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ASSESSMENT OF REPRODUCTION AND PRODUCTIVITY INDICES OF MARES OF POLISH KONIK HORSES BREED IN THE ROZTOCZE NATIONAL PARK STUD FARM DURING 1996–2015

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Abstract. The work presents and evaluates the reproduction indices of the mares from the stud farm of Polish Konik horses bred during the years 1996–2015 in the Roztocze National Park (RNP). The studies included 46 dams and analyses of 157 breeding seasons. During the analyzed period, 124 successful coverings of mares resulted in 114 live foals. The following differentiated reproduction utilization parameters were determined: foaling rate – 78.98%, fertility rate – 72.61%, fecundity rate – 63.06%, infertility rate – 21.0%, miscarriage rate – 4.03%, rearing efficiency – 86.84% and reproductive utilization index – 79.84%. In the population under study, only 20% of mares maintain reproductive activity for 6 years and more, therefore the overall mean 3.41 for the herd breeding season is not satisfying. At present, the RNP stud farm houses the mares representing four dam families, i.e. Urszulka, Tarpanka, Traszka and Zaza. The average gestation length of all the mares in the study group was 327.53 days ranging from 306 (Tora) up to 355 days (Temida). Pregnancy duration averaged 328.8 days for colt foals and 326 days for filly foals. The results of the reproduction and productivity indices obtained in the analyzed herd were considerably affected by individual traits of a mare. A foaling season in the studied mare group is characteristic for the representatives of this species and commonly occurs between February and April (84 animals – 67.74%). The analysis of the reproduction and productivity measures of the stud farm mares in Zwierzyniec has indicated the need of drawing attention to some breeding efforts towards improvement of the breeding indices.

Key words: Polish Konik horses, mare, reproduction indices, stud farm

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INTRODUCTION

Any animal breeding is affected by factors dependent on genetic and environmental conditions. The properly conducted breeding work as the key component of progress allows to obtain good results in animal utilization and production efficiency which in turn, influence the economic effects of the animal breeding centers [Górecka et al. 2005, Sobczuk 2005, Balińska et al. 2007].

The Polish Konik horse breeding in the Roztocze National Park (RNP) area has been carried out since 1984 when the first herd comprising a stallion and 4 mares was introduced to the reserve enclosed with fence [Sasimowski and Kaproń 1984]. As the herd developed and steadily increased, the reserve grounds were extended successively. In order to make most effective use of breeding potential of the material obtained in this reserve system, the second herd was set up in 1996 and managed under the stable system in the mid-forest settlement Florianka. However, the stable breeding is not limited to horse maintenance but the animals are provided with planned rearing, grooming, training saddle and cart as well as reproduction [Kaproń et al. 2013].

The objective of the research is to present and evaluate the reproduction indices of the Polish Konik horses mare group in the stable breeding system during 1996–2015 in the Roztocze National Park area.

MATERIAL AND METHODS

The research material comprised 46 mother mares maintained in the Centre for Farm Breeding of Polish Konik horse in the Roztocze National Park (RNP) over 1996–2015. The source data was obtained from the breeding records collected in the Centre, i.e. the registers of foaling and breeding dates and individual mare records. On the basis of the data, the following eight key reproductive performance indices were estimated:

1. foaling rate – the ratio of pregnant mares / number of mares bred;
2. fertility rate – the ratio of live-born foals / number of mares bred;
3. fecundity rate – the ratio of weaned foals / number of mares bred;
4. infertility rate – the ratio of barren mares / number of mares bred;
5. miscarriage rate – the ratio of miscarriages / number of pregnant mares;
6. stillbirth rate – the ratio of stillbirths / number of pregnant mares;
7. reared foals rate – the ratio of weaned foals/ number of live-born foals;
8. reproductive utilization index – the ratio of weaned foals / number of pregnant mares.

The gestation length was determined considering the seasons of reproductive utilization of a mare and its belonging to a dam breeding line. On the grounds of

the parturition dates, foaling time distribution during the year was established and presented.

The obtained results were analyzed statistically calculating the means, standard deviation, minimum and maximum values using the Statistica 10 software package.

RESULTS

Table 1 summarizes the reproductive utilization parameters of the mares over the years 1996–2015 (breeding/foaling seasons). During this 19-year stable breeding period, 46 mares were studied and 157 reproductive utilization seasons analyzed. As a result of 124 efficient matings, the mares delivered 114 live foals. There were noted 33 cases of barrenness, 5 miscarriages and 5 stillbirths.

