Poultry analysis and research on the preparation of crushed blue grass feed for poultry

Komil Astanakulov1*, Hossein Navid2, Azizbek Khatamov3, Abdimalik Kurbanov4, Bogdagul Karshieva1, Shavkat Adukadirov5, and Nilufar Jurayeva6

1National Research University “Tashkent Institute of Irrigation and Agricultural Mechanization Engineers”, 39, Street Kari Niyaziy, Tashkent, 100000, Uzbekistan
2University of Tabriz, East Azerbaijan Province, Tabriz, 29 Bahman Boulevard, Iran
3Jizzakh polytechnic institute, 4, Islam Karimov street, Jizzakh, Uzbekistan
4Termez State University, 43, Street Barkamol avlod, Termez, 190111, Uzbekistan
5Termez Institute of Engineering and Technology, Street Islam Karimov, Termez, 190111, Uzbekistan
6Termez state pedagogical institute, 288b, Islom Karimov str., Termez, 190111, Uzbekistan.

Abstract. Poultry is considered an important part of the biosystem. The demand for poultry meat in the world is increasing, and it is currently the second place among the meat products grown and consumed with 34 percent, and by 2030 it is expected to take the first place. The analysis of the state of poultry breeding in the world and in Uzbekistan was carried out. Currently, in Uzbekistan, great importance is attached to the development of poultry farming, and more chickens, quails, turkeys, geese and ducks are raised. If we take into account that these birds also eat blue grass and feeding them with blue grass is also beneficial for growth and development, it is reasonable to introduce chopped blue grass to the diet of the birds during the 1st phase: 18-45 weeks of age and the 2nd phase: 46-65 weeks of age. A device for crushing green grass has been developed. In this device, the crushed grass contains up to 5.9% of fractions larger than 20 mm, and when they are given to birds of the above age, they do not bend and come out, so it is necessary to separate them before feeding them to the birds.

1 Introduction

Poultry is an integral part of the biological system, domestic poultry is mainly raised for meat and eggs for humans. In Uzbekistan, poultry farming is considered as one of the areas of animal husbandry to employ people and increase the population's income [1-5]. If we look at the past times, raising chickens, ducks and geese in households has been one of the important jobs in Asia and Europe for several thousand years. The Turkey was first domesticated in America, then brought to Europe and then spread to other regions. According to information, raising chickens and other poultry in Europe was started in the late 18th century in France, Holland and England.

* Corresponding author: komiljon.astanaqulov@gmail.com

© The Authors, published by EDP Sciences. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).
In terms of meat production in poultry farming, chickens and turkeys are in the first places. In this regard, the United States accounts for a third of the poultry meat produced. Poultry farming in the US began with raising chickens on small farms. Despite the fact that poultry farming was founded much earlier, it was only in the 1950s that chicken farming was considered an important sector in the production of meat and eggs. This can be seen when in the US there were 143 million chickens in 1940, but by 1950 the number of chickens had increased to 631 million thanks to the emphasis on chicken farming. By 1960, the number of chicks had increased to one billion. With more than 7 billion broiler chicks supplied by American farmers in 1996, poultry production is still the main activity of many American farms.

The main reason for this is the increased demand for poultry meat in the world. Poultry is the second largest meat product currently grown and consumed, accounting for 34% of all meat consumed. According to experts, by 2030, consumption of poultry meat will take the first place in the world. For this reason, it is necessary to pay great attention to improving the efficiency of poultry feeding and ensuring quality and safe meat from it.

2 Materials and methods

The analysis of the state of poultry breeding in the world and in Uzbekistan was carried out based on the study of Internet information and books and manuals related to poultry breeding. In this regard, the stages of development of poultry breeding on the website uzanalytics.com, the current situation in Uzbekistan and the world, the work planned for the future, information on feeding poultry on the website agro-olam.uz, information from the Veterinary and Animal Husbandry Development Committee of Uzbekistan, the work of the Animal Husbandry and Poultry Institute the information from the methodological manuals on poultry feeding was used [6-12].

When raising chickens and other poultry, their age is divided methodologically into 17 weeks, 18-45 weeks, 46-65 weeks, and 66 weeks and above. Based on the young age of the birds, it became known that they should be fed on the basis of certain rations. Based on the analysis of these data, it was determined that it is possible to feed the birds with chopped grass in the period up to 18-45 weeks and up to 46-65 weeks. Here are the recommended indicators for chicken care: air temperature 30°C (measured at the height of the chick's shoulder in front of food and water); bed temperature 28-30°C; relative air humidity 60-70%.

