



УДК 619:616391:637.61:636.934.57

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PROGRESS OF PRODUCTION PERFORMANCES IN MINKS UNDER EFFECT OF PREPARATION MINKOVIT AND VITAMIN-MINERAL PREMIX PUSHNOGOLD

It has been investigated the effect of the preparation Minkovit and vitamin-mineral premix Pushnogold on the production performances of Perejaslav brown mink: breeding efficiency, actual accretion of young animals and their growth intensity, quality and size of a pelt.

Perejaslav brown mink is the best selection and breeding achievement at the Perejaslav-Chmelnitski breeding farm. It is characterized by a strong body structure, good growth that allows getting pelts of big size. An average female body length of this species ranges from 41–46 cm. It is referred to the group of medium hair animals, i.e. the length of female underfur ranges from 11–15 mm and the guard hair ranges from 21–26 cm. The hair color of this species has the following characteristics: the guard hair is of the same color throughout its body in chocolate tint. General colour of lighter and darker tones (up to black) is undesirable. The underfur has a distinctive bluish-gray colour with brown tips. The underfur colour has to coincide with the general hair colour. The length and the density of the guard hair are the same throughout its body. An important factor is the self-colour of its fur coat over its back and belly. Maculation is poorly distinctive – there are some small patches under its underlip which do not worsen the quality and don't diminish the value of its pelt. Planunynasale (nasal speculum) in these animals is brown of different intensity; the eyes are dark brown, the head, the tail and limbs are darker comparatively to the general colour of the hair-covering. An undesirable characteristic of the Perejaslav breed is a harsh contrast in the fur colour of belly and back (the back fur is darker than the belly one). In comparison with other mink breeds the Perejaslav brown mink is distinguished by its big size, excellent quality of hairiness, characterized by thick and luxurious glossy guard hair, thick underfur and homogeneous colouring of the hair coat.

The objective of this study – to investigate the effect of the preparation Minkovit and the vitamin-mineral premix Pushnogold to breeding efficiency, actual accretion of young animals and its growth rate, quality and enlargement of Perejaslav brown mink's pelts.

MATERIALS AND METHODS

The present study was carried out at the Perejaslav-Chmelnitski breeding farm (Kiev region) on young animals of Perejaslav brown mink.

The young animals were divided into two study groups and one control group, for 10 animals in each.

The mink young animals from the control group during the period of winter fur growing were fed in accordance with the basic diet (BD).

The mink young animals from the first study group during the period of winter fur growing were fed the food of the basic diet with the premix Pushnogold in the amount of 0,3 g for 1 animal, once a day within 21 days. The premix Pushnogold contains the complex of minerals and vitamins as well as antioxidant.

The mink young animals of the second study group were fed the food of the basic diet with preparation Minkovit [4, 5]. The preparation Minkovit was given to the young minks with the meal mixture by mouth in a dose of 0,06 g for 1 animal, once a day within 21 days.

The evaluation of the animal fur quality performance was carried out in the period of their maturation (before pelting) in accordance to Regulations on Recording of Animals and Rabbit Breeding [2].

The pelts were evaluated in accordance to the TOR-61 of Ukraine 603-94 «Mink Pelts Undressed» [8].

The obtained results were processed statistically using the computer program Statistica.

THE RESULTS OF THE RESEARCH AND DISCUSSION

An important characteristic in the evaluation of a mink production performance is its breeding capacity which is characterized by the amount of its kits at birth, the amount of deadborns, the amount of the survived and raised young animals before their separating.

In the result of the investigation carried out it has been found that the breeding capacity of the minks which were fed the preparation Minkovit within 21 days was 33 kits for 5 female minks while breeding capacity of the minks which were fed the vitamin-mineral premix Pushnogold within the same period and the



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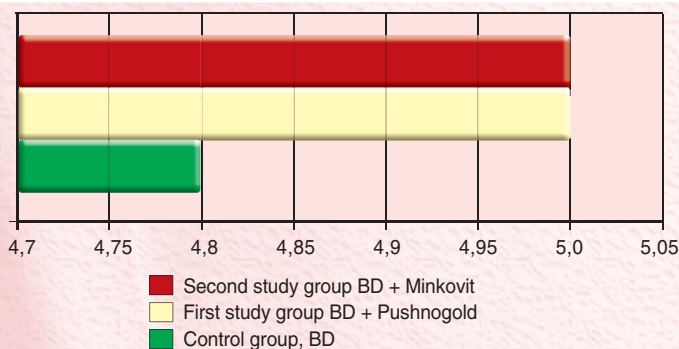


Fig. 1. Evaluation in points of hair coat quality in the minks after they were used the preparation Minkovit and the vitamin-mineral premix Pushnogold, $M \pm m$, $n=10$

