

AJCA Pedigree Recording and Registry Status

Effective November 1, 2019

The *Rules for the Registration and Transfer of Jersey Cattle* define the programs and procedures approved by the Board of Directors for recording animals in the permanent database of the American Jersey Cattle Association (AJCA). The following information is required:

- (a) birth date of the animal,
- (b) permanent identification in the form of tattoo in the ear or AJCA-approved double-matching tamper-evident eartags, and
- (c) parent information (*pedigree*).

The Association records descendants of animals registered in the AJCA Herd Register through rules for the Herd Register and Generation Count system. As required, prefix and suffix designations will be added per AJCA rules. The Association also records registered Jersey cattle imported from countries having recognized herd books.

Herd Register

Animals with Herd Register (HR) status have seven (7) or more unbroken generations of known Jersey ancestors that are recorded by the Association. The Association issues a green-bordered *Certificate of Registration* for these animals.

Generation Count Recording

The Association also records:

- (a) animals that exhibit the characteristics of Jersey cattle but lack complete documentation of parentage, and
- (b) animals that have one known and AJCA-recorded Jersey parent and a parent of another breed.

With the continued use of AJCA Herd Register status bulls, progeny will progress to HR status (*see Tables 1 and 2*).

1. Females are recorded at all Generation Counts.
2. Generation Count {1} is assigned to the female that has one known parent (either sire or dam) recorded by the AJCA. The other parent may be completely unknown or of another breed. If both parents are unknown, the animal may be qualified for recording by being genotyped (*see notes, Table 1*).
3. Until November 1, 2019, bulls may be recorded with a minimum Generation Count of {3} after additional stipulations are met (*see Requirements to Record Bulls*).
4. The numerical designation of progeny will increase by one (1) from the Generation Count of the sire or dam, whichever

is lowest (*refer to tables*).

5. Progeny of Generation Count {6} parents have Herd Register status and do not have a suffix in their registration names.
6. When an unknown animal or animal of another breed is introduced to an animal's pedigree, the Generation Count will be reset to start at {1}.

The Generation Count suffix is an integral part of the animal name. The gold-bordered *Certificate of Identification* is issued to animals recorded at Generation Counts 1, 2 and 3. Generation Count 4, 5 and 6 animals are issued the green-bordered *Certificate of Registration*.

Requirements to Record Bulls

Males that can be recorded with Herd Register (HR) status do not have to be genotyped in order to be registered.

Males that will have a Generation Count must have (1) a minimum Generation Count of 4; (2) the bull, its sire and its dam must be genotyped; and (3) the bull must have a Breed Base Representation (BBR) of 100 (*Effective November 1, 2019*).

In addition, effective January 1, 2019, all Generation Count and JX males must be genotyped for declared undesirable non-Jersey

traits as a condition of registration. Test results must be reported to AJCA and any positive carriers will be reported on animal performance documents.

Unregistered (UR) Recording

Animals with permanent identification that are not qualified to be recorded in the Herd Register or with a Generation Count shall be recorded with prefix "UR" and Generation Count 0 included in their name. The *Certificate of Identification* is issued to the owner.

Prefixes and Suffixes Assigned by Rule

All animals having one (or more) ancestor(s) of another breed within six (6) generations shall have the letters "JX" included in their names as a prefix.

The following letters shall be included in animal names as a suffix as applicable: "ET" for animals produced through embryo transfer, "ETS" for animals resulting from split embryos, and "ETN" for animals resulting from nuclear transfer (cloning); "P" for polled animals with one polled parent, "PP" for animals determined to be homozygous polled by testing, consistent with their pedigree; "LL" for declared carrier of Limber Legs, and "RVC" for declared carrier of Rectovaginal Constriction.

Eligibility for National Awards and Shows

Females with Generation Count 4 or greater are eligible for Honor Roll, Hall of Fame, and National Class Leader recognition,

(continued on reverse)

Table 1. AJCA Recording System for Females, effective March 12, 2016

Dam Status	Generation Count of Sire						HR
	UR	{2}	{3}	{4}	{5}	{6}	
	Generation Count of Offspring (<i>see Notes</i>)						
UR	UR or {1}*	{1}	{1}	{1}	{1}	{1}	{1}
{1}	{1}	{2}	{2}	{2}	{2}	{2}	{2}
{2}	{1}	{3}	{3}	{3}	{3}	{3}	{3}
{3}	{1}	{3}	{4}	{4}	{4}	{4}	{4}
{4}	{1}	{3}	{4}	{5}	{5}	{5}	{5}
{5}	{1}	{3}	{4}	{5}	{6}	{6}	{6}
{6}	{1}	{3}	{4}	{5}	{6}	HR	HR
HR	{1}	{3}	{4}	{5}	{6}	HR	HR

Female recording starts at Generation Count 1, either (a) by pedigree listing a known and AJCA-recorded Jersey parent; or (b) qualified by genotyping.

* Recorded with prefix UR unless qualified by genotyping to be recorded with GC {1}.

the President's Trophy, Hilmar Cheese Award, Living Lifetime Production Contest and National Jersey Youth Production Contest, and included in calculations of AJCA herd lactation and Jersey Performance Index™ averages.

