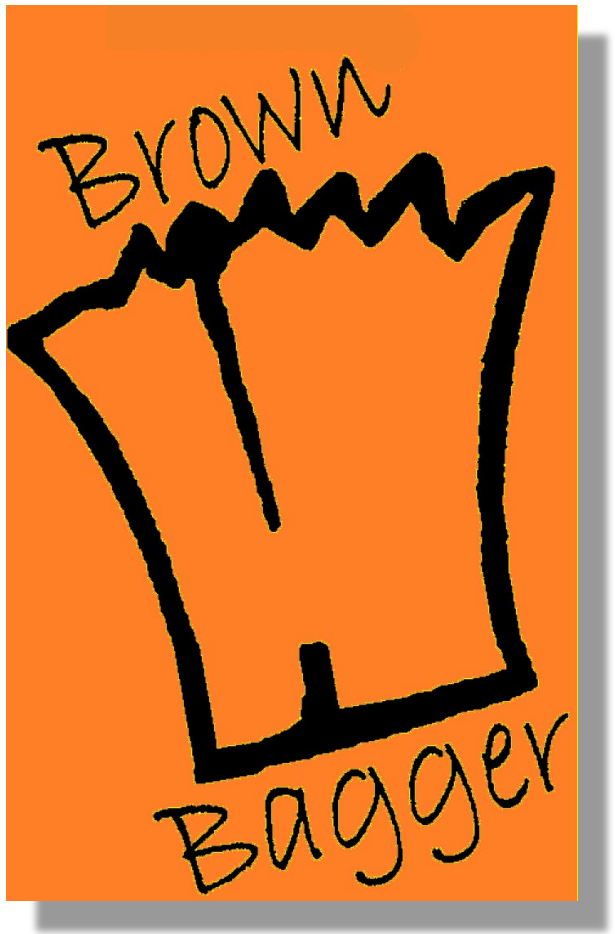
Welcome to Session 1



2024 Future-proofing Beef Selection Decisions

eBEEF.ORG

Session 1-Part 2
Bull Purchase Behaviors and Strategies

Bull buying: an investment in your herd's future

Dr. Bob Weaber,
Kansas State University

Bull buying: an investment in your herd's future

Bob Weaber, Ph.D.

