

CHARACTERISTICS OF THE BREED STRUCTURE AND SEMEN QUALITY OF STALLIONS FROM NATIONAL STALLION DEPOTS¹

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Abstract: The analysis of breed and age structure and basic indicators of semen evaluation in studied population of 965 stallions from National Depots and Training Centers it was stated that the highest percent of the population is represented by different breeds of saddle type – 25% (among which 81,4% are Noble Half-bred stallions) and cold-blood stallions – 21%. The lowest percent was represented by primitive horses – about 4%. The remaining 50% were represented by Silesian, Malopolski and Wielkopolski horses. Among all stallions used for reproduction 66% belonged to group of horses between 5 and 15 years, then 16% - young stallions to 5 years, 16% stallions in age of 15 – 20 years and only 2% of stallions older than 20 years. The examination of reproductive ability of these stallions showed that around 6% of them represent very low libido- usually they were young stallions. The normal level of sperm motility and concentration represented around 92% of stallions. Among stallions with lower value of examined factors dominated primitive and cold-blood sires and also stallions in age between 10-20 years.

Key words: stallion, semen, breeds, age, National Depots.

Introduction

Conducting national horse breeding has been connected with the proper breeding organization and breeding policy that should consider tendencies of particular horse breeds preferences. Several breeds exist in breeding. Breed structure of stallions' stock has to be adjusted to numerous breeds in breeding as its basing goal is to improve genetic and usable quality of population (*Nowicka-Posluszna et al. 2003*)

Investigation conducted on stallions resulted in conclusion that the stallions directed to reproduction have very different breeding value as they are checked neither before nor during the reproduction exploitation although such obligation arises from the Breeding Act of February 11, 1999. The necessity of stallion evaluation has been confirmed also by results of several investigations that proved significant correlation between quality of semen and mare fertility (*Jasko et al.1992, Dowsett and Knott 1996, Wierzbowski and Kosiniak-Kamysz 1998*).

The goal of the work was to conduct analysis of basic semen indicators of stallions in Poland in the Stallion Depots belonging to the Agricultural Property Agency of the State Treasury in 2002 according to a breed, age and clinic condition.

Materials and methods

Research of stallions kept in 9 Stallion Depots belonging to the State Agency and kept at that time in the Training Centers was conducted in November – December 2002. Among 1057 stallions kept in the Stallion Depots and 87 kept in the Training Centers, 965 were examined. Clinical examination of testicle and epididymis were conducted also the diameter of both testicles was measured, libido and semen quality parameters were evaluated, evaluating only the spermatozoon reach fraction.

Results and discussion

Analysis of breed structure of investigated population showed that stallions represented 6 breed groups and it was stated that analyzed stallion population consisted of:

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- 206 (21,4%) stallions belonging to a group of cold-blood horses,
- 134 (13,9%) Silesian (sl) and Oldenburg (old) horses (respectively 128 and 6),
- 157 (16,3%) Malopolski horses (m),
- 187 (19,4%) Wielkopolski horses (wlkp),
- 247 stallions (25,6%) were counted to the saddle type (Noble half-bred – 202, KWPN – 6, Hanoverian – 4, Holstein – 3, Trakenner – 1, Thoroughbred – 23, Arabian – 6 and Anglo-Arabian pure bred – 3)
- 33 (3,4%) primitive horses (Hucul – 27 and Polish Koniks – 6).

The age analysis of the investigated group proves that in the state breeding the most numerous group – 66%, are the stallions between 5 – 15 year of age, next two groups – both 16% - were stallions age 15 – 20 and below 5 years old (among them 9% were the stallions in the Training Centers) and only 2% of stallions were older than 20 years.

The age analysis conducted for particular breeds indicates the highest percentage registered stallions up to 15 years of age among saddle horses (87,9%) and cold-blooded horses, the lowest percent was represented by primitive horses (60,6%) whereas percentage of three other breeds was between 75,9 – 79,1.

In a group of stallions above 15 years the highest percentage was represented by Wielkopolski horses stallions (25,3%) and Malopolski stallions (19,77%) whereas the share of 3 breeds except for primitive breeds was between 15,2 – 16,9%.

