DOI: 10.21005/AAPZ2016.39.3.19

FOLIA POMERANAE UNIVERSITATIS TECHNOLOGIAE STETINENSIS
Folia Pomer. Univ. Technol. Stetin., Agric., Aliment., Pisc., Zootech. 2016, 328(39)3, 219–226

*Hanna SZCZYPUŁKOWSKA, Lidia FELSKA-BŁASZCZYK*

# SELECTING THE DATE OF MATING IN FARM MINK (*NEOVISON VISON*) FOR OPTIMIZATION OF REPRODUCTION PERFORMANCE

# WYBÓR ODPOWIEDNIEGO TERMINU KRYCIA NORKI HODOWLANEJ (*NEOVISON VISON*) W CELU OPTYMALIZACJI WYNIKÓW ROZRODU

Laboratory Animal Anatomy, West Pomeranian University of Technology, Szczecin, Poland

**Streszczenie.** Analizowano wpływ czynników hodowlanych, takich jak: długość ciąży, wiek, termin i krotność kryć na wyniki rozrodcze samic hodowlanej norki amerykańskiej (*Neovison vison*). Podczas badań obserwowano grupę 1372 samic odmiany Silverblue w okresie od 5 do 24 marca (okres kojarzeń zwierząt) oraz od 25 kwietnia do 10 maja (okres wykotów). Analizowano wyniki rozrodu samic w wieku od roku do 4 lat. Oprócz wieku do oszacowania wyników rozrodu brano pod uwagę termin pierwszego krycia i liczbę kryć oraz długość ciąży. Analizie poddano liczbę norcząt urodzonych, odchowanych oraz wielkość jałowienia samic. Wyniki badań wykazały, iż wiek, termin krycia oraz liczba pokryć samic ma istotny wpływ na długość ciąży i wyniki rozrodcze samic. Stwierdzono, że dłuższa ciąża samic pogarsza wyniki rozrodcze.

**Key words:** *Neovison vison*, reproduction, gestation length.
**Słowa kluczowe:** *Neovison vison*, rozród, długość ciąży.

## INTRODUCTION

The success of a mink breeding farm depends primarily on the reproduction performance of the animals. Parameters of reproduction, such as the number of females effectively mated by males, litter size, number of live-born per litter and number mink weaned from a litter, are the subject of the on-farm genetics works. In the period of preparation for the breeding season, during the mating, and during the pregnancy, all work on the farm are geared to provide the most optimal conditions and to achieve the best results. As soon as in November, thanks to a carefully planned selection, the best females and males from among young animals are selected for the fur quality and the origin from the most fertile dams.

Besides selection and genetics, reproduction performance is influenced by a number of factors, such as best mating date, mating replication, age of females, or climate including photoperiod during the pregnancy (Socha and Kołodziejczyk 2006; Kołodziejczyk and Socha 2012; Felska-Błaszczyk et al. 2013), or even by a proper approach by the farm staff working with the animals (Seremak et al. 2011a).

Corresponding author – Adres do korespondencji: Lidia Felska-Błaszczyk, Laboratory Animal Anatomy, West Pomeranian University of Technology, Szczecin, Doktora Judyma 14, 71-460 Szczecin, Poland, e-mail: lidia.felska-blaszczyk@zut.edu.pl

The specificity of mink reproduction, including the diapause in gestation, results in the fact that gestation length becomes a very important character, determining the litter size. ample variations in gestation length in mink are caused by the diapause, which is longer in females mated earlier in the mating season, and shorter in those mated later (Socha and Markiewicz 2002). The heat in mink occurs in March and lasts for about three weeks. During this time, oocytes maturate periodically, every 6–8 days (Wehrenberg et al. 1992). This cyclic oocyte maturation underlies the applied system of repeated mating, which brings better results of reproduction, primarily in terms of fertilization success. The second mating is usually done the day following the first attempt – within this period of time, 80% of females accept the male – the other mating being applied in seven days from the first mating.

The average litter size is 4–5 kits. Larger litters have been observed, however, even such reaching 15 to 17 young. However, the survival rate in such litters is usually very low, hence such numerous litters are basically undesirable (Felska-Błaszczyk and Sulik 2008).

