



Canadian Bison Association
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Bison Genomics Testing

After completing the research and development, the Canadian Bison Association is offering three new genomic tools to bison producers and the conservation community so that they can better understand the genetic profile of their herds. The three tests include:

1. A parentage test based on the newest technology available.
2. A test to determine the Plains/Wood composition of a bison using genetics.
3. A test to measure cattle introgression in bison.

An Important Note

The Canadian Bison Association will maintain a confidential file of the test results for analytical purposes. The analysis will not reveal any individual results. The test results belong to the producer that purchases the test.

Parentage Testing

The parentage test for producers uses the most current technology. This test compares the profile of an offspring to the profiles of possible parents. The tool can be used for establishing a profile, sire verification, dam verification and parentage verification. Profile only testing must be completed before verification testing can occur.

The parentage tests offered will include:

1. Profile only
2. Parentage verification (includes both sire and dam verification)
3. Sire verification only
4. Dam verification only

Results will be reported for the parentage tests requested.

Plains/Wood Composition Testing

The plains/wood composition testing differentiates plains/wood bison and the composition of crosses. The proposed testing complements the historical producer records as well as the

phenotypic assessments of the past. This scientifically based assessment will strengthen the records producers currently have. The plains/wood test will also help producers manage hybrid vigor and increase genetic diversity.

The categories presently used by the bison registry are very broadly based. With further testing, substantially more precision may be possible in the future.

Recognizing the small error rate inherent in the test, as well as the need to build on documented information provided by producers, the goal is to be as inclusive as possible while maintaining the purity of the classifications. The distribution below will be used.

Plains /Wood Composition Table

| Plains Score | Category |
|-----------------|---------------------|
| 93.75% - 100% | Plains |
| 81.25% - 93.74% | 7/8 Plains 1/8 Wood |
| 68.75% - 81.24% | 3/4 Plains 1/4 Wood |
| 56.25% - 68.74% | 5/8 Plains 3/8 Wood |
| 43.75%-56.24% | 1/2 Plains 1/2 Wood |
| 31.25%-43.74% | 3/8 Plains 5/8 Wood |
| 18.75%-31.24% | 1/4 Plains 3/4 Wood |
| 8.75%-18.74 | 1/8 Plains 7/8 Wood |
| 0.0% -8.74% | Wood |

The results will be reported to the producers by range in one of the specific nine categories. In addition, the producer will receive the specific Plains/Wood score for each animal.

Cattle introgression Testing

For those producers interested in the level of cattle introgression in their animals, the test will be provided as a percent.

Cattle Introgression

Although further refinement may be required, the cattle introgression tool is functional and can be implemented. The tool will identify those bison that test positive for cattle introgression expressed as a percent. During the research program, the average cattle introgression test score was 0.8% and ranged from 0.0% to 4.5%.

What is the Process

The producer begins with the collection of genetic material from the animal to be tested. Preferred samples types are the Allflex TSUs and Hair Cards. You can order the genetic collection tools online by going to Neogen's e-commerce website <https://www.neogen.com/solutions/sampling-equipment/>. Any samples received at the lab

without a barcoded sample collector (i.e.: loose hair in an envelope) will be subject to a \$4 fee for lab staff to transfer the sample to a Hair Card.

You can get more information about the collection options and on instructions on how to use the tools available on the CBA website.

For those wanting to maximize the use of technology while using the Allflex Tissue Sampling Units (TSUs), a 2D Data Matrix barcode scanner will assist in organizing TSU number linked to the animal sampled. Neogen Canada uses barcode scanners like this one:

https://www.amazon.ca/gp/product/B07FTFBMY1/ref=ppx_yo_dt_b_asin_title_o02_s00?ie=UTF8&psc=1

What is the price of the Services?

Each test is priced at \$30 for members and \$35 for non-members. If you order all three tests at the same time, the price will be \$70 for members and \$80 for non-members.

Steps Once You Have Collected Your Samples.

Step 1

The bison producer completes the order form including payment details and e-mails the whole Excel workbook to bisongenetics@sasktel.net. A PDF or photo of the Excel form cannot be processed by the CBA office.

Step 2

The CBA office processes the order form by entering the order into Neogen's LIMS (Livestock Information Management System) system and processes the payment.

Step 3

The CBA office e-mails the producer a 6-digit Order Number.

Step 4

The producer mails samples and the 6-digit order number to Neogen Canada. Samples received at the lab without the 6-digit order number will be subject to delays in processing.

Step 5

Neogen Canada completes laboratory work.

Step 6

Neogen Canada reports the test results to the CBA office.

Step 7

The CBA office returns the results to the bison producer and uploads the results to the database which is secured off site. The test results are confidential, belong to the producer and the producer data can be used for generalized and anonymized analysis only.