Table 2 and 3 present the reproductive performance and average reproduction indices determined as well as average gestation length dependent on the number of breeding seasons of mares.

The most numerous mare group, over 60%, included those used for reproduction for 1 or 2 seasons (Table 2) that gave birth to 37 foals (over 29% of all foals born). The mares reproductively active for 3–5 seasons accounted for 19.57% of all mothers (9 specimens) and produced 27 foals (21.77%). The highest number of foals (60 animals, i.e. over 48% of all born) was recorded for the mares used for reproduction from 6 up to 11 seasons and these 9 dams constituted 19.56% of all mother mares.

The mares active reproductively for 2 (11 specimens) and 5, 6, 10 seasons were characterized by substantial barrenness as demonstrated by the infertility rates calculated for these groups – from 25.00 up to 50.00% (Table 3). The upper limit of the analyzed index was calculated for the mares used for reproduction for 5 seasons and its high value resulted from the individual infertility index of the Hania mare (80.00%) born in 2003 (after Hektor from Hańcza). This mare was stabled for 5 breeding seasons and only once mated efficiently. After the subsequent failed breeding attempt, in 2011 the mare was transferred to the reserve where it has given foals every year up to now.

Out of a total of 124 foals, there were 65 colts – ♂ (52.42%) and 59 fillies – ♀ (47.58%). The values of lost offspring as a result of miscarriages, stillbirths and the losses of newborns or on the first months of life were not related to the number of mare breeding seasons. Among 46 mares, 18 of them (39.1% of pregnant mares) experienced fetal loss once, one mare (2.2%) twice and two mares (4.4%) three times. One of these that lost pregnancy three times was Herpa born in 2005 (after Hart from Hańcza). Herpa was active reproductively for 8 seasons with a history of one barren season, one miscarriage and two cases of foal loss

Table 1. Reproduction indices of mares used for breeding in RNP Konik Polski stud farm in 1996–2015

Tabela 1. Wskaźniki rozrodu klaczy użytkowanych rozpłodowo w hodowli stajennej konika polskiego w RPN w latach 1996–2015

Breeding / foaling year Rok stanowienia /wyźrebienia	Mares mated Klacze kryte	Index, % – Wskaźnik, %												
		foal rate źrebności		fertility płodności		infertility jałowości		miscarriage poronień		stillbirth martwo urodzonych		reared foals odchowanych źrebiąt		reproductive utilization of herd użytkowości
	n	n	%	n	%	n	%	n	%	n	%	n	%	%
1996/1997	8	8	100.00	7	87.50	0	0	0	0	1	12.5	6	85.71	75.00
1997/1998	6	6	100.00	5	83,30	0	0	1	0	0	0	5	100.00	83.83
1998/1999	7	6	85.71	6	85.71	1	14.28	0	0	0	0	6	100.00	100.00
1999/2000	7	5	71.43	4	57.14	2	28.67	1	20.0	0	0	3	75.00	60.00
2000/2001	7	5	71.43	4	57.14	2	28.57	0	0	1	20.0	4	100.00	80.0
2001/2002	6	6	100.00	6	100.00	0	0	0	0	0	0	6	100.00	100.00
2002/2003	6	6	100.00	6	100.00	0	0	0	0	0	0	6	100.00	100.00
2003/2004	6	5	83.33	4	66.67	1	16.67	1	20.0	0	0	4	100.00	80.00
2004/2005	6	6	100.00	6	100.00	0	0	0	0	0	0	4	66.67	66.67
2005/2006	8	5	62.50	5	62.50	3	37.50	0	0	0	0	5	100.00	100.00
2006/2007	9	6	66.67	6	66.67	3	33.33	0	0	0	0	4	66.67	66.67
2007/2008	11	10	90.91	10	90.91	1	9.09	0	0	0	0	7	70.00	70.00
2008/2009	8	6	75.00	4	50.00	2	25.00	0	0	2	33.3	4	100.00	66.67
2009/2010	11	7	63.63	6	54.55	4	36.36	0	0	1	14.2	6	100.00	85.71
2010/2011	9	8	88.89	6	66.67	1	11.11	2	25.0	0	0	6	100.00	75.00
2011/2012	9	6	66.67	6	66.67	3	33.33	0	0	0	0	5	83.33	83.33
2012/2013	8	6	75.00	6	75.00	2	25.00	0	0	0	0	6	100.00	100.00
2013/2014	13	9	69.23	9	69.23	4	30.77	0	0	0	0	7	77.78	77.78
2014/2015	12	8	66.67	8	66.67	4	33.33	0	0	0	0	5	62.50	62.50
Total Łącznie	157	124		114		33		5		5		99		
$\bar{x}$	8.26	6.53	78.98	6.0	72.61	1.7	21.00	0.2	4.03	0.2	4.03	5.21	86.84	79.84
SD	2.16	1.43		1.6		1.4		0.5		0.5		1.31		