Females mated within the initial period of the heat have a longer diapause, whereas those mated at the end of the heat show a shortened diapause (Seremak et al. 2009). Extending diapause implies an increased mortality and reabsorption of embryos, which leads to reduced litter sizes (Felska-Błaszczyk et al. 2010a). However, another report by Felska-Błaszczyk et al. (2010b) brings information that early mating, that is in the beginning of the heat, reduces the rate if barren females. The authors observed that the period 1 to 10 March is best for mating in terms of the percentage of infertile females. Breeders often admit females to males at the beginning of the heat cycle just to stimulate the oestrus (Felska-Błaszczyk et al. 2016).

Hence, a question, which date of mating is the optimum in terms of reproduction performance. Should female mink be mated in the beginning of the heat so as to reduce the infertility incidence at a cost that the pregnancies will be longer and smaller litters will be obtained? Or rather, should females be mated later in the heat, which will result in a shorter gestation and larger litters at a cost of lower number of whelping females?

It is difficult to give a definite answer to this question, so in this study we will try to estimate the relationship between the length of pregnancy and the performance of reproduction, in terms of age, the date and the number of matings.

## MATERIAL AND METHODS

### Farm and animals

The study was carried out on a large mink farm located in western Poland. The mink were managed in standard cages, fed an industrial feed supplied by another a feed producer. The semi-liquid feed was based on fish and chicken, composed in accordance with nutrient demands by mink, following relevant dietary recommendations for farmed mink (Zalecenia żywieniowe… 2011). The feed was distributed with a feed dispenser 3 times a day. Fresh water was available without limits from drinkers.

### Experiment

The group consisted of 1372 Silverblue females observed from 5 to 24 March (mating season) and from 25 April till 10 May (whelping season). We analysed reproduction parameters of females aged 1 to 4 years. Besides the age, the date of the first mating, number of matings, and gestation length were included in the analysis. In relation ot the first mating date, the females were distributed into the following groups:

- group A: mated from 5 to 9 March,
- group B: mated from 10 to 14 March,
- group C: mated from 15 to 19 March
- group D: mated from 20 to 24 March.

Females were mated once, twice, three times and four times.

In terms of gestation length, the animals were divided into the following groups:

- group 1: 44 – 48 days in gestation;
- group 2: 49 – 53 days in gestation;
- group 3: 54 – 58 days in gestation;
- group 4: 59 – 63 days in gestation.

In the experiment, we analysed litter size at birth, the number of weaned kits per litter and the percentage of barren females.

**Statistical analysis**

The statistical data processing was carried out using the STATISTICA 10.0 PL package. The basic statistics involved mean values. In order to estimate the significance of differences between the means, we used multivariate ANOVA in a non-orthogonal design. The analysis was based on the following linear model:

$Y_{ijkl} = m + w_i + t_j + l_k + d_l + e_{ijkl}$

where:

$Y_{jkl}$ – level of trait,
$m$ – trait mean,
$w_i$ – effect of age of the female,
$t_j$ – effect of the date of the first mating,
$l_k$ – effect of the number of matings,
$d_l$ – effect of gestation length,
$e_{ijkl}$ – random error.

## RESULTS AND DISCUSSION

The results of the study allows concluding that each of the studied parameters, ie. age, gestation length, first mating date and number of matings, had an effect on the pattern of litter size at birth and at weaning, as well as on the number of barren females.

Table 1 shows the relationship between the litter size at birth and at weaning and female's age and gestation length, and the percentage of barren females by age. Females having the shortest pregnancy (group 1) produced the most numerous litters. This was confirmed statistically at $P < 0.01$ and $P < 0.05$. There was also a lot of statistical differences (at $P < 0.01$ and $P < 0.05$) in the litter size at birth and at weaning depending on the length of pregnancy and age of the female.

Table 1. The litter size at birth and at weaning in relation to the age of the female
Tabela 1. Liczebność miotu po urodzeniu i liczba odchowanych szczeniąt w zależności od wieku samicy

