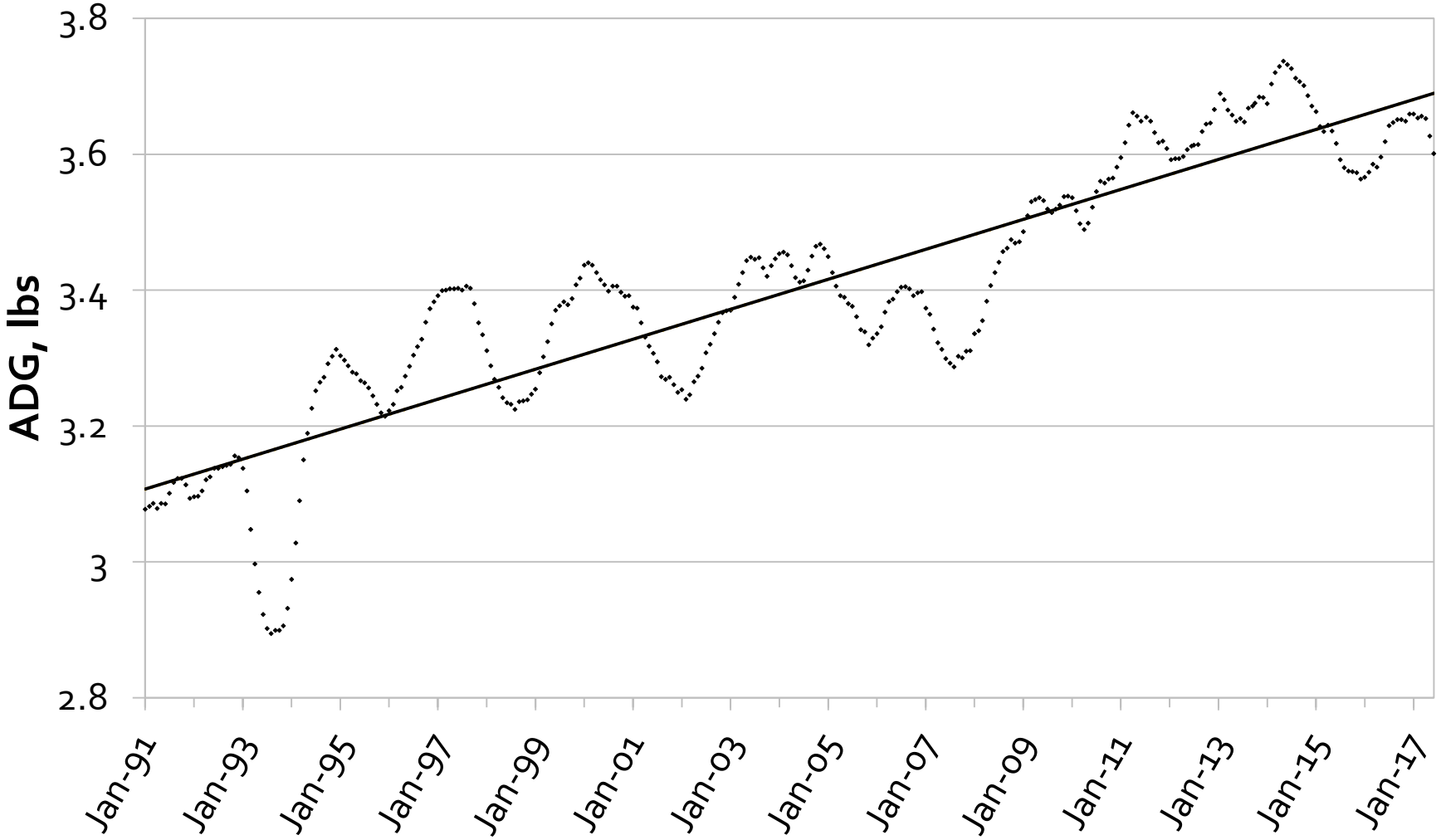
Today cattle have tremendous capacity for post-weaning growth and carcass weight

Figure 3. Relative genetic trends for yearling weight (lb) of the seven most highly used beef breeds (3a) and all breeds that submitted 2017 trends (3b) adjusted for birth year 2015 using the 2017 across-breed EPD adjustment factors.

3a.

