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# SPERM QUALITY OF THE STUD BULLS DEPENDING ON THE YEAR SEASON

**Mussabekov A.T(PhD)[1], Shamshidin A.Y(PhD)[2] and Alshinbaev O.A (PhD)[3]**

[1]Kazakh Agro Technical University S.Seifullin, Astana, Akmola region, Kazakhstan[1]
[2]Republican Center of livestock breeding JSC "ASIL TYLIK."Akmola region, Kazakhstan[2]
[3]South Kazakhstan State University M.Auezov, South-Kazakhstan region, Kazakhstan[3]

**ABSTRACT:** *The results of studying the sperm biotechnological indicator breed peculiarities of the various breed bulls on the year seasons are given.It determined that bull sperm quality is influenced by such factors as year season.*

**KEYWORDS**: Stud Bull, Sperm, Year Season, Ejaculate, Sperm Concentration.

## INTRODUCTION

Gametogenesis bulls-manufacturers is a long, multifactorial process. Formation of viable sperm depends on the inherent functional abilities of the body of the bull, and a number of exogenous factors.

One of the important factors affecting spermatogenesis is the season of the year. 2003 pointed out that the minimum volume of ejaculate produced in winter, higher - in the spring and the highest - in the spring and the highest - in the summer, in the autumn months mark a decline compared with the summer.

1997 pointed out that the sperm production-sperm donor bulls obtained in the winter, has a higher biological value than that taken in the summer. In April-September, receive a minimum number of ejaculates, and the maximum - in November-March.

Effect of temperature on the quality of sperm is considered. In their view, the optimum for spermatogenesis of bulls is a daily temperature from plus 15 to 20 ° C. 1989 conducted research on the effect of season on the indicators of sperm of bulls, we noted that the sperm activity was greatest in the autumn-winter period, and the lowest in the spring and summer season. In summer, at an ambient temperature above + 25 ° C, decreased volume of ejaculate.

Bulls-sperm donors different species can react differently to seasonal changes and produce semen, respectively, differ in quality. Similar studies in the conditions of Central Siberia have not been carried out, so we set a goal - to evaluate the quality of the semen of bulls of different breeds on the seasons of the year.

## MATERIALS AND METHODS

The object of the study was to sperm production bulls sperm donor five species: Red-and-White (41), Black-and-White (19), Red-and-White Holstein ( 8); Black Pied Holstein (5) and Simmental (3); JSC "ASIL TYLIK" belonging. Wetookintoaccount such factors as:

1) obtained by seed only one bull-producer, ml;



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2) seed obtained on average per bull ml;

3) the marriage of native seed ml%;

4) the average number of ejaculates obtained in one of the bull, ea.;

5) the average ejaculate volume, ml;

6) theaverage concentration, bn \ ml;

In winter the cows from the red-motley breed estimated 75 ejaculates, Black and White - 27, red-and-white Holstein - 17, black-and-white Holsteins - 6 and Simmental - 5 ejaculates. In the spring of 125 ejaculates evaluated bulls red and White breed, 41 - Black-and-White, 16 - a red-and-white Holsteins, 9 - Black and White Holsteins and 8 - Simmental. In the summer of bulls red-motley breed received and evaluated 111 ejaculates, Black-and-White - 40, red-and-white Holsteins - 21, Black and White - 8 and Simmental - 6. In the autumn - 98 ejaculates from bulls red and White breed, 36 - black and White, 15 - a red-and-white Holsteins, 6 - black and White Holsteins and 9 – Simmental.

The volume of ejaculate in milliliters determined dimensional glass pipette, the concentration of spermatozoa using photo electrocolorimeter. All studies were conducted in the laboratory by taking sperm of Republican Center of livestock breeding JSC"ASIL TYLIK." in the period from January to November 2015.

## RESULTS AND DISCUSSION

State Animal the study period was estimated by veterinarians as good bulls feeding diet conforms to the standards established by taking into account body weight and usage. Data obtained on sperm quality in winter, are presented in Table 1.

From this seed in winter, a large share of the bulls culled from black-and-White and Black-and-White Holstein - 22.1 and 21.4%, respectively. A good quality sperm differed Simmental bulls. (Table 1).

