

THE EXTERIOR FEATURES of the ANIMALS the ASCANIAN POPULATION the UKRAINIAN GREY CATTLE BREED

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Aim. To assess the efficiency of preserving the gene pool of Grey Ukrainian Cattle, determine the current level of development of these animals and the features of their exterior from body measurements. As a result of studies, to establish the variability of these indicators in animals of the Ascanian relict population of the Grey Ukrainian Breed Cattle on the pedigree reproducer SE “EF IABSR “Askania Nova” of the Chaplynka district of the Kherson region. **Methods.** Measuring, index, biometric. **Results.** Based on the results of basic measurements of the body structure, a significant level of development of high-altitude points in adult animals was determined: at the withers 139-147 cm in bulls-sires, 135-136 cm in cows; oblique body length - 174-189 cm and 167-168 cm); chest girth - 209-233 cm and 199-200 cm. These indicators correlate with the formation of high live weight - 850-1100 kg in bulls, 550-800 kg in cows, and have a stably low variability. The indicators of the main measurements vary within: for bulls $C_v = 2.2-5.7\%$, for cows $C_v = 2.8-5.2\%$. The variability of these measurements by the magnitude of the reaction rate for bulls is 5.6–13.7; 12.6-25.6; 12.3-21.0%; for cows 11.0-13.6; 16.1-21.0; 13.9-25.7%. According to the main indices of the body structure, the animal of this herd belong to the large, high-legged type of Meat Direction Productivity. Some insufficient development of the sacrum in cows was also noted. **Conclusions.** Prolonged purebred breeding of the Grey Ukrainian Cattle breed Ascanian population on their own genetic resource did not noticeably affect or worsen the exterior forms and constitution of animals. Significant absolute indicators of metric measurements the adult animals body characterize the high level of strength their constitution. This was the result of animals' high adap-

tation, the studied population, to environmental conditions. The low values of the coefficient of variation C_v and the magnitude of the norm of the reaction the measurements indicate a conservatively stable genetic nature of the constitution and the exterior. This fact is a feature of this relict gene pool. The type of animals studied is defined as tall with a deep and extended body format. Such characteristics determine the Meat Direction Cattle productivity and meet to the objectives of the conservation program. Some deviations in the development of individual points have a historically hereditary nature, and are phylogenetically fixed in the gene pool. The obtained results confirm the effectiveness of the applied biotechnology of purebred breeding for the conservation of species-specific features of the exterior of the studied population.

Keywords: Grey Ukrainian breed of Cattle, relict gene pool, species-specific features of the exterior, the identity of the exterior.
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ОСОБЛИВОСТІ ЕКСТЕР'ЄРУ ТВАРИН АСКАНІЙСЬКОЇ ПОПУЛЯЦІЇ СІРОЇ УКРАЇНСЬКОЇ ПОРОДИ ВЕЛИКОЇ РОГАТОЇ ХУДОБИ

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Мета. Встановити сучасний рівень розвитку та особливості екстер'єру за промірами тіла та їх варіабельність тварин асканійської популяції реліктової сірої української породи великої рогатої худоби племрепродуктора ДП «ДГ ІТСР» Асканія-Нова» Чаплинського району Херсонської області для оцінки ефективності збереження цього генофонду. **Методи.** Вимірювальні, індексні, біометричні. **Результати.** За результатами взяття основних промірів будови тіла виявлено значний рівень розвитку висотних статей у дорослих тварин (в холці 139-147 см у бугаїв-плідників,

