

Research concerning the reproduction indices in Semigreu of Transylvania equine function of years (2008 – 2012), and by total population

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Abstract. The values of the main reproduction indices of the Semigreu of Transylvania horses from Beclean Stud, Romania are presented and analyzed in this paper. They are reported based on the inventory data of the reproduction activity of 87 dams, recorded during 2008-2012. Based on raw data obtained from the stud inventory, the most significant reproduction indices were calculated: number of cycles/gestation, number of freshening/gestation, service-period (SP), gestation length (DG) and calving interval. The analyzed indices were determined function of years. The average values of the reproduction indices emphasize a normal evolution of the reproduction function in Semigreu of Transylvania mares. The differences, by years, between the reproduction indices are mainly resulted from the influence of several factors that differ from a year to another, as social deficiencies, technological deficiencies, etc.

Key Words: Semigreu of Transylvania, reproduction indices, equine, Beclean Stud Romania.

Introduction. Even expensive and difficult, research concerning the equine reproduction, is in development. Investigations for elucidation of important problems were carried out both worldwide and in our country. They concern: installation of sexual maturity, gametogenesis, alterations of the genital apparatus and hormonal tableau during sexual cycle, early diagnosis of gestation, parturition development, mares freshening or artificial insemination after parturition, embryonic and fetal mortality, causes and treatment of infertility (Dumitrescu 1986).

Literature supplies reliable data concerning the reproduction parameters in equine (Dumitrescu 1986; Georgescu et al 1982; Marcu et al 1987, 1996, 2007a; Mureșan et al 2005; Mureșan 2001). The research concerning the equine reproduction emphasized that the natality and fecundity of this specie are lower compared to other farm species. They think that this is determined by the morpho-physiological particularities of the specie, and also to the partial exploitation of the biological reproductive potential, both in females and males.

Material and Method. Considering some aspects of the Semigreu of Transylvania genetic consolidation process, which is developing at Beclean Stud, in this paper we record and calculate, based on raw data obtained from inventories concerning the reproduction activity developed within this stud, the most significant reproduction indices in mares: number of cycles/gestation, number of freshening/gestation, service-period (SP), gestation length (DG), calving interval, and fertility index, by calendaristic years and total population.

Research was developed during 2008 – 2012, on equine material made up of 87 Semigreu of Transylvania mares.

The raw data were processed by usual statistical methods, and the following estimates were obtained:

- average (\bar{X})
- standard deviation (s)

- coefficient of variability (V%)
- standard deviation of average (s_x).

Results and Discussion. Concerning the dynamics of the reproduction indices by years, we found that they differ from a year to other.

Figure 1 and table 1 show that the number of estrous cycles in Semigreu of Transylvania has the lowest value of 1.28 cycles in 2010 – 2011, while the highest value of 1.69 estrous cycles was recorded in 2009 – 2010.

The number of freshening by gestation, also differs from a year to another, thus in 2010 – 2011 it has the lowest value of 4.28, while the maximum value of 5.88 freshening/gestation was reported in 2008 – 2009.

The analyze of the service - period, gestation length and calving interval, by calendaristic years (Table 1, Figure 2) shows differences, thus: service-period recorded the maximum value during 2009 – 2010, being of 222.27 days, and minimum value, of 154.54 days, during 2008 – 2009. The gestation length is relatively constant during the studied 4 years period.

The minimum value of gestation length was reported in 2011 – 2012, being of 342.88 days, while the highest value was recorded in 2010 – 2011, of 349.50 days.

Concerning the calving interval, we recorded a similar evolution compared to service-period. The minimum value of 502.46 days was recorded during 2008 – 2009 and the maximum value of 569.12 days, during 2009 – 2010.

The lowest variability was reported for gestation length. It is determined by the low influence of the environmental factors, and strong genetic determination (Ludu 2007).

Concerning the number of estrous cycles, freshening/gestation, service-period, and calving interval, we recorded high variability, due to the influence of the environmental factors and low genetic determination. Also, the differences of the reproduction indices, by year, are the result of the influence of several factors, which differ from a year to another, as social deficiencies, technological deficiencies, etc.

The average values of the reproduction indices, by total population, during analyzed period, emphasize a normal evolution of the reproduction function in Semigreu of Transylvania mares.

Table 2 shows, by total population, the following indices: number of estrous cycle of 1.56, number of freshening by gestation of 5.28 freshening/gestation, service-period length of 191.22 days, gestation length of 347.43 days, and calving interval of 537.99 days.

The research in the field, concerning the reproduction indices in Semigreu of Transylvania were performed by Marcu et al during 1990 – 1995, 2005 – 2007. The values of the gestation length reported by these authors, in above mentioned periods, were of 344.05 days, and 348.73 days respectively.

