

# Quick Reference to ASA EPDs and \$ Indexes

## Expected Progeny Differences (EPDs)

EPDs are the most accurate and effective tool available for comparing genetic levels. In using EPDs, the difference between two sires' EPDs represents the unit difference expected in the performance of their progeny. For example, if sires A and B have EPDs of +10 and -5, a 15-unit difference would be expected in their progeny (moving from -5 to +10 yields 15 units). Key to using EPDs is knowing what units they are expressed in. For example, if the above case referred to weaning weight EPDs, A would be expected to sire 15-pounds more wean-

ing weight than B. If calving ease were the trait, A would be expected to sire 15-percent more unassisted births in first-calf heifers; in other words, if B sired 30 assists in a group of 100 heifers, we'd expect A to require 15 assists. A percentile-ranking chart is required to determine where a bull's EPDs rank him relative to other bulls in the breed. For percentile rankings or more detailed information about EPDs and \$ indexes, visit [www.simmental.org](http://www.simmental.org), then click GENETIC EVALUATION. *Listed below are the units ASA EPDs are expressed in:*

**All-Purpose Index (API):**

Dollars per cow exposed under an all-purpose-sire scenario. (See below for more details.)

**Back Fat (BF):**

Inches of backfat.

**Birth Weight (BW):**

Pounds of birth weight.

**Calving Ease (CE):**

Percent of unassisted births when used on heifers.

**Carcass Weight (CW):**

Pounds of carcass weight.

**Maternal Calving Ease (MCE):**

Percent of unassisted births in first-calving daughters.

**Milk (MLK):**

Pounds of weaning weight due to milk.

**Marbling (MRB):**

Marbling score.

**Maternal Weaning Weight (MWW):**

Pounds of weaning weight due to milk and growth.

**Ribeye Area (REA):**

Square inches of ribeye.

**Stayability (STAY):**

Percentage of daughters remaining in the cowherd at six years of age.

**Terminal Index (TI):**

Dollars per cow exposed under a terminal-sire scenario. (See below for more details.)

**Weaning Weight (WW):**

Pounds of weaning weight.

**Yearling Weight (YW):**

Pounds of yearling weight.

**Yield Grade (YG):**

Yield grade score.

## \$ Indexes

Though EPDs allow for the comparison of genetic levels for many economically important traits, they only provide a piece of the economic puzzle. That's where \$ indexes come in. Through well-conceived, rigorous mathematical computation, \$ indexes blend EPDs and economics to estimate an animal's overall impact on your cowherd enterprise. The same technology that led to the dramatic progress in swine, poultry and dairy genetics over the last several decades was used to develop the following \$ indexes:

**All-Purpose Index (API):**

Evaluates sires for use on the entire cow herd (bred to both Angus first-calf heifers and mature cows) with the portion of their daughters required to maintain herd size retained and the remaining heifers and steers put on feed and sold grade and yield.

**Terminal Index (TI):**

Evaluates sire for use on mature Angus cows with all offspring put on feed and sold grade and yield.

**Using API and TI:**

First, determine which index to use; if you're keeping replacements, use API, if not, TI. Then, just as with

EPDs, zero in on the unit difference between bulls. (As described above, index units are in dollars per cow exposed.) The difference can be used to determine how much a bull is worth compared to another. Or, put another way, how much you can pay for one bull compared to another. For example, when buying an all-purpose-type sire, you can quickly figure a bull scoring +100 for API is worth an extra \$6,000 over a +50 bull if both are exposed to 30 cows over 4 years ( $\$50 \text{ diff.} \times 30 \text{ hd.} \times 4 \text{ yr.} = \$6,000$ ). A percentile-ranking chart is required to determine where a bull's index value ranks him relative to other bulls in the population. For percentile rankings or more detailed information about EPDs and \$ indexes visit [www.simmental.org](http://www.simmental.org).

