

Value of Bull Gain Testing and Replacement Heifer Development Programs

Joe C. Paschal

Livestock Specialist

Texas A&M AgriLife Extension

j-paschal@tamu.edu

Bull Gain Testing

- Unbiased source of postweaning performance information
 - Postweaning gain (112 d)
 - ADG
 - Weight per Day of Age - WPDA
 - Yearling weight
 - Ultrasound
 - Ribeye area
 - Marbling
 - Rump fat
 - Frame score
 - Pelvic area
 - Scrotal circumference



Procedure

- Bulls entered in a test need to be properly prepared health-wise
 - Weaned and backgrounded
 - Vaccinated
 - Internal and external parasites
- Entering related bulls is recommended
- Bulls are delivered, weighed, tagged and sorted by age group and placed on a high roughage diet for a warm-up period.
- After the warmup period the bulls are weighed and placed on test, usually with the same high roughage diet for 112 d.
- At the end of the test data is collected and summarized.
- Some tests will award top performing bulls and/or conduct sales.
- Bull gain tests are an aid to selection, Expected Progeny Difference (EPD) should be used



Data Collected

- Average Daily Gain (ADG) – most widely collected, indication of growth and size
- Weight Per Day of Age (WPDA) – growth rate per day of age
- Frame score or hip height – measure of altitude and is related to weight
- Scrotal circumference – used to measure puberty, part of the breeding soundness evaluation 32 cm is recommended
- Ultrasound measures of ribeye area, intramuscular fat (as an indicator of marbling), and rump fat for carcass merit
- Pelvic area measurement
- Sheath measurement
- Body condition score



Reading and Understanding Results

- Review the 2019-2020 Rio Grande Valley Beef Cattle Association Bull Gain Test and Replacement Heifer Development Program results.

Considerations in Selecting and Developing Replacement Heifers

- Purchase or raise
- Adaptability
- Cost
- Genetics
- Herd health
- Temperament
- Replacement production
- Market
- Salvage value



Traits to Select and Selection Aids

- Fertility
- Beef character
- Structural correctness
- Muscling
- Weaning weight
- Maternal performance (milk)
- Temperament
- Health
- Reproductive tract scores
- Pelvic area
- Longevity
- Expected Progeny Difference/Indexes
- Genomic tests



Replacement Female Selection

- Early maturity
- Moderate size and milk
- Reproductive tract score
- Adapted to environment - BCS
- Early breeders
- Use Stayability EPD and Maternal Indexes developed by purebred associations
- Raise vs purchase
- BVD – PI free



5 Step Replacement Heifer Management Plan

- Heifer selection at weaning
- Management from weaning until breeding
- Management at breeding
- Management after breeding
- Management after calving
- Rebreeding



Heifer Selection at Weaning

- Purebred breeders should look at EPDs
- Keep heifers with only heavy actual weaning weights
 - Born early in season
 - Target is 65% of mature wt. at breeding
- Retain 10% more heifers than needed
- Do not keep heifers with structural defects
- Have a great herd health program
- Do not select heifers based solely on femininity
- Do not overfeed!



Igenity Maternal Index

The Igenity Maternal index places emphasis on fertility, reproduction and weaning weight, with a negative emphasis on yearling weight. This is an attempt to control mature cow size in those heifers chosen as replacements.

This index is designed for producers wanting to keep their own replacement females and market calves at weaning.

