

# **Protocol for Test Mating for Absence of Dominant Black Allele**

## **The Hebridean Sheep Society**

### **Background**

Hebridean sheep are black because they are homozygous recessive for a black allele at one of the two loci for colour genes in sheep - the A locus. Some Hebridean sheep carry an additional black allele at the E locus. This is thought to have entered the population through the introduction of Jacob and / or Black Welsh Mountain blood. When present, this dominant black allele would mask the effects of the presence of the normally dominant white allele, which resides in sheep at the A locus, and could also have entered the breed line by cross breeding. As a result, such Hebrideans could produce white lambs when bred with other, normal Hebridean sheep which do not carry this dominant allele.

For many reasons, it is desirable to rid the breed of this recently acquired dominant black allele. It is clearly impossible to test-mate females to the point where it can be statistically confirmed that they have no dominant black allele, but rams can easily be tested by breeding them with a sufficient number of white ewes.

### **Advice**

A Hebridean ram being test-mated in this way, needs to produce at least 14 lambs when cross-bred with white ewes. All these lambs should be white if the ram is free of the dominant black allele. When a ram has produced 14 white lambs and 0 black lambs from these crosses, there is a less than 1% chance that he does, after all, carry the dominant black allele. The test, carried out in this way, is thus more than 99% reliable. Breeders should be aware that many 'white' breeds of sheep can carry a recessive black allele and this would give rise to some black lambs being produced in such a test-mating programme, even with Hebridean rams that carried no dominant black allele. This might cause a perfectly 'correct' Hebridean ram to be unjustifiably rejected. Breeders should try to use ewes from pure white breeds (e.g. Lleyn, Whiteface Woodland, Dorset Horn / Polled Dorset, Texel) and crosses between them.

### **Verification**

The Society is prepared to verify the results of such test matings carried out by members. As with any aspect of pedigree breeding, the veracity of the results will be dependent on the honesty of the breeder. However, it is clear that if a ram was sold as "tested free of dominant black allele" on the basis of corrupted evidence, the breeder would be liable to the purchaser for any losses which might ensue. Furthermore, it is unlikely that any breeder would go to all the trouble of such test mating and then fiddle the results.

### **Verification Procedure**

The breeder should notify the Secretary of intention to carry out such a test mating, giving the breeds and ear tag numbers of the ewes to be used, as well as the registration number of the ram. A minimum of 14 lambs must be produced - but these can be spread over more than one lambing season if necessary.

Immediately at the completion of lambing, the breeder should supply the results, giving the tag numbers of lambs from each ewe, and their colour.

Before lambs are weaned, the Society will arrange for an inspection of the ewes with their lambs. The breeder will need to pay the inspector's travel costs.

The Society will then issue a document which states that the ewes and lambs, as listed, have been inspected and verified as white.

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