

TEIXEIRA CATTLE COMPANY PRESENTS

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# TOTAL COW CONNECTION IGENITY GENOMIC PROGRAM

*Increase the level of genetic awareness in your cattle population.*



Wendy  
Hall

# TCC IGENITY

## MISSION STATEMENT

Our goal is to increase the level of genetic awareness in the commercial cattle population with a system designed to identify DNA/Genomic Markers.

## OBJECTIVES FOR THE ECONOMICALLY IMPORTANT TRAITS VIA DNA

- Identify genomic rank of unregistered cattle with unknown sire and dam within the bovine population.
- Establish historical population distribution
- Identify areas of improvement
- Increase sire selection impacts with selection pressure via DNA that is the same for unregistered cattle as it is for registered cattle.



# WHAT IS TCC IGENITY?

We want to introduce you to Igenity testing with the development of the Teixeira Cattle Co. Custom Index, a first-of-its-kind DNA evaluation that will rank Teixeira bulls on an identical basis as your commercial cow herd – Total Cow Connection (TCC) Igenity.

This evaluation will allow you to compare profiled replacement heifers on the same DNA scale as bulls. You can use DNA predictions to pick seedstock using the same kinds of DNA marker technology seedstock producers use in their breeding programs.

Will this system replace other important selection criteria? DNA testing adds power to other ways we select breeding stock. Visual appraisal, our lifelong experience, performance records from feeding and finish phases, highly accurate GE-EPDs – these are still important. But DNA testing brings new power to predict traits that profiled cattle will pass on to their offspring. This enhances selection of commercial replacements in your herd. You can focus your time and money on the best replacements and use the information to bring genetics into your herd.

At Teixeira Cattle Co., we build our bulls to provide the greatest return per dollar invested. Our profit-orientated genetics reduce inputs for sustainable production in the Great Basin as well as the West and produces progeny that will deliver post-weaning premiums.

Now we are working with Neogen GeneSeek Operations – the world's leading DNA testing lab for animals – to profile our bulls on the same platform that you test your cows. And this will help you advance faster on your goals, taking your cow herd in more profitable directions.

Sample Collectors can be purchased from Teixeira Cattle Co. by filling out the order form included on page 5.

- Blood cards FREE
- Tissue Sample Unit (TSU) \$2.00
- DNA tests are \$29.00 per cow

Teixeira Cattle Co. will use its volume purchase power and coordinated buying with customers to earn preferred pricing rebates. These rebates, from \$2-\$10 per test, depending on the total volume, will be returned to bull customers as a credit their bull sales at checkout, not to exceed 20% of the total purchase price of the bulls purchased from Teixeira Cattle Co.

## WHAT TO EXPECT IN THE IGENITY TCC CATALOG

- DNA Collection Instructions
- TCC Igenity Order Form and Instructions
- Sample Charts and Graphs of DNA Tables



# IGENITY BLOOD SAMPLE INSTRUCTIONS

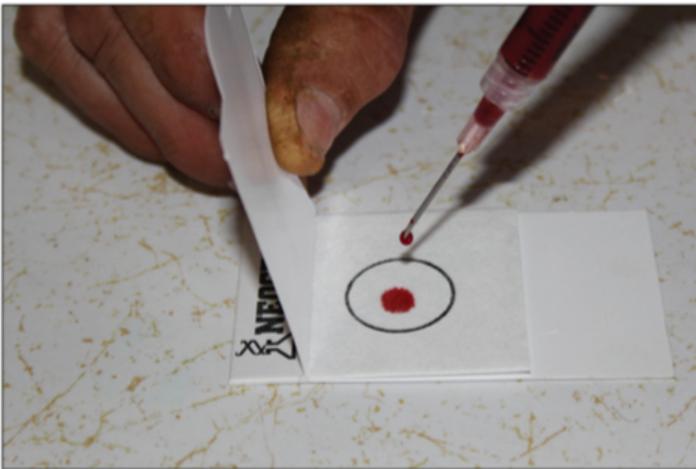
Two to three drops of blood are needed on the collector portion of the card. This can be collected from anywhere on the animal. Two locations for easy-to-find blood vessels are the ear and the underside of the tail.



1. Appropriately restrain the animal. Locate a blood vessel, visually or by palpation. Clean the area so the sample is not contaminated with dirt or manure. Use a clean needle or lancet for every animal.



2. Blood can also be sampled with a syringe or blood tube from the vein on the underside of the tail. This may be easier than sampling blood from an ear vein that is covered with long, thick hair.



3. Collect two to three drops of blood on the collector portion of the collection card by allowing the blood to drip or squirt onto the card. Do not wipe the needle, ear or tail on the collection card. Discard the needle in an appropriate disposal container.



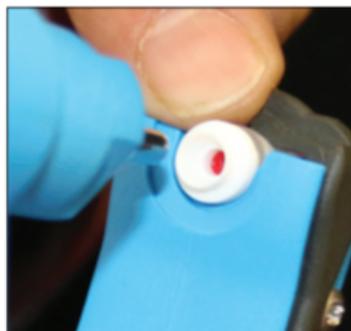
4. Before placing blood drops on blood cards, write an accurate customer name and animal ID in the spaces provided. Let the cards sit open and air dry before closing cover flap.

