

Matching Production Levels to Environmental Conditions

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40's and 50's
“Era of Insanity”

1953

**CHAMPION ANGUS
FEMALE
CHICAGO
INTERNATIONAL
EXPOSITION**



1969

**GRAND CHAMPION
STEER
CHICAGO
INTERNATIONAL
EXPOSITION**



70's and 80's

“Return to Insanity”



**90's and 2000's
"Back Again"**

World **HEREFORD** Conference



World
HEREFORD
Conference 2012

NATIONAL
POLLED HEREFORD
CHAMPION
TWO YEAR OLD BULL

Sponsored By



GRP

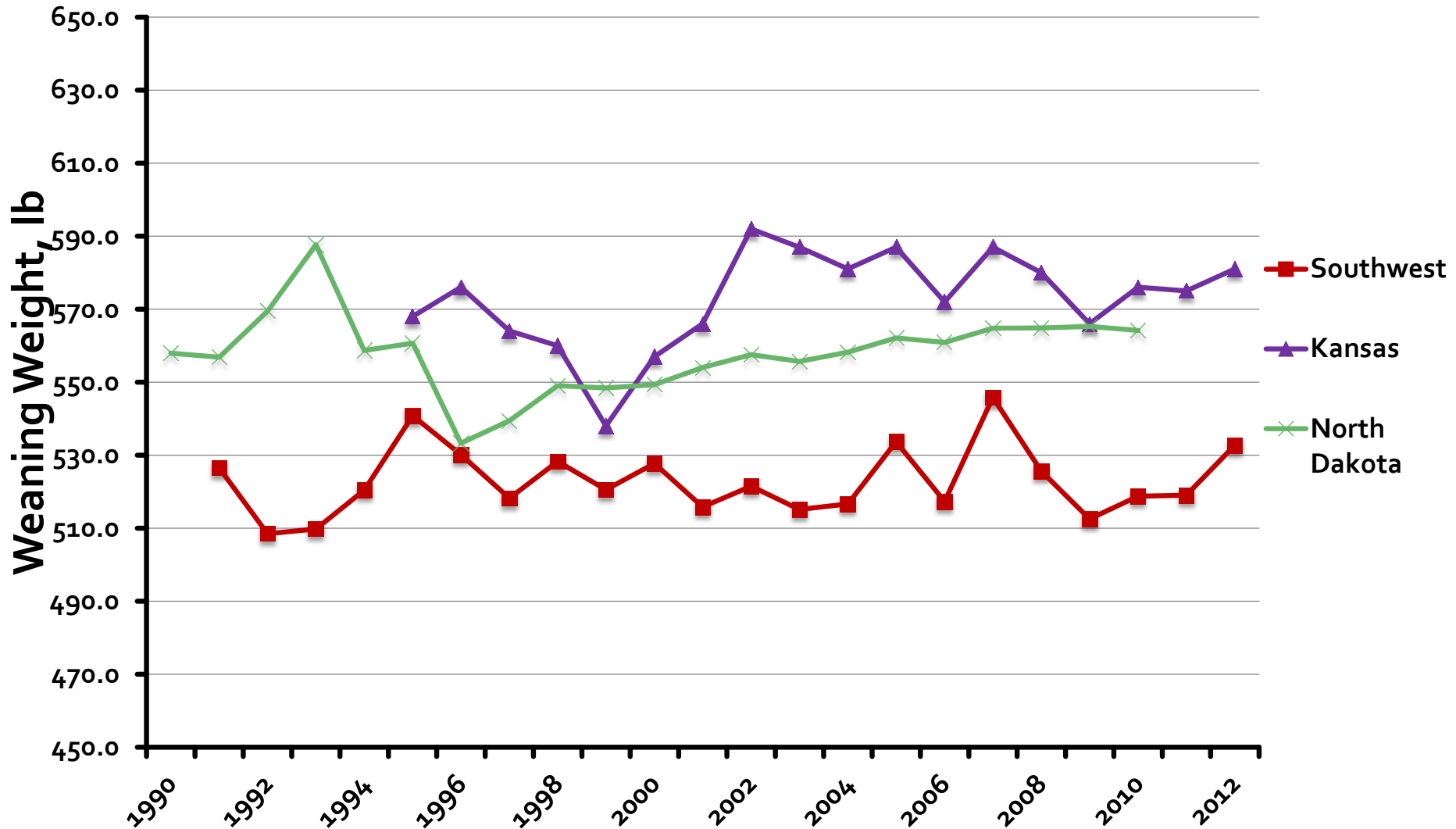
Matching Forage Resources: Are we getting closer?