135-136 см у корів), косої довжини тулубу (174-189 см та 167-168 см), обхват грудини (209-233 см та 199-200 см), які корелюють з формуванням високої живої маси (850-1100 кг у бугаїв, 550-800 кг у корів) і мають стабільно невисоку мінливість, яка коливається в межах: для бугаїв $C_v=2,2-5,7\%$, для корів $C_v=2,8-5,2\%$. Варіабельність основних промірів за розмахом норми реакції становить для бугаїв 5,6-13,7; 12,6-25,6; 12,3-21,0%; для корів 11,0-13,6; 16,1-21,0; 13,9-25,7%. За основними індексами будови тіла тварини стада відносяться до крупного високононого типу м'ясного напряму продуктивності, при цьому відмічено дещо недостатній розвиток крижів у корів. **Висновки.** Тривале чистопородне розведення асканійської популяції сірої української породи на власному генетичному ресурсі помітно не вплинуло і не погіршало екстер'єрні форми та конституцію тварин. Значні абсолютні показники метричних промірів тіла дорослих тварин характеризують високий рівень міцності їх конституції, який став результатом високої адаптації досліджуваної популяції до умов оточуючого середовища. Невисокі значення коефіцієнту варіації C_v та розмаху норми реакції промірів свідчить про консервативно стійку генетичну природу конституції та екстер'єру, що є особливістю даного реліктового генофонду. Визначений високорослий, тип тварин глибокого і розтягнутого формату характеризує м'ясний напрямок продуктивності і відповідає завданням програми збереження. Деякі відхилення у розвитку окремих статей мають історично спадкову природу, які закріплені в генофонді філогенетично. Отримані результати підтверджують ефективність застосованої селекційної біотехнології чистопородного розведення для збереження породоспецифічних особливостей екстер'єру досліджуваної популяції.

Ключові слова: сіра українська порода великої рогатої худоби, реліктовий генофонд, породоспецифічні особливості екстер'єру, ідентичність екстер'єру.

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ОСОБЕННОСТИ ЭКСТЕРЬЕРА ЖИВОТНЫХ АСКАНИЙСКОЙ ПОПУЛЯЦИИ СЕРОЙ УКРАИНСКОЙ ПОРОДЫ КРУПНОГО РОГАТОГО СКОТА

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Цель. Определить современный уровень развития и особенности экстерьера по промерам тела и их вариабельность животных асканийской популяции реликтовой серой украинской породы крупного рогатого скота племрепродуктора ГП «ОХ ИЖСР «Аскания-Нова» Чаплинского района Херсонской области для оценки эффективности сохранения этого генофонда. **Методы.** Измерительные, индексные, биометрические. **Результаты.** По результатам взятия основных промеров строения тела определен значительный уровень развития высотных статей у взрослых животных (в холке 139-147 см у быков-производителей, 135-136 см у коров), косой длины туловища (174-189 см и 167-168 см), обхват груди (209-233 см и 199-200 см), которые коррелируют с формированием высокой живой массы (850-1100 кг у быков, 550-800 кг у коров) и имеют стабильно невысокую изменчивость, которая меняется в пределах: для быков $C_v=2,2-5,7\%$, для коров $C_v=2,8-5,2\%$. Вариабельность этих промеров по размаху нормы реакции составляет для быков 5,6-13,7; 12,6-25,6; 12,3-21,0%; для коров 11,0-13,6; 16,1-21,0; 13,9-25,7%. По основным индексам строения тела животные стада относятся к крупному высоконому типу мясного направления продуктивности, при этом отмечено несколько недостаточное развитие крестца у коров. **Выводы.** Длительное чистопородное разведение асканийской популяции серой украинской породы на собственном генетическом ресурсе заметно не повлияло и не ухудшило экстерьерные формы и конституцию животных. Значительные абсолютные показатели метрических промеров тела взрослых животных характеризуют высокий уровень крепости их конституции, который стал результатом высокой адаптации изученной популяции к условиям окружающей среды. Невысокие значения коэффициента вариации C_v и размаха нормы реакции промеров свидетельствуют о консервативно устойчивой генетической природе конституции и экстерьера, что является особенностью этого реликтового генофонда. Определенный как высокорослый тип животных с глубоким и растянутым форматом туловища характеризует мясное направление продуктивности и отвечает задачам программы сохранения. Некоторые отклонения в развитии

отдельных статей имеют исторически наследственную природу, и которые закреплены в генофонде филогенетически. Полученные результаты подтверждают эффективность применяемой селекционной биотехнологии чистопородного разведения для сохранения пород специфических особенностей экстерьера изученной популяции.

