Live weight and exterior characteristics of lambs obtained from inbreeding F2 hybrid sheep of Hisar and native breeds

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Abstract. In this article, live weight and body size parameters of hybrid lambs obtained from inbreeding of F2 hybrid sheep with Hisar and native breed genotypes were higher than those of pure native breed lambs. These obtained results showed that improvement of selection traits of native breed sheep using Hisar breed rams is of great scientific and practical value. The live weight of the hybrid rams obtained from inbreeding was 5.62 kg at birth, and the females were 5.17 kg, respectively. In group I, the live weight was 0.45 kg, or 8.7%, and 0.34 kg, or 7.2% higher than the live weight of purebred heifers. However, the average live weight of experimental hybrid lambs at birth was 5.37 kg. It was found that the average live weight of pure native lambs was 0.41 kg or 8.3% higher. It should be noted that in experimental group II, at the age of 12 months, crossbred lambs were higher in body size than pure native lambs. In this case, hybrid frames in experimental group II compared to those of equal frames in control group I, respectively, 1.46 cm or 2.07%; 2.4 cm or 3.43%; 0.61 cm or 0.97%; 0.35 cm or 2.15%; 0.45 cm or 2.16%; 1.2 cm or 1.51% and can be seen to be 0.03 cm higher.
Keywords. Sheep, lamb, breed, hybrid, hisar, native, live weight, ramcha, selection.

1 Introduction

Sheep breeding is one of the leading sectors in the livestock sector, 30% of the total meat supplied in Uzbekistan is obtained from sheep breeding, which requires the development of this sector on a more scientific basis [1]. For this purpose, it is important to take care of the sheep at a reasonable level, to feed them with full value, and to further improve the breeding work. From sheep, human food (meat and fat), industrial wool, skin, fur, and medical products are obtained [2].

The following sheep breeds are bred in Uzbekistan: native, Karakol, Hisar, semi-fine wool-yielding meat-serjun and partially Adilboy sheep breeds. Breeding of these sheep is carried out in the following regions - in the mountain, subalpine and semi-desert regions, mainly meat-fatty breeds are bred, and in the desert and semi-desert regions, the Karakol sheep breed is bred [3, 4].

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The native sheep breed is a breed created in our country through folk selection for several thousand years, it is well adapted to breeding in the mountainous and sub-mountainous regions of Uzbekistan, and it is considered one of the leading breeds in terms of head number. In Uzbekistan today, the number of native and native breed hybrids is about 10 million [5]. Today, in the Kashkadarya, Surkhandarya, and Bukhara regions of Uzbekistan, pure native, as well as Karakol and native hybrids, pure native, Hisar and native hybrids are being bred in Tashkent, Samarkand, Syrdarya, Jizzakh, and Vadi regions.

Native breed sheep are distinguished from other sheep breeds by being well adapted to the conditions of the outdoor environment (rainy, snowy and wet and cold) [6]. Sheep of this breed have the characteristics of bringing out their high genetic potential in terms of productivity under good grazing conditions [7].

According to the opinions of many authors, native breed sheep are called Uzbek national sheep, and these sheep are sheep that are well adapted to the climatic conditions of mountain and sub-mountain regions [8]. The native breed of Tailfat sheep is described as being distinguished by its extreme endurance, solidity of constitution, and good quickness. Sheep are kept in pastures throughout the year. In terms of meat and fat productivity, they have a lower index than the Hisar breed. One of the distinctive features of sheep of this breed is the low legs and elongated body [9]. Most sheep have long foreheads, heads and ears. Most of the sheep are black, but sometimes brown, orange and gray sheep are also found. The live weight of cows is up to 75 kg, rams - 100 kg and more. Wool is sheared once a year, and the average wool shearing is used for blankets - 2.0-3.0 kg, rams - 3.0-4.0 kg, coarse wool, coarse cloth, felt and other purposes [10].

Native breed sheep are distinguished from other sheep breeds by being well adapted to the conditions of the outdoor environment (rainy, snowy and wet and cold). Sheep of this breed have characteristics of revealing their high genetic potential in terms of productivity in good pasture conditions [11].

Native breed sheep belong to aboriginal breeds that have been created by folk selection in the mountains, highlands and hills for thousands of years, and its Persian translation means native, and they are intensively bred in the northern regions of Tajikistan [12].

