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ANALYSIS OF THE STATE OF THE POULTRY INDUSTRY AND HIDDEN OPPORTUNITIES

Abstract

Today, both producers and consumers of fodders are aware that achieving high productivity of animals and poultry, as well as optimal quality of final products, is impossible without the use of complete and nutritionally balanced feed. Requirements for the quality of compound feeds continuously grow and change, as new, more productive animal breeds and poultry crosses appear. It is proved that the COVID-19 pandemic, the full-scale war in Ukraine, climate variability and the global economic crisis are seriously undermining efforts to fight hunger and improve food security and nutrition. In the countries of Europe and Central Asia, the number of people who face problems in accessing adequate nutrition, including quality and safe products, has increased by 25.5 million people. According to FAO estimates, by 2050 we will have to increase the production of food and animal protein, including by 60%, to provide food for the world's 9.3 billion people. It has been established that poultry products are the most common and available source of animal protein to meet the needs of the world's population. The dynamics of changes in the feed production volume in 2018-2023 according to the data of the annual Agri-Food Outlook are presented. The top 10 leading countries in the feed production in 2022 are listed. They consume 64% of the world's compound feed, and half of the world's compound feed consumption is concentrated in four countries (China, USA, Brazil and India). A comparative analysis of the structure of compound feed production by types of agricultural animals and poultry for 2021-2023 shows that there is a growth trend for almost all types. The production of compound feed for pigs has been negatively affected by ASF all over the world. The greatest growth is observed in the field of compound feed for pets. It has been proven that a third of consumers prefer poultry products due to their availability and quality. In Ukraine, the industry is developing rapidly even in the conditions of a full-scale war, personnel shortages, power outages, inflation and disruption of logistics chains. The volume of global poultry production from 2012 to 2023 is shown. It is constantly increasing, caused by the increase in demand for affordable and relatively cheap animal protein. As a result of the analysis of the dynamics of poultry meat production by country in 2022-2023, it was established that the USA remains the leader in the production of poultry meat in the world for many years. Brazil and China remain in second and third place. Brazil has the largest growth during the reporting period. High competition in the field of breeding of laying hens and broilers stimulates the development of niche industries, such as guinea fowl breeding. Guinea fowls are raised for meat, eggs and fluff. This can be a very profitable business, especially for small poultry farms, due to the speed of payback of small investments and the unpretentiousness of the bird.

Key words: guinea fowl, feed production volumes, market analysis, poultry industry, poultry meat, industrial producers.

Introduction

The compound feed industry involves the production of feed raw materials, fodder and compound feeds for feeding all animals, regardless of whether they are farm animals, wild or exotic.

The compound feed industry is a global, multi-billion-dollar sector of the country's agro-industrial complex, which is of crucial importance for ensuring the world's food security.

The animal feed industry is usually different from the food industry, which specializes in creating food and nutrition for humans. However, it is worth noting that both of these industries have deep connections, as the feed industry plays a key role in ensuring the production of animal products for human consumption. In livestock sectors, feed is a significant part of total costs, often exceeding 50% of all costs.

Today, both producers and consumers of fodders are aware that achieving high productivity of animals and poultry, as well as optimal quality of final products, is impossible without the use of complete and nutritionally balanced feed. Requirements for the quality of compound feeds continuously grow and change, as new, more productive animal breeds and poultry crosses appear [1, 2].

Poultry products are the most common and affordable source of animal protein to meet the needs of the world's population. Poultry breeding is a branch of the agricultural sector. Its main purpose is the breeding, feeding and maintenance of poultry, the use of mechanization and automation of technological processes, as well as veterinary prevention, with the aim of producing eggs, meat and other products, such as down, feathers, fatty liver, etc., using effective labor and capital resources [3].

Poultry farming is a fairly profitable industry, and this is confirmed by the lowest feed costs per unit of production compared to other types of farm animals. The conversion ratio of compound feed for poultry is 2-3:1, compared to pigs, where this conversion ratio is 4-6:1. Biological features of poultry determine the decisive influence on the production technology of poultry meat and eggs. These features include their reproductive qualities, rapid growth at an early stage of life, high reactivity to stressful situations, intensive metabolism, as well as a specific structure of the gastrointestinal tract and skin [4].

