**Project name:** AP14972970 "the influence of genetic factors on the reproductive capacity of meat-oriented breed bulls".

**Scientific novelty and significance of the project:** in Animal Husbandry practice, the assessment of producer bulls is based on such complex features as its origin, development, exterior, Constitution and ability to pass on its qualities to offspring. Such a bull assessment system has long been adopted and fully justifies itself. But due to artificial insemination of bulls and the large use of their genotype in breeding animals, there is a need to supplement their assessment with indicators of fetal productivity.

The formation of the fetus is a complex and long-lasting process, which is influenced by many environmental factors. Based on research by scientists, it has been proven that the quality of the semen of breeding bulls is influenced by the seasons and, in addition, breed characteristics.

The reproductive function of bulls is largely determined by the genetic diversity of animals in terms of the degree of heredity of the main selection characteristics and properties useful for the economy. Unfortunately, in recent years in the country, the influence of genetic factors on the sperm productivity of meat Bulls obtained by domestic (Kazakh white-headed breed) and foreign (Hereford, Aberdeen-Angus) selection has not been studied, but has been evaluated only by individual productivity. And the selection of productive Bulls based on quantitative and qualitative indicators for the quality of sperm production and calving will allow the process of selection in animal husbandry to proceed faster.

In the studies of foreign scientists, it is indicated that the influence on genetic factors largely depends on the producing male bull, that is, the breed, the male trail, and 35-40% depends on genetic factors, and 60-65% on paratypic factors.

However, in recent years, interest in this issue has increased. The situation that has arisen has not bypassed animals belonging to new genotypes of dairy and meat cattle.

In this regard, for the first time, the influence of genotype, breed, country of origin on the ability to produce and fertilize sperm and offspring of breeding bulls belonging to beef cattle breeds with different genotypes bred in the northern regions of Kazakhstan will be studied in comparison. The selection and genetic parameters of sperm production indicators (variability, correlation between indicators) and the possibilities of their use in forecasting and sorting are determined.

Thanks to the results of the study, by the season of the year, the links between high-yielding qualities and breeding traits of producer Bulls with different genotype and age are determined. Recommendations are given for the effective use of bulls in the process of artificial insemination.

In Kazakhstan, there were no previously conducted analogues of Industrial, Scientific-Industrial and experimental experiments on the proposed methodology of scientific experiment. Similar studies on the reproductive capacity of male bulls of meat cattle were carried out in Russia, Canada, Germany, the USA and other countries, but these works were carried out mainly in order to increase the effectiveness of dairy cattle bulls through the influence of genetic factors on their reproductive capacity.

**Expected results:**

- For 2022: a proposal will be prepared with an analysis of the relationship between the genetic impact on the quality indicators and the ability to fertilize and signs of sperm of bulls of different breeds and genotypes of the country of origin;

- For 2023: the influence of the hereditary property and growth hormone genes in their sperm on the offspring of bulls with different genotypes is studied and the genetic

contribution is determined. As a result of the study, the main elements of information support for the selection of breeding bulls with different genotypes according to the indicators of sperm productivity will be compiled and implemented, and an information base of seed resources for breeding work will be created in JSC "Asyl-Tulk".

- Thanks to the results of the study, by the season of the year, the relationship between the high productive qualities of productive Bulls of different genotypes and ages and the influence of growth hormone genes in their sperm on offspring is determined, and the act of introduction into production 1 is issued;

- As a result of the study, the main elements of information support for the selection of breeding bulls with different genotypes according to the indicators of sperm productivity will be developed and implemented, and an information base of seed resources for breeding work will be created in JSC "Asyl-Tulk".

- For 2024: thanks to the results of the study, by the season of the year, the links between the high-yielding properties of producer Bulls with different genotypes and ages and the influence of growth hormone genes in their sperm on offspring will be determined, and 1 act of introduction into production will be issued

- Within the framework of the project, 3 articles are published in foreign or domestic publications recommended by Coxon and 2 articles in the first three quartiles on impact factor in the Web of Science database or in peer-reviewed scientific publications with at least 50 (Fifty) percentiles On CiteScore in the Scopus database;

Project manager-Makhanbetova Aizhan Bekbolatovna, master of Science A. sh., PhD student of the Kazakh agrotechnical university named after S. Seifullin in the specialty 6d080200 – technology of production of livestock products? And asisstent of the Department" technology of production and processing of livestock products". Under his authorship, more than 30 scientific papers have been published, the Scopus database contains 1 Article, 4 patents, 4 proposals.

**Members of the research team:**

Kazhgaliyev Nurlybay Zhigerbayevich - scientific consultant, candidate of Agricultural Sciences, Associate Professor. He has published more than 100 scientific papers, including 3 monographs, 3 textbooks, 17 manuals, 4 patents, more than 80 scientific articles. Under his leadership, 3 doctoral students were trained and 16 master's theses were defended. He is one of the leading scientists of the Republic in the field of meat cattle breeding; 2018-2020 participated in the following projects: budget program 217 "development of Science", subprogram 102 "grant financing of scientific research" on the topic "adaptation and quality of productivity of the third generation of imported beef cattle in the conditions of the northern region of Kazakhstan" (meme.registration No. 0118RK00736) and the MES "development of effective breeding methods in marketable cattle breeding" for the 2018-2020 Project "study of the effectiveness of breed transformation within the framework of the Sybaga program in the Northern Region and Karaganda region".

**Information for potential users:**

Today, the need for genetic control of the process of breeding work is becoming an important criterion for the development of the main branches of Agriculture. The task of breeders is to preserve and consolidate in their offspring the optimal combinations of genes taken from the ancestors, as well as to use information about the genetic characteristics of animals in heredity.

In meat cattle breeding, improper work on assessing a male bull, which fertilizes hundreds of cows with its sperm, in turn, can cause serious losses not only in the gene pool of an individual herd, but also in the genetic fund of a full population.

In this regard, the main idea of the project is to determine the genetic influence of the breed and country of origin on the quantitative and qualitative indicators of sperm productivity of bulls with different genotypes of meat orientation and the relationship between the studied selection characteristics.