Texel DM, the hyper-developed muscling sheep breed of the future

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Belgium is famous for its hyper-developed muscling Belgian Blue cattle and Pietrain pig. Texel DM is a new line which presents all the characteristics of double muscling and is considered the leader in Belgium for terminal crossing.

Texel DM breeders have always selected animals for muscling development when preserving size and structure. The animals are quite different from the other European Texel lines in their muscle development, and especially in their better carcass quality with lower fat content and higher values of killing-out percentage.

A typical Texel DM ram

Scientifically documented

A research project sponsored by the Walloon Region of Belgium has been developed since the 80's. The study of double muscling in sheep and especially in Texel DM took place in the Department of Genetics of the Veterinary Faculty of the University of Liege (ULg) and in Ciney with the Office de Promotion des Petits Elevages de Wallonie (OPPEW).
The OPPEW has established a recording program and was in charge of the extension work. Conventional Texels and Texel DMs were compared at the research farm of ULg. The research work can be considered as a first scientific documentation of the Texel DM.

Growth

Texel breed is well documented in Belgium. Weights at different ages d with their corresponding daily gains were collected by the OPPEW, standardised to weight at 10, 30, 70, 90 and 130 d and have been studied in order to establish growth curves for analysing several non genetic factors (herd, sex and birth type, age of the dam, month and year of lambing) affecting growth traits from birth to weaning.
The relative importance of each fixed effects was estimated by eliminating each particular effect from the global model. Values of R2 obtained for the global model were around 35% for the weights and around 30% for the daily gains. The relative importance of each effect was as follows: sex-type of birth (20 %) > herd (10%) > age of dam (5%) > month of lambing (1%) > year of

lambing (<1%) and for daily gains: sex-type of birth (15 %) > herd (10%) > age of dam (2%) > month of lambing (<1%)> year of lambing (<1%).

Carcass and meat quality

A carcass with incomparable meat qualities can be considered as the main attraction of Texel DM. The results (means (standard deviation)) of an experiment done at the research station farm of the Veterinary Faculty of the University of Liege on 121 conventional and 28 meaty (DM) Texel rams shows that Texel DM rams, slaughtered at the same average weight, have a better dressing out percentage.

	Conventional	**Texel DM**
Final Weight	47.2 (5.2)	47.7 (3.2)
Carcass Weight	23.6 (3.2)	24.9 (2.4)
Dressing Out %	49.9 (2.8)	52.3 (2.8)
Skin	6.4 (1.0)	5.8 (0.9)
Viscera	9.9 (1.7)	9.9 (1.0)

In a comparison with the Bleu du Maine breed, the Texel DM was characterised by carcasses with less fat and bone and a killing out percentage 7.8% higher on average.

	T E X E L		**B L E U du M A I N E**	
(K°)	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**
Final weight	47.050	5.107	48.030	4.088
Carcass weight	25.850	3.520	22.570	1.929
Dressing out %	54.800	0.025	47.000	0.017

The complete dissection of the double lumbar L4 indicated that the Texel DM was characterised by a better muscle/total L4 ratio (efficiency), a bigger eye muscle, smaller psoas muscles and less fat and bone.

	T E X E L		**B L E U du M A I N E**	
	MEAN	**STANDARD DEVIATION**	**MEAN**	**STANDARD DEVIATION**
Weight	229.82	37.4	229.37	29.4
Efficiency	72.40	2.5	65.25	4.1
Surface Eye M.	1764.05	323.1	1322.70	115.5
Perimeter Eye M.	184.95	17.3	169.40	8.4

Eye M.	53.48	13.1	43.50	4.9
Psoas Maj.	14.06	2.5	16.90	2.3
Psoas Min.	5.87	0.8	4.80	0.7
Quad. Lumb.	2.77	0.7	2.61	0.5
Vert. muscle	12.25	2.1	10.59	2.1
Fat	21.53	7.4	28.60	14.3
Bone	41.40	3.2	51.57	4.7

For the plasmatic concentration of creatine and creatinine considered as other indicators of muscle development, Texels DM had average values of creatine 25% lower and of creatinine 20% higher than Bleu du Maine sheep.
The analysis of the muscle fibbers of the *Sartorius* muscle has indicated bigger muscular fibber cells with a higher frequency of type II fibbers, indicating that the superiority of Texel DM was due to muscular hypertrophy.

Genetic determinism and crossbreeding results

An experiment conducted by ULg and INRA (Toulouse-France) was started in 1996 in order to determine whether the Texel DM entity is monogenic or polygenic. The F1 born from Texel DM rams and Romanov ewes are now being studied; this first trial will be followed by other crossbreeding systems classically used in genetics to track gene(s) linked with muscular development.
Even if we cannot answer the question concerning the genetic determinism at the moment, it is clear that, after comparing different breeding systems used by INRA, the Texel DM is considered the best terminal ram line.

Export success

The best Texel DM rams are used in pure breeding and in crossbreeding. Main exports involve the use of Texel DM as terminal sires on dam lines which are selected for prolificacy.
From an economic point of view, the main interest in crossbreeding is the improvement of carcass quality and this is the main reason why Texel DM is an export success.

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