ANNOTATION

Dissertation work "The variability of agronomic traits of beef cattle of different genotypes under "Agri "Dinara-Ranch" Ibrayeva Roza, presented for the degree of Doctor of Philosophy PhD in the specialty 6D080200 – Technology of livestock production

The relevance of the research topic. In the context of Kazakhstan's current agricultural policy, the development of beef cattle breeding is a top priority, as repeatedly emphasized in the messages of the President of the Republic of Kazakhstan. In particular, the President's recent messages have focused on the need to increase the productivity of domestic livestock farming, boost the production of high-quality beef, and enhance its export potential. Therefore, conducting research on the variability of economically valuable traits in beef cattle of different genotypes aligns with the strategic objectives outlined in the President's Message and aims to address the current challenges in the development of domestic livestock farming and the meat industry.

An important task of the country's agro-industrial complex is to sustainably increase the production of livestock products, especially beef. Due to its biological value, beef is one of the main sources of a balanced human diet. Almost everywhere in the world, measures are being taken to increase the productivity of beef cattle, including the development of new breeds and types characterized by large body size, high growth rates, and an optimal ratio of essential nutrients in the meat. The increase in the rate of intensification of beef cattle breeding, as well as the projected increase in the number of beef cattle, requires genetic improvement and necessitates the creation of new genotypes of animals that are large, tall, and capable of maintaining high growth rates for an extended period to produce heavy carcasses with optimal fat deposition, sturdy reproductive capabilities, and sufficient milk production. Modern animal husbandry, particularly beef cattle breeding, places increasing demands on production efficiency, profitability, and resistance to housing conditions. In these conditions, special attention is paid to the significance of variability of economically valuable traits.

LLC "Agrofirm "Dinara - Ranch" is one of the enterprises actively engaged in breeding beef cattle of different genotypes. This enterprise conducts research on the variability of productive indicators in animals of different genotypes during their cultivation.

Thus, this study has practical innovation and scientific value, as its results can be used to develop effective breeding programs, increase the productivity and sustainability of beef cattle in a specific farm, and more widely applied in similar climatic and production conditions.

In the modern agro-industrial sector of Kazakhstan, the most important consideration of beef cattle breeding is to increase animal productivity while minimizing costs. One of the key factors that determine the productivity of beef cattle is the breeding of animals with high genetic potential. As an advanced agricultural enterprise, Dinara-Ranch Agrofarm LLP specializes in breeding various

breeds of beef cattle, which creates unique conditions for comparing the productivity of animals of different genotypes that are suitable for production and climatic conditions.

- Identify the most productive and adapted breeds;
- Develop recommendations for breeding and selection work;
- Increase the efficiency of fattening and grazing;
- Create the foundations for increasing the genetic improvement strategy.

Thus, the study of the variability of economically valuable indicators of beef cattle of various genotypes under the conditions of a particular farm is not only of scientific value, but also of great practical importance.

Currently, one of the important problems facing the agro-industrial complex of our country is increasing the production of beef. In order to increase the production of meat, and especially beef, it is necessary to use the genetic potential of cattle breeds, to have a strong feed base, to introduce specialization, and to improve breeding methods. In the context of the formation of market relations, specialized beef cattle breeding plays a priority role in the production of biologically valuable and competitive beef. In the Republic of Kazakhstan, the most common breeds of beef cattle are the Kazakh White-headed and the Hereford. The Kazakh White-headed breed, which was obtained through the reproductive crossbreeding of local Kazakh and Kalmyk cattle with Hereford cattle, holds a special place among these breeds. In the herds of the Kazakh White-headed breed, crossbreeding with Hereford cattle is occasionally practiced. In recent years, modern tall-type Canadian breeders have been widely used for crossbreeding. However, there is no consensus among researchers regarding the effectiveness of crossbreeding between Kazakh White-headed and Hereford cattle of different genotypes, which makes studying this issue in the southern regions, including at Agrofirma Dinara-Ranch, an urgent task.

Research objective

To identify the variability of economic and price indicators in beef cattle of different genotypes raised at Agrofirma Dinara-Ranch LLP, and to determine the most productive and adapted breeds for further breeding.