In the Central Asian countries, the contribution of the Hisar breed of sheep to the improvement of the selection characteristics of tailfat sheep, to the creation of new types and breeds is considered to be very large. For example, using Hisar sheep, Tajik meat-fatty-Serjun sheep breed was created in Tajikistan, Ordabin breed in Kazakhstan, Aktyubinsky sheep with semi-fine wool, Aivyakol breed and Merino breed in Kyrgyzstan. In Uzbekistan-Usturt meat-fat-wool sheep, therefore, the Andijan type of sheep with similar characteristics was created [13].

Using the genetic potential of Hisar and native sheep, creating their productive genotypes, genetically improving productivity characteristics, establishing productive breeding flocks of the breed, raising high-yielding sheep in terms of meat productivity, developing methods for improving the selection characteristics of the offspring obtained from them is important scientific and practical. is important. Also, it is of urgent importance to crossbreed the native breed using Hisar breed rams and to improve the selection characteristics through continuous selection of the offspring obtained from them.

One of the most important selection characteristics of sheep is the live weight at birth, which affects the future growth and development of sheep, that is, lambs born with a high live weight retain a high advantage under optimal storage and feeding conditions [11].

The daily feed ration of native breed rams fed for 75 days is 1.0 kg of cotton seed meal, 1.0 kg of grass hay, 0.5 concentrate feed and 15 g of table salt, the meat and fat yield of lambs fed with fat in a stable barn, showed that it is much higher compared to tenkurs fed on pastures, that is, their slaughter yield is 52.95% and the amount of meat is 26.03%.

According to the selection results, the live weight of the best sheep compared to the general flock was 7-10 kg (12-18%) higher in ewes and 28 kg (33%) in rams. The authors noted the importance of studying the level of nutrition, breeding conditions and meat and fat productivity in the development of ways and methods of further improvement of breeding work in Hisar sheep.

The live weight of ewes with 1/2 x native ewes of Hisar breed is 4.22 kg (6.8%) higher than that of pure native ewes, while the live weight of mature native ewes is 11.66 kg (21.2%) was higher. These results are important for the improvement of the breeding characteristics of native breed sheep by their genotype selection. Similar conclusions were reached by [4, 7, 8].

Crossbred lambs have good meat qualities under pasture conditions, large body, strong constitution, well-developed body structure, good growth, satisfactory fatness, sufficient milk yield and high meat product coverage.

Tailfat is a genetic trait of this sheep breed and is considered one of the main "observable" indicators and serves as a natural nutrient reserve in unfavorable feeding conditions, mainly during severe cold periods of winter. At the moment, Edilboy sheep have the highest meat and fat productivity among other sheep breeds, and coarse wool serves to improve sheep in terms of meat-fat productivity [1, 2, 9].

2 Materials and methods

The practical phase of the study unfolded across the span of 2021 to 2023, unfolding within the premises of the distinguished "Kholto'raev Oybek KHM" breeding farm, an enclave dedicated to the cultivation of sheep in the heart of the Ohangaron district within the Tashkent region. The overarching objective of this phase was to intimately probe the dynamics within the realm of lamb rearing, a pivotal component of the sheep breeding domain.

The scope of the research encompassed two distinct groups of lambs, each with a distinctive lineage. Group I was comprised of lambs of pure native breed ancestry, showcasing an unadulterated genealogy. In parallel, Group II showcased a more complex lineage, involving hybrid lambs, a synthesis of F2 joint breeds—3/4 of the distinguished hisar breed harmoniously entwined with 1/4 of the indigenous native breed.

The meticulous selection process ensured a well-balanced representation of 46 lambs from the pristine native breed heritage for Group I. Correspondingly, Group II featured 49 hybrid lambs, each embodying the intricate genetic dance between hisar and native breeds in their F2 makeup.

This empirical treasure trove of data was meticulously subjected to the rigors of variational statistics, anchored by the scholarly insights of E.K. Merkureva, circa 1970. The statistical toolkit revealed a wealth of information, rendering the average indicators (X) of each group, fortified by their corresponding errors (Sx), in a symphony of numerical precision. The essence of variability (Cv) was distilled, offering a snapshot of the subtle dynamics that shape the realm of sheep breeding.

Further fortifying the validity of the findings, the criteria of comparative indicators were unwrapped with the discerning lens of reliability (td,P). This analytical framework lent credence to the conclusions drawn from the study, rendering a nuanced understanding of the contrasting attributes that set Group I and Group II apart.

