

PERFORMANCE INDICATORS OF THE CROSS BREED «ANSAR» IN NORTHERN KAZAKHSTAN

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Annotation. In most countries, poultry farming is a leading sector among other agricultural production sectors, providing the population with a variety of high-quality products but, especially the production of meat from water-borne poultry, as one of the sources of biologically valid protein in human nutrition. By transferring genetic material and making extensive use of existing domestic poultry gene pool, it is possible to establish effective breeding programs and breed new domestic breeds; lines and cross-sections of aquatic species of birds with breeding and productive qualities at the level of the best world specimens. In this article we present the results of scientific studies on productivity of «Ansar» cross-breed, obtained by crossing the original A1 paternal line and the maternal A2 line in the Partnership with limited responsibility «Bishkul poultry factory». Cross «Ansar» surpasses the local population of ducks in terms of reproductive qualities, growth rate, viability, egg-bearing capacity, high playability and their adaptability to local forage and natural-climatic conditions of the northern region of Kazakhstan.

Keywords: ducks, cross, meat productivity, preservation, breeding herd, line.

Introduction. Genotype selection has advantages over traditional methods in that it does not take into account the variability of economic and useful traits caused by the environment, making it possible to assess the bird at an early age regardless of sex, that has a positive effect on the breeding work of agricultural poultry [1-3].

Northern Kazakhstan has favorable natural and climatic conditions for breeding waterfowl. The area is concentrated with a large number of lakes and pastures, which gives advantage for efficient and intensive breeding and production of agricultural waterfowl [4].

The continuous process of creating new, more productive, cost-effective lines and crosses continues to replace previously separated ones, which, like breeds and breed groups, need to be preserved. However, in recent years, not only has the number of small breeds and breed groups sharply decreased, but also birds that recently had industrial significance. Along with the reduction of their livestock, breeding work with them has stopped, although many of them retain a certain breeding value for one or another characteristic of the economically useful qualities of the bird, and in the future can be used in breeding to create new crosses adapted to the conditions of industrial technology and for household farms of the population. The use of such uncompetitive crosses in crosses with newly created or commercially important lines will allow the creation of new parental forms and crosses, as well as heterogeneous populations, which, in turn, are the genetic source of the creation of new forms of poultry [5].

The poultry industry is now one of the growing industries of AIC, aimed at ensuring food security for the population. The demand for poultry products increases significantly every year.

The main task of poultry farming development is to organize breeding work and provide producers with high-quality breeding material. In order to better meet the consumer demand of the population, along with the cultivation of broiler chickens for meat, it is necessary to increase the production of products obtained from waterfowl, which is relevant and corresponds to the priority directions of the development of the agro-industrial complex of the Republic of Kazakhstan.

In meat poultry breeding, breeding work is aimed at increasing the yield of hatching eggs, their hatchability, and obtaining young animals with a high growth rate. To obtain highly productive industrial poultry of meat and egg directions, crossing of combined lines (interlinear hybridization) is more effective.

The signs characterizing the reproductive qualities of a bird relate to quantitative indicators and have a polygenic nature of inheritance. Due to their low heritability (0.01-0.20), direct selection for their improvement is ineffective even when using family or combined selection. Therefore, additional tests are used to select birds with the best reproductive qualities (for example, sexual behavior and activity of males, development of secondary sexual characteristics, physiological and biological indicators, etc.).

According to leading breeders, the gene pool can be preserved by creating collections of reserve genetic lines and breeds of poultry, including non-economic ones. However, it is not possible to solve the problem of preserving the bird's gene pool only by creating breeding herds and reserve lines, since genetic changes are inevitable with long-term conservation. Therefore, it is necessary to develop a set of measures and choose such methods and techniques that would contribute to maintaining the typicality of a breed or breed group not only in terms of the phenotype of qualitative, but also quantitative characteristics.

The main attention in the breeding of meat poultry is paid to the early growth rate, feed payment, the output of daily young to the laying hen of the parent herd, slaughter yield, the quality and composition of the carcass (reducing the proportion of abdominal fat). Selection only by growth rate is becoming less effective, therefore it should be carried out taking into account other productivity indicators, i.e. there is a need for multifactorial selection: by meat yield, carcass shape, egg laying hens of the parent herd [6].

