

THE EFFECT OF ELECTROMAGNETIC FIELD USED IN THE GOSLINGS GROWING TECHNOLOGY

EFECTUL CÂMPULUI ELECTROMAGNETIC UTILIZAT ÎN TEHNOLOGIA DE CREȘTERE A BOBOCILOR DE GÂSCĂ

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There were held a lot of different studies with different tips of irradiation till now. For having positive results it is necessary to continue the studies with most important tips of irradiation. It was demonstrated the tendency of increasing the productive indices after using the electromagnetic field in goslings growing technology. The results showed that regime 4 with the activation 45' and regime 10 with the activation during 10' had a positive influence on the goslings maintenance, fixing the increasing of these index by 1.4 % and 3.2 %. The activation leads to the improvement of productive indices during all growing experimental period. The positive effect of activation by electromagnetic field on the maintenance level of goslings was received in exp. I group, where the percentage was 94.4 %, in the ex. II group these index was 93.1 %, comparing the results with the control group it is marked a difference corresponding with 4.5 % and 3.2 %. After the goslings slaughtering was established that the quality of muscle mass in experimental groups was higher than in control group, and this index in exp. I group achieved the average 3066.7 g but in control group it was 2766.7 or by 9.8 % lower. The received results have theoretical and practical importance for increasing maintenance, growing intensity of goslings and do not have negative influence on meat chemical composition.

Key words: goslings, growing technology, electromagnetic field, maintenance.

Introduction

The geese meat production is becoming large because of the improved technologies and its biological characteristics. There are a lot of well know factors which have a positive influence on gosling's growing and their development, the physical factors could have as well a positive influence on their growing indices too, but they have to be studied, yet.

There were held a lot of different studies with different tips of irradiation till now. For having positive results it is necessary to continue the studies with most important tips of irradiation.

It is necessary to mention that a lot of authors tell about the positive influence of different tips of irradiation, after the study there was established the biological efficiency of irradiation the turkey by ultra-violet waves. There was studied the chicks growing up dynamic. The irradiation stimulated the chick's development during their growing up period. There was notices the increasing tendency of the body weight, the irradiation stimulate the liver and muscle stomach at the end of embryo period. The growing intensity, the body weight of turkey chicks received from irradiation lots were higher, what had an influence on the growing percentage of their maintenance. The results showed the positive action of used irradiation [5].

There are a lot of studies with the low doses of irradiation what were held on the human body. In the developing period of human body, it has high radioactive sensibility [8].

One of the studies was dedicated to study the reaction of ovarian tissue after the irradiation. But unfortunately there is no any information what would let to tell about the low level of whole body irradiation [6].

The negative action of high doses of ionized irradiation on the breeding functions of males and females were described by a lot of authors. There was noticed that the males lost their insemination capacity after irradiation by Roentgen waves. Later there was established that the insemination capacity after irradiation depended on the level of irradiation [3].

It means that the study had to be continued.

There was studied gamma-irradiation in embryo period. There were noticed some changes of blood indices at the checks. The received results established the efficiency of low gamma irradiation waves used in poultry technologies [4].

The studies showed that the electromagnetic field had different influence on the biological organisms [7].

The positive results of the scientific study about the influence of the magnetic field were held in different fields but less in poultry. It is known that the in poultry technologies are successfully used the irradiation what were mentioned before.

Our studies what were held before these with the electromagnetic field in the hatchery technology showed the indices increasing and made us to study the influence of this factor.

The electromagnetic waves can have as well an influence on biological processes. The penetrating depth of the electromagnetic waves in biological tissues depends on the absorption capacity of tissues energy, which is determined by the tissues structure and by the frequency of the electromagnetic waves [2].

Materials and Methods

As an object of the study were the goslings of Cubaneze breed and electromagnetic field by formed installation called – Biomag.

The electromagnetic field generated by the installation is formed after impulsing of the electric current variable in time, which is spread by several electrical cables.

The installation has ten regimes of activation. In the experience we used two regimes: nr.4 and nr.10.

All the groups were formed accordingly to analogy method of the groups which was described by Alexandrov V. [1]. The goslings were selected accordingly to their outward, development, body weight, down condition. The study was held from one day to 12 weeks of age. All goslings were grown up and fed in the same conditions accordingly to the technology [9].

At the final of growing period there were slaughtered tree goslings from each group. After the slaughtering there was analyzed the meat chemical composition.

The goslings were activated by electromagnetic field for choosing best regime of activation.

Results and Discussions

The evidence of maintenance level was held at different age of growing up period; the resultants of the maintenance level are shown in table 1.