# IGENITY TISSUE SAMPLE INSTRUCTIONS



1. Remove a TSU punch from the packaging. Punches should be assembled as one piece; if they have come apart, reassemble. Open the tube retainer at the base of the applicator by pushing the retainer clip.

2. Insert the punch into the applicator. Release the clip to lock punch into the device. Carefully squeeze the applicator handles together, guiding the punch tip into place if necessary. When the gun bolt rests flush against the red plastic clip, release the handle.



3. Remove the red plastic clip by pulling it outward. Be careful as the metal cutter above the clip is very sharp. Ensure the applicator is loaded with an unused punch (if the red plunger is visible, the punch is used and should be replaced with one that is unused).

4. Slide the applicator over the animal's ear and position the metal cutter one inch from the edge of the ear, making sure to avoid any obvious veins or ridges. Squeeze handles together to take a sample and then release to free the ear. Try to do this in one swift, fluid motion.



5. Remove the punch from the applicator and check that sampling has been successful. If not, discard the sample and proceed with a new punch. Remove the used cutter from the applicator by pulling the handles apart. Discard carefully as the cutter is very sharp.



# TCC IGENITY ORDER FORM



## PRODUCER INFORMATION

Operation/Ranch Name: \_\_\_\_\_

*(above will be on file at Teixeira Cattle Co. for credit purposes)*

Contact Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

## SAMPLES

*If sample kits need to be ordered, email [cattle@thousandhillsranch.com](mailto:cattle@thousandhillsranch.com) or call 805-595-1420.*

# of Samples: \_\_\_\_\_

Sample Type:  blood card or  Tissue Sample Unit (TSU)

Sample ID: \_\_\_\_\_

*(how samples are identified to you. i.e. Ranch 1, Winter Bulls, Heifers, CB Bulls)*

**Blood Cards = FREE**  
**TSU = \$2.00/each plus shipping**

## METHOD OF PAYMENT

TCC Igenity Test \$29.00 x Number of Samples = \$ \_\_\_\_\_

Check (enclosed, payable to Teixeira Cattle Co.) Check #: \_\_\_\_\_

## RECEIVING TEST RESULTS

- Email
- Access to Dashboard Direct (with an email notification that results are available)
- Both

## SAMPLE SUBMISSION

Mail with payment and samples to:  
Teixeira Cattle Co.  
855 Thousand Hills Rd.  
Pismo Beach, CA 93449

*\*Samples will NOT be sent off without payment.*

OFFICE USE ONLY	
Date Received:	_____
Received By:	_____
Billing Order #:	_____
Invoice #:	_____
Sample Sent Date:	_____
Results Received Date:	_____
Results Sent Date:	_____
Completed Date:	_____
By:	_____

## DISCLAIMER:

By submitting this TCC Igenity Order form I acknowledge and agree to the services provided by TCC Igenity are delivered "as-is." Teixeira Cattle Co. warrants only that it will use commercially reasonable efforts to process the sample(s) provided with this form presented to Teixeira Cattle Co. by you. Teixeira Cattle Co. provides no warranty of any kind, whether express or implied, Teixeira Cattle Co. assumes no legal liability or responsibility for the accuracy, completeness, reliability or usefulness of any information disclosed. Teixeira Cattle Co. assumes no responsibility for incorrectly identifying a particular animal as the source of any sample. In no event shall Teixeira Cattle Co. or its agents or officers be liable for any damages whatsoever (including without limitation, damages for loss of profits or business interruption, or any indirect, special, punitive, consequential or incidental damages) arising out of the use of the information and data obtained through the services provided hereunder, even if Teixeira Cattle Co. has been advised of the possibility of such damages.

Sign: \_\_\_\_\_ Date: \_\_\_\_\_

# DEFINITIONS OF DNA TABLE

## MATERNAL TRAITS

### **BIRTH WEIGHT (BWT)**

Variation in birth weight a heifer or bull will pass along to its offspring.

### **CALVING EASE DIRECT (CED)**

Percentage of unassisted births, indicating greater probability that a calf will be born unassisted out of a first calf heifer. The higher Igenity score will indicate a greater percentage increase in the calving ease direct.

### **CALVING EASE MATERNAL (CEM)**

The probability that a first calf heifer will calve unassisted. The higher Igenity score will indicate a greater percentage increase in the calving ease maternal.

### **STAYABILITY (STAY)**

The chance a heifer will remain in the herd as a productive cow until at least six years of age. The higher Igenity score will indicate a greater percentage increase in stability.

### **DOCILITY (DOC)**

The animal's genetic potential to be calm or have calm offspring. The higher Igenity score will indicate a greater percentage of calves with acceptable disposition.

### **HEIFER PREGNANCY RATE (HPR/HPRG)**

A heifer's chance of conceiving over a normal breeding season. A higher value is desired.

### **MILK**

Indicated as pounds of calf weaning weight affected by the milk production of a calf's dam. This not a prediction of actual pounds of milk produced.