In essence, the practical segment of the research, a span extending across two years, heralded a deep dive into the realm of lamb rearing, illuminating the juxtaposition between purebred native lambs and their hybrid counterparts. Guided by the beacon of statistical rigor, this exploration furnished a comprehensive understanding of the dynamics within this intricate world, a testament to the dedication of scholars to uncover the intricate tapestry woven within the domain of sheep breeding.

3 Results and discussion

Live weight indicators of animals are one of the most important growth indicators of the organism. The live weight of sheep at birth affects their future development and is one of the most important selection characteristics and is one of the indicators that determine the main efficiency. The growth and development of different sheep breeds are different, and they show different growth rates even under the same conditions, depending on the animal breed, fertility characteristics, direction of productivity, adaptability to natural and climatic conditions, and breeding periods.

The live weight of lambs, the total body size, is manifested by the enlargement of individual organs, which is called the growth of the body of the lambs and undergoes quantitative changes. Farm animals differ in live weight, size and growth of body parts. In the practice of zootechnics, the increase in the live weight of animals and the growth of body parts are determined based on the measurement of the body dimensions obtained from the body parts.

The development of the organism refers to the totality of morphological and physiological changes that occur in the animal organism throughout its life. One of the most important growth indicators of organicism is the live weight of the animal.

Growth and development in different breeds of sheep are different, depending on the animal breed, fertility characteristics, direction of production, adaptability to natural and climatic conditions, and methods of inbreeding, they show different growth rates even under the same storage and feeding conditions.

Taking this into account, we analyzed the live weight indicators of pure native breed and hybrid lambs by periods, the results of which are presented in Table 1.

Table 1. Live weight indicators of purebred and hybrid lambs by periods, kg.

Breed		Gender						Average live weight of lambs		
		Ram			Ewe					
		n	$\overline{X} \pm S_{\bar{x}}$	Cv,%	n	$\overline{X} \pm S_{\bar{x}}$	Cv,%	n	$\overline{X} \pm S_{\bar{x}}$	Cv,%
Newborn										
I	Lambs of pure native breed	24	5.17± 0.06	5.88	22	4.74± 0.13	12.58	46	4.96± 0.08	7.23
II	Hybrids from inbreeding	26	5.62± 0.10 ***	9.47	23	5.08± 0.07*	6.79	49	5.37± 0.07***	6.30
1 month										
I	Lambs of pure native breed	24	17.05± 0.27	7.72	22	16.46± 0.33	9.40	46	16.77± 0.24	6.85

II	Hybrids from inbreeding	26	18.64± 0.32 ***	8.74	23	17.7± 0.38*	10.36	49	18.20± 0.24***	6.41
3 months										
I	Lambs of pure native breed	24	33.06± 0.55	8.11	22	31.93+ 0.60	8.75	46	32.52± 0.42	6.19
II	Hybrids from inbreeding	26	35.60± 0.40 ***	5.72	23	34.03± 0.58*	8.16	49	34.86± 0.41***	5.79
5 months										
I	Lambs of pure native breed	24	41.26± 0.63	7.46	22	39.50+ 0.93	7.11	46	40.42± 0.47	5.56
II	Hybrids from inbreeding	26	44.52± 0.55 ***	6.28	23	41.65± 0.63*	7.22	49	43.17± 0.50***	5.71
8 months										
I	Lambs of pure native breed	24	45.50± 0.51	5.44	22	43.0± 0.47	5.11	46	44.30± 0.39	4.26
II	Hybrids from inbreeding	26	48.84± 0.46 ***	4.79	23	45.16± 0.62 **	6.59	49	447.11± 0.38***	3.99
12 months										
I	Lambs of pure native breed	24	51.40± 0.95	9.02	22	47.2± 0.52	5.21	46	49.39± 0.56	5.44
II	Hybrids from inbreeding	26	55.25± 1.04 **	9.67	23	50.0± 0.53 ***	5.09	49	52.78± 0.58***	5.37
18 months										

I	Lambs of pure native breed	24	64.80± 1.10	8.33	22	57.31± 0.87	7.14	46	61.22± 0.49	3.81
II	Hybrids from inbreeding	26	70.42± 1.09 ***	7.90	23	61.80± 0.76 ***	5.94	49	66.37± 0.55***	4.06
Note: * P>0.95; ** P>0.99; *** P>0.999										

As can be seen from the table, the average live weight at birth of hybrid rams obtained from inbreeding in group II was 5.62 kg, and the weight of females at the corresponding age was 5.17 kg, which is 0.45 kg or 8.7% compared to the live weight of equals born from pure native breeds in group I. (P>0.999) and was higher by 0.34 kg or 7.2% (P>0.95). At the same time, the average live weight of experimental hybrid lambs at birth was 5.37 kg, which was 0.41 kg or 8.3% (P>0.999) higher than the average live weight of pure native lambs.