Professor and Head

Eastern Kansas Research and Extension Centers

Kansas State University

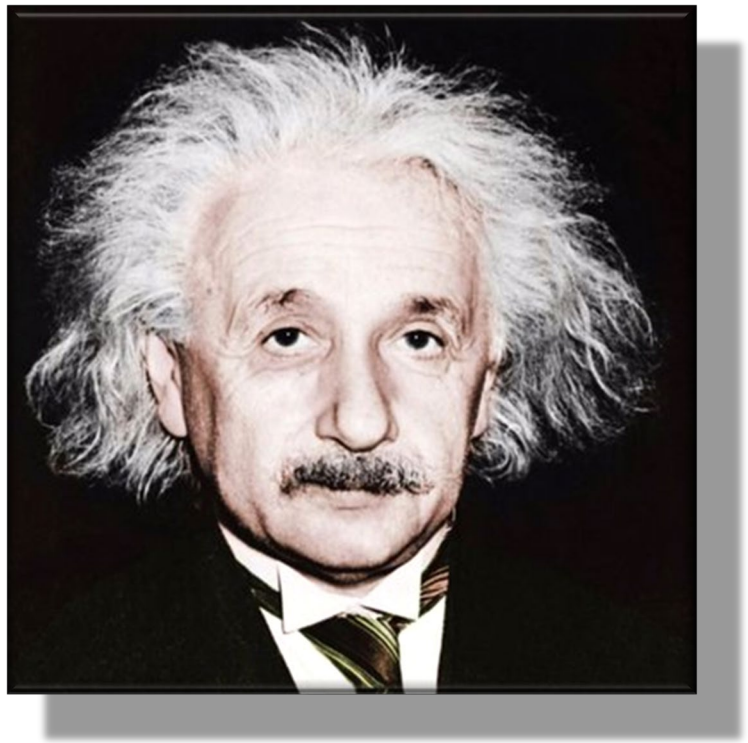
bweaber@k-state.edu; 785-477-1287

K STATE BEEF KSUBeef.org

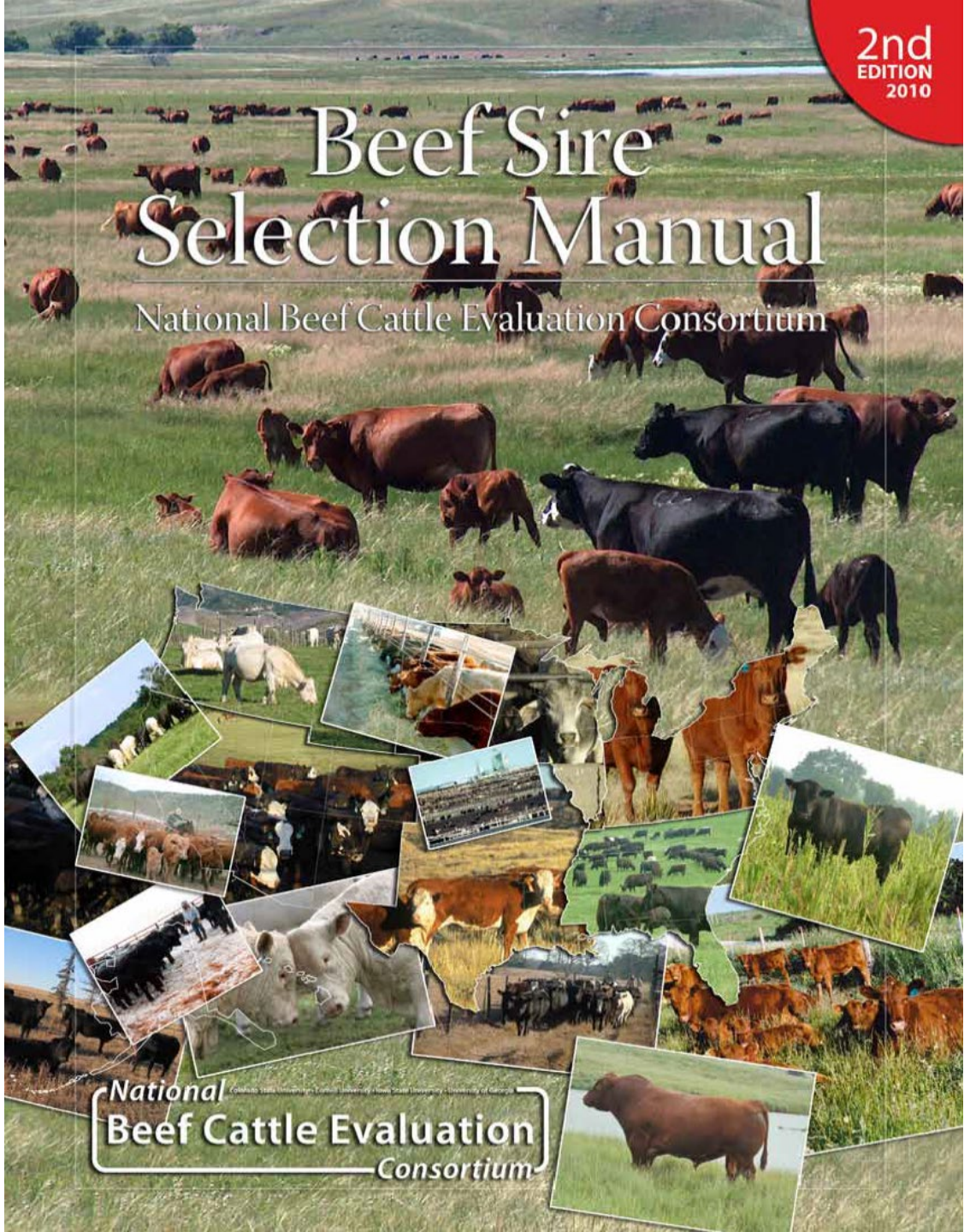
How do we fix problems?

"No problem can be solved from the same consciousness that created it."

-- Albert Einstein, Ph.D.