In the process of continuous creation of new, more productive and cost-effective lines and crosses, the replacement of previously separated ones continues, which, like breeds and breed groups, need to be preserved. However, in recent years, the number of not only small breeds and breed groups of waterfowl has decreased, but also breeding work with poultry has stopped, although many of them retained their breeding value for a number of signs and could later be used to create new crosses and lines adapted to the conditions of industrial technology and farming households of the population. The use of such lines in crosses with lines of industrial importance will allow the creation of new parental forms and crosses of ducks. And the resulting heterogeneous populations, in turn, can become a genetic source for the creation of new breeds of ducks. Thus, the task is not only to preserve the numerous diversity of lines, breeds, populations, but also to rationalize

Scientists have been concerned for many years with the preservation of the diversity of lines, breeds, populations of agricultural birds by creating highly productive specialized lines and crossovers for eggs and meat production. Improving existing and creating new crossovers is a continuous breeding process. Currently, breeding work with ducks in many countries is aimed at increasing lean meat yield and reducing fat of the carcasses. Between the live mass of domestic ducks and the mass of their skin and fat there is a positive and highly reliable correlation at 0.83-0.98. Therefore, selection to increase the live mass of ducks usually leads to an increase in fat in the carcasses and has little effect on lean meat [7-9].

The gene pool is a crucial basis for the creation of poultry breeds and a source of genetic resources for their improvement. In this regard, it is necessary to create heterogeneous populations with widespread use of domestic breeds and breed groups, which will contribute to the creation of new lines based on valuable economically useful traits, as well as the development of new methods of genetics and breeding. Imports can also serve as a genetic source for obtaining crosses and heterogeneous populations.

Within the framework of the scientific and technical program: "Development of technologies for effective management of the breeding process in poultry farming" in the field of agriculture for 2021-2023, scientists have developed and put into production the domestic two-line Ansar cross, which provides great prerequisites for further breeding work on the creation of a competitive domestic duck breed.

In this regard, the results of this study are relevant and will be used to meet consumer demand for domestic breeding waterfowl, with developed information technologies for automating the production process during cultivation and feeding rations for different age groups of ducks.

Materials and methods of research. Breeding work is a single system of animal management activities, including assessment, selection, directed rearing and breeding methods, rational feeding and keeping of poultry, breeding and management, veterinary and prophylactic poultry care, as well as management, marketing, certification of breeding products and so [10; 11].

The main objective of poultry breeding is to maintain or significantly improve the herd's productivity. For example, successful breeding depends on the assessment and selection of birds and on breeding methods that allow new genotypes with improved productive and breeding qualities, and on targeted breeding of birds that takes into account the physiological needs of different poultry genotypes [12].

The research was conducted on the basis of PJSC «Bishkul poultry factory», the objects of the study served the population of waterfowl of the collection flock. During the work, the following indicators of productivity were studied: Live mass and growth dynamics of young at 1-7 weeks, live mass of adult birds, safety of young and adult birds, egg quality, egg fertility, egg weaning, calf weaning.

In the selection and selection of producers, related mating is excluded, since the technology of cyclic selection is used. Evaluation of ducklings by live weight, meat forms of physique and exterior is carried out at 7 weeks of age. The selection of individuals by live weight is carried out according to the standard deviation of body weight from the average along the line in a particular batch. Drakes of paternal lines are selected with a live weight 2σ or more above the average, females- 0.5σ or higher. Drakes and ducks of maternal lines are selected with an average live weight and above. When selecting ducklings for further breeding purposes, the development of the pectoral and leg muscles, the muscularity of the chest, the development of the keel and legs, the feathering of the back are also taken into account. A bird with exterior defects is culled.

Prior to the breeding season, a preliminary assessment and selection of drakes was carried out according to the quality of sperm production.

To assess the producers by the quality of offspring, at least 50 ducklings were taken from each drake, and at least 10 day-old ducklings from a duck. The assessment was carried out at 7 weeks of age according to the growth rate, meat forms of physique and viability during the growing period, feed costs per 1 kg of growth, yield and quality of feather and down [13].

The study included differentiation of lines by specialisation characteristics of the ratio of pullets and ducks in a nest 1:4. The bird in the nest was selected according to the principle of analogues by living mass, age and origin.

The duck breeding program was based on an individual assessment of the bird's breeding and productive qualities [14].

The main method was combined selection. Family in combination with individual assessment of producers on the quality of linear and hybrid offspring. Selection of birds by selectable traits was carried out without the use of related mating [15; 16].