Ключевые слова: серая украинская порода крупного рогатого скота, реликтовый генофонд, пород специфические особенности экстерьера, идентичность экстерьера.

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One of the main principles of preservation the endangered rare gene pools is the preservation of the identical appearance and pedigree features of the exterior. That is, what distinguishes the gene pool, the population among other breeds of domestic animals. Preservation of the external forms of the gene pool allows preserving the original gene complexes inherent only to this genotype that control the manifestation of all breed-specific body functions. In fact, the indicators of the exterior become indicators of the level of purity the genotype, the compliance of animals with the purebred type.

The Convention on Biodiversity notes that "... the main condition for the conservation of biological diversity is ... maintaining ... viable populations" [1], therefore, the main link in the conservation of endangered gene pools of local breeds is primarily the preservation and improvement of the suitability of these animals to environmental conditions and disease resistance [2]. Assessing the exterior of endangered breeds allows you to control the level of strength of the constitution of animals, the associated state of health and endurance, affecting the degree of adaptation to breeding conditions, which determines the increased viability of the gene pool. By the exterior, one can judge the biological resistance and adaptability of animals to the environment [3, 4]. Exterior assessment is the primary indicator of gene pool conservation efficiency and the effectiveness of the breeding system used for this herd.

Today, in conditions of total commercialization the domestic animal husbandry, with excessive use of animals in industrial technology under constant production stress, problems arise with the formation of the strong constitution and the exterior [5]. Preservation of local native breeds, as carriers of outstanding gene complexes responsible for the strong constitution, for the adaptability of individuals and the entire gene pool, acquires the importance of a value reserve for improving the adaptability the highly specialized commercial breeds in the context of global climate change [6].

A strong constitution and a specific exterior corresponding to the breed standard are the main criteria for selecting typical high-class successors for the genealogical structure of the herd - carriers for printing breed-specific gene structures [7]. Therefore, the assessment of animals on the exterior allows you to keep the genotype of the population clean.

The relic Grey Ukrainian breed, having gone a long way over a thousand-year evolution and selective influence of purebred breeding (first, spontaneous, and then scientifically based), has formed a specific gene complex with an original set of alleles. This complex is characterized by a high level of balance and stability with a high level of phenotypic realization. These qualities are primarily realized in a strong constitution, significant resistance to diseases and resistance to extreme environmental factors [8, 9, 10, 11]. This complex has no similar among other breeds of Ukraine. Studying the features and monitoring the degree of phenotypic realization of the external forms of the exterior the animals of the Grey Ukrainian breed will allow for planning, planning in the right direction and taking measures for the successful development of the gene pool of the Ascanian population of Grey Ukrainian breed in modern conditions [12].

The Ascanian population is a peculiar population of Grey Ukrainian breed. In the remote steppes of the Kherson region, it preserved the purity of the ancient gene pool [13,14] and became a reserve of valuable alleles responsible for stamina and endurance in extreme steppe zones.

The purpose of researches. To assess the effectiveness of selective biotechnology of purebred breeding used in the herd of Ascanian population of Grey Ukrainian breed, and to determine the directions of sustainable development of the population, the following tasks were posed: establish the modern level of development and features of the exterior, points of body structure, their variability, determine the safety of the original type of Ascanian population of Grey Ukrainian breed. At the same time, the influence of specific breeding conditions was determined: a hot extreme climate, a small population, and conditions of detention on the studied exterior parameters.