One of the key areas of poultry farming development in Ukraine is the breeding of guinea fowl. This is of great importance for obtaining poultry meat and eggs,

especially in conditions of intensive production.

During the long evolutionary process, poultry has developed characteristics that significantly distinguish it from its wild ancestors. Their domestication led to a significant increase in growth intensity, reproduction rate, reproductive productivity and feed efficiency. The ability of birds to be omnivorous allows the use of various sources of feed, including waste from the processing of agricultural raw materials. This process of choice and artificial selection has led to the creation of modern breeds of poultry that have improved genetic characteristics that increase their production capacity and adaptability to agricultural conditions. Among such characteristics, we can note a higher level of production of meat, eggs, feathers, faster growth, improved feed conversion and the ability to accumulate mass.

This evolutionary process was reflected in modern commercial poultry breeds, such as broilers, laying hens and others, which are key figures in agriculture and food production. This success of domesticated poultry is the result of choice and artificial selection that emphasize the importance of poultry in growing food and sustaining the human population.

Purpose and objectives of the analysis

The purpose of the research is to justify the feasibility of guinea fowl feed production, marketing research and analysis of the poultry feed market.

Results and its discussion

It has been seven years since the international community committed itself to ending hunger, food insecurity and all forms of malnutrition. However, unfortunately, both the world as a whole and the ECA region (Europe and Central Asia) in particular are still far from achieving this goal by 2030 [5].

The COVID-19 pandemic, the full-scale war in Ukraine, climate variability and the global economic crisis are seriously undermining efforts to fight hunger and improve food security and nutrition. These crises led to higher prices for food, agricultural resources, and energy resources, as well as increased production and transportation costs and costs during the transition period. They have also led to higher unemployment, lower incomes and higher costs of healthy food, limiting its availability. Many of these costs and restrictions on the availability of healthy food have reached record highs. In the countries of Europe and Central Asia, the number of people who face problems in accessing adequate nutrition, including quality and safe products, has increased by 25.5 million people [5].

According to estimates by the Food and Agriculture Organization (FAO), we will need to increase food production by 60% by 2050 to feed the world's 9.3 billion people. This increased need for food leads to an increase in the production of animal protein. Between 2010 and 2050, animal protein production will increase by about 1.7% per year, while meat production will increase by almost 70%, aquaculture by 90% and dairy by 55%. The high popularity of animal protein indicates the important role of the compound feed sector, which will also grow with this demand. The compound feed industry is key to the sustainable development of animal husbandry and plays an important role in the global food industry, providing safe and nutritious components of animal protein. Each increase in the production of animal protein requires a significant increase in the production of compound feeds for the sustainable development of animal husbandry [6].

According to market reports, in the conditions of the growth of the world's livestock population, the spread of animal diseases and the growth of the population, especially in developing countries, the demand for compound feeds is expected to increase in the coming years. In addition, increasing demand for quality dairy and meat products, intensive industrialization process, and scientific progress are other important factors that are likely to contribute to the growth of the compound feed market.

According to the data of the annual Agri-Food Outlook fig. 1 shows the dynamics of changes in the volume of compound feed production in 2018-2023.

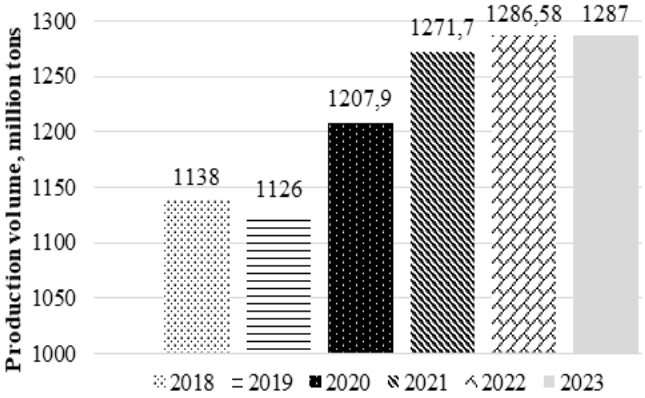

Fig. 1. Dynamics of changes in the volume of compound feed production in 2018-2022

Fig. 2 shows the Top-10 leading countries in the compound feed production in 2022. They consume 64% of the world compound feed, and half of the world compound feed consumption is concentrated in four countries (China, USA, Brazil and India) [7].