On average, one bull black and white breed semen was obtained more than 12.1 ml, than from black-and-white Holstein (P> 0.999), but less than 15,17 ml (P> 0.95) than from manufacturers Simmental . As a result of further investigation found that the Bulls received Simmental semen at 16.01 mL larger than bulls from black-and-white breed (P> 0.95) at 27.27 ml - black-and-white Holstein bulls (P> 0.999) and 3.44 ml - bull red-motley breed. When compared with other breeds significant differences were found. But the tendency to growth of the seed produced by the bulls of this breed in the winter obtained stably.



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**Biotechnological indicators of sperm production bulls in winter**

| Breed | Receivedseedall, ml | Seeds obtained in average per bull, ml | Marriage native sperm | | The number of ejaculates per bull, pc | Cv, % | The average volume of ejaculate, ml | Cv, % | The average concentration, billion\ml | Cv, % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ml | % | | | | | | |
| Red-motley | 1607 | 21,43± 1,44 | 315 | 19,6 | 4,76± 0,29 | 52,1 | 4,39± 0,12 | 23,9 | 1,17± 0,06 | 43,6 |
| Black-motley | 556 | 20,59± 2,59 | 123 | 22,1 | 4,85± 0,53 | 56,5 | 4,05± 0,19 | 23,9 | 0,88± 0,10 | 57,9 |
| Red-motley Holstein | 431 | 25,35± 3,37 | 57 | 13,2 | 5,59± 0,71 | 52,6 | 4,72± 0,31 | 27,3 | 1,32± 0,09 | 29,5 |
| Black-motleyHolstein | 56 | 9,33± 1,81 | 12 | 21,4 | 2,17± 0,40 | 45,2 | 4,25± 0,28 | 16,5 | 0,86± 0,19 | 53,5 |
| Simmental | 183 | 36,60± 6,90 | 24 | 13,1 | 8,20± 0,97 | 26,5 | 4,34± 0,38 | 19,6 | 1,15± 0,09 | 17,4 |

Also Simmental bulls ejaculates on the number received in the winter exceeded bulls black-motley and red-motley Holstein 3.35 (P> 0.95) and 2.61 (P> 0.95), respectively ejaculate. The lowest coefficient of variation for this indicator was also in bulls Simmental group.

As the average volume of semen per producer significant differences between the bulls of different breeds has not been established.

In winter, the average concentration of spermatozoa in 1 ml of semen ranged from breed to breed. According to this index bulls red-motley breed at 0290000000 \ ml (P> 0.95) exceeded the semen of bulls of black-motley breed and 0.69 billion \ ml (P> 0.999) Holstein black-and-white breed. Bulls black-motley breed concede on this indicator at 0.44 billion \ ml bulls Holstein red-motley group. The a verage sperm concentrations perm red-and-white Holstein son 0460000000 \ ml (P> 0.95) exceeded the semen of bulls of the same breed of black-motleybranch.

Thus, the reproductive capacity of Simmental cows was higher when compared to other breeds of bulls on the number received the seed on a bull-sperm donor, the number of ejaculates obtained at a single source. In this group, the proportion of bulls rejection of native seed wasthe lowest, but the volume of semen and sperm concentration in 1 ml was high erinthered-and-white Holstein bulls.

In the spring of cows of red-motley breed on average per sperm donor it was obtained seed is less than that of the red-and-white Holstein cattle producers in the 9.61 mL (P> 0.95) on 11,11ml (P>0.99 ) than from the Simmental, but 14.3 ml higher (P> 0.999) than from black-and-white Holstein bulls that are inferior to this index to 16.02 ml (P> 0.999) red-motley Holstein and 9, 39 ml (P> 0.999) Simmental bulls. When comparing this indicator Holstein Black and White bulls with the bulls of other breeds indicated that they were inferior to 23.91 (P> 0.999) red-motley Holstein bulls and 25.41 ml (P> 0.999) Simmental (Table. 2).



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**Biotechnological indicators of sperm production bulls in spring**

| Breed | Receivedseedall, ml | Seeds obtained in average per bull, ml | Marriage native sperm | | The number of ejaculates per bull, pc | Cv, % | The average volume of ejaculate, ml | Cv, % | The average concentration, billion\ml | Cv, % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ml | % | | | | | | |
| Red-motley | 2815 | 22,52±1,4 | 431 | 15,3 | 5,55±0,32 | 64,5 | 3,99±0,1 | 27,1 | 1,15±0,04 | 40,5 |
| Black-motley | 994 | 24,24±2,47 | 148 | 14,9 | 5,93±0,47 | 50,9 | 4,30±0,58 | 86,7 | 0,91±0,07 | 51,6 |
| Red-motley Holstein | 514 | 32,13±4,57 | 62 | 12,1 | 7,56±0,82 | 43,5 | 4,14±0,24 | 23,4 | 1,13±0,15 | 51,3 |
| Black-motleyHolstein | 74 | 8,22±2,33 | 21 | 28,4 | 2,44±0,63 | 77,0 | 3,15±0,19 | 17,8 | 0,44±0,18 | 120,5 |
| Simmental | 269 | 33,63±4,01 | 27 | 10,0 | 8,75±0,88 | 28,4 | 3,82±0,13 | 9,9 | 1,28±0,07 | 15,6 |

