

VETERINARY SCIENCES

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APPLICATION OF ZEOLITE AS AN ALTERNATIVE FEED SOURCE IN POULTRY

Hajiyev M.*PhD in agricultural sciences, associate professor, director,
Scientific Research Institute of Animal Husbandry, Goygol, Azerbaijan***Guliyeva Sh.***Senior researcher of the Department of Genetics, Biotechnology and Breeding
Scientific Research Institute Of Animal Husbandry, Goygol, Azerbaijan***Aslanov Y.***Head of Department of Genetics, Biotechnology and Breeding
Scientific Research Institute Of Animal Husbandry, Goygol, Azerbaijan***Mammadov K.***Researcher of the Department of Genetics, Biotechnology and Breeding Head of the
Scientific Research Institute Of Animal Husbandry, Goygol, Azerbaijan***Aliyeva E.***Junior researcher of the Department of Genetics, Biotechnology and Breeding
Scientific Research Institute Of Animal Husbandry, Goygol, Azerbaijan*<https://doi.org/10.5281/zenodo.8386098>

Abstract

One of the main conditions for the development of all areas of animal husbandry is the creation of a solid and full-value fodder base. Feed is a link between crop production, animal husbandry and industry. Intensive feeding in poultry farming is highly dependent on feeding birds with better quality and higher nutritional value feeds. So, the fodder intended for birds should be rich in macro-micro elements, vitamins and biologically active substances.

Keywords: poultry, breeding eggs, incubation, feed ration, macro-microelements, vitamins, zeolite.

Introduction

Poultry is one of the most developed, economically promising and profitable branches of agriculture. [1]. Today, the successful development of the poultry industry has been achieved by the direct application of the achievements of science and advanced practice to production. [2]. One of the main factors of increasing the production, number and productivity of birds in poultry farming is the production of complete ration feed. [3]. An imbalance of minerals and other biologically active substances in the fodder leads to a disturbance in metabolism, a decrease in productivity, as a result, a decrease in quality.

A special attention is paid to feeding birds with high metabolism and productivity with foods rich in minerals in reproductive poultry farms. [4].

One of the ways to increase the productivity and resistance of animals is to use biologically active substances, including minerals that are metabolic catalysts. Numerous studies have determined their important role in tissue, respiratory tract, hematopoiesis, reproductive processes, functions of nervous and endocrine systems, and in the processes of strengthening the natural defense of the animal body.

One of the main conditions for the development of all areas of animal husbandry is the creation of a solid and full-value fodder base. Feed is a link between crop production, animal husbandry and industry. Intensive feeding in poultry farming is highly dependent on feeding birds with better quality and higher nutritional value feeds. So, the fodder intended for birds should be

rich in macro-micro elements, vitamins and biologically active substances.

Food security issue of the constantly growing world population remains a priority also for Azerbaijan. In recent years, the year by year fall and rise in the price of oil in the world market, and the rise in the exchange rate of the currency in the world exchange, have brought the development of the non-oil sector to the agenda in our republic. From this point of view, the production of livestock products is one of the priority areas of the republic's economy because most of the population's demand for food products is obtained from livestock products. As in many fields, increasing productivity by applying intensive technologies, advanced feeding and nutrition in animal husbandry is one of the most important tasks facing agricultural science.

People's healthy lifestyle is closely related to the provision of environmentally friendly products. Considering the high demand for livestock products, it is necessary to develop poultry farming in the republic. Development of animal husbandry by intensive methods is one of the most important issues facing scientists and experts working in this field. Because meat, milk, eggs and other such food products, which are the most important and high-quality protein of the population, are obtained from the livestock sector. Therefore, there is a great need for scientific research to provide the people of Azerbaijan with sufficient ecologically clean livestock products. Taking into account this need, we started carrying out scientifically based research works.

One of the main conditions for the development of all areas of animal husbandry is the creation of a solid and full value fodder base. Feed is a link between crop production, animal husbandry and industry. Intensive feeding in poultry farming is highly dependent on the feeding of birds with better quality and higher nutritional value feeds. So, the fodder intended for birds should be rich in macro-micro elements, vitamins and biologically active substances.

Targeted use of zeolite as a mineral preventive and therapeutic supplement for the development of poultry farming allows not only to increase the productivity of birds, but also to ensure the prevention of diseases. It was determined that the use of natural zeolite as a feed additive has a positive effect on the morphological composition of blood, its redox and respiratory functions.

It was determined that one week after starting to feed with zeolite in experiments, digestive processes stabilize, general acidity, peptic activity of stomach contents, proteolytic and aminolytic activity of pancreatic juice, absorption of calcium and phosphorus in the intestine increases.

The main direction in the use of zeolite as an alternative feed in the poultry industry is to increase growth and productivity, reduce morbidity and feed consumption, and remove toxic metals (lead, cadmium, quicksilver, etc.) from food chains.