aged more than three days. The information is illustrated in Table 3 which presents the following parameters obtained in this group: fertility (75.0%), fecundity (50.0%) and foal rearing (66.67%).

Mean gestation length of 46 analyzed mares and 119 foalings was 327.53 days and ranged between 306 and 355 days (Table 3). The shortest pregnancy periods were reported for the Moczarka mare born in 1995 (after Kordon, from Matnia) whose reproductive activity was maintained for 7 breeding seasons. After the first failed pregnancy in 1998 (abortion on 224 day), Moczarka reared 6 foals (2 colts and 4 fillies) and average duration of gestation was 317.67 days ($\pm$10.11). The longest pregnancy resulting in live foal delivery was 345 and 355 days with average 350.0 days ($\pm$7.07) recorded for the Temida mare born in 1997 (after Nor, from Teina).

Table 2. Reproductive performance of mares in relation to number of breeding seasons

Tabela 2. Produkcyjność rozpłodowa klaczy w zależności od sezonów użytkowania

Years/seasonsof reproductive utilization Lata/sezony użytkowania rozpłodowego	Mares mated Klacze kryte		Barren mares Klacze jałowe	Foals – Źrebięta							
	n	%	n	n	%	♂	♀	aborted poronione	stillborn martwo urodzne	died padłe	weaned odsadzone
1	8	17.39	0	8	6.43	3	5		1	1	6
2	20	43.48	11	29	23.39	16	13	1	2	5	21
3	2	4,35	1	5	4.03	2	3			1	4
4	5	10.87	3	17	13.71	10	7	1			16
5	2	4.35	5	5	4.03	2	3	1			4
6	2	4.35	3	9	7.26	6	3			2	7
7	3	6.52	1	20	16.13	10	10	1	1	3	15
8	1	2.17	1	7	5.65	7	0	1		2	4
10	1	2.17	4	6	4.84	4	2				6
11	2	4.35	4	18	14.53	12	6		1	1	16
Total – Łącznie	46	100.00	33	124	100.00	65	59	5	5	15	99

Table 3. Reproductive utilization indices and mare gestation length in relation to number of breeding seasons

Tabela 3. Wskaźniki użytkowania rozpłodowego oraz długość trwania ciąży klaczy zależnie od sezonów użytkowania

Years/seasons of reproductive utilization Lata/sezony użytkowania rozpłodowego	Index, % – Wskaźnik, %					Gestation length, day Długość ciąży, dni		
	fertility płodności	fecundity plenności	infertility jałowości	reared foals odchowanych źrebiąt	reproductive utilization of herd użytkowości rozpłodowej stada	Average (±) Średnia (±)	min.	max.
1	87.50	75.00	0.00	85.71	75.00	330.50 (4.7)	317	339
2	65.00	52.50	27.50	80.77	72.41	328.08 (12.3)	306	355
3	83.33	66.67	16.67	80.00	80.00	323.40 (10.9)	310	339
4	80.00	80.00	15.00	100.00	94.12	332.79 (11.5)	318	353
5	40.00	40.00	50.00	100.00	80.00	335.00 (7.2)	329	343
6	75.00	58.33	25.00	77.78	77.78	329.33 (7.4)	317	343
7	85.71	71.43	4.76	83.33	75.00	324.22 (8.2)	309	338
8	75.00	50.00	13.00	66.67	57.14	316.29 (6.0)	311	327
10	60.00	60.00	40.00	100.00	100.00	328.57 (8.5)	319	341
11	77.27	72.73	18.00	94.12	88.89	328.06 (4.5)	320	337
$\bar{x}$	72.61	63.06	21.00	86.84	79.84	327.53 (9.61)	306	355

