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PRESERVATION AND IMPROVEMENT OF THE GENE POOL OF WATERFOWL IN ORDER TO CREATE NEW DOMESTIC CROSSES AND EVALUATE THE ORIGINAL LINES OF FAMILIES IN CROSSES, IN ORDER TO IDENTIFY THEIR COMPATIBILITY ACCORDING TO THE MAIN ECONOMICALLY USEFUL CHARACTERISTICS

ANNOTATION

This paper presents the results of scientific research on the economically useful qualities of ducks of the collection herd of the “Bishkek Poultry Farm” LLP.

Breeding work with ducks was based on the methods and techniques used in working with meat poultry (chickens, ducks, turkeys, geese, etc.). However, they took into account their own specific features of ducks and differences due to the biological qualities of this bird species (features of growth and development, excessive obesity of the carcass, narrow sex ratio, organization of nesting productivity accounting). In the structure of the progenitor and parent herds, there may be 20-40% of overfed ducks, the level of productivity of which is quite high in the second cycle of egg laying. After forced molting, more ducklings can be obtained from the duck of the parent flock than in the first egg-laying cycle, although the total egg-laying rate is slightly lower in the second cycle.

For the year-round receipt of incubation eggs, and therefore the uniform production of duck meat throughout the year, multiple (three-fold) recruitment of the parent herd is carried out. The parent herd is formed at the age of 150 days. The ratio of drakes and ducks is 1:4.

Thus, among the collection herd, we have discovered ways to preserve and improve the gene pool of waterfowl by increasing their productivity.

Key words: ducks; cross; meat productivity; preservation; egg production; line.

Introduction. Ducks are one of the promising types of poultry in the poultry industry. Among the biological features of ducks, in the practice of breeding this type of bird, signs are widely used that contribute to the effective production of the main product - duck meat. The practical value of waterfowl has long been known. The meat and fat of these birds are food products. It contains 17% protein, of which 98% is considered high-grade. Their meat is highly nutritious and has good taste qualities. The slaughter weight of ducklings is approximately 80% of the live weight, the content of edible parts is 69% of the slaughter weight.

One of the main advantages of ducks is the high growth rate of young animals, while in the first two months of life their live weight increases by 50-60 times with good feeding. Ducks have an intensive metabolism, a normal body temperature of 42 °.

Eggs are used in the food industry, and among some peoples of the East they are a traditional delicacy. This, in turn, indicates the relevance and prospects of comprehensive research. Ducklings, like adult ducks, have high vitality, are well preserved, and have species immunity to many infectious diseases that other bird species suffer from.

A complex indicator when working with poultry meat, assuming the maximum possible yield of meat from one parent pair, is determined not only by live weight, meat quality and feed consumption per unit of production, but also to a large extent by reproduction indicators. of the parent herd, and this is egg production, and the yield of incubation eggs, and fertility, and hatchability of eggs, and the hatch of young. However, there is such a nuance that an excessive increase in the live weight of laying hens leads to a decrease in egg production and thereby reduces the gross productivity of eggs.

Materials and methods of research. A general information search was conducted on the research topic "Conservation and improvement of the gene pool of waterfowl in order to create new domestic crosses and evaluate the starting lines of families in crosses, in order to identify their compatibility according to the main economically useful characteristics." The research program and methodology were studied and compiled.

A work program and research methodology for the event have been compiled: "Conservation and improvement of the gene pool of waterfowl in order to create new domestic crosses and evaluate the original family lines in crosses, in order to identify their compatibility according to the main economically useful characteristics."

The methodological and informational basis of the study were the results of fundamental and applied research by domestic and foreign scientists in the field of poultry farming.

The objects of the study were the populations of ducks of the collection herd of the Bishkek Poultry Farm LLP in the northern region of Kazakhstan, Kyzylzhar district, and Beskol.

In the process of doing the work, the following productivity indicators were studied:

1. Live weight and growth dynamics of young animals aged 1-7 weeks. They are determined by weekly, individual weighing of the entire livestock.

2. The live weight of an adult bird was determined by random sampling of at least 10% of the total population in order to control the growth and development of the bird.

3. Safety of young animals. It was determined (for young animals – from daily to 7 weeks of age) by the ratio of the surviving livestock to the ducklings originally adopted for breeding, expressed as a percentage.

4. The safety of an adult bird. The ratio of dead ducks to the livestock transferred to the adult herd, expressed as a percentage, was determined.