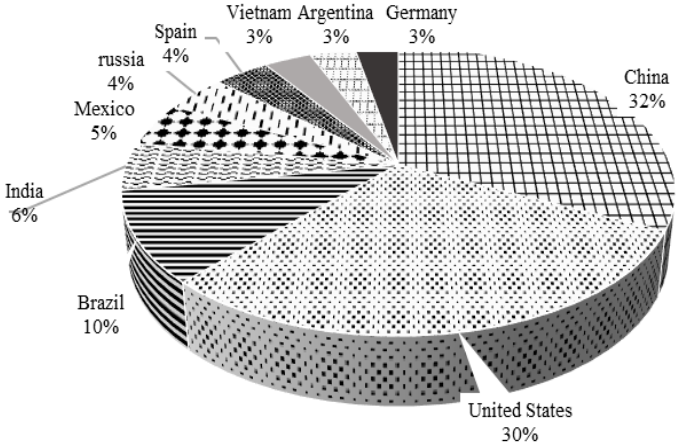

Fig. 2. Top 10 leading countries in the production of compound feed in 2022

A comparative analysis of the structure of compound feed production by species of agricultural animals and poultry for 2021-2023 shows (fig. 3) that almost all species show a growth trend. The compound feed production for pigs has been negatively affected by ASF all over the world. The greatest growth is observed in the field of compound feed for pets.

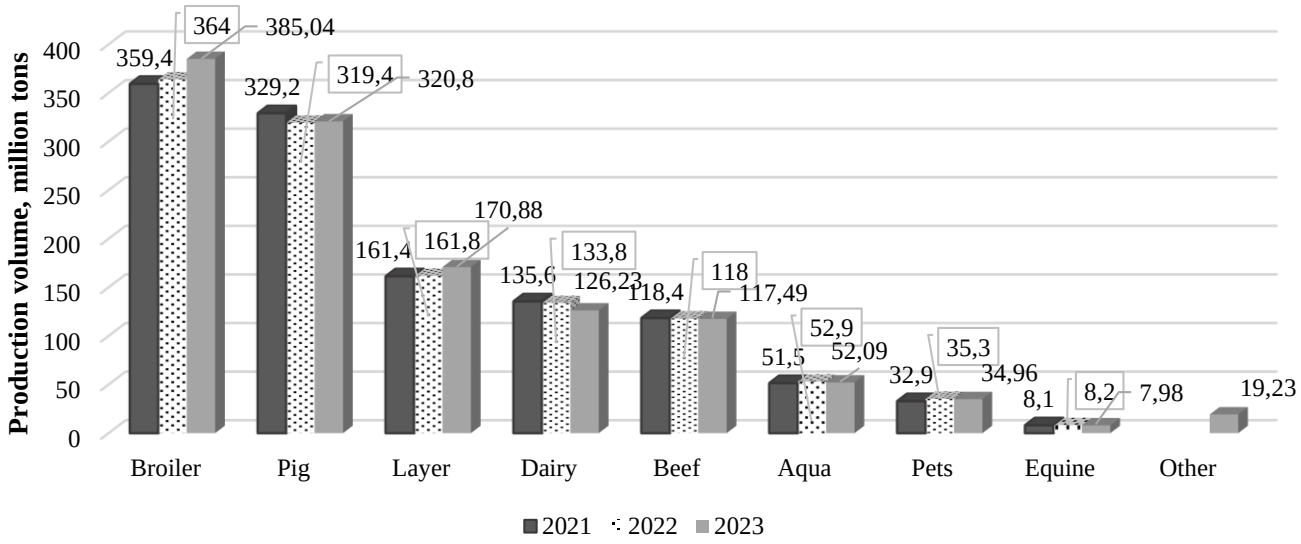

Fig. 3. The structure of compound feed production by types of agricultural animals and poultry for 2021–2023

A third of global consumers prefer poultry meat due to its characteristics and "price-quality" ratio. At the moment, the meat poultry industry in Ukraine is rapidly developing and expanding its capabilities due to the effective growing mainly broiler chickens and turkeys [8, 9].