Research objectives

1. To analyze the conditions of keeping and feeding of beef cattle in Agrofirma Dinara-Ranch LLP;
2. To study the methods of productivity of animals of different genotypes;
3. To assess the degree of variability of economically valuable traits;
4. To conduct a comparative analysis and determine the most promising genotypes for identifying a trait;
5. To develop practical recommendations for using the obtained results in breeding work.

Objects and methods of research:

Scientific and production experience was carried out in the conditions of sandy deserts of the Southern Balkhash region of the Almaty region of the Balkhash district of the Agrofirm Dinara-Ranch LLP. The object of research is cattle of the meat breed (Kazakh white-headed, Gereforddskaya poroda and their crosses (F1♂ Gereforddy×♀Kazakh white-headed). While conducting the experiments generally

accepted methods were used. Every result was confirmed by experimental data which was obtained using zootechnical and biochemical methods.

The main points to be defended

1. Characteristics of the initial stock of different breeds of beef cattle;
2. Milk yield of cows;
3. Reproductive qualities;
4. Calving rate and survival rate;
5. Dynamics of variability of live weight of young animals of different genotypes from birth to 18 months of age;
6. Determination of variability of meat productivity;
7. Determination of economic efficiency in raising bulls of different genotypes.

Justification of the originality and practical significance of the results obtained.

Scientific originality. For the first time in the conditions of the sandy deserts of the Southern Balkhash region, the variability of economically valuable traits of beef cattle of different genotypes was studied in a comparative aspect by the Agrofirm Dinara-Ranch LLP.

Scientific and practical value of the work. Additional reserves for beef production and increased meat productivity have been identified, along with more efficient use of feed and materials, in addition to the increased profitability of beef cattle farming through the cultivation of bulls obtained by crossing Kazakh White-headed cows with Canadian-bred Hereford bulls of the tall type. According to V.A. Vershinin, the descendants of Canadian bulls exceeded their peers in live weight at the age of 15 months, respectively by 7.8% and 5.0%, and by 18.9% and 11.3% in terms of profitability of meat production. The application of the research results in the LLP "Agrofirm "Dinara-Ranch" has led to a significant increase in the meat productivity of various genotypes. Similarly, the results of the experimental studies in the dissertation showing a major contribution to zootechnical science and practice.

Description of the main research results.

The main results of the dissertation have been repeatedly presented at the international scientific conference "Current State, Development Prospects, and Modernization of the Agro-Industrial Complex of the Republic of Kazakhstan." State University named after Shakarim, Semey. The reliability of the results obtained during the conducted studies is confirmed by the use of certified equipment and generally accepted methods, the inclusion of a sufficient number of animals in the experimental part for an objective assessment of the results, and the processing of the material using variational statistics with the determination of the significance difference criterion using the Student's table at three levels of probability of significance difference. The work has been sufficiently covered in publications.

The contribution of the doctoral student to the preparation of each publication. The collection, analysis and generalization of experimental and literary data, statistical processing of the results, and illustrations were made by the author personally. The work undertaken made it possible to produce first-generation bull calves by crossing two breeds—the Kazakh White-Headed and Hereford—in order to increase meat productivity. The study assessed the growth and development of

young animals from birth to 18 months, slaughter weight and yield, carcass morphological composition, meat quality parameters of experimental bulls, and overall economic efficiency.

Based on the materials of the dissertation, 11 scientific papers have been published, including 2 articles in publications indexed in the Scopus database, 4 articles in journals recommended by the Quality Assurance Committee for Science and Higher Education of the Ministry of Science and Higher Education of the Republic of Kazakhstan, and 5 articles in materials of international scientific and practical conferences.

Compliance with the directions of science development or state programs: The research work was conducted within the framework of program-targeted financing under the budget program 217 "Creation of conditions for the development of animal husbandry and production, processing, and sale of animal products." Furthermore, the research results were included in the annual reports for 2016-2019 under the project "Scientific Foundations for Increasing the Productivity of Domestic and Imported Beef Cattle Breeds in the Sandy Deserts of Southern Balkhash."

Structure and scope of the dissertation: The dissertation consists of an introduction, 3 chapters, a conclusion, and a list of references (148 items, including 29 tables and 32 figures. The total volume of the dissertation is 128 printed pages (including the main text on Page 119 and the appendices on Page 9).