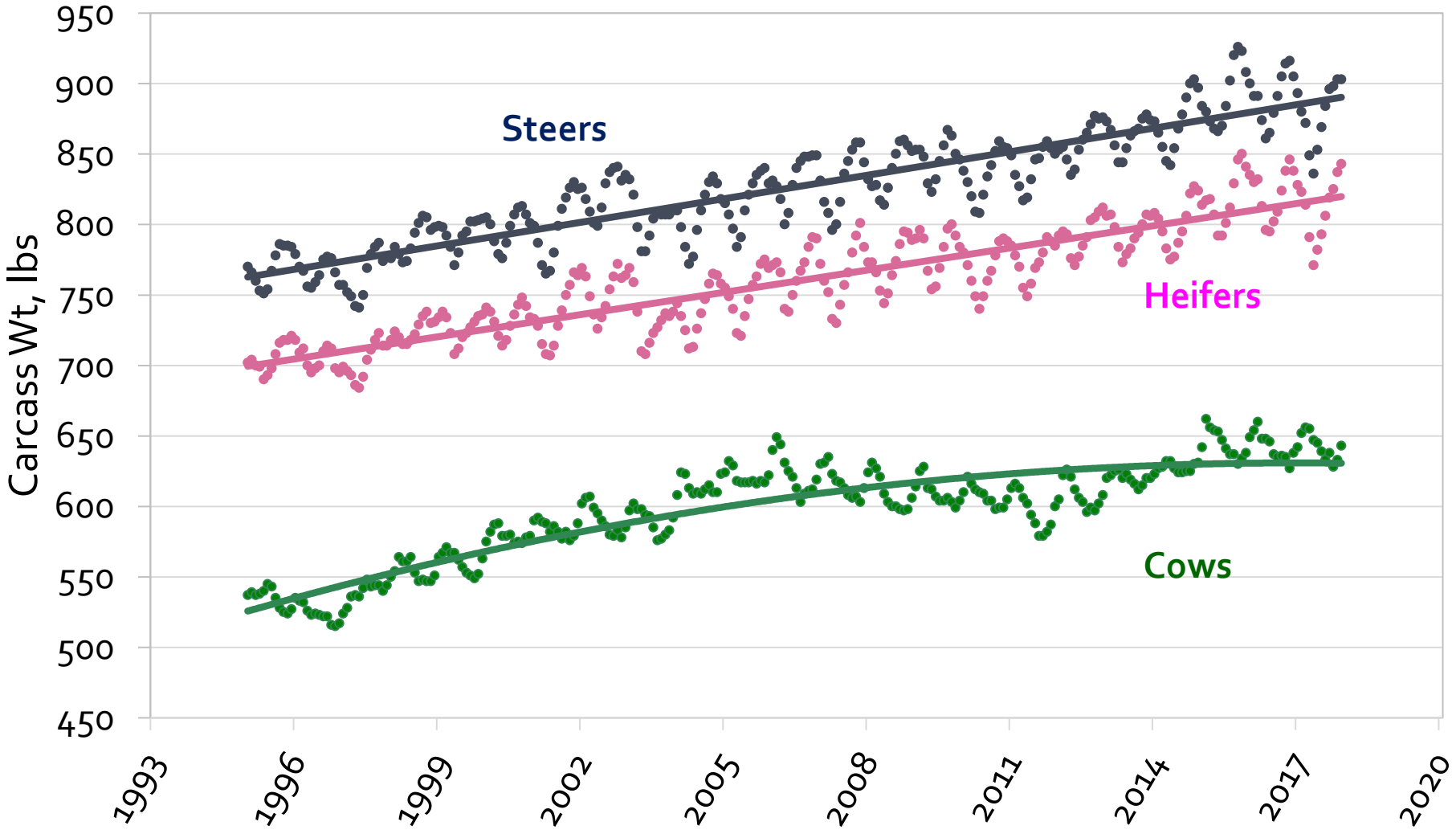


Finishing Phase Performance



Carcass Weights

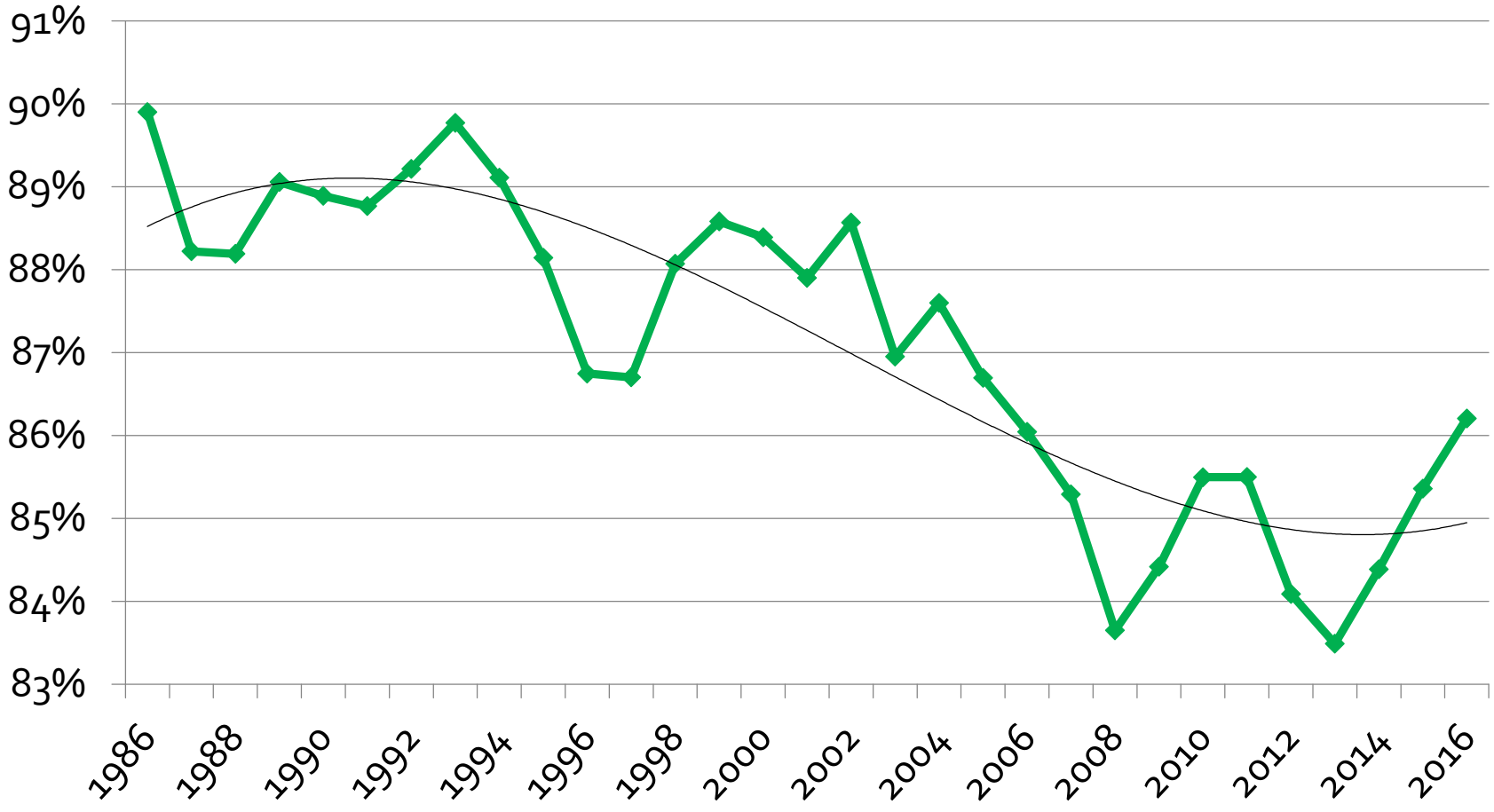
Federally Inspected



Reproduction

Beef Calf Crop Percent

Estimated from USDA NASS Data



Source: Dr. Derrell Peel, Oklahoma State University

Where do we go from here?

If you are like me, and want to grab every opportunity that comes your way, repeat after me:

The answer is YES!
Now, what was the question?

Richard Branson

Selection and development
of females that excel in fertility,
lower cost of production, AND
maintain post-weaning characteristics

Profitability Differences

Pendell et al., 2015 (KFMA data)

- 79 operations with data from 2010 through 2014
- High profit 1/3 averaged $415 more net return per cow compared to low profit 1/3
- 32.2% difference due to gross income
  - Weaning weight
  - Weaning rate
  - Calf price
  - Cull cow income
- 67.8% difference due to reduced cost

Value vs Cost of Added Weaning Weight

Pendell et al., 2015 (KFMA data)

- 1 pound of added weaning weight = $0.86 added cost per cow
- 234 weekly sale reports (2010 – 2014) from Oklahoma National Stockyards value of gain = $0.85 ± 0.33

Reproductive Efficiency / Fertility / Stayability

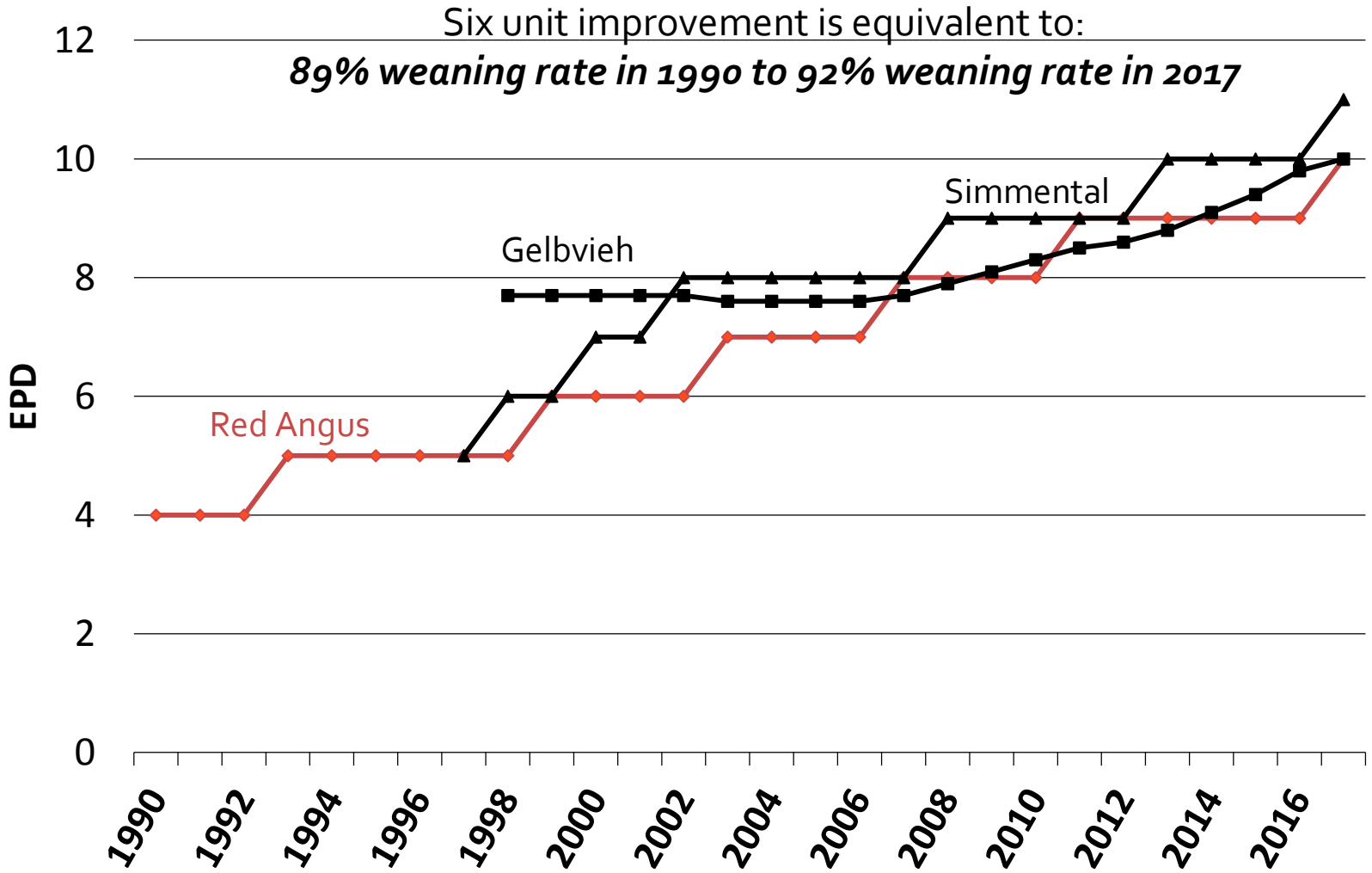
Stayability

- Total Herd Reporting (THR)
- Stayability – improves cowherd efficiency through reduced replacement rate
- Available for
  - Red Angus
  - Simmental
  - Simbrah
  - Gelbvieh
  - Limousin
  - Saler

Emphasis on fertility has been quietly expanding since 1995

- Red Angus initiated THR and Stayability in 1995
  - Positive observation
    - Must calve as a 2-yr-old
    - Produce calf every year until at least 6
  - Negative observation
    - Miss a calf / open
    - Culled for soundness, production, disposition, BCS, etc.

