



NDSU

DICKINSON
RESEARCH EXTENSION CENTER

CHAPTER 5

Developing a Cow Herd that Fits Your Ranch Environment

David Lalman, PhD
Professor and Extension Beef Cattle Specialist
Oklahoma State University

Continuing Our Commitment Of Service To Agriculture Since 1905
1041 State Avenue, Dickinson, ND 58601 • 701-456-1100

Developing a Cow Herd that Fits Your Ranch Environment

September 2, 2017

Dr. David Lalman, Professor and Extension Beef Cattle Specialist
Oklahoma State University

What is the Environment?

- Forage availability
 - Allen et al., 2011: Animal unit (AU) = one mature, non-lactating bovine (middle-third of pregnancy) weighing 1,100 lb and fed at a maintenance level for zero gain (19.4 lb dry matter / day)
 - Oklahoma = 3 acres per AU to 25 acres per AU
- Forage nutritive value
 - Native tallgrass prairie in Oklahoma:
 - Protein = 2 - 16% of forage DM vs cattle requirements of 7 - 14%
 - Energy = TDN 48 - 75% of forage DM
 - Persistent macro and micro mineral imbalances

What is the Environment?

- Climate
 - Temperature
 - Humidity
 - Rain, mud
 - Ice
 - Snow
 - Sun and access to shade
 - Wind and access to break or shelter
- Parasites
 - Internal
 - External
- Disease challenges
- Distance to water (or between clumps of grass)
- Water quality
- Rock vs sand as influence feet and teeth

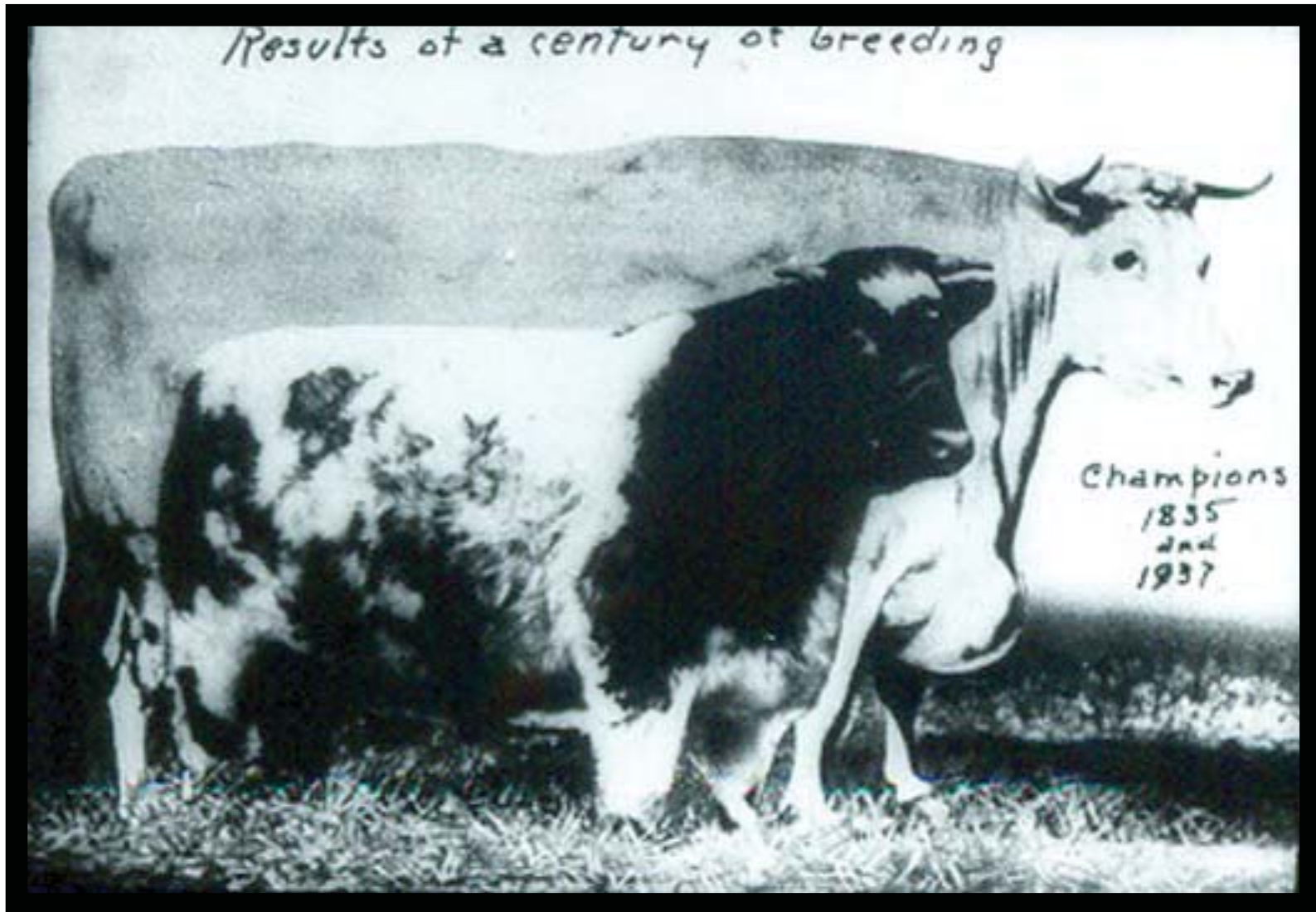
What is the Environment?

- Management
 - Animal handling
 - Grazing management
 - Low input: survival of the fittest
 - Moderate input: expend time, effort and \$ to remove **some** of the environmental impediments
 - High input: expend time, effort and \$ to remove **most** of the environmental impediments

What is a good “match”?

- A cow that can
 - Wean a healthy calf every 365 days for 12 consecutive years
 - Problem free - requires no extra-curricular handling or medical treatment (including the owner)
 - Low cost - requires little supplemental feed in your grazing and management system
 - Utilize your country – travel and forage where the grass, “weeds” and brush haven’t been grazed or browsed
 - Get too fat in the good years and thrive in the bad years (make you think you need more cows)
 - Produce steer calves with the capacity to gain on grass, convert in the 5’s, gain 4 lb per day, never need treated, produce a large, high quality carcass...calves that have the capacity to build your reputation (hopefully a good one)

