

The data obtained provide materials for the physiological justification of the tomato light culture technology in intensive cultivation systems.

References

1. LaShelle E. Spencer Dwarf Tomato and Pepper Cultivars for Space Crops / LaShelle E. Spencer, Mary E. Hummerick, Gary W. Stutte, Takiya Sirmans // ICES, 2019. P. 164.
2. Guoting Cheng Comparing the Flavor Characteristics of 71 Tomato (*Solanum lycopersicum*) Accessions in Central Shaanxi/ Guoting Cheng, Peipei Chang, Yuanbo Shen // ORIGINAL RESEARCH ARTICLE. Front. Plant Sci. 2020.
3. Prikupets, L. B. Investigation of the effect of radiation in different ranges of the FAR region on the productivity and biochemical composition of the biomass of salad-green crops / L. B. Prikupets, G. V. Boos, V. G. Terekhov, I. G. Tarakanov // Zhurn. Lighting engineering. - 2018. - No. 5. - Pp. 6-12.
4. Tarakanov, I. G. Physiological research as a basis for the industrial technologies development of plant light culture / I. G. Tarakanov // Mir Teplits. - 2019. - No. 4. - Pp. 37-42.
5. Zubolomova, E. A. Effect of different light intensity on tomato growth and development: Abstract of PhD thesis: 44.03.05 / E. A. Zubolomova. - Cheljabinsk, 2016. - 50 p.

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THE EFFECTIVENESS OF USING A PHYTOBIOTIC PREPARATION «FARMATAN» FOR GROWING BROILER CHICKENS

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Abstract: *The zootechnical indicators of broiler chickens growing were studied when replacing feed antibiotics with the phytobiotic «Farmatan».*

Key words: *Phytobiotic, Broiler chickens, Safety, Body weight, Average daily gain, Feed's costs per unit of production .*

Poultry breeding for meat production is very important sector of agriculture, the person's consumption of poultry meat as own production per person in one year is 34 кг [2]. In the period from one day to 6-7 weeks of age, the body weight of broiler chickens increases 50-60 times. Intensive activity of all organs and mechanisms, which regulate the protective functions of the body, is caused by increased of metabolism in broiler's body, which leads to reduce the body's resistance to the effects of even minor environmental factors. This explains the relatively low resistance, as well as susceptibility to diseases that can be caused by pathogenic and opportunistic pathogens [4]. The intensification of modern industrial poultry farming as the most progressive and dynamically developing branch of agriculture, aimed to increasing productivity and increasing production volumes, inevitably leads to numerous

problems associated with poultry health [5].

In order to strengthen the natural resistance of poultry, the resistance of poultry to stress conditions, reduce the negative effects of antibiotic therapy and other necessary technological methods, improve digestion, increase productivity and safety, it is currently recommended to use probiotics, prebiotics, symbiotics, organic acids, essential oils, enzymes, phytopreventive additives in feeding broiler chickens [1, 3, 5]. In this regard, the purpose of our study was to determine the optimal rate of introduction of the phytobiotic preparation "Farmatan" into the compound feed for broiler chickens. Farmatan is a balanced combination of microencapsulated tannins with butyrate and calcium lactate, essential oils of cinnamon, oregano and chili pepper. The main active ingredient of this feed additive is an extract from sweet chestnut wood (*Castanea Sativa* Mill), obtained by water extraction without the use of chemicals. The extract contains several dozen active substances (flavonoids, organic acids and their salts, saponins, mono- and polysaccharides, essential oils, micro- and macroelements, etc.), the main of which are hydrolysable ellagitannins [1, 3, 5].

It had become known, that the ellagitannins protect the sweet chestnut wood from the effects of various microbes, bacteria, parasites and insects, therefore it is practically not susceptible to diseases. The same protective function is performed by ellagitannins in the body of animals and birds [1, 3, 5].

The principle of action of ellagotannins is that they bind to the membranes of bacterial cells and remove toxins secreted by these cells by complexation. In addition, ellagitannins block the "information link" of pathogenic microorganisms, with the help of which they can determine the size of the colony. This leads to disorientation of bacteria, receiving false information about their number and, as a consequence, to a decrease in the number of the colony [1, 3, 5]. Antibacterial, antiparasitic, anti-inflammatory, astringent and other positive properties of "Farmatan" allow it to be an effective alternative to antibiotic growth stimulants [1, 3, 5].

A scientific and economic experiment was carried out at the Verkhnevolzhskaya Poultry Farm in the Kalininsky District of the Tver Region, on broiler chickens of the Cobb-500 cross. The experiment lasted 38 days. 4 groups were formed by the method of live weight analogues. The birds of each group were kept in a separate house. The broiler chickens of the control group received the main ration adopted on the farm (with the feed antibiotic Flavomycin). Chickens of the experimental groups were given the phytobiotic "Farmatan" in the main diet instead of the feed antibiotic in the amount of: For the second experimental group - compound feed "Start" 500 g / t, "Growth" – 250 g / t, "Finish" – 250 g / t; for the third experimental group – compound feed "Start" 650 g / t, "Rost" – 325 g / t, "Finish" – 325 g / t; for the fourth experimental group – compound feed "Start" 800 g / t, "Growth" – 400 g / t, "Finish" – 400 g / t. Five days before the slaughter of broiler chickens, the antibiotic and phytobiotic were removed from the Finish compound feed. The housing and feeding conditions are the same among the four groups of the experiment, and they are compatible with the technological standards adopted for keeping crosses broilers Cobb-500. The poultry house is a single-hall building using the Deep Litter System for keeping poultry. the nipple drinking system is used for chicken in each house. All chicks were fed compound feed on full ration basis according to VNITIP's recommendations (2015). The compound feed was produced at company Smolensk KXII.