Table 1

The reproduction indices function of years

<i>Reproduction index</i>	<i>Period</i>	<i>N</i>	<i>Unit</i>	$X \pm s_x$	s^2	<i>s</i>	<i>V%</i>
Number of estrous cycles	2008 – 2009	26	n	1.62±0.18	0.89	0.94	58.27
	2009 – 2010	26		1.69±0.21	1.18	1.09	64.23
	2010 – 2011	18		1.28±0.11	0.21	0.46	36.07
	2011 – 2012	17		1.59±0.26	1.13	1.06	67.00
Number of freshening	2008 – 2009	26	n	5.88±1.08	30.27	5.50	93.49
	2009 – 2010	26		5.77±0.83	17.70	4.21	72.93
	2010 – 2011	18		4.28±0.83	3.98	1.99	46.62
	2011 – 2012	17		4.65±0.79	10.74	3.28	70.53
Service period	2008 – 2009	26	Days	154.54±30.54	24314.66	155.93	100.9
	2009 – 2010	26		222.27±39.72	41027.48	202.55	91.13
	2010 – 2011	18		196.28±57.62	59761.15	244.46	124.55
	2011 – 2012	17		194.47±38.43	25112.64	158.47	81.49
Gestation length	2008 – 2009	26	Days	347.92±3.43	305.51	17.48	5.02
	2009 – 2010	26		348.46±3.88	391.62	19.79	5.68
	2010 – 2011	18		349.50±1.81	58.97	7.68	2.2
	2011 – 2012	17		342.88±1.69	48.49	6.96	2.03
Calving interval	2008 – 2009	26	Days	502.46±30.96	24924.02	157.87	31.42
	2009 – 2010	26		569.12±40.44	42529.87	206.23	36.24
	2010 – 2011	18		544.94±57.12	58728.29	242.34	44.47
	2011 – 2012	17		537.35±38.87	25680.62	160.25	29.82

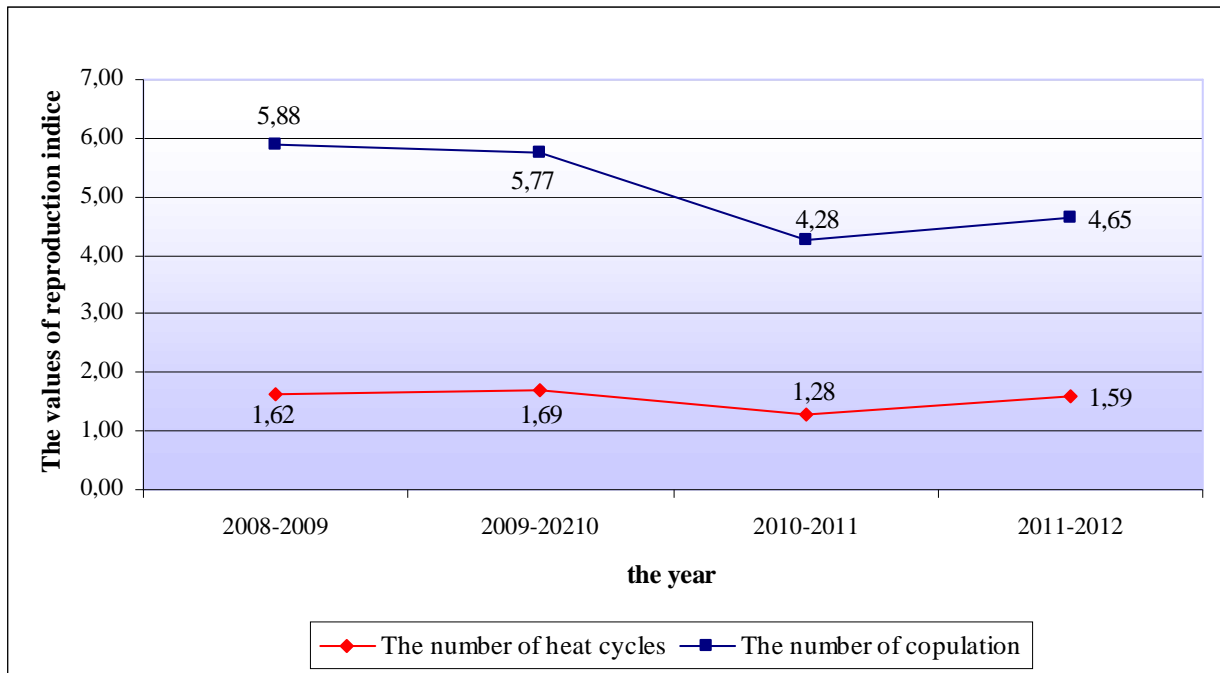


Figure 1. The dynamics of the number of the estrous cycles and number of freshening by gestation by years in Semigreu of Transylvania.