Genetic Trend For Stayability



Beef Calf Crop Percent

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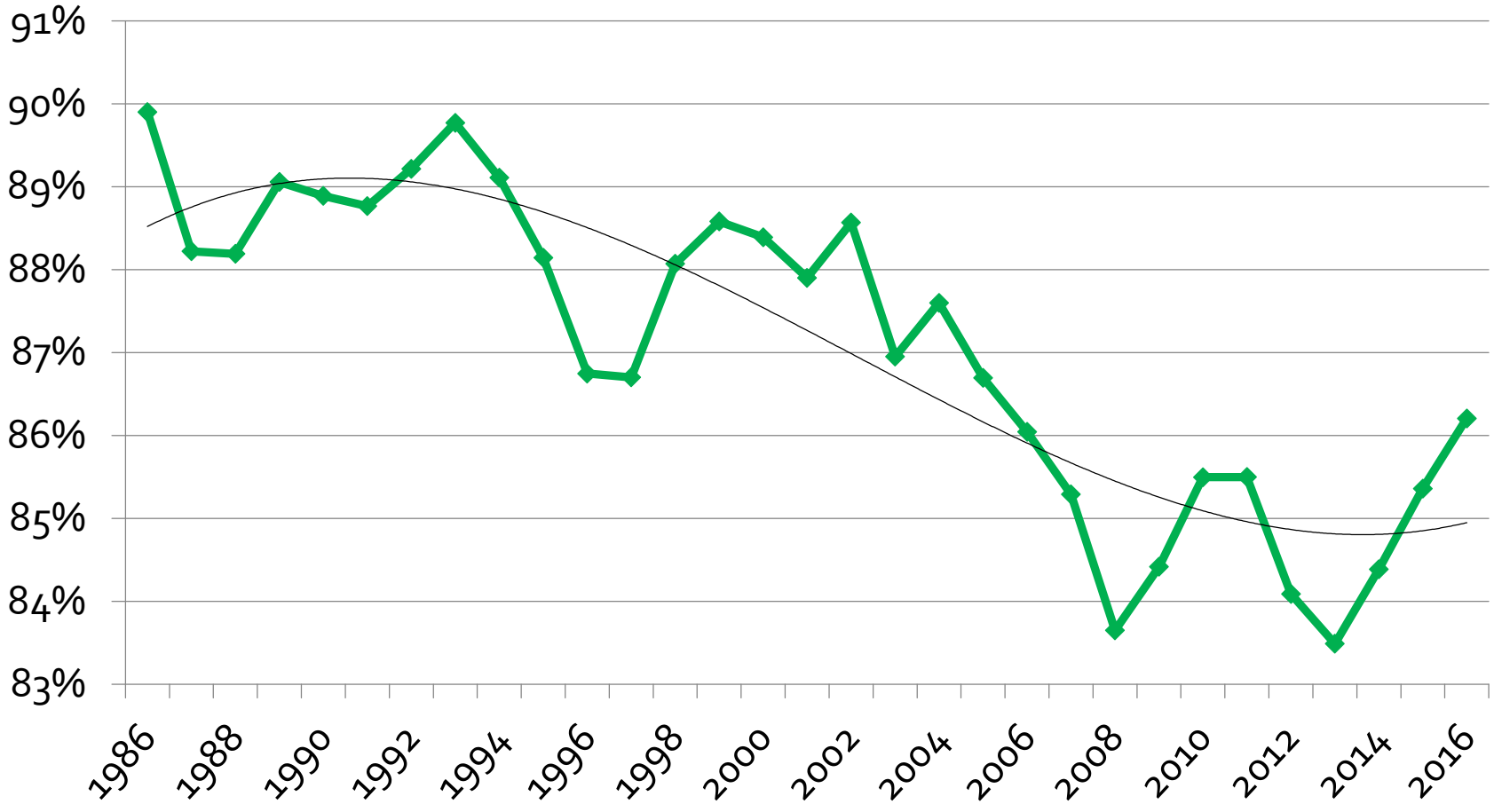


Source: Dr. Derrell Peel, Oklahoma State University

Sustained Cow Fertility

1215_PerformanceMatters.pdf - Google Chrome

Secure | https://hereford.org/static/files/1215_PerformanceMatters.pdf

PERFORMANCE MATTERS

by Jack Ward, executive vice president

jward@hereford.org

AHA Releases New Fertility Traits

Jack Ward

The American Hereford Association (AHA) is in its 15th year of Whole Herd Reporting. Recently, this program allowed for the development of two new fertility traits, Heifer Calving Rate (HCR) and Sustained Cow Fertility (SCF), which have been released as a research analysis on the AHA website at *Hereford.org*.

These two traits will become part of the full evaluation in the near future and will be added to the $ Indexes. But today they are just reported as research with no correlation to any other traits and have no genomic component.

fertility expected progeny differences (EPDs).

Heifer Calving Rate

The Heifer Calving Rate EPDs are produced from an animal model genetic evaluation for 293,313 animals encompassing a six-generation pedigree. Heifer calving records were analyzed as a categorical trait in which more than 98,000 records were used in the binary analysis as calved and not calved, based on recorded calf birth date.

The contemporary groups were defined as herd, first-calf heifer yearling contemporary group, calf birth year and

at first calving between 600-800 days was used as part of edits along with checks for contemporary group variation. Heifer calving rate for the dataset was 73%, under the criterion that the heifers calved by 800 days of age. The heritability for heifer calving rate is .15, which is consistent with the magnitude of estimates for lowly heritable reproductive traits but still allows for genetic progress.

The following example depicts a comparison between two sires for their HCR EPDs to describe genetic differences in future daughter calving rate. Note that a higher

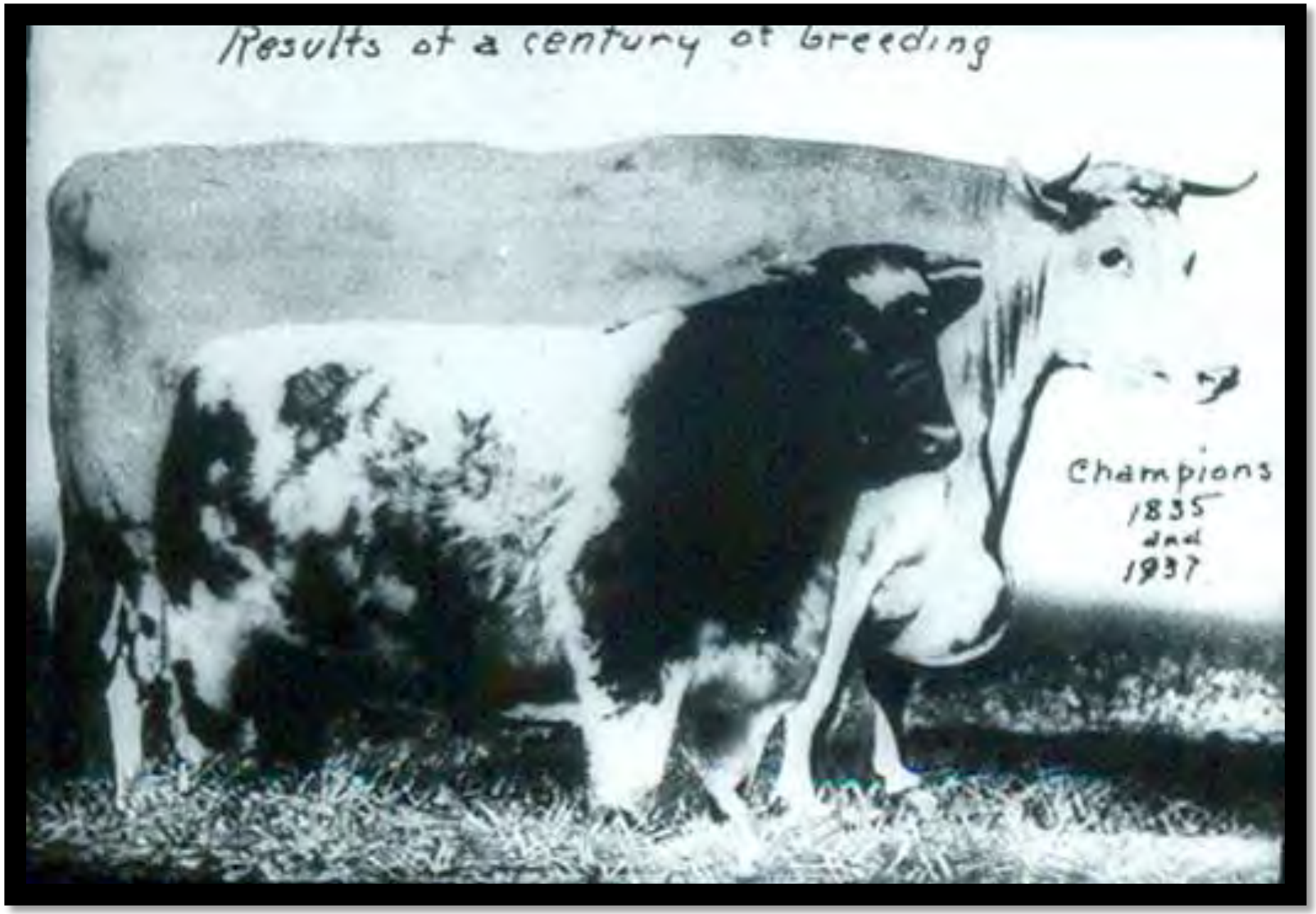
Sustained Cow Fertility (SCF)