Table 4 gives the reproduction indices, gestation length along with the dam lines to which the studied mares belong. In the RNP stud farm, four following female lines are maintained (according to the numbers of representatives): Traszka (20 specimens), Zaza (13), Urszulka (7) and Tarpanka (5). Lines of Karolek's

mare was represented by one mare originating from the Polish Academy of Sciences Experimental Farm in Popielno – Jedwabna, born in 1986 (after Niżowiec, from Jedyna). During 5 reproductive utilization periods spanning the years 1996–2000, Jedwabna produced 3 foals (1 colt and 2 fillies) and none of them was qualified for further breeding; one pregnancy lost (filly) was reported. In the 2014/2015 breeding season, the families were represented by 4 breeding mares of the Traszka line and the Urszulka line, 2 mares of the Zaza line and Tarpanka. Mean pregnancy length ranged from 325.4 days for the Zaza family (309 min – 346 max) up to 331.0 days for Tarpanka (319–350) and Karolka (321–343). The average gestation length was similar for colt and filly foals, however a colt foal pregnancy was generally longer by 2.5 days. Inverse relationships were noted in the individual analysis of the Urszulka, Tarpanka and Karolka line (Table 4).

Table 4. Average reproduction indices and mare gestation length regarding mare belonging to dam line

Tabela 4. Średnie wskaźniki rozrodu oraz długość ciąży klaczy z uwzględnieniem przynależności do linii żeńskich

Dam line Linie żeńskie	Mares mated Klacze kryte	Season Sezony	Mares in foal Klacze źrebne	Index – Wskaźnik, %					Gestation length, day Długość ciąży, dni		
	n	n	n	fertility płodności	fecundity płenności	infertility jałowości	reared foals odchowanych źrebiąt	reproductive utilization of herd użytkowości rozpłodowej stada	♂	♀	Total Łącznie (±)
Traszka	20	63	53	76.19 Abc	63.49 ab	15.87 AB	83.33 Ab	75.47 aB	329.3	327.3	328.4 (9.1)
Zaza	13	51	37	68.63 AD	58.82 acD	27.45 AC	85.71 C	81.08 aC	329.2	321.3	325.4 (10.5)
Urszulka	7	18	15	77.78 Def	66.67 c	16.67 Cd	85.71 D	80.00 D	324.7	326.7	325.5 (9.4)
Tarpanka	5	20	15	70.00 be	70.00 bD	25.00 Bd	100.0 ACD	93.33 BCDE	330.6	331.3	331.0 (8.6)
Karolka	1	5	4	60.00 cf	60.00	20.00	100.0 b	75.00 E	329.0	332.0	331.0 (11.1)
Total Łącznie	46	157	124	72.61	63.06	21.00	86.84	79.84	328.8	326.0	327.5 (9.61)

Significance of differences in columns denoted by the same letters: a, b… at $P \leq 0.05$; A, B… at $P \leq 0.01$.
Istotności różnic w kolumnach oznaczone tymi samymi literami: a, b… przy $P \leq 0{,}05$; A, B… przy $P \leq 0{,}01$.

The yearly distribution of foaling of the mares in the stud farm is presented in Figure 1. The highest birth rate was determined in March (27.42% – 34 units), February (24.19% – 30 units) and April (16.13% – 20 units), altogether, over 67% of all the foalings. Two miscarriages (1.61% of parturitions) were registered in November.

DISCUSSION

In each study year, a breeding season was characterized by varied reproduction parameters (Table 1). The number of mares intended for reproduction at each season oscillated from 6 up to 13 animals, that is 8.26 as the annual mean. Considering the number of foals produced throughout the 19-year stable breeding period, 6.53 foals were born each year on average. The foaling rate for the Polish Konik horses herd under study ranged from the minimum 62.5% (2005/2006 breeding season) up to the maximum 100.0% (5 seasons) with the overall mean 78.98% (Table 1). Similar seasonal variation of this index was noted in the herd of Polish Konik horses mares in Sieraków (66.6–100.0%), Dobrzyniewo (36.4––100.0%) and Kobylniki (57.6–88.5%) with overall means 83.3, 85.6, 76.1%, respectively [Balińska and Nowicka-Posłuszna 2004]. According to Geringer et al. [2001], foaling rate remains one of the most important indices and its value calculated for English Thoroughbred population and presented by this author was very close – 78.54%. The studies of Tischner [2002] on Thoroughbreds also confirmed the finding. Higher values of this parameter were reported by Balińska et al. [2007] who calculated it for the population of Polish Konik horse mares in the Horse Stud Farm Dobrzyniewo (86.9%).

