SUMMARY

of the doctorat thesis entitled:

RESEARCH ON THE ECONOMIC EFFICIENCY OF THE USE OF SEXED SEMEN IN BOVINE

PhD-student: **SERTU Stelian**

Stientific coordinator: ***Professor, PhD*** **TĂPĂLOAGĂ Paul-Rodian**

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The paper '*Research on the economic efficiency of the use of sexed semen in bovine*' is structured in two sections, namely: section I - Bibliographic study and section two - Personal research

Section I - Bibliographic study - includes two chapters.

Chapter I, entitled '*The impact of artificial insemination on dairy farms*', presents the history of the first modern reproductive biotechnology - artificial insemination, its evolution, the advantages of using artificial insemination, their role in eradicating some sexually transmitted diseases, in improving production performance but also in the development of methods of laboratory analysis of semen.

This chapter also presents the dynamics of dairy cow farms in our country according to their size and the evolution of cow herds in recent years. The high proportion of subsistence farms of up to 10 heads and the decrease in the herd of dairy cows were found.

The male reproductive system, spermatogenesis, the role of spermato-cytogenesis and spermiogenesis in the formation of spermatozoa are presented.

Classical and modern methods of analysis of conventional, freshly harvested semen are presented, so that it can be used fresh, frozen or processed.

The transition from the monopoly of the conventional semen to the diversification of the types of sperm according to the technology of obtaining it and the share of calves with predetermined desired sex obtained is presented. Also here is presented the context that favored the

development of these technologies, namely the large number of males obtained in dairy cow farms that lead to economic losses and the decrease in the slaughter age of cows up to 2.8 lactations. Different methods of processing freshly harvested conventional semen are presented

Chapter II, entitled '*Methods of calculating economic efficiency for the use of sexed semen*', presents the production and reproduction indicators with the help of which the economic analysis is carried out. It was presented how each indicator is calculated and how to interpret the results obtained.

This chapter details the factors influencing the economic efficiency of using sexed semen. For each influencing factor, the current, internationally known results were presented.

Also in this chapter are presented the techniques of assisted reproduction with sexed semen IVF and ICSI and the current international results obtained by using these methods of fertilization.

The second section of the doctoral thesis called – Personal research - was structured in IV chapters.

Chapter III presents the purpose and objectives of the doctoral thesis. In this chapter, the analysis methods for meeting the objectives and reaching the goal are presented. The materials that were used during this experiment and the working method were presented.

Chapter IV, entitled '*Analysis of the impact of reproduction in cows inseminated with sexed semen*', is structured in 9 subchapters in which the efficiency of insemination of cows with sexed material is analyzed with the help of the indicators involved in the analysis of farm management.

In this chapter, the fecundity index was analyzed to determine the efficiency of the use of sexed semen in cows; comparative analyzes were performed between cows inseminated with sexed semen and those inseminated with HeiferPlus semen to determine the efficiency of using sexed semen in dairy cows; comparative analyzes were performed between cows inseminated with sexed semen, conventional semen and HeiferPlus semen to determine the efficiency of using sexed semen in dairy cows; the interval from calving to the first insemination was analyzed to determine the optimal period of insemination with sexed semen of dairy cows; the efficiency of the use of sexed semen in cows was analysed, by productivity groups, in order to determine the influence of milk production on reproductive indicators in cows inseminated with sexed semen; the influence of longevity on reproductive indicators was analyzed in cows

inseminated with sexed semen; the influence of the maintenance status of the cows on the reproductive indicators was analyzed in cows inseminated with sexed semen; the efficiency of estrus synchronization programs was analyzed in cows inseminated with sexed semen; the efficiency of performing inseminations with sexed semen in cows under increased safety conditions was analyzed.

Chapter V, entitled '*Analysis of the reproductive impact of calves inseminated with sexed semen*', is structured in 4 sub-chapters in which the efficiency of inseminating calves with sexed material is analyzed with the help of the indicators involved in the analysis of farm management.

In this chapter, the fecundity index was analyzed to determine the efficiency of the use of sexed semen in the vines; the efficiency of estrus synchronization programs was analyzed in calves inseminated with sexed semen; the efficiency of carrying out inseminations with sexed semen in vines under increased safety conditions was analyzed; the comparative analysis was performed between cows and calves inseminated with sexed semen

Chapter VI presents the general conclusions. In this chapter were recorded the main results obtained that influenced the economic efficiency of the use of sexed semen in cows and vines in each chapter studied.

Following the results obtained to increase the economic efficiency of inseminations with sexed semen, it is recommended: the insemination of dairy cows should be carried out between 80-100 days after calving because during this period the best fecundity index was obtained in cows inseminated with material sexed seminal; insemination of primiparous cows – because in this batch the reproductive performances recorded during insemination with sexed sperm were the most advantageous from an economic point of view; insemination of cows with high milk production because the obtained results showed that the productivity of the cows did not negatively influence the reproductive indicators. These cows are preferred because they have very high genetic value and through high milk production they can support the insemination costs; insemination of cows in good maintenance condition because the accumulated energy reserves favor the improvement of reproductive indicators and lead to economic growth; insemination with sexed semen should be carried out in cows entered into estrus synchronization programs because they have made a considerable contribution to increasing reproductive performance; the insemination of cows with sexed semen should be carried out using the

method with protection because this way the fecundity index increases and reproductive pathology is prevented; the insemination with sexed semen of the calves because in this age group the best results were obtained from the lots analyzed; insemination with sexed semen should be carried out in heifers entered into estrus synchronization programs because they have made a considerable contribution to the improvement of reproductive indicators; the insemination of calves with sexed semen should be carried out by the method with protection because this way the reproductive indicators improve and the cost/gestation price decreases.