## CARCASS TRAITS

### **TENDERNESS (TEND/TNDR)**

Animal's genetic potential for carcass tenderness (measured by Warner-Bratzler shear force test). A higher Igenity score indicates greater tenderness.

### **USDA MARBLING (MARB/MRB)**

Marbling score indicates the degree of marbling in the rib eye at the 12th rib expressed in USDA marbling units.

### **RIB EYE AREA (REA)**

Rib eye area estimates muscling in beef carcass, and it's measured inches of the rib eye at the 12th rib.

### **FAT THICKNESS (FAT)**

Fat thickness is scored as depth of fat in inches over the rib eye muscle at the 12th rib. Higher thickness scores equate to a lower lean yield.

### **HOT CARCASS WEIGHT (HCW/CWT)**

Hot carcass weight is the hot or un-chilled weight of the carcass after slaughter and the removal of the head, hide, intestinal tract and internal organs.

## PERFORMANCE TRAITS

### **RESIDUAL FEED INTAKE (RFI)**

This measure is an indicator of feed efficiency. It is the difference in animal's daily consumption of feed to achieve the same level of daily gain. Lower RFI equals greater feed efficiency.

### **AVERAGE DAILY GAIN (ADG)**

Based on the pounds of gain per day. The Igenity score for ADG identifies an animal's genetic potential for post-weaning growth.

### **WEANING WEIGHT (WWT)**

Pounds at age of 205 days.

### **YEARLING WEIGHT (YWT)**

Pounds at age of 365 days.

## DIAGNOSTIC REPORTS

### **BOVINE VIRAL DIARRHEA – PERSISTENTLY INFECTED (BVD PI)**

Many producers test their herds for BVD PI as routine bio-surveillance. Negative animals are free of the BVD virus. Positive animals have the virus present in their cells, are likely persistently infected and infect others in the herd. If there is a positive test result, first contact your veterinarian. A positive result in a blood test must be confirmed. Neogen veterinary diagnostic team will contact you.

## OTHER REPORTS

### **SAMPLE REJECTED (SR)**

The quality of DNA testing starts with the quality of the sample. Common reasons for sample rejection are: lack of animal ID on the sample, improper or blank information on an order form, insufficient hair follicle samples, mold, dirt, foreign or fecal matter, evidence of tampering or sending in decomposing animal tissue.

### **NO RESULT (NR)**

Some samples appear normal but don't produce acceptable results due to contaminants that are undetectable to the eye. To test the animal, a new sample will need to be submitted.

### **RESULTS ARE NOT COMPLETE (X)**

At times Neogen will send out partial results, such as providing BVD PI results before Igenity profiling is completed. The traits scored as an X indicate the analysis for that test has not yet been completed.

**Validation:** Development of Igenity profiles begins with the assembly of large populations of animals with phenotypic data and/or expected progeny differences (EPDs). We use multiple resource populations, involving thousands of animals that represent various production environments and biological types, often working with partners from the seedstock, cow/calf, feedlot and/or packing segments of the beef industry. Once the phenotypic data and EPDs are captured, our geneticists and research partners carefully analyze marker associations, using appropriate analytical methods, to ensure validity. Markers are analyzed to determine the most powerful combination for any given trait. Final validation takes place in independent populations that include thousands of animals, resulting in confidence any significant associations discovered will have a high probability of truly occurring in various biological types and environments.

# EXAMPLES OF INDEX DATA

THE FOLLOWING INDEX DATA ARE EXAMPLES OF HOW DATA WILL BE DISPLAYED AT SALE BY THE SEA.

Animal	TCC Maternal Index	TCC Feeder Index
1	7.6	8.2
2	7.25	7.89
3	6.9	7.84
4	8.1	7.83
5	6.2	7.8
6	7.3	7.76
7	7.65	7.75
8	6.85	7.72
9	7.15	7.72
10	6.8	7.68
AVG	6.83	6.85

\*Index data displayed in Sale by the Sea catalog.

TCC Maternal Traits						TCC Feeder Traits					
Animal	Calving Ease Maternal	Docility	Heifer Pregnancy	Milk	Average Daily Gain	Stayability	Residual Feed Intake	Tenderness	Marbling	Ribeye	Fat
1	7	7	8	10	10	7	4	9	10	5	7
2	7	8	9	7	9	6	4	7	10	5	7
3	5	7	8	7	10	7	7	7	10	7	7
4	8	7	8	7	10	8	5	8	10	5	6
5	5	5	8	5	10	6	7	6	10	6	8
6	8	5	8	7	9	7	3	4	9	4	8
7	7	6	9	7	9	7	5	4	10	6	7
8	7	5	8	6	9	6	7	7	10	6	9
9	5	7	9	8	10	7	5	7	9	6	6
10	6	7	8	7	10	7	5	4	8	6	8
AVG	6.16	6.63	7.29	6.49	8.28	6.94	6.4	5.83	8.41	5.48	6.65

\*Index data available upon request at sale.