Cattle are Changing More Rapidly Today

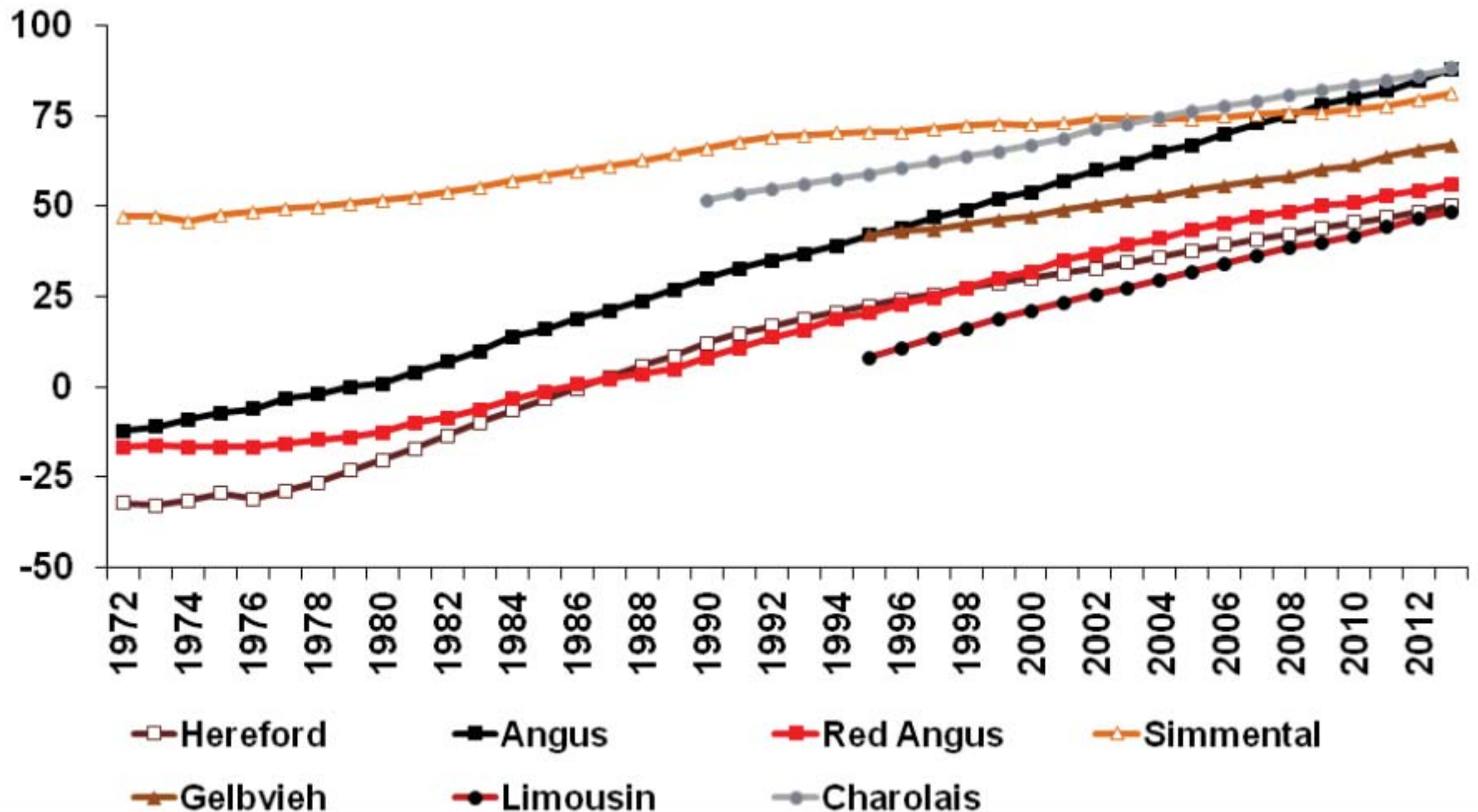


Post-weaning Perspective

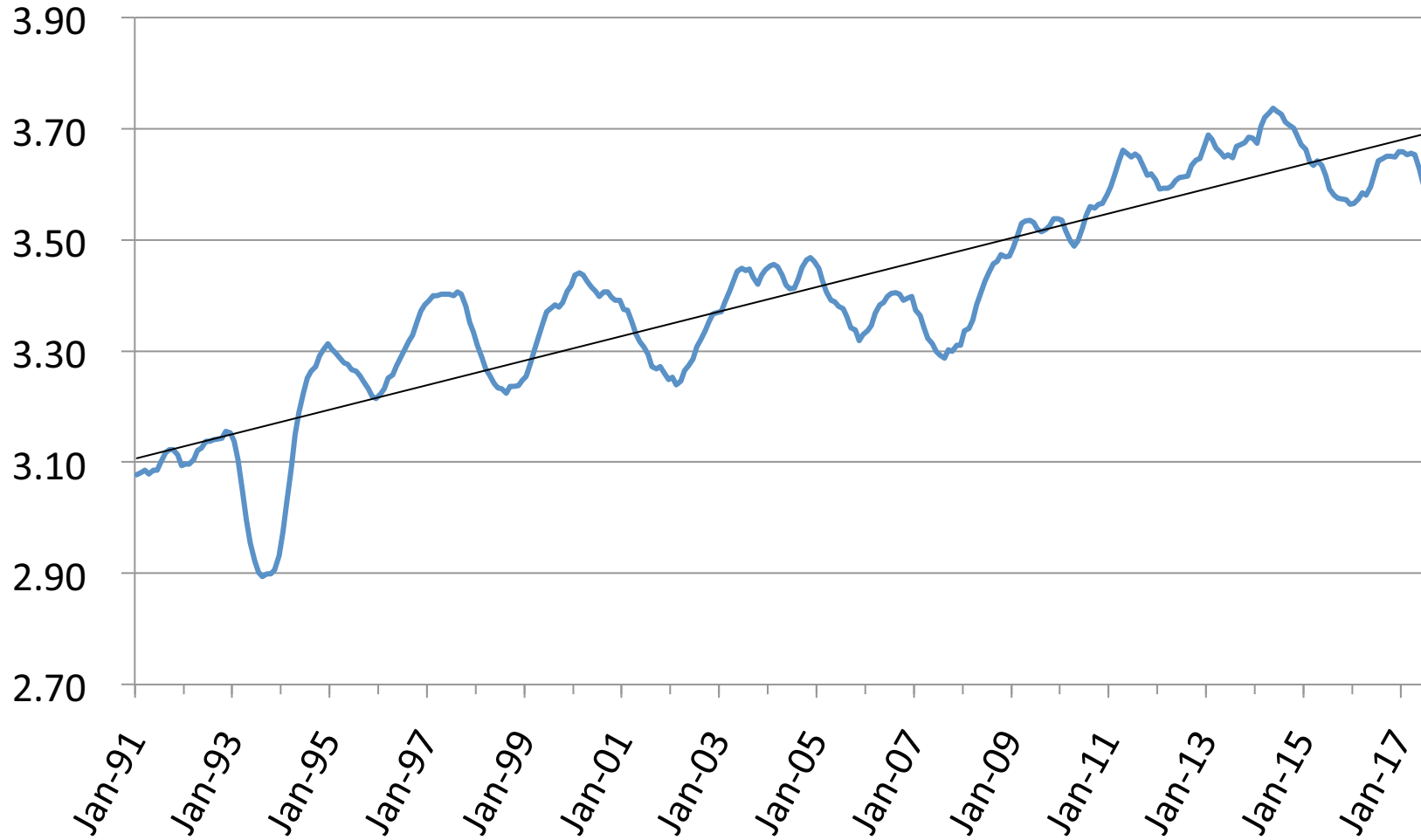
Today cattle have tremendous capacity for post-weaning growth and carcass weight

Figure 3. Relative genetic trends for yearling weight (lb) of the seven most highly used beef breeds (3a) and all breeds that submitted 2015 trends (3b) adjusted for birth year 2013 using the 2015 across-breed EPD adjustment factors.

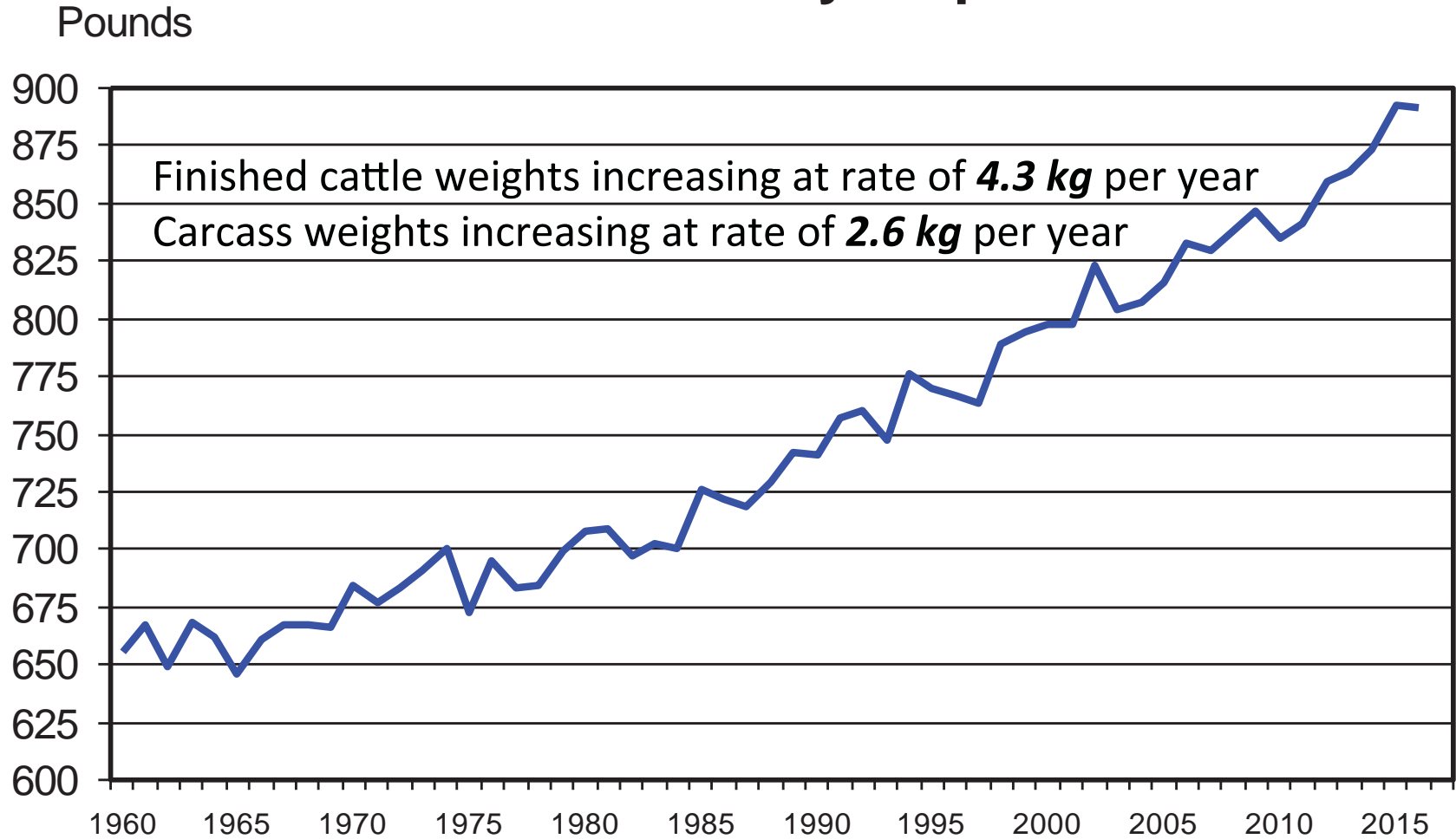
3a.



