Icelandic Sheep Breeders of North America

Horn Genetics Update

Rich Kimball

Jill Tyrer of Denbighshire UK recently wrote with information on Icelandics in Great Britain as well as some valuable information about horn genetics. Jill is a member of the British Icelandic Sheep Breeders Group. She forwarded a letter from Dr. J.J.B. Gill from the genetics department of the University of Liverpool. Below is a synopsis of the genetics rules for horns in sheep.

According to Dr. Gill:

The rules of dominance of horns or polledness in sheep are sex dependent due to "interaction between the allele and the hormonal regime of the animal."

If the allele for polled is P and for horns is HO at the horned locus Ho then the rules are:

Polled is dominant in ewes
Horned is dominant in rams

Thus the possible combinations are:

	Ewes	Rams
Homozygous Polled	P-P polled	p-p polled
Heterozygous	P-ho *polled	Ho-p *horned
Homozygous Horned	ho-ho horned	Ho-Ho horned

* Heterozygous horns in rams may be smaller than homozygous horns. However, a ram showing any horns (other than scurs) carries the Ho gene, even button horns. Heterozygous ewes may or may not

show horns but the horns will be noticeably smaller than a homozygous horned ewe.

Editor's note (Deb Kimball): Ewe horn curvature may be an indicator of heterozygous horn/polled, though we need more data to confirm this. Stefania Dignum has mentioned curved horned vs. wide horns as well. It seems that wide horns are probably homozygous. The genetic notation for the horned locus is a mix of notations found in literature. An allele that is capitalized is regarded as dominant and usually appears first in the list. Thus the notation for ewes' and rams' genetic makeup is different to follow this convention.

Editor's note (Laurie Ball-Gisch) The genetics of horns is something that has been of repeated interest to our breeders. Additional issues have carried articles on horns and we will likely continue to discuss horn genetics in the future, as this seems to be one of the more difficult traits to understand or predict.