5. Uniformity or coefficient of uniformity. It was calculated by determining the percentage of birds from the livestock, weighted at a certain age, the live weight of which deviates from the average value by no more than 15%.

6. Puberty. It was determined by the laying of the first egg for each laying hen and in general by line and cross.

7. Egg production. The ratio of the gross egg harvest for the entire period to the initial number of laying hens was taken into account.

8. Fertilization of eggs. It was calculated by the ratio of fertilized eggs selected by the ovoscopy method to the number of eggs laid for incubation, expressed as a percentage.

9. Egg hatchability. It was calculated by the ratio of the number of healthy ducklings received to the number of fertilized eggs laid for incubation, expressed as a percentage.

10. Breeding of young animals. It was determined by the ratio of healthy ducklings bred to the number laid for incubation, expressed as a percentage.

Drakes before planting in nests were evaluated by external indicators of the development of reproductive organs, individuals with inflammatory processes, underdeveloped, with technical damage, etc. were rejected.

In the selection and selection of producers, related mating is excluded, since cyclic breeding technology is used. Ducklings are evaluated by live weight, meat body shapes and exterior at the age of 7 weeks. The selection of individuals by live weight is carried out according to the standard deviation of body weight from the average 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 pectoral and leg muscles, the muscularity of the chest, the development of the keel and legs, the feathering of the back, the development of flight feathers of the I and II orders 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 gain, yield and quality of feathers and down.

Drakes were not subjected to forced molting, and they were removed from the herd for the period of molting in ducks.

The breeding program provides for strict differentiation of lines based on specialization. The ratio of drakes and ducks in each nest is 1:4.

The work with the bird of the breeding core was carried out using family and combined breeding methods (family with an individual assessment of each individual). The biometric processing of the obtained material was carried out in accordance with the "Manual for animal technicians".

The results and their discussion. Productive indicators of the “Ansar” cross in the conditions of the basic farm of the “Bishkul’s Poultry Farm” LLP with group maintenance.

In accordance with the regulations, a thematic patent search was conducted, with a search depth of 10 years according to the sources of the Republic of Kazakhstan, where the following sources of information were studied: The Official Bulletin of the Patent Office of the Republic of Kazakhstan "Industrial Property" (No. 1-12 2021, No. 1-12 2022).

On the basis of the “Bishkul’s Poultry Farm” LLP, the productivity indicators of the ducks of the breeding herd with group maintenance were studied.

Table 1 – Productivity of “Ansar” cross ducks in group maintenance

Indicators	Unit of measurement	Results
Egg laying per laying hen for 40 weeks of the cycle	pc.	145
Hatching eggs yield	%	95,3
Fertilization	%	89,2
Egg hatchability	%	91,8
Duckling hatchability	%	71,4
The safety of day-old ducklings	%	96,4

Egg production per laying hen for 40 weeks of the cycle was 145 pcs. eggs at the exit of the incubation egg are 95.3%, with a fertilization rate of 89.2% and egg hatchability of 91.8%. It should be noted that the breeding of maternal ducks aimed at increasing fertility provided for selection not only according to the number of eggs laid by the duck, but also their suitability for incubation. In this regard, targeted breeding was carried out to increase the yield of eggs suitable for incubation, increase the fertilization of eggs and their hatchability.

To determine the quality of eggs, an incubation egg was collected for morphological analysis on the basis of the “Bishkul’s Poultry Farm” LLP. Egg quality indicators were studied in the laboratory. The object of the research was a bird of the maternal and paternal lines. During the incubation process, biological control was carried out at the “Bishkul’s Poultry Farm” LLP, accounting for the duration of the incubation period (28 days), accounting for the results of incubation for each batch of eggs, monitoring the safety of young animals.

Eggs intended for incubation must meet a number of requirements designed to meet the needs of the embryo in order to ensure its normal development. The quality requirements for incubation eggs are determined by the following indicators: egg shape index, shell thickness, unit of How, etc. The results of studies on the quality of hatching eggs are presented in Table 2.