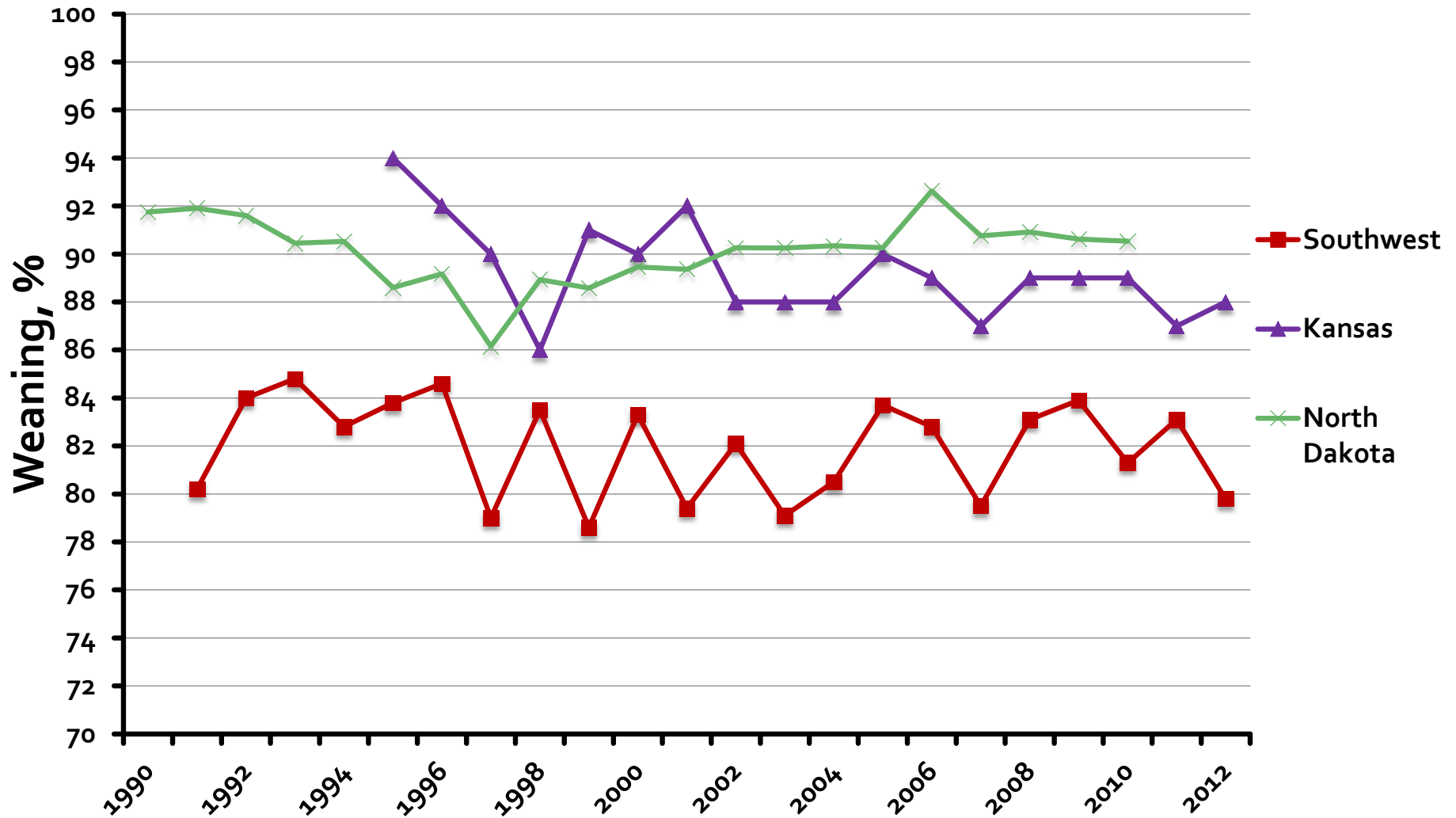
How are we doing?

- Kansas: Kansas Farm Management Association
 - Kevin Herbel
- North Dakota: Cow Herd Appraisal Performance Software (CHAPS) Summary
 - Dr. Kris Ringwall
- New Mexico, Oklahoma, Texas: Standardized Performance Analysis (SPA) Summary
 - Dr. Stan Bevers

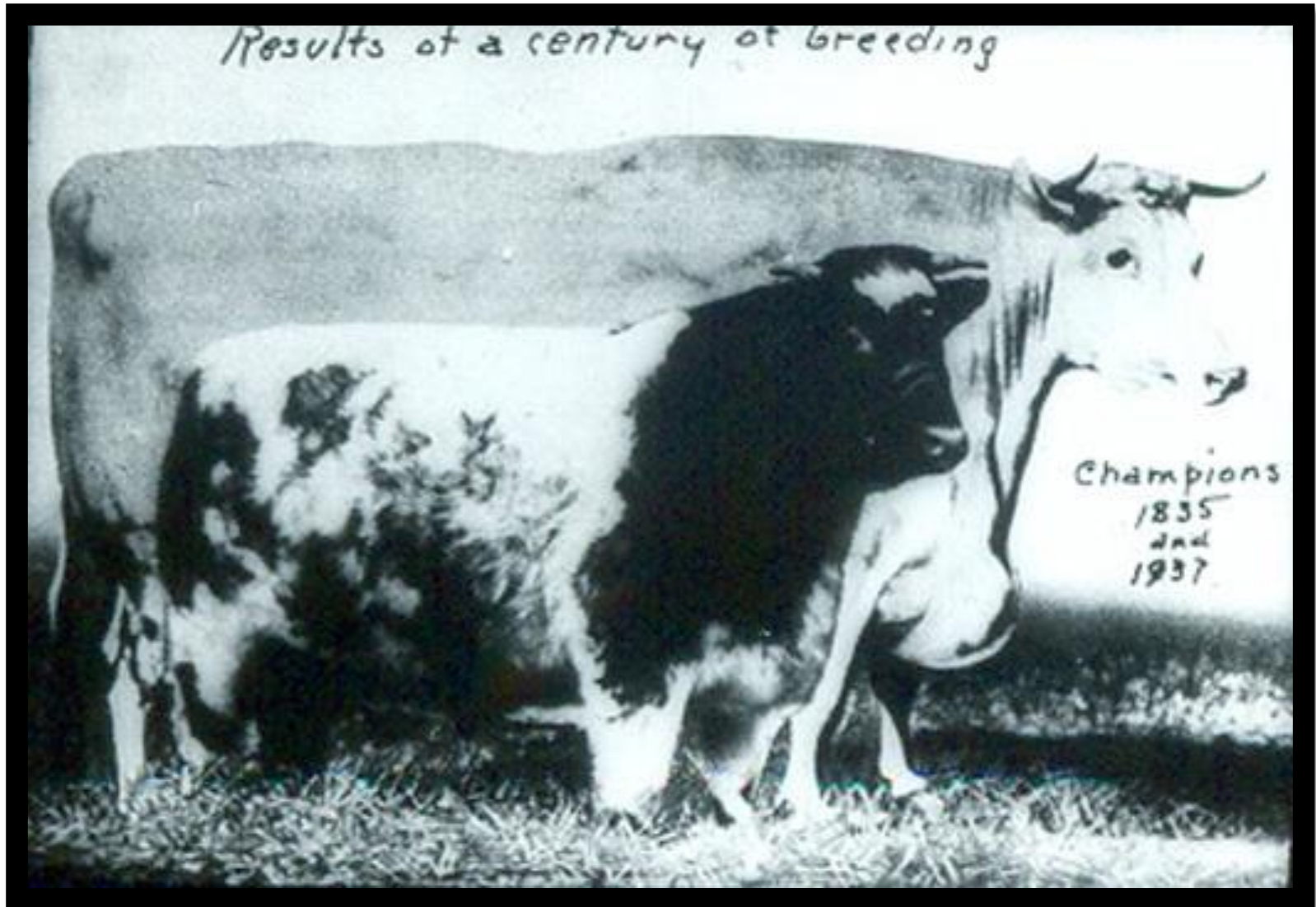
Weaning Weight in Commercial Cow/Calf Operations