| Factor<br>Czynnik | Gestation group<br>Grupa ciąży | Female's age – Wiek samicy<br>I | <br>II | <br>III | <br>IV | Mean<br>Średnia |
|---|---|---|---|---|---|---|
| Litter size at birth<br>Liczebność miotu<br>po urodzeniu | 1 | $7.71^{A}$ | $6.54^{Aa}$ | $7.35^{ABC}$ | $5.43^{A}$ | $6.83^{Aa}$ |
| | 2 | $6.88^{a}$ | $5.91^{b}$ | $5.57^{B}$ | $5.50^{B}$ | $6.11^{B}$ |
| | 3 | $7.31^{B}$ | $4.69^{a}$ | $4.62^{A}$ | $5.10^{C}$ | $6.09^{a}$ |
| | 4 | $5.77^{ABa}$ | $4.66^{Ab}$ | $5.66^{C}$ | $3.33^{ABC}$ | $5.42^{\mathbf{AB}}$ |
| Mean – Średnia | | 6.91 | 5.45 | 5.80 | 4.84 | 6.20 |
| Litter size at weaning<br>Liczba odchowanych<br>szczeniąt | 1 | $5.39^{A}$ | $5.14^{AB}$ | $5.35^{Aa}$ | $4.00^{AC}$ | $5.15^{AB}$ |
| | 2 | 4.69 | $4.76^{C}$ | $4.13^{a}$ | $3.17^{B}$ | $4.56^{C}$ |
| | 3 | 5.06 | $3.93^{B}$ | $3.51^{Ab}$ | $2.40^{CD}$ | $4.43^{Ba}$ |
| | 4 | $4.06^{A}$ | $2.95^{AC}$ | $4.66^{b}$ | $0.66^{ABD}$ | $3.70^{ACa}$ |
| Mean – Średnia | | 4.80 | 4.19 | 4.41 | 2.55 | 7.58 |
| Barren females<br>Samice jałowe [%] | | 19.39 | 19.90 | 24.12 | 25.97 | 19.40 |

A, B, C… – various capital letters denote significant differences between means within columns at $P < 0.01$ – różnice istotne pomiędzy średnimi w obrębie kolumny na poziomie $P < 0,01$ oznaczone są różnymi wielkimi literami.
a, b – lower-case letters denote significant differences between means within columns at $P < 0.05$ – małe litery oznaczają różnice istotne pomiędzy średnimi w obrębie kolumny przy poziomie $P < 0,05$.

Older females as well as those longer in gestation raised fewer kits as compared with younger females in shorter gestation. Females in shorter gestation raised more kits than those in a longer gestation. Regardless of the age, the relationship between gestation length and the litter size at birth and at weaning is very clear; along with lengthening of pregnancies, the litter size at birth and at weaning decreased. Observable is also the increase in the number of barren females with age – it was lowest in year-old females, 19.39%, whereas in 3- and 4-year-old females this rate was from 24 to 25%. Also Dziadosz et al. (2010) proved that the percentage of barren females among 3-year-old mink is higher as compared with 2-year-olds.

Our analysis revealed a clear correlation between the length of gestation and the reproduction performance parameters. A study by Felska-Błaszczyk et al. (2010a) shows that females in gestation longer than 56 days produced the least numerous litters. The authors observed in Silverblue mink a litter size decrease from 6.89 kits, born from a gestation of 44 days, to 4.78 kits, born from a gestation lasting over 56 days.

Considering the female's age and the litter size at birth, another distinct relationship can be seen. Year-old females gave birth to larger litters compared to the subsequent years of their farming. This result corresponds with those reported by Felska-Błaszczyk et al. (2010a).

Table 2 presents the analysis of litter size at birth, the number kits weaned per litter and percentage of barren females in relation to the date of the first mating, and also in relation to the length of pregnancy. It has been shown that females mated in the earliest produced larger litters. Thus, the decrease in litter sizes at birth with a later first mating was observed. This was confirmed statistically at $P < 0.01$ and $P < 0.05$. The litter size at birth was – besides the first mating date – influenced by gestation length. A linkage was also observed between mating date and gestation length; females mated in the earliest and those having shortest gestations produced larger litters.

Females mated later raised smallest litters, and also females mated in groups A and D showed a decrease in the number of kits weaned from gestations lasting 49–53 days; with a longer gestation, the number of reared offspring increases. This was confirmed statistically. Females of group C showed the greatest litter sizes at weaning at the shortest and longest pregnancy. Females of group B raised most kits from 49-53 days' gestation (gestation group 2).

Table 2. Litter sizes at birth and at weaning in relation to the date of the first mating
Tabela 2. Liczebność miotu po urodzeniu, liczba odchowanych szczeniąt w zależności od terminu pierwszego krycia