New factors of poultry feeding, such indicators as body weight, a weight gain, and feed

consumption per unit of production is of particular interest.

Zootechnical indicators of broiler growing are shown in table (1) below.

Table 1

Zootechnical indicators of growing broiler chickens when using phytobiotic «Farmatan» in feeding

Indicator	Group			
	1 control	2 Experimental	3 Experimental	4 Experimental
Birds (n)	28891	28965	28853	30929
Average body weight of 1 head, g: at one day of age	48,0	47,7	48,0	47,8
at 38 day.	2745	2712	2762	2820
Average daily gain, g%	71,0 100,0	70,1 98,7	71,4 100,6	73,0 102,8
Safety, %	97,7	96,2	97,8	98,1
Feed costs per 1 kg of gain, g %	1,52 100,0	1,52 100,0	1,47 96,7	1,48 97,4

Body weight is the main criterion by which the feeding efficiency of broilers is judged. The highest body weight of broilers at the end of the growing period (38 days) was in the 4th experimental group – 2820 g, which is 3% higher compared to the control group. The body weight of chickens in the 3 experimental group (2762 g) did not differ significantly from that of controls (2745 g). However, the bird of the 2nd experimental group, which received the lowest dosage of "Farmatan", lagged behind in growth and had a body weight less than the analogs from the control and experimental groups, by 1.2, 1.8 and 4.0%, respectively.

One of the main indicators characterizing the growth rate of young poultry is the average daily gain, which was determined by calculation based on weight measurement. Analysis of the data from table (1) showed, that chickens of the 4th experimental group, which received 800 g / t "Farmatan" in the compound feed(start), and 400 g / t in the (growth) and (finish) compound feed, had showed the highest growth rate.

The average daily gain in this group was 73 g, which is 2.8% more than in the control. The smallest average daily gain (70.1 g) was found in broilers when "Farmatan" was used in feeding in for "Start" compound feed – 500 g / t, for "Growth" and "Finish" compound feed – 250 g / t (experimental group 2). The safety of broilers in experimental groups 3 and 4, when using the phytobiotic preparation "Farmatan", was 0.1 and 0.4% higher than in the control group. At the same time, the highest safety of broilers was observed in the experimental group 4th – 98.1%, where the maximum amount of "Farmatan" was introduced into the compound feed. Among the indicators that determine the zootechnical and economic efficiency of poultry products is feed's costs per unit of production, which were calculated by dividing the amount of compound feed consumed for the entire period of the experiment by the increase in live weight of broiler chickens during the growing period. By results in table (1), it was found that low rates of feed consumption were noted in the 3th and 4th experimental groups – 1.47 and 1.48 kg, which is 3.3 and 2.6% lower than in the control group. In the control and 2 experimental groups, feed consumption per 1 kg of gain was 1.52 kg. Thus, it was found that broiler chickens of the 4th experimental group were distinguished by high body weight , average daily gain,

safety and the lowest feed costs per unit of production, in whose antibiotic "Flavomycin" was replaced with the phytobiotic preparation "Farman" in the amount for the compound feed "Start "800 g / t," Growth "and" Finish" – 400 g / t.

References

1. Здоровый кишечник – залог эффективности современного птицеводства [Текст] // Птица и птицепродукты. - 2019. - № 3. - С. 32-33.
2. Методика проведения исследований по технологии производства яиц и мяса птицы: рекомендации [Текст] / В. С. Лукашенко, А. Ш. Кавтарашвили, И. П. Салеева [и др.]; под общ. ред. В. С. Лукашенко, А. Ш. Кавтарашвили. - Сергиев Посад, 2015. - 104 с.
3. Натуральная кормовая добавка ФАРМАТАН – эффективная альтернатива антибиотикам в птицеводстве [Текст] // Эффективное животноводство. - 2019. - № 4. - С. 8-9.
4. Псхациева, З. В. Динамика живой массы цыплят-бройлеров при использовании бентонитовой подкормки [Текст] / З. В. Псхациева // Аграрная Россия. - 2013. - № 8. - С. 22-24.
5. Трайнев, И. Можно ли обойтись без антибиотических стимуляторов роста? [Текст] / И. Трайнев // Птицепром. - 2019. - № 3. - С. 30-31.

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BIOMORPHOLOGICAL SPECTRA OF SANDY PLANTS CAREERS MOSCOW REGION

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Abstract: *The article discusses the variety of life forms in sand pits of the Moscow region. Detailed analysis of the influence of environmental factors on the plant community has been conducted.*

Key words: *environmental factors, species diversity, sand pits, reclamation.*

Species diversity is lost in the development of sand pits plants, and the spectrum of life forms changes significantly. On my own the vegetation of the quarries is restored for a very long time - at least a hundred years under favorable circumstances and profiling slopes. Usually, profiling is not carried out, overburden in quarries do not return, respectively, overgrowing is slow and spontaneously, disrupted by periodic slopes. The decision of this the problem could be carrying out reclamation work.

Determination of the biomorphological spectrum of vegetation under study areas are necessary to form a plan for the restoration vegetation cover on the sandy substrate of mined out pits. The variety of life forms depends not only on historical features of landscape development, but also from environmental factors such as steepness of slopes, moisture and soil