Materials and research methods. The object of research is the modern gene pool of bulls and cows the Ascanian population relic native Grey Ukrainian breed on the pedigree state enterprise "EF IABSR" Askania-Nova "- NSSGCSB" (section "Markeevo") in the Chaplynka district of Kherson region. This 69-year-old population has been bred clean by natural mating in the hot climate of the Southern Steppe of Ukraine. The studies were carried out on the basis of primary zootechnical and breeding stock records; according to the annual comprehensive assessment of animal herds (scoring); databases of animals of the gene

pool of the Askania Nova livestock breeding laboratory of the IABSR. Measurement of exterior points in bulls was carried out before use for mating in a herd. Young bulls were measured at the maximum live weight, and cows - 2-3 months after calving. The exterior of the animals was evaluated according to the main measurements of the body structure of animals. These measurements were carried out in 2013-2018. In carrying out this work, the participation was attended by a research scientist of the Cattle Breeding laboratory, R. Makarchuk. Generally accepted methods were used. According to the measurements, body indices were calculated [15] and the exterior type of animals of the studied population was evaluated. Statistical analysis of the data was carried out by means of the MS Excel 2010 operating system using methods of variation statistics according to the method of M.A. Plokhinsky (1969) [16].

Research results. The gene pool of the gray Ukrainian breed of the pedigree state-owned enterprise EF "Askania-Nova" is bred in the Prisivashia region in southern Ukraine. This area is characterized by an extremely hot arid climate. The number of modern herd totals 221 animals, including 5 bull-sires, 85 cows, 69 heifers, 53 bulls, 9 fattening cows. The herd is bred according to the technology of beef cattle breeding at all-the-year-round keeping on an open fodder-feeding platform with entry into the premises. In the warm season, grazing is carried out on seeded cultural and natural pastures in the buffer zone of the natural steppe core of the Biosphere Reserve "Askania Nova". Reproduction of the herd is carried out during year-round natural mating with the bull-sires of their own reproduction.

In modern breeding conditions, a population with a unique specific gene complex that is distinguished by an original set of alleles is successfully preserved. A huge period of time the formation of the gene pool under the influence of natural factors and purebred breeding contributed to the emergence of a high level of balance and stability of animal genotypes of Grey Ukrainian breed. The studied breed exhibits extremely valuable economic and biological qualities. Thanks to the polished nature of the gene pool in animals, outstanding adaptive qualities are steadily inherited. For hundreds of generations, the exceptionally high strong constitution and the harmony of the exterior have not been lost.

The metric indicators of body's points the animals in the herd are presented in tables 1, 2.

Table 1. Linear measurements of body points bull-sires the Grey Ukrainian breed, cm

Linear measuring	Bulls-sires 2-3 years				Bulls-sires 4-6 years			
	n	M±m	Cv, %	lim	n	M±m	Cv, %	lim
Height in the withers	22	139,4±1,1	3,8	131-149	5	146,8±1,4	2,2	143-151
Height in the sacrum	22	142,2±0,9	2,9	135-152	5	147,0±2,6	4,0	142-157
Width breasts	22	47,1±1,0	9,5	40-53	5	53,8±0,6	2,4	52-55
Depth breasts	22	73,9±1,1	7,0	66-85	5	81,2±1,6	4,5	77-85
Oblique body length (stick)	22	173,5±2,1	5,6	156-196	5	189,4±4,1	4,5	182-205
Head length	22	51,7±0,9	8,0	46-60	5	55,4±3,1	12,4	50-67
Maximum head width	22	25,7± 0,6	11,1	21-32	5	27,6±1,2	9,4	26-32
Width of the hip joint	22	49,9±1,0	9,0	42-60	5	58,6±0,7	2,6	57-60
Width in the ischial tubercles	14	35,9±1,4	15,0	17-42	5	40,6±0,7	3,7	39-43
Oblique back-side length	22	54,4±0,8	6,8	49-61,5	5	60,0±0,8	2,9	59-63
Girth of the sternum behind the shoulder blades	22	209,4±2,6	5,7	190-230	5	233,0±5,5	5,2	220-247
Metacarpal circumference	8	21,6±0,9	11,8	17,5-25	5	22,2±0,2	2,0	22-23
Horns length	17	31,2±1,2	16,3	15-37	4	33,0±2,9	17,3	25-38
Distance between horns	13	66,8±3,6	19,7	37-80	4	83,3±4,8	10,2	70-91