Weaning Rate in Commercial Cow/Calf Operations



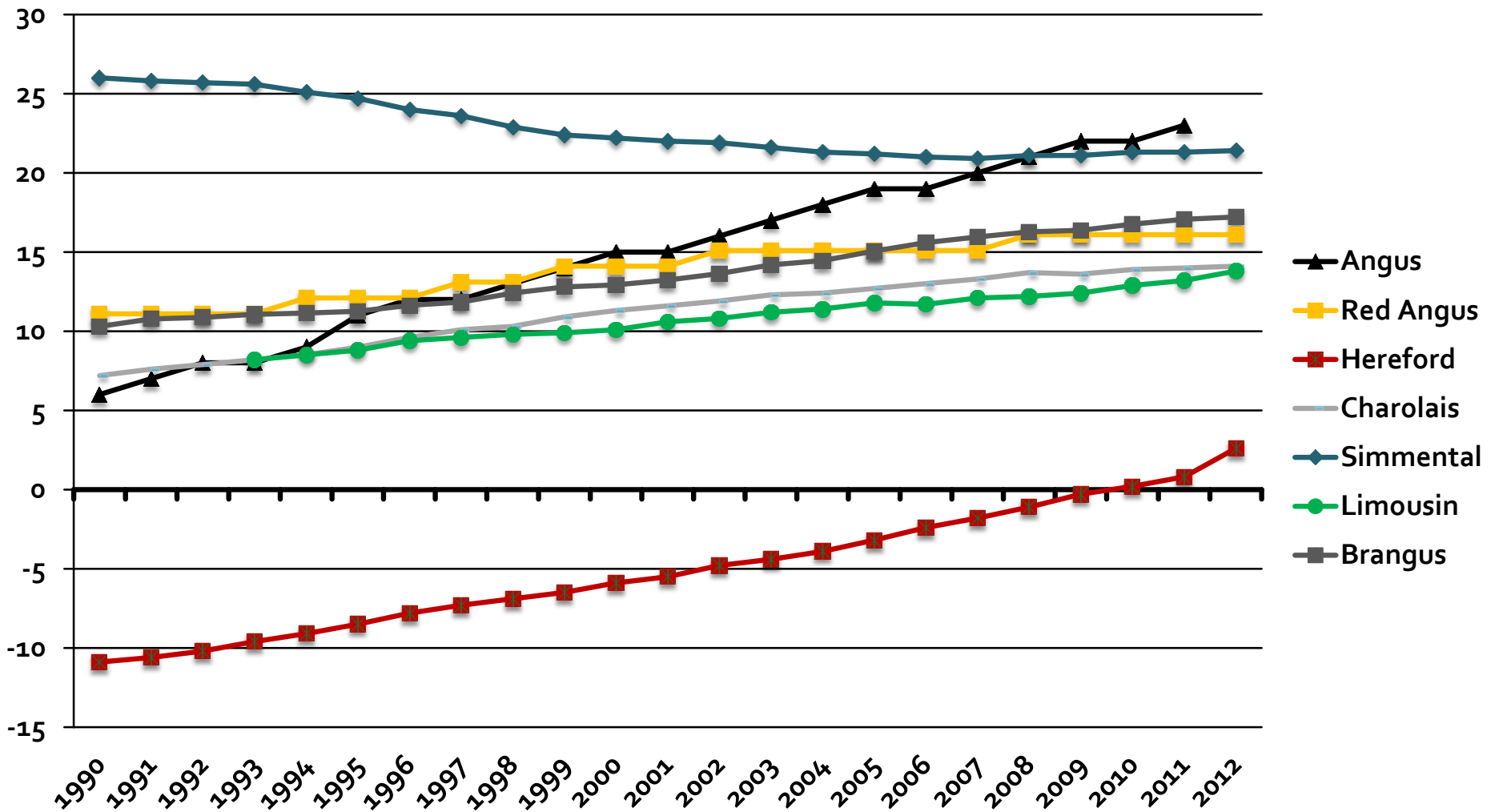
Caution: Cattle are Changing!