K STATE BEEF
KSUBeef.org



EBEEF.ORG

K STATE BEEF
KSUBeef.org

Overview

- Systematic selection part of our sustainability strategy
- Clock is ticking…short play, long play
  - Building environmentally adapted cows takes time
  - Make market targeted calves
  - Use the best tools and science available
- Practical selection advice for cattlemen that can impact sustainability and profitability of your ranch card **TODAY**!
- Advice: Don’t make this exercise harder than it needs to be!

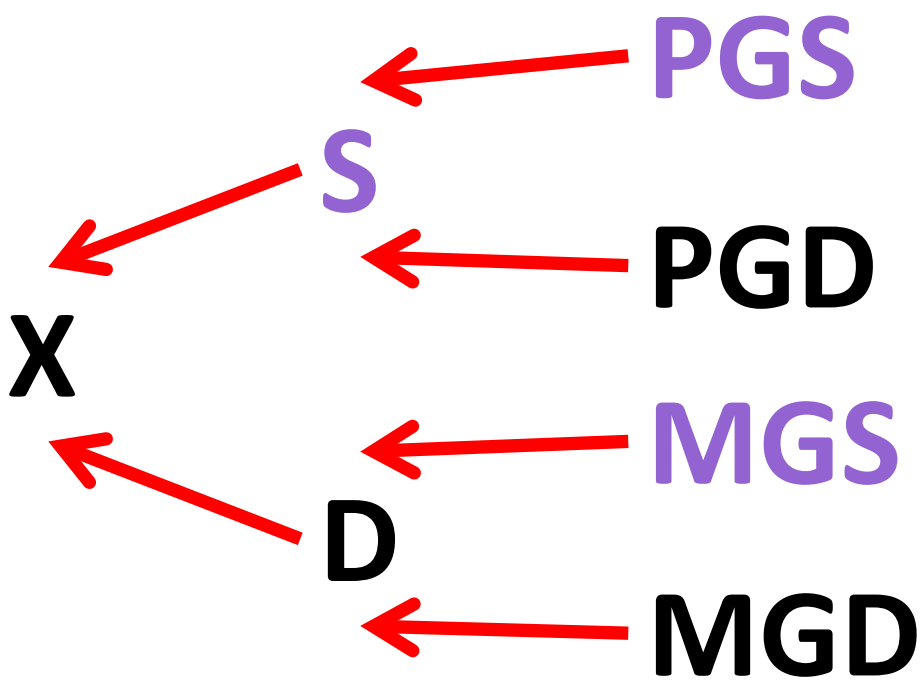
K STATE BEEF
KSUBeef.org

Leverage Points

- Align selection criteria with breeding objective and marketing end-point
  - Spangler talk next week
- Separate maternal and terminal mating decisions if possible
- Select for environmentally adapted cows
  - Lalman talk next week
  - Leverage heterosis – especially maternal heterosis
- Use the best tools- EPDs and Indexes
- Buy the right bulls!!!
  - Sale strategy - get professional help if needed!

K STATE BEEF
KSUBeef.org

3 Bulls = 87.5% of Genes in a Cow! Make Sure They Are Winners!



K STATE BEEF
KSUBeef.org

If you don't know where you're going any road will do!

K STATE BEEF
KSUBeef.org

Sometimes it feels like herding cats!

K STATE BEEF
KSUBeef.org

PICK YOUR PATH CAREFULLY!

