

RESEARCH REGARDING THE DYNAMIC OF SOME REPRODUCTION INDICES FOR GREY STEPPE BREED

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Abstract

The goal of this paper is to underline the evolution of breeding indices for Grey Steppe breed, based on the fact that this breed is on the verge of extinction. The biological material was represented by a number of 48 specimens of Grey Steppe breed from three locations (SC Boviselect SRL, Neamț, SC Modern Farm SRL, Cluj-Napoca and SCDCB – Dancu, Iași).

The breeding indices were calculated based on the breeding records of the specialized units for cattle breeding and were statistically interpreted with the help of the program Microsoft Excel from the Microsoft Office package and finally the variation estimators (arithmetic average, the average standard deviation and the variation coefficient) for the analyzed parameters were established.

The average values for the gestation period fell within the recommended interval according to the literature (278 – 290 days) for all three farms.

The average duration for service- period exceeds the recommended interval by far (45 – 75 days), resulting 373 days for the second lactation and 310 days for the seventh lactation as the cattle had more time to recover between the two calving.

The period between the two calving has exceeded 365 days since the duration of service-period was longer, coming up to average means of over 500 days.

The age at the first calving had the average value above the recommended one of 24 months in the literature, due to breeding at greater ages of the specimens from Grey Steppe breed.

Key words: Grey Steppe, breeding indices, bovines

INTRODUCTION

We have few data and papers in our country with regards to the conservation of Grey Steppe breed. This aspect has to do with the lack of a certain “tradition” regarding the conservation and keeping of domestic animals on the verge of extinction and on the other hand with the lack of economic interest, that usually the Romanian breeders invest with these breeds [2].

In Romania, Grey Steppe breed, forgotten for a long time and considered to be of no importance due to the inferior productive genetic potential of the improved breeds, is once again of interest, now, when specialists approach the issue of genetic biodiversity in the animal world and follow the conservation of the genetic heritage of rustic breeds, an action coordinated by FAO. According to FAO classifications, Grey Steppe breed

belongs to the group of the populations on the verge of extinction (group E) [7].

MATERIAL AND METHOD

The work material was represented by a number of 48 cows of Sura de stepa breed from three locations: SC Boviselect SRL, Zănești, Neamț, 7 cows, SC Modern Farm SRL, Jucu, Cluj-Napoca, 3 cows and SCDCB, Dancu, Iași, 38 cows. The value from which the reproduction indices were calculated, were taken from the keep records of the current reproduction for each farm [8]. The formulas for the reproduction indices have been taken from the literature.

The age of the first calving represents the number of days or months until the first calving and it is recommended to be of 24 months [9].

The duration of gestation is the number of days since insemination until parturition and had values in the range 278 - 290 days [10].

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Table 1 The basic reproduction indices in cows [10, 13, 14]

No.	Name of indices	Symbol	Index calculation	
			formula	cartouche
1	Age at first calving	V_{pf}	$V_{pf} = Z_f - Z_n$	Z_f = day of 1 st calving Z_n = birthday
2	Gestation	DG	$DG = Z_f - Z_p$	Z_p = parturition day Z_f = calving day
3	Service period	SP	$SP = Z_g - Z_f$	Z_g = day of fecund insemination Z_f = day of the last calving
4	Calving interval	CI	$CI = SP + DG$	SP = service-period DG = gestation period

The service period represents the interval, in days, from parturition to the beginning of gestation (until the last insemination or fecund freshening) and has values between 45 - 75 days [14].

The study of this index underlines a series of data regarding the way in which the treatment of cows with advanced gestation is ensured, and especially in the puerperal period (for cows) and the way the young cattle is kept for reproduction (young female cows).

The interval between calving (CI) is a reproduction index that can be calculated only in cows with two calving and is

expressed in absolute values. It is calculated for each female cow, for the interval between two successive calving and has a mean value of 365 days [9].

