ULST Timisoara
Multidisciplinary Conference on Sustainable Development
30-31 May 2024

CORRELATIONS REGARDING ARTIFICIAL INSEMINATION IN COWS, IN RELATION TO THE BIOLOGICAL VALUE OF SEMEN MATERIAL

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Abstract: Puberty generally occurs at a very young age, approximately 6-8 months, usually later at 8-12 months, with some variations depending on: breed, species, and management system (1,3).

In unimproved breeds with low productivity levels, heat cycles are more pronounced, especially during summer, in cows maintained on pasture, in warm shelters, with provision for exercise and good quality feed and nutrients (2,4,5). Improved breeds with significant exploitation deficiencies can lead to a decrease in the intensity of heat manifestation and ultimately fertility (8,10).

Within the northeastern region of Iași County, cattle fertility in 2022 showed a descending distribution, from the highest threshold of 77.7% at 2 years of age to the minimum value of 22.5% in cows over 9 years old.

Females aged between 2 and 5 years have an upper limit of fertility percentage ranging from 77.7% to 67.2%. In 2022, in the same category of cows, the conception rate recorded higher values than the previous year, ranging from 83.7% to 71.4%. For cows aged 9 years and older, the level of conception rate ranged from 50.0% to 22.8% (2023).

In 2022, the highest conception rate percentage in cows was recorded using semen from bull Ivan (57.3%), followed by bull Jimm (55.5%). The lowest value of 48.7% was recorded using straws with semen from bull Rufus.

For heifers in the same year, there was an increase in the percentage of gestation using semen from bull Ivan (68.1%), followed by bull Caho (62.5%), and the lowest value of (56.0%) with bull Rufus.

Keywords: cow, reproductive indices, semen.

• Introduction

• The "social position" of bulls within groups can influence their sexual activity. Dominance is expressed more strongly and consistently in older bulls (those aged 3.5 - 4 years or older) and appears to be related more to age advancement and less to body weight (12,15). It has been suggested that the effect of social interactions among bulls on herd fertility may be greater at a lower bull/female ratio than at a higher mating stress rate (13,14). Dominance effects among bulls can also influence the results obtained in libido tests (16,24).

• Dominance rank has been negatively correlated with libido in a study conducted on young bulls. If dominance and libido indeed represent different characteristics, then dominant bulls (or bulls) may reduce herd fertility both by their inability to mount females and by preventing less dominant bulls from mating (17,23). Thus, such effects are likely more evident when young bulls are placed together with older bulls in a pasture, although combining different bull genotypes in a pasture where bulls and cows are together may apparently cause similar effects .

• Material and method

• Within the veterinary sanitary district of Suceava County, frozen semen straws from bulls from the farms:
• WORLD WIDE SIRES – LTD. U.S.A. – S.C. SCHNTAL – SCHUL IMPEX S.R.L.;
• ABS – GENUS (World Leader in Bovine Genetics): "The most valuable genes for the most performing farmers.„
• The frozen semen doses used for artificial insemination in the district come from genetically valuable Holstein Friesian bulls.

• Results and discussions

In the studied district, the fertility of cows in 2022 exhibited a descending distribution, from the highest threshold of 77.7% at 2 years of age to the minimum value of 22.5% in cows over 9 years old.

Table 1
The Dynamics of Conception Rate (Rc%) in Cattle in Relation to the Age of Females in the Year 2022

Age of females	NR. COWS I.A.	Preganant Nr.	Conception rate(%)
2 year	45	35	77,7
3 year	48	33	68,7
4 year	50	34	68,0
5 year	58	39	67,2
6 year	44	27	61,3
7 year	39	23	58,9
8 year	42	23	52,2
9 year	38	17	44,4
>9 year	102	23	22,5
TOTAL	466	254	54,5

Table 2
The dynamics of Rc% in cattle in relation to the age of females in 2023

Age of females	Nr. Cows I.A	Pregnant (nr.)	Conception rate (%)
2 year	43	36	83,7
3 year	45	34	75,5
4 year	45	35	77,7
5 year	56	40	71,4
6 year	42	28	66,6
7 year	38	24	63,1
8 year	40	24	60,0
9 year	36	18	50,0
>9 year	105	24	22,8
TOTAL	450	263	58,4

