

# HEREFORD

## Genetic Conditions Screening Policy

The Canadian Hereford Association currently institutes a **mandatory DNA testing policy** for the following four genetic conditions:

- **Diluter/Rat-tail:** the dilution gene causes cattle with a black coat colour to be diluted to grey, and red to be diluted to yellow. Rat-tailed calves are usually mouse grey, have short, curly, and sometimes sparse hair and lack normal tail switch development.
- **Idiopathic Epilepsy:** age of onset can be variable, ranging from birth to several months of age. Occurrence and persistence of seizures may be influenced by environmental stressors such as temperature extremes or increased physical activity. Upon initial onset of seizures, calves may appear to walk with a stiffened, irregular gait. During seizure episodes individuals will typically lie on their side with all limbs extended in a rigid state. Seizure episodes may last from several minutes to more than an hour.
- **Hypotrichosis:** partial to almost complete lack of hair. Affected calves are often born with very short, fine kinky hair that may fall out leaving bare spots or areas susceptible to rubbing. The haircoat colour will sometimes appear frosted or silverish. The tail switch may be underdeveloped.
- **Maple Syrup Urine Disease:** (lethal) Calves are typically born without symptoms but by 2-4 days of age become slow, dull, and eventually recumbent. The calves will often throw their heads back, lying on their side unable to rise. These calves may have some swelling of the brain at autopsy, but diagnosis requires laboratory investigation. The calves have a defect in an enzyme that breaks down complex amino acids in the diet and the buildup of these in the body creates the urine odor and brain damage. The disease's name comes from the smell of urine observed in human babies (not always noted in calves).

The policy involves **all animals submitted** for DNA testing, including AI sires, donor dams, and walking bulls. The Canadian Hereford Association will have the right to publish the results and the policy became effective in 2010.

This policy is consistent with a similar policy implemented by the American Hereford Association and is a joint North American surveillance program for the benefit of Hereford breeders and the cattle industry.

## Mandatory Testing Policy Guidelines

1. All DNA samples submitted will automatically be tested for the four conditions noted above.
2. There is **no additional cost** to the member for these four DNA condition tests. The CHA Standard Test includes normal parentage verification or SNP (DNA) profiles, genomic profile (to create GE-EPDs), and the screening for these four genetic conditions.

3. The Canadian Herefords Association will **publish all known carriers** of the six known conditions for registered animals on the Canadian Hereford Association website.
4. The Canadian Hereford Association will not accept any test results for parentage, genetic conditions or other genetic tests from any laboratory or company other than the approved service providers to the CHA.

The Canadian Hereford Association currently institutes a **voluntary DNA testing policy** for the following genetic condition:

1. **Mandibulofacial Dysostosis:** The anatomic features overlap with a variety of other facial defects and can include cleft palate, brachygnathia (short jaw) and camplygnathia (crooked jaw or face). The unique and consistent hallmarks of the condition include unusual bilateral skin tags just behind the corner of the mouth. These tags are attached to an unusual bone formation. There may be additional skin tags near and/or below the ears. A ridge of Meckel's cartilage, a structure usually present only during embryonic development, is retained in these calves and attaches to the skin tag. This cartilage is encased in bone as it is followed from the skin tag toward the base of the ear. This bone attaches specifically to the zygomatic process of the temporal bone (just above the articulation of the jaw). The calves' ears are sometimes slightly small and floppy. Muscles of the jaw are underdeveloped, and calves may have an elongate oral opening appearing as an exaggerated smile. The nursing reflex is present, but nursing is not vigorous. Calves with the additional cleft palate, severely shortened or crooked jaws are debilitated in ability to nurse. Calves with the defect are live born but are not able to thrive.
2. **Delayed Blindness:** Delayed Blindness (DB) is caused by retinal degeneration within the eye. Cattle affected by DB are not born blind, but vision loss is noticeable near or just after one year of age. Initial clinical signs may include the animal having difficulty navigating their surroundings, bumping into stationary objects, and slowly navigating unfamiliar terrain. These cattle will also lack a menace response (reaction to something being moved toward the eye). Cattle are remarkable at adapting; if in a stable environment vision loss may be severe when first noticed. Unless secondarily injured, the eye appears normal to the casual observer. A detailed ophthalmologic evaluation of the retina in the back of the eye can confirm retinal degeneration. Diagnosis can also be established by genetic testing.

## **Voluntary Testing Policy Guidelines**

1. Due to the added cost of testing for MD and DB these are currently voluntary tests, therefore MD and DB must be requested to receive a result. See Fee Schedule for the current cost of the MD, DB and other genomic tests.
2. The Canadian Hereford Association will not publish carriers on **unregistered** animals.
3. The Canadian Herefords Association will **publish all known carriers** of the six known conditions for registered animals on the Canadian Hereford Association website.