Milk



Genetic Trend for Milk



Milk vs Maintenance

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

Ferrell and Jenkins, 1984

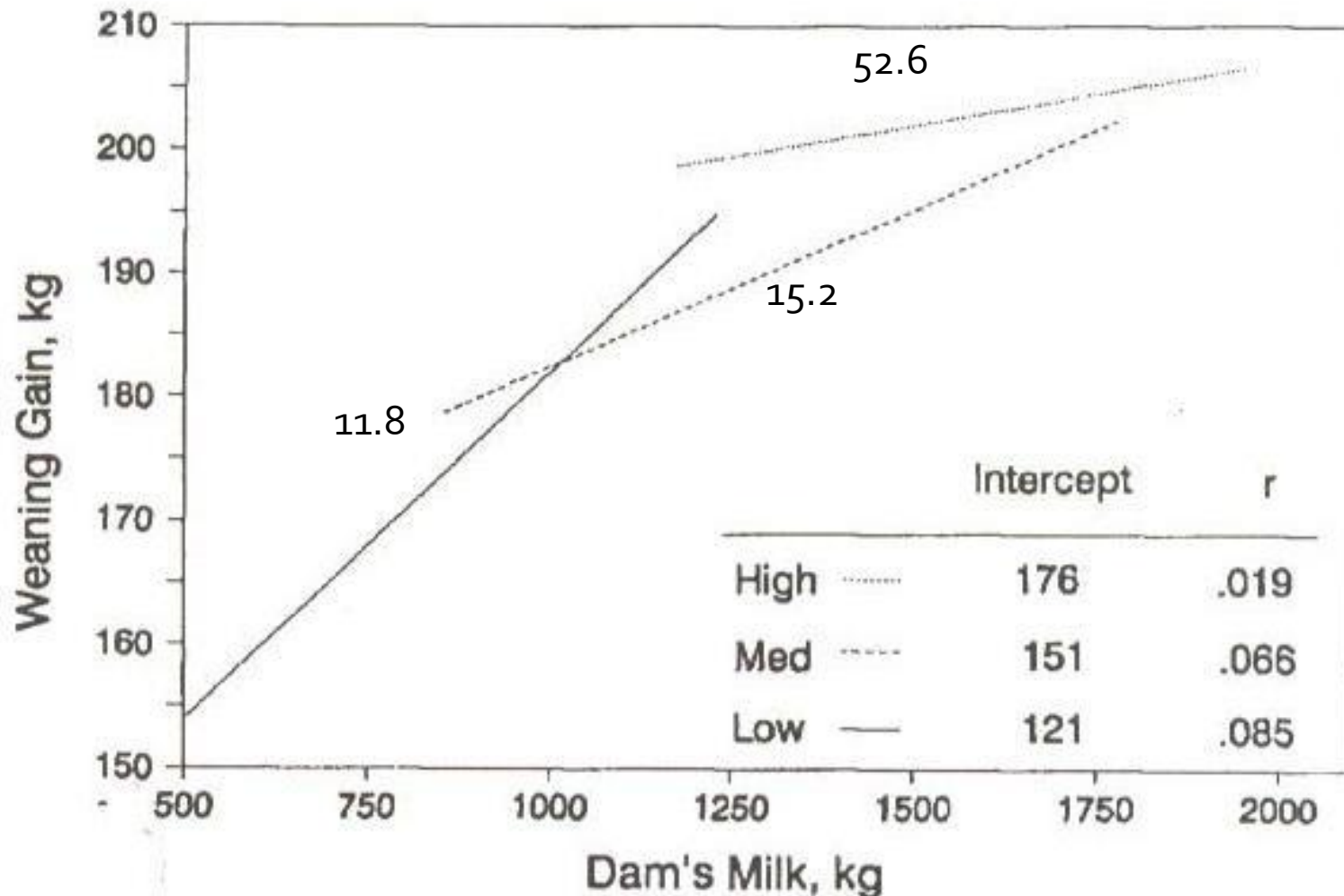
Montano-Bermudez et al., 1990

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

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

Ferrell and Jenkins, 1988

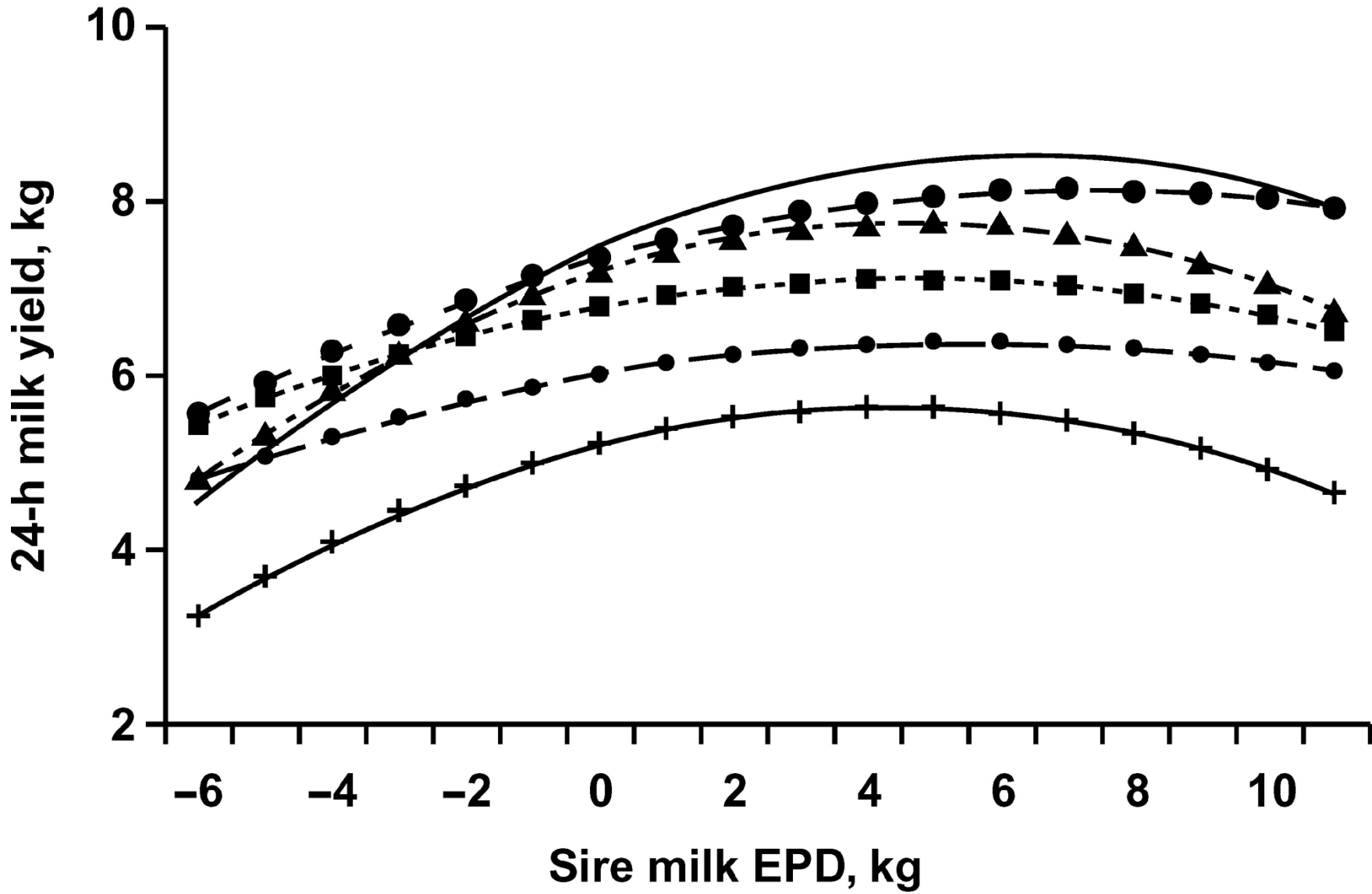
Relationship of milk production to calf WW



Consider:

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

— APR -▲- MAY -●- JUN -■- JUL -○- AUG -+ - SEP



Brown et al., 2005

**Increasing risk/frequency
of cases where:**

- a) forage resources limit the
expression of genetic potential
for milk**

- b) production costs have increased
because the “environment” has
been artificially modified to fit
the cows**