| Factor<br>Czynnik | Gestation group<br>Grupa ciąży | Mating group – Grupa krycia<br>A | <br>B | <br>C | <br>D |
|---|---|---|---|---|---|
| Litter size at birth<br>Liczebność miotu<br>po urodzeniu | 1 | 7.00 | $6.65^{Aa}$ | $7.04^{Aab}$ | $6.36^{Aa}$ |
| | 2 | 7.03 | $6.60^{B}$ | $5.79^{a}$ | $5.28^{a}$ |
| | 3 | 7.62 | $5.70^{a}$ | $4.45^{A}$ | $4.16^{A}$ |
| | 4 | 6.20 | $4.38^{AB}$ | $5.23^{b}$ | – |
| Mean – Średnia | | 6.96 | 5.83 | 5.62 | 5.26 |
| Litter size at weaning<br>Liczba odchowanych<br>szczeniąt | 1 | $6.00^{AB}$ | $4.39^{A}$ | $5.34^{A}$ | $4.95^{A}$ |
| | 2 | $3.87^{ACD}$ | $5.29^{B}$ | $4.55^{a}$ | $3.24^{A}$ |
| | 3 | $5.21^{C}$ | $4.40^{C}$ | $3.36^{Aab}$ | 4.00 |
| | 4 | $4.36^{BD}$ | $2.87^{ABC}$ | $4.36^{b}$ | – |
| Mean – Średnia | | 4.86 | 4.23 | 4.40 | 4.06 |
| Barren females<br>Samice jałowe [%] | | 11.21 | 29.71 | 24.85 | 30.35 |

A, B, C… – various capital letters denote significant differences between means within columns at $P < 0.01$ – różnice istotne pomiędzy średnimi w obrębie kolumny na poziomie $P < 0,01$ oznaczone są różnymi wielkimi literami.
a, b – lower-case letters denote significant differences between means within columns at $P < 0.05$ – małe litery oznaczają różnice istotne pomiędzy średnimi w obrębie kolumny przy poziomie $P < 0,05$.

We also present the number of barren females in relation to the first date of mating. It can be seen that the females mated earliest (group A) attained the lowest percentage of sterility, about 11%, and as this date was later, the percent increased to the level of 30% on the last date of mating (group D).

The litter size in the mink also depends on the date the first mating took place. Females mated from 5 to 9 March produced the largest litters. Similar results were reported by Socha and Markiewicz (2002). These authors report that females mated before 5 March had the most numerous litters. This was due to gestation length. In the seame report, Socha and Markiewicz (2002) stated that females whelping before 25 April produced larger litters that those whelping on 5 May. In particular, the date of the first mating was related with gestation length. Our studies demonstrated that females mated first time from 5 to 9 March and being pregnant from 44 to 48 days were able to raise the largest litters. Similar results were reported by Socha and Markiewicz (2002), who observed that the largest litters at weaning were attained by females mated up to 5 March, and the smallest – those mated after 15 March. The authors also observed that gestation length is significant for the weaning success. Felska-Błaszczyk et al. (2010a) analysed the effect of mating date and the number of matings in farmed mink in relation to reproduction performance and stated that 1–10 March is the best period for mating, and females mated after 21 March showed a higher share of barren females. The authors also observed that multiple matings reduce the percentage of barren females.

The data shown in Table 3 enable analysis of the relationship between the litter size at birth, number of raised kits per litter, percentage of barren females and the number of effective matings and gestation length. females mated 3 or 4 times produced the largest litters from gestations lasting 54 to 58 days (group 3 of gestation). Females mated once or twice produced largest litters if gestation was shortest, 44 to 48 days. These relationships were confirmed statistically at P < 0.01 and P < 0.05.

Table 3. Litter size, the number of weaned kits by number of matings
Tabela 3. Wielkość miotu, liczba odchowanych młodych ze względu na liczbę kryć

| Factor<br>Czynnik | Gestation group<br>Grupa ciąży | The number of matings – Liczba kryć<br>1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| Litter size at birth<br>Liczebność miotu przy urodzeniu | 1 | $6.62^{a}$ | $6.86^{A}$ | 7.50 | – |
| | 2 | 6.03 | $6.01^{a}$ | 6.60 | $6.85^{a}$ |
| | 3 | $5.31^{a}$ | 5.16 | 7.50 | $7.75^{A}$ |
| | 4 | 6.00 | $4.92^{Aa}$ | 7.44 | $5.81^{Aa}$ |
| Mean – Średnia | | 5.99 | 5.73 | 7.26 | 6.80 |
| Litter size at weaning<br>Liczba odchowanych szczeniąt | 1 | $4.69^{A}$ | $5.26^{AC}$ | $3.50^{AB}$ | – |
| | 2 | $4.83^{Ba}$ | $4.54^{B}$ | 4.20 | $4.39^{b}$ |
| | 3 | $3.95^{a}$ | $3.90^{C}$ | $5.00^{B}$ | $5.42^{ab}$ |
| | 4 | $3.00^{AB}$ | $3.28^{AB}$ | $5.66^{A}$ | $4.04^{a}$ |
| Mean – Średnia | | 4.11 | 4.24 | 4.59 | 4.61 |
| Barren females<br>Samice jałowe [%] | | 42.97 | 25.38 | 15.15 | 4.37 |