Finishing Phase (Feedlot) Performance is Increasing



Steer Carcass Weight Federally Inspected

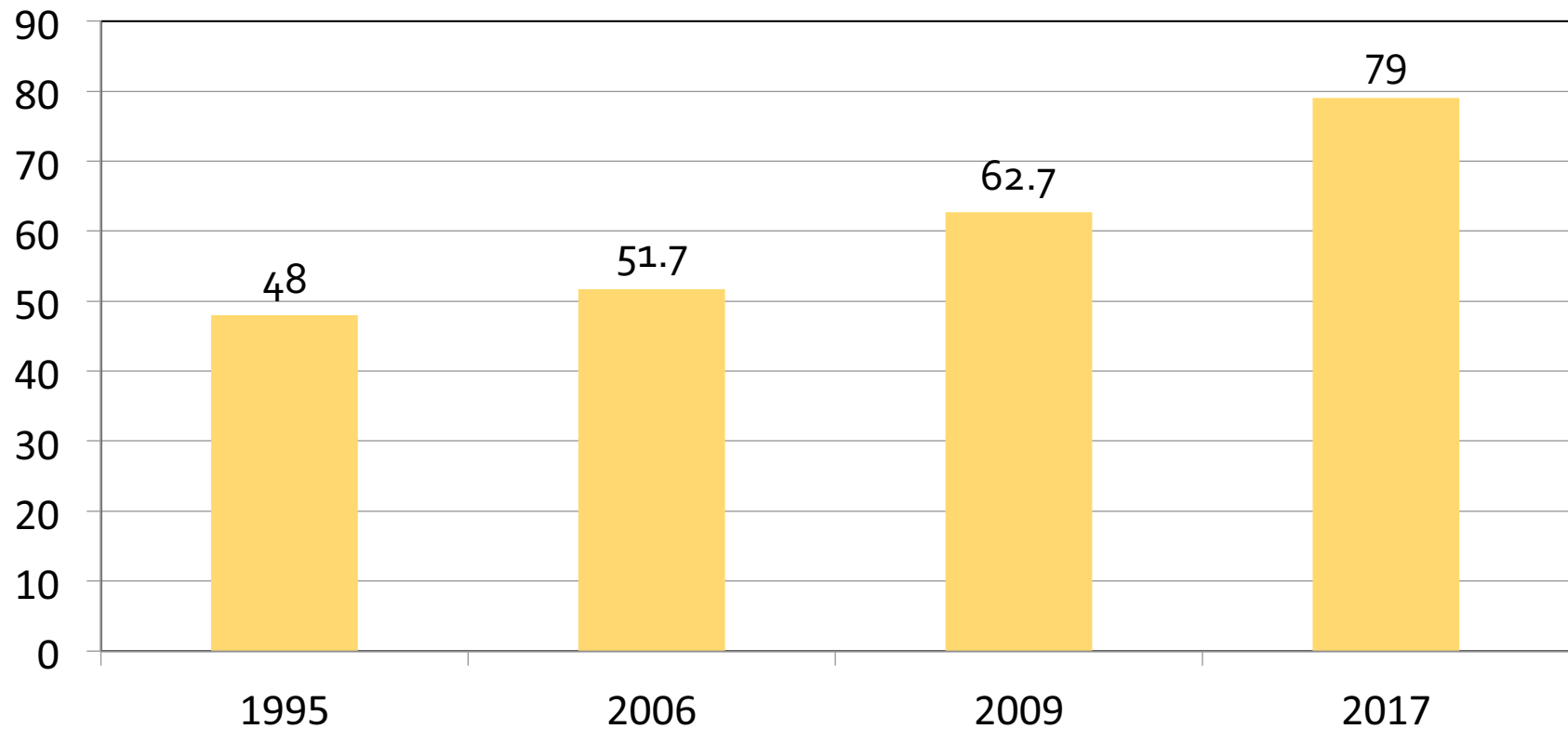


Post-Weaning Perspective

Cattle have tremendous capacity for marbling

Beef quality

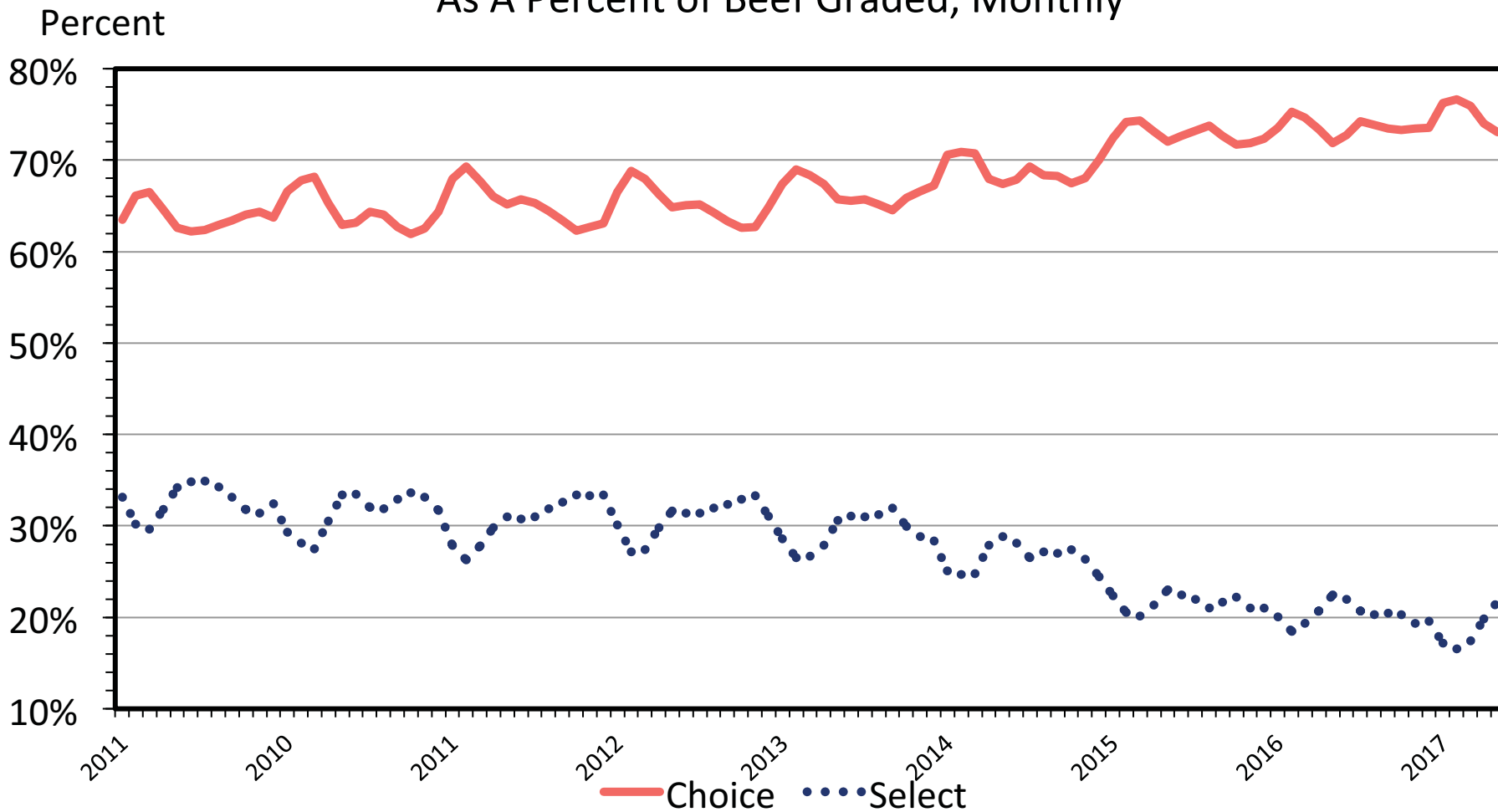
% Cattle Grading USDA Choice and Above



Livestock Marketing Information Center, 2016

BEEF GRADED CHOICE AND SELECT

As A Percent of Beef Graded, Monthly



Data Source: USDA-AMS, Compiled by LMIC
Livestock Marketing Information Center

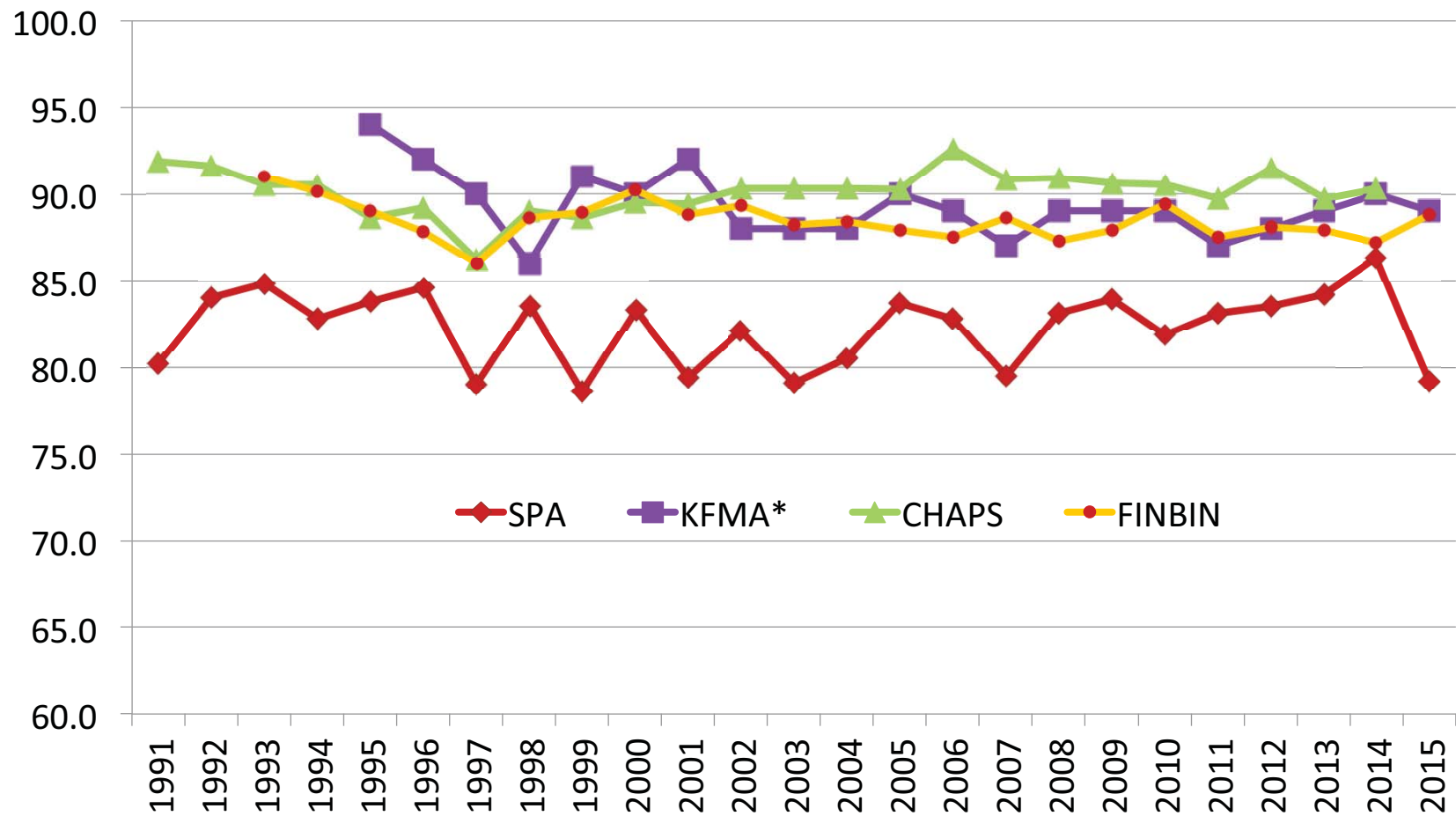
M-S-25
07/28/17

Cow/Calf Enterprise

Profitability and Performance Data

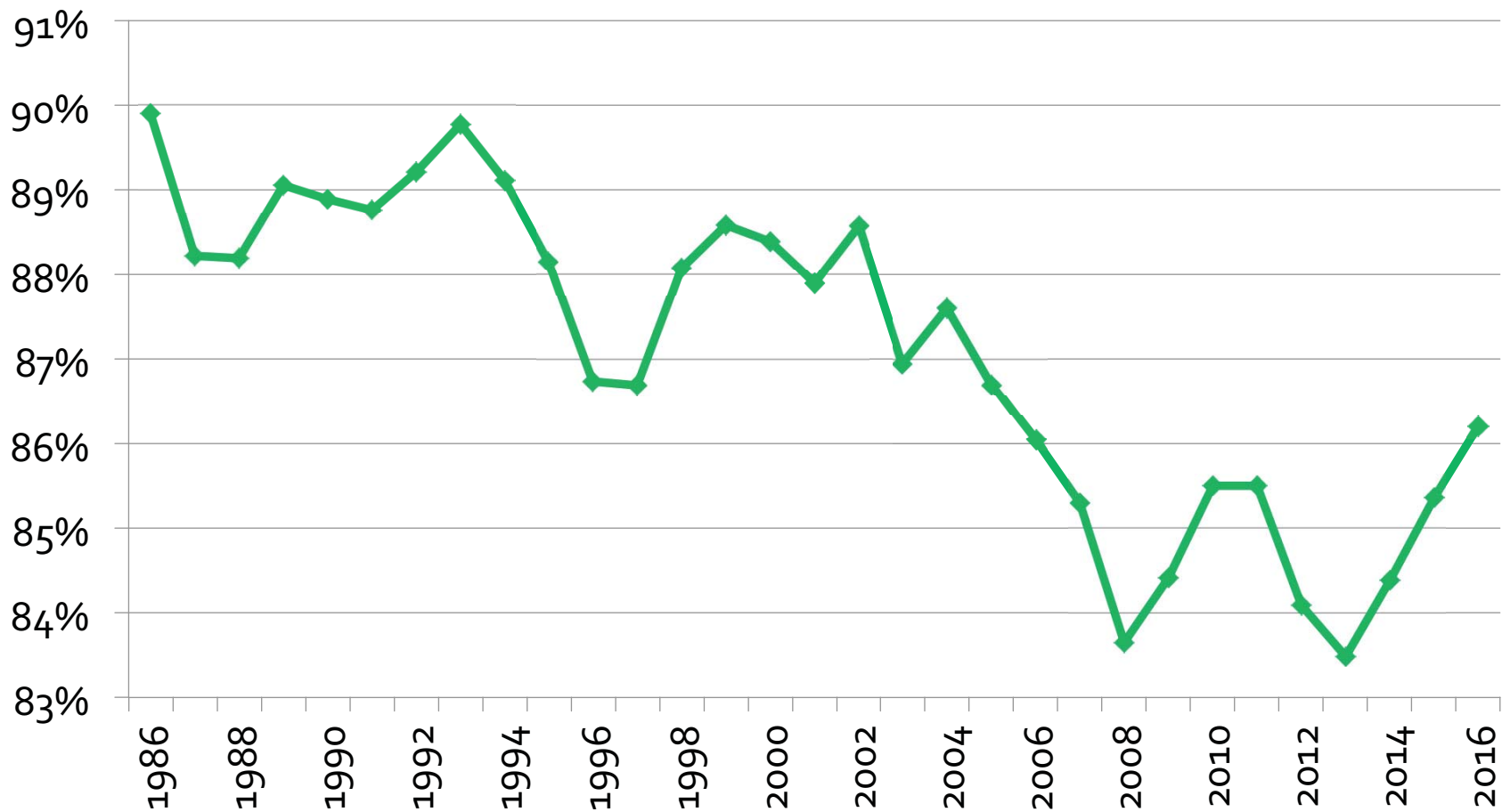
- Kansas: Kansas Farm Management Association (KFMA)
Kevin Herbel
- North Dakota: Cow Herd Appraisal Performance Software (CHAPS)
Dr. Kris Ringwall
- New Mexico, Oklahoma, Texas: Standardized Performance Analysis (SPA)