Age analysis of stallions in 9 Depots - without taking into consideration stallions that at that time were in the Training Centers – shows that the dominant age group were stallions between 5 and 15 years of age consisting 64,7 – 83,4% in particular depots. Whereas the percentage of stallions up to 5 years of age and over 15 was very different from a depot to a depot. Only in the SD Bogusławice the percentage was in favor of younger stallions. In all other depots there were always higher percentage of stallions over 15 years, in SD Kętrzyn and Łobez the difference did not exceeded 4% , in SD Łąck, Starogard Gdański and Książ, the stallions over 15 was on average from 8,4 – 10,7% more, in SD Białka, Gniezno, Klikowa i Sieraków from 18-29,6%. It should be stressed that the percentage of stallions below 5 years in those depots was between 0-8%. It indicates that the remount of horse stock is limited so as a result the stock is aging.

From among 965 investigated stallions the semen was collected from 877 – 90,8%. Detailed analysis of reasons way it had been impossible to collect semen from 88 stallions show that among them 32 stallions (40%) had libido 0 (it should be stressed that group 23 stallions were from Training Centers it means stallions below 5 years of age) and 8 stallions (5%) had health problems.

Libido analysis of stallions the semen was collected from shows that 93,8% of stallions has shown libido 3 or 4 whereas only 6,2% it means 55 stallions had libido at level 1-2. It should be stressed that in the group were 23 stallions from the Training Centers, so in a group over 5 years the percentage of stallions with low libido L 1-2 was only 3,4% whereas in a group of stallions below 5 – 35%.

Conducting analysis of sperm motility and concentration in obtained semen it was stated that sperm motility in the scope of 1/60 – 4/90 and concentration $>150 \times 10^6$ spermatozoon in cm^3 was represented by respectively 90,0% and 94,6% of investigated stallions. Analysis of 136 ejaculations with motility $< 1/60$ and concentration of spermatozoon $< 150 \times 10^6$ within the particular breeds as age groups showed that: the highest percentage of stallions with so low semen quality parameters were registered in a primitive stallions group (23%) and cold blood (18,7%), next Malopolski (17%) and Silesian (16,5%), whereas among the Wielkopolski and saddle stallions respectively 13,0% and 13,8%. The analysis of the above indicators according to the age groups showed the most often there were the stallions 15-20 years old (20,1%) and 10-15 (17,4%). The lowest percentage of stallions (9,2%) with such semen value was registered in the age group 5 - 10, whereas in the age groups below 5 and over 20 the percentage reached 15% of stallions.

The measurements of testicles diameter in particular breeds according to age groups showed that the highest diameter have the testicles of cold blood stallions – 13 cm and Silesian stallions 12,1 cm with the average between 10,6 - 11,8 cm for the other breeds. The testicles diameter of stallions below 5 and over 20 – 11,5 cm is slightly lower that for stallions in the age group 5-15, where it was 12,0 cm.

KARAKTERISTIKE RASNE STRUKTURE I KVALITETA SEMENA PASTUVA IZ NACIONALNIH DEPOA

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Rezime

Analiza strukture rase i uzrasta kao i ocena osnovnih indikatora semena u ispitivanoj populaciji od 965 pastuva iz nacionalnih depoa i trening centara je pokazala da je najveći procenat populacije predstavljen različitim rasama jahaćeg tipa - 25% (među kojima 81,4% su plemeniti polukrvni pastuvi) i pastuvi nepoznatog porekla - 21%. Najniži procenat su bili primitivni konji - oko 4%. Preostalih 50% su bili pastuvi Silesian, Malopolski i Wielkopolski. Od svih pastuva korišćenih za reprodukciju 66% je pripadalo grupi konja starosti od 5 do 15 years, zatim 16% - mladi pastuvi do 5 godina, 16% pastuva uzrasta od 15 - 20 godina i samo 2% pastuva starijih od 20 godina. Ispitivanje reproduktivne sposobnosti ovih pastuva je pokazalo da oko 6% ima veoma slab libido - obično su to mladi pastuvi. Normalni nivo pokretljivosti sperme i njene koncentracije postoji kod oko 92% pastuva. Među pastuvima sa nižim vrednostima ispitivanih faktora dominirali su primitivni i pastuvi nepoznatog porekla kao i pastuvi u uzrastu između 10 i 20 godina.

Ključne reči: pastuv, seme, rase, uzrast, nacionalni depoi

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