**Important disclaimer:**

DO NOT compare index values of purebreds of different breeds, hybrids of different breed composition or purebreds with hybrids — our system was not developed to make valid comparison among these groups. Therefore, you must first determine the breed and breed composition appropriate for your herd and use index values to compare animals within that population.

# TraitTrac:

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The American Simmental Association (ASA) has a **TraitTrac** indicator on the web pedigree page of every animal in our database. Like a traffic signal light, **green** indicates safety from genetic defects, **yellow** means be careful, and **red** says, there is potential danger.

*Dr. Jerry Lipsey, Executive Vice President  
American Simmental Association*

Many factors impact customer satisfaction, and one is confidence that genetic defects are absent. Of course, the reality of biology is that mutations, unknown defects, or undetected defects are nearly always a possibility. Here at the American Simmental Association (ASA), we are testing the most influential bulls in our businesses in order to assure we are not spreading genetic abnormalities.

## ASA screens the 50 Most-Used Sires:

If you think the most recent outbreaks of genetic defects in several breeds were amazingly widespread, reproductive technologies are likely the cause. A.I. combined with synchronization creates the opportunity for a single A.I. sire to have huge impacts on the genetic make up of any breed or herd.

Each year, the top 50 bulls (A.I. sires), have a large impact on all SimGenetic traits. Of course, each year, the list is a different 50 than the previous; however, popular A.I. sires often remain in the top 50 for a significant part of a decade. Typically, twice per year, we send DNA for lab evaluations of genetic defect status of these most-used sires.

**Table 1** displays our tests for these Most-Used Sires. As you can see, there are many more genetic abnormality tests than most cattle producers would estimate. It's not practical to test every sire that qualifies into the 50 Most-Used list for all these defects, and some tests are difficult, time consuming and expensive. In addition, this list in **Table 1** is apt to expand with scientific advancements.

## There will be more DNA tests:

In our future, some other abnormalities we expect will be detected by DNA analyses are fawn calf, cleft palate and many others. Some defects such as syndactyly (Holstein and Angus), protophyria (Limousin), and beta-mannosidosis (Salers

**Table 1 — Genetic Defect Tests For Screening ASA's Most-Used Sires**

| Genetic Defect                                     | Service Provider(s)                                 |
|--|---|
| <b>DW1</b> (Angus Dwarfism)                        | MMI Genomics  |
| <b>AM</b> (Arthrogyrosis Multiplex)                | Pfizer, Igenity, GeneSeek, AgriGenomics, Genex, MMI |
| <b>BLAD</b> (Bovine Leukocyte Adhesion Deficiency) | Maxxam Analytics                                    |
| <b>CVM</b> (Complex Vertebral Malformation)        | Maxxam Analytics                                    |
| <b>DL</b> (coat color dilution)                    | AgriGenomics, Igenity                               |
| <b>IE</b> (Idiopathic Epilepsy)                    | AgriGenomics, Igenity, Pfizer                       |
| <b>HY</b> (Hypotrichosis)                          | AgriGenomics  |
| <b>KY</b> (Karyotype)                              | UC Davis  |
| <b>NH</b> (Neuropathic Hydrocephalus)              | Pfizer, Igenity, GeneSeek, AgriGenomics, Genex, MMI |
| <b>OS</b> (Osteopetrosis)                          | Pfizer, Igenity, GeneSeek, AgriGenomics, MMI        |
| <b>PHA</b> (Pulmonary Hypoplasia with Anasarca)    | Pfizer, Igenity, GeneSeek, AgriGenomics             |
| <b>TH</b> (Tibial Hemimelia)                       | Pfizer, Igenity, GeneSeek, AgriGenomics             |

and Angus) already have DNA tests developed; however, we are not yet confident these tests are effective for SimGenetic-based animals. When we are sure, we will screen numerous sires and grandsires.

When ASA receives genetic abnormality test information, we accumulate the information in our database and provide visual signals for public viewing on our website. All the animals in our database can be pedigree and performance-viewed on our website ([www.simmental.org](http://www.simmental.org) or [www.simbrah.org](http://www.simbrah.org)).