Cow Size



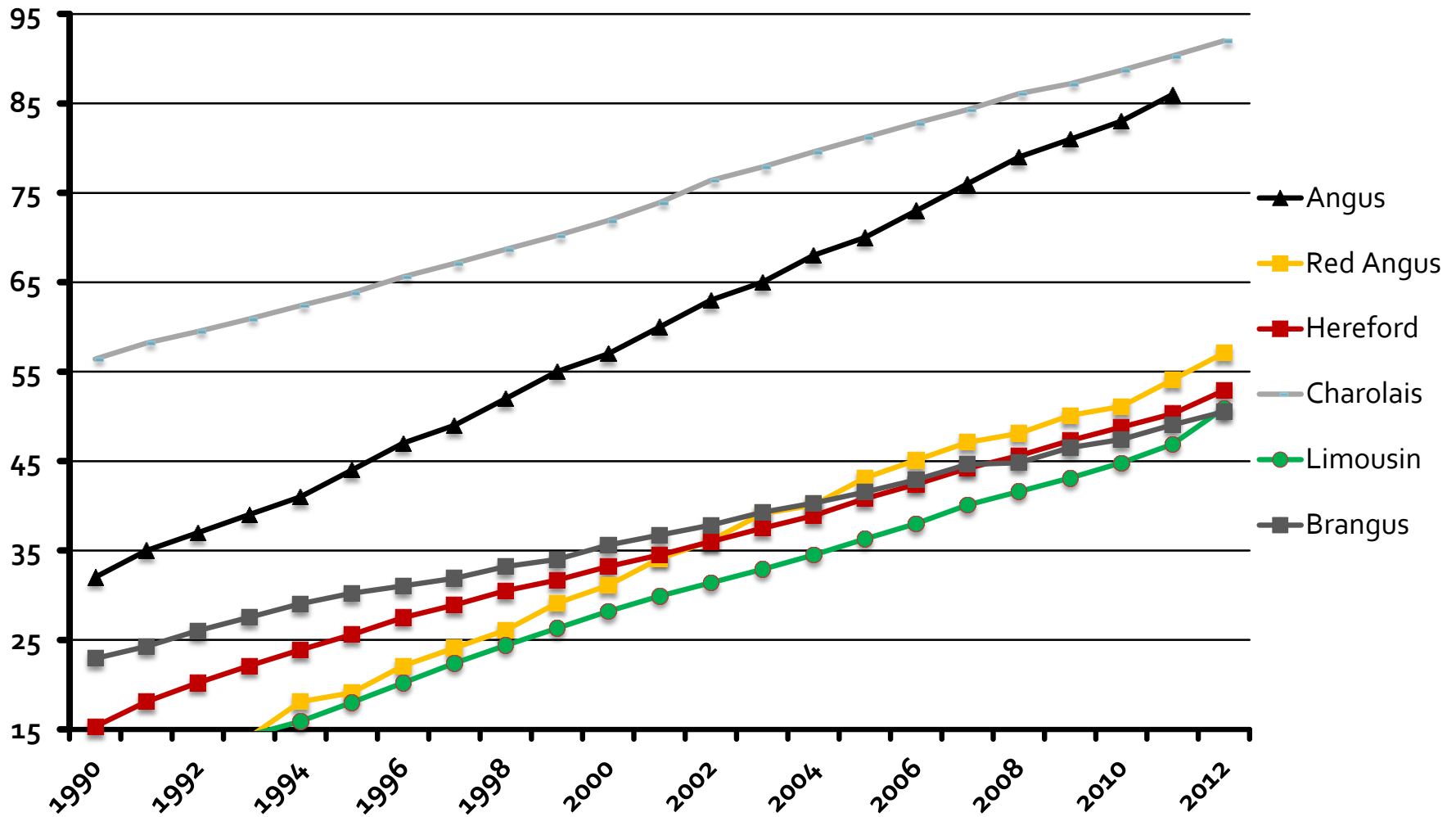
Muscle



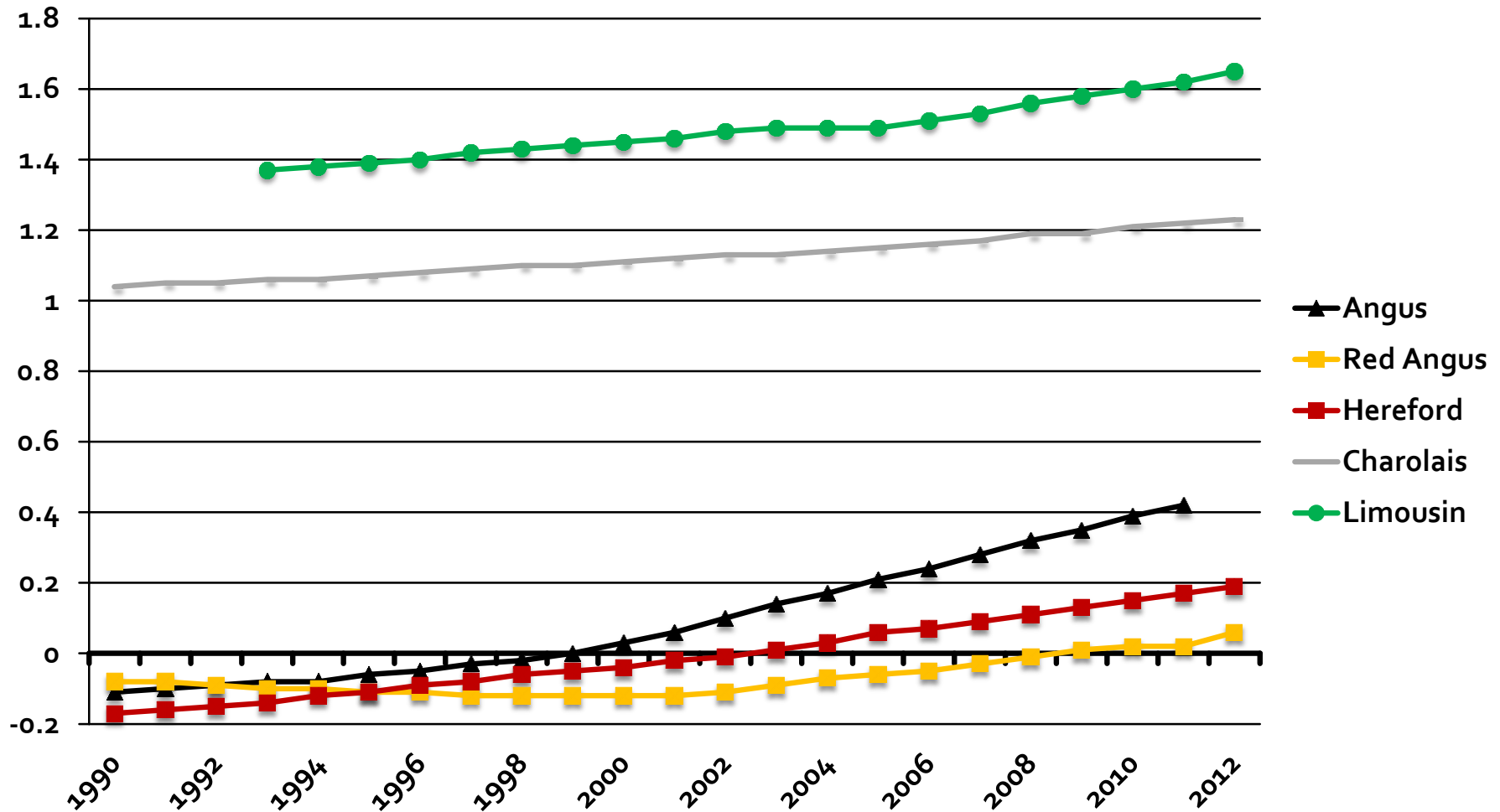
Growth



Genetic Trend for Yearling Weight



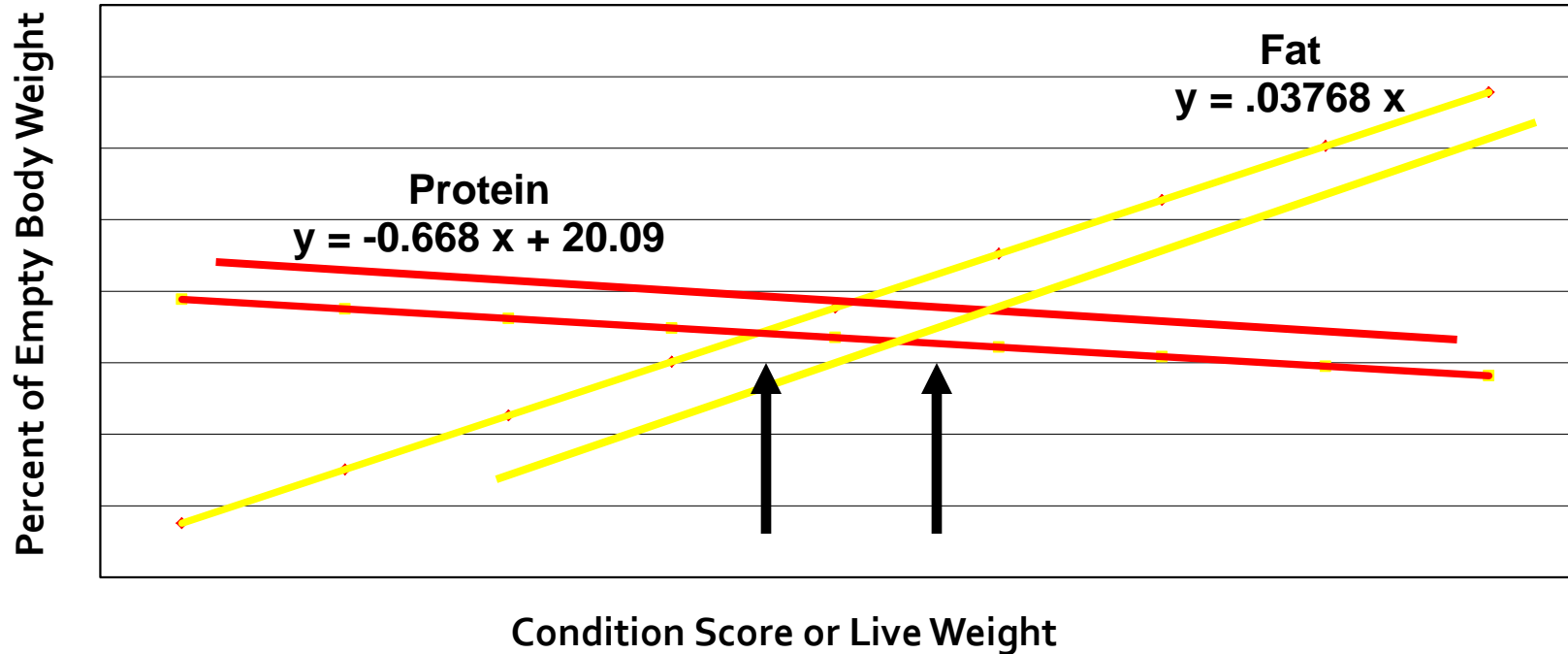
Genetic Trend for Ribeye Area



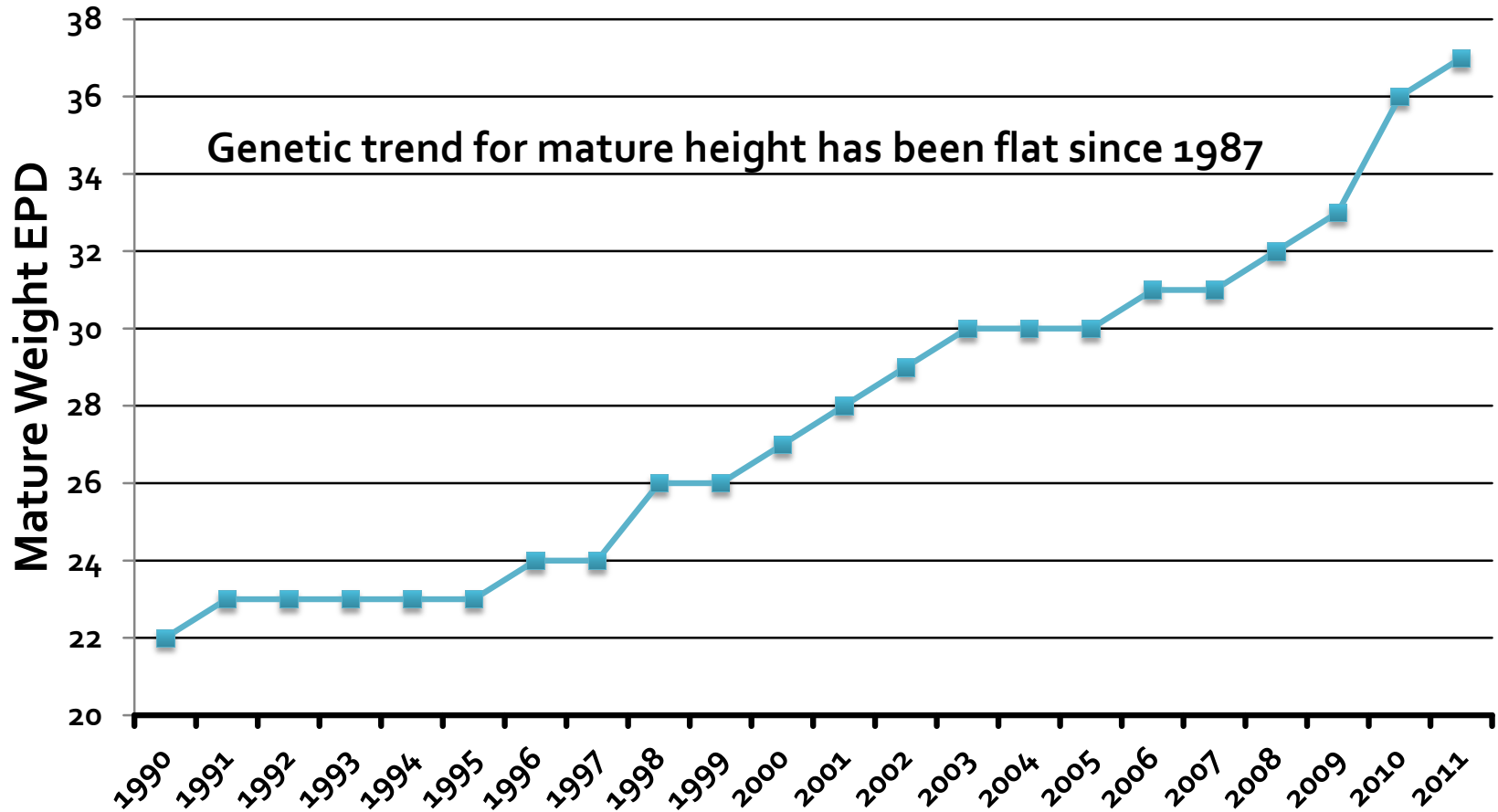
How will continued aggressive selection for muscle impact commercial cows' "matching" ability?

- The answer is not clear
- Minor increase in NEM
Ferrell, 1988
- Increased mature weight
MacNeil, 1984
- More muscle = less fat at same live weight
- "Undesirable associations between maternal traits and retail product appear to be mediated through fat thickness"
Tess, 2002
- Lower adipose composition is associated with:
 - Older age at puberty
 - Lower conception rate
 - Lower calving rateSplan et al., 1998