From cows of red-motley breed ejaculates obtained at 2.01 (P> 0.95) less than that of Holstein bulls red-motley group and 3.2 ejaculate compared to Simmental bulls (P> 0.999).

Black-motley Holstein on this indicator yielded 3.11 ejaculate (P> 0.999), red and variegated, 3.49 (P> 0.999) Black and White, 5.12 (P> 0.999) red-motley Holstein and 6, 31 ejaculate (P> 0.999) Simmental bulls.

When comparing bulls at an average volume of ejaculate found that black-and-white Holstein bulls ejaculate was less than 0.84 ml, than the red-and-white (P> 0.999), 0.99 ml, than the red-and-white Holsteins (P > 0.99), and 0.67 ml than bulls Simmental (P> 0.99). Simmental bulls for this indicator yielded 0.32 ml of red-motley bulls Holstein (P> 0.999)

The highest concentration was observed in the spring Simmental bulls 1.28 billion \ ml and lowest in black-and-white Holstein bulls 0.44 billion \ ml. When comparing the rocks on this indicator found that black-motley Holstein bulls conceded by Occupational bulls red-motley breed at 0710000000 \ ml (P> 0.999), Black-and-White 0.47 (P> 0.95) 0.69 (P> 0.99) of red-motley Holstein and 0.84 billion \ ml (P> 0.999) Simmental bulls.

Sperm of Simmental bulls sperm contained more than sperm of sperm donorblack-and-white breed.

Thus, a number of spring seed obtained as compared to the winter season has changed slightly. The number of received ejaculates per bull. From of Simmental bulls, in winter, we get more seed with a higher concentration than that of other breeds of bulls. In comparison with other breeds in the spring in Black and White bulls increased volume of ejaculate.

In the analysis of biotechnological indicators of sperm of bulls of different breeds in the summer we found that the average sperm obtained from a bull more than in the spring. On average, one bull red-motley breed semen was obtained less than 4.85 mL (P> 0.95) than bulls



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from a sulfur-and-White, 7.86 ml (P> 0.999) than that of red-motley Holstein , and 13.22 mL (P> 0.999) than from sperm donor of Simmental.

The greatest number of ejaculates in the summer, as well as in the winter and spring, was obtained from the of Simmental bulls to 4.21 (P> 0.999) (P> 0.999) than that of the red-and-white bull, 3.29 ( P> 0.999) than from black-and-white, to 3.67 (P> 0.999) than that of the red-and-white Holstein bulls, and 5.92 (P> 0.999) than from black-and-white Holstein bulls. Black-motley Holstein bulls on this indicator yielded 2.63 ejaculate (P> 0.99) bulls black-motley breed and 2.25 (P> 0.95) of red-motley Holstein.

As the average volume of ejaculate in summer observed minor variations from breed to breed. The largest volume of ejaculate was bulls red-motley Holstein - (4.68). According to this indicator are 0.52 ml (P> 0,95prevyshali bulls red-motley breed and 0.83 ml of Simmental bulls (P> 0.99), and Simmental bulls 0.67 mL (P> 0.999) inferior bulls black-motley breed.