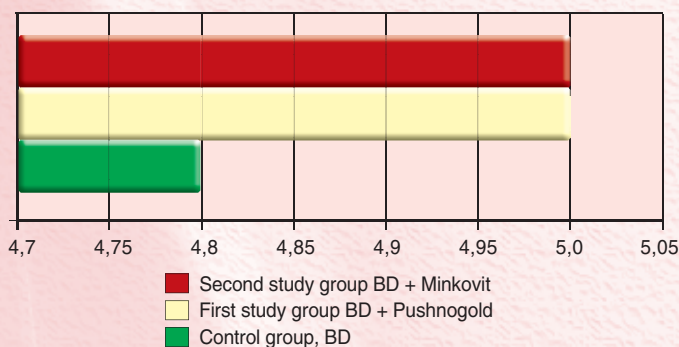


Fig. 2. Evaluation in points of hair colour in the minks after they were used the preparation Minkovit and the vitamin-mineral premix Pushnogold, $M \pm m$, $n=10$

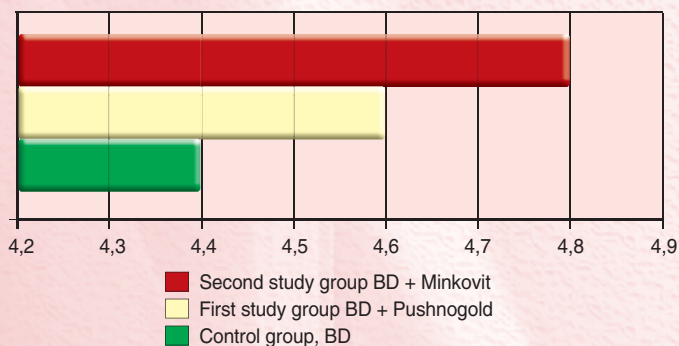


Fig. 3. Evaluation in points of fur maculation in the minks after they were used the preparation Minkovit and the vitamin-mineral premix Pushnogold, $M \pm m$, $n=10$

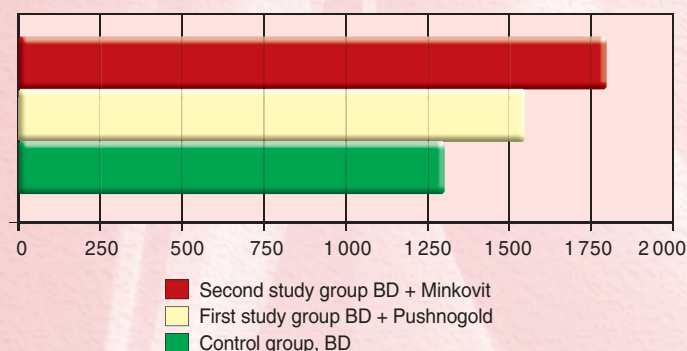


Fig. 4. Minks body weight (grams) after they were used the preparation Minkovit and the vitamin-mineral premix Pushnogold, $M \pm m$, $n=10$

minks of the control group was 31 and 29 kits for 5 female minks accordingly. The obtained findings point out the good effects of the components of the preparation Minkovit on reproductive and breeding capacity of Perejaslav brown minks.

Commercial value of animal fur pelts is determined by the quality of their hair coat. Annually within the period from November 1 till November 15 the Perejaslav-Chmelnitski breeding farm carries out mink evaluation in accordance with the Regulations on Bonitation of Minks, Foxes, Polar Foxes, Polecats, Raccoon Dogs, Nutrias of In-cage Breeding approved by the Ministry of Agrarian Policy of Ukraine No. 351 dated 25.09.2003 [2]. Animals are measured, weighed; their fur qualities are visually estimated. The results of the evaluation are entered in the register and the computer database.

The quality of hair coat was evaluated on a five-point scale. The quality of hair coat was evaluated as 5 points if the hair coat height was typical for the breeding type which is selected at the farm, the guard hair covers totally the underfur on the back, on the sides and the belly; as 4 points if the hair coat height was typical for the breeding type which is selected at the farm, the hair coat was thick and even, thinner guard hair was visible on the belly and on the sides, and the underfur was visible faintly; as 3 points if the hair coat corresponded to the breeding type by the height, but was less thick and silky, the guard hair covered totally the underfur on the back, but on the sides the underfur was visible; as 2 points if the hair coat was not thick, the guard hair was thin, the underfur on the back was visible, it was visible a slight thin place in area of the perineum. The quality of hair coat was evaluated as 1 point if a pelt did not meet the evaluation demands from 2 till 5 points.

The obtained results point to the evaluated by maximum 5-point hair coat quality in the mink young animals which were fed the preparation Minkovit and the vitamin-mineral premix Pushnogold, while the hair coat quality of the young animals of the control group made 4,8 points (Fig. 1).

