



Dairy cattle breeding terminology

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CALVING INTERVAL (C.I.)

The period of time from one calving to the next (includes the lactation period and the dry period prior to the next calving).

CARRIER

An animal having a recessive gene in its genetic make-up. *Red Carrier* Holsteins, for example, are black and white and give no outward indication that they *carry* and can transmit the gene for red color.

CHARACTER (characteristic)

A feature of form or function in an animal caused by the joint action of a gene or group of genes and the environment. Milk yield is a character (or characteristic), as are color, horns, etc.

CHROMOSOMES

The cell material which acts as the means for transporting genes during cell division. Chromosomes (except sex chromosomes) normally occur in pairs in cells of the body.

FRATERNAL TWINS

Two individuals developing from the fertilization of two separate eggs, each by a different sperm cell, carried during the same pregnancy. May be both males or females, or one male and one female.

FREEMARTIN

Sterile female born twin with a bull. About 93% of females born twin with a bull are sterile. Registration of such a heifer is withheld until proof of fertility is established.

GAMETE

A reproductive cell of either sex; a sperm or an egg.

GENES

The units or factors of heredity that are responsible for the expression of any characteristic. Genes are tiny segments of protein contained in all cells. They normally occur in pairs and form the *bridge of inheritance* from one generation to the next.

GENETICS

The science or study of inheritance.

GENETIC VARIATION

The differences in genetic makeup that exist among animals.

GESTATION

Period from conception to birth of offspring; pregnancy. Average length of gestation for dairy cattle is approximately 280 days.

HERITABILITY

The percent of effectiveness with which a characteristic is passed from parents to offspring; genetic similarity between generations. May also be considered as that part of the phenotype selected for in the parents and found expressed in the offspring.

IDENTICAL TWINS

Two individuals that developed as a result of the division of one fertilized egg. Must be of the same sex and are extremely similar. Color markings of one may be mirror image of other. More correctly referred to as monozygotic twins.

INBREEDING

Practice of mating animals more closely related than the average of the population.

Examples: full brother to sister, sire to daughter, or son to dam.

LACTATION PERIOD

Length of time cow is producing milk. The period of continuous milk production from the time of calving until dry.

LETHAL

Destructive of life.

LETHAL GENE

A gene which causes the death of the calf, usually before or at birth. Most gene pairs causing inherited lethals must be in the homozygous (pure) recessive condition to be fatal to the calf.

LINEBREEDING

A mild form of inbreeding. Usually practiced to maintain as high a relationship as possible to some outstanding ancestor.

LONGEVITY

Length of useful life.

MATURE EQUIVALENT (M.E.)

A lactation record that is corrected for age and season to estimate mature production—using available age-conversion factors. M.E. applies to records used for comparative purposes as in sire evaluation where many production records are involved. Not intended as a predictive figure on individual animals.

2X-305-M.E.

A production record made by or adjusted to twice a day milking for 305 days, and age-corrected to a Mature Equivalent basis.

MUTATION

A rare change in the DNA. Extent to which mutations influence the inheritance of farm livestock is not known precisely.

PENETRANCE

The ability of a gene or group of genes to cause their characteristic to develop under the conditions of a particular environment. Color has a high penetrance; for instance, a calf will be black and white in any environment. Most economic characters (milk production, rate of gain, etc.) have imperfect penetrance. They are influenced by environmental factors.

PERSISTENCY

The degree to which milk yield is maintained from month to month by the cow during her lactation.

PREDICTED TRANSMITTING ABILITY (PTA)

Estimate of genetic superiority (or inferiority) that an animal will transmit to an offspring. It is used for both males and females.

PROBABILITY

The likelihood, chance or odds of the occurrence of any particular event. The *odds* of getting a heifer are 50:50 or 1:1.

PROGENY TEST

The evaluation of an animal based upon the performance or appearance of its offspring. The most reliable means of determining the genetic makeup of an animal for major physical traits.

RED FACTOR

Refers to the gene for *recessive red* in Holstein cattle. When referred to as the Red Factor, the gene is in the mixed condition (Bb) and unexpressed in the *carrier* bull or cow. Thus a Red-Factor bull is an example of a carrier bull (See CARRIER).

RELIABILITY (REL)

Measure of amount of information in the PTA estimate. Information from the animal, the parents, and progeny are considered.

SEX and AGE TERMINOLOGY

For dairy cattle: young female-heifer, young male-bull, castrated male-steer, mature female-cow, mature male-bull.

SEX RATIO

Ratio of males to females. Expected ratio is 50:50 over an extended period of time.

TEST DAMS

Refers to females of known genetic makeup for a pair or pairs of genes. Test dams are mated to a sire suspected of being a carrier of a specific gene or genes.

UNDESIRABLE RECESSIVE

An undesirable characteristic produced by a pair of homozygous recessive genes. Many result in deformed or dead calves.

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