



## Description of Genetic Terms

1. **REGNAME**  
The herdbook name of the bull
2. **CODE #**  
The special number which the AI companies use to identify sires
3. **MILK**  
The average milk production of a bull's daughters in a 305 day lactation (expressed in pounds: 1 kg = 2.2 pounds).
4. **FAT**  
The average fat production of a bull's daughters in a 305 day lactation (expressed in pounds).
5. **FAT%**  
The average fat% of a bull's daughters.
6. **PRO**  
The average protein production of a bull's daughters in a 305 day lactation (expressed in pounds).
7. **PRO%**  
The average protein % of a bull's daughters.
8. **# DTRS**  
The number of milking daughters this sire has in his proof.
9. **# HERDS**  
The number of herds where this bull's daughters are milking.
10. **PTAM**  
Predicted ability of sire to transmit genetics for milk production. The pounds of milk produced by a bull's daughters above contemporaries.
11. **PTA%F, PTAF**  
As for PTAM, this is the amount of fat a bull's daughters are expected to produce above contemporaries.
12. **PTA%P, PTAP**  
As for PTAM, this is the amount of **TRUE** protein a bull's daughters are expected to produce above contemporaries.
13. **REL**  
Production reliability
14. **PTAT**  
Type or confirmation improvement expected from a bull's daughters compared to contemporaries
15. **TPI**  
Total Performance Index: This is a figure which combines type, management and production traits into one number. Very commonly used to rank bulls, TPI is the USA Holstein Association's multi trait index that ranks bulls on overall performance. The traits included in the TPI formula, and their respective percentages in the formula are:
  - Fat 16%
  - Protein 27%
  - Feed Efficiency (FE) 3%
  - Productive Life (PL) 7%
  - Somatic Cell Score (SCS) -5%
  - Fertility Index (FI) 13%
  - Daughter Calving Ease (DCE) -2%
  - Daughter Still Birth (DSB) -1%
  - PTA Type 8%



UDC 11%  
FLC 6%  
Dairy Form -1%

TPI places more emphasis on type traits than the Net Merit formula, comparable emphasis on Fat and Protein production, and slightly lower emphasis on health traits.

16. **TREL**

Type reliability

17. **SCS**

Somatic cell score: Measures a bull's milking daughter's susceptibility to mastitis. The USA herd average is 3.00 with lower proof values indicating greater resistance to mastitis incidence.

18. **SCS REL**

Somatic cell reliability

19. **PL**

Productive life is a score used to identify the productive days of life a cow will have compared to herd mates. A PL of 1.0 equates to one additional month of production in the herd. Only the first 305 days of lactation are included in the calculation of PL. Therefore, a lactation of 335 days in length will not receive any additional credit toward PL than a lactation of 305 days.

20. **PL REL**

Productive life reliability

21. **FE**

The Feed Efficiency (FE) Index takes into account the individual feed costs to produce an extra pound of milk, fat and protein while accounting for differences in maintenance costs, housing costs and calving weights that may be attributed to the size of the cow. Cows that produce high volumes of milk without requiring high volumes of feed are rewarded in this index.

$FE = (\text{dollar value of milk produced}) - (\text{feed cost of extra milk}) - (\text{extra maintenance cost})$

22. **NM\$**

Net Merit: Economic value which is a consideration of production, SCS and PL scores. Is the expected lifetime profitability of a bull's average daughter as calculated by the USDA-AIPL. The traits included in the NM\$ formula and their respective percentages in the formula are:

Fat 22%  
Protein 20%  
Milk -1%  
Productive Life (PL) 19%  
Somatic Cell Score (SCS) -7%  
Daughter Pregnancy Rate (DPR) 7%  
Heifer Conception Rate (HCR) 2%  
Cow Conception Rate (CCR) 1%  
Calving Ability (CA\$) 5%  
Udder Composite (UDC) 8%  
Feet and Leg Composite (FLC) 3%  
Body Size Composite (BDC) -5%

23. **SCE**

Sire Calving Ease: This is the estimate of the Percentage of Difficult Births in Heifers (DBH) when they calve the first time. Each standard deviation in improvement equates to a 1% decrease in difficulty. The average for AI bulls with progeny is 7.9% DBH.

24. **SCE OBS**

Number of calvings observed



**25. SCE REL**

Calving ease reliability

**26. DCE**

Daughter Calving Ease: Tendency of daughters of a particular sire to have more (or fewer) problems at calving time than an average cow and to produce calves that are born more easily (or more difficult) than calves produced by an average cow. measures the ability of a cow to calve easily. Each standard deviation in improvement equates to a 1% decrease in difficulty. Low Daughter Calving Ease is highly correlated with a long Productive Life.

**27. FI**

Fertility Index (FI) combines values from three measures of reproductive performance to provide one overall fertility score. Fertility Index = 18% HCR + 18% CCR + 64% DPR

**28. DPR**

Daughter Pregnancy Rate measures the cow's ability to begin cycling, show estrus, conceive and maintain pregnancy and is highly correlated with PL. A DPR of 1.0 equates to a 1% increase in pregnancy rate during a given 21 day estrus cycle. Each increase of 1% in PTA DPR equals a decrease of 4 days in PTA days open. For example, daughters of a bull with 3.4 DPR will get in calf 13.6 days quicker on average than a bull with a DPR of 0.

**29. HCR**

PTA HCR (Heifer Conception Rate) – measures the ability of virgin heifers to conceive. An HCR of 1.0 equates to a 1% increase in heifer conception rate.

**30. CCR**

PTA CCR (Cow Conception Rate) – measures the ability of lactating cows to conceive. A CCR of 1.0 equates to a 1% increase in cow conception rate.

**31. SCR**

Sire Conception Rate – this is not a genetic trait, but measures the fertility of the bull. An SCR of 1.0 indicates a 1% increase in conception rate when compared to average.

**32. UDC**

Udder Composite Index

Udder Depth 35%

Fore Udder 16%

Rear Udder Height 16%

Rear Udder Width 16%

Udder Cleft 9%

Front Teat Placement 5%

Rear Teat Placement 7% (absolute value of the difference between the animal's STA for RTP and the intermediate optimum STA of +1.0)

**33. FLC**

Feet and Legs Composite Index

FLC = 0.5(Linear Traits) + 0.5(Feet and Legs Score)

Linear Traits = 0.48(Foot Angle) + 0.37(Rear Legs Rear View) – 0.15(Rear Legs Side View)

**34. KC**

Kapa Casein: This indicates the “type” of Casein (milk protein) a bulls daughters will have – AA, AB or BB