Both bulls have over 270 daughters in production

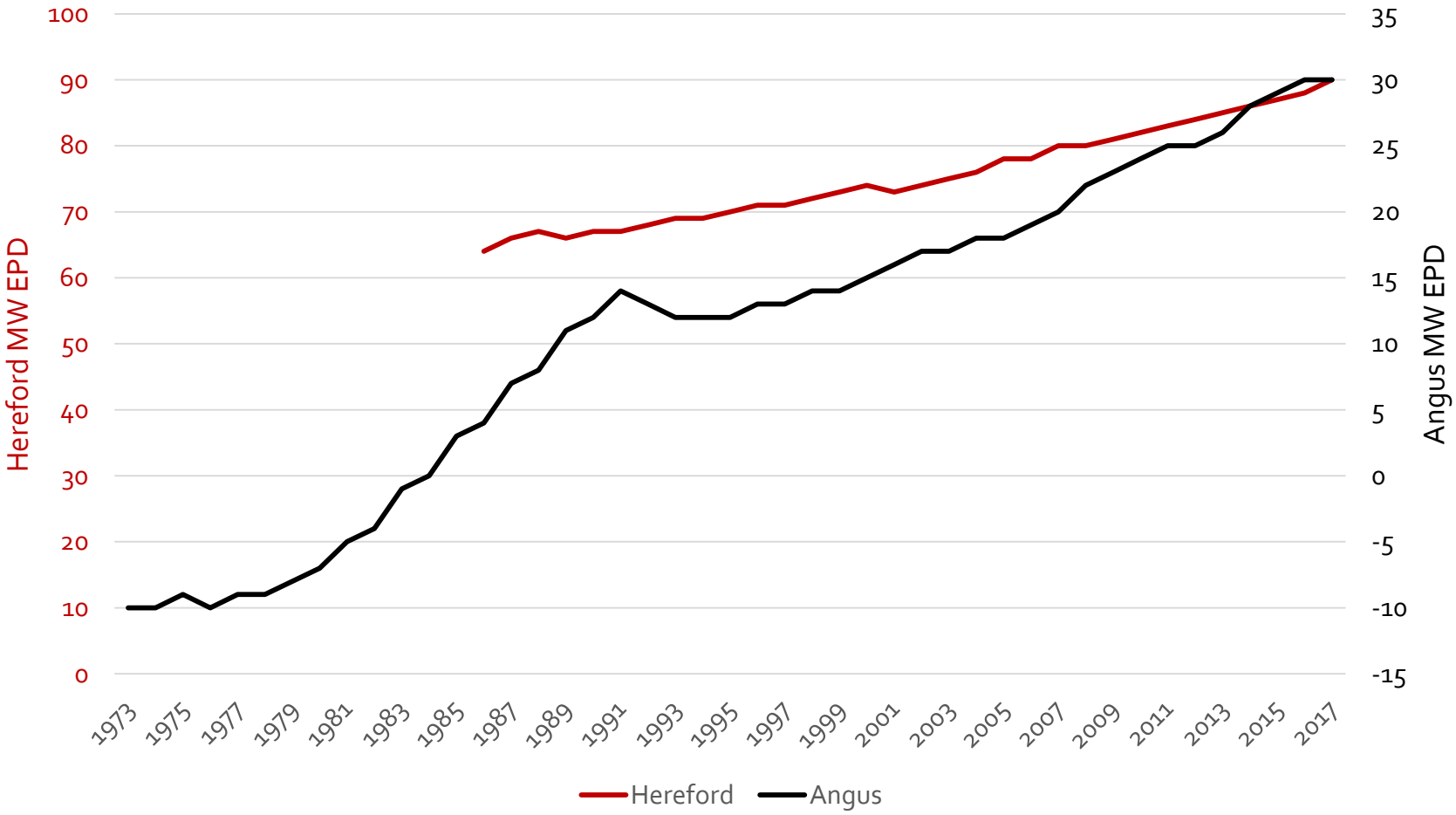
One bull has SCF = 39
One bull has SCF = -6

Given 100 2-yr-old daughters each, the more fertile bull has probability of **45 more** 12-yr-old daughters still in the herd 10 yr from now

