

SUMMARY

RESEARCH REGARDING THE CORELATION BETWEEN REPRODUCTION INDICES AND PERFORMANCES WITHIN THE LIPIZZAN HORSE BREED

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The research in the field of reproduction for horses have been limited for a long time, but during the last decades, these ones were intensified, once the horse was reconsidered, enriching the knowledge concerning the reproduction physiology and pathology specific to this breed.

The research goal was the one of analysing the reproduction activity and the performances obtained by the Lipițan breed horses, bred and exploited in in the herds Sâmbăta de Jos and Beclean, so for the father studs as for the mother mares; another goal was to put at the disposal of future research data concerning the reproduction indexes and the performances specific to this breed.

The reproduction activity has a significant importance both in increasing and improving the livestock, as especially in rising the economic efficiency in breeding horses.

One will try the achievement of some correlations among some indicators of reproduction and performances in Lipițan studs and mares, from the two herds which represent the objective of this study.

The feeding, housing and care of the horses in these herds provide the necessary conditions for the unfoldment in good conditions of the reproduction activity and for showing the productive potential.

The doctoral thesis mirrors in a scientific manner the research and documentation done in the herds Sâmbăta de Jos and Beclean.

The observations were made on a number of 13 Lipițan father studs and 40 mares, from Sâmbăta de Jos herd and the same breed 5 father studs and 13 mares from Beclean herd, during 2008-2017. The evaluation of the reproduction activity was done by means of the following indexes: the first copulation age; the first parturition age, the service-period length, the period among parturitions, the gestation length for females, the copulations number, the offsprings number, the sexes ratios for studs, the marks and time obtained in test of trot speed test with individual harnessing for 15 km with 450 kg, by the mares and father horses from the two herds.

The primary data were statistically processed by classical methods compared with the ones from the literature and they are rendered in 84 tables and 62 figures and 38 photos.

The thesis was structured in two different parts. The first part comprises in 5 chapters data concisely included by the speciality literature.

In the first chapter, there is presented the dynamics of the horses livestock in Romania and of Lipițan breed. The morpho-physiology of the genital apparatus in horses, the morpho-physiology of the genital apparatus of the stallion and of the mare represent the topic of the second chapter. The topic of the third chapter is represented by copulation and the systems of copulation. The fecundation, the gestation and the parturition in horses are presented in the fourth chapter, and in the fifth chapter, there are concisely presented the productive performances in Lipițan breed.

The dynamics of the horses livestock during 1990-2014 presented in the first chapter, is graphically rendered and it shows a decreasing tendency of the horses livestock during the whole mentioned period, excepting certain periods with slight increases. The first increase of the horses livestock is noticed in the area București-Ilfov, in the periods 1990-1993 and 2008, and the second increase was recorded in the south-east of Oltenia, during 2009.

Lipițan breed is one of the old races hereditary consolidated, whose creation started in 1580, when Lipizza herd in the Mountains Karst from Austria was born.

In our country, the first Lipițan specimens were brought at the beginning of the XIXth century on the Bruckentals lands from Sâmbăta de Jos, where there is a centre for horses rearing.

In the second chapter, one concisely presents the morpho-physiology of the genital apparatus, both for stallions for the mare. A good reproduction of horses livestock leads to a high fertility and natality as well as to a better viability of the youth. On account of these results, one may intensify the selection of kinned generations in order to obtain as many as possible valuable specimens.

The male genital apparatus is formed of organs which have the role to form the sperm and to put it into the genital organs of the females.

The female genital apparatus has gametes origin and endocrine role and on the other side it has the role of providing a normal unfolding of fecondation, insemination and development of the conception offspring in the intra-uterus life after the conception till the parturition.

The IIIrd chapter comprises the presentation of the copulation activity and the copulation systems practices in Romania. The herds are top farms which have the role to obtain genetical progress and to maintain the genetical variability of the breed nuclei. The number of father studs found in the NATIONAL HERD Administration is of 101 heads, representing 7,06% out of the total of 1432 heads. The mother mares represent 50% of the total livestock, namely 716 heads. The biggest number is represented by the number of studs with public mating, namely 615 heads, representing 42,94%. One may apply two systems of mating, such as guided mating and mating in freedom.

The IVth chapter presents fecondation which, genetically, is achieved by merging the nucleus of spermatozoon with ovulei core, through a complex process. The process of fertilisation is influenced by ovulation. The knowledge of the ovulation moment has a great practical importance, since the release of the ovum from follicle Graaf occurs with 1-2 days prior to the end of the oestrus, and in this short time frame, it is necessary for the ovocyte to meet sperm.