At the age of one month, crossbred lambs achieved a higher live weight than pure native breed lambs. For example, at the age of one month, crossbred rams-18.64 kg and females-17.7 kg compared to pure native breed rams 1.59 kg or 8.9% (P>0.999) and 1.24 kg or 7, It was higher by 5% (P>0.95). It should be noted that in our research, one-month-old purebred lambs in group I had an average live weight of 16.77 kg, which was 1.43 kg or 8.5% (P>0.999) less than the average live weight of the equivalents in group II. were

In experimental groups, at the age of 3 months of lambs, the live weight of hybrid rams was 35.60 kg, 2.54 kg or 7.7% (P>0.999) than that of pure native breed lambs, in female lambs these indicators were 34.03 kg, compared to pure native breed lambs. 2.1 kg or 6.6% (P>0.95) was higher. In studies, regardless of the sex of lambs, a higher result in terms of average live weight at the age of three months was observed in hybrids. For example, it was found that the average live weight of hybrid lambs at 3 months of age was 34.86 kg, which was 2.34 kg or 7.2% (P>0.999) higher than the average live weight of pure native breed lambs.

At 5 months of age, group II crossbred rams had a live weight of 44.52 kg and female crossbreds 41.65 kg, 3.26 or 7.9% (P>0.999) compared to group I equivalent rams and 2.15 kg compared to female lambs. or 5.4% (P>0.95) was higher. When analyzing the average live weight of lambs in both groups in these months, it was noted that the average live weight of crossbred lambs was 43.17 kg, which was 2.75 kg or 6.8% (P>0.999) higher than the average live weight of purebred equine lambs.

In our research, when we studied the live weight of lambs at the age of 8 months, we can see that hybrids obtained from inbreeding have a higher result. For example, at the age of 8 months, the live weight of crossbred lambs was 48.84 kg, 3.34 kg (7.3%, P>0.999) more than that of pure native breed lambs, and 45.16 kg in female lambs, 2.16 more than that of pure native breed lambs. kg (5.0%, P>0.99) was higher.

The average live weight of lambs in all groups, regardless of gender and breed, was determined and analyzed. According to his results, lambs of pure native breed at the age of 8 months in group I had an average live weight of 44.30 kg, which was characterized by an average live weight of 2.81 kg (6.3%, P>0.999) less than the average live weight of equals in experimental group II.

A higher advantage in live weight was observed in lambs from inbreeding, where crossbred rams had an average live weight of 55.25 kg at 12 months of age, compared to pure

native-bred equal rams of 3.85 kg (7.5%, P>0.99), females belonging to 50.0 kg, 2.8 kg (5.9%, P>0.999) higher than pure native breed females. It should be noted that when we determined the average live weight indicators of lambs in groups, it was found that the live weight of hybrid lambs at the age of 12 months was higher. For example, the average live weight of crossbred lambs was found to be 52.78 kg, 3.39 kg (6.8%, P>0.999) higher than the average live weight of pure native lambs.

Even at the age of 1.5 years, crossbred lambs had a higher live weight than pure native breed lambs. For example, at 1.5 years of age, crossbred rams were 70.42 kg and females were 61.8 kg, compared to pure native rams by 5.62 kg or 8.7% (P>0.999) and 4.49 kg or 7 was higher by .8% (P>0.999). In all experimental groups, regardless of the breed and breed of lambs, according to the results of determining their live weight at the age of 18 months, the highest indicators were shown in hybrids. In particular, the average live weight of crossbred lambs was 66.37 kg, which was 5.15 kg or 8.4% (P>0.999) higher than that of pure native breed lambs.

We studied the body dimensions of purebred and crossbred lambs, the results of which are presented in Table 2.