Reading the Chart

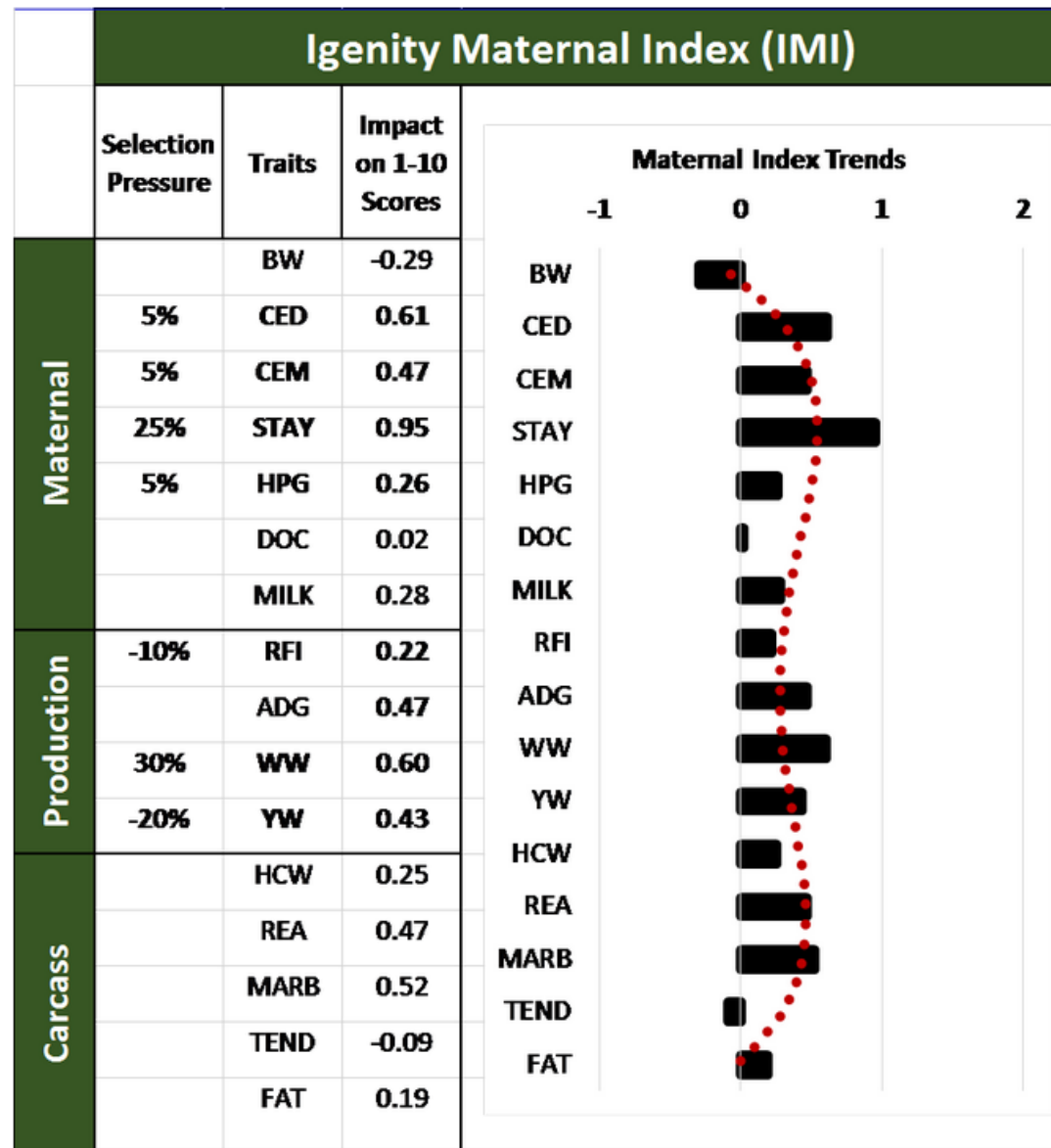
Selection Pressure: The amount of emphasis placed on the animal's breeding value for that trait.

Traits: Each MBV reported in an Igenity Beef Profile.

Impact on 1-10 Scores: This is the estimated change in Igenity scores following one generation of selection using this index. These impacts are graphically provided in the chart.

Maternal Index Trends – How to Interpret

- Improved stayability and cow maintenance trends.
- Modest increases in milk.
- Still favorable impacts on gain and carcass traits.



Relationship Between Actual Weaning Weight of Calves and Calving Date in a 60 Day Season

Percent of high, medium and low weaning weight calves born during the ..

<u>Weaning</u> <u>Wt.</u> <u>Rank</u>	<u>No.</u> <u>Head</u>	<u>Weaning</u> <u>Wt.</u>	<u>Weaning</u> <u>Age</u>	<u>ADG</u>	<u>First</u> <u>20 days</u>	<u>Second</u> <u>20 days</u>	<u>Third</u> <u>20</u> <u>days</u>
High	2910	417	207	1.68	70	24	6
Medium	2916	360	195	1.49	42	39	19
Low	2916	301	181	1.28	19	33	48

Management from Weaning Until Breeding

- Weigh selected heifers at weaning – determine the number of days from weaning (7 months) until the start of breeding season and their target breeding weight (14 months)
- Determine 65% of your cow herd's mature weight
- Apply the following formula:
 - Target wt. – Weaning Wt./
Number of days between
 - (780 lbs. – 550 lbs.)/210 d = 1.09
lbs./d