# IGENITY GENETIC EFFECTS TABLE

Igenity Beef Genetic Effects Table																
Igenity Scores	Maternal Traits							Performance Traits				Carcass Traits				
	Birth Weight	Calving Ease Direct	Calving Ease Maternal	Docility	Heifer Pregnancy	Milk	Stayability	Average Daily Gain	Residual Feed Intake	Weaning Weight	Yearling Weight	Hot Carcass Weight	Fat Thickness	Ribeye Area	Tenderness	USDA Marbling Score
	(lbs.)	(%)	(%)	(%)	(%)	(lbs.)	(%)	(lbs.)	(lbs.)	(lbs.)	(lbs.)	(lbs.)	(in.)	(sq. ins.)	(lbs. WBSF)	(marb. units)
10	11.3	23.9	23.9	22.7	13.1	35.1	29.9	0.35	2.1	63.9	108.5	81.5	0.21	1.8	-1.2	142
9	10.0	21.2	21.2	19.8	11.6	31.2	26.8	0.31	1.8	56.8	96.4	72.4	0.18	1.6	-1.0	126
8	8.8	18.6	18.6	17.4	10.2	27.3	23.6	0.27	1.6	49.7	84.4	63.4	0.16	1.4	-1.0	110
7	7.5	15.9	15.9	15.0	8.7	23.4	20.5	0.23	1.4	42.6	72.3	54.3	0.14	1.2	-0.8	95
6	6.3	13.3	13.3	12.7	7.3	19.5	17.3	0.19	1.1	35.5	60.3	45.3	0.12	1.0	-0.6	79
5	5.0	10.6	10.6	10.3	5.8	15.6	14.2	0.15	0.9	28.4	48.2	36.2	0.09	0.8	-0.6	63
4	3.8	8.0	8.0	7.9	4.4	11.7	11.0	0.12	0.7	21.3	36.2	27.2	0.07	0.6	-0.4	47
3	2.5	5.3	5.3	5.4	2.9	7.8	7.9	0.08	0.5	14.2	24.1	18.1	0.05	0.4	-0.2	32
2	1.3	2.7	2.7	2.9	1.5	3.9	4.7	0.04	0.2	7.1	12.1	9.1	0.02	0.2	-0.1	16
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Understanding 1 to 10 Igenity scoring:** This chart allows you to cross reference the 1–10 Igenity scores for traits with their corresponding Molecular Breeding Values (MBV) or expected effects. This MBV is the prediction of how future progeny of an animal are expected to perform compared to the progeny of other profiled animals. Higher scores are not necessarily better – they just mean the animal has more genetic potential for that trait.

**Comparing scores between profiled animals:** The examples below show you how to equate Igenity scores to variations in Molecular Breeding Value effects from the genetic table.

Heifer Pregnancy Rate (HPR)	Igenity Score	Genetic Effect	Description
Animal A	8	10.2%	Animal A will produce daughters with a 7.3% higher probability of conceiving during a normal breeding season compared to daughters of Animal B.
Animal B	3	2.9%	
		7.3%	

Stayability (STAY)	Igenity Score	Genetic Effect	Description
Animal A	8	23.6%	Daughters of Animal A have a 15.7% greater probability of staying in the herd until six years of age than daughters of Animal B.
Animal B	3	7.9%	
		15.7%	

Average Daily Gain (ADG)	Igenity Score	Genetic Effect	Description
Animal A	8	0.27 lbs.	Animal A is expected to produce progeny that will gain 0.19 pounds more per day than progeny of Animal B, and therefore weigh 28.50 pounds more after 150 days on feed.
Animal B	3	0.08 lbs.	
		0.19 lbs. per day	

Residual Feed Intake (RFI)	Igenity Score	Genetic Effect	Description
Animal A	8	1.6 lbs.	Progeny of Animal B are predicted to consume 1.1 pounds less feed per day than progeny of Animal A to achieve the same daily gain.
Animal B	3	0.5 lbs.	
		1.1 lbs.	



# EXAMPLE DATA CHARTS AND GRAPHS

THE NEXT CHART AND THREE GRAPHS ARE A THIRD PARTY AUDIT OF ACTUAL CORRELATION DATA FROM DNA TO ACTUAL CARCASS DATA FROM A TEIXEIRA CATTLE CO. BULL CUSTOMER.

