

Application of the Hydroponic Green Fodder Technology in Poultry Breeding and Maintenance of The Broiler in as Provided by Zoogygienic Conditions

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Abstract

The article sets out as a goal the ensuring in a sustainable form of innovative development in the designing of feeding strategies within the framework of the project "Sustainable development of poultry farming and the creation of a value chain for food production" in farms of the republic. Also, for rational and proper feeding of birds, the use of the Hydroponic Green Fodder technology, the presence of high-calorie protein (raw protein) in the feed, as well as amino acids, a small amount of cellulose, carotene, calcium and phosphorus, create favorable conditions for the development of chickens.

Keywords: Hydroponics, rational feeding, technology, raw protein, infection.

Introduction

The development of breeding and feeding strategies under the "Sustainable Development of Poultry Farming and Creation of Value Added Chain for Production of Foodstuffs" Project, funded by the Government of Azerbaijan and have been implementing since December 2018 under the FAO-Azerbaijan Partnership Program to ensure production in line with market demand, was set as a goal to develop in a sustainable manner in/through the functioning of added value chain for poultry (Mitrofanov, 2010).

Since poultry farming is one of the fast-growing, widespread and profitable sectors of animal husbandry, the government's concern for the efficient use of this industry has increased significantly. Thus, in the field of poultry farming, new farms and individual farms have been created (Zayas, 2013). Relevant work has been carried

out in the direction of increasing poultry production using hydroponic and other innovative technologies. The increase in financial support for the development of the poultry farming from year to year, the commissioning of production sectors involved in the production and packaging of poultry meat and the marketing organization have played an irreplaceable role in the development of this sector.

The development of poultry farming, as well as an increase in the output of poultry farming products, largely depends on the fact that the chickens selected for raising of broilers are healthy, lively, well developed and of the same weight. That is, if there is a weight of 55-60 grams of eggs laid in the incubator, the weight of one-day-old chicks is 35-40 grams. Healthy chickens hatch on time and in droves, grow quickly, and mortality decreases. Healthy chicks are selected in 6-8 hours after hatching, and the retarded chicks from growth are culled (Mikhailov, 2014).

For the proper feeding of birds, the Hydroponic Green Fodder technology is one of the key factors in ensuring the intensive growth of chicks. Because of the presence in the feed allowance consisting of high-calorific protein (raw protein), as well as amino acids, a small amount of cellulose, carotene, calcium and phosphorus, creates favorable conditions for the development of chickens (Mikhailov et al., 2017).

Innovation of Hydroponic Green Fodder technology

The introduction of innovations in farmers' poultry units plays an important role in the modernization and intensification of production (Shafiyeva, 2005). Therefore, there is a need to apply an innovation mechanism for improvement the feed supply in farmers' poultry units. From this perspective, the innovation of Hydroponic Green Food technology for improvement the feed supply in poultry farms can meet the needs of not only small farm enterprises, engaged in poultry farming, but also of large complexes. From this point of view, there are no analogues to the Hydroponic Green Fodder technology. Using this method, in agriculture, regardless of weather conditions, it is possible to produce green fodder of steady quality, continuing during 365 days a year. Grains sprout at an above-zero temperature of 18° C, and micro-macro vitamins are transferred to the plant along with water. So long as, green fodder is rich in high-calorific protein (raw protein), as well as amino acids, carotene, calcium, phosphorus and vitamin E, which leads to increased productivity indicator in poultry. The feed obtained by this method improves digestion in birds and stimulates weight gain.