Table 2 – Morphological analysis of eggs (n=10)

Indicators	The paternal line	The mother line
1	2	3
Average egg weight, g	67,2±3,09	62,8±5,3
Protein index	0,083±0,03	0,072±0,08
Yolk Index	0,39±0,8	0,403±0,2
Protein height, mm	8,1±0,18	7,2±0,05
HU	81±1,7	79,8±1,85
1	2	3
Shell thickness, mm	0,38±0,01	0,36±0,02
The ratio of protein weight to yolk weight	1,41	1,34

The results of the morphological analysis of the incubation egg along the lines collected from the breeding herd indicate that the quality indicators of duck eggs were in the normal range. The average weight of laid eggs ranged from 62.8-67.2 g, with a predominance on the paternal side. The protein index is an indicator of egg quality and directly depends on the height of the protein, so in laying hens of paternal lines, the average protein index was 13.2% higher, as a result of which egg hatchability in laying hens of paternal lines was higher, since there is a positive correlation between egg hatchability and protein index. In eggs obtained from the paternal line, the yolk was relatively larger due to a decrease in the amount of protein, the ratio of protein to yolk was 1.41.

In order to preserve the incubation qualities of eggs before laying, ensure optimal operation of incubators and protect the bred young from adverse factors, the established parameters of the microclimate (temperature and humidity regime, egg rotation, air cooling) were strictly observed in the hatchery. The incubation temperature averaged 37.8 ° C (± 0.3%), relative humidity 49.7-60%, the temperature in the hatchery when transferring eggs to hatching ranged from 37.2 ° C, with relative humidity 54-58%, with mass hatching the temperature was 36.9 ° C, with an average humidity of 65-69%. Air cooling was performed twice a day for 25-45 minutes, depending on the age of the embryos (after closure of the allantois 13-14 days), taking into account the outdoor temperature. Additionally, egg spraying was used for faster cooling.

The incubation egg was evaluated by its appearance, egg weight, shell shape and quality, as well as the location of the air chamber. The incubation egg was selected with a regular shape, which clearly distinguished the blunt and sharp ends. The shell line was shallow from the blunt to the sharp end of the egg.

Eggs of irregular shape, asymmetrical, with hard-to-distinguish ends, with non-standard weight, notch and microcracks, with a large and movable air chamber were rejected.

The laying of eggs was carried out in a pre-prepared, tested and operational incubator, so that the selection of young animals and work with them fell in the morning hours.

During incubation, biological quality control of eggs was carried out, where pathologies were not detected.

The main method of control was ovoscopy of eggs with their subsequent opening. Biological control was carried out on all trays from each incubation cabinet, while unfertilized eggs and with dead embryos were selected from the entire batch, preventing abrupt cooling of the eggs.

The increase in reproductive indicators is explained both by intensive breeding using traditional and new methods of selection and selection, and by the applied methods of directional cultivation and keeping of ducks.

During the breeding season, eggs from ducks of the breeding herd were incubated for further cultivation and distribution of ducklings, 6,017 eggs aged 280 days were incubated.

The data obtained, presented in table 3, indicate that

The fertilization of eggs was at a fairly high level of 89.2%. The output of young animals was 71.4%, respectively, with egg hatchability of 91.8%.

It should be noted that the waste of eggs during incubation by category was: blood ring-2.6%, "frozen" - 6%, "chokes" - 3.6%, "black rot" - 2.5%, and cripples – 3.1%. In general, the results of ovoscopy correspond to the normal development of the embryo, which contributes to the normal hatching of healthy conditioned young. The departure from incubation was 28.6%.

Table 3 – Incubation of duck eggs and biological control to obtain daily young for further distribution

Indicators	Results
1	2
Eggs laid for incubation, pcs.	6 017
Average egg weight, g	66,8
Fertilization of eggs, %	89,2
1	2
Egg hatchability, %	91,8
Duckling hatchability, %	71,4
head	4 296
Departure from incubation, %	28,6
Including: unfertilized	10,8
blood ring	2,6
frozen	6
chokes	3,6
black rot	2,5
cripples	3,1
The safety of day-old ducklings, %	96,4
The total number of conditioned young animals was obtained, head	4 167

The main method of control was ovoscopy of eggs followed by their opening of embryos. During incubation, biological quality control of eggs was carried out.

When the eggs were screened on the ovoscope, an egg with hidden defects was rejected, such as notches, marbling or mottling of the shell; blood inclusions; "redness" (when the yolk is mixed with protein); incorrect location and large size of the air chamber. Eggs with a displaced air chamber to the side or to the sharp end of the egg were also culled.

Conclusion. Thus, the results of this study are relevant due to the fact that the production of duck meat in the republic was previously based on the use of 4-5 lines and populations of the Beijing breed. At the same time, according to the results of comprehensive studies, it was revealed that the domestic line and population, like the Ansar cross, represent rich genetic material and can be used in the creation of new crosses, the data obtained allow further breeding work to create and preserve crosses and lines that ensure the production of eggs and meat adapted to industrial conditions, as well as to conditions in small and farms.