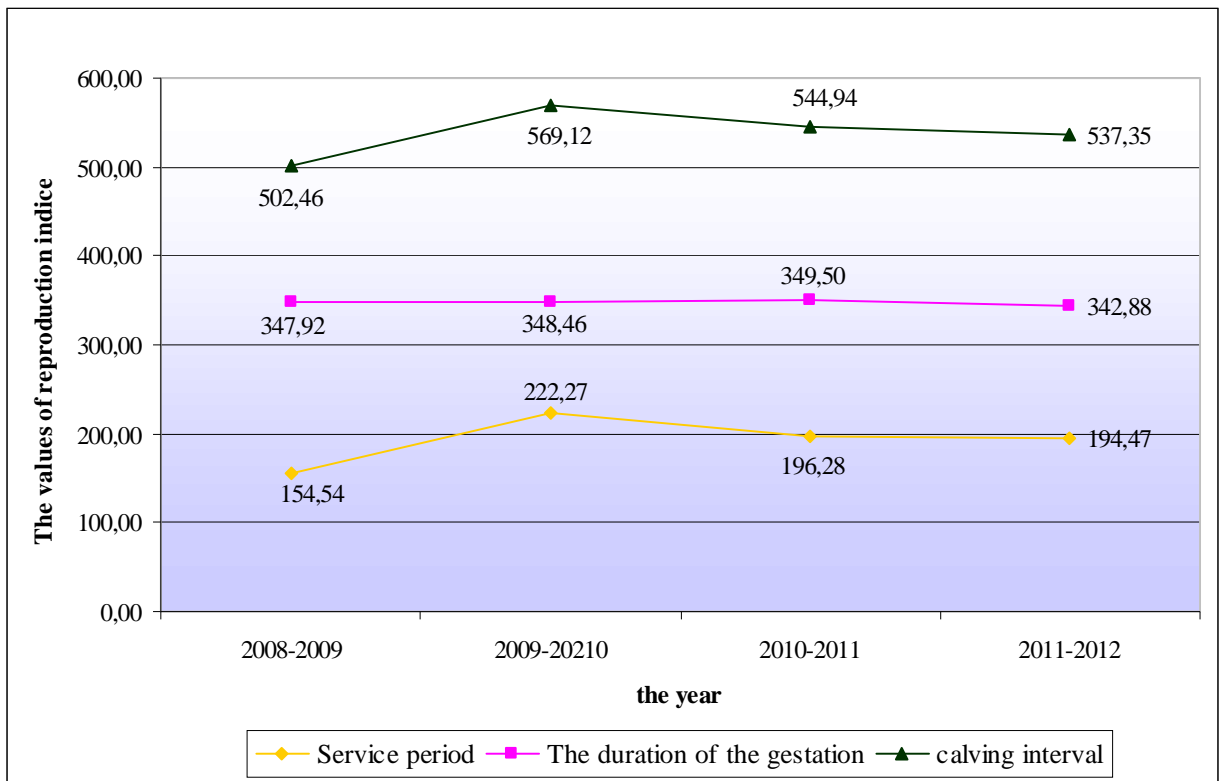


Figure 2. The dynamics of the service-period, gestation, and calving interval by years in Semigreu of Transylvania.

Table 2

The reproduction indices in Semigreu of Transylvania

<i>Issue</i>	<i>Index</i>	<i>N</i>	<i>X± sx</i>	<i>s²</i>	<i>s</i>	<i>V%</i>
Total	No. of estrum cycles	87	1.56±0.10	0.88	0.94	59.90
	No. of freshening	87	5.28±0.44	17.20	4.15	78.61
	S.P.	87	191.22±20.39	36185.87	190.23	99.48
	D.G.	87	347.43±1.62	228.71	15.12	4.35
	C.I.	87	537.99±20.53	36680.27	191.52	35.60

Conclusions. The reproduction indices at Semigreu of Transylvania equine breed, analyzed in dynamics, during a lifetime, are framed within reproduction parameters characteristic for the specie, in accordance with the findings of Marcu et al (2007) and Ludu et al (2007).

The gestation length is influenced by the environmental factors in a low extent, being strongly genetic determined.

The variability of estrous cycles, freshening by gestation, service-period, and calving interval is high enough due to the influence of the environmental factors and low genetic determination.

The differences of the reproduction indices, by years, are the result of the influence of several factors, which differ from a year to another, as social deficiencies, technological deficiencies, etc.

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