The use of natural zeolite as a feed additive in poultry has the following results:

- the nutritional properties of the feed are improved
- has a positive effect on digestive processes in the bird's body, increases the efficiency of nutrient absorption
- has a positive effect on the physiological condition of birds
- increases the vitality of animals, prevents some diseases
- increases the productivity of adults
- adsorbs radionuclides, ammonia oxide and carbon dioxide, hydrogen sulfide and salts of heavy metals and removes them from the body.

Urgency of the research work: Due to the disruption of the centralized supply of mineral feed additives in modern times, the use of natural mineral zeolite in poultry farming has become relevant. In

accordance with the theme and calendar plan of our scientific research work in 2021-2025, expanding the use of alternative feed sources in feeding animals and birds, increasing digestibility by using zeolite feed additive in feeding newly created lines and crosses, researching egg productivity and yield percentage, protection and preservation of local bird gene pool are the main goals for achievement.[1]

Justification of the topic: In poultry feeding, as in other areas of livestock farming innovative technologies and various feed additives have recently been widely used. Mainly, there is a need to use alternative sources of feed in newly created lines of different types in egg breeds of chicken. Feed intended for birds should be rich in macro-microelements, vitamins and biologically active substances. Thus, since it is expensive to import feed additives and premixes from foreign countries, the use of zeolite, which is considered a natural mineral available in our country, allows us to satisfy the need of birds for macro and micro elements.

The purpose and task of scientific research work: The main goal is to apply innovative feeding technologies in poultry farming and to expand the use of zeolite, which is considered a natural mineral in our country.

The objective of the research work is to satisfy the demand of poultry for macro and microelements, to improve the quality indicators of breeding eggs and improve the quality of incubation. [2]

Methodology of scientific research work: The methodology of the research work was carried out in accordance with the maintenance technology approved by the All-Russian Scientific Research and Technology Poultry Institute (B.F. Bessarabov. " Poultry meat and egg production technology based on industry". 2012). [3]

The object of research work: Lider-55 is a meat-ovarian line bred at AEF of the SRIAH.

Discussion of the results of the study: During the research work, experimental and control groups were created with 20 heads in each group, the control group was fed with normal feed, and the experimental group was fed with sample feed.

Composition and nutritional value of basic feed for 35-45 days old birds, %, gr

Table 1

Feed	Amount of feed, %
Wheat	50,0
Corn	15,0
Sunflower seed	10,0
Soy meal	19,0
Sunflower oil	1,0
Mineral feed and vitamins	
Salt	0,3
Shell	1,7
DKF	2,0
Premix	1,0
In 1 kg of feed	
Feed unit	116,87
Exchange energy, MC/kg	77,36

Energy feed unit	7,74
Crude protein, %	18,7
Crude cellulose, %	2,81
Phosphorus, %	0,7
Calcium, %	1,2
Crude oil, %	2,81

Composition and nutritive value of the sample feed

Table 2

Feed	Amount of feed, %
Wheat bran	58,5
Counter feed	37,5
Green feed	1,0
Mineral feed	
Lime	0,5
Zeolite	2,0
Marble dust	0,5
In 1 kg of feed	
Feed unit	113,68
Exchange energy, MC/kg	77,23
Energy feed unit	7,72
Crude protein, %	18,45
Crude cellulose, %	1,26
Phosphorus, %	0,25
Calcium, %	0,52
Crude oil, %	1,09

Dynamics of changes in the live mass of birds raised in the I control group, on average per head

Table 3

Age of birds, days	Live mass, gr	Live mass growth during the period, gr	Daily increase, gr	The amount of feed eaten during the day, gr	Feed cost per live weight gain, gr	Feed conversion , 1 kg of live weight gain kg
	M ₊ m					
35	860,0 _± 0,15	-	-	-	-	-
45	1160,0 _± 1,26	290,0	29,0	45,0	450	1,55

Dynamics of changes in the live mass of birds raised in experimental group II

Table 4

Age of birds, days	Live mass, gr	Live mass growth during the period, gr	Daily increase, gr	The amount of feed eaten during the day, gr	Feed cost per live weight gain, gr	Feed conversion , 1 kg of live weight gain kg
	M ₊ m					
35	852 _± 0,34	-	-	-	-	-
45	1210,3 _± 0,94	351,60	35,16	45,0	450	1,28

As can be seen from the table, the experimental group gained 50.3 g more weight than the control group. From the conversion of feed, it is known that 270 g less feed was consumed per 1 kg of live weight gain in the experimental group compared to the control group. (table 5).

Table 5

Economic efficiency of scientific research work

Indicators	Feed	
	Counter feed	Sample feed
Amount of eaten feed, kg	6,75	6,75
Cost of 1 kg of feed, man	0,70	0,38
Total cost of feed, man	4,72	2,56

The total cost of 6.75 kg of feed consumed during the 10 days breeding period is 2.31 manats. Economic efficiency has been achieved.

Result:

1. During the experiment, 50.3 g more weight was obtained from the birds raised with the sample feed than the control group.

2. It is known that 270 g less feed was used for 1 kg live weight increase in the experimental group compared to the control group from the feed conversion.

3. 2.31 manats in total cost of 6.75 kg of feed consumed during 10 days breeding period. Economic efficiency has been achieved.

The research is ongoing.

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