

Article

## The Characteristics of The Growth and Development of Internal Development Organs in The Breed of Various Goats

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**Abstract:** The article describes the features of growth and development of the internal organs of intrauterine development of the fetus, determines the mass of the internal organs of the fetus, calculates the maximum and average daily growth of the internal organs of the fetus of different breeds of goats, and determines the preservation of kids.

**Keywords:** goat breeding, breed, local, zaanen, mursia-garnet, heart, trachea, lungs, digestive system, stomach, liver, kidneys, biological features, fertility, milk, maternal instinct. goat breeding, breed, local, zaanen, mursia-garnet, heart, trachea, lungs, digestive system, stomach, liver, kidneys, biological features, fertility, milk, maternal instinct.

### 1. Introduction

In the current economic conditions, goat breeding, which is mainly engaged in wool production, has become unprofitable due to low demand and low prices for this product. The sale of wool does not cover the costs of raising goats, which can make the industry uncompetitive. In this regard, the search for additional production and sales opportunities is a pressing issue. This task can be successfully solved by producing meat and milk, the volume of which in most cases depends on the technologies of goat breeding.

Therefore, to solve these problems, the Zaanen and Murcia-Granada breeds of goats, which are leading in the world in terms of milk productivity, were imported to Karakalpakstan and comprehensive studies were conducted.

The biological characteristics of goats are that they are maximally fed on pastures and roughage, turning them into food and raw materials for industry, and their need for grain feed is very low.

In the modern stage of goat breeding, there is a need to produce its products using low-cost technologies. Therefore, the existing technology for producing goat products needs to be analyzed and reconstructed.

First of all, it is necessary to use the unique biological characteristics of the mother goats, high fertility, milk yield and maternal instinct of the goats in order to leave offspring and maximally preserve the new generation.

Currently, in Uzbekistan, there are two technologies for raising goats in pasture conditions: the first is feeding the goats directly next to the mother during the period of full-fledged milk feeding until the age of 4.0-4.5 months, and after the milking period, the goats are separated from the mother in the morning and fed in the evening by the same separation-soaking method, which is placed next to the mother, so that the goats are fed for 2 months, so that the goats cannot better graze and use separate pastures, and until the kids.

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## 2. Materials and Methods

In this regard, the task was set to conduct a comparative analysis of goat breeding using different technologies in order to rationally combine the physiological state of animals and production practices with the biological characteristics of the mother goats. For this purpose, three identical groups of 25 head each with local, Zaanen and Murcia-Granada goats and kids were created in March of the 2019 milking season.

The first group served as a control: the goats remained with their mothers throughout the lactation period and were fed milk until they were satisfied, while the first two months of the goats were grazing around the slaughter site.

The second group consisted of an experimental group, in which week-old goats were separated from their mothers in the morning and placed with their mothers in the evening, depending on the time of their return from the pasture. This lasted for 2 months. Later, the children were raised with their mothers. Starting from the age of 30 days, the goats were fed 30 kg of grated hay per day. The use of this technology made it possible to graze goats on long pastures without goats, thereby feeding them more and contributing to obtaining more milk and, accordingly, increasing the growth rate of goats. On rainy days, the goats were kept in the barn, and on other days - in the open barn.

The third experimental group, in which only male and female goats were fed in difficult conditions, i.e., they were fed full-fledged feed only manually and conditions were created for obtaining milk and meat products from them. The mass of the internal organs and the fetus was studied using electronic scales with an accuracy of up to 0.1 g.

## 3. Results

In our experiment, we first compared the internal organs of domestic and imported Zaanen and Murcia-Granada breeds of goats, the obtained data is presented in Table 1.