Results. Breeding program of the Musk Brood «Bishkul Colored» and «Medeo» (white Beijing) included individual assessment of breeding and productive qualities of the bird. Increase of bird fertility by directly including additional traits in the selection programme that determine the reproductive qualities of ducks, with individuals selected from the best families and families, Well combining high fertility and growth rate of young at an early age.

Cross «Medeo» by the outside and constitution is a pronounced type of meat. The bird is large, the trunk long, broad and deep, its placement almost horizontal. Chest deep, convex and broad, keel long, well-made. The head is quite large, the neck is medium in length, thick, the legs are not high and massive, the wings small, closely attached to the body. The plumage is white with a creamy shade. The type of behavior - balanced calm. The line ducks have good plumage, excellent meat shapes.

Cross « Bishkul Colored» is derived from a targeted homogenous selection with the use of inbreeding in moderate degrees of kinship. This cross-breed uniform color plumage, the development of the exterior, stably transmitting the selected signs to progeny. The color of the plumage of the head of the seleside, the upper part of the neck, the areas of the wings and the tail - black-sizay. The plumage of the female is painted brown all over the body. At this color of duck plumage in the belly area is slightly lighter than on the back. Characterized by the following external features: a head of medium size, neck short, thick, trunk massive, broad. Legs of medium length, strong, widely spread. Beak and feet are orange in colour. Chest broad, convex, keel long, well-made. The wings are small, tightly attached to the body. Broiler ducks have low fat and higher muscle output, as well as higher meat output per duck.

The live mass and growth dynamics of young at 1-7 weeks were determined by weekly, individual weighing of all livestock. Weighing of the young at 7 weeks old showed that the average weight of the duck was 3,400.3 g for the cross « Bishkul Colored » and 2,950.4 g for the cross «Medeo» in Table 1 (Figure 1). The programme of breeding ducks provides for the formation of a breeding nucleus by completing breeding nests and laying new lines, differentiated selection according to the characteristics of specialization, breeding on combinations. Thus, on the basis of LLC «Bishkul poultry factory» was created a herd of crossbred progeny «Ansar», obtained by crossing the original paternal line A1 and the mother line A2 cross «Ansar».

Table 1 – Dynamics of live mass of ducks, g ($\bar{X} \pm S_x$)

Age, days	group	
	1 experienced, g	2 experienced, g
	cross «Bishkul Color»	cross «Medeo»
daily allowance	49,9±0,39	49,5±0,37
7	220,7±0,29	190,6±0,65
14	509,7±0,76	455,4±0,78
21	1115,6±0,87	990,2±0,98
28	1880,8±0,85	1600,4±0,68
35	2620,7±0,84	2200,2±0,48
42	3100,3±0,29	2600,1±0,79
49	3400,3±0,63	2950,4±0,37

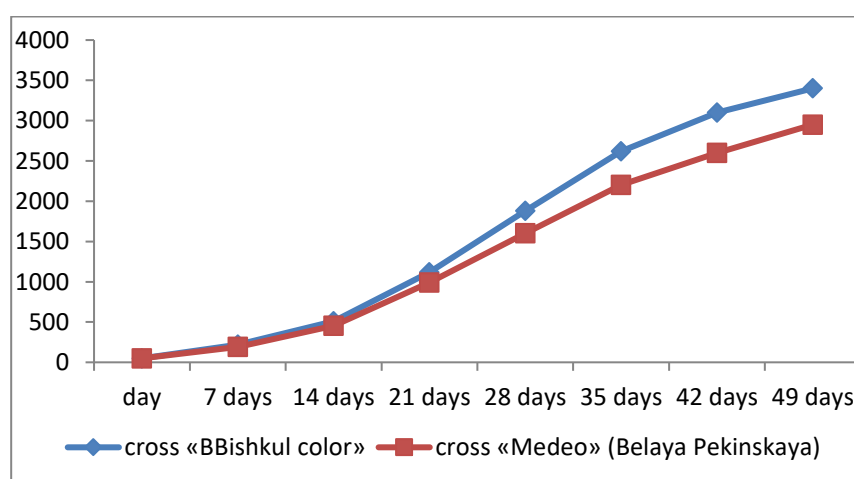


Figure 1 – Evolution of live ducks up to 49 days cross «Bishkul Colored » and cross «Medeo»

Meat productivity for water-bearing poultry is the most important and basic economic quality, characterized by the living mass, meat qualities of poultry at slaughter age, as well as the nutritional value of meat.