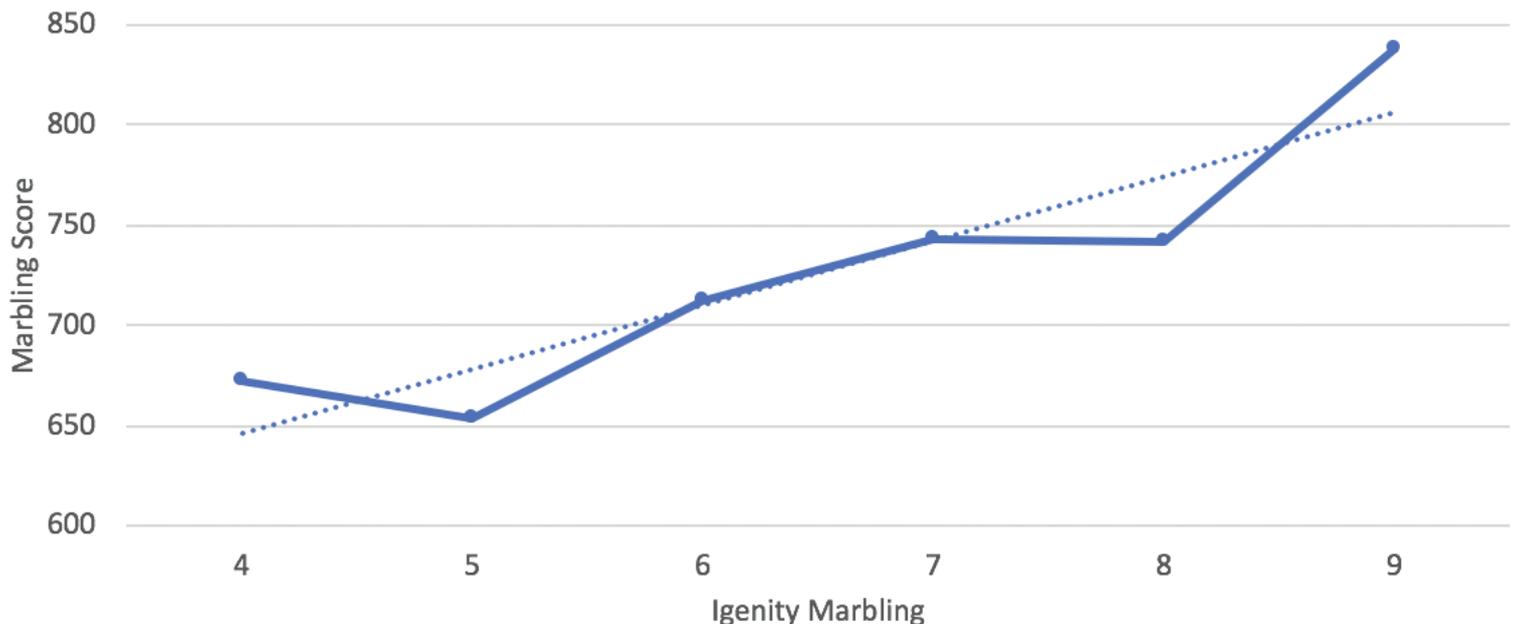
*For Reference: Solid Blue Line = actual DNA data | Horizontal Axis = Igenity DNA score*

## CARCASS DATA SUMMARY

Characteristic	Mean	Minimum	Maximum	Standard Deviation
Hot Carcass Weight	906	759	1084	74.6
Marbling Score	MD31	SM76	AB67	105 Degrees
Backfat	0.49	0.22	0.87	0.13
Ribeye Area	14.14	11.30	17.06	1.36
Camera YG	3.07	1.95	4.81	0.61

## MARBLING RELATIONSHIPS

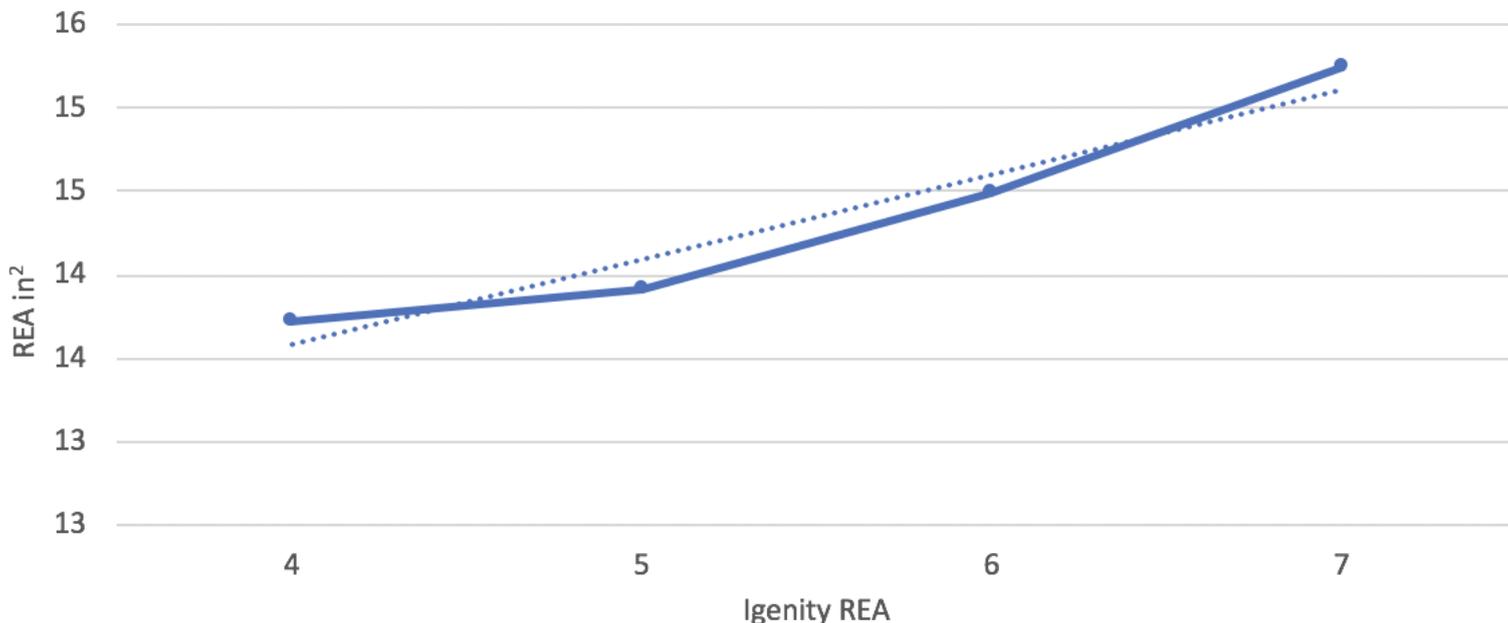
This graph describes the marbling relationships between the Igenity DNA scores along with the marbling scores (as shown on left side of graph).