Table 2. Exterior characteristics of purebred and hybrid lambs

Genotype	Gender	n	Loin height	Rump height	Body oblique length	Chest width	Chest depth	Chest circumference	Poll circumference
Lambs of pure native breed	**1 month**								
	Ram	7	49.54 ±0.26	50.52 ±0.25	42.57 +0.24	14.04 +0.11	17.75 ±0.11	54.04 ±0.32	7.11± 0.055
	Ewe	8	49.11 ±0.25	50.21 ±0.26	42.21 +0.21	13.81 +0.11	17.21 ±0.11	53.81 ±0.32	7.07± 0.037
	5 months								
	Ram	6	67.31 ±0.28	68.11 ±0.39	58.33 +0.43	15.61 +0.25	19.57 ±0.17	76.02 ±0.35	7.42± 0.084
	Ewe	8	66.52 ±0.29	67.21 ±0.21	57.56 +0.20	15.32 +0.06	18.17 ±0.07	74.82 ±0.33	7.33± 0.077
	8 months								
	Ram	8	69.12 ±0.31	70.01 ±0.35	59.75 +0.20	15.81 +0.17	19.61 +0.12	77.62 ±0.41	7.61± 0.077
	Ewe	9	68.65 ±0.31	69.46 ±0.31	59.31 +0.19	15.71 +0.20	19.45 ±0.26	77.11 ±0.34	7.56± 0.060
	12 months								
	Ram	8	70.35 ±0.37	70.01 ±0.37	62.61 +0.48	16.26 +0.24	20.75 ±0.31	79.15 ±0.47	7.71± 0.058
	Ewe	8	69.42 ±0.34	70.41 ±0.34	60.05 +0.49	16.01 + 0.18	19.71 ±0.30	78.65 ±0.49	7.66± 0.045
Hybrids from inbreeding	**1 month**								
	Ram	8	50.52 ±0.29 **	51.41 ±0.27 *	44.01 ±0.26 ***	14.41 +0.10 ***	18.15 ±0.10 ***	55.5± 0.326 ***	7.15± 0.042
	Ewe	10	50.04 ±0.23	51.11 ±0.23 **	43.81 ±0.16 ***	14.01 +0.08 *	17.45 ±0.08 *	54.61 ±0.25 *	7.11± 0.039
	5 months								

	Ram	6	68.81 ±0.29 **	69.53 ±0.31 **	59.45 ±0.42 *	15.81 +0.29	19.65 ±0.17	77.42 ±0.35 **	7.51± 0.074
	Ewe	10	67.51 ±0.25 *	68.25 ±0.27 **	58.45 ±0.28 **	15.66 +0.06	18.31 ±0.08	76.32 ±0.39 **	7.40± 0.069
	8 months								
	Ram	8	70.11 ±0.29 *	70.92 ±0.29 *	60.63 ±0.22 **	16.26 +0.17 *	19.92 ±0.13	78.68 ±0.47	7.67± 0.073
	Ewe	9	69.48 ±0.31 *	70.35 ±0.31 *	60.07 ±0.20 **	15.91 + 0.21 *	19.71 ±0.26	78.21 ±0.45	7.61± 0.068
	12 months								
	Ram	8	71.81 ±0.38 **	72.41 ±0.40 **	63.22 ±0.42 **	16.61 +0.24 **	21.2± 0.287	80.35 ±0.47	7.74± 0.042
	Ewe	8	70.55 ±0.37 **	71.51 ±0.36 **	61.65 ±0.45 **	16.68 + 0.22 **	20.48 ±0.33	80.01 ±0.51	7.70± 0.052
Note: * P>0.95; ** P>0.99; *** P>0.999									