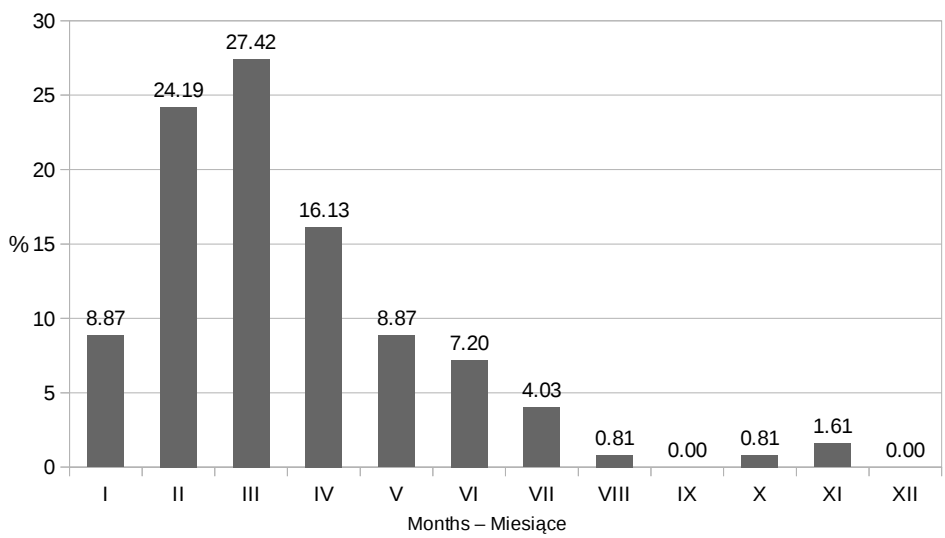

Fig. 1. Percentage distribution of foalings in 1997–2015 by month

Rys. 1. Procentowy rozkład wyźrebień w latach 1997-2015 w zależności od miesiąca

Fertility index of the analyzed mare group over the 19-year period maintained at the level of 50–100% with overall mean 72.61% (Table 1). The first fairly low

value of the parameter (50%) was determined in the 2008/2009 season when out of eight mares mated at that time, two cases of barrenness and 2 stillbirths were recorded. Nearly the same value of the fertility index was obtained by Jodkowska et al. [2001] for Wielkopolska mares, while slightly higher (74.01%) for Purebred Arabian mares by Sobczuk [2005]. A number of authors highlight beneficial effects of the reserve, harem and pasture management systems on horse fertility index [Davies Morel and Gunnarsson 2000, Bachman et al. 2003, Jaworski 2003]. Topczewska [2013] studying two herds of Hucul horses maintained under the harem system indicated that reproductive rates are likely to be affected by the environmental conditions.

Fertility index is directly dependent on losses that could be due to mare barrenness, miscarriages and stillbirths. Throughout the 19-year observation period of the Zwierzyniec stud farm, barrenness of mares was not reported in only five years (Table 1). In the other seasons, infertility percentage oscillated between 9.09–37.5% and thus, it was 21.0% on average. Similar varying values of the index were indicated by Balińska and Nowicka- -Posłuszna [2004] in the herds of Polish Konik horses in the breeding centres in Wielkopolska. The cross-sectional studies on Hucul horses by Kubacki et al. [2004] showed a positive trend of a marked and significant decrease of the infertility index in favor of an increase of other reproduction parameters.

The miscarriage and stillbirth indices studied during the 19-year research period were the same, 4.03% (Table 1), however slightly higher than those calculated for Polish Konik horses mares housed in Dobrzyniewo, that is 3.7% and 3.5%, respectively [Balińska et al. 2007]. It is challenging to establish the specific reasons causing abortion in mares as it may result from a variety of causes such as mechanical trauma (pressing against narrow passage wall, kicking) or mare body condition [Górecka and Jezierski 1997, Jaworski 2003, Balińska and Nowicka-Posłuszna 2004].