After mating or fecund insemination, the gestation appears which represents the period between the fecund ovulation and the parturition. The mare gestation lasts, in average, 11 months (336 days, with variations between 335-350 days). The parturition is a complex and complete physiological process where the endocrine and the muscle systems participate in, but also other foetus and mother stimuli.

In the Vth chapter, one briefly presents the productive activity unfolded in the herds. The objectives of horses breeders are the ones of permanent improvement of animals performances in competitions and it may be defined as energetic capacity (productive performances). Starting with 1955, Lipițan rearing was meant less for horseback riding and more for the medium traction skills, tending to massivization. There were introduced tests for heavy traction for walking and trotting, giving up to the galloping tests. In our country, there are four tests for the coupling pin contest. The first test is the one of presentation, graded AI, the second one is the dressage test, graded with AII, the third is the marathon, graded with B, and the fourth test is the obstacles test, graded with C.

The second part comprises personal research and it extends over 4 chapters.

In the sixth chapter, there are presented the settlement and the natural conditions of Sâmbăta de Jos and Beclean herds, where necessary observations for this research were unfolded.

In the seventh chapter, there are presented the goal of research, the studied biological materials and the working method. The data gathered from the two herds were recorded in a data basis, afterwards being processed by means of the Student test. The goal of the research was the one of analysing the reproduction activity and the performances obtained by the Lipițan horses, reared and exploited in the herds Sâmbăta de Jos and Beclean, both for the father studs as for the mother mares and to put at the disposal of future research data concerning the reproduction indexes and performances specific to the breed. The research was conducted on a number of 13 Lipițan father studs (25,5% out of the effective total) and 40 mares (75,5% out of the effective total) from Sâmbăta de Jos herd and 5 Lipițan father studs (27,7% out of the effective total) and 13 mares (72,3% out of the effective total), from Beclean herd. In order to be able to analyse the reproduction and performances activity in the Sâmbăta de Jos and Beclean herds, there have been observed the studs and mares in the two herds and there were consulted the registers and zootechnical evidences in the two farms for a 10 years period (2008-2017). The resulted data were statistically processed. There were calculated medium values (\bar{x}), the medium standard error ($S\bar{x}$)

and the variability coefficient (V%). The reproduction indexes were calculated on the basis of the data provided by the mating and parturition registers, using specific formulae to each index.

In the eighth chapter, there are rendered the results obtained for the analysed reproduction indexes and for the performances recorded with the father studs in the two herds. We analysed the reproduction activity of the 13 father studs in Sâmbăta de Jos and of the 5 studs in Beclean herd. The studs were divided on age categories of $7 \leq 12$ years and >12 years. The reproduction indexes (the mating number, the fecundity, the natality and the number of the offspring) were calculated for the productive life of the stallion and depending upon the age category where these ones were grouped. The productive performances obtained, such as the average of the grades and of the time obtained in the test of speed trot individual harnessing for 15 km with 450 kg were correlated with the results obtained after analysing the studs reproduction activity.

In the ninth chapter, there are presented the results obtained for the analysed reproduction indexes and the performances recorded with the reproduction mares in the two herds. There were studied 40 mares from Sâmbăta de Jos herd and 13 mares in Beclean herd, which were grouped in three age categories (<5 years, between 5-10 years and >10 years). The calculated reproduction indexes are: the medium number of matings depending on the age of the mare; the number of gestations depending on the age of the mare; the fecundity percent depending on the age of the mare (%); the medium age at the first mating (years); the medium age at the first parturition (years); the service of the medium period (days); the period among parturitions (days); the medium number of offspring depending on the age of the mare; the natality percent depending on the age of the mare (%); the medium number of male offspring, depending on the age of the mare; the percent of male offspring depending on the age of the mare, the medium number of female offspring, depending on the age of the mare; the percent of female offspring depending on the age of the mare (%); the average of the grades obtained in the test of speed trot individual harnessing for 15 km with 450 kg, depending on the age of the mare; the average of the time obtained in the test of speed trot individual harnessing for 15 km with 450 kg, depending on the age of the mare.

The tenth chapter comprises conclusions and recommendations. In terms of the results obtained by the analysed reproduction indexes and of the obtained performances, we can consider that the activity of reproduction and production Sâmbăta de Jos and Beclean herds unfold in optimal conditions, the achieved values framing in the characteristics of the species and breed. To conclude, out of the obtained results, it results a positive correlation between the analysed performance indexes and the performances obtained by the studs and mares in Sâmbăta de Jos and Beclean herds. This statement is supported by the results obtained both for the reproduction activity as for the sports one, results which framed in limits foreseen by the literature.