RESULTS AND DISCUSSIONS

Due to the great importance of reproduction, for the economical productive results of the activity of breeding milk cows, one has to focus and work on its planning and management and pay attention also to the professional level and the special scrupulosity, that the specialists and technicians must have.

Table 2 Average values of reproduction indices in the Grey Steppe breed nucleus from SC Boviselect, Zănești, Neamț

Lactation no.	Statistic calculus	Gestation duration (days)	Service period (days)	Calving-interval (days)	Age at first calving (months)
I	n	7	7	7	7
	$\bar{X} \pm s \bar{X}$	281 ± 1.05	-	-	38 ± 8.26
	CV %	1.45	-	-	83.27
	Variation interval	277...288	-	-	17...107
II	n	4	4	4	4
	$\bar{X} \pm s \bar{X}$	284 ± 0.76	373 ± 69.38	540 ± 66.35	-
	CV %	1.04	72.09	47.57	-
	Variation interval	280...287	70...724	340...917	-
III	n	2	2	2	-
	$\bar{X} \pm s \bar{X}$	281 ± 0.91	153 ± 39.44	467 ± 33.96	-
	CV %	1.26	99.83	28.16	-
	Variation interval	278...283	45...261	374...560	-
IV	n	1	1	1	-
	\bar{X}	281	66	372	-
V	n	1	1	1	-
	\bar{X}	285	61	373	-
VI	n	1	1	1	-
	\bar{X}	287	63	375	-

In Grey Steppe cows from the farm SC Boviselect, Zănești the average age at the first calving was of 38 months, with limits between 17 and 107 months, with a decreased variability (83.27%), values, which indicate a weak reproductive maturity of Grey Steppe breed as being over the values indicated in the literature [3, 9].

The average values of the gestation's duration were situated within the recommended interval in the literature, for all the six lactations, having a reduced variability (1.04% - 1.26%) [4, 10].

The service period for the second and third lactation had average values over the variation interval of 45 - 75 days, as the cows were left to rest a greater period until freshening [14].

The interval between calving has exceeded the recommended average value of 365 days for all the six lactations [9].

The average age at the first calving in the cows from SC Modern Farm, Jucu was of 48 months, with limits between 17 and 100 months, with a clear variability (95.55%), which indicated again the reproductive lateness of Grey Steppe breed.

Table 3 Average values of reproduction indices in the Grey Steppe breed nucleus from SC Modern Farm, Jucu, Cluj – Napoca

Lactation no.	Statistic calculus	Gestation duration (days)	Service-period (days)	Calving-Interval (days)	Age at first calving (months)
I	n	3	3	3	3
	$\bar{X} \pm s \bar{X}$	283 ± 1.81	-	-	48 ± 8.32
	CV %	2.47	-	-	95.55
	Variation interval	277...295	-	-	17...100
II	n	3	3	3	-
	$\bar{X} \pm s \bar{X}$	284 ± 1.55	160 ± 28.4	443 ± 30.34	-
	CV %	2.11	68.75	26.54	-
	Variation interval	278...290	50...270	325...560	-
III	n	3	3	3	-
	$\bar{X} \pm s \bar{X}$	287 ± 1.1	95 ± 7.3	380 ± 7.75	-
	CV %	1.48	29.77	7.89	-
	Variation interval	284...290	50...140	350...410	-
IV	n	3	3	3	-
	$\bar{X} \pm s \bar{X}$	286 ± 0.26	92 ± 7.59	444 ± 29.95	-
	CV %	0.35	45	26.13	-
	Variation interval	285...287	52...135	328...560	-
V	n	2	2	2	-
	$\bar{X} \pm s \bar{X}$	287 ± 0.1	70 ± 5.16	357 ± 7.30	-
	CV %	0.35	40.41	7.92	-
	Variation interval	286...287	50...90	337...377	-

In Grey Steppe cows from the farm SC Modern Farm, Jucu, Cluj-Napoca the gestation duration was of 283 ± 1.81 days for the first calving (CV – 2.47%), 284 ± 2,11

for the second calving (CV – 2.11%) and 287 ± 1.1 days for the third calving (CV – 1.48%). The values are within the limits given in literature: 278 - 290 days [10].

