

CHEMICAL COMPOSITION OF FEEDS FOR POULTRY

Talented student **Zhumanova P.B.**,Assistant **Amanov R.Ch.**,Associate Professor **Mamatov Kh.A.**

Samarkand State University of Veterinary Medicine,

Animal Husbandry and Biotechnology, Nukus Branch

Abstract: This article analyzes the statistical data on grain and oilseed crops grown in Karakalpakstan. According to statistical results, over the past five years, the following crops have been cultivated in Karakalpakstan: among grain crops—wheat, corn, sorghum, barley, millet, and rice; among oilseed crops—sunflower, sesame, flax, safflower, and peanuts. The chemical composition and nutritional value of each plant were studied. It was noted that oilseed crops have higher protein, fiber, and fat content, while grain crops contain more carbohydrates. In terms of energy exchange value, the highest indicator was found in sesame (720 kcal), while the lowest was in sunflower meal (210 kcal).

Keywords: Broiler chickens, protein, fat, carbohydrates, fiber, ash, grain crops, oilseed crops

Introduction

In most countries of the world, poultry farming holds a leading position among other branches of agriculture, providing the population with high-quality dietary food products and raw materials for processing. It is considered one of the most efficient and profitable sectors. Today, the rapid development of production is also being implemented in poultry farming, particularly in large-scale poultry farms that operate as fully industrialized enterprises.

The poultry industry ensures the reproduction of poultry, fulfills contractual obligations for product supply, and specializes in egg production, meat-egg production, and breeding poultry, taking into account natural and economic conditions. Egg production farms are mainly organized on poultry farms. Chicken eggs are widely consumed as a nutritious and economically efficient food, especially in regions with favorable feed bases. Meat-egg production farms are typical of poultry farms, producing both meat and eggs. Breeding work in poultry farming primarily involves the production of hatching eggs and the incubation of ducklings, goslings, and turkey poults.

Today, poultry farms occupy a significant share in the agricultural market due to the high growth intensity and rapid turnover of investments in this sector. This field requires the optimization of feeding, simplification of production management, and cost reduction to minimize product prices through efficient methods.

As of January 1, 2023, the number of poultry in the Republic of Karakalpakstan reached 5,196.9 thousand heads. In 2020 and 2021, the numbers were 4,743.2 and 5,055.4 thousand heads, respectively. As of January 1, 2023, 14.8% of Uzbekistan's total poultry population belonged to farm enterprises, 26.3% to private (household) farms, and 58.9% to agricultural organizations. Compared to the same period in 2017 (11.5%, 61.9%, and 26.6%, respectively), the number of poultry increased by 20.0 million heads (28%) across all categories.

Egg and meat production have also been steadily increasing. In Karakalpakstan, egg production reached 387 million eggs by 2022. Over the past decade, egg production has increased by nearly 400%, rising from 96.8 million to 386.9 million. Meat production in Karakalpakstan peaked in 2017 at 8.9 thousand tons but decreased by almost half to 4.1 thousand tons by 2019. The growing number of poultry increases the demand for feed, which amounted to 20,195 tons in 2018. It is also worth noting that while Uzbekistan had 9 state-registered feed production enterprises in 2018, this number has now reached 32. However, Karakalpakstan still lacks dedicated feed production facilities for poultry.

Today, producing high-quality feed from available resources and unlocking the genetic potential of high-yielding poultry breeds in egg and meat production are among the most important factors.

Grain crops constitute 80-85% of poultry feed, making their chemical composition a major focus. Therefore, this study examines the general chemical composition (moisture, protein, fat, fiber, nitrogen-free extract, and ash content) of grain crops grown in Karakalpakstan. Based on statistical data, the chemical composition of local grain crops (corn, wheat, sorghum, barley, millet, rice, and sunflower meal) was analyzed.

It is known that the growth rate of animals depends on their nutrition and the degree to which their diet is saturated with essential nutrients. Feeds used in domestic conditions do not always fully meet the body's biological needs, which is why various biologically active feed additives are widely used in global practice. However, despite the availability of such additives in the market and their high cost, the efficiency of their use in our country has not yet been sufficiently studied.



In response to this situation, there has been a growing trend in all categories of farms producing agricultural products. For example, over the past three years, farm enterprises have increased by 113.6%, 115.7%, and 102.8%, while private (household) farms have grown by 103.3%, 103.3%, and 103.5%. Agricultural organizations, on the other hand, have seen increases of 116.7%, 158.2%, and 116.2%.

Currently, the most widely cultivated grain crops in the livestock sector of the Republic of Karakalpakstan are wheat, corn, barley, rice, sorghum, and millet, which have been included in state statistics over the past five years. The production of grain crops varies annually, yet the growth in the poultry sector is noticeable. This situation leads to a decrease in feed production for animals and an increase in imports.

Additionally, oilseed crops such as sunflower, flax, sesame, safflower, and peanuts are cultivated in Karakalpakstan. However, according to statistical data, only sunflower and sesame are planted annually, and their use in feed for livestock and poultry remains limited.

Poultry feed primarily consists of 50-60% wheat and corn, 20-25% soybean and sunflower meal, and the remaining 20-25% includes various additives, vitamins, and minerals.

Table 1

Biochemical Composition of Local Grain Crops

Indicator	Wheat	Corn	Sorghum	Barley	Millet	Rice
Dry matter (%)	86.00	86.00	84.7	86.0	85.4	86.0
Protein (%)	11.8	10.3	11.9	10.3	4.14	7.5
Ash (%)	1.7	1.2	2.9	2.4	2.1	3.9
Fiber (%)	3.9	2.2	11.3	5.6	10.24	9.7
Fat (%)	2.2	4.9	4.6	2.4	1.57	2.6
Nitrogen-free extract (%)	66.4	67.4	54.0	65.3	67.35	62.3
Calcium (mg/100g)	54	34	46	93	62	40
Phosphorus (mg/100g)	370	301	325	353	361	328

Indicator	Wheat	Corn	Sorghum	Barley	Millet	Rice
Energy value (kcal/100g)	304	365	329	288	298	303

Conclusion

Statistical results indicate that over the past five years, the main grain crops cultivated in Karakalpakstan include wheat, corn, sorghum, barley, millet, and rice, while oilseed crops include sunflower, flax, sesame, safflower, and peanuts. The chemical composition and nutritional value of local grain and oilseed crops were studied. It was found that oilseed crops have higher protein, fiber, and fat content, whereas grain crops are richer in carbohydrates. In terms of energy exchange value, sesame has the highest indicator (720 kcal), while sunflower meal has the lowest (210 kcal).

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