In our opinion the high fur quality in the minks of the study groups is a result of the effect of the constituents of the used to them preparations, namely Zinc, Copper, Cobalt, Iodine, which stimulated the increase of hair follicles density per pelt's unit-area and prevented pathological hair loss which happens when there is its deficiency.

Quality of hair color in the minks was evaluated on a five-point scale. Colour of hair-covering was evaluated in 5 points if it had brown color with well-marked bluish-grey tint and the underfur was grey with delicate brown shading; 4 points – if it had brown hair-covering with lesser bluish-grey tint and the underfur was grey with brown tint; 3 points – if it had brown hair-covering and the underfur was grey with brown tips; 2 points – if it had brown hair-covering with yellowish and greyish brown tint; 1 – when colour of hair-covering did not meet the demands of the evaluation from 2 to 5 points.

The obtained results point to the evaluated by 5,0 points quality of hair colour in the mink young animals in the study groups while the quality of hair colour in the control group made 4,8 points (Fig. 2).

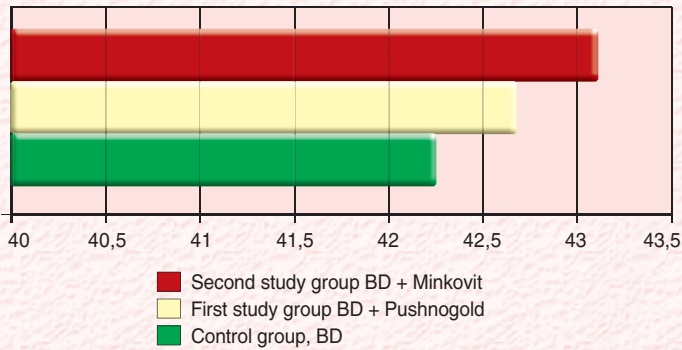


Fig. 5. Minks body length (cm) after they were used the preparation MINKOVIT and the vitamin-mineral premix PUSHNOGOLD, $M \pm m$, $n=10$

Worse quality of hair-covering in the minks of the control group may be a consequence of Copper deficiency in their organisms which affects on fur colour [1, 7, 9].

Maculation is an additional feature that is taken into account during mink bonitation was also evaluated on a five-point scale. Fur was evaluated in 5 points if there was not any maculation on; in 4 points – when maculation was poorly distinctive and was visible on a lip or there were separate clusters of white hair on a mink's belly; in 3 points – when there was a macula on a mink's belly with the width of less than 2 cm; in 2 points – when there was a macula on a mink's belly with the width from 2 till 4 cm; in 1 point (very large maculation) – when was a macula on a mink's belly part with the width of more than 4 cm.

Maculation in the minks of the control was evaluated in $4,4 \pm 0,16$ points, while in the minks of the study groups it was less marked. Especially in the minks which were fed with the vitamin-mineral premix Pushnogold maculation was evaluated in $4,4 \pm 0,16$ points, and in the minks which were fed with the preparation Minkovit it was nearly absent and made $4,4 \pm 0,16$ points from 5 that is the most targeted performance in the time of selective/breeding work at the breeding farm (Fig. 3).

One of the most important production performances is body weight which was determined by individual weighting of animals before their feeding. It has been found out that the body weight of the minks which were fed the preparation Minkovit exceed the body weight of the ones in the control group as well as the minks which were fed with the vitamin-mineral premix Pushnogold over 27% and 16% accordingly (Fig. 4). This points out that the using of the preparation Minkovit to minks gives better effect to their growth, body weight, dimensions and pelts size. It should be noted that there is a direct relation between an animal body weight and its pelt area, moreover the area of a pelt depends largely on an animal's body weight than on its body length [3, 6].

Furthermore the corresponding regularities were found out during measuring of minks' body length. Thus the length of the minks (distance from the point of the nose to the tailhead) which were fed the preparation Minkovit exceeded the length of the minks of the control group by 1,08 times (by 3,2 cm), and the length of the minks which were fed the vitamin-mineral premix Pushnogold – by 1,05 times (by 2,2 cm) (Fig. 5).

The showings of mink's body weight and length were used for evaluation of animals' size and body build using the following characteristics (Table 1).

On the base of the data obtained the minks were given the appropriate class. During its determination the following features were taken into account – body build (see Table 1), quality of hair-covering (see Fig. 1) and its colour (Fig. 2). There are 8 classes of animals in all [2] (Table 2).

It has been determined that the minks of the control and study groups were referred to 1st and 2nd classes (the highest). The tone of their colour and additional features (maculation) during class determination were not taken into account.