Winter Feeding Costs and Performance of Heifers Fed Together or Separately

	<u>Fed Together</u>		<u>Fed Separately</u>	
<u>No. Heifers</u>	<u>10</u>	<u>10</u>	<u>19</u>	<u>20</u>
Wean Wt. (lbs)	376	475	374	464
Projected ADG	1.5	1.4	1.72	1.17
Actual ADG	1.27	1.47	1.81	1.24
Projected Wt.	715	715	715	715
Actual Wt.	620	719	669	722
\$/Hd/Day	<u>\$0.75</u>	<u>\$0.75</u>	<u>\$0.89</u>	<u>\$0.67</u>
Avg. \$/Hd/Day	\$0.75		\$0.78	

Breedtype, Size and Production Effects on Reproduction

- Heifers should be at least 65% of their mature body weight and a BCS of 5 to expect them to cycle
- Heifers need to be cycling BEFORE breeding
 - Bull effect
- Heavier milking breeds do reach puberty at an earlier age BUT also have higher nutritional requirements
- Crossbreeding and hybrid vigor important for fertility
- Larger breeds (and animals within breeds) will be heavier (and possibly older) at puberty than smaller ones
- Bos indicus heifers will exhibit later puberty (older)
- Over developed (fat) heifers will have reduced milk production and wean lighter calves
- Some evidence that disposition affects fertility

Management at Breeding

- BCS and reproductive tract score and pelvic area measurements
- Breed 20-30 days before the start of the breeding season of the mature cow herd
- Mate to fertile bulls with high accuracy EPD for calving ease and or birth weight
- Breed heifers for 70-90 days.



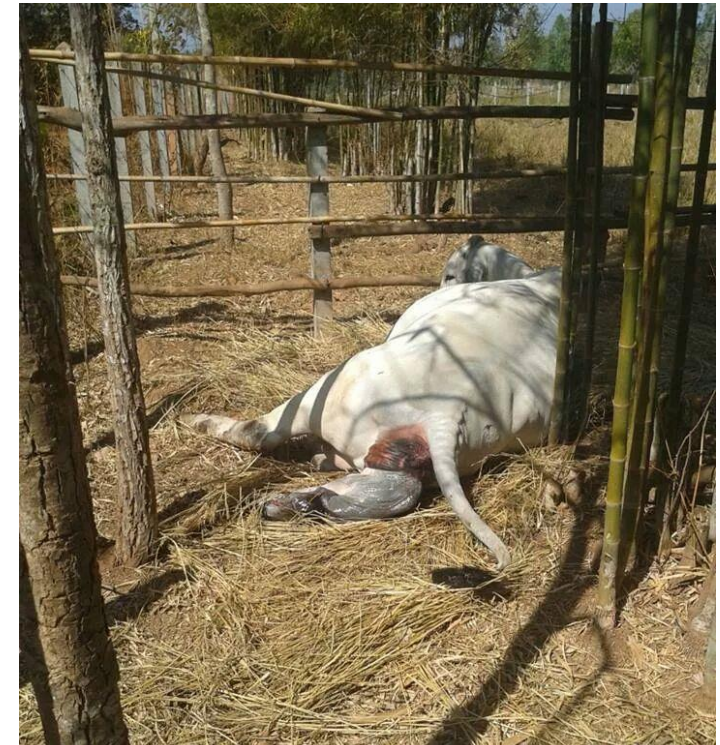
Management After Breeding

- Pregnancy test 60-65 after breeding season ends
- Retain only pregnant heifers, market others as open or exposed or rebreed for a late calf
- At 60-90 days before calving, separate bred heifers from mature cowherd to aid in feeding and any special care needed
- Grow heifers to 85% of their mature weight
- Heifers need to calve in a BCS of at 6 to ensure high rebreeding rates



Management at Calving

- Hold heifers in an easily accessible pasture or trap for observation and assistance at calving
- Check heifers 3-4 times daily, be ready to assist those needing it (keep your vet in the loop!)
- Continue to feed heifers to maintain body condition and continue to grow to improve rebreeding percent



Rebreeding Management

- If first calf heifers are in poor body condition and/or you are short of feed, consider early weaning at 30-60 days of age or use once daily sucking to reduce nutrient demand on COW
- Breed for 60-90 days, starting the breeding season at the same time as the mature cows, pregnancy test 60 days after the end of the season.
- Cull any that fail to rebreed.





FRIDAY, APRIL 17, 2020

Heifer CONSULT Available for use by Beef Cow-calf Producers

Heifer CONSULT (Collaborative, Online, Novel, Science-based, User-friendly, Learning, Tool) is designed to help beef cow-calf producers improve the reproductive success of their heifers and young cows.