Using EBV Data to Promote Parasite Resistance

by Melanie Barkley
Penn State Extension Service

Internal parasites have been an issue in sheep production for a long time. As producers, we all strive to prevent parasite infections as much as possible, but one avenue that many of us have overlooked is the opportunity to utilize EBV data generated through NSIP, the National Sheep Improvement Program, to help promote genetic resistance to parasites.

EBVs are calculated by making comparisons, or rather genetic linkages, between not only related animals in one flock, but also by looking at those genetic linkages with related animals in other flocks. Through these linkages, producers can then make selection decisions for a number of different traits. This multi-trait selection can often include traits that may or may not be visually evaluated. Certainly, parasite resistance would be one of those traits that would incorporate both visual and non-visual appraisal.

For producers who practice FAMACHA, they can visually evaluate the anemia level in an animal and then use that to make deworming decisions. Animals that appear anemic get dewormed, while those that appear normal do not get dewormed. If an animal is borderline in the evaluation for anemia, then an assessment of body condition may come into play. But, if parasites are present that do not cause anemia, then the FAMACHA tool is no longer effective. So, this can be a great opportunity to utilize a genetic selection tool, such as an EBV for worm egg count to help improve genetic resistance to internal parasites.

When selecting breeding animals, a producer's goal is to select those genetics he or she wants passed on to the next generation of the sheep flock. When you only select on phenotypic traits, those you can visually assess, you are not able sort out the difference between how much of this trait is affected by genetics compared to how much of this trait is affected by the environment. So, EBVs can take the guesswork out of the visual appraisal.

The EBV for parasite resistance is based on worm egg counts (WEC) that are recorded at weaning, early post-weaning or late post-weaning timeframes. Animals that have a low or negative WEC EBV can be expected to have more resistance to parasites than animals with higher EBVs for WEC. So, if you want to choose between a ram with an EBV of -20 and one with an EBV of 2 for worm egg count, you should consider the ram with the -20 EBV over the other ram. Producers who raise sheep in temperate climates where internal parasites have a large effect on growth and performance can find this EBV very beneficial. According to NSIP's fact sheet "NSIP EBV Notebook" research suggests that post-weaning WEC EBVs are the most useful genetic indicator of parasite resistance, although studies with Katahdin sheep show that weaning worm eggs counts provide useful information on parasite resistance in young lambs. Weaning and post-weaning WEC EBVs are strongly, but not perfectly, correlated.

The most accurate method to assess parasite resistance in an individual sheep is through the use of and EBV for worm egg count.

Now is a great time to sign up for NSIP. The first year flock enrollment fee is waived so you only pay the analysis fee for the sheep that will be kept as breeding stock. For more information about NSIP, check out their website at http://nsip.org/. Even if you don't enroll your flock, remember that you can still utilize performance data by purchasing rams and replacements ewes that have EBV data. So, take the guesswork out of your selection decisions and choose Dorsets with data!