Table 2. Linear measurements of cow body points of Grey Ukrainian Breed, cm

Linear measuring	Cows 3-4 years				Cows 5-13 years and older			
	n	M±m	Cv, %	lim	n	M±m	Cv, %	lim
Height in the withers	25	135,5±0,8	2,8	127-141	37	134,9±0,7	3,2	125-142
Height in the sacrum	25	137,3±0,6	2,4	130-146	37	136,9±0,6	2,4	130-145
Width Breasts	25	41,5±0,8	9,5	35-48	37	41,9±0,7	9,8	33-50
Depth Breasts	25	69,1±1,0	7,0	55-76	37	70,1±0,7	6,4	57-80
Oblique body length (stick)	25	166,8±1,4	4,0	155-180	37	167,5±1,4	5,2	157-190
Head length	24	47,3±0,7	6,9	40-57	35	48,6±0,5	6,6	42-54
Maximum head width	24	22,8±0,4	8,3	19-26	35	23,7±0,4	10,3	21-32
Width of the hip joint	25	53,9±0,4	4,2	50-58	37	53,7±0,7	8,0	42-61
Width in the ischial tubercles	25	32,2±0,9	13,4	25-39	36	33,7±0,6	9,7	28-40
Oblique back-side length	25	52,9±0,6	5,5	48-61	37	52,00±0,5	6,2	47-61
Girth of the sternum behind the shoulder blades	25	199,0±1,3	3,2	188-213	36	199,5±1,6	5,0	175-220
Metacarpal circumference	5	18,6±0,2	2,9	18-19	35	18,8±0,5	5,3	17-19
Horns length	19	29,4±1,0	15,6	22-37	34	33,5±0,9	15,4	22-44
Distance between horns	19	50,9±1,3	11,3	40-60	34	49,5±1,4	15,9	31-64

According to the absolute metric measurements of body points, the bulls of the herd are characterized by a significant development of high-altitude measurements: the height at the withers is 139.4-146.8 cm and the sacrum is 142.2-147.0 cm; latitudinal - oblique body length 173.5-189.4 cm, oblique backside length 54.4-60.0 cm; voluminous - girth of the sternum behind the shoulder blades 209.4-233.0 cm. This indicates their intense ontogenesis in modern breeding conditions: average daily

gain in live weight of 856-1010 g. As a result, a strong constitution is formed with a clearly expressed high degree of fitness and is associated with a high live weight of 850-1100 kg. At the same time, coarsening and weighting of external forms is not observed, the type of animals is harmoniously balanced.

The points of the exterior the Ascanian population Grey Ukrainian breed cows are distinguished by significant development. Moreover, with age, the absolute measurements of cows are slightly reduced, especially due to animals older than 12 years. This was the result of the intensity of the reproduction, as a genetic feature of the population. Young cows of new generations have a higher level of development due to the used breeding techniques of the applied biotechnology for preserving the gene pool. For the first time, the development of horns was determined, especially their length, as a breed-specific sign. This index is an indicator of the purity of the genotype. It was determined that the animals of the Ascanian population have horns of medium length, and in cows they are somewhat longer and narrower. There are cows with horns of 44 cm with a distance between them of 64 cm; in bulls the maximum reaches 38 cm with a distance of up to 91 cm.

The peculiarity of the dynamics metric measurements variability is noted by low indicators. This fact is a manifestation of the high stability of the relict gene pool and indicates a conservatively stable level of inheritance the constitution and exterior. The coefficient of variation C_v of the main measurements characterizing the strong constitution (height at the withers, oblique length of the body, girth of the sternum) for bulls is respectively $C_v = 2.2-3.8; 4.5-5.6; 5.2-5, 7\%$; for cows $2.8-3.2; 4.0-5.2; 3.2-5.0\%$).

