

Improving the DNA database of genotypes using SNP markers for locally breed cattle in Kazakhstan



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The aim of the work was to study the manifestations of SNP in DNA in determining the origin of cattle and improving the domestic database of genotypes of meat and dairy breeds of Kazakhstan.

The following tasks have been implemented:

- 1) collect biological material, extract at least 1000 DNA and conduct genotyping of DNA samples;
- 2) to test parentage verification and develop a database of SNPs for local cattle.

The object of research is sires, cows and calves of the Kazakh White-Headed (KW) and Hereford (H) breeds of Northern, Western and Eastern Kazakhstan

DNA research was conducted in the Laboratory of Animal Genetics at the University of Queensland (Australia) and in the GeneSeek Laboratory (USA)



National database
<http://www.plem.kz>

Tabl.1-DNA Genotyping and Confirmation of Origin Results

Name of the farm	Breed	The number of investigated DNA with a genetic profile of SNP, goals			The number of calves with confirmed paternity in the information-analytical system, goals		
		Total	sire (cow)	calf	DNA confirmed	confirmed paternity in the IAS	% confirmation with IAS database
Sabit farm	KW	245	20	225	225	178	86,4
Adlet-T farm	KW	78	30	48	48	37	77,1
Aysulu farm	KW	209	14	195	195	186	98,9
Krymskoe farm	KW	351	17 (75)	259	75	1	1,3
Shalabay farm	KW	137	28	109	105	97	97,8
Koluton – 04 farm	H	47	9	38	38	38	64,3
Total	-	1067	118	874	686	-	-
Other 67 farm	-	791	791	-	-	-	-

Pic.1-Loading the genetic profile into the IAS system

DNA were tested in the Laboratory of Animal Genetics at the University of Queensland (Australia) 200 samples and 1658 samples were tested in the laboratory of Neogen (USA). Calculation of the parentage reliability was made for 1067 animals.

A subbase «Database of SNP manifestation in domestic cattle DNA» was developed, which includes 245 SNP markers (including 100 major SNPs recommended by ISAG) and is filled with DNA indicators from 1858 breeding animals.