Dr. Stan Bevers
- Upper Midwest (FINBIN), Center for Farm Financial Management, University of Minnesota

Weaning Rate in Commercial Cow/ Calf Operations



Beef Calf Crop Percent

Estimated from USDA NASS Data



Source: Dr. Derrell Peel, Oklahoma State University

Beef Calf Crop Percent

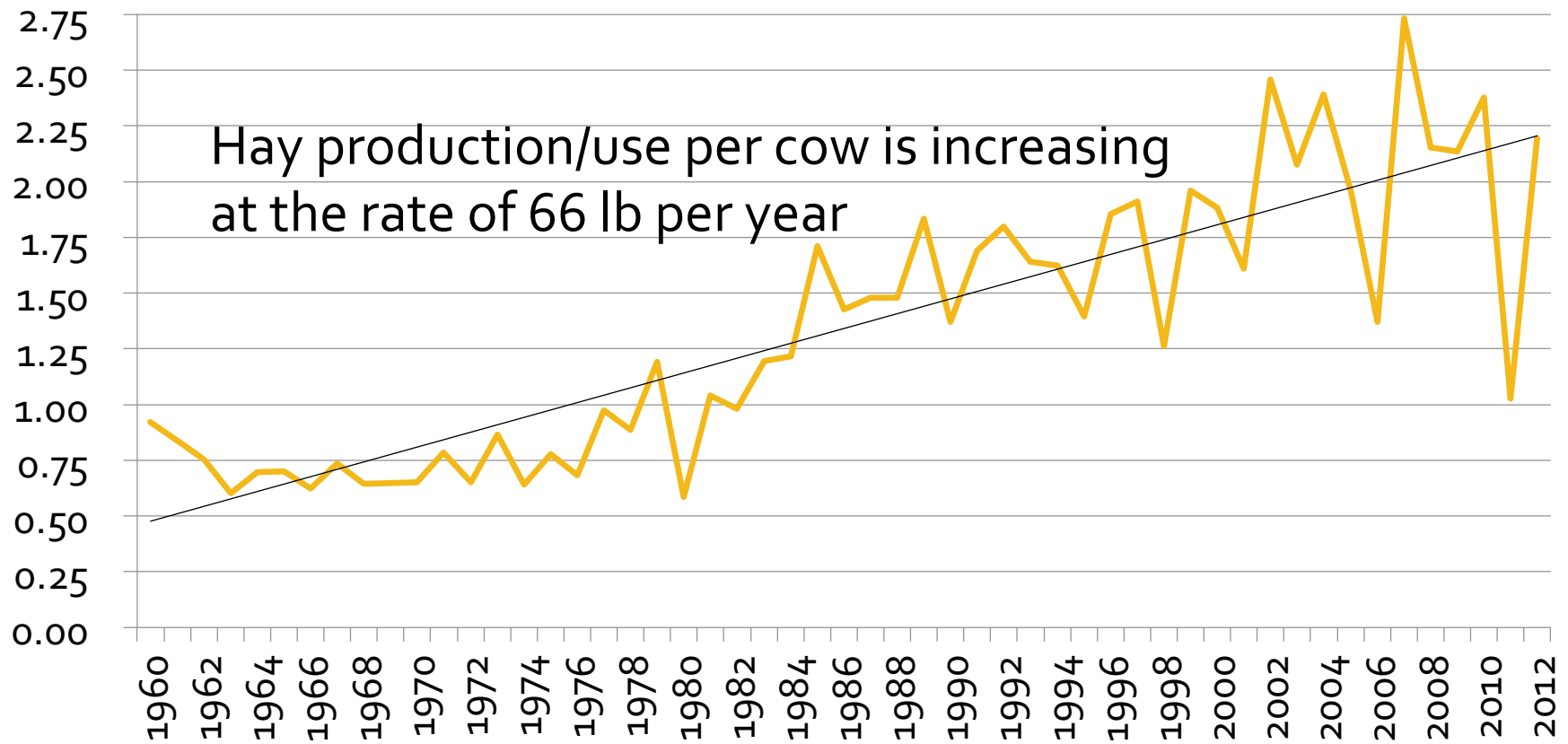
Estimated from USDA NASS Data



Source: Dr. Derrell Peel, Oklahoma State University

Hay Production: Oklahoma

Tons Per Beef Cow



Summary

- When cattle producer's are provided effective science-based tools, THEY USE THEM
- Dramatic improvement in ***post-weaning performance, total beef produced per cow, and carcass quality***
- In the meantime, commercial cow herd efficiency, particularly fertility have made no progress
 - Exception: dramatic improvement in frequency of dystocia

We can do both!