In hot climates, the density of poultry is approximately as follows: in microclimate-controlled poultry houses - a maximum of 30 kg/m² at the end of production, in open-wall poultry houses with minimum microclimate control - a maximum of 20-25 kg/m² at the end of production, and in the hot season of the year maximum 16-18 kg/m².

Information about the device that grinds blue grass for poultry and its performance indicators was formed on the basis of the information in the dissertation and articles of A. Borotov and researchers. The size fractionation of the crushed grass in the shredder device was determined based on the fact that the body size of the birds in the period of 18-45 weeks of age is small, and in the period of 46-65 weeks of age, the size of the body is also increased, and it is possible to spread feed up to 10-20 mm in size. Separation of chopped grass into 2 fractions - edible and large for large poultry such as turkeys, ducks and geese, into 3 fractions - up to 10 mm and 10-20 mm into edible and large (larger than 20 mm) fractions for chickens and quails was determined based on the characteristics of small birds.
3 Results and discussion

3.1 Poultry analysis

Today, China, the USA, Japan and Russia occupy the leading positions in poultry farming. Currently, 1 trillion 360 thousand eggs and 296 million tons of poultry meat are produced in the world. In this regard, China is in the first place with a share of 40 percent, while the second place was given to the United States. In the 90s of the last century, the "country under the sky" occupied the fourth place, and thanks to the comprehensive reforms carried out in the country, it rose to the first place. In order to achieve such results, special groups for the development of poultry farming were established. These groups identified all the problems in the field and solved them in a timely manner. Thanks to the reforms carried out in China, poultry farming has developed. During the last 30 years, due to the development of poultry farming, the national economy has achieved high indicators. The population was provided with work. The living conditions of the villagers have improved, and their incomes have increased.

In poultry farming, chicken farming is on the first place, and goose farming is on the second place. There are a number of reasons for this. Chicken can be fed in any conditions. Geese are raised mainly for their meat. Inexpensive and at the same time high-quality goose meat is also very useful for the human body.

In recent years, along with geese, people interested in raising ducks and turkeys are also increasing. Its meat is known to be dietary. The United States is the number one producer of turkey products. It is followed by France, Italy, Great Britain and Germany. Turkeys cannot be raised in closed buildings. Unlike chickens, they love the outdoors. Turkeys are very important in poultry farming.

Because quail meat is useful, quail meat and eggs are also widely consumed in Uzbekistan. In recent years, not only in our country, but also in the whole world, great attention has been paid to quail breeding. According to experts, quail breeding has been going on for 200 years in Japan, and the investment in quail breeding will soon pay for itself. Quails multiply three times faster than rabbits. Despite the fact that quail eggs are small, they are now able to compete with chicken eggs in terms of sales. A person who eats one quail egg every day has been found to have strong immunity. Quail eggs can be stored for a long time, but the egg-laying quail itself cannot be fed for more than a year. Therefore, it is necessary to change the laying quails often.

According to press reports, ostriches can be seen being fed in some places. In recent years, ostrich breeding has been launched in Uzbekistan. Despite the fact that the homeland is Africa, ostriches got used to the climate of Uzbekistan, which led to the emergence of many people interested in raising them. African ostriches are currently being raised on farms. They live for 50 years and lay eggs for at least 30-35 years. Strauss are very affectionate and curious and learn quickly to their owners. Owners of ostrich farms can not only profit from their meat and eggs, but also organize tours to show the ostriches to those who are interested. A dumpling made from one ostrich egg can be eaten by 8-10 people.

Turkeys are mostly raised in Kashkadarya region, where industrial turkey farming has been established in Qamashi district. The initial stage of this project implemented by "Azza Poultry" Limited Liability Company is aimed at bringing inbred turkeys from abroad and breeding them in local conditions.