The web pedigree page has a red, yellow or green circular indicator in the upper right hand corner that we refer to as **TraitTrac**. Be sure you know where the **TraitTrac** indicator is in the following graphic (next page) and always check for a green light before you buy or sell.

# Eliminate Worry over Genetic Defects

## Crossbreed with "Green Light" Simmental or SimGenetic Bulls

Crossbreeding nearly eliminates abnormal calves! ASA's policy of DNA testing our most popular sires is protecting SimGenetic breeders from spreading defects. The American Simmental Association is focused on crossbreeding; consequently, **Simmental-sired calves have almost zero risk for the defects listed in Table 1.**

ASA Nbr: 2392907      MCM 727T      Tattoo: 727T

Single Birth Bull      1/2 SM 1/2 AN      TraitTrac: 

Owner 000303 - MC DERMOTT & SONS, M C      Birth Date 04/28/2007  
Breeder 000303 - MC DERMOTT & SONS, M C      Original Issue: 2007-10-10

|     | CE   | Brth | Wean | Year | MCE  | Milk | MWW | Stay  | CW    | YG   | Marb | BF   | REA | Shr   | API  | TI |
|-----|------|------|------|------|------|------|-----|-------|-------|------|------|------|-----|-------|------|----|
| EPD | -3.3 | 4.6  | 23.8 |      | 9.9  | 12.2 |     | -27.3 | -0.02 | 0.42 | 0.05 | 0.10 |     | 109.9 | 54.3 |    |
| ACC | 0.33 | 0.29 | 0.28 |      | 0.23 | 0.24 |     | 0.24  | 0.16  | 0.17 | 0.17 | 0.16 |     |       |      |    |

**- Pedigree +**

|                          |         |   |
|--------------------------|---------|---|
| C A FUTURE DIRECTION5321 | 2146546 | P |
| MCM MARBLER 307N         | 2203727 | P |
| MCM 119L                 | 2123480 | P |
| MCM 727T                 | 2392907 | P |
| HUNTS CALCULATOR 2720    | 2109289 | P |
| MCM 336N                 | 2203753 | P |
| MCM 832H                 | 1989322 | P |

Owner 000303 - MC DERMOTT & SONS, M C      Date of S 04/28/2007

Click the green circle next to TraitTrac to see or read information on the DNA and Genetic tests for the animal (and ancestry).

### Information on DNA and Genetic tests

2392907 MCM 727T

NH - AF

**- Pedigree +**

|                           |         |    |
|---------------------------|---------|----|
| C A FUTURE DIRECTION 5321 | 2146546 | P  |
| C A MISS POWER FIX 30R    | 2059977 | PR |
| MCM MARBLER 307N          | 2203727 | P  |
| BLACK IRISH KANSAS        | 1925514 | DF |
| MCM 119L                  | 2123480 | P  |
| MCM 722G                  | 1930760 | P  |
| MCM 727T                  | 2392907 | AF |
| G O A B T 11 COMPUTER     | 2204723 | AF |
| HUNTS CALCULATOR 2720     | 2109289 | DF |
| RR 1148 1DA 720A          | 8792841 | PR |
| MCM 336N                  | 2203753 | P  |
| HSF BLACK ON TRACK 61E    | 1862852 | PR |
| MCM 832H                  | 1989322 | P  |
| MCM 570E                  | 1827287 | PR |

**Legend**

- TF: Tested Free
- PF: Parentage Free
- DF: Documented Free
- AF: Assumed Free
- TC: Tested Carrier
- CL: Carrier in Lineage
- PR: Population Risk

