

# U.S. Genetic Evaluations

## **1. Lifetime Net Merit \$**

Lifetime Net Merit \$ measures net profit over the lifetime of a bull's average daughter. Traits and weightings in the Lifetime NM\$2006 index:

Production (23% PTA Fat & 23% PTA Protein)....	46%
Productive Life (PL).....	17%
Somatic Cell Score (SCS).....	-9%
Daughter Pregnancy Rate (DPR).....	9%
Calving Ease (SCE) (DCE).....	2%
Stillbirths (SSB) (DSB).....	4%
Udder Composite.....	6%
Feet and Legs Composite (FLC).....	3%
Size Composite.....	-4%

## **2. Lifetime Net Merit \$ Percentage Ranking**

Net Merit \$ ranking in the U.S. population.

## **3. Reliability (REL or R)**

A measure of the amount of information in a trait. Reliability is expressed as a percentage, ranging from 1 to 99. The closer the Reliability is to 99, the more reliable the proof.

## **4. Lifetime Cheese Merit \$**

Lifetime Cheese Merit \$ was designed for producers who sell milk in a cheese market. Protein has more value in the cheese market than it does in the standard component pricing market. Milk receives a negative economic weight in the Cheese Merit index. The Lifetime Cheese Merit index combines the same traits as the Lifetime Net Merit index.

## **5. Lifetime Fluid Merit \$**

Lifetime Fluid Merit \$ combines the same traits as the Net Merit index with different weightings. This index is useful for dairies paid solely for milk volume, as more emphasis is placed on milk yield.

## **6. Daughters**

The number of daughters included in the bull's milk proof.

## **7. Herds**

The number of different herds a bull's daughters are located in (considering daughters which are included in the bull's milk proof).

## **8. PTA Milk**

PTA for milk production in pounds, reflecting the expected milk production of future mature daughters.

## **9. PTA Fat Pounds**

PTA for butterfat in pounds, reflecting the expected butterfat production of future

mature daughters.

**10. PTA Fat Percent**

Indicates the genetic variance of a bull's PTA for transmitting fat as being positive or negative.

**11. PTA Protein Pounds**

PTA for protein production in pounds, comparing the expected production of future mature daughters.

**12. PTA Protein Percent**

Indicates the genetic variance of a bull's PTA for transmitting protein as being positive or negative.

**13. PTA Productive Life**

Productive Life is a measure of longevity, measured in months.

**14. PTA Somatic Cell Score (SCS)**

The PTA for SCS is used to improve mastitis resistance. Bulls with low PTA for SCS (less than 3.0) are expected to have daughters with lower mastitis than bulls with high PTA for SCS (greater than 3.5).

**15. PTA Type (PTAT)**

PTA Type is an estimate of the genetic superiority for conformation that a bull will transmit to its offspring. This is directly correlated with the final score of the bull's daughters, not the linear traits.

**16. Udder Composite**

Udder Composite is an index based on ability for udder improvement. Udder Composite includes six linear traits, and the weighting for each trait reflects the trait's contribution to higher udder scores.

The traits and their weightings are:

Udder Depth.....	35%
Front Teat Placement.....	5%
Fore Udder Attachment.....	16%
Rear Udder Height.....	16%
Rear Udder Width.....	12%
Udder Cleft.....	9%
Rear Teat Placement.....	7%

**17. Feet and Legs Composite**

Feet and Legs Composite is a measure of a bull's ability for foot and leg improvement. Weights for the four traits in the composite are:

Feet and Legs Score.....	50%
Foot Angle.....	24%
Rear Legs-Rear View.....	18.5%

Rear Legs-Side View.....7.5%

### **18. TPI™ (Type Performance Index)**

TPI™ combines several traits into one index to rank sires on their ability to transmit a balance of these traits. TPI™ is calculated by Holstein Association-USA. The traits and their values are:

Fat & Protein.....45%  
Productive Life.....10%  
Somatic Cell Score.....5%  
Udder Composite.....10%  
Feet & Legs Composite.....5%  
PTA Type.....13%  
Dau Pregnancy Rate.....8%  
Dau Calving Ease.....2%  
Dairy Form.....1%  
Dau Stillbirth.....1%

### **19. Calving Ease**

Sire Calving Ease: Percentage of Estimated Difficult Births in Heifers (EDBH) when they calve for the first time. Using bulls 8% EDBH or less can be used to reduce stress on first-calf heifers. Daughter Calving Ease: Tendency of daughters of a particular sire to have more (or fewer) problems at calving than an average cow and to produce calves that are born more easily (or difficult) than calves produced by an average cow.

### **20. Stillbirth**

Service Sire Stillbirth: measures the tendency of calves from a particular service sire to be stillborn more or less often. Daughter Stillbirth: measures the ability of a particular cow (daughter) to produce live calves. Stillbirth is expressed as percent stillbirths, where stillborn calves are those scored as dead at birth or born alive but died within 48 hours of birth.

### **21. Fertility**

Sire Fertility: Estimated Relative Conception Rate (ERCR) is the difference of conception rate of a sire, expressed as a percent, compared to other A.I. sires used in the same herd. ERCR is calculated on bulls with 300 inseminations recorded in the past three years. ERCR is calculated by USDA.

GenCheck™: A fertility evaluation on all bulls with 300 or more services, but do not have an official ERCR calculated by USDA. Dau. Pregnancy Rate: Percentage of nonpregnant cows that become pregnant during each 21-day period. A DPR of '1' implies that daughters from this bull are 1% more likely to become pregnant during that estrus cycle than a bull with an evaluation at zero.

### **22. SynchSmart**

SynchSmart evaluates conception of sires when bred to females which have been synchronized (ovulation induced through hormonal treatment).

### **Linear Type Traits**

Genetic evaluations for the 18 linear type traits are expressed as Standard

Transmitting Abilities (STAs). Standardized values are used because each trait has a different average PTA, and the PTA ranges vary within traits. STAs simplify interpreting the linear genetic evaluations. As a result, all linear traits have an average of 0. The range of STA values is generally 6 STA units. Both extremes for each trait are approximately 3 STA units from the average.

***Interbull and Interbull-MACE***

If a bull has daughters in two or more countries he receives an Interbull proof. Interbull allows comparisons of bulls who were sampled in different countries. Interbull-MACE (Multiple Trait Across Country Evaluation) is used for international type evaluations. The Interbull proof listed is on the U.S.A. base.

***Genetic Base***

The genetic base for the evaluations is PTA 05, representing the average of cows born in 2000.