# EXAMPLE DATA CHARTS AND GRAPHS

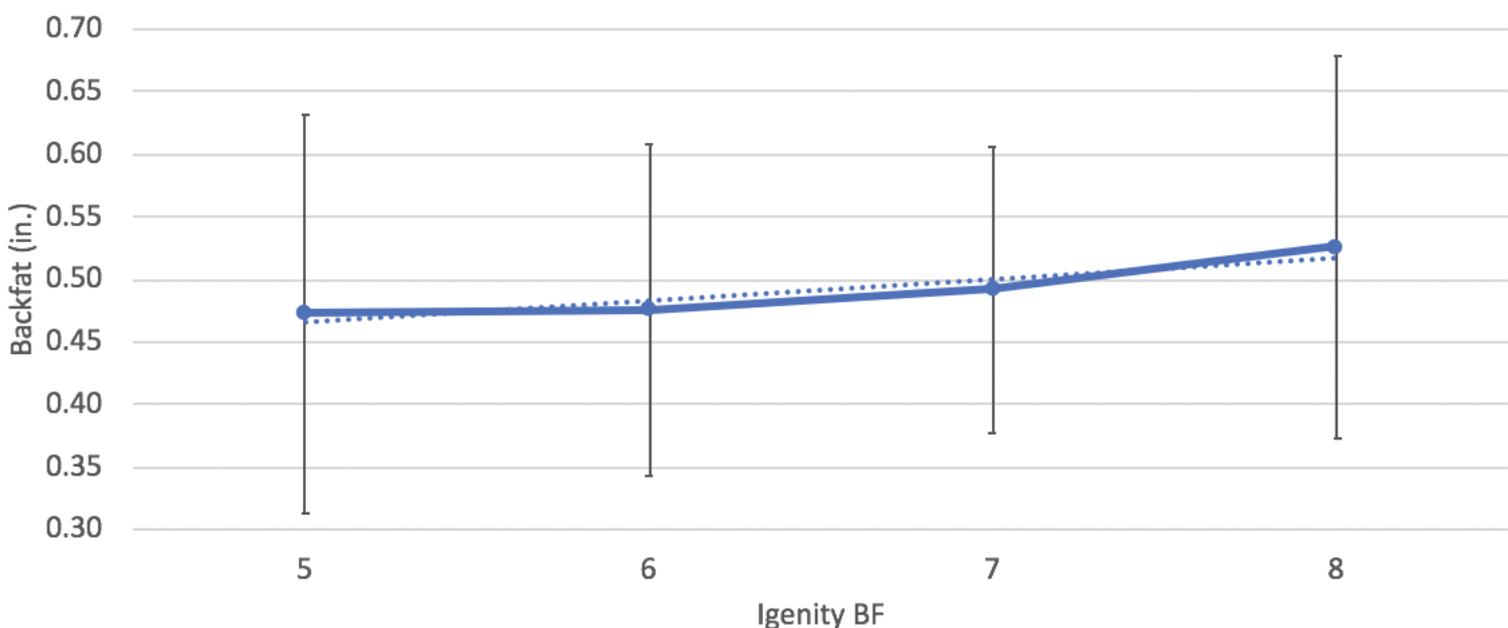
## RIBEYE AREA RELATIONSHIPS

This graph describes the ribeye area relationships between the Igenity DNA scores for individuals along with the ribeye area scores (as shown on left side of graph).