The obtained results testify about the most expressed positive effect of the preparation Minkovit on the showings according to which a mink class is determined. Thus, among the young animals which were used the preparation Minkovit it has been found that there were the animals of 1st class in 1,66 and 1,25 times more compared to the young animals of the control group and the first study group accordingly (Table 3).

Table 1 – Evaluation of minks' size and body build

Evaluation, points	Description of animal's size and body build	Minimal showings of body size for females	
		length, cm	body weight, kg
10	Especially big, strong	47	1,7
9	Especially big, strong	45	1,6
8	Especially big, strong	43	1,5
7	Especially big, strong	41	1,4
6	Especially big, strong	39	1,3
5	Especially big, strong	38	1,2
4	Big, strong	37	1,0
3	Medium size, strong	36	0,8
2	Small, strong	Less than 36	Less than 0,8
1	Any, weak		

Table 2 – Evaluation scale of mink fur qualities on the main features

size and body build	Features on which		Class
	quality of hair-covering	colour of hair-covering	
5	5	5	1
4–5	4–5	5	2
4–5	4–5	4	3
3–5	3–5	5	4
3–5	3–5	4	5
3–5	3–5	3	6
On condition that there is the evaluation on the basic feature – 2 points			7
On condition that there is the evaluation on the basic feature – 1 point			8

Table 3 – Showings of class rate in the minks of the study and control groups, $M \pm m$, $n=10$

Animal groups	1 st class, %	2 nd class, %
BD Control	50,00±0,24	50,00±0,24
I st study group, BD + Pushnogold	66,67±0,16***	33,33±0,02***
II nd study group, BD + Minkovit	83,33±0,02*** ^{ΔΔΔ}	16,67±0,02*** ^{ΔΔΔ}

*** $P < 0,001$ compared to the control group;

^{ΔΔΔ} $P < 0,001$ compared to the first study group.



The size of pelts was determined by measuring of their length from the midst of the eyes till a mink's tail and the width along the line that is half the length of the pelt.

In accordance to the TOR-61 [8] pelts are divided into the following: very big «A» (69–80 cm), very big «B» (64–69 cm), big (53–64 cm), medium (48–53 cm). The pelts of the control and study groups were very big «B» and big sizes.

At the same time it has been obtained from the second study group the quantity of very big pelts «B» in 30% and 12% more than from the minks of the control and first study group, accordingly.

During the evaluation of the minks production performance a special attention was paid to presence of hair defects. Defects of hair in animals are considered as damage of hair and skin which appear during their life (caused by shedding, skin diseases, mechanical damage, dirt accumulation and littering of hair because of poor feeding and incorrect keeping, during animals pelting, pelt primary processing, its storage and transportation) [10–13].

To determine the rate of defect it was used a five-point grade scale. A pelt was rated as 5 points when there were not any defects; as 4 points when there were solitary defects; as 3 points when a pelt had separate affected parts; as 2 points when a pelt had its whole surface affected. The pelts rated as 4 and 5 points were referred to normally haired, and the pelts of 2 and 3 points were referred to defective ones.

It was determined that among the minks of the control group only 20% of them had no defects of hair while 50% of pelts had slight rate of defectiveness, and 30% of pelts had medium rate of defectiveness.

The minks which were fed the vitamin-mineral premix Pushnogold have not shown any hair defects in 60% of pelts, and 40% of them have had a slight rate of defectiveness.

The minks which were fed preparation Minkovit have not shown any hair defects in 80% of pelts, and only 20% of them have had slight a rate of defectiveness. It testifies about greater effect of the components, which are included to the preparation Minkovit, on the processes of hair formation in minks.

CONCLUSIONS

Thus, the results we have obtained indicate that the using of the preparation *Minkovit* makes greater effect on mink breeding efficiency, actual accretion of young animals and its growth rate as well as on quality and enlargement of mink pelts. All of the aforesaid allows recommending the preparation *Minkovit* to breeding farms as an effective means for treatment and prevention of mineral metabolism disorders, decreasing of defects and improvement of mink hair quality.

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Одержано 8.10.2014

Вплив препарату Мінковіт і вітамінно-мінерального преміксу Пушногод на виробничі показники норок. Т.А. Палюх, Т.В. Немова, М.І. Цвіліховський

Досліджено вплив препарату Мінковіт і вітамінно-мінерального преміксу Пушногод на виробничі показники норок коричневої переяславської породи: плодючість, діловий вихід молодняку та інтенсивність його росту, якість і розмір шкурки.

Влияние препарата Минковит и витаминно-минерального премикса Пушногод на производственные показатели норок. Т.А. Палюх, Т.В. Немова, Н.И. Цвилюховский

Исследовано влияние препарата Минковит и витаминно-минерального премикса Пушногод на производственные показатели норок коричневой переяславской породы: плодовитость, деловой выход молодняка, интенсивность его роста, качество и размер шкурки. ◉

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