

GENETIC ABNORMALITIES IN JERSEY CATTLE

The American Jersey Cattle Association maintains a recording system to monitor abnormalities and publishes a list of declared carrier bulls to control two genetic abnormalities. Limber Legs (LL) was designated a genetic abnormality by the Board of Directors in November of 1972, followed by the declaration of Rectovaginal Constriction (RVC) in June of 1975.

Abnormal animals, fortunately, are rare. Few Jersey breeders have seen an animal affected with one of the declared Jersey abnormalities. Since these abnormalities are genetic in nature, it is important that all persons working with Jerseys be able to recognize the conditions. Suspected cases should be immediately reported to the American Jersey Cattle Association.

Limber Legs

The newborn calf is normal in all respects, except that:

- The shoulder and hip joints may be rotated in any direction without discomfort to the calf; and



Figure 1. A calf affected with Limber Legs, like the one shown above, will never be able to stand. Note the unnatural position of both the fore and rear legs.

- The calf cannot stand. It will struggle to stand, but cannot due to the incompletely formed muscles and joints.

Some calves affected with Limber Legs are born dead. Those that are born alive, however, appear healthy and may be kept alive for a few weeks. A calf affected with Limber Legs cannot stand. The condition will never improve.

Rectovaginal Constriction

Many genetic defects in cattle are easily diagnosed upon the birth of a calf, Limber Legs being one example. Other genetic defects are not detected, however, until clinical problems or calving difficulties occur. Such a defect is Rectovaginal Constriction (RVC).

RVC is characterized by stenosis of the vulvo-vestibular portion of the female reproductive tract and stenosis of the anal sphincter area in both sexes. In simple language, this means a tight anal opening and a constriction in the vulvar-vestibular area.

Parturition is abnormal due to inadequate relaxation of the vestibular ring and vestibular-vulvar area. Dystocia in females can be relieved only by episiotomy (incision of the vagina to permit the calf to pass through the canal) or Caesarian section.

At breeding time, the inseminator may not be able to perform his/her normal function because of the constriction (inelasticity) of the anal sphincter area. Natural breeding may take place since the insemination act does not involve invasion of the rectal area.

At time of pregnancy checking, the investigator almost always is unable to get far enough into the rectum to palpate the fetus.

At the time of birth, the manifestation of RVC is gross and easily determined. The non-elastic condition of the vulvar region makes normal calf birth impossible and a Caesarian section or episiotomy must nearly always be performed to deliver the calf.

Frequently the udder is also affected. Circulation of fluid through the udder may be so poor that extreme edema results, to the extent that gangrenous loss of teats and/or quarters may occur.

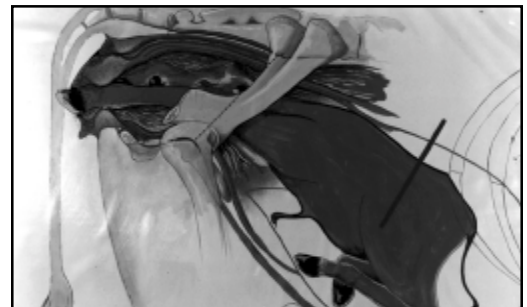
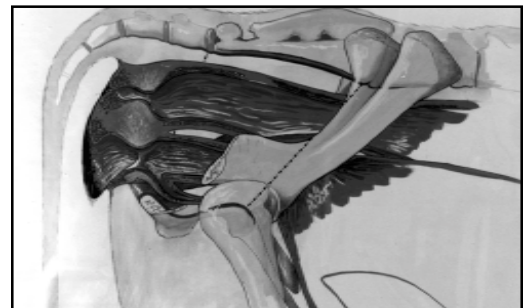
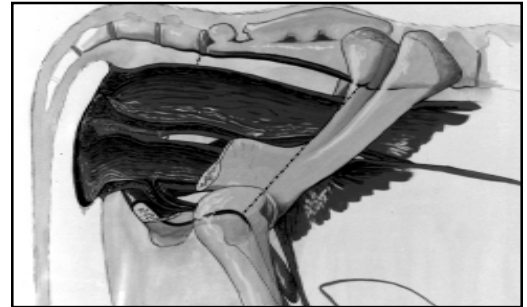


Figure 2. Compare the vulvo-vestibular area of the normal anatomy (top) with an RVC-affected anatomy (middle). The bottom illustration shows the extent to which the unborn calf can enter the birth canal of an RVC-affected dam before being unable to progress.

The Importance of Reporting

There are three important factors involved in controlling genetic abnormalities: reporting abnormal animals; labeling the carriers; and making this information available to people making breeding decisions.

Whether or not the AJCA's abnormality reporting program is effective depends almost entirely upon how complete the reporting is. The question often arises, "What do you report?" The answer is, "If it's out of the ordinary in your experience, report it to the Association." Report forms are available upon request from the Executive Secretary and Superintendent of Records.