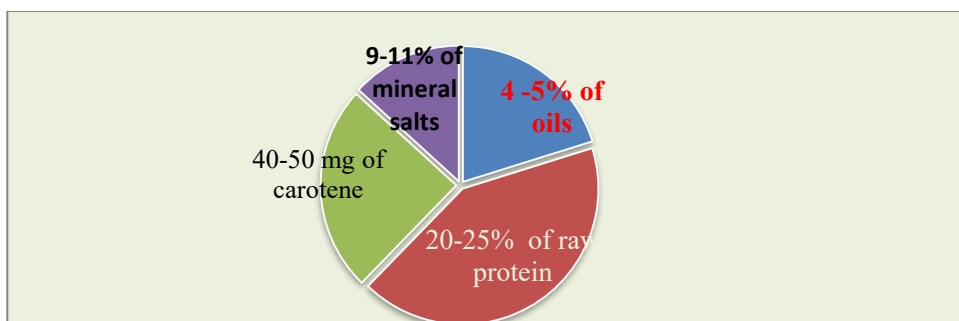


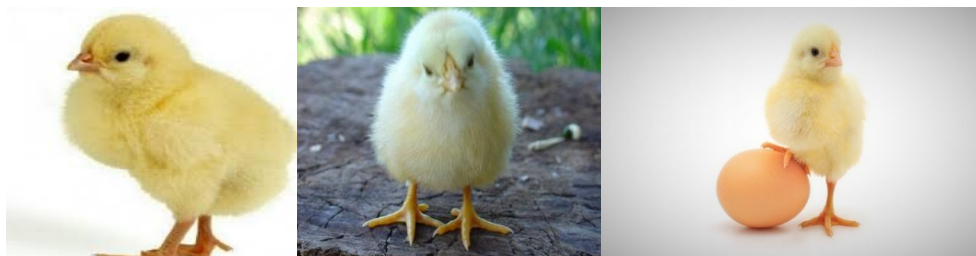
Figure 1. The amount of substances in the composition of 1 kg of green fodder

Birds eat up this food with great appetite. It should be considered that 1 kg of green fodder contains 20-25% of raw protein, 4-5% of fat, 35-50% of nitrogen-free extraactive substances, 9-11% of mineral salts and 10-15% of cellulose. Plus, 1 kg of green fodder contains 40-50 mg of carotene, which directly affects the productivity of birds.



As a result of the application of the Hydroponic Green Fodder technology in family poultry farms, in 2019, the total number of eggs obtained from each chicken increased by 11.6%, the weight gain (200 g) in each chicken (in broiler) intended for slaughter - increased by 13.3%, the number of chicks leaving the incubator increased by 12.2%. As a result of the use of Hydroponic Green Fodder in the feed allowance, the efficiency of the farm has increased and the costs of feed for each bird have decreased. The complete organization of the sprouting of bird feed by the hydroponic method takes 5-6 days. Thus, from 1 kg of wheat within 5-6 days, 4-5 kg of green mass is obtained. It should be noted that wheat is first washed in special containers, this clears the grains from poisonous spores of fungi and dust, and then the grains for sprouting are laid out in each container at a rate of 1–1.2 kg per one container. Starting from the second day, seedlings are obtained. On the third day, the root system of the grain begins to branch out and develop vegetatively. On/Through the fourth to fifth days, along with the rapid development of both roots and green mass, the amount of raw protein (protein), starch (sugar), mineral salts, etc. is increased in the composition of the feed. Therefore, from an environmental point of view, with

regard to the full practical value of pure fodder, it is used to meet the needs of poultry for raw protein, water carbon, calcium, phosphorus and carotene. Birds eat food along with the roots, and the main nutritional value is in the root system. Continuous feeding with hydroponic green fodder ensures the health of broilers, daily weight gain, and the development of quality poultry meat production.



In order to ensure the innovative development of broilers, the proper formulation of the feed allowance of chickens creates the opportunity for rapid growth of the broiler and hence the presence of a high percentage of healthy rearing. Demand for feed depends on the age and body weight of the broiler.

For the first five days, chicks are fed on boiled eggs, wheat bran, bottom milk, fresh anthropogenic green fodder, crushed shells, and so on. Eggs should be boiled in clean water, then crushed together with the shells and given as feed. It is also recommended to add additional 2-3% of feed yeast to feed. In this case, the yeast increases the amount of vitamins in the feed by increasing/raising the number of cells and bacteria. The normal metabolism in young birds is largely depended on the good care of chicks. Thus, the soaked feed mixture is fed to 30-day-old chickens 3-4 times a day (one ration of hydroponic green fodder), and then 2-3 times. Chicks up to ten days of age are fed every two hours, and then up to 30 days of age every 3 hours. For each head of broiler in the first week, 12-15 g are given, 21-20 g in the second week, 40-45 g in the third week, 60-65 g in the fourth week, 75-85 g in the fifth week, 90-100 grams in the sixth to seventh weeks and after the eighth week 100-110 grams of feed are given. The live weight of a broiler fed in this way is estimated 1500-1600 g and more for seven to eight weeks with the consumption of 2-2.5 kg of a feed unit per 1 kg of live weight.