The interval of the service period has registered average values that exceed the recommended limits given by the literature (45 - 75 days), with the exception of the average value for the fifth lactation [14].

The interval between calving (calving interval) had average values that have exceeded the recommended value of 365 days [9], due to the greater service period.

Age at first calving was of 48 ± 8.32 months with limits between 17 and 100 months, with a decreased variability (95.55%), values, which indicate a weak reproductive maturity of Grey Steppe breed as being over the values indicated in the literature [3, 9].

Table 4 Average values of reproduction indices in the Grey Steppe breed nucleus from SCDCB Dancu Iași

Lactation no.	Statistic calculus	Gestation duration (days)	Service-period (days)	Calving-Interval (days)	Age at first calving (months)
I	n	38	38	38	38
	$\bar{X} \pm s \bar{X}$	273 \pm 2.17	-	-	32 \pm 1.62
	CV %	3	-	-	27.81
	Variation interval	246...290	-	-	20...57
II	n	24	24	24	-
	$\bar{X} \pm s \bar{X}$	277 \pm 2.34	235 \pm 30.85	446 \pm 18.25	-
	CV %	4.62	92.84	28.95	-
	Variation interval	245...293	30...990	275...747	-
III	n	16	16	16	-
	$\bar{X} \pm s \bar{X}$	276 \pm 2.29	250 \pm 41.25	447 \pm 26.21	-
	CV %	4.54	116.62	41.42	-
	Variation interval	250...290	35...1100	295...934	-
IV	n	15	15	15	-
	$\bar{X} \pm s \bar{X}$	278 \pm 0.87	200 \pm 25.13	399 \pm 18.82	-
	CV %	1.72	88.84	33.39	-
	Variation interval	270...288	38...700	312...790	-
V	n	11	11	11	-
	$\bar{X} \pm s \bar{X}$	275 \pm 1.91	205 \pm 22.93	417 \pm 16.61	-
	CV %	3.79	79.02	28.18	-
	Variation interval	250...290	50...600	248...598	-
VI	N	6	6	6	-
	$\bar{X} \pm s \bar{X}$	280 \pm 1.29	165 \pm 21.59	379 \pm 4.77	-
	CV %	2.52	92.53	8.92	-
	Variation interval	270...290	60...470	330...426	-
VII	N	2	2	2	-
	$\bar{X} \pm s \bar{X}$	275 \pm 1.29	310 \pm 55.50	339 \pm 4.40	-
	CV %	2.57	124.78	9.18	-
	Variation interval	270...280	37...592	317...361	-

The average age at the first calving was of 32 months with limits between 20 and 57 months, a value under other values found in different scientific papers (39 months) [1, 11, 12] but over the maximum recommended limit of 24 months [9].

The gestation period varied in the range of 273 - 280 days and was within other intervals from other studies about the same cattle breed (262 - 281 days) [1, 11, 15], but also within the recommended one in the literature (278 - 290 days) [10].

The average values for the service period are close to the ones determined in other scientific papers [1, 11, 15] but over the maximum recommended limit (75 days) [14].

CONCLUSIONS

1. The Grey Steppe breed has a low reproductive maturity, given the average values, that are much over the recommended ones for the studied cows from all three farms.

2. The gestation duration in Grey Steppe breed has similar average values to the ones registered for improved breeds.

3. In all three locations, the service period duration was greater as to the determined average values for the improved breeds.

4. The calving interval is directly influenced by the service period duration and has registered average values greater than the ones given in the literature.

5. Grey Steppe is a primitive breed, less studied due to its low productivity, a reason for which the reproductive nucleus was neglected, thus this breed is on the verge of extinction.

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