K STATE BEEF
KSUBeef.org

Basic Model

$$P = G + E$$

$$G = A + D + I$$

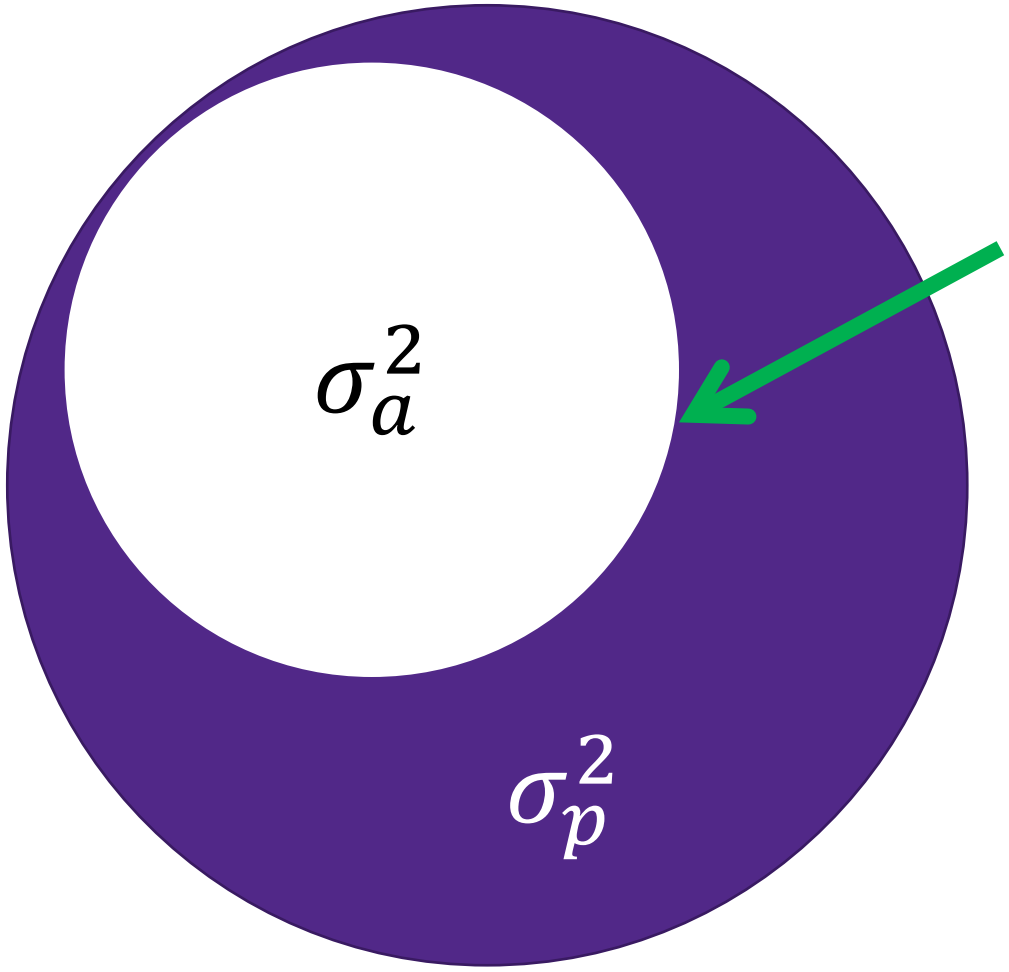
A = Breeding value (Additive gene effects)

D = Dominance effects (pairing of genes effects)

I = Epistatic (interactions among genes)

K STATE BEEF
KSUBeef.org

HERITABILITY



$$h^2 = \frac{\sigma_a^2}{\sigma_p^2} = 40\%$$

h^2 is the proportion of variation between individuals that is under genetic control.

