

## **Selection of mink tolerant to Aleutian disease** **-can you accelerate the process of achieving a tolerant herd?**

Several ranchers in North America and Europe are selecting their mink for increased resistance to Aleutian disease (AD). In addition to visual examination of animals, there are a number of different tests available to help ranchers identify animals tolerant to AD, including the iodine agglutination test (IAT), quantitative ELISA and PCR. There is little information available on the effectiveness of these tests in creating tolerant mink in diverse mink color types infected with different virus strains. There is a way, however, to speed up the creation of tolerant herds, regardless of the method used in identifying tolerant mink.

Let's look at some facts:

1-Genetic control of tolerance to AD is rather complex. If you breed a male with a female, both of whom appear to have good AD tolerance based on visual inspection, the IAT or ELISA tests, not all their kits will be as tolerant to the disease as their parents. This is the same as breeding a male and a female that were each born into litters of 8. They do not necessarily produce litters of size 8. Animal breeders say that tolerance to AD, like many other traits, has a low to moderate heritability.

2- In other livestock species such as cattle, sheep and swine, the rate of genetic improvement in traits with low to moderate heritability is accelerated using a method known as BLUP (Best Linear Unbiased Prediction). This powerful technique uses information on individual animals as well as on their relatives from the same farm or from different farms, and calculates an Estimated Breeding Value (EBV) for each trait for every individual. EBV is the best indicator of the genetic potential of animals as parents for the next generation, allowing livestock owners to rank their animals and keep the best for breeding. The use of EBV increases the rate of genetic improvement, particularly for the traits with low heritability and those that are difficult to measure, such as AD tolerance in mink.

What should you do to use BLUP? This is my proposal:

- 1- All mink ranchers who are interested in selecting for increased tolerance to AD should sign on to form a consortium. The larger the number of animals and the larger the number of ranches that are participating in the consortium, the greater the rate of genetic progress.
- 2- Participating ranchers will meet and decide on a uniform data collection strategy.
- 3- All participating ranchers will perform the same animal testing procedures and data collection, which will be collectively agreed upon.

- 4- Participating ranchers will agree to collect required data to the best of their ability.
- 5- Pedigrees of all breeder mink should be known, it is therefore necessary to breed each female with one male (twice or three times).
- 6- The EBV for tolerance to the AD virus of each potential breeder mink will be estimated by BLUP, and ranchers will only use certified animals for breeding.
- 7- New animals to be imported to a ranch must meet the criteria established by the consortium.
- 8- The membership fee to cover the cost of establishing the consortium and data analysis will be decided upon by members. There will be a minimum fee and additional costs based on the number of animals that will be evaluated.
- 9- After establishment of the consortium, other ranchers would be eligible to join, with majority approval of existing members. New ranchers would be required to pay additional registration and data analyses fees, as determined by the members.
- 10- Genetic evaluation could be performed by organizations that are currently providing similar services for other livestock species, or a new North American organization that can be established for mink.
- 11- An internet-accessible central database and web-based tools for uploading and downloading data, accessing genetic evaluations, identification of males and females that can produce tolerant progeny and generating reports for monitoring improvement in resistance to AD symptoms will be designed.

This procedure, if accepted by several ranchers, to increase the number of animals under evaluation and to reduce costs, will ensure the maximum rate of genetic improvement for tolerance.

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