



## “Bull-Buying Strategies”

with Kent Andersen, Ph.D., & Frank Padilla

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Sponsored by Five Star Cattle Systems

## Presenters



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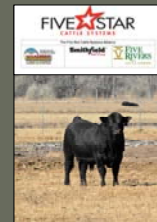
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- All bulls pass semen tests & breeding soundness exams
- All bulls are sold at a delivered price



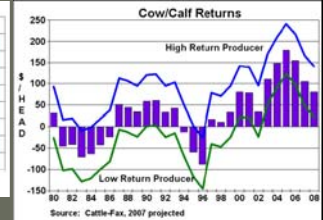
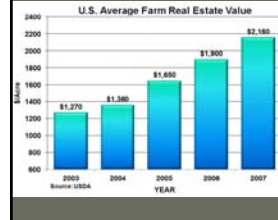
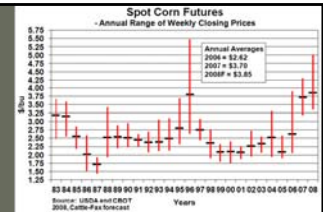


## Bull-buying strategies

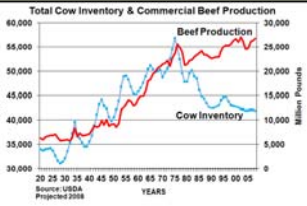
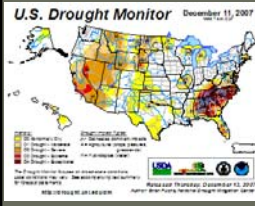
- What is the objective when buying bulls?
  - Invest in bulls with the highest likelihood of transmitting the most profitable genetics possible for the situation at the most sensible cost
  - Complex – decision-support tools & more standardized information under development but not yet available
  - Science and intuition – not all numbers & quantified traits ... not all visual evaluation ... blend of science, “art” & economics



## Macrotrends that might affect bull-buying strategies



## Macrotrends that might affect bull-buying strategies



## Bull-buying strategies: the value of pedigree information

- Relationships among animals – EPDs
- Minimize inbreeding depression (fitness)
  - Lines vary in response to FX
    - Lower fertility
    - Higher mortality
    - Lighter birth weights
    - Less milk production
    - Lighter pre- & postweaning growth
    - Decreased longevity



## EPDs from different breeds not directly comparable ... yet



Adjustment Factors to Add to EPDs of Sixteen Different Breeds to Estimate Across Breed EPDs

Breed	Birth Wt.	Weaning Wt.	Yearling Wt.	Maternal Milk
Angus	0.0	0.0	0.0	0.0
Hereford	2.7	-3.1	-12.7	-15.7
Red Angus	2.5	-4.7	-0.7	-5.1
Shorthorn	7.0	32.5	46.1	16.6
South Devon	5.8	23.1	41.7	8.0
Braunvieh	6.3	30.3	17.4	24.5
Charolais	9.6	40.9	48.7	3.5
Gelbvieh	4.4	7.0	-21.2	6.2
Limousin	4.0	-1.3	-24.0	-12.6
Maine-Anjou	7.1	-2.9	-31.9	-6.2
Salers	4.2	30.7	43.5	12.8
Simmental	5.7	24.4	17.0	13.7
Tarentaise	3.0	31.9	18.3	20.0
Beefmaster	9.0	42.2	43.7	-4.1
Brahman	12.1	38.5	2.6	26.7
Brangus	5.0	24.3	26.5	-3.1

## Bull-buying strategies: EPDs

- Calving ease (direct)
- Birth weight
- Weaning weight
- Yearling weight
- Milking ability
- Docility
- Scrotal circumference
- Heifer pregnancy
- Calving ease (maternal)
- Stayability
- Mature weight
- Yearling & mature height
- Maintenance energy
- Carcass & ultrasound
  - Weight
  - Fat thickness
  - Ribeye area
  - Yield grade
  - Marbling score
  - Tenderness
- Indexes
  - \$EN, \$W, \$F, \$G, \$QG, \$YG, \$B
  - \$BMI, \$CEZ, \$BII, \$CHB
  - \$API, \$TI
  - \$MTI