Foal rearing index (Table 1 and 3) is related to the number of potential losses – death of foals in the birth-to-weaning interval (Table 2). In the Zwierzyniec stud farm, 15 foals (8 colts and 7 fillies) died during this period. The overall foal rearing index was 86.84% and was lower by 10% than that obtained for Polish Konik horses mares in Dobrzyniewo [Balińska et al. 2007] but higher by 3.6% as compared to thoroughbred mares [Geringer et al. 2001].

Another parameter useful for the determination of selection intensity in mare herd is the reproductive utilization index (Table 1). Taking into account that the limit value for this index set in the Program of Conservative Breeding of Polish Konik horse [2012] is 72%, the overall mean achieved in the RNP stud farm 79.84% is a fully sufficient value.

The mean utilization length of mares was 3.41 years and then 2.7 foals per mare were produced on average. The largest number of foals – 10 (6 colts and 4 fillies) was delivered by the Toksja mare after Homer-Kolczak from Trzmielina born in 1991 which was active reproductively for 11 breeding seasons in the Zwierzyniec stud farm. However, as out of farm animals, mares continue their reproductive function for the longest period of time [Jaworski et al. 1996, Wierzbowski and Kosiniak-Kamysz 1998], the aforementioned mean values can be considered low. The values obtained in the stud farm may also result from the RPN setting the goal of production of horses for breeding and of utilitarian use (saddle and cart)intended for introduction into the reserve breeding [Kaproń et al. 2013]. A higher number of reproductive utilization seasons was recorded in Polish Konik horses mares in Dobrzyniewo – 6.8 on average [Balińska et al. 2007]. In breeding horses of primitive breeds, as many authors indicate, it is vital that their maintenance conditions are close to the natural environment as that affects the length of reproductive activity [van Dierendonck et al. 2004, Jaworski and Łuczyńska 2005, Cromwell-Davies 2007, Curry et al. 2007]. The finding is consistent with the results reported by Topczewska [2013] who studied Hucul horses.

Table 4 presents the distribution of reproduction indicators in relation to mare breeding lines. From the beginning, the mares used for breeding in the stud farm in Florianka have belonged to four families. Alike the works of other authors, the reproduction parameters characterizing parental groups displayed some variation relative to the overall mean obtained in the entire herd analyzed [Wejer and Tomczyński 2001, Sobczuk 2005, Balińska et al. 2007, Topczewska 2013]. There were established significant and highly significant statistical differences between the particular mean reproduction indices and that confirmed the differentiation between the dam lines. While comparing other Polish Konik horses stud farms [Balińska and Nowicka-Posłuszna 2004, Balińska et al. 2007], the obtained productivity parameters (fertility, fecundity and foal rearing) were lower but it is noteworthy, that in the studied group the most favorable results had the mares from the family Urszulka (77.78, 66.67, 85.71%, respectively) followed by Traszka (76.19, 63.49 and 83.33%).

The mean gestation lengths (Table 3) determined in the present research, similar to the results reported by Jodkowska et al. [2001], can indicate substantial influence of individual traits of the dams analyzed. The mean for these mares was – 327.53 days of gestation which is shorter by 5.13 days than that calculated by Jaworski and Łuczyńska [2005] for the stabled group of Polish Konik horse mares in Popielno. The average duration of pregnancies summarized in Table 4 is comparable to some data reported from the Dobrzyniewo breeding centre [Balińska et al. 2007]. As for the Zaza family, the results for pregnancies that produced colts (♂) were nearly the same, i.e. 329.2 days in the Roztocze National Park (RNP)

and 329.3 days in Dobrzyniewo (D). Whereas the results for the filly (♀) foal pregnancies showed 5-day differences, that is 321.3 (RNP) and 326.35 (D). Lower values for the Urszulka family for both, colt and filly foal pregnancies were calculated in the RNP, that is 324.7 (RNP) and 332.1 (D) then 326.7 (RNP) and 335.4 (D). Altogether for this dam line, the difference was 8.6 days (RNP – 325.5; D – 334.1). Considering gestation duration for colt foals within the Tarpanka line subject to the center, there were recorded just one day differences in the pregnancy lengths: 330.6 days in the RNP and 329.6 days in Dobrzyniewo. The filly foal pregnancies were shorter in the dams from Dobrzyniewo – 323.9 days. An overall average gestation length recorded for the dams from the RNP (327.53) was found within the lower limit of values presented by Wierzbowski and Kosiniak-Kamysz [1998], i.e. 320–360 days. In the present research, the colt foal pregnancies lasted 328.8 days, whereas for filly foals – 326.0 days.