**Biotechnological indicators of sperm production bulls in summer**

| Breed | Receivedseedall, ml | Seeds obtained in average per bull, ml | Marriage native sperm | | The number of ejaculates per bull, pc | Cv, % | The average volume of ejaculate, ml | Cv, % | The average concentration, billion\ml | Cv, % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ml | % | | | | | | |
| Red-motley | 2658 | 23,95± 1,40 | 507 | 19,1 | 5,46±0,28 | 53,4 | 4,16±0,10 | 26,2 | 1,18±0,05 | 41,5 |
| Black-motley | 1152 | 28,80± 1,78 | 192 | 16,7 | 6,38±0,36 | 35,7 | 4,52±0,14 | 19,5 | 1,19±0,04 | 23,5 |
| Red-motley Holstein | 668 | 31,81± 3,63 | 81 | 12,1 | 6,00±0,59 | 44,7 | 4,68±0,24 | 23,1 | 1,34±0,09 | 30,6 |
| Black-motleyHolstein | 125 | 15,63± 3,44 | 33 | 26,4 | 3,75±0,84 | 63,5 | 4,05±0,33 | 23,2 | 0,79±0,17 | 62,0 |
| Simmental | 223 | 37,17± 2,59 | 42 | 18,8 | 9,67±0,71 | 18,1 | 3,85±0,13 | 8,1 | 1,26±0,06 | 11,1 |

Interpedigree also observed differences in the average sperm concentration of 1 ml in the summer. The highest concentration was observed in the red-and-white Holsteins (1.34 billion \ ml), and the lowest in black-and-white bulls of the same breed - (0.79 billion \ ml)

When comparing breeds on this parameter indicated that sperm red-and-white Holstein bulls on 0.39 billion \ ml bovine semen exceeded red-motley breed (P> 0.95) and 0.55 billion \ ml (P> 0, 99) black and White Holstein bulls.

The lowest concentration of sperm in the semen of bulls was black-motley Holstein. For this indicator, they conceded bulls red and mottled on 0.39 billion \ ml (P> 0.95) for 0.4 billion \ ml Black-and-White (P> 0.95) and 0.47 billion \ ml ( P> 0.95) bulls Simmental breeds.

Thus, in the summer on the number of received seed and ejaculates per bull favorably with other breeds of Simmental bulls, but it should be noted that during this period compared to the other seasons, the proportion of marriages of native seed. Sperm red-and-white Holstein bulls



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on indicators such as the average ejaculate volume and concentration of semen, sperm superior performance bulls of other breeds.

In the autumn the number of sperm per bull decreased compared to the summer season. No significant differences in the number of ejaculates obtained has not been established between the rocks. The average volume of semen of bulls of black-motley breed of 0.5 mL (P> 0.95) was higher than that of Simmental bulls, other reliable interbreed differences in this indicator has been established (Table. 4).

**Biotechnological indicators of sperm productionbulls in autumn**

| Breed | Receivedseedall, ml | Seeds obtained in average per bull, ml | Marriage native sperm | | The number of ejaculates per bull, pc | Cv, % | The average volume of ejaculate, ml | Cv, % | The average concentration, billion\ml | Cv, % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | ml | % | | | | | | |
| Red-motley | 2485 | 25,36±1,58 | 444 | 17,9 | 5,52±0,30 | 53,1 | 4,32±0,11 | 25,9 | 1,26±0,05 | 38,1 |
| Black-motley | 1038 | 28,83±2,71 | 144 | 13,2 | 6,00±0,47 | 46,7 | 4,65±0,18 | 23,9 | 1,25±0,05 | 23,2 |
| Red-motley Holstein | 412 | 21,47±5,91 | 75 | 18,2 | 5,40±1,01 | 72,4 | 4,89±0,4 | 31,3 | 1,05±0,16 | 58,1 |
| Black-motleyHolstein | 124 | 20,67±4,49 | 27 | 21,8 | 4,50±0,76 | 41,6 | 4,60±0,57 | 30,4 | 0,93±0,11 | 27,9 |
| Simmental | 225 | 25,00±5,24 | 33 | 14,7 | 6,00±1,15 | 57,7 | 4,15±0,18 | 13,2 | 1,25±0,09 | 20,8 |

It should be noted that in the autumn decreased the amount obtained from the seed of Simmental bulls ejaculates number compared to other seasons. During this period, they observed a decrease in sperm biotech indices.

As the concentration of sperm semen of bulls of red-motley breed to exceed 0.01 billion \ ml (P> 0.95) semen of bulls of black-motley breed at 0.33 billion \ ml (P> 0.99) in black-and-white Holsteins, bulls and black-and-white breed had sperm concentrations by an average of 0.32 billion \ ml (P> 0.99) than the black-motley Holstein bulls.

Analysis of variability in all seasons of the year showed a significant variation in the number of ejaculates obtained, the average volume of ejaculate and an average sperm concentration of 1 ml. It should be noted of Simmental bulls, in which the variability of these signs all seasons of the year were lower than in other breeds that can talk about a stable reproductive ability of bulls.

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