**Improving post-weaning traits WHILE improving
the match...cow herd efficiency**

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

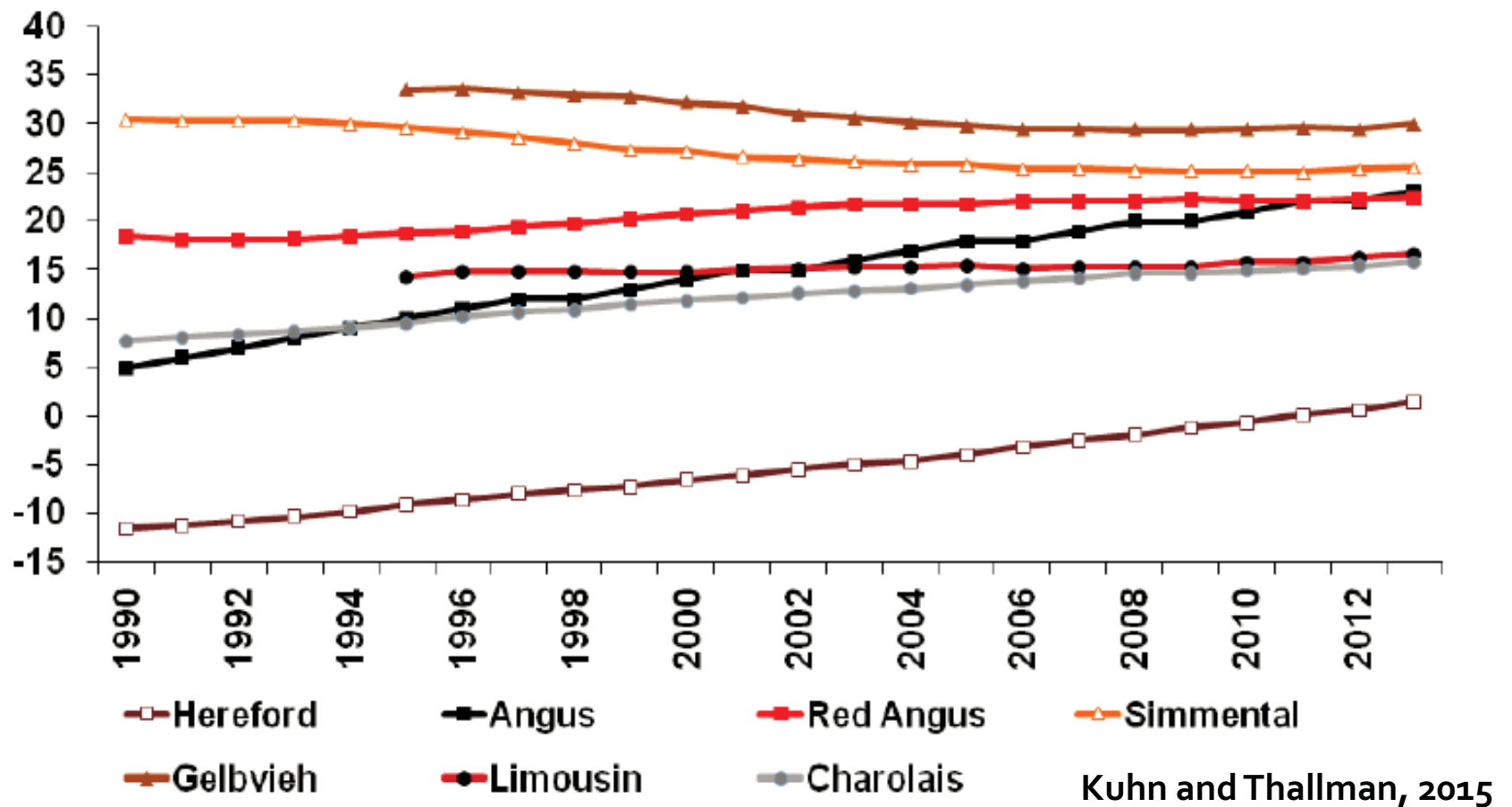
Pendell et al., 2015 (KFMA data)

- 1 lb of added weaning weight = **\$1.00** added cost per cow
- 234 weekly sale reports (2010 – 2014) from Oklahoma National Stockyards for 550 to 650 lb calves indicated average value of added weight = **\$0.86 ± 0.33**

Milk

Figure 4. Relative genetic trends for maternal milk (lb) of the seven most highly used beef breeds (4a) and all breeds that submitted 2015 trends (4b) adjusted for birth year 2013 using the 2015 across-breed EPD adjustment factors.

4a.



Milk Production

- One OSU cow herd, no intentional selection for higher milk EPD's
- 2015, 2016 milking machine after calf removal
- Peak yield (May) = 30.9 lb

Milk vs Maintenance

- More milk = higher year-long maintenance requirements (NEm)