## EPDs rank animals

### PERCENTILE BREAKDOWN CURRENT SIRES OF 2004–2006 BORN CALVES

Upper Percentile Group	Calving Ease Direct	Birth Weight	Weaning Weight	Yearling Weight	Milking Ability	Calving Ease Maternal	Scrotal Circum.	Stayability	Docility	Carcass Weight	Ribeye Area	Yield Grade	Marbling Score	\$MTI
1%	18	-3.0	60	104	33	11	1.1	25	32	50	0.69	-0.22	0.16	58
2%	16	-2.2	57	100	31	10	1.0	24	30	43	0.62	-0.18	0.13	49
3%	15	-1.7	55	97	30	9	0.9	24	29	40	0.57	-0.16	0.11	48
4%	14	-1.3	54	94	29	8	0.8	23	28	37	0.53	-0.15	0.09	47
5%	13	-1.0	53	93	28	8	0.8	23	27	35	0.51	-0.14	0.08	47
10%	11	-0.2	49	87	26	7	0.7	22	24	28	0.41	-0.11	0.06	46
20%	9	0.7	45	81	24	5	0.5	20	21	22	0.31	-0.07	0.03	44
30%	8	1.3	42	76	22	4	0.4	19	18	19	0.23	-0.04	0.00	43
40%	7	1.8	40	73	20	4	0.3	18	16	15	0.17	-0.02	-0.01	42
50%	6	2.2	38	70	19	3	0.2	17	13	13	0.11	0.01	-0.03	41
60%	5	2.6	35	67	18	2	0.1	16	10	10	0.06	0.03	-0.04	40
70%	4	3.1	33	63	16	1	0.0	14	8	7	0.01	0.05	-0.05	39
80%	3	3.6	30	59	15	0	-0.1	13	5	3	-0.05	0.08	-0.07	38
90%	1	4.4	26	52	13	-2	-0.2	11	0	-3	-0.13	0.12	-0.10	37



## 3 generations of bulls purchased & daughters retained contribute to more than 87% of the genetics in your herd



## Bull-buying strategies: heifer bulls

- Approach selection with target specifications
  - Direct calving ease (CED) EPD
    - Double-digit CED  $\geq +10$  (AN: top 10%)
  - Birth weight (BW) EPD
    - BW EPD  $\leq 0.0$  (AN: top 10%)
    - Sensible actual or adjusted birth weight or ratio
  - Maternal traits (if replacements retained)
    - High fertility (SC EPD, HP EPD, STAY EPD)
    - Respectable maternal calving ease (CEM)
    - Moderate size & milk (MA EPD)
      - matched to resources
    - Other: docility, teats or udder, dam's production history
  - As much growth & carcass merit as possible, matched to the target market



## Bull-buying strategies: all-purpose

- Approach selection with target specifications
  - Curve-bending EPD profiles
    - BW EPD  $\leq 2.5$  (top 50%), YW EPD  $\geq 85$  (top 25%), moderate frame (5 or 6), MW or MH EPDs  $\leq 30$  or 0.5 (most moderate 50%)
  - Favorable EPD profiles for maternal traits
    - High fertility (SC EPD, HP EPD, STAY EPDs)
    - Respectable maternal calving ease (CEM) EPD
    - Moderate size, milk and maintenance – match to resources
    - Other: docility, teats or udder, dam's production history
  - Carcass EPDs matched to the target market
    - Marbling (MARB) EPD
    - Ribeye area (REA) EPD
    - Indexes available to simplify selection



## Bull-buying strategies: terminal

- Approach selection with target specifications
  - Growth with acceptable calving ease
    - BW EPD  $\leq 4$  (avoid heaviest 15%, positive CED), YW EPD  $\geq 95$  (top 10%), high but acceptable CW EPD
  - Carcass EPDs matched to the target market
    - Marbling (MARB) EPD roughly  $\geq 0.30$  and IMF EPD  $\geq 0.20$  (top 25%)
    - Ribeye area (REA) EPD roughly  $\geq 0.30$  and REA EPD (scan)  $\geq 0.40$  (top 25)
    - Indexes available to simplify selection



## Bull-buying strategies: accuracy & reliability

- Accuracy associated with non-parent EPDs
  - “P”, “I” & low numeric accuracy
  - “P+”, “I+” & low numeric accuracy
    - EPDs are more reliable if animals' own records, contemporaries & group information are included
    - If animals' own records are not incorporated into published EPDs, buyer must attempt to factor in animals' own records
    - Animals produced via ET
  - High accuracy: a strong case for AI



## Thoughts about scan data



## Bull-buying strategies: scan data

- Buyers & sellers
  - Collected by UGC-certified field technicians & scan technology
  - Interpreted by UGC-certified labs
  - Breed association adjusted measures, ratios & incorporated into carcass EPDs
  - Selection based on EPDs that fairly incorporate animals' own scan data & group information
  - Ratios used for within-group comparisons only