By a long-term feeding with compound feed, for each ton of it, 10-15 grams of antibiotics should be added. The antibiotics given at this dose have a stimulating effect on the rapid growth of broilers and prevent many intestinal diseases. On the other hand, long-term use of antibiotics with high doses retards the growth of broilers, deteriorates the composition of some vitamins and gives poor results. All antibiotics should be removed from the feed ration 8-10 days before slaughter. After

49-63 days, broilers are transferred to the slaughtering and processing shop. For 6-8 hours prior to the slaughter, broilers are kept without feeding.



Breeding of broilers on bedding

During the rearing on the bedding, 4-5 batches of chickens intended for meat can be raised in one premise per year. After breeding of each batch, the premise is cleaned, disinfected, the bedding is laid anew and the next batch is accepted. The following technology is applied on a thick bedding: 0.7-1 kg of slaked lime is laid on each plot of a square meter, corn stalks in 5-7 cm of thickness, peat, tree bark or chopped straw are laid on it. Until the end of the breeding period, 1.5-2.0 kg of bedding is used per bird. During the breeding period, 10-12 chickens are kept on each square meter in winter, and 9-10 chickens in summer.



Effect of aeration on breeding of broilers

In broiler development, air exchange is of great importance. With insufficient oxygen in the premise, the chickens intended for meat eat less than usual, respiratory diseases develop among them, and the expected weight gain is not achieved. Therefore, ventilation must be regulated in such a way that for each kg. of live weight there was produced 1.5 cubic meters of air exchange. In addition, when the premise, where the broilers are bred, is lit for 18 hours in the first week during the day and

then gradually reduced to 14 hours. Good results can be obtained in increasing the weight of meat chickens. Since chicks are unable to regulate their body temperatures from day one, temperature fluctuations inside the premise will have a sharp effect on them. The presence of a sharp air flow inside the premise causes such abnormalities in birds as diarrhea, delayed feathering, and deterioration in digestion. Cold and wet weather causes kidney damage, wet and cold causes severe diarrhea, and dust, ammonia and carbon dioxide leads to the occurrence of various diseases of the respiratory organs. At normal heat levels, chicks are in brisk condition, their feathers are smooth, they readily eat feed, drink enough water and this ensures the rapid weight gain. Control over the quality of water and feed used in poultry farms is of great importance. Water pollution with organic substances also leads to dangerous consequences. Poor water quality leads to corrosion, tanning and becoming moldy of some means in poultry farming as well. Water hardness depends on the amount of calcium containing in it. The presence of more than 4 mg of calcium in one liter of water indicates its hardness. In order to provide birds with good quality of water, oxidizing agents that are not harmful to birds should be added to the water composition. For this purpose/to do this, citric acid and chlorine are most commonly used. In this case, the total number of microorganisms in the water decreases, the pollution with organic substances comes down, and the accumulation of some metals reduces. Drinking containers should always contain clean water. In order to protect chickens from gastrointestinal diseases, potassium permanganate is added to the water in a ratio of 1: 10,000.

Result and discussion

1. Development of breeding and feeding strategies within the framework of the "Sustainable development of poultry farming and creation of value added chain for production of foodstuffs".
2. Observing appropriate principles in the direction of increasing the production of poultry meat in farm enterprises and individual farms using/taking advantage of hydroponics and other innovative technologies.
3. To organize intensive growth of poultry, it is proposed using the hydroponic green fodder technology for full-quality and rational feeding of broiler and keeping in accordance with zoohygienic conditions.
4. When rearing a broiler, air exchange and breeding on bedding the regulation in accordance with zoohygienic standards should be controlled.

5. Entry routes to poultry-houses, hatchery houses, slaughtering shop and other premises should be equipped with disinfectant facilities, built in 1.5 m long and 15 cm deep, which should be regularly moistened with disinfectant solutions.

6. For disinfection of automobile tires, new disinfection barriers/means should be organized and a 3% formaldehyde solution or chlorinated lime solution with 1% active chlorine in its composition, 5% creolin or xylonaphtha solution should be added there/should be added at the entrance.

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