The analysis of the table data in Table 2 shows that the body size of one-month-old crossbred lambs obtained from inbreeding was found to be higher than the body size of lambs born from pure native breed lambs. For example, group II hybrid frames have a loin height of 50.52 cm, rump height of 51.41 cm, body oblique length of 44.01 cm, chest circumference of 14.41 cm, chest depth of 18.15 cm, chest circumference of 55.5 cm and poll girth is 7.15 cm and 0.98 cm (P>0.99) compared to pure native rams; 0.89 cm (P>0.95); 1.44 cm (P>0.999); 0.37 cm; 0.40 cm; 1.46 cm (P>0.999) and 0.04 cm higher. However, at this age, Ewe crossbred lambs have loin height of 50.04 cm, rump height of 51.11 cm, body oblique length of 43.81 cm, chest circumference of 14.01 cm, chest depth of 17.45 cm, chest circumference of 54.61 cm and poll circumference is 7.11 cm, 0.93 cm compared to pure native breed Ewes respectively (P>0.99); 0.9 cm (P>0.99); 1.6 cm (P>0.999); 0.20 cm; 0.24 cm; 0.8 cm (P>0.95) and 0.04 cm higher. F2 lambs of experimental group II had higher body dimensions at the age of 5 months compared to their counterparts born from purebred lambs. In particular, at the age of 5 months, the loin height of the rams of the F2 breed is 68.81 cm, the rump height is 69.53 cm, the oblique length of the body is 59.45 cm, the chest width is 15.8 cm, the chest depth is 19.65 cm, and the chest circumference is 77.42 cm and poll circumference is 7.61 cm, compared to the body dimensions of pure native breed rams in group I, respectively, loin height-1.5 cm (P>0.999), rump height-1.42 (P>0.99) cm, body oblique length-1.12 cm (P>0.95), chest width-0.2 cm, chest depth-0.08 cm, chest circumference-1.4 cm (P>0.99) and poll circumference -0 .09 cm higher. In experimental group II, crossbred Ewes at this age had loin height of 66.52 cm, rump height of 67.21 cm, body oblique length of 57.56 cm, chest width of 15.32 cm, chest depth of 18.17 cm, chest circumference of 74.82 cm and the poll circumference is 7.33 cm, compared to the body dimensions of pure native Ewe equals of group I, respectively, loin height-0.99 cm (P>0.95), rump height-1.04 cm (P>0.99) , body oblique length-0.89 cm (P>0.99), chest width-0.34 cm, chest depth-0.14 cm, chest circumference-1.5 cm (P>0.999) and poll circumference-0 .07 cm higher.

At the age of 8 months, rams born from inbreeding crossbreeds have a loin height of 70.11 cm, a rump height of 70.92 cm, a lean body length of 60.63 cm, a chest width of 16.26 cm, a

chest depth of 19.92 cm, a chest circumference of 78.68 cm and poll circumference is 7.67 cm, loin height-0.99 cm or 1.43% (P>0.95) of these indicators of purebred rams, respectively; rump height-0.91 cm or 1.30% (P>0.95); oblique body length-0.88 cm or 1.47% (P>0.99); chest width- 0.45 cm or 2.84% (P>0.95); chest depth - 0.31 cm or 1.58%; breast circumference-1.06 cm or 1.36% and poll circumference was found to be 0.06 cm higher.

In the table data, when we determined the body dimensions of crossbred Ewe lambs of this age and group, they were characterized by a higher result than that of purebred lambs of this age. For example, the loin height of hybrid Ewes is 69.48 cm on average, compared to that of pure Ewes by 0.83 cm or 1.21% (P>0.95); respectively, rump height 70.35-0.89 cm or 1.28% (P>0.95); oblique body length-60.07 cm-0.76 cm or 1.28% (P>0.99); chest width-15.91 cm-0.2 cm or 1.27%; chest depth-19.71 cm-0.26 cm or 1.33%; chest circumference-78.21 cm-1.1 cm or 1.42% (P>0.95) and poll circumference was found to be 0.05 cm higher.

At the age of 12 months, the loin height of the hybrid rams of the F2 breed in experimental group II is 71.81 cm, and the height of the pure native breed rams is 70.35 cm, respectively, the rump height is 72.41 cm; oblique length of the body 63.22 cm; chest width 16.61 cm; chest depth 21.2 cm; chest circumference was 80.35 cm and poll circumference was equal to 7.74 cm, respectively 1.46 cm or 2.07% (P>0.99) compared to that of the control group. 2.4 cm or 3.43%; 0.61 cm or 0.97%; 0.35 cm or 2.15%; 0.45 cm or 2.16%; 1.2 cm or 1.51% (P>0.99) and 0.03 cm higher.