A, B, C… – various capital letters denote significant differences between means within columns at P < 0.01 – różnice istotne pomiędzy średnimi w obrębie kolumny na poziomie P < 0,01 oznaczone są różnymi wielkimi literami.
a, b – lower-case letters denote significant differences between means within columns at P < 0.05 – małe litery oznaczają różnice istotne pomiędzy średnimi w obrębie kolumny przy poziomie P < 0,05.

There was also a number of differences, statistically significant at P <0.01 and P <0.05, in the number of reared kits per litter – females raised more kits if they had been mated more times, however those mated once and two times raised most kits when their gestations had been shortest. Females mated three and four times raised most kits born from the longest gestations, ie. 59 to 63 days.

The number of matings had a great influence on the percentage of barren females, since it was highest (nearly 43%) in females mated once only, and the lowest (about 4.5%) in females mated 4 times.

The analysis showed that the females that had been mated four times produced larger litters. Similar results were obtained by Felska-Błaszczyk et al. (2012). In the color varieties the authors studied, all females that had been mated four times produced larger litters than females mated just once. Analyzing the number of matings and litter size at weaning, we can observe an increased number of weaned kits with the number of applied matings. This relationship has been confirmed by Felska-Błaszczyk et al. (2012). The authors claim that 4-fold repeated mating improves kit weaning success. Different results, on the other hand, were reported by Ślaska and Rozempolska-Rucińska (2011). There, a higher number of matings resulted in a lower number of weaned kits, and females mated twice attained the best weaning performance. It should be noted that Ślaska and Rozempolska-Rucińska (2011) also included the system of mating in their analysis. The authors noticed that females mated many times within a short period of time attained high reproduction performance parameters. Hence, females mated in the system 1+1+1+1 produced litters that were largest both at birth and at weaning. The system of matings applied in our studies was similar to that, in which the time span between the matings had been limited.

## CONCLUSIONS

The result of the study reveals that the age of females, the date of the first mating, the number of matings and gestation length affect the female reproductive parameters. Age and length of gestation significantly affected the number of born and reared kits per litter. Females that are longer in gestation and older ones were characterized by lower litter sizes both at birth and at weaning. The date of mating females was strongly correlated with the length of gestation. Females mated for the first time in the period from 5 to 9 March and being pregnant 44 to 48 days gave birth and raised most numerous litters. The number of matings in female mink has a significant effect on gestation length. A shorter interval between matings, as well as more matings applied, which leads to a shorter pregnancy, allows obtaining more numerous litters, both born and reared. A higher number of matings and an earlier date of the first mating reduces the number of barren females, while the delayed mating and their smaller number increases the sterility rate of the females. Female's age also has an effect on sterility; older females contain a higher percentage of barren females.

## REFERENCES

**Dziadosz M., Seremak B., Lasota B., Masłowska A., Mieleńczuk G.** 2010. Analiza wybranych cech reprodukcyjnych samic norek (*Neovison vison*) różnych odmian barwnych na przestrzeni kolejnych lat badawczych [Analysis in some reproduction traits of female mink (*Neovison vison*) depending on the colours vartieties and age] . Acta Sci. Pol., Ser. Zootechnica 9(4), 71–80. [in Polish]

**Felska-Błaszczyk L., Seremak B., Lasota B., Klecha A.** 2013. Extra light during pregnancy improve reproduction performance of mink (*Neovison vison*). Ann. Anim. Sci. 13(4), 797–805.

**Felska-Błaszczyk L., Seremak B., Lasota B., Sobczyk J.** 2012. Influence of gestation length and multiplicity of mating encounters in different color varieties of the american mink (*Mustela vison*) on selected parameters of reproductive performance. Acta Sci. Pol., Ser. Zootechnica 1 (3), 21–30.