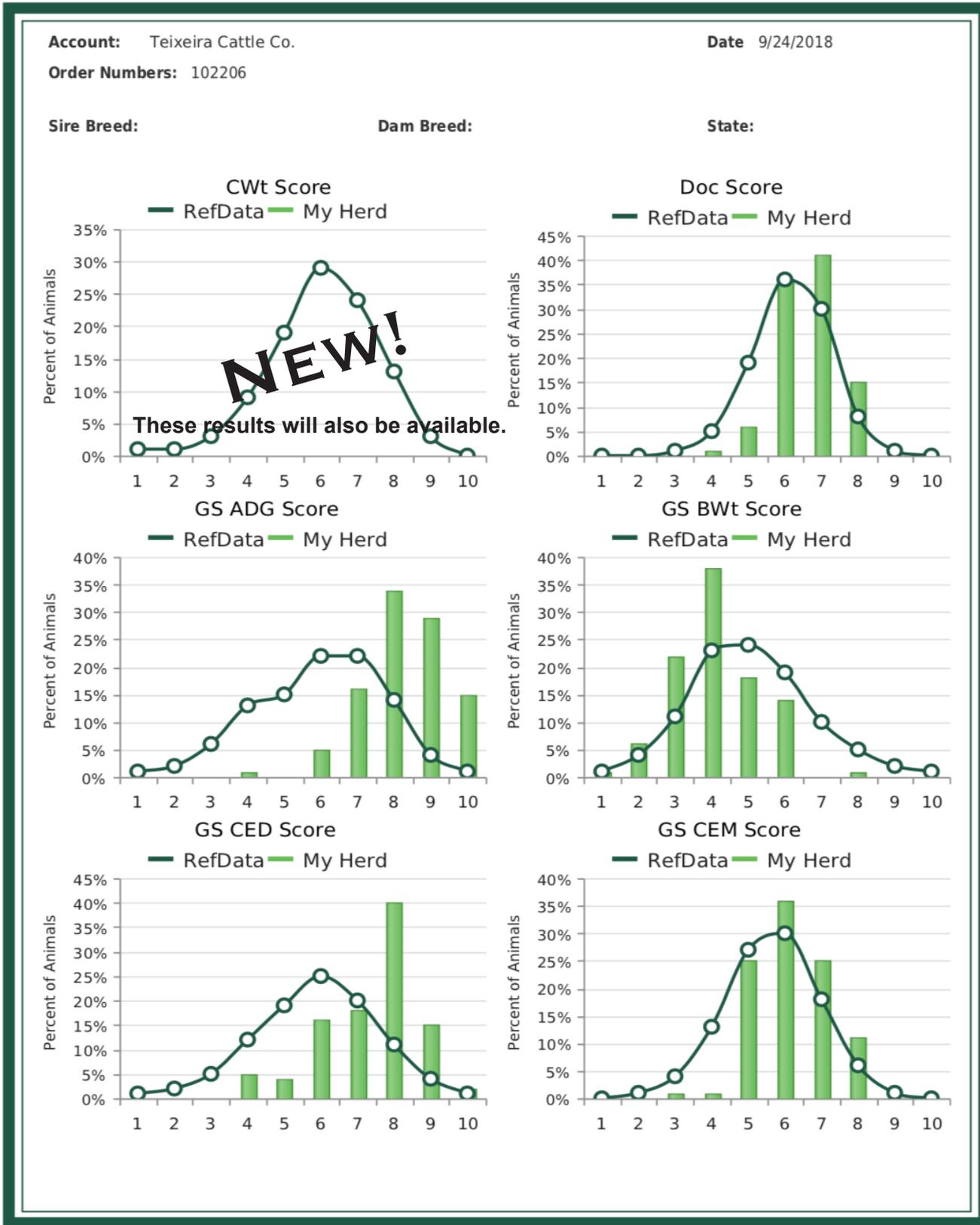
## BACKFAT RELATIONSHIPS

This graph describes the backfat relationships between the Igenity DNA scores for individuals along with the backfat scores (as shown on left side of graph).