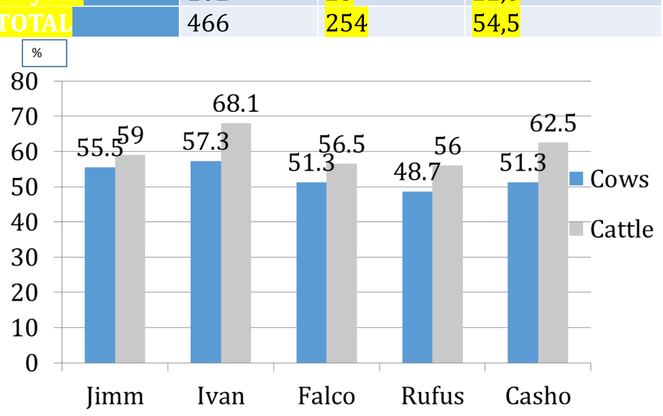

Fig. 1 Dynamics of Rc % in cows and vines according to semen used in the year 2022

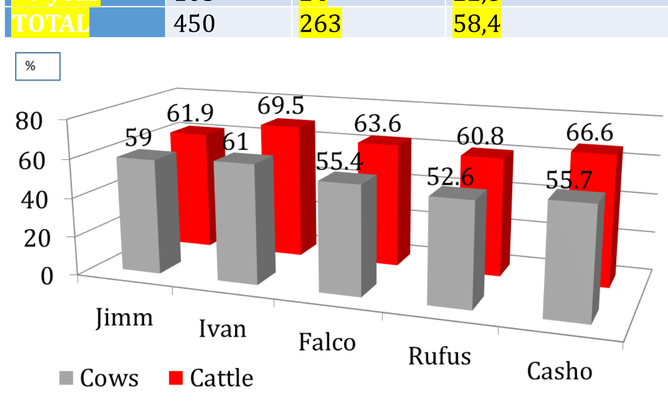

Fig. 2 Dynamics of Rc % in cows and vines depending on the semen used in the year 2023

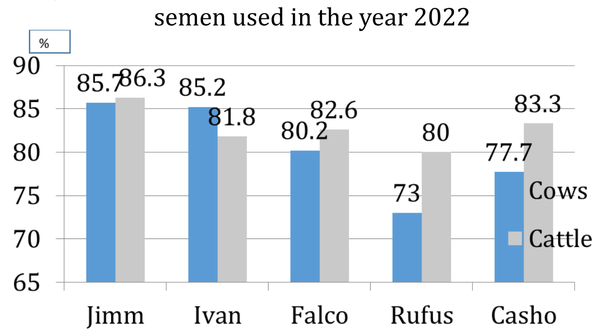

Fig. 3 Dynamics of the gestation index in cows and calves according to the semen used in the year 2022

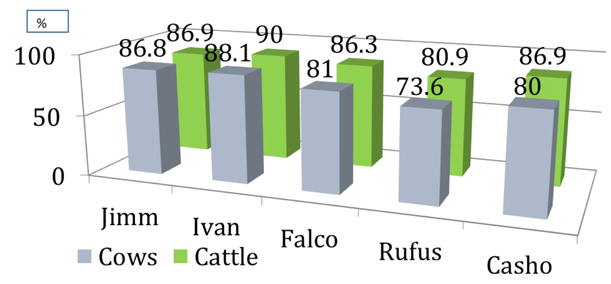

Fig. 4 Dynamics of the gestation index in cows and calves according to the semen used in the year 2023

• Conclusions

• 1.The conception rate on the population studied in 2022 was 54.5%, and in 2023 there was an additional difference of 3.9% and 58.4%, respectively.
• 2. In 2022 the pregnancy index reached a downward curve from 86.6% in females aged 2 years, to 72.5% in females aged over 9 years %.
• 3. In 2023, the gestation index in relation to the age of 2-year-old cows recorded the most significant weight of (88.3%), and in females over 9 years of age the lowest threshold was reached of (74.2 %).
• 4. Analyzing the conception rate in the dynamics of the years, respectively in 2022 depending on the semen used for sowing, it shows that in cows this index recorded a value of 52.25% and in vines 60.3%, noting a significant difference of 8, 05%.
• 5. In the second year of investigations (2023) the analysis of Rc. in relation to the sperm used for sowing, it recorded the following values: cows 56.4% and vines 64.5%.

• 6. The gestation index in the year 2022 in cows recorded the highest level of 85.7% using semen from the bull Ivan, and the lowest value of 73.0%% using semen from the bull Rufus. In the same year, the highest proportion of the gestation index was 86.3% using semen from the bull Ivan, and the lowest percentage was 80.0 using sperm from the bull Rufus.