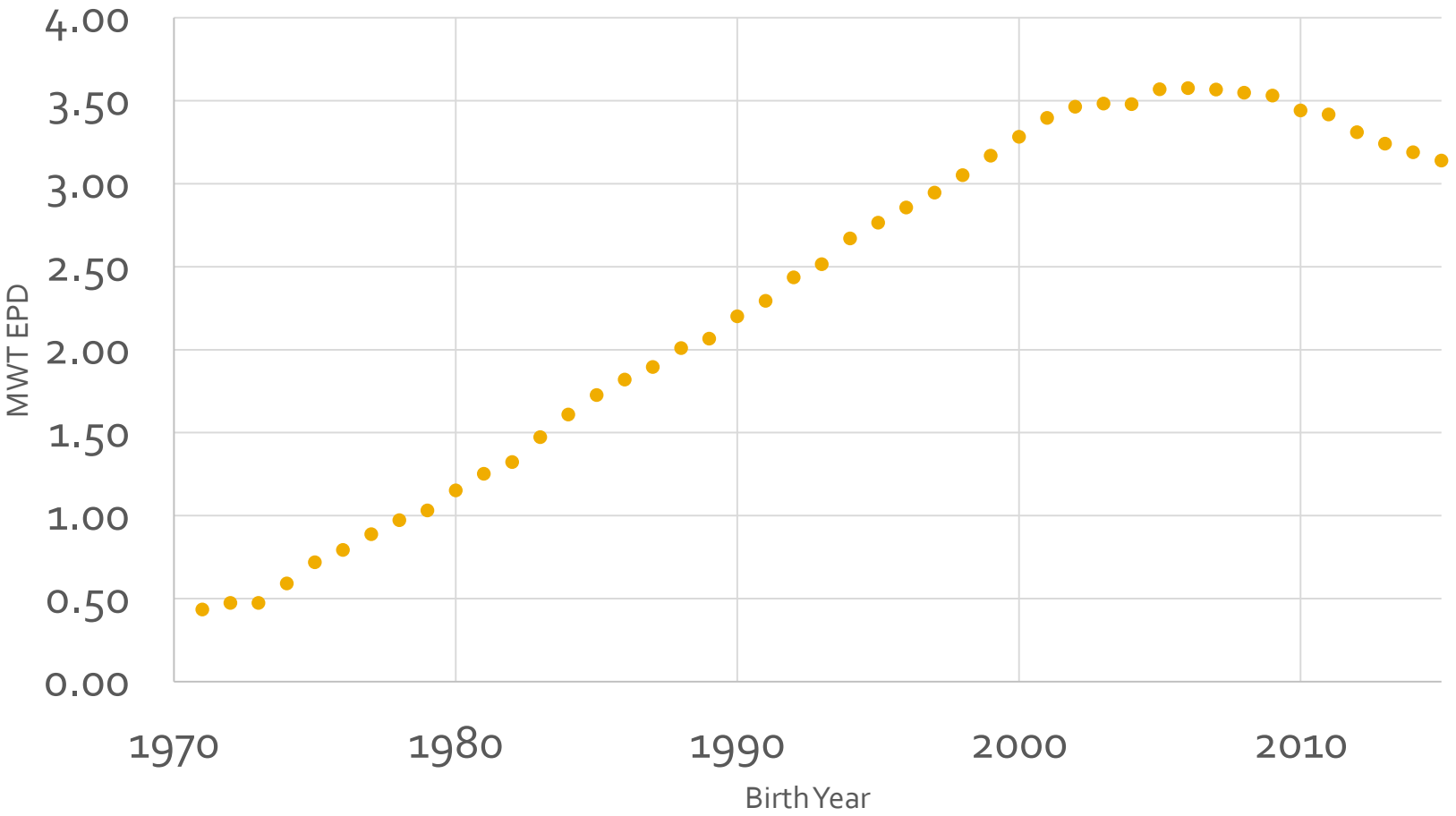
Mature Size



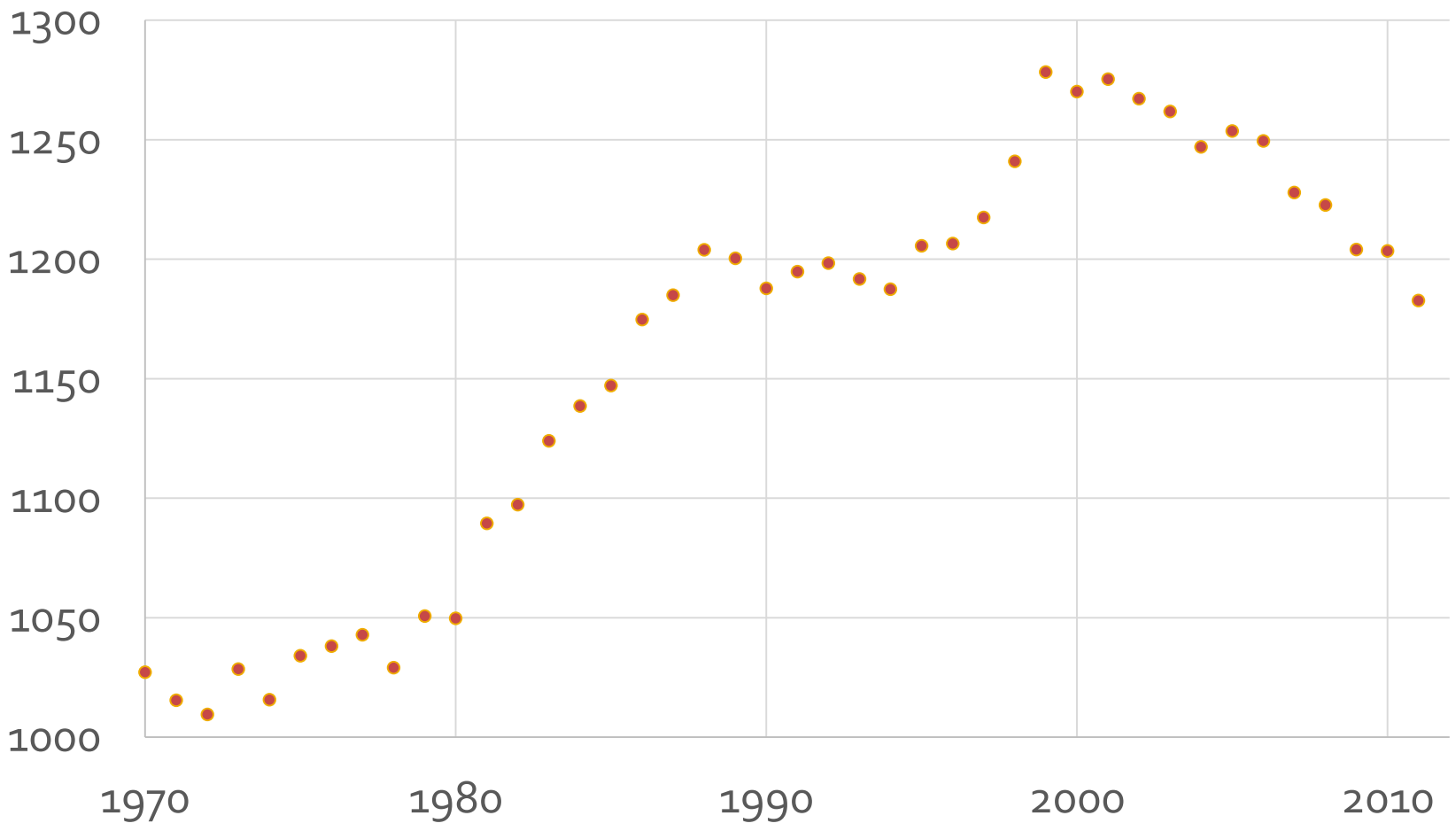
Genetic Trend For Cow Weight Angus and Hereford



Mature Weight Genetic Trend
Red Angus



Cow Weight at Weaning
Red Angus



Calf WW vs Cow BW

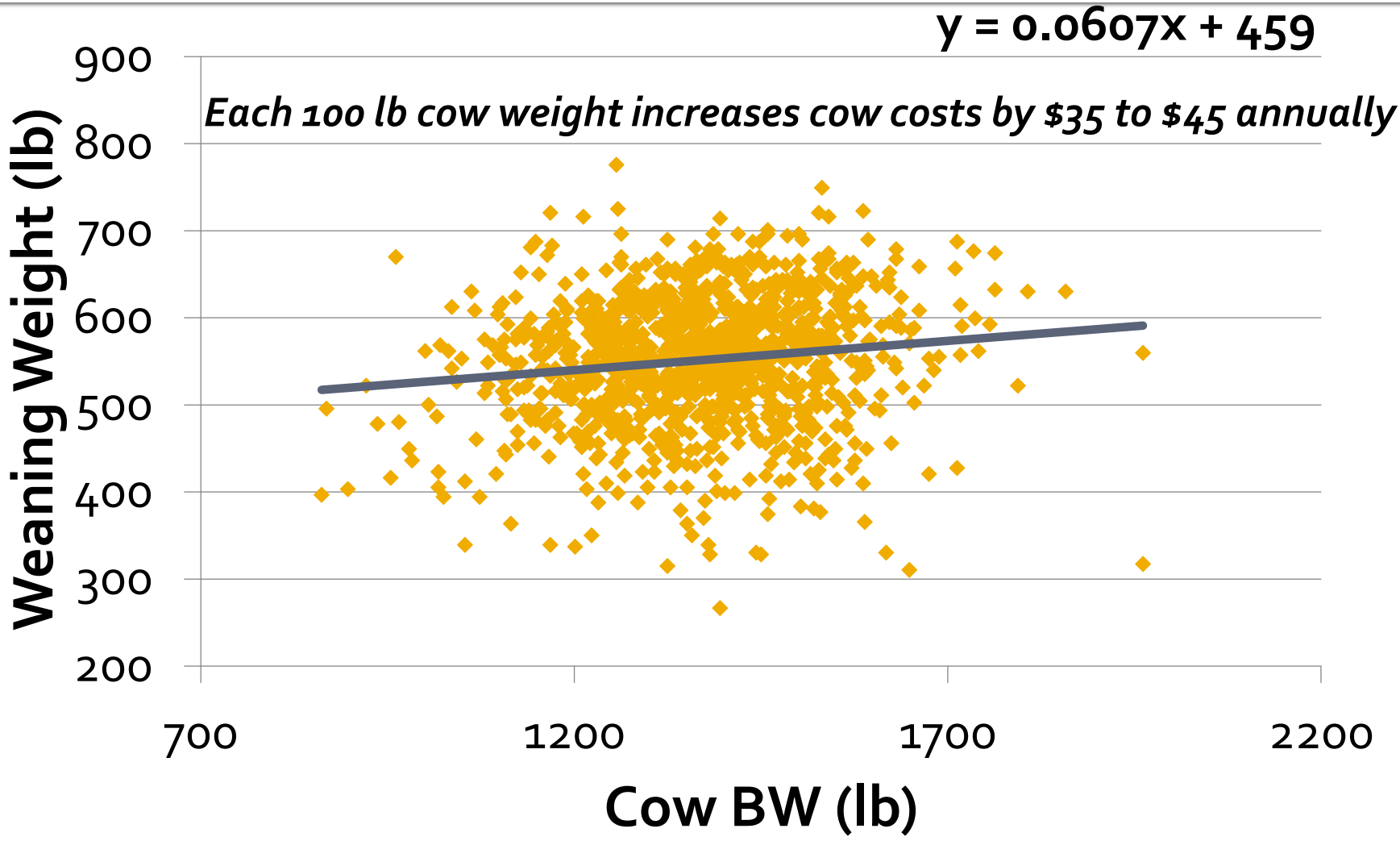
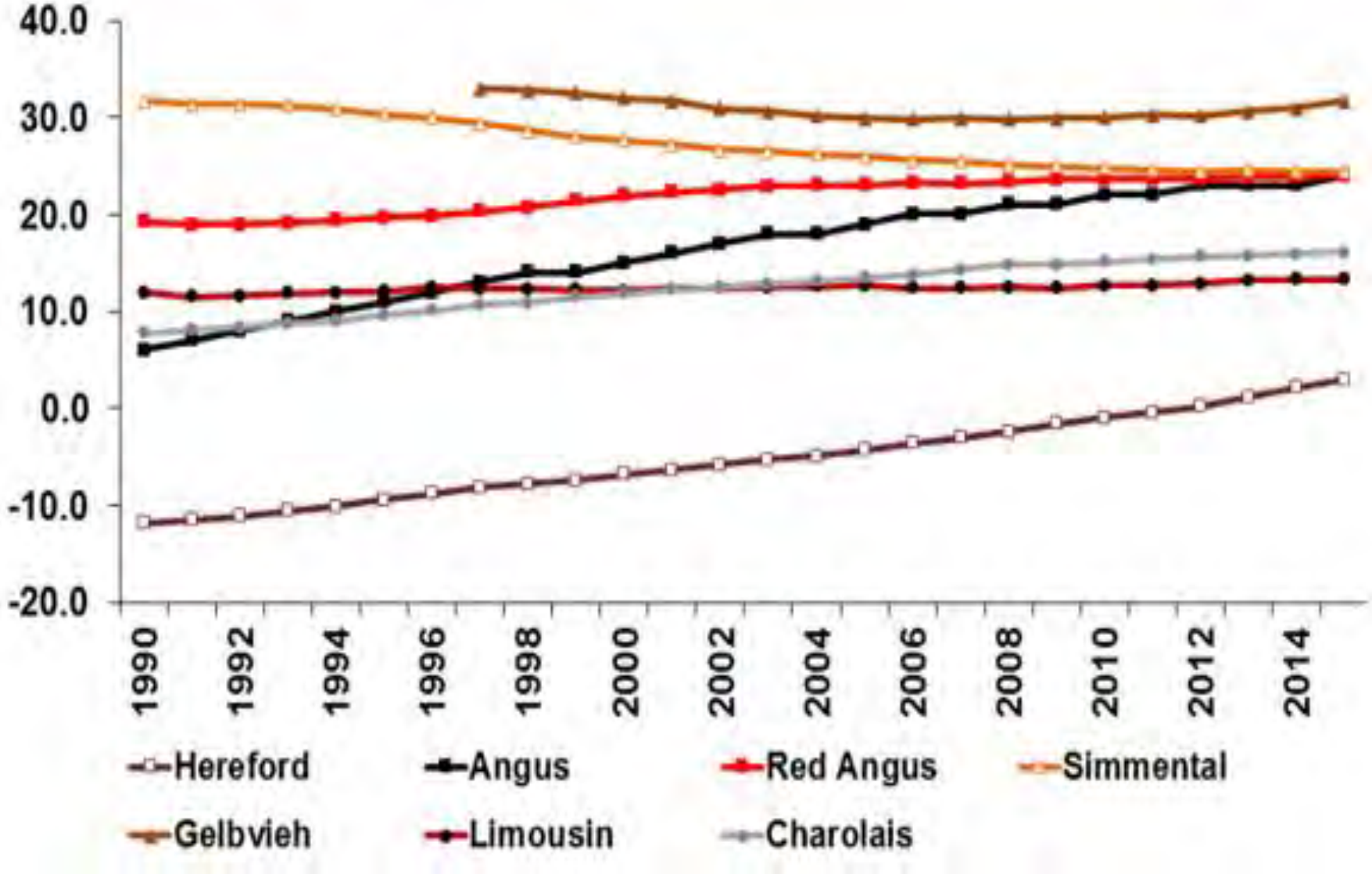



Photo Courtesy of Oklahoma State University

Figure 4. Relative genetic trends for maternal milk (lb) of the seven most highly used beef breeds (4a) and all breeds that submitted 2017 trends (4b) adjusted for birth year 2015 using the 2017 across-breed EPD adjustment factors.