**Traits**

- NH: Neuropathic Hydrocephalus
- AM: Arthrogryposis Multiplex

AM - AF

**- Pedigree +**

|                           |         |    |
|---------------------------|---------|----|
| C A FUTURE DIRECTION 5321 | 2146546 | P  |
| C A MISS POWER FIX 30R    | 2059977 | PR |
| MCM MARBLER 307N          | 2203727 | P  |
| BLACK IRISH KANSAS        | 1925514 | DF |
| MCM 119L                  | 2123480 | P  |
| MCM 722G                  | 1930760 | P  |
| MCM 727T                  | 2392907 | AF |
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| MCM 832H                  | 1989322 | P  |
| MCM 570E                  | 1827287 | PR |

| Color Code Designations         | Action  |
|---------------------------------|---|
| <b>TF</b><br>Tested Free        | Level of security that an animal will not pass on a genetic defect. |
| <b>PF</b><br>Pedigree Free      |   |
| <b>DF</b><br>Documented Free    |   |
| <b>AF</b><br>Assumed Free       |   |
| <b>PR</b><br>Population Risk    | Not Tested Potential or unknown risk without testing.               |
| <b>CL</b><br>Carrier in Lineage |   |
| <b>TC</b><br>Tested Carrier     | Known carrier of a genetic defect                                   |

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# Carcass Merit Program

## ASA's Young Sire Progeny Testing Program

With the first matings at the Sheek Ranch, Cabool, Missouri in the spring of 1997, the American Simmental Association launched a program that would eventually change the direction and collective futures of all producers and users of Simmental Genetics. Then simply known as the Carcass Merit Project, the top sires of the Simmental and Simbrah breeds were randomly mated to commercial females with the plan to collect difficult-to-get progeny sire group carcass information and sometimes tenderness data. Now entering its 15th breeding season, over 35,000 females have been mated and nearly 10,000 carcass records have been collected to bolster the ASA's end product genetic evaluation. In addition to information about Quality and Yield traits, this program contributes well over 1,000 birth, weaning and yearling weights, and calving ease scores each year and nearly 4,000 shear force records have been collected. Another more recent addition to the CMP has been the inclusion of intake and feed conversion data collection at the University of Illinois on nearly 2,000 sire identified steers.

You may ask yourself, who pays for all this? Bull owners commit thousands of dollars each year to get unbiased evaluation for the next generation of geneti-

cally influential young candidate sires. This information is important for all SimGenetic users as it builds significant accuracy for economically important EPDs and assists in the early screening for bulls that possess unique levels of trait differential and thus provide maximum selection leverage.

These data collected also have allowed the ASA to amass substantial information for benchmarking so that performance and value expectations can be conveyed to current and potential customers of our members. From providing confidence regarding levels of calving assistance, all the way to predicting end product value for those wishing to be profitable in the feeding business, ASA can reliably estimate the performance of their genetic products due in part to the information collected on SimGenetic sires tested in these "real world" commercial situations. To date, data have been collected on individuals from 41 different commercial herds in 18 states with steers fed and harvested in nearly every cattle feeding region of the US. In fact, end product data collected in this sire evaluation program led directly to the specifications developed for the 7070 beef marketing grid.

## Carcass Merit Sire Evaluation Program

Each year, bull owners commit thousands of dollars to get unbiased evaluation for the next generation of genetically influential young candidate sires. For SimGenetic users, this information is critical for building significant accuracy for economically important EPDs.

**For more information, contact:**  
American Simmental Association  
406-587-4531 or  
simmental@simmgene.com



*Sires are tested in "real world" commercial situations. Data is collected from 41 different herds in 18 states with steers fed and harvested in nearly every cattle feeding region in the U.S.*

### Carcass Merit

- Over 35,000 commercial cows mated
- 10,000 carcass records collected
- Average 74% Choice, YG 2.8
- Complete tenderness data

### Calving Ease

- 4,400 British heifers mated
- Average Birth Weight 78.6 lbs
- Elite Simmental calving-ease lines identified and published

### Feed Conversion

- 1,318 sire-identified SimAngus™ progeny test steers
- Average Dry Matter Feed Conversion 6:3:1
- Average Daily Gain 3.62 lbs/day