Ferrell and Jenkins, 1984

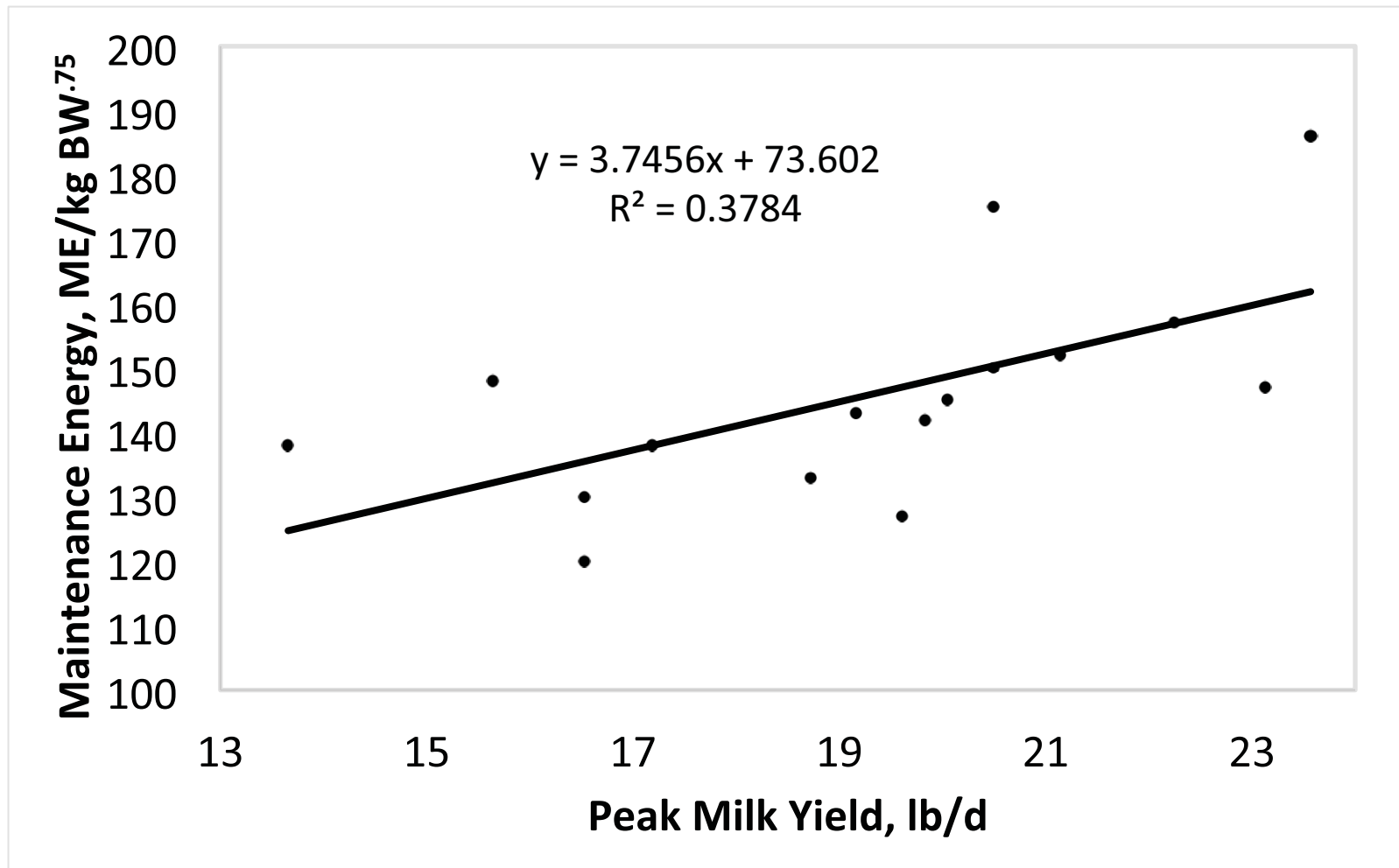
Montano-Bermudez et al., 1990

- Related to greater visceral organ mass relative to empty body weight

- Rumen, small and large intestine, liver, heart, kidneys

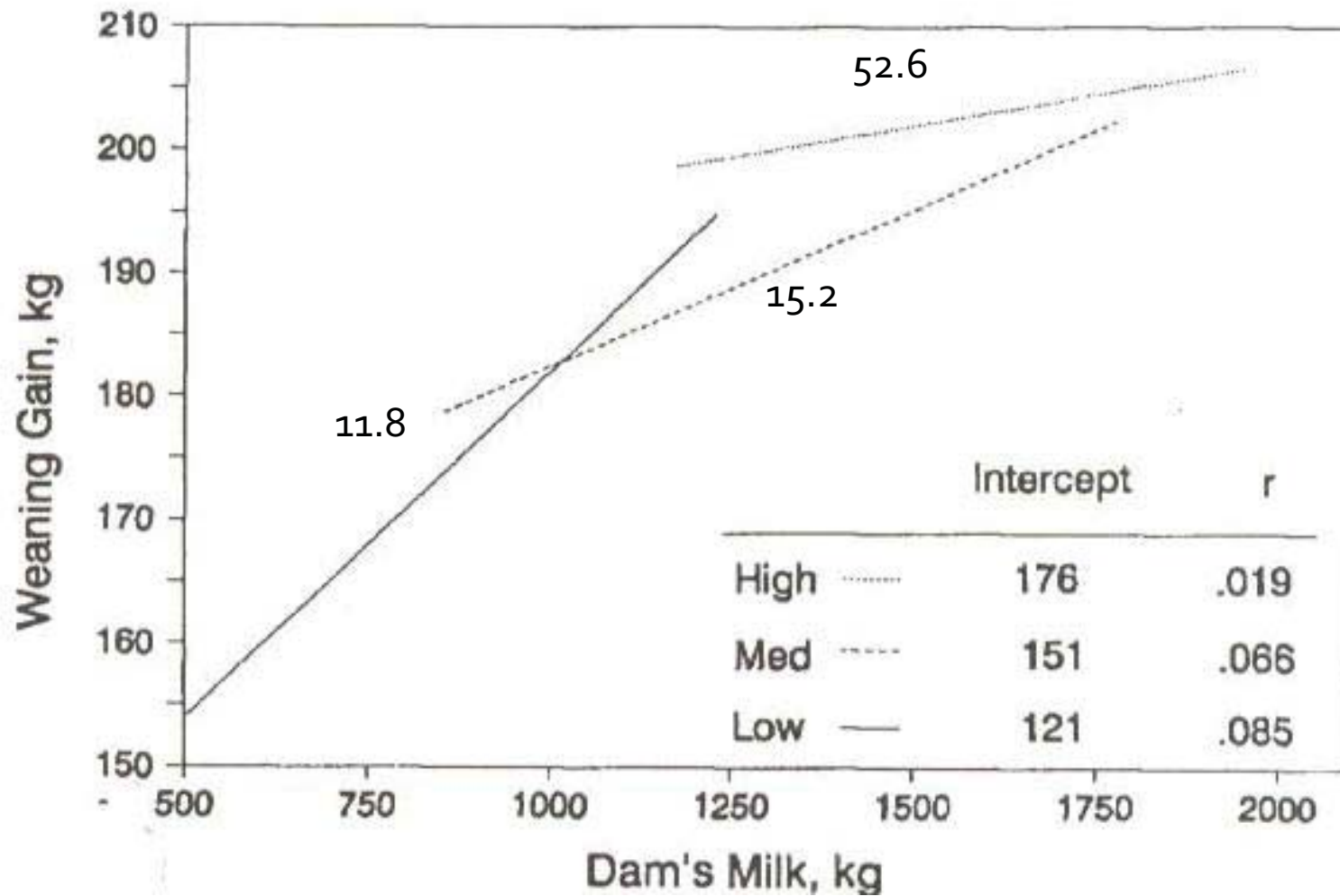
Ferrell and Jenkins, 1988

Maintenance vs Milk



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

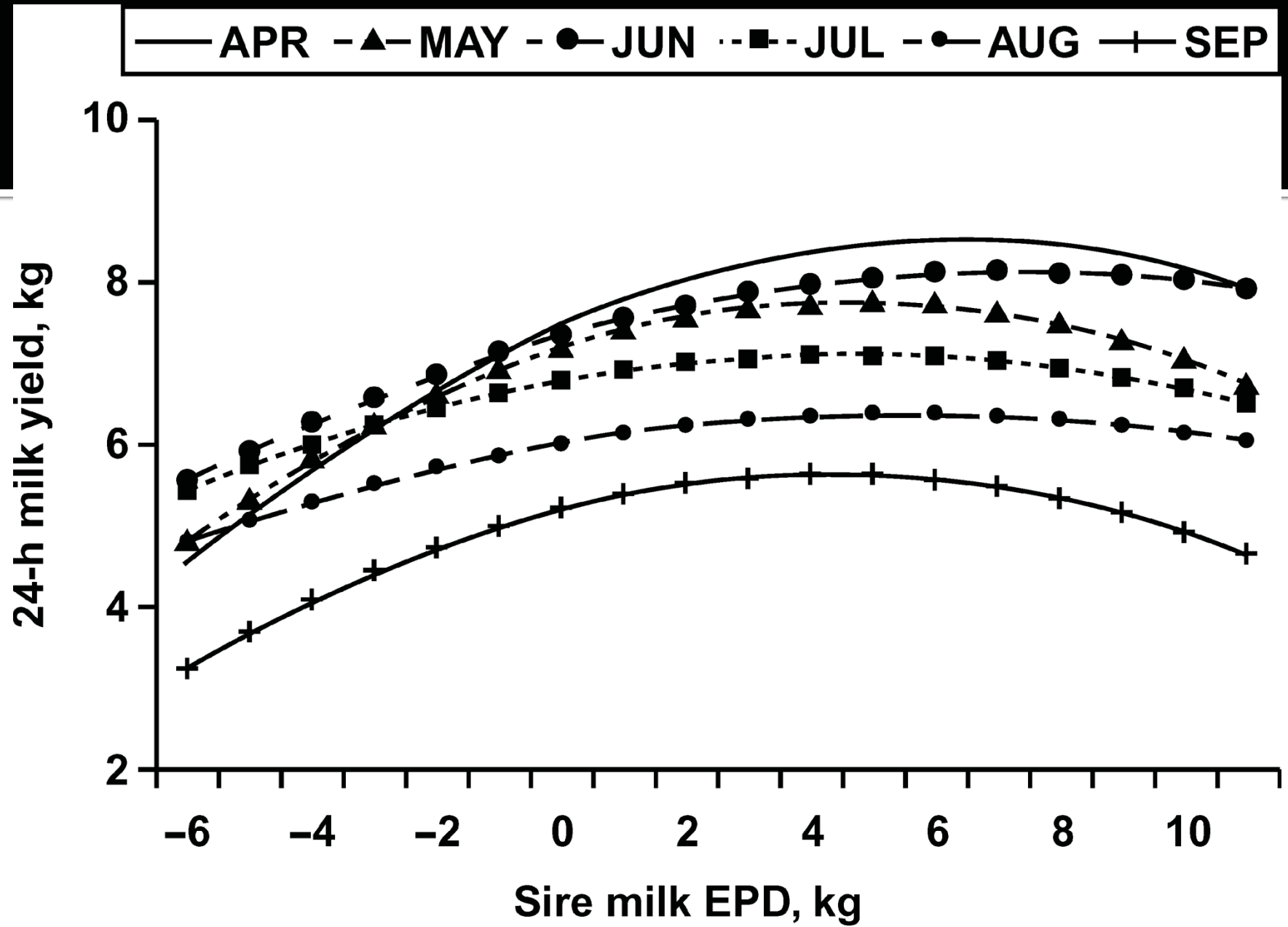
Relationship of milk production to calf WW



Lewis et al. (1990)

Consider:

Is there a limit of milk production
that YOUR forage can support?



Brown et al., 2005

Increasing Frequency of

- a) forage resources limit milk production
- b) maintenance energy requirements are **HIGHER THAN NECESSARY**
- c) production costs have increased because the “environment” has been artificially modified to fit the cows

2017flyerbeefconference x ISDA Meat Grading Reports | x Optimal Milk Module x 2017 BIF Conference x

Secure | https://www.angus.org/Performance/OptimalMilk/OptimalMilkModule.aspx

American Angus Association® Angus Foundation Angus Genetics Inc. Angus Media Certified Angus Beef NJAA Auxiliary

ANGUS

Management Marketing Sales News Events

Optimal Milk Module

Results

Current Assumptions for Your Herd


Average Cow Weight:	1250 lbs	Milking Ability:	Medium	Pasture & Feed Cost:	\$400	Feed Variability:	Extremely variable
---------------------	----------	------------------	--------	----------------------	-------	-------------------	--------------------

Estimated Cost of Feed Energy for Your Farm or Ranch **\$0.101** per Mcal.

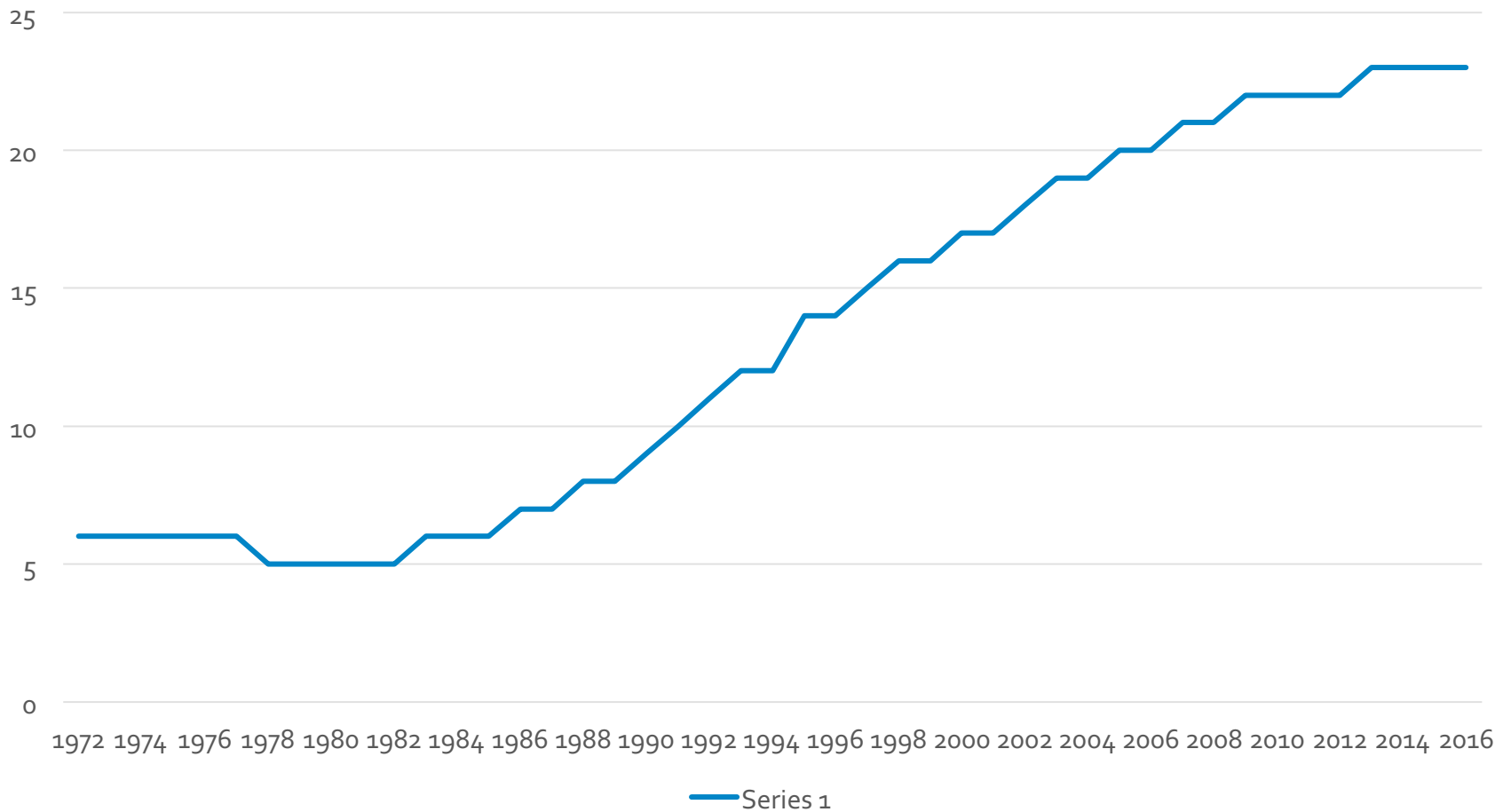
The Angus Optimal Milk EPD range for your operation is **15 to 19** lbs