Animals recorded at Generation Count 4 and higher are eligible for national shows and AJCA-designated regional shows.

Breed Base Representation

Breed Base Representation (BBR) is a genomic trait that assesses the degree to which alleles in an individual animal's genome are in common with the allele frequency of the breed reference group for Ayrshire, Brown Swiss, Guernsey, Holstein and Jersey. The more an animal's genetic make-up resembles its breed reference group, the higher its BBR for the primary breed. Rules and publication policies for BBR are established by the Council on Dairy Cattle Breeding (CDCB).

Reference Group

The 3,886 A.I. bulls in the Jersey reference group (April 2019) were determined by CDCB selection criteria:

1. are genotyped, and
2. have daughters with milk evaluations, and
3. all 30 animals in the 5-generation breed stack are identified with the breed code Jersey; and
4. if born 2000 and later, all ancestors in the 5-generation pedigree are known.

Reference groups are updated annually with the April official genetic evaluations.

Reporting of BBR

CDCB policy is to report BBR values of 94 or greater for one breed as 100. BBRs below 94 are reported as calculated.

BBR is calculated and reported only once for all genotyped animals, unless re-genotyped with a higher density chip.

Understanding BBR

Variation in genomic BBR values is explained by these factors. *Within Breed.* Animals whose ancestors have been accurately documented purebreds for many generations often obtain a BBR for the primary breed less than 100, simply due to the calculation procedures.

BBRs in the range of 90 to 97 can reveal the presence of outcross bloodlines. When an animal is unrelated to the North American population or has bloodlines not well represented among the bulls included in the breed reference group, its BBR could well be in the mid-90s.

Common Alleles. Precise percentages of breed sources are not possible simply because animals vary. Also, because there are com-

mon alleles across breeds, the contribution from the primary breed could be off by 5% or even more from that derived.

Crossbreeding. A BBR lower than 90 usually indicates evidence of crossbreeding. In some cases, determining whether *crossbreeding or outcross bloodlines* is the basis for a lower relationship to the breed reference group can be difficult. Mistakes will be made if conclusions are drawn without considering that BBR numbers for the evaluated breeds could vary by as much as 5% from what is expected, and occasionally even more.

BBR is effective at detecting the presence of genetics from other breeds when such other breeds have provided a significant percentage of the alleles. Still, spread in BBR numbers is to be expected. Analysis of BBRs of animals that have three grandparents of breed X and one grandparent of breed Y (*expected breed alleles 75% and 25%*) show primary breed BBRs as low as 70 or as high as 80, simply due to limitations of the method. Some animals will deviate even more due to the random nature of which chromosomes are transmitted from grandparents through their sire and dam.

Breeds Referenced. Five dairy cattle breeds have enough A.I.

bulls genotyped to form a breed reference group. The BBR for each animal is determined relative only to these five groups, and even if all of an animal's genes do not come from the referenced breeds.

Pedigree Information. Missing or limited pedigree information may make it difficult to determine whether crossbreeding or outcross bloodlines is the reason for a relatively low BBR.

Publication of BBR

The AJCA publishes genomic BBR on pedigree, performance and genetic evaluation reports, and JMS sale catalog pedigrees.

The combination of AJCA registry status and BBR criteria are used to publish primary reports in the *Jersey Genetic Summary* ("Green Book"), as follows:

- *Males:* (a) all Herd Register and also Generation Count 4-6 bulls with BBRs expressed as 100; and (b) all Generation Count 3 bulls and Generation Count 4-6 bulls with BBRs less than 94;
- *Genotyped females:* (a) all Herd Register and also Generation Count 4 and greater with BBRs expressed as 100; and (b) all Generation Count 3 females and Generation Count 4-6 females with BBRs less than 94;
- *Non-genotyped females:* (a) all Herd Register; and (b) Generation Count 3 through 6.

Bulls must have their own genotype and have a BBR to be included in lists of *Active & Foreign Bulls Marketed in the U.S.*

Effective November 1, 2019, location December 2019 Jersey Genetic Summary

Table 2. AJCA Recording System for Males, effective November 1, 2019

Dam Status	Generation Count of Sire						HR
	UR	{2}*	{3}**	{4}	{5}	{6}	
Generation Count of Offspring (see Notes)							
UR							
{1}							
{2}		{3}	{3}	{3}	{3}	{3}	{3}
{3}		{3}	{4}	{4}	{4}	{4}	{4}
{4}		{3}	{4}	{5}	{5}	{5}	{5}
{5}		{3}	{4}	{5}	{6}	{6}	{6}
{6}		{3}	{4}	{5}	{6}	HR	HR
HR		{3}	{4}	{5}	{6}	HR	HR

* Bulls recorded by AJCA according to rules prior to March 14, 2015.

** Bulls recorded by AJCA according to rules prior to November 1, 2019.

REQUIREMENTS: Bulls at Generation Counts 4 through 6 will be recorded with the prefix UR until these requirements are met: (a) genotyping resulting in a Breed Base Representation (BBR) value of 100; (b) genotyping the sire; and (c) genotyping the dam.

Bulls with Herd Register (HR) status are not required to be genotyped before being recorded.