**Table 1.** The mass of internal organs of intrauterine development of the fetus of goats of different breeds, g

Goat breed	Fetal age	Mass,g	The mass of internal organs, g						
			heart	trachea	lungs	oesophagus	stomach	liver	kidneys
Local	60 days	58,7	1,17	8,04	12,5	1,17	3,1	27,0	3,3
	90 days	481,0	22,1	16,5	124,1	7,7	34,6	242,4	33,7
	120 days	1671,8	93,6	26,8	433,0	26,8	137,0	852,7	101,9
	At birth	2933	278,6	155,4	654,1	67,5	395,9	1184,9	196,5
Zaanen	60 days	78,1	3,12	10,7	16,6	3,12	4,1	35,9	4,5
	90 days	659,4	30,4	22,4	170,3	10,6	47,5	332,6	46,2
	120 days	2286,9	128,1	36,6	592,3	36,6	187,5	1166,4	139,5
	At birth	4012	381,1	212,6	894,7	92,3	541,6	1620,8	268,8
Murcia Granada	60 days	45,8	1,84	6,0	9,8	1,84	2,44	21,2	3,2
	90 days	387,2	17,8	13,2	99,8	6,2	27,9	195,0	27,1
	120 days	1342,7	94,0	21,5	347,8	21,5	110,1	684,9	81,9
	At birth	2356	223,8	124,9	525,4	54,2	318,1	951,8	157,9

The data obtained on the live weight of the kids at birth showed that the average live weight of the kids was 4012 g, the lowest result was observed in the kids of the Murcia-Granada breed - 2356 g, and the kids of the local breed took an intermediate position from 2933 g.

Analysis of the obtained data on the mass of the internal organs of the fetuses of different breeds of goats revealed that during the development of the fetus, biological processes occur differently in their internal organs. For example, the heart mass of a 60-day-old Zaanen goat is 3.12 g, the Zaanen breed is 1.7 times heavier than the Murcian-Granate breed and 2.7 times heavier than the local breed. It was noted that the information received about the organs of the trachea, lungs, digestive tract, stomach, liver and kidneys in the fetus develops practically in this order.

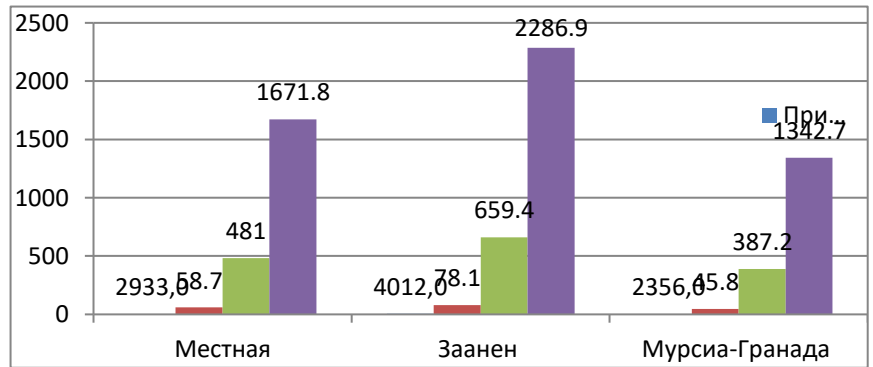


Figure 1. The mass of the fruit of different breeds of goats, g

From the data in Figure 1, it can be seen that the 60-day fruit weight was the highest in the Zaanen breed and amounted to 4012.0 g. The lowest value was recorded in the fruit of the Murcia-Granada breed - 2356.0 g. Local goats took the intermediate place of 2933.0 g. Analysis of the fruit weight of goats of different breeds at 60, 90, and 120 days revealed that it was equal to the birth weight. Thus, it has been established that the development of the fetus depends not only on the conditions of keeping and feeding of goats, but also, first of all, on their heredity.

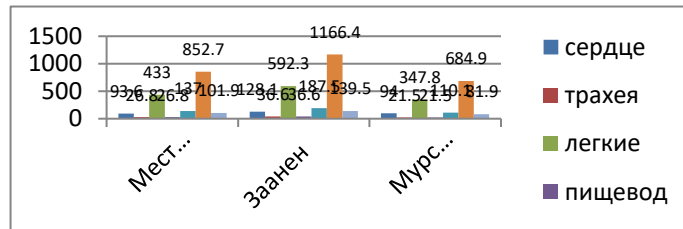


Figure 2. The mass of the internal organs of the fetus of goats of different breeds.

The study of the mass of internal organs of goats of different breeds indicates their level of development, and the analysis showed that there is a connection between the live weight of goats and the valvularity of internal organs. These indicators were the highest for the Zaanen breed, the lowest for the Murcian-Granadian breed, and the average for the local breed.



Figure 3. Goat survival rate, %

#### 4. Discussion

In animal husbandry, the preservation of goats is one of the main indicators of breeding in the herd. As can be seen from the data presented in Figure 3, the retention rate

of the Murcia-Granada breed in the herd was 100 percent. The local breed of goats accounted for 96 percent, and the Zaanen breed for 92 percent. In our opinion, these data obtained from our experience, especially the low retention rate of Zaanen breed goats (92.0%), is explained by the large size of goats of this breed and their high fertility compared to local and other breeds [1,2].