An important indicator of the growth and development of birds is the change in their living mass. The control of the change in living mass was carried out every 7 days. Live mass is the main characteristic by which the amount of meat in birds of any age is determined (Figure 2).

In the LLC «Bishkul poultry factory» live mass was defined by means of individual weighing of young in Table 2.

Table 2 – Dynamics of the live mass of ducks population LLC «Bishkul poultry factory»

Age of the bird	M±m	δ	Cv
daily allowance	0,080±0,0002	0,011	13,8
week 1 (7 days)	0,203±0,0004	0,020	10,0
week 2 (14 days)	0,456±0,0007	0,029	6,47
week 3 (21 days)	0,834±0,0005	0,022	2,66
week 4 (28 days)	1,228±0,0010	0,043	3,60
week 5 (35 days)	1,865±0,0008	0,035	1,94
week 6 (42 days)	2,291±0,0013	0,052	2,27
week 7 (49 days)	3,249±0,0014	0,055	1,74

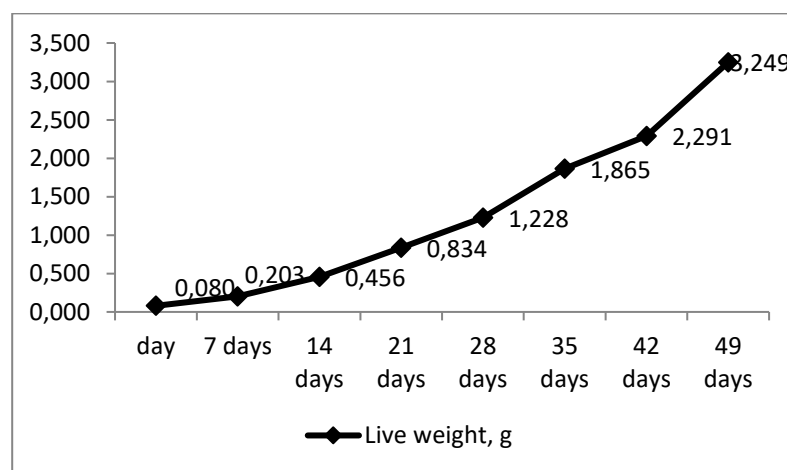


Figure 2 – Evolution of live weight of ducks up to 49 days

To carry out directed production of young, control was carried out on the growth and development of young in the total herd of basic farm, where the average weight was 3.249 kg. During the weekly overhang, there is a uniform increase in the live mass of ducks (Figure 3).

The live mass of young during the period up to 49 days was 3681.9 g for the father's line A1; 3432.7 g for the mother's line A2; 3490.3 g for the mother's line A2; 2993.5 g for the mother's line; and 3200.9 g for the cross-breed «Ansar» (Seles 3586.1 g) for the mother's line in Table 3.

Table 3 – Live mass of ducks aged 49 days in line A1, line A2 and cross «Ansar» LLC «Bishkul poultry factory»

Indicator	unit	Father's line A1		Mother's line A2		Cross «Ansar»	
		male	female	male	female	male	female
live weight	g	3681,9	3432,7	3490,3	2993,5	3586,1	3200,9

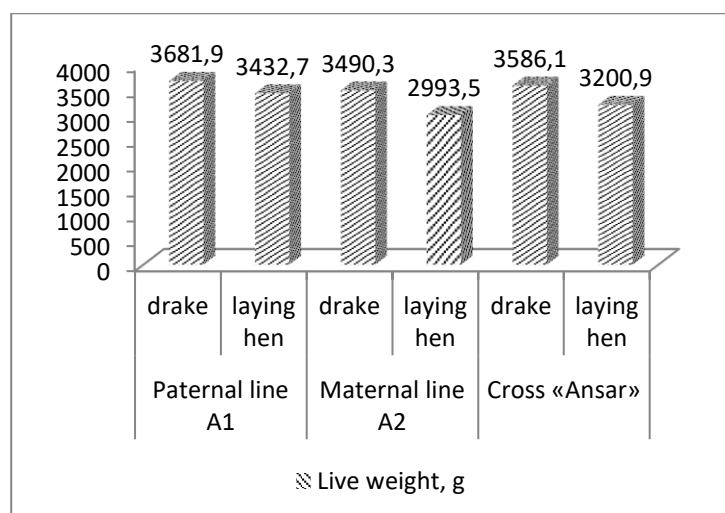


Figure 3 – Live mass of birds on lines, g

The cross-breed offspring «Ansar» showed that they were not below 98-99% in degree of line expression, which is shown by low variability of main selected features. This shows the homogeneity of the new cross bird population. Breeding on the lines of the ducklings of the created cross «Ansar» made it possible to obtain offspring capable of ensuring a stable inheritance of valuable qualities (vitality, ovularity, playability and reproductive qualities).