[Help Using Your Results](#)
Your feed costs are average.
Your pasture and feed supplies tend to be highly variable from year to year.
[View the Economics of Milk EPDs for your operation](#)

<< Prev Page Start Over

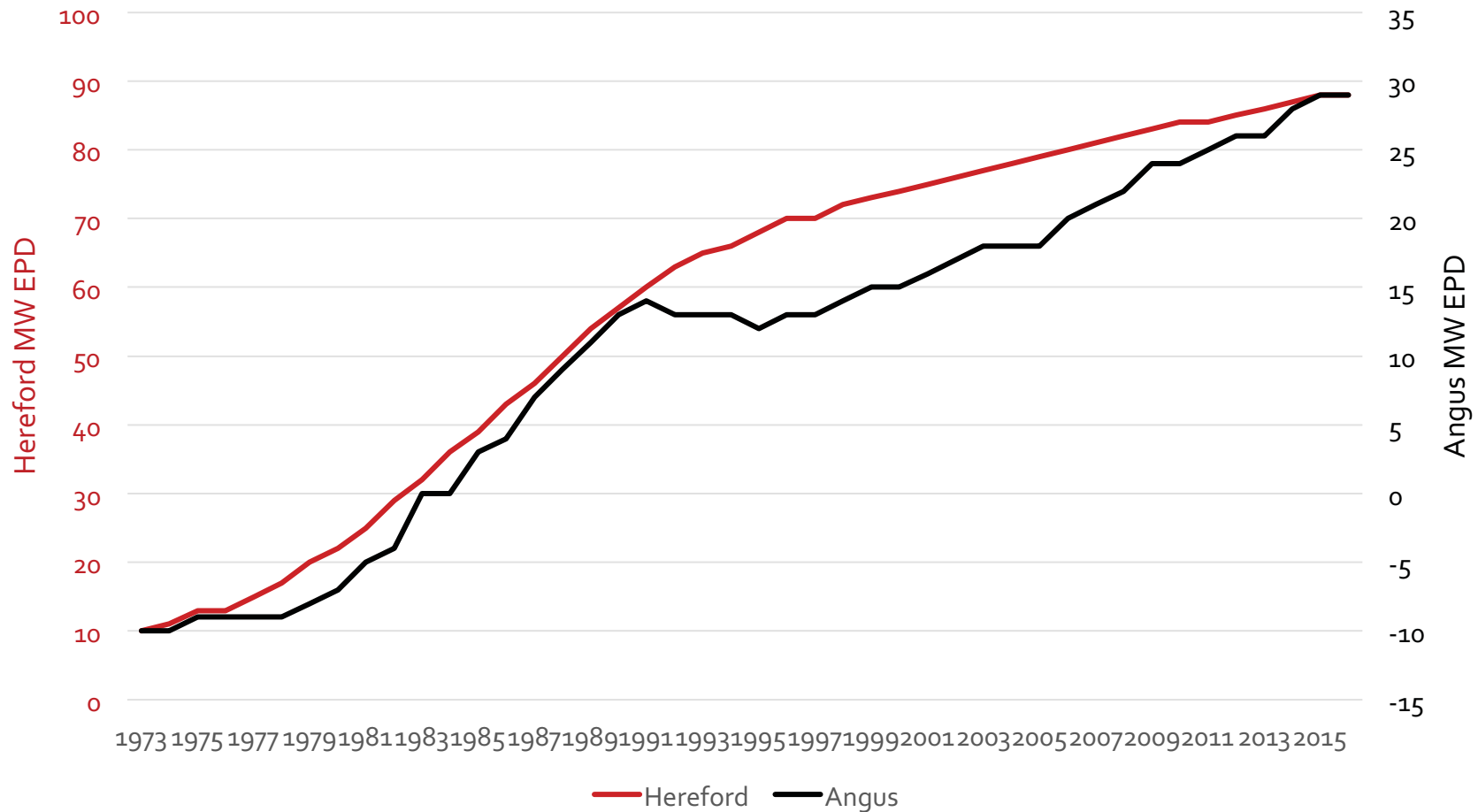


Genetic Trend For Milk Angus

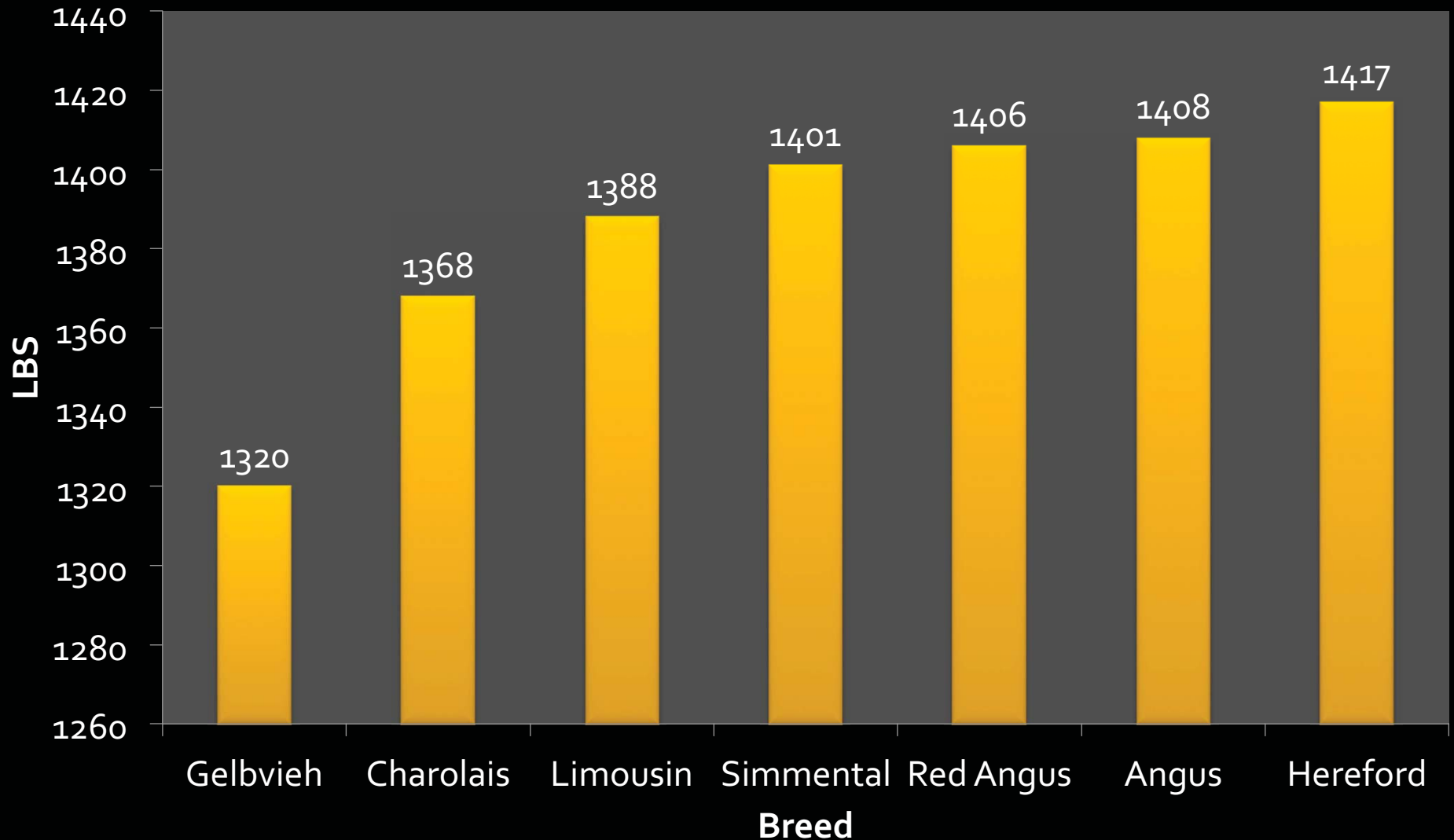


Mature Size, Maintenance and Growth

Genetic Trend For Cow Weight Angus and Hereford



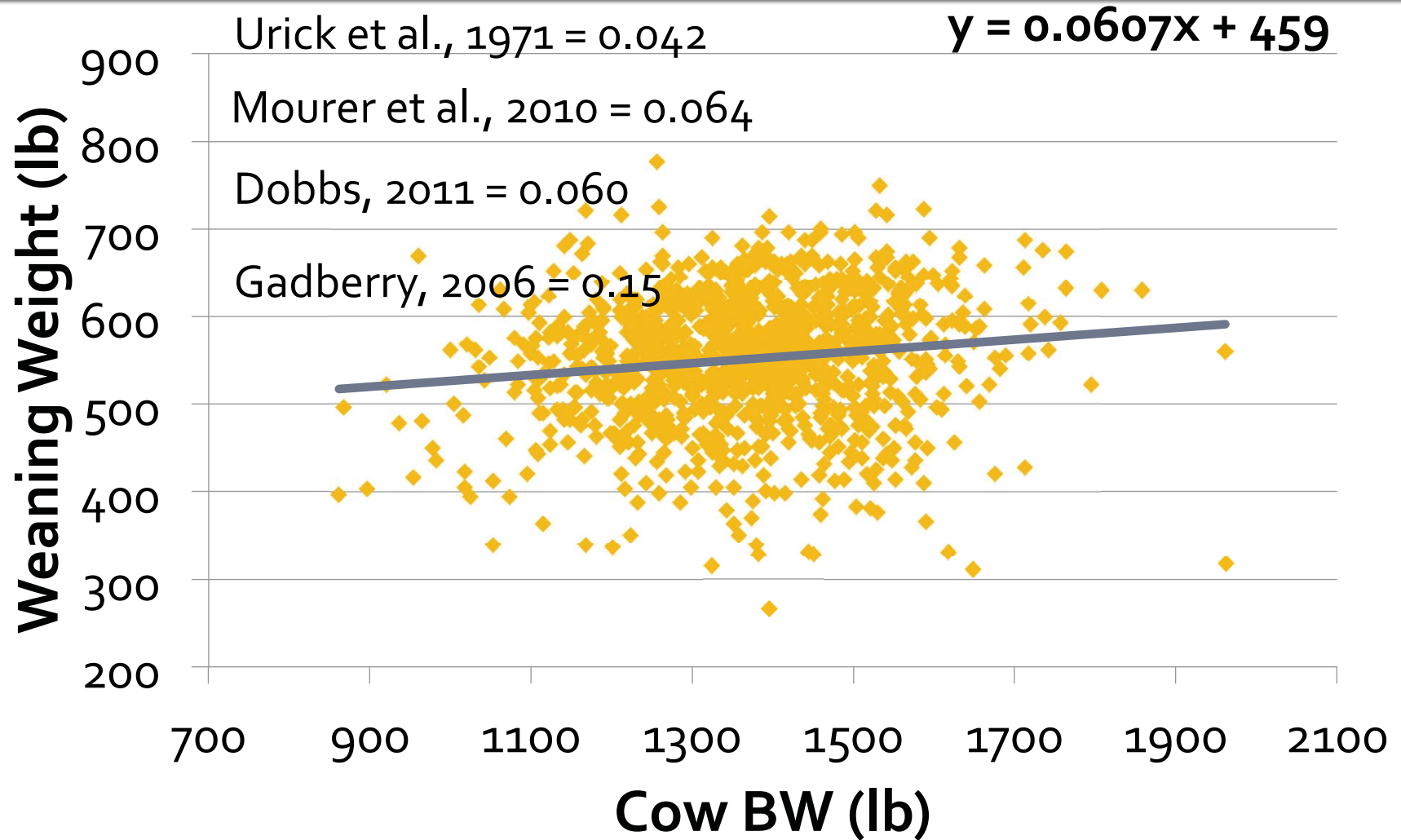
How big are they now?





**Do bigger cows
wean bigger calves
in a restricted environment
(commercial herds)?**

Calf WW vs Cow BW



Cost of Added Cow Weight

Annual cost / 100 lb of additional cow BW = \$42

(Doye and Lalman, 2011)

Growth and Feed Intake

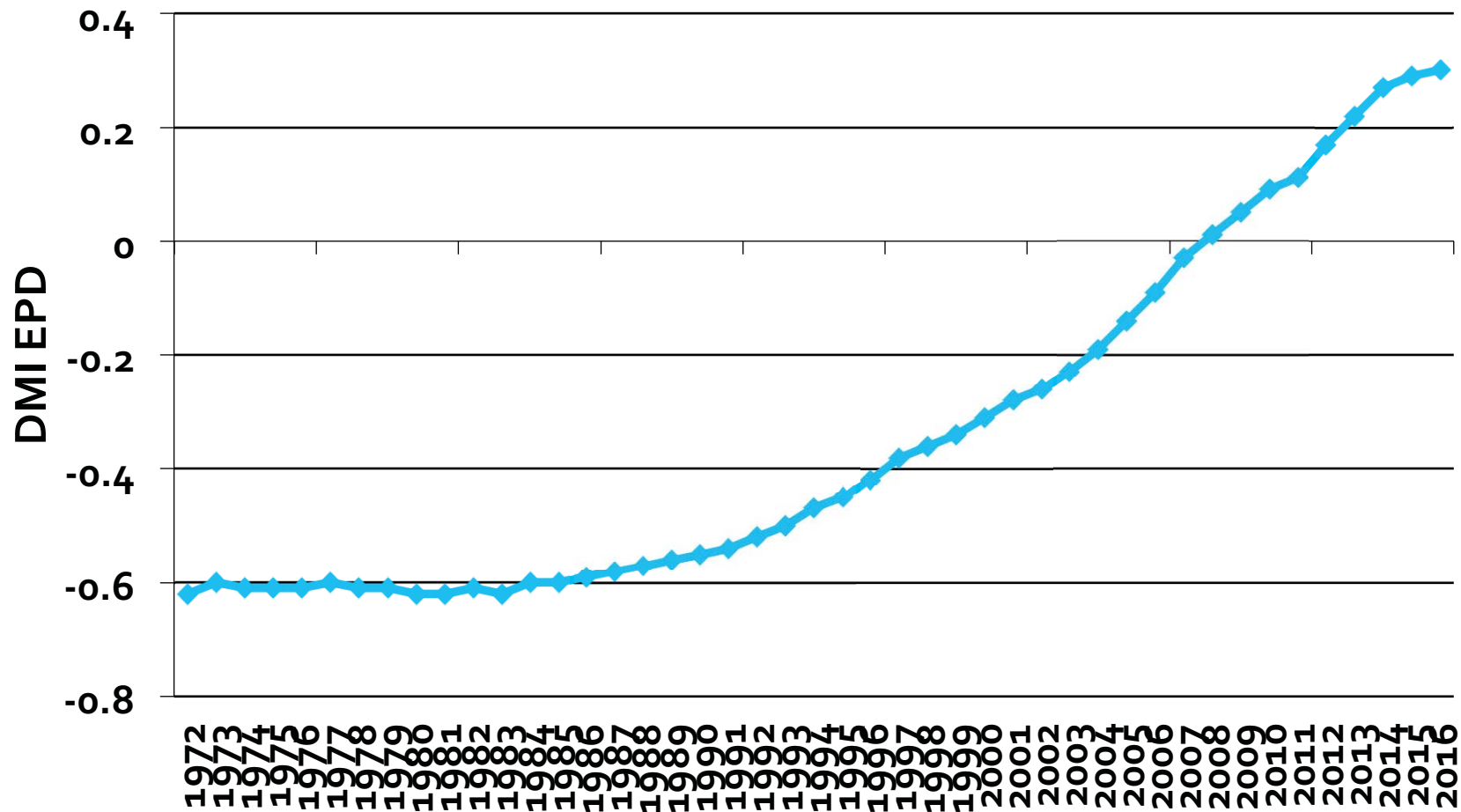
- Increased feed intake and gut capacity results in increased visceral organ mass relative to live body weight (yes, just like milk)
- The GI and liver make up less than 10% of the cow's body mass
- The GI and liver combine to use 40 to 50% of total energy expenditure in a beef cow

Ferrell, 1988

Continued aggressive selection for growth results in cattle with greater appetite

Recent development of feed intake and efficiency EPD's will result in reversal of this trend and deceleration of selection for growth

Genetic Trend For Dry Matter Intake Angus