The level of variability measurements the body structure points of animals is fairly objectively reflected in the reaction rate (extreme values) and its magnitude (Tables 3, 4). The minimum and maximum values of the main measurements have a small amplitude: for bulls in the range of $5.6-13.7; 12.6-25.6; 12.3-21.0\%$; for cows - $11.0-13.6; 16.1-21.0; 13.9-25.7\%$. This also characterizes the conservatism and stability of the gene structure the Askanian population in a modern breeding environment.

To adequately characterize the proportionality and balance of the animal development, an index estimate the points ratio its body is used. The proportional structure of the animal's body indicates the typicality, purity and stability, harmony of the population genotype. It confirms its biological usefulness, which is especially important for the conservation of rare gene pools [17].

An index estimate of the bulls and cows the Askanian population Grey Ukrainian breed is presented in tables 5 and 6.

Table 3. The variability of the absolute measurements of the bulls' physique the Ascanian population Grey Ukrainian breed

Linear measuring	Bulls-sires 2-3 years			Bulls-sires 4-6 years (n=5)		
	lim	range of reaction rate		lim	range of reaction rate	
		cm	%		cm	%
Height in the withers	131-149	18	13,7	143-151	8	5,6
Height in the sacrum	135-152	17	12,6	142-157	15	10,6
Breast width	40-53	13	32,5	52-55	3	5,8
Depth of chest	66-85	19	28,8	77-85	8	10,4
Oblique trunk length (stick)	156-196	40	25,6	182-205	23	12,6
Head length	46-60	14	30,4	50-67	17	34,0
Maximum head width	21-32	11	52,4	26-32	6	23,1
Width of the hip joint	42-60	18	42,9	57-60	3	5,3
Width in the ischial tubercles	27-42	15	55,6	39-43	4	10,3
Oblique backside length	49-61,5	12,5	25,5	59-63	4	6,8
Girth of the sternum behind the shoulder blades	190-230	40	21,0	220-247	27	12,3
Metacarpal circumference	17,5-25	7,5	42,9	22-23	1	4,6
Horns length	15-37	22	146,7	25-38	13	52,0
Maximum head width	37-80	43	116,2	70-91	21	30,0

Table 4. The variability of the absolute measurements the cows' physique of the Ascanian population Grey Ukrainian breed

Linear measuring	Cows 3-4 years (n=25)			Cows 5-13 years (n=37)		
	lim	range of reaction rate		lim	range of reaction rate	
		cm	%		cm	%
1	2	3	4	5	6	7
Height in the withers	127-141	14	11,0	125-142	17	13,6
Height in the sacrum	130-146	16	12,3	130-145	15	11,5
Breast width	35-48	13	37,1	33-50	17	51,5
Depth of chest	55-76	21	38,2	57-80	23	40,4
Oblique trunk length (stick)	155-180	25	16,1	157-190	33	21,0
Head length	40-57	17	42,5	42-54	12	28,6
Maximum head width	19-26	7	36,8	21-32	11	52,4

4. Table continuation

1	2	3	4	5	6	7
Width of the hip joint	50-58	8	16,0	42-61	19	45,2
Width in the ischial tubercles	25-39	14	56,0	28-40	12	42,9
Oblique backside length	48-61	13	27,1	47-61	14	29,8
Girth of the sternum behind the shoulder blades	188-213	25	13,3	175-220	45	25,7
Metacarpal circumference	18-19	1	5,6	17-19	2	11,8
Horns length	22-37	15	68,2	22-44	22	100,0
Distance between horns	40-60	20	50,0	31-64	33	106,4