Table 1

The maintenance of goslings at different stages of age, %

Indices	The number of goslings	Gosling's maintenance, %			The average during growing period
		their age, weeks			
		4	6	8	
Control group	25	80.0	95.0	94.7	89.9
Experimental I group	25	92.0	95.6	95.5	94.4
Experimental II group	25	84.0	95.2	100	93.1

The positive effect of activation by electromagnetic field on the maintenance level of goslings was received in exp. I group, where the percentage was 94.4 %; in the exp. II group these index was 93.1 %, comparing the results with the control group it is marked a difference corresponding with 4.5 % and 3.2 %.

After the goslings slaughtering was established that the quality of muscle mass in experimental groups was higher than in control group, and this index in exp. I group achieved the average 3066.7 g but in control group it was 2766.7 g or by 9.8 % lower.

It was studied the slaughtering output of the goslings, and it was determined that the higher index was registered in exp. I group, the average being 78.9 % or by 2.04 % higher than in control group.

The indices of slaughtering output are shown in figure 1.

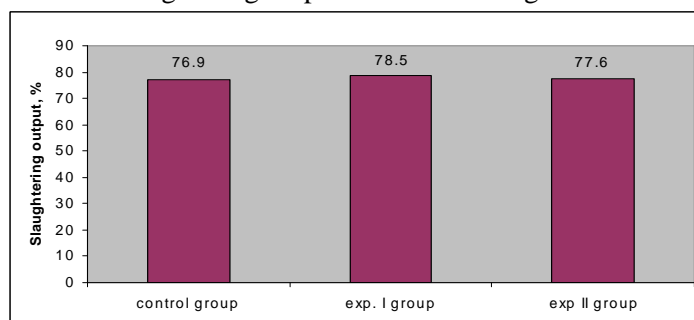


Fig. 1 Slaughtering goslings output, %

Studying the meat chemical composition of slaughtered goslings there was not noticed some noticeable differences between analyzed indices, there was just a little difference between water quality in the exp. I group being 73.92 %, but in the exp. II group it was 74.10 %, and in control group – 74.02 %.

The growing evidence of goslings consisted in the determination of the growing indices during the experimental period.

The results showed that the maximal growing indices were obtained in exp. I group, where the absolute growing gain during the experimental period was higher than in control group by 8.9 %, in the same average of daily gain being higher by 8.9 %, in exp. II group these indices were better to compare with control group corresponding by 3.38 % and 3.37 %.

In both experimental groups the relative gain had a growing tendency.

The slaughtering output was received in exp. I group 78.5, in exp. II group the level was 77.6 % or by 1.6 % and 0.7 % higher than in control group.

The indices of growing results of activated goslings by electromagnetic field are shown in table 2 and 3.

Table 2

The growing indices of activated goslings ($\bar{X} \pm S\bar{x}$)

Indices	The average of body weight, g			
	the age, weeks			
	one day age	4	8	12
Control group	107.48±0,94	1311.7±5.10	2890.31±6.32	3597.38±5.47 ***
Exp. I group	107.56±0.36	1470.52±2.86 ***	3020.7±6.98 ***	3907.60±12.53 ***
Exp. II group	107.0±0.34 ***	1479.76±2.52 ***	3010.0±10.18 ***	3715.0 ±13.28 ***

The authentic level *** B ≥ 0.999

Table 3**The gain during experimental time ($\bar{X} \pm S\bar{x}$)**

Indices	The gain during experimental time			Day average in % to control group
	absolute, g	the average per day, g	relative, %	
Control group	3489.9±5.29	41.55±0.06	97.01	100
Exp. I group	3800.04±12.55 ***	45.24±0.41 ***	97.25	108.90
Exp. II group	3608.0±13.09 ***	42.95±0.16 ***	97.12	103.37

The authentic level *** B \geq 0.999

There was established the chemical composition of slaughtered goslings. The results are shown in next table 4.

Table 4**The chemical composition of gosling's meat irradiated by electromagnetic field**

Indices	Water, %	Dry substances, %	Proteins, %	Fat, %	Mineral substances, %
Control group	74.02	25.98	18.47	6.22	0.99
Exp. I group	73.92	26.08	18.62	6.23	1.02
Exp. II group	74.10	25.90	18.62	6.23	1.01

Analyzing the dates, it is possible to tell that there were not noticed essential changes of gosling's meat.

It is possible to mention that electromagnetic field, does not have a negative influence on chemical composition of goslings meat. The chemical composition did not have a great difference as in control group the same in experimental groups. The protein concentration was higher in experimental groups. In exp. I group it was by 3.28 % and in exp. II group it was by 0.58 % higher comparing it with control group.

Conclusions

The positive effect of activation by electromagnetic field on the maintenance level of goslings was received in exp. I group, where the percentage was 94.4 %, in the exp. II group this index was 93.1 %, comparing the results with the control group it is marked a difference corresponding with 4.5 % and 3.2 %.

After the goslings slaughtering was established that the quality of muscle mass in experimental groups was higher than in control group, and this index in exp. I group achieved the average 3066.7 g but in control group it was 2766.7 or by 9.8 % lower.

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