**If you are in the cow business, fertility reigns supreme.
Always has, always will...**



Sharing the Focus

- Requires long term commitment
 - **Moderate** size, growth and milk
 - Cull open cows
 - Be willing to challenge them
 - Resist the temptation to gradually modify the environment
 - Keep only early-born heifers
 - Keep only early-bred heifers
 - Buy (or keep) bulls out of cows that always calve early
- Tools available
 - RADG, RFI, Feed Intake, HP, ME, Longevity, Stayability
 - Selection indexes for maintenance and profit
 - Optimal Milk Module

Sharing the Focus

- Find source of seedstock that:
 - Puts **PRIORITY** on ERT's related to fertility and forage use efficiency
 - Culls open cows
 - Keeps only early-born heifers
 - Keeps only early-bred heifers
 - Puts environmental pressure on their cattle – weed out those that do not “match”
- Purchase bulls out of cows that are **challenged in an environment similar to yours**, have never missed a calf, and calve early

The Focus Will Once Again Shift: With Change Comes Opportunity

- Genetics tools will finally be available to make meaningful improvement in fertility
 - Stayability and Longevity EPD's have contributed
 - Genomic discoveries developing now
 - Hereford, Red Angus, Angus working hard to roll out new fertility EPD's this fall



Photo Courtesy of Oklahoma State University