According to the results of the study, it was noted that in order to maintain the level of fertility along the maternal and paternal lines, it is necessary to monitor the dynamics of average daily body weight gains, since with lower and higher live weight gains, the repair young will experience a decrease in the reproduction rates of the adult herd. The selection of the bird according to the selected characteristics was carried out without the use of related mating. Such an approach to breeding lines can significantly increase the fecundity of poultry, reduce feed costs for products, improve or maintain the achieved level of live weight of ducklings at 7 weeks of age, which ultimately increases the yield per laying hen of the parent herd and reduces its cost.

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ТҮЙІН

Бұл жұмыста "Бішкөл құс фабрикасы" ЖШС коллекциялық табын үйректерінің шаруашылыққа пайдалы қасиеттерін ғылыми зерттеу нәтижелері ұсынылған.

Үйректермен асыл тұқымды жұмыс ет құсымен (тауықтар, үйректер, Күркетауықтар, қаздар және т.б.) жұмыста қолданылатын әдістер мен тәсілдерге негізделген. Алайда, құстардың осы түрінің биологиялық қасиеттеріне байланысты үйректердің өзіндік ерекшеліктері мен айырмашылықтары ескерілді (өсу және даму ерекшеліктері, қаңқаның артық семіздігі, тар жыныстық қатынас, өнімділіктің ұя салу есебін ұйымдастыру). Табындардың құрылымында

өнімділік деңгейі өте жоғары және жұмыртқа салудың II циклінде 20-40% артық үйректер болды. Жұмыртқа өндірудің бірінші циклінде көбірек үйрек алуға болады, дегенмен екінші циклде жалпы жұмыртқа өндірісі біршама төмен.

Инкубациялық жұмыртқалардың жыл бойы түсуі үшін, демек, үйрек етін бір жыл бойы біркелкі өндіру үшін ата-аналық табынды бірнеше рет (үш есе) жинақтау жүргізіледі. Ата-аналық табын 150 күндік жаста қалыптасады. Бір ата-аналық жұптан шығуы мүмкін болатын етті құсымен жұмыс істеу кезіндегі кешенді көрсеткіш тек тірілей салмақпен, ет сапасымен және өнім бірлігіне шаққандағы азық шығынымен ғана емес, сонымен қатар көбінесе көбею көрсеткіштерімен де, және жұмыртқа өндірісі, инкубациялық жұмыртқалардың шығымы, жұмыртқалардың шығарылуы және жас жануарлардың шығуымен анықталады. Алайда, жұмыртқа салатын үйректердің тірілей салмағының шамадан тыс артуы жұмыртқа өндірісінің төмендеуіне әкеліп соқтырады және осылайша жұмыртқаның жалпы өнімділігін төмендетеді. Жұмыртқа өнімділігін, сондай-ақ олардың шығымын кешенді зерттеу өзекті болып табылады.

Осылайша, коллекциялық табынның ішінде біз суда жүзетін құстардың өнімділігін арттыру арқылы олардың генофондын сақтау және жетілдіру жолдарын жеңілдетуге болады.

РЕЗЮМЕ

В настоящей работе представлены результаты научных исследований хозяйственно-полезных качеств уток коллекционного стада ТОО «Бишкульская птицефабрика».

Племенная работа с утками основывалась на методах и приемах применяемых в работе с мясной птицей (куры, утки, индейки, гуси и др.). Однако учитывались свои специфические особенности уток и отличия, обусловленные биологическими качествами этого вида птицы (особенности роста и развития, избыточная ожиренность тушки, узкое половое соотношение, организация гнездового учета продуктивности). В структуре прародительского и родительского стада может быть 20-40 % перьярых уток, уровень продуктивности которых достаточно высок и во II цикле яйцекладки. После принудительной линьки от утки родительского стада можно получить больше утят, чем в первом цикле яйценоскости, хотя на втором цикле общая яйценоскость несколько ниже.

Для круглогодичного поступления инкубационных яиц, а следовательно, равномерного в течение года производства утиного мяса, проводят многократное комплектование (трехкратное) родительского стада. Родительское стадо формируют в 150-дневном возрасте. Соотношение селезней и уток 1:4.

Таким образом, среди коллекционного стада нами были обнаружены способы сохранения и совершенствования генофонда водоплавающих птиц, путем увеличения их продуктивности.