K STATE BEEF KSUBeef.org

You get what you sow…

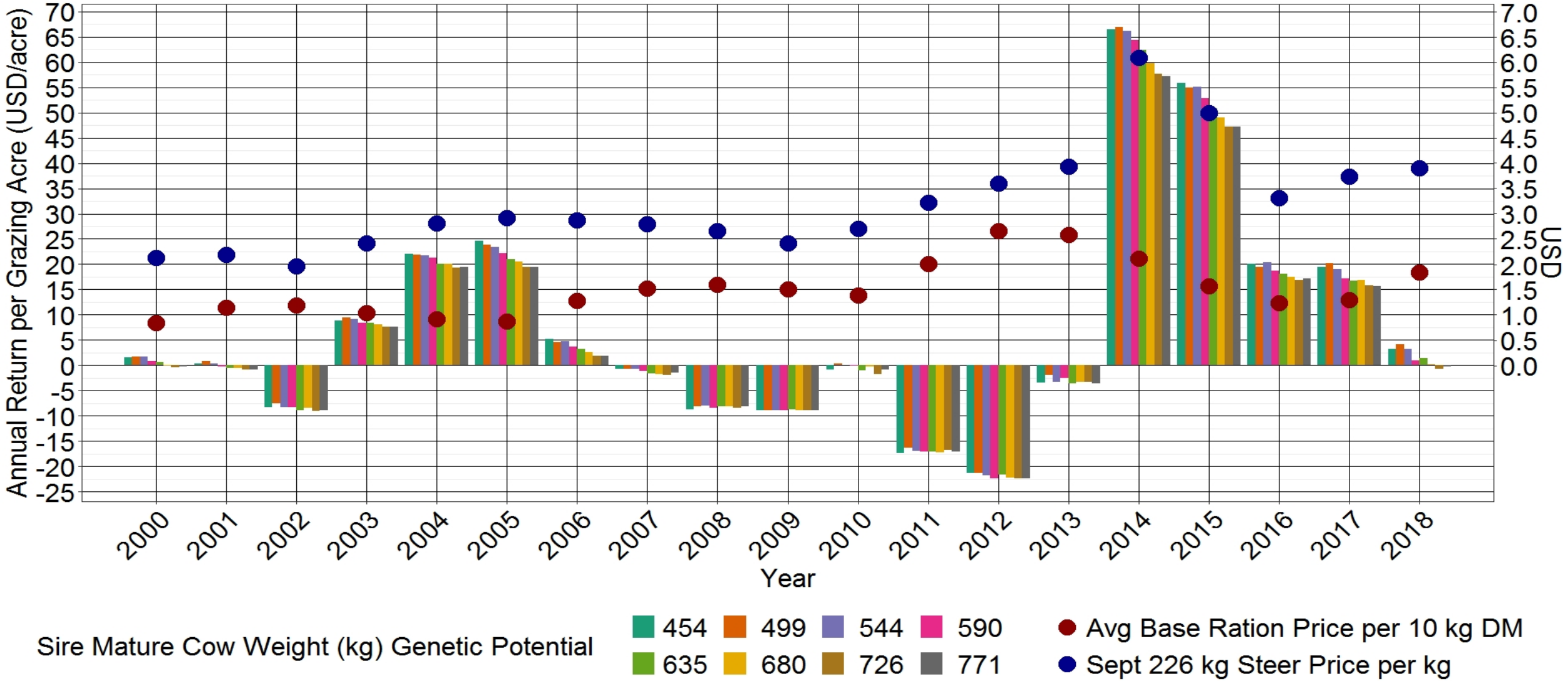
- If you use terminal traits and terminal indexes in selection, what do you get?
- **You get response in terminal traits!**

- If maternal traits are important to you, put pressure on maternal traits
  - Think ‘optimization’
  - Traits: CE, CEM, DOC, HP, Stay (rebreeding), MW, ME, replacement indexes

K STATE BEEF
KSUBeef.org

Median Annual Return per Grazing Acre 2000-2018

(Aherin et al., 2020)