In many countries of the world, breeds of turkeys that can produce 20 to 30 kilograms of meat and 70-90 eggs per season are raised. The domestic turkeys that we raise give an average of 6-7 kilograms of meat and 45-50 eggs per year. For this reason, with the help of experts, it is planned to industrially breed turkey species brought from abroad in the local climate.
These turkey chicks can be reared for 150 days, and 20 kilograms or more of meat can be obtained. Up to 30,000 turkeys are planned to be raised here. According to statistics, 163 poultry breeding projects were implemented in the last year. The number of poultry kept in households is also increasing. But there is another side of the matter, that high results cannot be achieved only by growing raw materials. For example, poultry farming is highly developed in countries such as the USA, Italy, France, and England. These countries also lead in the production and export of ready-made poultry products. If poultry products processing facilities are put into operation, Uzbekistan can also export poultry meat.

As can be seen from the above, great importance is attached to the development of poultry breeding in Uzbekistan. 3 factors are important in the development of poultry farming. These are the feeding of high-yielding good crosses of poultry, timely preventive maintenance and good feeding.

### 3.2 Research on the preparation of bluegrass feed for poultry

Today, poultry is fed mainly with grain feed, blue grass and grass meal, nutritious fats, minerals and vitamins. Carrots, potatoes, sugar beets, pumpkins and cabbage can also be given to poultry as additional food [9-12].

Among poultry, turkeys, quails, chickens and ducks are herbivores, and feeding them with grass is also beneficial. This works especially well when they are in Phases 1 and 2 (18-45 and 46-65 weeks). Because this is the period when they are mostly growing up.

In this case, the birds can be fed with alfalfa in the form of barra, greens and other useful herbs. But when feeding the birds with grass, it is necessary to grind the grass to them.

Taking this into account, a device with a compact version of a light construction was developed for grinding green grass for poultry (Figure 1) [4, 12].

![Fig. 1. Schematic diagram of the device for grinding blue stem feed.](image)

1-transmission line; 2,9-supplier joves; 3- counter cutting plate; 4-grinding drum; 5- blade; 6- outlet pipe; frame 7; 8-electric motor

In the developed device, the process of grinding green grass is carried out as follows: the green grass to be ground is transferred to the feeders 2 and 9 with the help of rod 1. And the
feeders cover the grass and transfer it to the shredder drum 4 over the counter cutter plate 3 at the same speed while holding it. And the drum cuts the grass with its blades 5 on the counter cutting plate located below. The back of the blade is bent, and the cut stem pieces are collected in this part of the blade, and then thrown out through the outlet pipe 6. The grinding device receives the movement from the electric motor 8 through belt transmissions [4, 12].

During the period of use of this device, the amount of fractions up to 5 mm in the content of crushed feed when grinding green alfalfa stalks was from 39.6% to 51.1%, the amount of fractions from 5-10 mm was from 31.6% to 44.2%, from 10-20 mm the amount of fractions was found to be from 4.2% to 22.9%, and the amount of fractions larger than 20 mm was up to 5.9% (Figure 2).

![Variation in the degree of crushing of alfalfa stalks in the herb grinder.](image)

This indicates that the crushed grass in this device should be divided into fractions for feeding to poultry. If we take into account that it is recommended to feed the birds with blue grass in phases 1 and 2 of the training period with blue grass, then the chopped grass is divided into at least 2 fractions: the 1st fraction with a size of up to 20 mm and the 2nd fraction with a size of more than 20 mm or 3 fractions: 1st fraction size is up to 10 mm, 2nd fraction size is up to 20 mm and 3rd fraction size is more than 20 mm.

### 4 Conclusion

Poultry remains an important source of meat and eggs for humans. For this reason, great importance is attached to the development of poultry farming in Uzbekistan. Currently, more chickens, quails, turkeys, geese and ducks are raised in Uzbekistan. If we take into account that these birds also eat blue grass and it is useful for their growth and development, it is reasonable to include crushed blue grass in their diet during the 1st phase of the young period, i.e. 18-45 weeks, and the 2nd phase, i.e. 46-65 weeks. For this purpose, a device for crushing green grass has been developed. In this device, the crushed grass contains up to 5.9% of fractions larger than 20 mm, and when they are given to birds of the above age, they do not bend and come out, so it is necessary to separate them before feeding them to the birds.

For this reason, researches are currently being conducted on the development and parameterization of the rotary separator for the grass shredder.
References


8. A. Borotov, R. Choriev, U. Boykulov, A. Khatamov, E3S Web of Conferences **390** 04038 (2023)


10. Sh.X. G’apparov, R.R. Karimov, R.M. Choriyev, I.E. Musurmonov, E3S Web of Conferences **401** 04041 (2023)