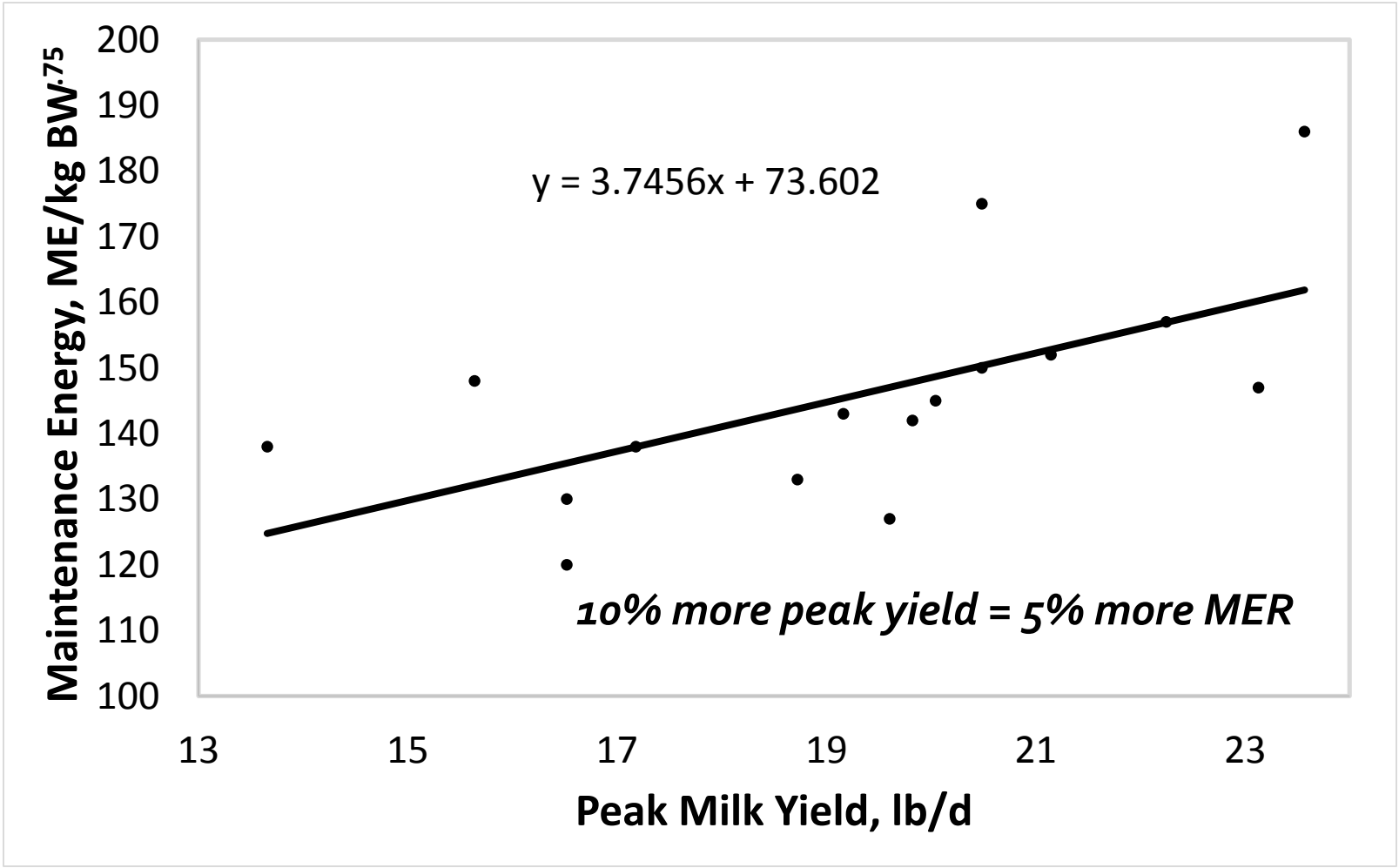
4a.



Peak Milk Yield
Spencer and Bayliff, 2016

- Commercial Angus herd
- Spring calving
- Sire milk EPDs: above breed avg
- Peak yield (May) = 31 lb

Milk vs Maintenance

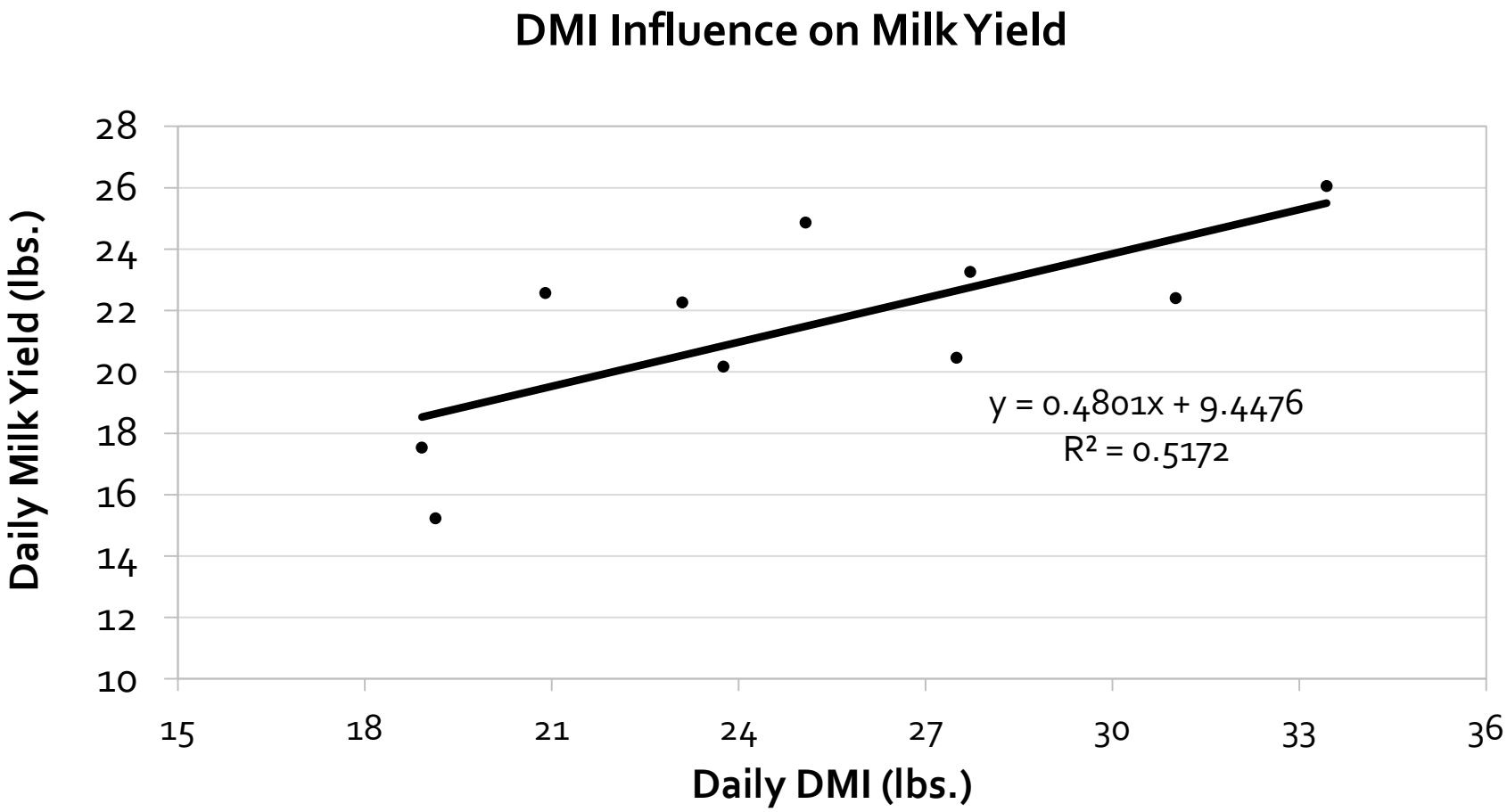


Ferrell and Jenkins (1987) and Montano-Bermudez et al. (1990)