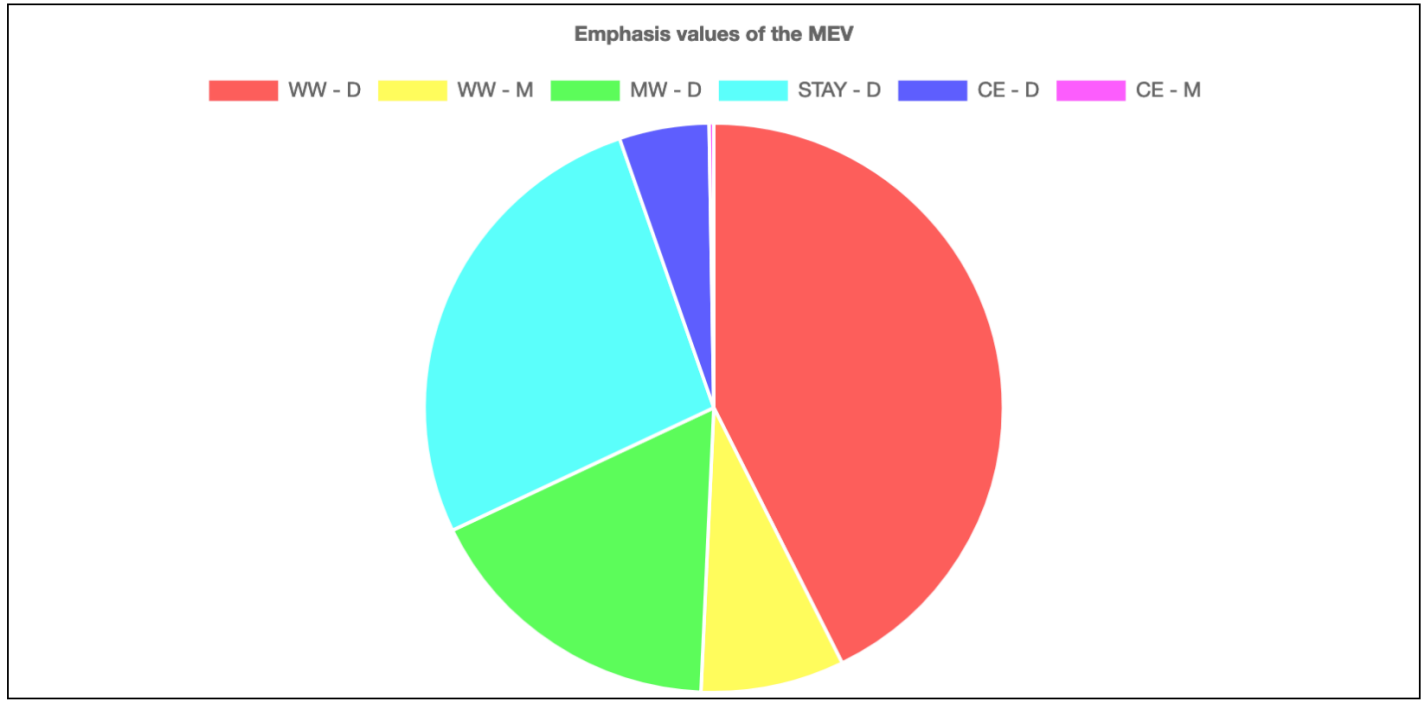
Columns represent the median return per grazing acre by MW category across all iterations for each production year from 2000 through 2018. Ration and cattle prices are exogenous variables based on historical data.

K STATE BEEF
KSUBeef.org

iGenDec -- Customized Selection Index

Results

Values | Graph



http://igendec.beefimprovement.org/

Terminal or Maternal?

Terminal

- $B, $F, $G (Angus)
- TI (Simmental)
- CHB$ (Hereford)
- MTI (Limousin)
- EPI and FPI (Gelbvieh)
- TSI (Charolais)
- GridMaster (Red Angus)
- $T (Beefmaster)
- Terminal Index (Brangus)

Maternal

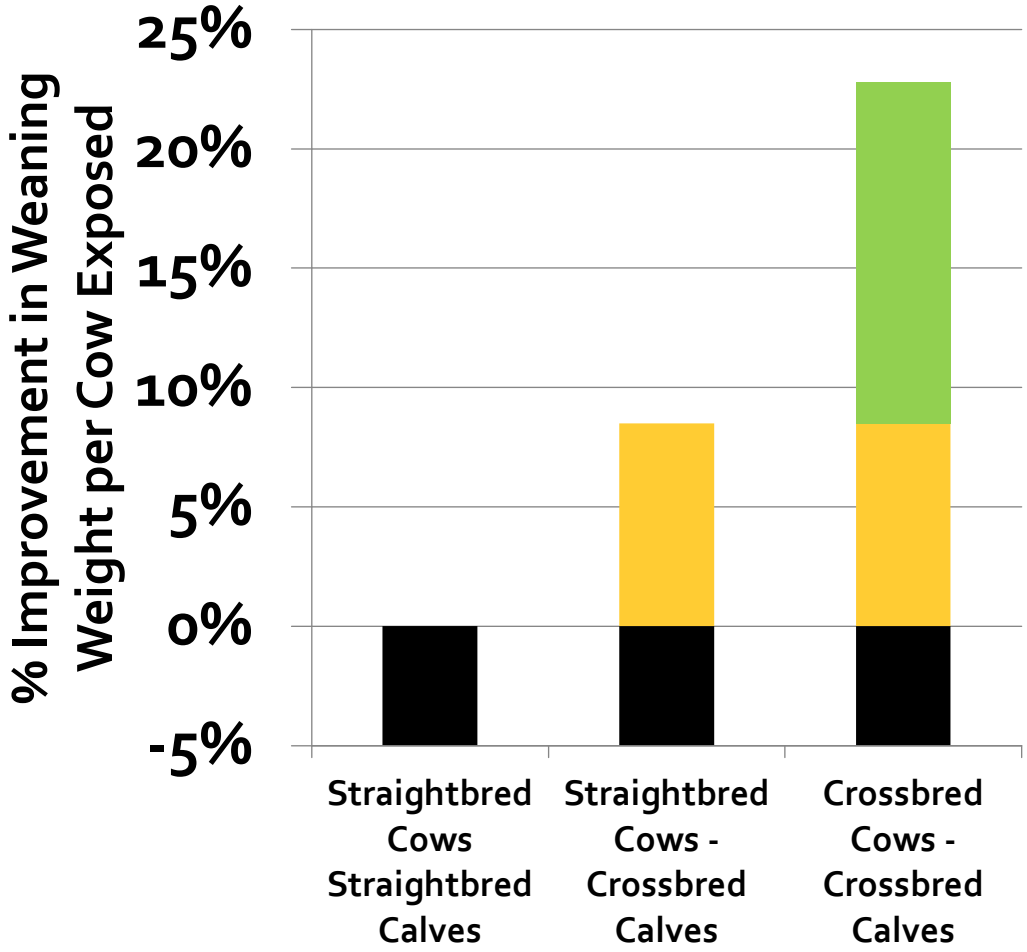
- $C, $W, $M, $EN (Angus)
- API (Simmental)
- BMI$, BII$ (Hereford)
- HerdBuilder, ProS (Red Angus)
- $Cow (Gelbvieh)
- $M (Beefmaster)
- Fertility Index (Brangus)

