

€uro-Star Genetic Indexes for Sheep

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Genetic indexes are available on many pedigree rams in Ireland and provide an important selection tool for sheep farmers when deciding on purchasing a ram. Rather than relying on physical appearance alone, the genetic index of a particular ram enables farmers to see the expected performance benefits in the ram's progeny. The genetic indexes can be used to select a ram to breed replacement ewes - using the Replacement index, or to breed lambs for slaughter - using the Terminal index. Genetic indexes, however, are only as good as the information used to calculate them; although most farmers are very familiar with the star rating system used for both beef bulls and rams, the star ratings alone should not be used to select your ram of choice. The accuracy value next to the ram's star rating is just as critical – this accuracy value gives an indication of the amount of data behind the index. The higher the accuracy the more data, such as lambing and weight information, that has been supplied on the ram himself and his relations and the more likely the ram will perform as indicated by the star ratings.

A recent study on the usefulness of the genetic indexes using commercial data recording by Sheep Ireland has shown that selecting rams based on high €uro-star terminal or maternal index (with high accuracy's) will result in superior performance relative to low star rated rams. Lambs born from five star rams had less lamb mortality, required less assistance at lambing and were heavier at weaning compared to lambs born from one star rams.

Like all genetic indexes the Sheep Ireland €uro-star indexes will constantly undergo changes to make sure that the indexes accurately reflect performance differences at farm level. A number of changes will take place in both the terminal and replacement index over the next number of years which will help to provide farmers with a more accurate tool for selecting rams.

Health sub-index

Health is one of the largest costs associated with sheep farming and treatments for poor health can not only be expensive but can also take up large amounts of a farmers time. Like all other species some of the differences between sheep susceptible to certain health incidences such as lameness, or mastitis are due to the genetic make-up of an animal. Recently Sheep Ireland has collected over 10,000 records on the most important health traits on pedigree animals that form the backbone of the star rated rams farmers select from at sales. Some stark differences were seen between lambs born to different rams but managed under the same conditions. For example in one flock where two rams produced lambs across multiple years, 91% of lambs born to one ram showed no signs of lameness, whereas for the other ram only 20% of lambs showed no signs of lameness! This information is currently being used to form a new health sub-index whereby rams will be given star ratings and accuracy values on lameness and dag scores. In the future star ratings on mastitis and parasite burden will also be generated once sufficient data is collected.

Across-breed evaluations

Similar to the beef and dairy indexes, many sheep farmers are looking to have the facility to compare the Euro-star index of rams across breeds. Currently however the sheep Euro-star indexes are only comparable within individual breeds and not across breeds. In order to facilitate accurate across breed evaluations the genetic indexes of each animal must correct for breed differences – this requires large amounts of information on crossbred animals. Over the last number of years the volume of data sourced on crossbred animals has increased through data collected on the Sheep Ireland Central Progeny Test flocks, and through the Teagasc BETTER farms and research flocks in Athenry. This information has enabled research on the comparison of genetic indexes across breeds to be undertaken for the first time. Preliminary results on across breed comparison of genetic indexes will be available in 2017 and it is hoped that farmers selecting rams in 2018 will be able to do so using across breed star ratings.

Genomic Selection

Genomic selection is a new technology that has gained large traction in the Irish dairy and beef industry over the last number of years. Genomics has the potential to rapidly increase the rates of genetic gain for the Irish sheep industry. This is a process that looks directly at the genes or DNA of an animal and predicted the animal's genetic performance than waiting for the animal's transmitted genes to be expressed and measured in the progeny. DNA remains the same for an animal across its lifetime and therefore the increase in accuracy from genomic selection can be achieved when the ram is still a lamb. Genomic selection was launched for Irish dairy cattle in 2009 and the resultant accuracy of genetic evaluations in dairy increased by 40%; in sheep the expected genetic gain may actually be greater since the current accuracy levels are lower and therefore the potential scope for improvement is greater. Research on the integration of genomic information into the Sheep Ireland Euro-star indexes is on-going and it is hoped that this information will be available to farmers for selecting rams in 2018.

New traits

Although current sheep genetic indexes contain information on key performance characteristics of an animal, there are still many traits that are not captured within the current Euro-star indexes. Research is on-going into other key traits such as carcass data, lamb vigour as scored at birth, and ewe survival. The current recording structures facilitates the collection of data in Pedigree LambPlus flocks, CPT flocks, Teagasc BETTER farms and a number of commercial sheep flocks that will enable genetic indexes to be calculated for these important traits in the near future. Over the coming years it is hoped that such traits will be included in the sheep Euro-star indexes.

The sheep Euro-star indexes are now an important tool that allow sheep farmers to make more informed breeding decisions and has the potential to increase profitability at farm level. Teagasc and Sheep Ireland will continue to work closely with the industry to further enhance sheep breeding and ensure that the benefits are clearly seen at farm level.