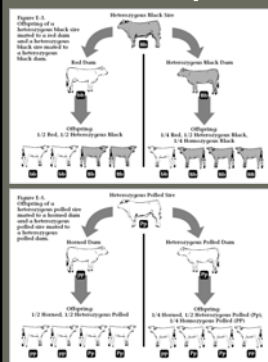


## Visual appraisal: cowboy commonsense necessities

- Soundness: feet, legs, sheath, teats or udder, etc.
- Body type (doing ability): moderate, deep, wide
- Attractive cattle are easier to sell at all levels



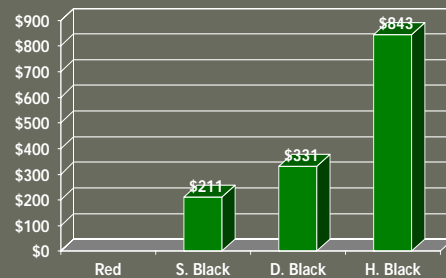
## Bull-buying strategies: qualitative traits



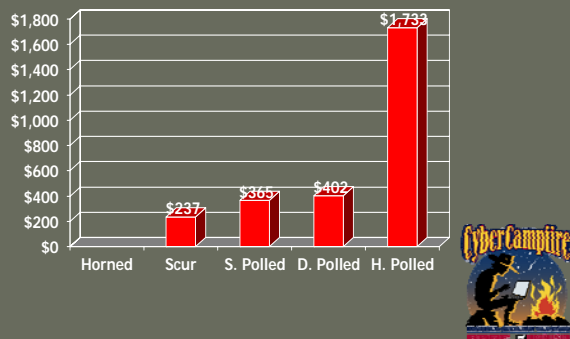
- Color: black dominant to red
- Polled: polled dominant to horned
- Genetic defects



## Influence of color on Limousin & Lim-Flex® bull sale prices



## Influence of polled status on Limousin & Lim-Flex® bull sale prices



genome.gov  
National Human Genome Research Institute  
National Institutes of Health

- Various DNA diagnostic test results for quantitative traits now are appearing in bull sale catalogs
- Success of the human genome project was & is a catalyst for livestock research & development

## Bull-buying strategies: DNA diagnostics for quantitative traits

- Limited but rapidly growing list of traits & markers that describe genetic variation
  - Tenderness (mostly 3 marker tests)
  - Marbling & percent Choice (4 to more than 120 markers)
  - Feed efficiency – based on net feed intake (4 markers)
  - Fat thickness
  - Ribeye area
  - Carcass weight
  - Yield grade
  - Disease resistance or immune response – coming soon?

## DNA diagnostics: Christmas wish list for seedstock & commercial producers

- More access to internal & external validation results
- Validation & segregation results on a within-population basis
  - Does a panel of markers have the same predictive power across different populations?
- External economic evaluation & validation
  - How much is it worth to have knowledge about “up to X%” of the variation (genetic) in a given trait?
- Standardization & incorporation of results into applicable multibreed genetic evaluations (EPDs)
  - Molecular genetic values (MGVs)
  - Profile scores (1–10) & associated value differences
  - Stars & Genetic progeny differences (GPDs)

## Bull-buying strategies: DNA diagnostics for quantitative traits



- Currently: test & use test results with caution & in combination with other measures (if applicable) & when economical
- In the future, new DNA & analytical technologies promise to revolutionize beef cattle performance programs & selection

## Bull-buying strategies: For what to look in sale information

- Guarantee, terms, conditions & services
  - Breeding soundness exam
  - Registration, transfer & inventory enrollment
  - Commitment to performance documentation
  - Health, including BVD-PI
  - PAP (high altitudes)
  - Tested & pedigreed – free of known genetic defects
  - Guarantee clearly communicated
  - Delivery options
  - Buy-back & marketing services
- Breeder honesty and integrity. Trust!

## Bull-buying strategies: Services from associations to help you find the right bulls

- Bulls for sale: searchable listing services
- Online animal lookups & sale catalogs
- Breeder directories: print & online
- Field representatives



## Five Star superior beef bulls

Documented genetics for feedlot performance  
& carcass merit



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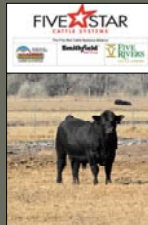


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Red Angus  
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Offering quality, performance-oriented genetics

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- Genetic strategy based on real data
- Expanded marketing opportunities



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## Thank you



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