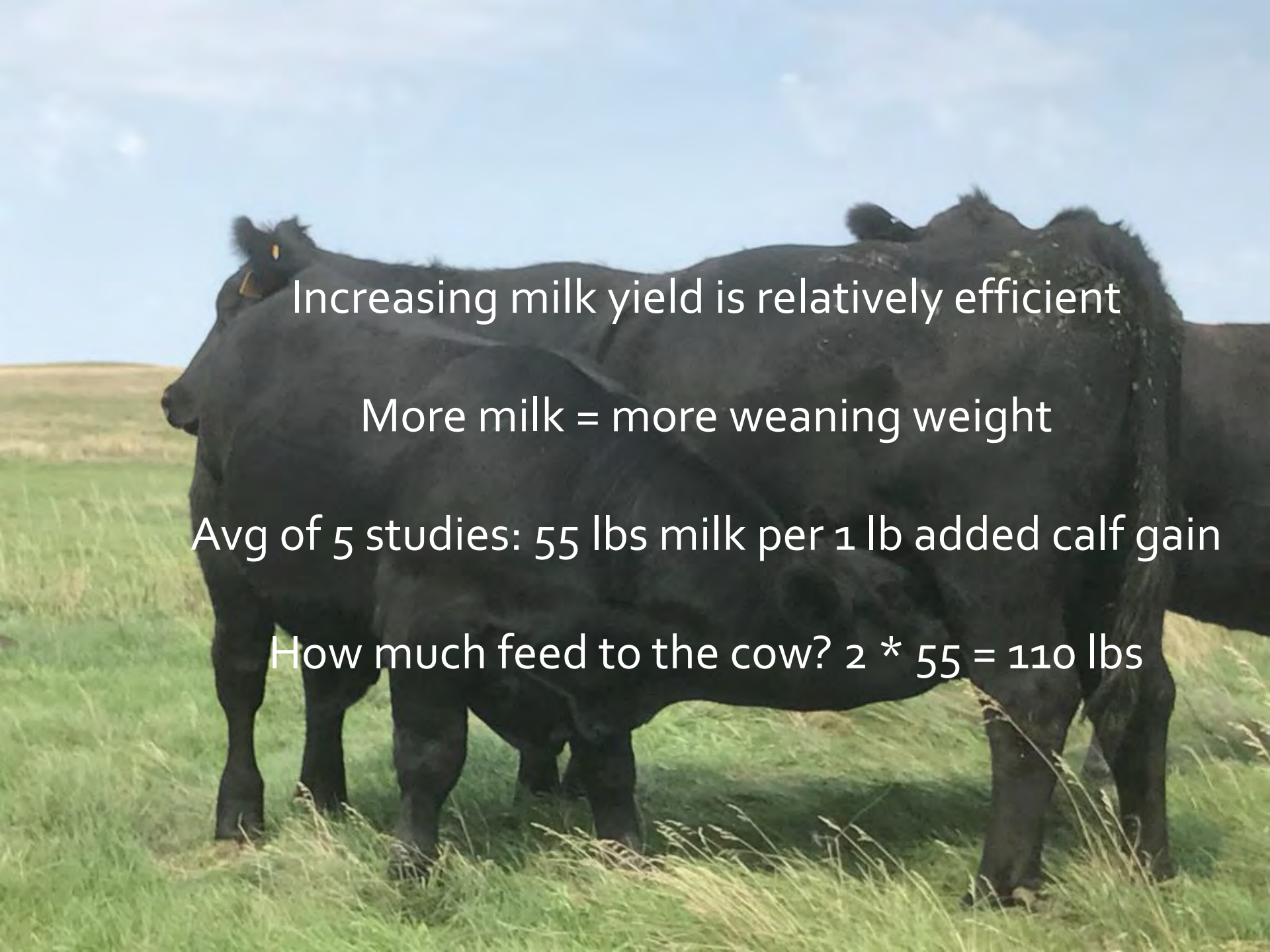
Conversion of Milk to Calf Gain

How much high-quality forage or similar mixed ration does it take to make a pound of milk?

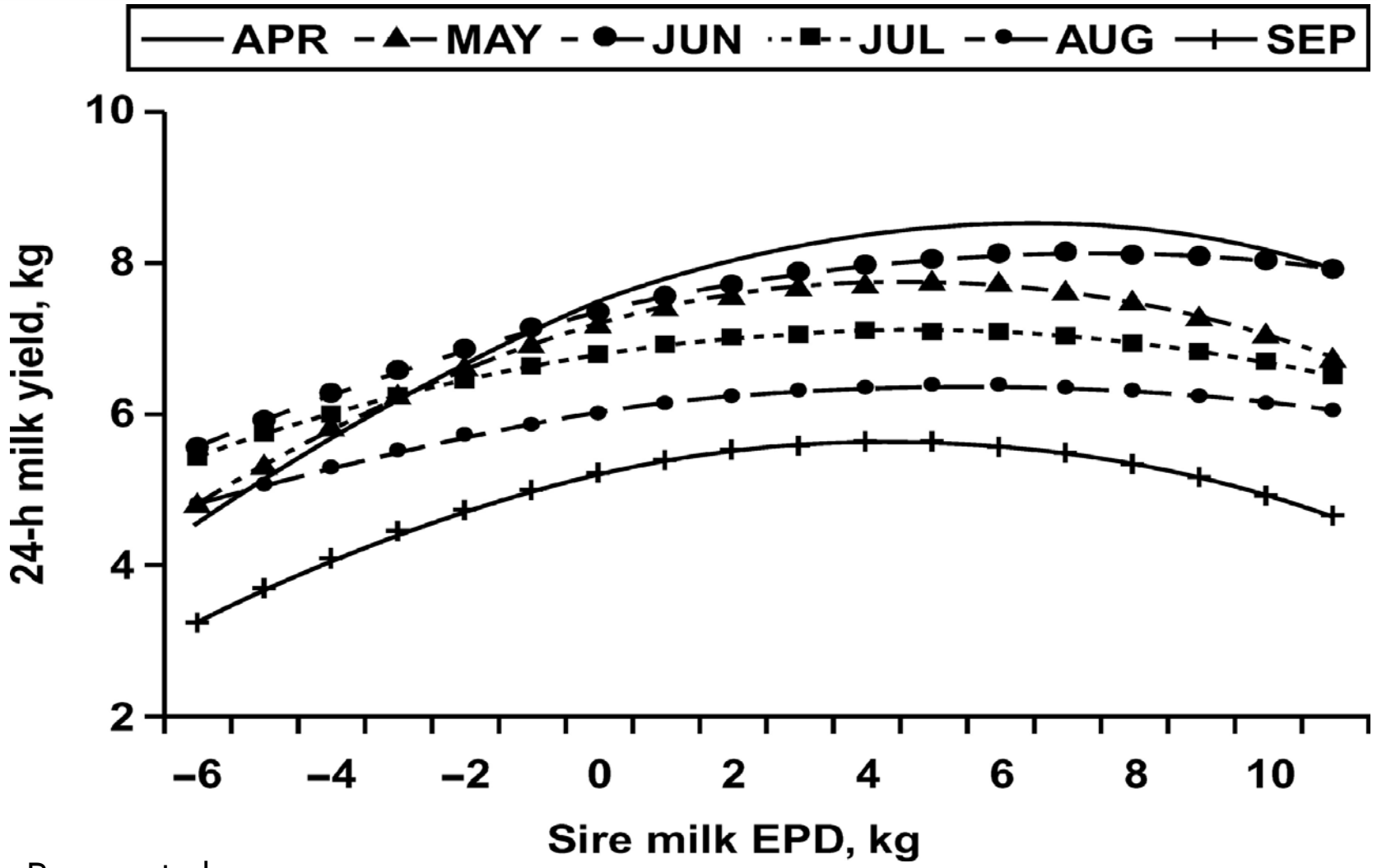
Range Cow Research Center
Spencer and Bayliff, 2017



lb feed : lb milk conversion is about 2:1


Increasing milk yield is relatively efficient
More milk = more weaning weight
Avg of 5 studies: 55 lbs milk per 1 lb added calf gain
How much feed to the cow? 2 * 55 = 110 lbs

Forage abundance and quality frequently limit milk yield



Brown et al., 2005

Peak Milk Yield Andresen, 2017

- Commercial Angus and H X A
- Fall calving
- Sire milk EPDs: below breed avg
- Peak yield (November)
- Ang = 22 lbs
- Herf X Ang = 20 lbs

