

## ABSTRACT

**of the dissertation work of Nusupov Amanzhan Maksutkanovich on the topic  
“The productiveness of Simmental cows of milk tupe «Irtishsky» and thier  
crosses in LLP «Kamishinskoe» konditions, submitted for the degree of Doctor  
of Philosophy (PhD) in the speciality 6D080200 - “Technology for the production  
of livestock products”**

### **Relevance of the research topic.**

Currently, the task of livestock farming in the Republic of Kazakhstan includes increasing the export of food products by 40 percent and, following medical standards, providing more than 20 million of the country's population with pure milk and dairy products. Based on domestic and world experience, one of the ways to solve this problem is to increase livestock production, i.e. increasing the herd of dairy and dairy-meat breeds with high genetic potential using interspecific hybridization methods.

This method began to be used in the country in the 80s when work was carried out to increase milk productivity and improve the morpho-functional structure of the udder of local Simmental cows. As a result of three-breed crossing in large peasant farms of the East Kazakhstan region, such as “Kamyshinskoe” and “E. Zaitenov” breeding red-motley Simmental cows of the "Irtysh" type and their crosses appeared.

The physiological and reproductive potential of cows of the new type “Irtysh” compared with cows of the Simmental and Holstein breeds is characterized by higher indicators in exterior (physique) and development and a strong constitution.

Thus, to preserve the best qualities of the Simmental breed in dairy cows of the “Irtysh” type and their crosses and increase the demand for pure milk and dairy products in the country, one of the urgent tasks is the crossing of Simmentals of domestic selection and red-and-white Holsteins of foreign selection.

### **The purpose of the dissertation research.**

Determination of the productivity of Simmental dairy cows of the “Irtysh” type and their crosses in the conditions of the East Kazakhstan region.

### **Research objectives:**

- determination of growth and development of crossbreeds of the “Irtysh” type;
- determination of milk productivity of first-calf heifers;
- determination of body measurements of crossbred cows of the “Irtysh” type;
- determination of the reproductive ability of crossbred cows of the “Irtysh” type;
- calculation of the economic efficiency of research work.

## **Research methods.**

To determine the productivity indicators of animals of the “Irtysch” type and their crosses of domestic and foreign selection based on the approval of the boniter-classifier, the following zootechnical methods were used.

Based on the interstate standard “Methods for determining productivity indicators of dairy and combined cattle” and instructions for the grading of dairy and dairy-beef cattle: at the birth of young animals, at the age of 3,6,9,12,18 months, using electronic scales were determined live weights of animals were calculated using the formula *absolute gain, average daily and relative gains*. At the birth of young animals, at 6 months, 12 months and 18 months, and for cows in the second month of lactation, before feeding, on a flat, clean and bright place by using a measuring stick, the following were determined: the *height of the animal (withers); oblique body length; chest depth and breadth; croup height; chest and cannon girth; width between points of hips*. Using the body measurements obtained, the animals' physique indices were calculated.

Based on the interstate standard “Sampling of milk and preparing them for testing,” the following were determined: *average daily milk yield; lactation results for 305 days, percentage of fat and protein in milk*.

Based on the interstate standard “Methods for determining productivity indicators of dairy and combined cattle” and guidelines for linear assessment of the exterior and classification of dairy cattle by body type, the following were determined: the lactation curve of cows; morphological structures of the udder of cows; udder measurements; udder index; milk flow rate; live weight and age at first insemination; pregnancy, dry period and service period; reproductive rate and fertility index.

Method N.A. Plokhinsky processed all the data obtained during the research work - calculations were carried out using the Excel computer program.

### **The main provisions submitted for defense (proven scientific hypotheses and other conclusions that represent new knowledge):**

- determination of the absolute growth, average daily and relative growth of Simmentals of the “Irtysch” type and their crossbred young animals for different periods;
- determination of exterior characteristics of Simmentals of the “Irtysch” type and their crossbred young animals in different periods and calculation of body indices;
- determination, on average, over 305 days of lactation of the average milk yield and the percentage of fat and protein in milk in Simmentals of the “Irtysch” type and their crossbred cows;
- construction of a lactation curve based on the results of lactation;

- determination of the morphological structures of the udder of Simmental cows of the Irtysh type and their crosses for 2-3 months of lactation and assessment of milk yield;
- determination of exterior indicators and calculation of body indices of first lactation dairy cows;
- determination of age and live weight at the first insemination, timing of pregnancy and duration of lactation, service and dry periods, age of first calving and intercalving period, reproductive rate and fertility index in Simmental cows of the “Irtysh” type and their crosses.