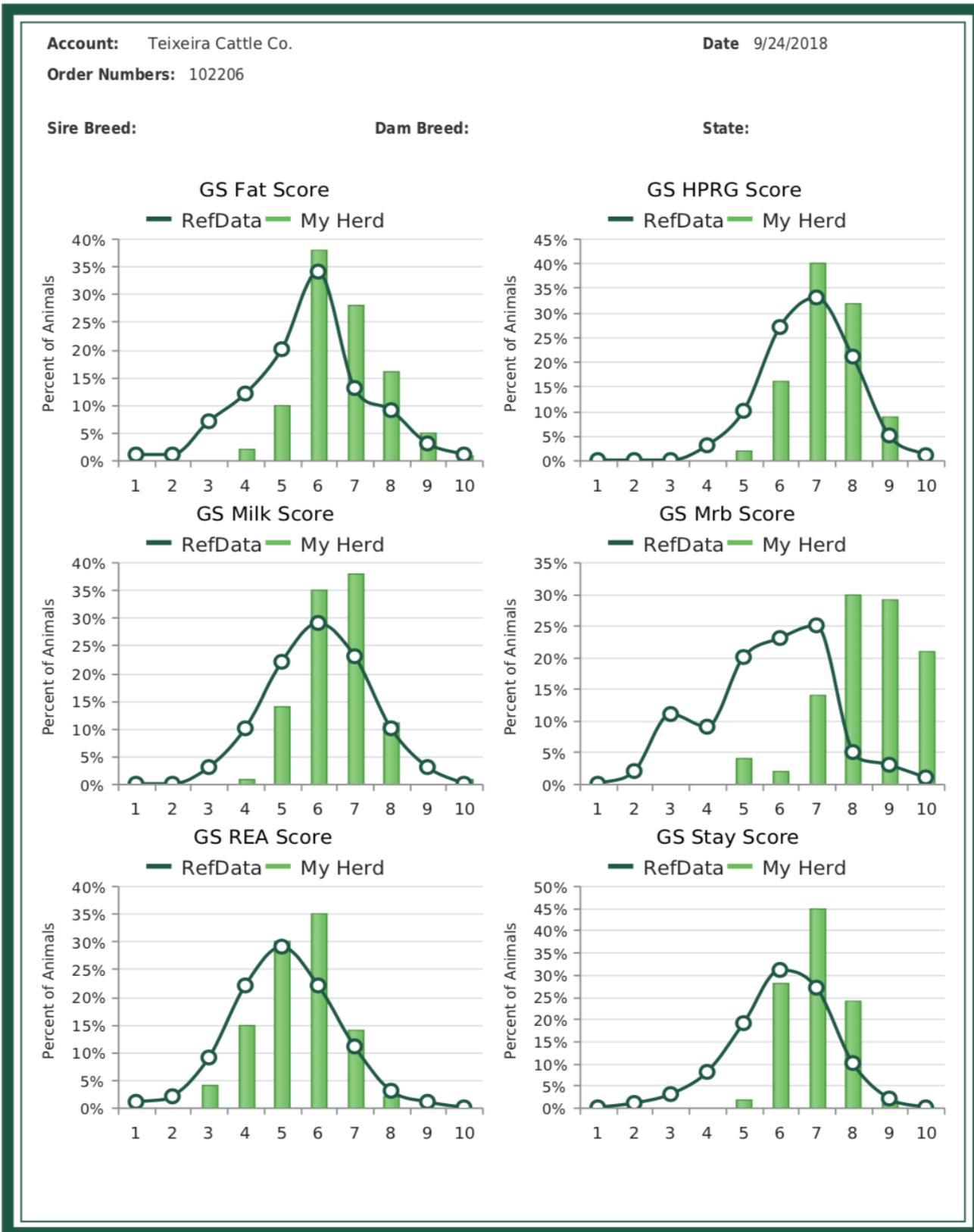
# EXAMPLE DATA CHARTS AND GRAPHS

TAKEN FROM TEIXEIRA CATTLE CO.'S IGENITY DASHBOARD



# EXAMPLE DATA CHARTS AND GRAPHS

TAKEN FROM TEIXEIRA CATTLE CO.'S IGENITY DASHBOARD



# EXAMPLE DATA CHARTS AND GRAPHS

TAKEN FROM TEIXEIRA CATTLE CO.'S IGENITY DASHBOARD



# ADDITIONAL INFORMATION

## POTENTIAL PROFIT EXAMPLE

### **WEANING GROWTH**

0.15 lbs more ADG X 205 days = 31 lbs @ \$1.50 selling price per pound = \$46.00 more pounds to sell

### **RESIDUAL FEED INTAKE**

0.9 lbs less feed per day = 328 less feed per year @ \$150.00/ton hay = \$25.00 less feed cost per year

### **HEIFER PREGNANCY RATE**

Increase pregnancy rate by 5.8% = 6 more calves to sell at weaning per 100 heifers = \$4,950.00 more income per 100 heifers or \$49.50 per each heifer.

### **STAYABILITY**

12.6% greater chance to be in the herd after 6 years of age. \$2,000.00 opportunity cost to create a replacement heifer.

- Four years in the herd = \$500.00 per year cost
- Eight years in the herd = \$250.00 per year cost

The replacement heifer eight years in the herd has a \$250.00 per year advantage over a heifer four years in the herd.  
12% of \$250.00 = \$31.00

### **PERCENTAGE CHOICE**

Choice/select spread = \$100.00 CWT carcass weight.  
21% more choice X \$80.00/HD = \$17.00 per head.

## ADDITIONAL SAMPLE AND CONTACT INFORMATION

### **SAMPLES**

Sample kits can be purchased through Igenity or Teixeira Cattle Co., however if you order through Teixeira Cattle Co. you will be given a rebate of \$10 per sample in the form of a credit to be used at one of the bull sales - Performance Plus or Sale By The Sea. Credit must be used within a year of order being submitted. Credit valid for bulls *ONLY*. The credit can only be 20% of total bull purchase.

#### *For Example*

*Spend: \$5,000 Use: \$1,000 Credit*

*Spend: \$10,000 Use: \$2,000 Credit*

### **SUBMITTING SAMPLES**

Samples will *NOT* be sent off unless the payment is included with sample submission. Be sure to make your checks payable to: Teixeira Cattle Co.

### **QUESTIONS? COMMENTS? CONCERNS?**

Please do not hesitate to contact us with any questions you may have regarding TCC Igenity.

John Teixeira: 805-448-3859

Tom Hill: 541-990-5479

Adam Teixeira: 805-459-1519

Email: [cattle@thousandhillsranch.com](mailto:cattle@thousandhillsranch.com)

Office Phone: 805-595-1420

You can also contact Tyler Gray with Neogen.

Email: [tgray@neogen.com](mailto:tgray@neogen.com)

Phone: 402-310-5056