Maintenance

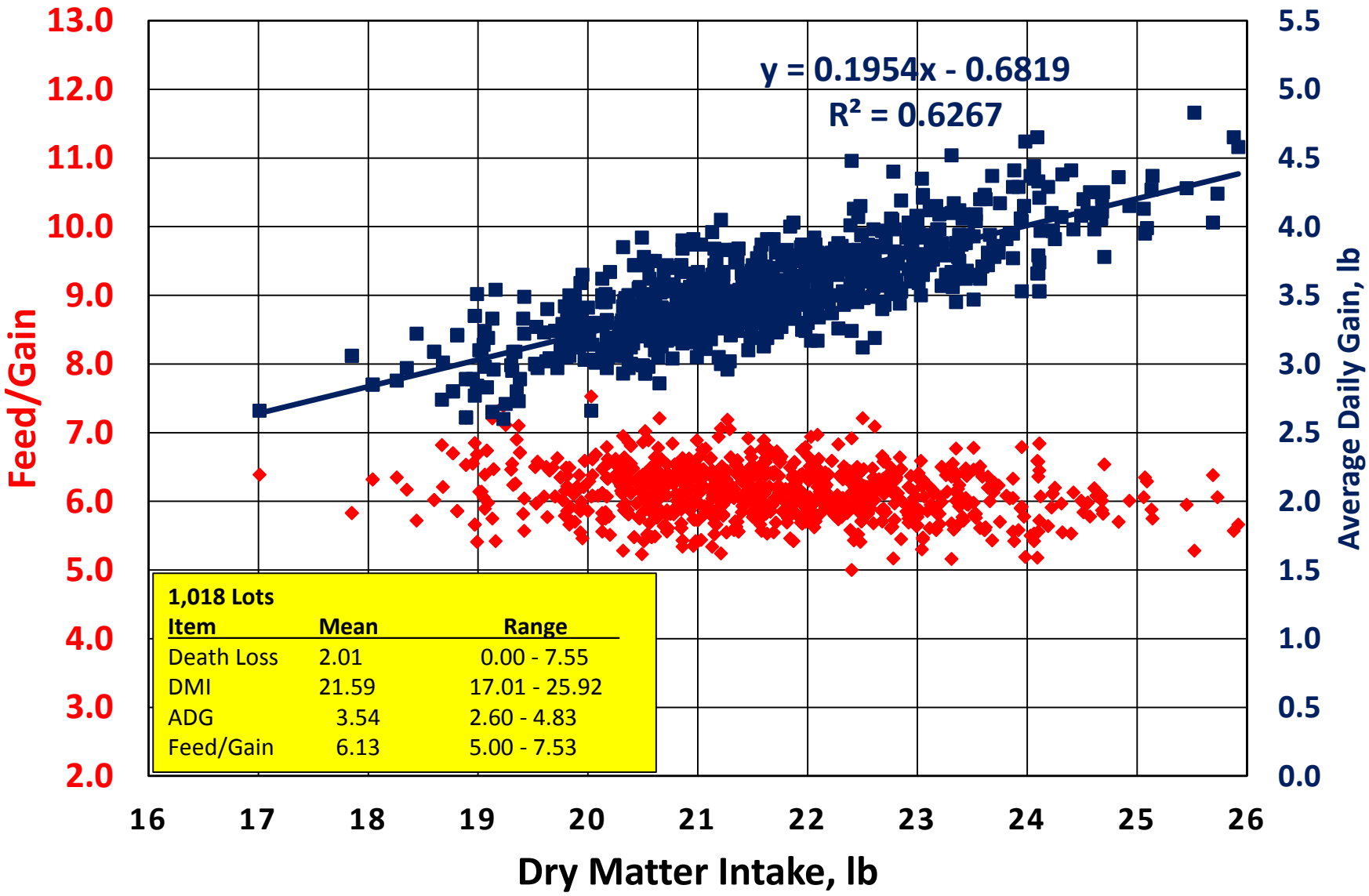
Growth

What happens to cow maintenance costs with aggressive selection for growth, gradual increases in cow size (primarily from increased visceral organ mass), and genetic potential for milk?

MAINTENANCE REQUIREMENTS

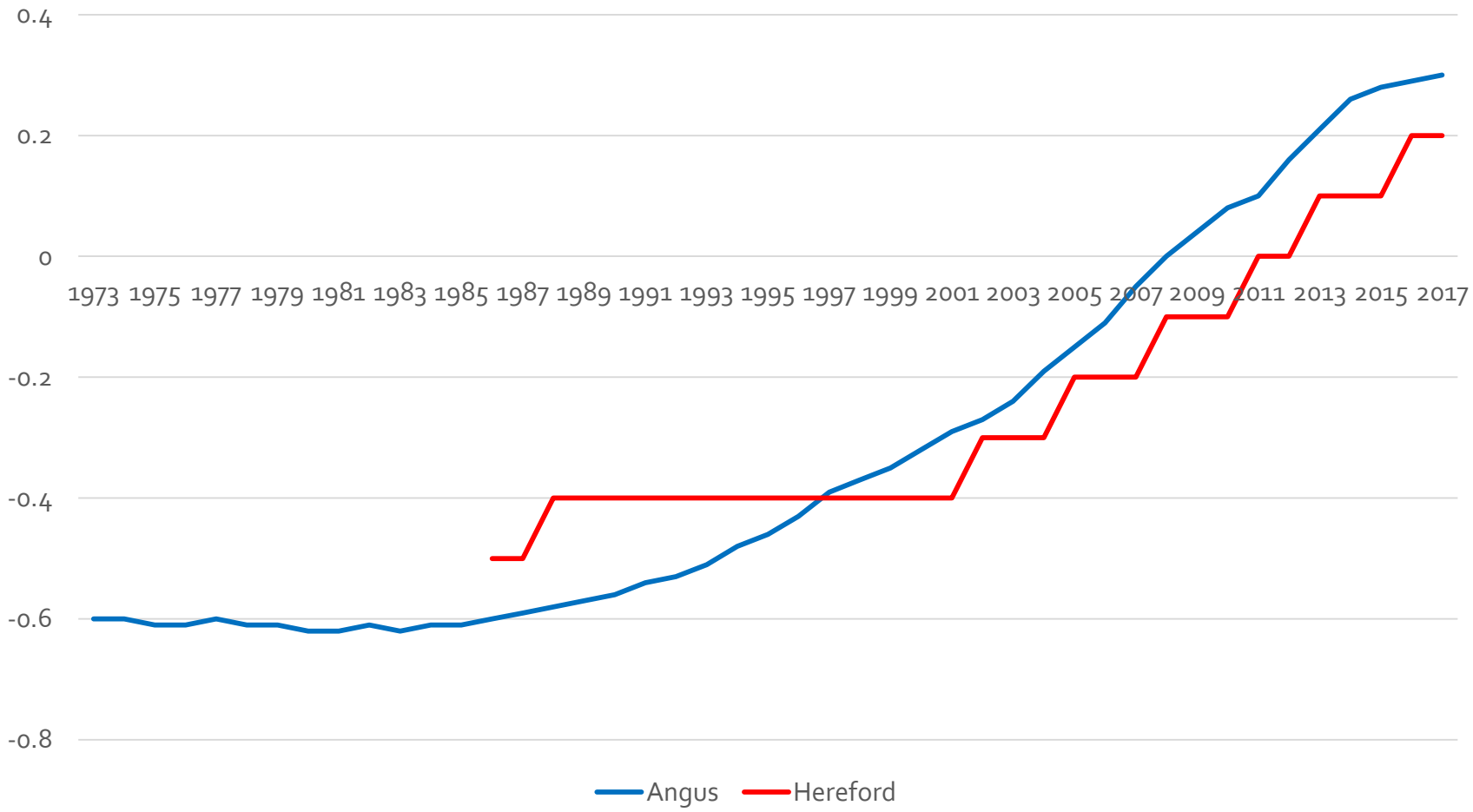
APPETITE

There is a limit to what your forage system can support



Source: Dr. Britt Hicks, 2018

Genetic Trend For DMI
Angus, Hereford



Controlling Appetite: Feed Intake

- Growing cattle consuming high-quality concentrate or high-quality mixed diets
- Positive relationship between DMI for concentrate and forage diets
  - Foote et al., 2017: .51
  - Cassaday et al., 2016 .58
- Little or negative relationship between concentrate and forage ADG
  - Foote et al., 2017 -.09
  - Cassaday et al., 2016 -.3

Retallick et al., 2017: ADG

Breed	Gain, lb/d
South Devon	0.07
Angus	0.00
Hereford	-0.11
Simmental	-0..33
Charlolais	-0..37
Red Angus	**-0..42**
Beefmaster	-0.44
Santa Gertrudis	**-0.55**
Gelbvieh	**-0.55**
Brangus	**-0.57**
Limousin	**-0.77**
Brahman	**-0.90**

Retallick et al., 2017: Feed Intake

Breed	DMI, lb/d
South Devon	**-3.48**
Beefmaster	**-3.44**
Limousin	**-3.24**
Brahman	**-2.97**
Santa Gertrudis	-2.29
Hereford	**-2.11**
Charlolais	**-1.94**
Gelbvieh	**-1.59**
Red Angus	**-1.50**
Brangus	-1.30
Simmental	-1.17
Angus	0.00

Retallick et al., 2017: Efficiency

Breed	Efficiency
South Devon	**0.200**
Beefmaster	**0.096**
Hereford	**0.090**
Charlolais	0.030
Limousin	0.017
Santa Gertrudis	0.012
Angus	0.000
Red Angus	-0.004
Simmental	-0.004
Brahman	-0.023
Gelbvieh	-0.027
Brangus	-0.049

Summary

- Inputs have been adjusted to maintain a higher input cow herd
- Fertility is beginning to improve and new tools will help
- In MANY cases, modest negative pressure on milk production would improve the match to forage resources
- DMI and Mature Cow Weight EPD's are relatively new and beginning to have a positive impact
- Matching cows to forage = MODERATE milk, growth, feed intake and mature size
- With today's tools there is no need to give up (go backwards) on post-weaning performance, carcass yield, or quality

Photo Courtesy of Oklahoma State University