Table 5. Body indices of bulls-sires the Grey Ukrainian breed,%

Inedxes	Bulls-sires 2-3 years				Bulls-sires 4-6 years			
	n	M±m	Cv, %	lim	n	M±m	Cv,%	lim
1	2	3	4	5	6	7	8	9
Long legs	22	47,0±0,6	5,7	39,1-51,1	5	44,7±0,7	3,4	43,0-46,9
Stretch	22	124,6±1,3	4,7	112,6-133,3	5	129,0±1,9	3,3	124,2-135,8
Pelvic-and-chest	22	94,7±1,8	8,8	83,3-114,3	5	91,8±1,3	3,2	88,3-96,5
Chest	22	63,8±1,1	8,2	56,0-76,8	5	66,3±1,2	4,1	63,5-69,6
Massiveness	22	120,2±1,4	5,8	109,2-132,5	5	123,1±2,7	4,9	116,4-132,4
Outgrowth	22	102,1±0,4	2,0	98,6-105,3	5	100,1±1,1	2,5	97,9-104,0
Bones	8	15,4±0,7	12,6	11,9-18,1	4	15,0±0,2	2,3	14,6-15,4
Wide Chest	22	33,8±0,5	7,6	29,9-39,4	5	36,7±0,5	3,1	35,6-38,5
Deep Chest	22	53,0±0,6	5,1	48,6-60,9	5	55,3±0,7	2,7	53,1-57,0
Comprehensive (by Dorotiuk)	22	149,3±1,3	4,1	135,3-160,8	5	140,0±2,0	3,2	133,6-145,6
Broad-body (by Zamyatin)	22	31,0±0,4	5,9	28,0-35,0	5	33,5±0,6	3,7	31,7-34,5
Massiveness (by Levantine)	22	149,5±1,4	4,3	135,6-159,8	5	158,7±2,6	3,7	150,7-164,4

5. Table continuation

1	2	3	4	5	6	7	8	9
Broad Fore-head	22	50,0±1,4	12,9	39,0-69,6	5	50,5±3,8	16,9	38,8-62,7
Big-head	22	37,1±0,5	6,2	33,1-42,0	5	37,7±1,9	11,1	34,5-45,0
Backside format	22	96,5±1,5	7,5	81,7-115,5	5	89,8±2,0	5,0	85-96,6
Roundness of Ribs	22	222,3±3,0	6,4	198,0-252,4	5	216,5±4,0	4,1	207,3-228,7
Backside Width	22	35,8±0,5	6,8	30,4-40,8	5	39,9±0,4	2,4	39,0-41,4

Table 6. Body indices of cows the Grey Ukrainian breed, %

Indexes	Cows 3-4 years				Cows 5-13 years and older			
	n	M±m	Cv, %	lim	n	M±m	Cv, %	lim
Long legs	25	49,0±0,6	6,4	43,7-58,3	37	48,0±0,5	5,92	41,2-57,5
Stretch	25	123,2±1,1	4,6	112,3-136,4	37	124,2±0,9	4,5	114,1-137,7
Pelvic-and-chest	25	77,0±1,4	9,1	63,6-92,3	37	78,5±1,5	12,0	59,3-104,8
Chest	25	60,2±1,2	9,5	50,0-74,6	37	59,9±1,0	9,8	46,7-73,7
Massiveness	25	119,4±0,9	3,7	113,2-130,1	36	119,3±0,9	4,6	104,6-129,1
Outgrowth	25	101,4±0,3	1,5	98,6-104,3	37	101,6±0,4	2,1	96,5-105,1
Bones	5	13,5±0,2	3,1	13,1-14,1	5	13,9±0,3	4,8	13,1-14,7
Wide Chest	25	30,6±0,6	9,4	25,6-35,1	37	31,1±0,5	9,1	25,4-36,4
Deep Chest	25	51,0±0,6	6,1	41,7-56,3	37	52,0±0,5	5,5	42,5-58,8
Comprehensive (by Dorotiuk)	25	149,4±0,9	3,0	139,5-157,5	36	149,1±0,9	3,6	141,2-162,1
Broad-body (by Zamyatin)	25	31,6±0,3	4,5	28,3-34,2	37	31,6±0,3	5,1	28,6-34,5
Massiveness (by Levantine)	25	147,0±1,1	3,6	137,7-157,8	36	148,0±1,0	3,9	132,6-166,7
Broad Fore-head	24	48,4±1,2	11,9	37,2-59,1	35	49,1±1,2	14,0	38,9-72,7
Big-head	24	34,9±0,5	7,0	30,5-42,2	35	36,1±0,5	7,6	30,9-43,2
Backside format	25	81,4±1,1	6,6	69,0-89,3	37	82,9±1,2	9,0	70,2-104,8
Roundness of Ribs	25	241,5±3,7	7,6	213,5-282,9	36	240,3±2,9	7,3	208,3-288,6
Backside Width	25	39,8±0,3	4,2	36,9-43,2	37	39,8±0,4	6,9	32,1-43,9