**Felska-Błaszczyk L., Sulik M.** 2008. Wpływ długości dnia świetlnego na wskaźniki użytkowości rozrodczej norek [Effect of the length of day light on the reproduction parameters of mink]. Hod. Zwierz. Futerk. 33, 37–40. [in Polish]

**Felska-Błaszczyk L., Sulik M., Dobosz M.** 2010a. Wpływ wieku i odmiany barwnej na wskaźniki rozrodu norek (*Neovison vison*) [Effect of mink (*Neovison vison*) reproduction in relation to age and colour variety]. Acta Sci. Pol., Ser. Zootechnica 9(3), 19–30. [in Polish]

**Felska-Błaszczyk L., Sulik M., Panknin A.** 2010b. Wielkość jałowienia samic norek (*Mustela vison*) różnych odmian barwnych w zależności od różnych systemów i terminów krycia [The incidence of barren females of mink (*Mustela vison*) of various colour types in relation to systems and dates of mating]. Acta Sci. Pol., Ser. Zootechnica 9(4), 81–92. [in Polish]

**Felska-Błaszczyk L., Lasota B., Seremak B.** 2016. Conception rates in farm mink (*Neovison vison*) in relations to first mating date, age and color variety. Anim. Sci. J. 87, 873–877. DOI: 10.1111/asj.12517.

**Kołodziejczyk D., Socha S.** 2012. Mink fertility of palomino colour type and its crossbreeds with different percentages of standard mink genes. Acta Sci. Pol., Ser. Zootechnica 11(4), 53–60.

**Seremak B., Dziadosz M., Lasota B., Felska-Błaszczyk L., Pławski K.,Masłowska A., Mieleńczuk G.** 2011a. Effect of the quality of handling and care on the reproduction parameters of mink. Acta Sci. Pol., Ser. Zootechnica 10(3), 93–102.

**Seremak B., Dziadosz M., Felska-Błaszczyk L., Lasota B., Pławski K., Masłowska A., Mieleńczuk G.** 2011b. A novel arrangement of breeding sets has a positive effect on some reproductive parameters in females of the american mink (*Neovison vison*) Acta Sci. Pol., Ser. Zootechnica 10(4), 105–114.

**Seremak B., Felska-Błaszczyk L., Dworecka M., Dziadosz-Styś M., Lasota B.** 2013. Analysis of litter sizes at birth and at 7 days of nursing in mink (*Neovison vison*) of Black Velvet, Hedlung White, and Silverblue color types. Acta Sci. Pol., Ser. Zootechnica 12(2), 39–48.

**Seremak B., Lasota B., Masłowska A., Dziadosz M., Mieleńczuk G.** 2009. Analiza zależności między datą pierwszego krycia a datą implantacji i długością ciąży u norki amerykańskiej (*Neovison vison*) odmiany wild i standard [Analysis of relation between the date of first mating to the date of implantation and gestation length in wild and standard color American mink (*Neovison vison*)]. Acta Sci. Pol., Ser. Zootechnica 8(4), 41–48. [in Polish]

**Socha S., Kołodziejczyk D.** 2006. Analiza czynników wpływających na plenność samic norek standardowych i palomino [Analysis of factors affecting fertility in standard and palomino mink]. Ann. UMCS, Sec. EE 24(56), 403–408. [in Polish]

**Socha S., Markiewicz D.** 2002. Effect of mating and whelping dates on the number of pups in mink. Electr. J. Pol. Agric. Univ., Ser. Animal Husbandry 5(2), http://www.ejpau.media.pl/volume5/issue2/ /animal/art-02.html.

**Ślaska B., Rozempolska-Rucińska I.** 2011. Mating system and level of reproductive performance in mink (*Neovison vison*). Ann. Anim. Sci. 11(1), 105–113.

**Wehrenberg W.B., Kurt K.J., Hutz R.J.** 1992. Effects of equine chorionic gonadotropin on reproductive performance in anestrous mink. J. Anim. Sci. 70, 499–502.

**Zalecenia żywieniowe i wartość pokarmowa masz. Zwierzęta futerkowe.** 2011. Red. A. Gugołek. Jabłonna, PAN. [in Polish]

**Abstract**. The aim of this study was to analyse the influence of breeding factors, such as gestation length, age, dates and number of matings, on the female reproductive performance in farmed American mink (*Neovison vison*). We observed a group of 1372 females, variety Silverblue, in the period from 5 to 24 March (mating season) and from 25 April to 10 May (whelping period). We analysed the reproduction in females aged from 1 to 4 years. Apart from age, the evaluation of reproductive performance included the date of the first mating, number of matings and the length of pregnancy. We analysed the litter size at birth and at weaning, as well as the rate of barren females. The results showed that age, date of mating and the number of matings had a significant impact on the length of pregnancy and reproductive performance of the females. It was found that reproductive performance deteriorates in a longer gestation.