Body Composition by BCS and Live Weight

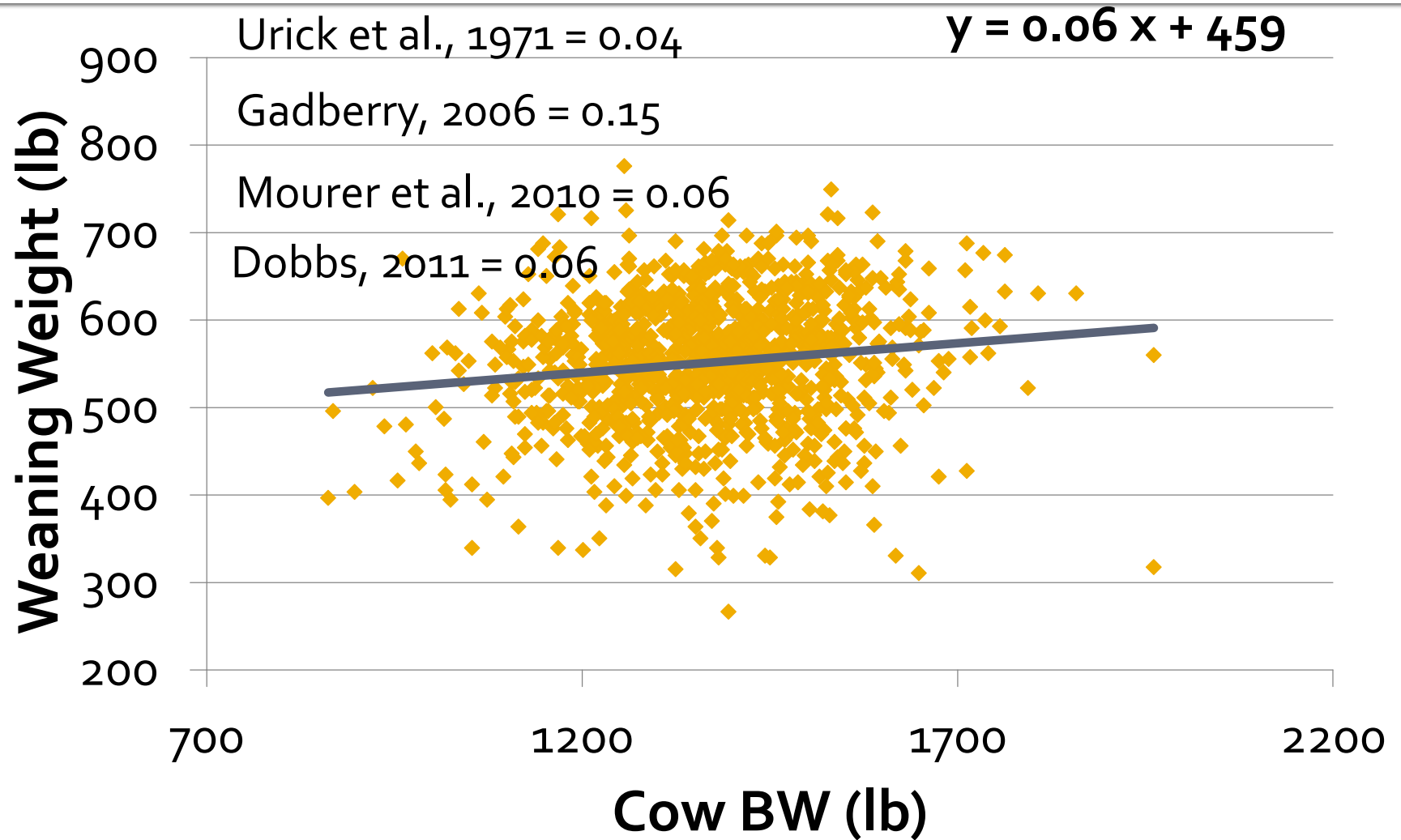


Genetic Trend For Mature Weight Angus



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

Calf WW vs Cow BW



Sensitivity Analysis

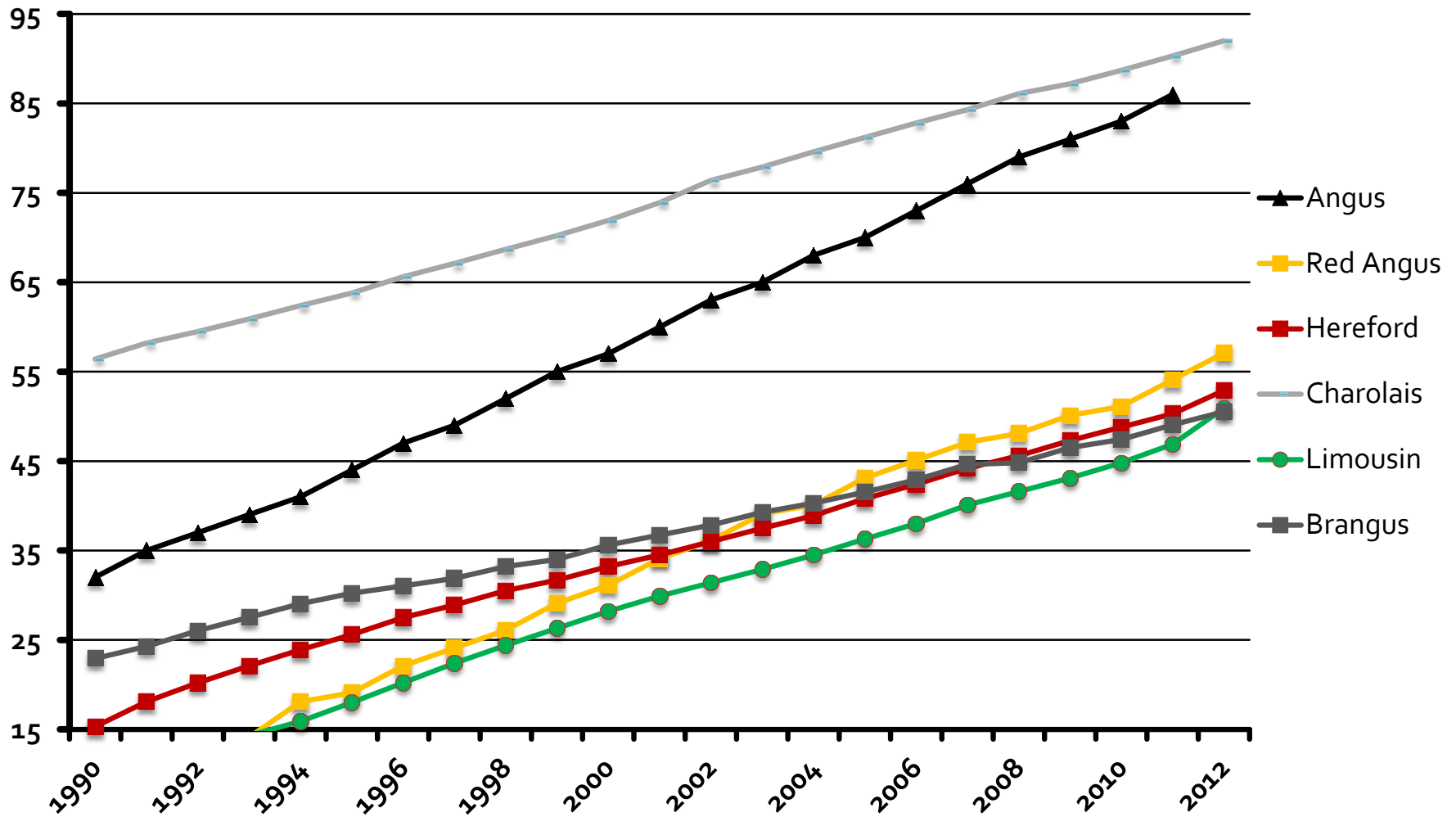
- Recent value of added gain ranges from about \$.80 to \$1.30
- Apparent maximum value = $\$1.30 \times 15 = \19.50
- Apparent minimum value = $\$.80 \times 6 = \4.80

Annual cost / 100 lb of additional cow BW = \$42
(Doye and Lalman, 2011)

Growth and Feed Intake



Genetic Trend for Yearling Weight



Beyond cow size, how does continued aggressive selection for growth impact commercial cows' "matching" ability?

A nutritionist's view of selection for growth and associated feed efficiency

- High growth cattle
 - Eat more feed: more calories left over for growth (NEg) after NEm has been met
 - NEm is lower
 - Efficiency of feed used for growth (NEg) is "better"
- There is a positive genetic correlation between growth and feed intake

Arthur et al., 2001

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

- **Could continued selection for growth and “capacity” be a contributing factor to the high cost of maintaining beef cows?**



What we have been doing:

- Teaching guidelines based on conditions that reflect a nutrient status that maximizes reproductive performance
- A major limitation is focus on short term effects with little consideration of long term implications