Table 2

Maximum and average daily suspension of internal organs of the fetus of goats of different breeds, g

Age period, days		Fruit weight, g	The mass of internal organs, g						
			Heart ce	trach ea	Lung s	Oesop hagus	Stomach	Liver	kidney s
Local									
1 to 60	maximum	58,7	1,17	8,04	12,5	1,17	3,1	27,0	3,3
	average daily	0,98	0,04	0,27	0,42	0,04	0,1	0,9	0,11
61 to 90	maximum	481	22,1	16,5	124,1	7,7	34,6	242,4	33,7
	average daily	8,02	0,74	0,55	4,14	0,26	1,15	8,08	1,12
91 to 120	maximum	1671,8	93,6	26,8	433,0	26,8	137,0	852,7	101,9
	average daily	27,9	3,12	0,89	14,4	0,89	4,57	28,4	3,4
121 to birth	maximum	1261,2	278,6	155,4	654,1	67,5	395,9	1184,9	196,5
	average daily	21,02	9,3	5,2	21,8	2,3	13,2	39,5	6,6
Zaanen									
1 to 60	maximum	78,1	3,12	10,7	16,6	3,12	4,1	35,9	4,5
	average daily	1,3	0,1	0,36	0,55	0,1	0,1	1,2	0,2
61 to 90	maximum	659,4	30,4	22,4	170,3	10,6	47,5	332,6	46,2
	average daily	11,0	1,0	0,75	5,7	0,35	1,58	11,09	1,54
91 to 120	maximum	2286,9	128,1	36,6	592,3	36,6	187,5	1166,4	139,5
	average daily	38,1	4,27	1,22	19,7	1,22	6,25	38,9	4,6
121 to birth	maximum	1725,1	381,1	212,6	894,7	92,3	541,6	1620,8	268,8
	average daily	28,8	12,7	7,09	29,8	3,08	18,05	54,03	8,96
Murcia Granada									
1 to 60	maximum	45,8	1,84	63,0	9,8	1,84	2,44	21,2	26,2
	average daily	0,76	0,06	2,1	0,33	0,06	0,08	0,71	0,87
61 to 90	maximum	387,2	17,8	13,2	99,8	6,2	27,9	195,0	27,1
	average daily	6,5	0,59	0,44	3,33	0,21	0,9	6,5	0,9
91 to 120	maximum	1342,7	94,0	21,5	347,8	21,5	110,1	684,9	81,9
	average daily	22,4	3,13	0,72	11,6	0,72	3,67	22,8	2,73
121 to birth	maximum	1013,3	223,8	124,9	525,4	54,2	318,1	951,8	157,9
	average daily	16,9	7,46	4,16	17,5	1,8	10,6	31,7	5,3

The data in Table 2 shows that the absolute and average daily growth of the internal organs of goats of different breeds is different. Observation of fetal development was carried out in the first stage after 60 days, and subsequent control measurements were carried out with an interval of 30 days. Absolute and average daily growth was calculated separately for each internal organ and the following data were obtained. All the obtained data showed practically the same pattern: the mass of the internal organs of the fetus and their development increases with time. However, it was noted that there is a difference in the absolute growth of the internal organs of each breed. For example, the absolute heart rate of the fetus before the 60th day was 1.17 g for the local breed, and the average daily growth was 0.04 g, while for the Zaanen and Murcia-Granada breeds, this indicator was 3.12 g, 0.06 g, and 1.84 g, 0.06 g, respectively, and almost the same for other internal organs. It was noted that there is a difference in the ratio.

## 5. Conclusion

The findings of this study reveal significant differences in the growth and development of internal organs among various goat breeds, emphasizing the impact of genetic factors on fetal development. The Zaanen breed exhibited the highest birth weight and organ mass, followed by the local breed, while the Murcia-Granada breed displayed the lowest values. These results suggest that breed selection plays a crucial role in optimizing meat and milk production in goat farming. The implications of this study underscore the necessity of tailored breeding and feeding strategies to enhance livestock productivity and economic viability. Further research should explore the long-term physiological and productive performance of these breeds in varying environmental conditions, incorporating advanced genetic and nutritional interventions to maximize efficiency in goat breeding practices.

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