Genomics can benefit sheep industry

The exciting prospects offered by genomic technology are more achievable for sheep farmers, where they are able to pool resources. It's not as straightforward as in the dairy industry, but combining the latest genomic technology with the Farmer's Eye can still bring huge benefits in terms of efficiency and the bottom line.

Dr Sotirios Karvountzis of Mendip Vets says the basic principles are obvious. Farmers have always known that heritable characteristics govern any breeding policy – whether that is aiming for more lean meat, less wool or better milk yields.

Sotirios is excited by the constantly evolving opportunities geonomics present. But he warns that while the science is precise, its application needs to be far more nuanced. It's important to select the desired genes for a given environment and outcome.

And he says there is a good way to sum up the use of new technology and the more traditional approach when discussing EBVs (estimated breeding values) and gEBV (genomic estimated breeding values). It's the old saying, 'The apple never falls far from the tree....'.

He explains: "All mammals, all creatures – anything that has got DNA in it - when they are born, not all the offspring are equal to each other. Not all hit the deck running, others go slower, others go backwards.

"Humans are the exception, with the ability to put mind over matter, but in the rest of the animal kingdom they are not equal to each other. So, to take one example, the ability to grow relatively quickly to reach a certain age at a certain weight....

"That is a well defined characteristic, it's what we call heritable, therefore it's predictable. There are certain lines of cattle, sheep, pigs, that are able to put on more weight quicker than others.

"These animals are hitting the deck running. Others don't. This process is repeatable. The difference is down both to genes and to the environment (the phenotype)"

The technology is available to select the most appropriate lines with the characteristics likely to achieve the desired outcome. Genomic testing can look at up to 90,000 genes, adding to the understanding of breeding stock for various attributes.

It is appropriate for sheep and goat producers as well as for suckler and dairy farmers, but the sheer volume of data available to the dairy industry makes it particularly useful. A range of advantages can be achieved by pooling information from AHDB herd genetic reports, the Signet database and genomic tissue sampling.

The desired outcome and the farming environment then governs the best genes to select from. The use of genomic testing isn't as widespread in sheep flocks, simply because it's so much more difficult to get consistent, reliable breeding data. The scattered spread of flocks  means there are far fewer pieces of information from which to draw conclusions and reliability is reduced.

And he adds: "The starting point is flipping a coin 50/50, so if I cross white with white will I get white. So I say Yes, on the basis that it's 50% reliable, which means every other one will be white and every other one will be something else.

"You want it to be 99% which means 1 in every thousand will behave differently from what you predicted. This is what happens with sheep all the time, because the numbers are not there the volume, the strength of the observation is not there and therefore the strength of the prediction is not there."

A possible way forward is for a group of sheep farmers to pool resources and pre-select from a shared group of ram lambs the ones that are likely to do well for certain characteristics. This would bring huge advantages in terms of saving money and time.

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