It should be noted that in experimental group II, at the age of 12 months, cross-bred Ewe lambs were higher in body size than pure native-bred equine Ewe lambs. For example, crossbred Ewes have loin height of 70.55 cm, rump height of 71.51 cm, body oblique length of 61.65 cm, chest width of 16.68 cm, chest depth of 20.48 cm, chest circumference of 80.01 cm and poll circumference of 7 .70 cm, compared to the body size of pure native Ewe equals of group I, respectively, loin height-1.13 cm or 1.62% (P>0.99); rump height-1.1 cm or 1.56% (P>0.95); oblique length of the body-1.6 cm or 2.66% cm (P>0.99); chest width-0.67 cm or 4.18% (P>0.99); chest depth-0.77 cm or 3.9%; chest circumference was 1.36 cm or 1.73% (P>0.95) and poll circumference was 0.04 cm higher.

4 Conclusions

Thus, the results obtained from the research were observed in lambs obtained from inbreeding of crossbred sheep with high F2 joint at the age of one month, 3, 5, 8, 12 and 18 months at birth, irrespective of the sex and age of the lambs, and the performance indicators of these lambs in terms of live weight, indicates that they depend on the genotype.

The results of measuring the body size of lambs in the research and their analysis show that in all groups, regardless of age and sex, lambs born from inbreeding of hybrid lambs of the F2 breed achieved high results in terms of body size. It can be concluded that regardless of age and sex, external characteristics of lambs depend on their genotype.

References

1. Kim, Y. S., Tseveen, K., Batsukh, B., Seong, J., & Kong, H. S. (2020). Origin-related study of genetic diversity and heteroplasmy of Mongolian sheep (Ovis arie) using mitochondrial DNA. Journal of Animal Reproduction and Biotechnology, 35(2), 198-206.
2. Mehetre, S. S., Rajput, H. J., & Shinde, G. C. (2003). Genetic analysis for seed cotton yield and its components in Gossypium hirsutum. Journal of Cotton Research and Development, 17, 2.

3. Withoeft, J. A., Da Costa, L. S., Marian, L., Baumbach, L. F., Do Canto Olegário, J., Miletti, L. C., ... & Casagrande, R. A. (2022). Microcephaly and hydrocephalus in a sheep fetus infected with Neospora caninum in Southern Brazil–Short communication. Acta Veterinaria Hungarica.
4. Márquez-Quiroz, C., López-Espinosa, S. T., Sánchez-Chávez, E., García-Bañuelos, M. L., la Cruz-Lázaro, D., & Reyes-Carrillo, J. L. (2014). Effect of vermicompost tea on yield and nitrate reductase enzyme activity in saladette tomato. Journal of soil science and plant nutrition, 14(1), 223-231.
5. Saxena, K. B., Kumar, R. V., & Rao, P. V. (2002). Pigeonpea nutrition and its improvement. Journal of Crop Production, 5(1-2), 227-260.
6. Choudhary, A., Yadav, S. R., & Parewa, H. P. (2019). Effect of wool waste in combination with farm yard manure and fertilizer on soil properties in aridisol of Bikaner, Rajasthan, India. Journal of Environmental Biology, 40(5), 1067-1072.
7. Rather, M. A., Shanaz, S., Ganai, N., & Hamadani, A. (2020). Status of farm animal genetic resources of Jammu and Kashmir-A Review. International Journal of Livestock Research, 10(4), 27.
8. Bhat, P. N., & Yadav, M. P. (2018). Animal Husbandry Research, Education and Development. Scientific Publishers.
9. Pandita, S., Verma, A., Kumar, R., Chander, Y., Yadav, D., Barua, S., & Kumar, N. (2023). miRNA profiling of lumpy skin disease virus infected primary lamb testicle cells.
10. Purohit, G. N. (2013). Fetal Complications of Gestation in the Buffalo: Etiology, Antenatal Diagnosis and Management. Bubaline Theriogenology A, 5712.
11. Kaur, R., Shilpa, S., Kumar, K., & Sharma, N. (2016). Genomics in agriculture. CABI Reviews, (2015), 1-25.
12. Arya, R. L., Arya, S., Arya, R., & Kumar, J. (2015). Fundamentals of Agriculture (ICAR-NET, JRF, SRF, CSIR-NET, UPSC & IFS). Scientific Publishers.
13. de Souza, J. C., Malhado, C. H., Ramos, A. A., Mota, M. F., Jorge, A. M., de Freitas, J. A., ... & Lamberson, W. R. (2010). Age at first calving and age of dam effect on daily gain (milking phase) and weaning weight in Brazilian Water Buffalo. Revista Veterinaria, 21(1).