The foaling date distribution of mares, the representatives of seasonal polyestrous animals [Wierzbowski and Kosiniak-Kamysz 1998], in the stud farm and reserve breeding systems was very close. For instance, the highest birth rate in the reserve – 83.13% was recorded in the March–May interval [Jaworski 2003], while in stable-free pasture system – approximately 76.7% during April and May [Topczewska 2013]. In the present studies, the peak birth rates in the stabled mare group was noted from February to April – 67.74% (Fig. 1) and definitely, it was associated with reproductive activity of mares as well as organization and efficiency of sound reproductive management in the breeding centre.

CONCLUSION

The studies on reproductive indicators of mare from the Roztocze National Park stud farm during 1996–2015 have shown high variation of the parameters evidently dependent on a breeding season. The mean indices (foal rate, fertility, infertility) calculated in the analyzed research period, are generally close to or lower than those reported for this type of horses in literature. In the population under investigation, only 20% of mares are active reproductively for more than 6 years, therefore the overall mean for the whole herd – 3.41 in a breeding season is not satisfactory. Currently, the representatives of four mare families are housed in the RNP stud farm, i.e. Urszulka, Tarpanka, Traszka and Zaza. The mares from the first dam line achieved the highest reproduction indices. The average gestation length for the entire group of the mares analyzed was 327.53 days ranging from 306 (Tora mare, Traszka line) up to 355 (Temida mare, Traszka line) and the value is found within the limits for horses. The foaling period determined in the mare group studied is characteristic for the representatives of the species and it occurs predominantly between February and April (84 units – 67.74%). The analysis of

the reproduction and productivity indices in the mare stud farm in the Roztocze National Park (RNP) has highlighted the need for making some breeding efforts to increase the breeding parameters. In the first place, that pertains to extension of the reproductive utilization season of mares.

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OCENA WSKAŹNIKÓW ROZRODU I PRODUKCYJNOŚCI KLACZY KONIKÓW POLSKICH W STAJENNEJ HODOWLI ROZTOCZAŃSKIEGO PARKU NARODOWEGO W LATACH 1996–2015

Streszczenie. Przedmiotem pracy jest przedstawienie i ocena wskaźników rozrodu klaczy z grupy stajennej konika polskiego hodowanych w latach 1996–2015 na terenie Roztoczańskiego Parku Narodowego. Badaniami objęto 46 klaczy matek i przeanalizowano 157 sezonów użytkowania rozpłodowego. W analizowanym okresie w wyniku 124 skutecznych pokryć klaczy otrzymano 114 żywo urodzonych źrebiąt. Wskaźniki rozrodu przyjmowały zróżnicowane następujące średnie wartości: wskaźnik źrebności – 78,98%, płodności – 72,61%, plenności – 63,06%, jałowości – 21,0%, poronień – 4,03%, martwych urodzeń – 4,03%, odchowu – 86,84% i użytkowości rozpłodowej stada – 79,84%. W badanej populacji tylko 20% klaczy użytkowana jest rozpłodowo 6 i więcej lat, dlatego ogólna średnia dla stada 3,41 sezonu nie jest zadowalająca. Obecnie w stajni RPN hodowane są przedstawicielki czterech rodzin klaczy: Urszulki, Tarpanki, Traszki i Zazy. Średni czas trwania ciąży dla całej grupy badanych klaczy wyniósł 327,53 dnia z wahaniami od 306 (kl. Tora) do 355 dni (kl. Temida). Ciąże zakończone porodem ogierków trwały średnio 328,8 dni, a klaczek 326 dni. Na uzyskane wyniki wskaźników rozrodu i produkcyjności w omawianym stadzie znaczący wpływ mają cechy osobnicze klaczy. Okres wyźrebień w badanej grupie klaczy jest charakterystyczny dla przedstawicielek tego gatunku i w większości odbywa się pomiędzy lutym a kwietniem (84 osob. – 67,74%). Dokonana analiza wskaźników rozrodu i produkcyjności stada stajennego klaczy w Zwierzyńcu wskazuje na potrzebę zwrócenia uwagi na pewne działania hodowlane w celu podniesienia ich wartości.

Słowa kluczowe: konik polski, klacze, wskaźniki rozrodu, hodowla stajenna

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