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## Genetic effects on lamb survival traits

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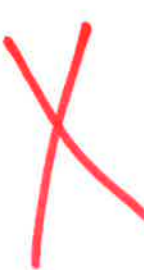
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**Behavioural studies on Icelandic leadersheep**Ó.R. Dýrmondsson<sup>1</sup>, E. Eythórsdóttir<sup>2</sup> and J.V. Jónmundsson<sup>1</sup><sup>1</sup>Farmers Association of Iceland, Bændahöllin, Hagatorg, 107, Iceland, <sup>2</sup>Agricultural University of Iceland, Keldnaholt, Reykjavík, 112, Iceland; ord@bondi.is

Icelandic leadersheep, a unique strain within the North European short-tailed Iceland breed, are known for their strongly inherited urge to walk or run in front of their flock. Leadersheep, normally kept in small numbers in each flock, are now found in just over 400 out of 2,200 sheep flocks in Iceland, numbering only 1,500 head out of the national sheep population of 475,000. Emphasis has been placed on conservation measures since the late 1950s, mainly through AI and individual recording. Although the difference between leadersheep selected for their outstanding behavioural abilities and intelligence, and other sheep of the same breed mainly selected for meat production characteristics, has been well known for centuries, experimental evidence acquired under controlled conditions has been lacking until recently. This paper presents the main results of a series of standardized trials in five sheep flocks so as to determine the willingness of ewes, rams and ewe lambs of the leadersheep strain to walk or run in front of groups of 'ordinary' sheep driven a certain distance from and to sheep houses known to them. The same two observers recorded behavioural events in all five trials and one of them was filmed. The trials were conducted in late October and early November of the same year, just before the onset of winterhousing. The results of the repeated tests were unequivocal in demonstrating the clearly pronounced and intrinsic leading instinct. Thus there was a perfect harmony in the behaviour pattern of all the leadersheep tested. It can be concluded that this first experimental evidence has substantiated previous knowledge of the unique characteristics attributed to Icelandic leadersheep.

**Genetic effects on lamb survival traits**D. Francois<sup>1</sup>, C. Raharivahoaka<sup>1</sup>, F. Tortereau<sup>1</sup>, J.P. Poivey<sup>2</sup> and L. Tiphine<sup>3</sup><sup>1</sup>INRA, GA, UR 631 SAGA CS 52627, 31326 Castanet Tolosan, France, <sup>2</sup>INRA, UMR 112 SELMET, 2 place Viala, 34398 Montpellier, France, <sup>3</sup>Institut de l'Elevage, MNE, 149 rue de Bercy, 75595 Paris cedex 12, France; dominique.francois@toulouse.inra.fr


Profitability of sheep industry is conditioned by the number of lambs produced by flocks. Both fertility and ewe prolificacy traits determines the number of born lambs. Then the survival rate influences the productivity of the flock. Survival traits are determined by different effects. Study of genetic effects on lamb survival has been conducted at two INRA experimental flocks composed of prolific Romanov ewes and of Romane ewes (former INRA-401 line=50% Romanov, 50% Berrichon du Cher). Survival was registered with codification of the mortality causes when possible. Survival data of 4,215 Romanov lambs and 22,428 Romane lambs has been studied at birth and from birth to 60 days of age on linear models with direct effects or with direct and maternal effects. Survival rate was 83.3% at birth for Romanov lambs and 69.5% at 60 days while in Romane the rate was 94.5% at birth and 87.4% at 60 days. Genetic parameters estimation was 0.047 direct heritability for survival at birth and 0.048 for maternal heritability in Romanov, as direct was higher (0.087) than maternal (0.006) in Romane. Romane maternal repeatability ( $c^2$ ) was 0.101. From birth to the age of 60 days, direct heritability was 0.059 and maternal heritability was 0.074 in Romanov, as direct was higher (0.067) than maternal (0.020) in Romane. Romane maternal repeatability ( $c^2$ ) was 0.060. In Romane, phenotypic correlation between survival at birth and birthweight (BW) was 0.182. Genetic correlation between survival direct effects and BW direct effects was -0.072 while that between survival direct effects and BW maternal effects was 0.020. At 60 days, phenotypic correlation between survival at 60 days and 30 days liveweight (LW) was 0.277. Genetic correlation between 60 d\_survival direct effects and LW direct effects was -0.124 while that between 60 d\_survival direct effects and LW maternal effects was 0.230.

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