

Canadian Llama & Alpaca Registry

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The CLAA Genetic Evaluation Program

As part of a proactive effort to enhance the position of the Canadian llama and alpaca industry in Canada and the world, the CLAA, in 2006, contracted the services of RAK Genetic Consulting Ltd. The finances to engage this consulting firm came from the Federal government as part of the BSE compensation package. RAK was engaged to review breed improvement initiatives in the domestic and global camelid industries and conduct a breed improvement feasibility study for the CLAA. The study was conducted through review of available information and research and a detailed survey/interview process.

Both llama and alpaca breeders provided similar responses to the survey, identifying fibre characteristics and the development of the fibre industry as key components to the survival and growth of the industry in Canada. Breed improvement must be based on economics and the fibre industry is starting to drive the value of animals as breeding stock. This shift will force members to select for fibre characteristics to ensure the long-term success of the industry. Education of members will be a key priority and recognition of members who participate in breed improvement programs will be integral to the growth of the program.

It was concluded that the CLAA is in a strong position to initiate a breed improvement program for its members. The program needs to focus on fibre characteristics and the development of an education program for the membership.

Breed improvement is built on the following key areas:

1. **Pedigree** – breed improvement is built from pedigree information - like begets like
2. **Measurement** – traits of economic importance should be included and measured if possible
3. **Analysis** – data is analysed and turned into information
4. **Application** – breeders apply this information to make knowledgeable breeding decisions
5. **Education** – education must occur regarding data collection and how to use the resulting information.

Like all livestock breeders, camelid breeders are constantly striving to improve their breed. Improvement is generally seen as a better "product", and in the camelid industry, different people may see a better "product" as being different things. For many it will be larger quantities of more valuable fibre, incorporating such things as fineness, softness, fleece weight, and evenness of colour. For others the emphasis may be on better conformation, higher fertility, faster growth rates and bigger body weights.

Wherever such improvement is sought, genetic factors are likely to play an important part in determining that improvement, and different alpacas differ in their ability to deliver that genetic improvement to their offspring. The key to genetic improvement of livestock is to first distinguish between genetic and

Resources:

- [How To](#)
- [Fibre Testing](#)
- [Fibre Testing Fact Sheet](#)
- [PowerPoint Presentation](#)

Forms for Alpacas

- [AHEAD Fibre Data Forms](#)
- [AHEAD Birth/Weaning Forms](#)
- [FAQ sheet](#)

Forms for Llamas

- [LEAD Fibre Data Forms](#)
- [LEAD Birth/Weaning Forms](#)
- [FAQ sheet](#)

environmental factors influencing performance and then select only those animals that are genetically superior to form the basis of a breeding herd. Performance that is the result of good management will not be passed on to the next generation whereas performance due to genetic superiority will be repeated. Genetic change in camelids presently occurs at a slow but steady rate, no one animal contains all the traits in perfect combination and improvement involves a system of small changes in a number of traits all focussed on an overall goal. While the gain acquired in any one year may not be large the overall effects of continued genetic improvement is cumulative and thus still results in significant improvement over time.

One way, however, to hasten this improvement is formal adoption of a genetic evaluation program. Adoption of genetic evaluation programs in other livestock breeds have been shown to be up to nine times more effective in driving genetic improvement than an individual's own singular efforts.

The CLAA Genetic Evaluation committee commenced work in 2006 to develop a program to measure genetic ability across a range of characteristics, and to report to breeders which animals in their own herds are most likely to pass on their genetic improvement in any given trait to their progeny. As with most breed improvement programs this will be done by gathering performance and pedigree data, collating these records and applying genetic analysis to produce a best estimate of an animal's true genetic value. Whilst improvement will still occur without this process, the rate of genetic gain is likely to be much slower, and much less certain.

All genetic improvement programs focus on traits of economic importance that will increase the profitability of the industry and it's participants. They are based on continual improvement in desired attributes with no defined end - so to speak. The goal and therefore the end product may change however, during the process, as knowledge of the importance of some of the attributes also changes. The long-term strategy is to develop a program that will bring together objective genetic measurements, incorporating a wide range of indices, into one database enabling breeders and producers to have access to information that will enable them to make better - informed breeding decisions. The traits include, at the present, but are not limited to:

- fibre quality (micron, SD, CV, comfort factor, staple length, fibre curvature, degree of medullation)
- gross fleece weights
- birth, growth and weaning weights

Enrolment in the genetic evaluation program is open to all members of the Association but is done on a voluntary basis. Information received from individual breeders, on individual animals is analysed and compiled into a report. The individual data contained in the report is the confidential property of each individual member. Initially the reports received by members are valid and useful only for the herd in which the camelid was raised. The comparisons are only valid within a herd because the evaluation contained in the report is expressed relative to the average performance of all camelids in that herd only. For example the camelid with a mean fibre diameter closest to the average of the herd is given a score of 100, all other camelids are scored as they relate to this mean figure. Ten % finer would have a score of 90, 10% stronger, a score of 110. Each camelid is scored in this fashion for each of the listed attributes. This gives breeders an instant and extremely useful learning tool for their own herd by providing them with a means of identifying and selecting genetically breeding stock superior (in the traits the breeder is most interested in). Ultimately, as the number of camelids recorded in the program increases more detailed statistical analysis may also give an indication of the genetic merit of an individual breeders herd relative to other herds in the province (or environmentally similar areas) or even Nationally. Information on individual herds remains confidential however, unless an individual breeder chooses to share the information. Ultimately it is hoped that this program will also give the Association the ability to produce, for each member, Canadian Llama and Alpaca Breeding Values for an increased range of different, but still economically important, traits.

Until now the size of the Canadian camelid industry has not been sufficiently large to support such a program and take full advantage of the measurable genetic

progress that can be made in our industry. Now however, as our camelid population increases, the implementation of this structured genetic evaluation program will enhance the competitive position of Canada in the world alpaca market, to the benefit of all Canadian breeders.

The 2007 CLAA AGM marks the official launch of this program. The Genetic evaluation committee has prepared a series of fact sheets detailing recommended traits for data collection and how to most effectively record those traits. Recording forms have been prepared. Introductory education packages have been compiled and will be mailed to the membership in the coming weeks. A power point presentation has been developed for educational use at show and events. All this information will soon be posted on the updated CLAA website together with a comprehensive "related readings" list for members desiring more information on the history and success of genetic evaluation programs.

In the survey conducted by RAK Genetic Consulting Ltd. Members repeatedly stated the desire for Canada to become the source of choice for camelid genetics. They also stressed the need to objectively measure traits and use the information to advance their genetics. The CLAA genetic evaluation program is now available for participation and its use will fulfil both goals.

Yours Sincerely, The CLAA Genetic Evaluation committee

- Rob Blom
- Daniel Eslake
- Caecilia Goetze
- Lynn Hilderman
- Peter Kerby
- Trudy McCall
- Oona Porter
- Clint Straub

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