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DNA parentage testing can pick out the finest in the flock

With the end of lambing in sight, our thoughts are turning to “which of our tups are producing more, higher value lambs?”. But like many sheep farms across Scotland, we do not have the facility to bring down all our ewes into inbye fields for mating or to tag and record lambs as they are born out on the hill.



So in our Auchtertyre high-hill flock we use multiple-sire mating groups, where 4 or 5 tups are put out with each larger group of ewes in different areas of the hill. Towards the end of mating, we also put out ‘chaser’ tups to try to catch any ewe not mated first time around.

This means that it is impossible to know not only which tups fathered which lambs but also even which ewe was the mother of each lamb. Some farms can ‘mother up’ lambs to ewes when they are in small batches in a field and record the associations. But we have to bring our ewes and lambs off the hill all together – and trying to ‘mother up’ with such large numbers would be extraordinarily time-consuming.

So for the past few years we have been using DNA testing in the Auchtertyre flock to try and get close to 100% accurate assignment of both paternity and maternity without the need for single-sire mating or mothering-up.

At the start of the process in 2014, all of our ewes and tups on Auchtertyre were DNA-sampled using an Allflex ‘punchgun’, which takes a tissue sample from the ear and stores it in a small tube. Once these samples are collected, we only need to take tissue samples from the lambs born each year when brought in for marking, and from any new externally-sourced tups introduced into the flock. The tissue samples are sent off to Zoetis for ‘Shepherd-Plus’ parentage testing, where they seek to match the DNA-profile of each lamb with the DNA-characteristics of our ewes and tups already on file. Of the lamb samples sent in 2017, 96% were matched with both a sire and a dam in the flock and only thirteen lambs had a dam-only match, suggesting neighbours’ tups got to their mothers first.

Each year the DNA data usually shows marked differences in the performance of individual tups within the multiple-sire mating groups. At best an individual tup will be shown to have fathered the majority of the lambs in a tupping group, and at worst another will have fathered few or no lambs. These differences could be due to differences in the fertility and/or libido of the tups (which cannot easily be assessed in advance of mating) or even to differences in the survivability of lambs from different tups.

Although DNA-testing is an additional expense, it is currently the only practical way to obtain parentage information which can allow hill farmers to make informed decisions when selecting tups for use in future years and lambs to use as replacements into the flock.

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