Action On Abnormalities

Excerpted from

Bylaws of The American Jersey Cattle Association

Article IV, Section 4. The Executive Secretary shall make such investigations of genetic factors occurring in Jersey animals as he or she may believe necessary or advisable and shall report the results of his or her investigations to the Board of Directors. Each member and non-member of the Association shall cooperate fully in any such investigation. The Board of Directors shall determine what genetic factors are considered to be undesirable in the Jersey breed and shall take whatever action it may consider appropriate to control and limit such undesirable genetic factors.

The collection, compilation and dissemination of information relating to genetic factors is hereby declared to be in the furtherance of the aims and purposes of the Association, the preservation of the high breeding standards of Jersey cattle, and the protection not only of the members of the Association but also of the public generally; and dissemination of such information is therefore, deemed to be qualified privilege. Accordingly, the Association shall publish and release such information in accordance with procedures established by the Board of Directors. In so doing neither the Association, nor its officers, directors, employees, or agents shall be liable for damages or otherwise.

are contained in supplemental statements adopted with respect to each undesirable genetic condition.

For each undesirable genetic condition the Board of Directors shall adopt a separate statement of procedures for designating animals, referred to as "Statement of Designation Procedures," and designate an official report form to be used for reporting affected animals. The Board of Directors shall be responsible for designating animals as carriers of an undesirable genetic factor. When an animal has been designated as a carrier, the Executive Secretary shall notify the last recorded owner, the breeder, and the lessee, if any, by certified mail.

The Board of Directors may adopt procedures and rules by which a Jersey may be progeny tested for a particular undesirable genetic factor. The rules and procedures for progeny testing are contained in supplemental statements adopted with respect to each undesirable genetic condition.

It shall not be the policy of the Association to identify and designate bulls as carriers of undesirable genetic factors when documentation on their own progeny is insufficient to accomplish designation.

Policies Regarding Undesirable Genetic Factors

Effective February 22, 1983

Statement of Policy

Every effort should be made within the breed to identify those animals that carry undesirable genetic factors. The Association considers it the responsibility and obligation of each member of the Association and each breeder of Jersey cattle to report to the Executive Secretary any known case of an abnormal Jersey animal. The Executive Secretary shall maintain records of abnormalities and shall make available information from such records in accordance with rules established by the Board of Directors from time to time.

The Board of Directors considers it to be unethical practice to offer for sale an animal, male or female, an embryo or semen from an animal that has been designated a carrier of an undesirable genetic factor without first informing the prospective buyer of this fact. In practice this means that any advertising, descriptive material, or pedigree containing a designated carrier of an undesirable genetic factor shall carry a statement indicating designated carriers.

This statement of policy is made in belief that it is in the best interests of the breed and the breeders of Jersey cattle. It is made in the belief that it will serve the position of those who have taken the more difficult, positive, open approach to this fundamental concept of ethics in the im-

proved breeding of dairy cattle. In the long run, all serve to gain by such a policy, but only to the degree that all cooperate in the acceptance and enforcement of this policy.

Identification of Undesirable Genetic Factors

In determining what genetic factors are considered to be undesirable in the Jersey breed, the Board of Directors shall consider such evidence as it considers appropriate. The Executive Secretary shall make such investigations of genetic factors occurring in Jersey animals as he may believe necessary or advisable and shall report the results of his investigations to the Board of Directors. Before recommending that the Board make a determination regarding the existence of an undesirable genetic factor, the Executive Secretary shall consult with at least two experts whose recommendations shall be submitted to the Board.

Identification of Carrier Animals

When the Board of Directors shall determine that an undesirable genetic factor exists in the Jersey breed, the Board shall take whatever action it may consider appropriate to control and limit the genetic factor. Such action will include procedures to identify animals that are probable carriers of the undesirable genetic factor and to inform persons having an interest in the Jersey breed of the identity of such probable carriers. The procedures for publication of the identity of probable carrier animals, referred to as "designated" carriers,

Publication and Release of Information

Male and Female Animals

The Executive Secretary shall maintain a record of all animals that have been designated carriers of an undesirable genetic factor, and designation shall be noted on all advertising, descriptive material, or pedigrees published by the Association containing reference to a designated carrier.

Except as provided in this statement of policies, no information concerning the genetic condition of any animal shall be released by the Association without approval of the Board of Directors.

Male Animals Only

When the Association receives an official report of an affected animal, the Executive Secretary shall so inform the last recorded owner, the breeder, and the lessee, if any, of the sire of such an animal by regular mail; and thereafter he shall routinely inform the breeder, the owner, and the lessee of that sire of the receipt of any additional reports and supporting documentation required by the applicable Statement of Designation Procedures and

of such additional information as he shall deem appropriate.