Conclusion. The herd of crosse ducks «Ansar» is consolidated by hereditary properties and main productive qualities, which are genetically stable transmitted to the progeny, as confirmed by the indicators of linear bird.

The result of the work carried out on the breeding of new cross duck will serve as a scientific basis for further development and increase of livestock in agricultural poultry not only in the northern region, but also in Kazakhstan as a whole, and will also increase the efficiency and profitability of the poultry industry of the Republic.

Gratitude. Scientific research was carried out within the framework of the scientific and technical program BR10765039 "Development of effective ways of breeding waterfowl by means of selection and technological methods and information technologies "under the budget program 267 "Improving the availability of knowledge and scientific research for 2024-2026 of the Ministry of Agriculture of the Republic of Kazakhstan.

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СОЛТҮСТІК ҚАЗАҚСТАНДАҒЫ "АҢСАР" КРОССЫНЫҢ ӨНІМДІЛІК КӨРСЕТКІШТЕРІ

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Андатпа. Көптеген елдерде құс шаруашылығы басқа ауылшаруашылық салаларының арасында халықты әртүрлі жоғары сапалы өнімдермен қамтамасыз ететін, бірақ әсіресе адамның тамақтануындағы биологиялық толық ақуыздың көздерінің бірі ретінде суда жүзетін құстардың етін өндіретін жетекші сала болып табылады. Генетикалық материалды беру және отандық құстардың қолданыстағы гендік қорын кеңінен пайдалану арқылы тиімді селекциялық бағдарламалар құруға және жаңа тұқымдар; тізбектер мен кростарды әлемдегі ең жақсы үлгілер деңгейінде асыл тұқымды және өнімді қасиеттері бар суда жүзетін құстарды шығаруға болады. Бұл мақалада "Бескөл құс фабрикасы" ЖШС-де бастапқы А1 аталық ізі мен А2 аналық ізі шағылыстыру арқылы алынған "Аңсар" кроссының өнімділік көрсеткіштерінің ғылыми зерттеу нәтижелері келтірілген. "Аңсар" кроссы көбею қасиеттері, өсу қарқындылығы, өміршеңдігі, жұмыртқа өнімділігі, жоғары көбейгіштігі және жергілікті азыққа және Қазақстанның солтүстік өңірінің табиғи-климаттық жағдайларына бейімделуі бойынша жергілікті үйрек популяциясынан асып түседі.

Тірек сөздер: үйректер, кросс, ет өнімділігі, сақталу, асыл тұқымды табын, желі.

ПРОДУКТИВНЫЕ ПОКАЗАТЕЛИ КРОССА "АНСАР" В СЕВЕРНОМ КАЗАХСТАНЕ

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Аннотация. В большинстве стран птицеводство является ведущей отраслью среди других отраслей сельского хозяйства, обеспечивая население разнообразной высококачественной продукцией, но, особенно, производством мяса водоплавающей птицы, как одного из источников биологически полноценного белка в питании человека. Путем передачи генетического материала и широкого использования существующего генофонда отечественной птицы можно создать эффективные программы селекции и вывести новые породы; линии и кроссы водоплавающей птицы с племенными и продуктивными качествами на уровне лучших мировых образцов. В данной статье представлены результаты научных исследований продуктивных показателей кросса «Ансар», полученных путем скрещивания исходной отцовской линии А1 и материнской линии А2 в ТОО «Бишкульская птицефабрика». Кросс «Ансар» превосходит местную популяцию уток по воспроизводительным качествам, скорости роста, жизнеспособности, яйценоскости, высокой воспроизводимости и своей приспособленности к местным кормам и природно-климатическим условиям северного региона Казахстана.

Ключевые слова: утки, кросс, мясная продуктивность, сохранность, селекционное стадо, линия.