According to an index estimate, the bulls of the Ascanian population are the type of high-legged animals with a deep, stretched body with a flat top line. This is evidenced by the level of deep chest indices - more than 50%, outgrowth - at the level of 100%, elongation - in the range of 124-129%. Bulls are distinguished by a fairly developed volumetric chest with a chest index of more than 60%, and a fairly wide back - the index of the backside format is at the level of 90%. Such an assessment of the physique corresponds to the direction of meat productivity and a high degree of adaptability, which is the goal of preserving this gene pool.

The cows of the Ascanian population of the Grey Ukrainian breed, according to the index estimate of physique, are distinguished by sufficiently developed strong limbs, especially the hind ones - the outgrowth index is more than 100%. They have a significantly stretched and deep body - the index of elongation is more than 120%; deep breasts at the level of 50%. They are characterized by a well-developed volumetric thorax, which indicates a busy metabolism and high constitution strong. These points, first of all, affect stability - the thoracic index is at the level of 60%, the roundness of the ribs is significant - 240%. The cows of the Ascanian population show high fecundity and are characterized by a wide developed pelvic girdle: the width of the backside is up to 40%, the format of the backside is more than 80%. At the same time, a feature of this gene pool was revealed - insufficient development of the lumbar belt, especially the sacrum. The overgrowth index is more than 100%, which indicates the underdevelopment of this point.

Conclusions. To assess the efficiency of conservation the Ascanian population Grey Ukrainian breed gene pool, the level of development of the main measurements of the exterior the animals of the herd on the pedigree producer SE "EF " Askania-Nova " was determined. As a result of metric body measurements of bulls and cows, a significant level of development their high-altitude points was discovered. These indicators are approaching the standards of the best world breeds (Charolais, Limousine, Marquis). They also correlate with the formation of high live weight (in bulls 850-1100 kg and in cows 550-800 kg). The complex of these indicators characterizes the strong constitution of animal in the herd, which was the result of high adaptation studied population gene pool to the environmental conditions.

The absolute values of the main measurements of the body have a stably low variability, which ranges: for bulls $Cv = 2.2-5.7\%$, for cows $Cv = 2.8-5.2\%$. This indicates a conservative genetic nature and stable inheritance of the constitution the Grey Ukrainian breed, is a feature of this relict gene pool. The nature of the variability of measurements is fairly objectively reflected in the range of reaction rates, i.e., the distance

of extreme values. For bulls, the excess of the maximum over the minimum is 5.6–13.7% and 10.6–12.6% for high-altitude measurements; latitudinal - 12.6-25.6; 12.3-21.0%; for cows, respectively, 11.0-13.6; 11.5-12.3; 16.1-21.0; 13.9-25.7%, which also characterizes a fairly low variability the exterior points of animals studied population.

According to the main body indices, animals of herd are a large, high-legged type with sufficient development of deep and latitudinal sizes. By the ratio of points corresponds to the harmonic type. But a feature of this gene pool is noted - a somewhat insufficient development of the sacrum, especially in cows. This feature was the result of a long historical use of the breed as a working one, and was phylogenetically fixed.

Thus, long-term breeding of the population by purebred breeding methods during the development of their own genetic resource did not lead to a significant decrease in the body of animals. And, most importantly, it did not affect the strong of the constitution. Specific methods of breeding and selection, the maximum approximation of the animals' keeping conditions to natural, as a component the biotechnology of purebred breeding and conservation, can effectively preserve the breed features and the identity of the exterior of the relict gene pool of the studied population.

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