When the Association receives an official report that an animal is affected with an undesirable genetic condition and that report is accompanied by the documentation required by the applicable Statement of Designation Procedures and if the sire of the animal described in the report is the son or grandson of a designated carrier or an affected animal, the Executive Secretary shall prepare a statement containing information as he, in his sole discretion, shall deem appropriate with respect to such sire. Such statement shall be furnished to the last recorded owner, the breeder, and the lessee, if any, of the sire and to any AI organization that is currently is offering for sale semen obtained from the sire. The statement shall also be furnished to any other person who requests information from the Association concerning the sire.

The identification of bulls designated as carriers of undesirable genetic factors shall be published in the *Jersey Journal* from time to time in such manner as the Executive Secretary shall determine.

Sales

The following polices shall apply with respect to all sales sponsored or managed by the Association or Jersey Marketing Service:

A bull shall not be accepted in any Association sponsored sale unless the probability of his being a carrier of an undesirable genetic factor, based on the bull's relationship to affected animals or designated carriers, is less than 12.5%.

Daughters of affected animals or designated carriers and granddaughters of affected animals shall not be accepted in any consignment sale managed by Jersey Marketing Service. Granddaughters of designated carriers shall not be accepted in the National Heifer Sale, the Pot O'Gold Sale or the All American Sale but may be accepted in other consignment sales managed by Jersey Marketing Service.

The consignor of any Jersey sired by a bull that has been officially reported as the sire of one affected animal shall have the responsibility of deciding whether to enter the consignment in a sale.

Limber Legs (LL)

Statement of Designation Procedures

Description of Condition

The affected calf has little or no control over movement of legs and is unable to stand. The calf's legs lack normal mus-

cling, appear loose at the joints, and can be flexed, extended and rotated without difficulty or discomfort to the calf. Usually the legs can be crossed above the dorsal side of the neck without discomfort to the calf.

Requirements for Designation of Limber Legs Carrier

The Board of Directors will not designate an animal a carrier of Limber Legs if the Board considers that there is a reasonable doubt that the animal is a carrier. The determination as to reasonable doubt depends upon the quality and amount of available evidence which will vary in each case.

Usually, the Board will designate a carrier bull without the concurrence of the breeder, last recorded owner, and the lessee, if any, upon receipt of two or more official reports that calves sired by that bull are affected with Limber Legs if (1) the calves reported on were born in two separate herds and (2) each report is accompanied by the written statement of a veterinarian or other person (other than the person signing the official report) who, in the opinion of the Executive Secretary, is qualified to identify the Limber Legs condition describing the condition of the calf and stating whether, in his opinion, the calf is affected with Limber Legs. However, with the concurrence of the breeder, the last recorded owner, and the lessee, if any, the Board will usually designate a carrier bull upon receipt of one or more official report(s) that a calf sired by that bull is affected with Limber Legs if each report is accompanied by a written statement by a veterinarian or other qualified person and if a parent or any grandparent of the bull has been designated a Limber Legs carrier.

Usually the Board will designate a carrier cow upon receipt of one official report that a calf delivered by that cow is affected with Limber Legs if the report is accompanied by the requisite written statement of a veterinarian or other qualified person.

An extended (six generation) pedigree of the affected animal will be prepared to see if the animal traces to designated carrier animals.

Rectovaginal Constriction (RVC)

Statement of Designation Procedures

Description of Condition

Rectovaginal Constriction (RVC) is constriction of the rectum and vagina such that the arm usually may not be inserted nor-

mally in the rectum to permit artificial breeding. An episiotomy or Caesarian section is usually required for calving. The condition may be accompanied by hardening of the udder.

Requirements for Designation of Rectovaginal Constriction Carrier

The Board of Directors will not designate an animal as a carrier of Rectovaginal Constriction (RVC) if the Board considers that there is a reasonable doubt that the animal is a carrier. The determination as to reasonable doubt depends upon the quality and amount of available evidence which will vary in each case.

Usually, the Board will designate a carrier bull without concurrence of the breeder, last recorded owner, and the lessee, if any, upon receipt of two or more official reports that calves sired by the bull are affected with RVC if (1) the calves reported on were born in two separate herds; (2) the bulls relationship to the calves is supported by blood typing; and (3) each such report is accompanied by the written statement of a veterinarian or other person (other than the person signing the official report) who, in the opinion of the Executive Secretary, is qualified to identify the RVC condition describing the condition and stating whether in his opinion the calf is affected with RVC. However, with the concurrence of the breeder, the last owner, and the lessee, if any, the Board will usually designate a carrier bull upon receipt of one or more official report(s) that a calf sired by that bull is affected with RVC if each report is accompanied by blood typing to verify parentage and by written statements of a veterinarian or other qualified person and if a parent or grandparent of the bull has been designated an RVC carrier or is affected with RVC.

Usually, the Board will designate a carrier cow upon receipt of one official report that a calf delivered by that cow is affected with RVC if the report is accompanied by blood typing to verify parentage and by the requisite written statement of a veterinarian or other qualified person.

An extended (six generation) pedigree of the affected animal will be prepared to see if the animal traces to affected or designated carrier animals.