“Feeding to maximize reproductive rate does not result in differential retention between females with high and low feed requirements. In contrast, managing cows under reduced feed inputs would more likely result in culling of cows with high feed requirement due to reproductive failure.

Furthermore, increasing the proportion of cows with reduced feed requirements may provide producers a margin of safety at times when feed resources are scarce or costly.”

Improving “Match” (without increasing inputs)

- Requires long term commitment
 - Moderate size, milk and muscle
 - 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, ME, Longevity, Stayability
 - Selection indexes for maintenance and profit
 - Optimal Milk Module

Improving Reproductive Efficiency

- 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 **managed like yours are or worse**, have never missed a calf, and calve early

“To breed for optimum means to have a target in sight beyond which you don’t want to go. If your goal is to maintain an optimum level for any trait, the evidence of your accomplishment is not visible change, but lack of it.”

Dr. Rick Bourdon

Summary

- No strong evidence that commercial cow efficiency has improved (“sell at weaning” context)
- From a commercial cow/calf perspective, the industry is on an unsustainable path relative to some traits
- Cows are big, and we can’t get enough milk or muscle
- The result: feed inputs/costs per cow/calf unit are increasing while limited data suggests that production is not
- Relatively new tools are available that will help, however these must become a priority in selection decisions and not considered secondary traits