#### **Description of the main results of the study.**

Domestic selection has strengthened the breeding values of Simmental cows of the Irtyshsky and Simmental crossbreds in comparison with Simmental dairy cows of the Irtyshsky type, made it possible to increase the growth of young animals over periods, reduce the time for the first insemination of heifers and the service period for first-calf heifers.

Foreign selection during the lactation period of cows increased milk yield, improved the structure of the udder of these cows and reduced the live weight of young animals at the first insemination in crosses of “Irtyshsky” and red-and-white Holsteins compared to Simmental dairy cows of the “Irtyshsky” type.

#### **Justification of the novelty and importance of the results obtained.**

For the first time, in the conditions of Kamyshinskoye LLP in the north-eastern region of Kazakhstan, the productivity of Simmental dairy cows of the Irtysh type and their crosses of Irtyshsky and Simmental of domestic selection and Irtysh and red-motley Holstein of foreign selection were studied in a comparative aspect.

Based on the research results, all data obtained were statistically and variationally processed, the economic efficiency was determined and implemented into production.

#### **Description of the doctoral student's contribution to the preparation of each publication.**

When performing his dissertation work, the doctoral student was directly involved in all zootechnical activities, processed the received materials following methodological instructions, and filled out special journals and zootechnical documents. The data obtained were fully statistically processed, the results are fully disclosed in the results and discussions section of the dissertation work.

To achieve the goal of the research work, the doctoral student published 10 articles based on the results of the research work, including the full implementation of

all tasks following the requirements for dissertation works:

1 article in a publication included in the Scopus database:

BIODIVERSITAS, Volume 22, Number 9, September 2021. Pages: 3663-3670, DOI: 10.13057/biodiv/d220908, ISSN: 1412-033X, E-ISSN: 2085-4722";

4 articles in domestic publications recommended by the Committee for Quality Assurance in the Field of Science and Higher Education of the Ministry of Education and Science of the Republic of Kazakhstan:

“Scientific Journal” Bulletin of the Shakarim State University of Semey. - Semey. 2018. No. 3 (83) P. 306-309;

“Scientific Journal” Bulletin of the Shakarim State University of Semey. - Semey. 2018. No. 4 (84) P. 248-252;

“Scientific Journal” Bulletin of the Shakarim State University of Semey. - Semey. 2020. No. 3. (91) P. 323-326;

“Scientific Journal” Bulletin of the Shakarim State University of Semey. - Semey. 2020. No. 3. (91) P. 326-329;

5 articles were published in the collection of international scientific and practical conferences (in abroad countries):

“Collection of the international scientific and practical conference of young scientists within the framework of the Winter International School.” - Almaty: KazNAU. 2018. pp. 81-83;

“Materials of the international scientific and practical conference Innovations in agriculture dedicated to the 10th anniversary of the Faculty of Agricultural Technology of Pavlodar State University. S. Toraigyrov.” - Pavlodar. 2019. pp. 134-139;

“Collection of materials from the international scientific and practical conference: Current state, development, prospects and modernization of the agro-industrial complex of the Republic of Kazakhstan.” - Semey. 2019. pp. 386-390;

“Materials of the international scientific and practical conference Socio-economic problems of the region in the conditions of innovative development of territories and ways to solve them, dedicated to the 80th anniversary of the Doctor of Agricultural Sciences, Professor Saipitin Kusmetovich Kurmanbaev.” - Semey. pp. 128-130;

"Collection of the international scientific and practical conference of young scientists within the framework of the International Master's Summer School." - Almaty: KazNAU. 2020. pp. 351-354.

### **Scope and structure of the dissertation .**

The dissertation consists of an introduction, a review of world and domestic

literary sources, methods and materials of research work, results and discussions, a conclusion, a list of references and applications, presented in computer text on 81 pages, containing 17 tables, 16 figures. The list of used literature consists of 127 literature sources, including 15 in a foreign language.