K STATE BEEF
KSUBeef.org

Benefits of Heterosis

- Heterosis increases production 20 to 25% per cow in *Bos taurus x Bos taurus* crosses; *50% in Bos indicus x Bos taurus* crosses in subtropical regions
- More than half of this effect is dependent on use of crossbred cows

Jenkins, MARC



K STATE BEEF KSUBeef.org

Mating System Goals

1. Optimize the utilization of calf and maternal heterosis.
2. Utilize breed complementarity to match cows to their environment and their progeny to market targets.
3. Minimize variation in progeny phenotypes by stabilizing breed inputs.
4. Use Adv. Repro tech to help structure mating system (i.e. AI, gender sort semen)

K STATE BEEF
KSUBeef.org

Having Your Cake and Eating it Too

- Commercial cattlemen **SHOULD** care about **BOTH** additive and non-additive effects.
  - Selection index/EPDs
  - Hybrid vigor or heterosis
- Seedstock producers **SHOULD** focus on additive genetic merit and putting it in a package that helps clientele exploit non-additive effects.

K STATE BEEF KSUBeef.org

How Do I Choose a Breeding Program

- Are you profit or premium focused?
  - Why not both?
- Herd size
  - Efficient bull utilization/manage variation in marketing groups
- How do I generate replacement heifers?
- How do I market calves?
- Constraints
  - Environment
  - Management

K STATE BEEF
KSUBeef.org

One Bull to Do It All…

Antagonisms

No Retained Heterosis

No Breed Complementarity

Selection tools/trait focus

K STATE BEEF KSUBeef.org

Separate Maternal and Terminal Mating Decisions

More Flexibility

K STATE BEEF KSUBeef.org

Sire and Grand Sire Selection Makes The Difference

- Genetic progress is gene flow from bull selection (>80% over time)
- Use DNA parentage to preferentially select daughters of specific sires:
  - Maternal focus
  - AI calves (simplify subsequent mating)
  - DNA parentage/paternity assignment is low cost ($13-15/test)
- **Buy bulls with genomically enhanced EPDs.**

K STATE BEEF
KSUBeef.org

Bull Purchase Strategies

- Do your homework
- Obtain sale supplement-digital!
- Sort sires on appropriate selection index
  - Value differences between bulls x number of matings is value difference over lifetime.
- Select 3X more bulls than you need to purchase
- Arrive at sale site early
  - Cull off your list for: type, kind, feet, disposition, color, etc.
- Check sale order and align with ranked list
  - Manage the budget – Cadillac taste, Chevy budget. ;)

K STATE BEEF
KSUBeef.org

Thank You!

Questions

K STATE BEEF
KSUBeef.org