During the war in Ukraine, poultry farming began to concentrate on small farms. Producers of compound feed products faced many problems that required a quick solution. The main problems were and remain:

✓ inflation and the general state of the economy (increase in prices for raw materials and finished products);

✓ disruption of logistics chains;

✓ staff shortage.

As a result, in 2022, the production volume of compound feed products in Ukraine fell by 35%. The exception is the poultry industry, where in 9 months of 2023, the volumes reached the pre-war period and even more. This fact once again proves that poultry farming occupies a leading place among all branches of animal husbandry and is highly profitable.

The volume of world production of poultry meat is constantly growing, which is caused by the increase in demand for affordable and relatively cheap animal protein. Fig. 4 shows the production of chicken meat worldwide from 2012 to 2023. Despite all the problems of the agro-industrial complex in 2021-2023, the global volume of poultry meat production increased by 2.1% [10].

The analysis of the diagram of poultry meat production by country in 2022-2023 (Fig. 5) shows that the USA remains the leader in poultry meat production in the world for many years. The second and third places are always occupied by Brazil and China. Brazil has the largest growth during the reporting period. All other countries have a stable production rate.

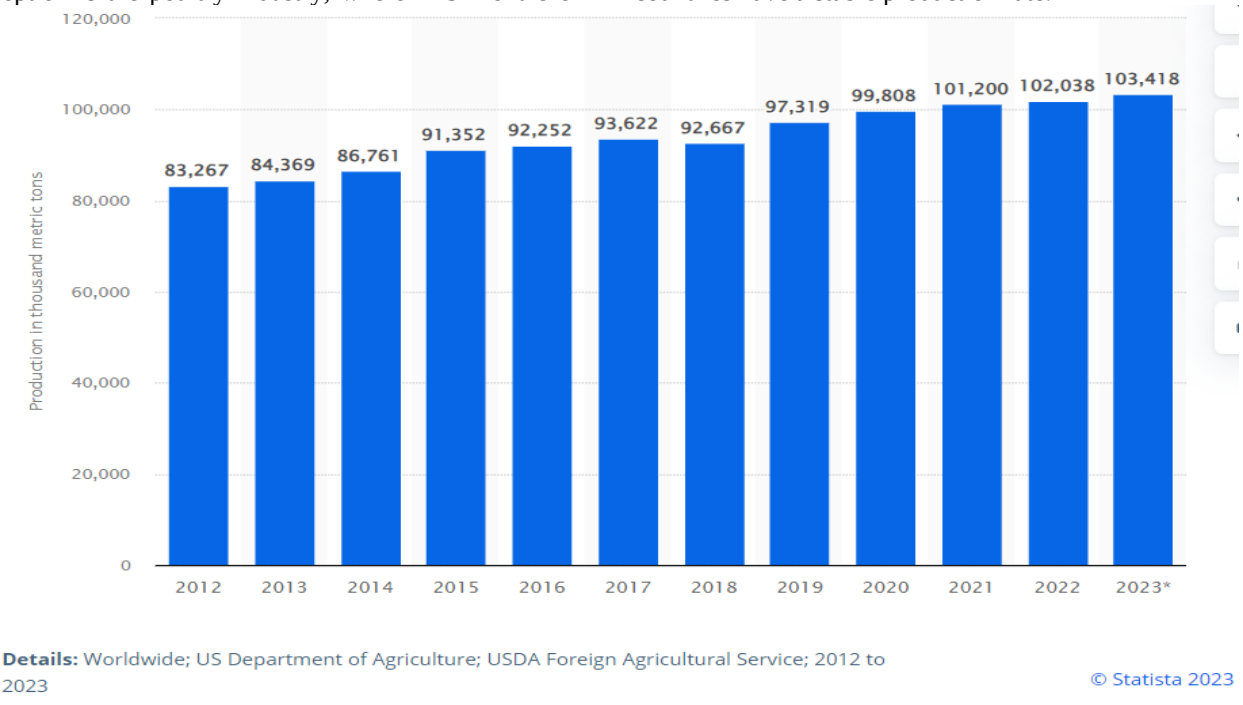

Fig. 4. Volumes of world production of poultry meat 2012 - 2023 [10]

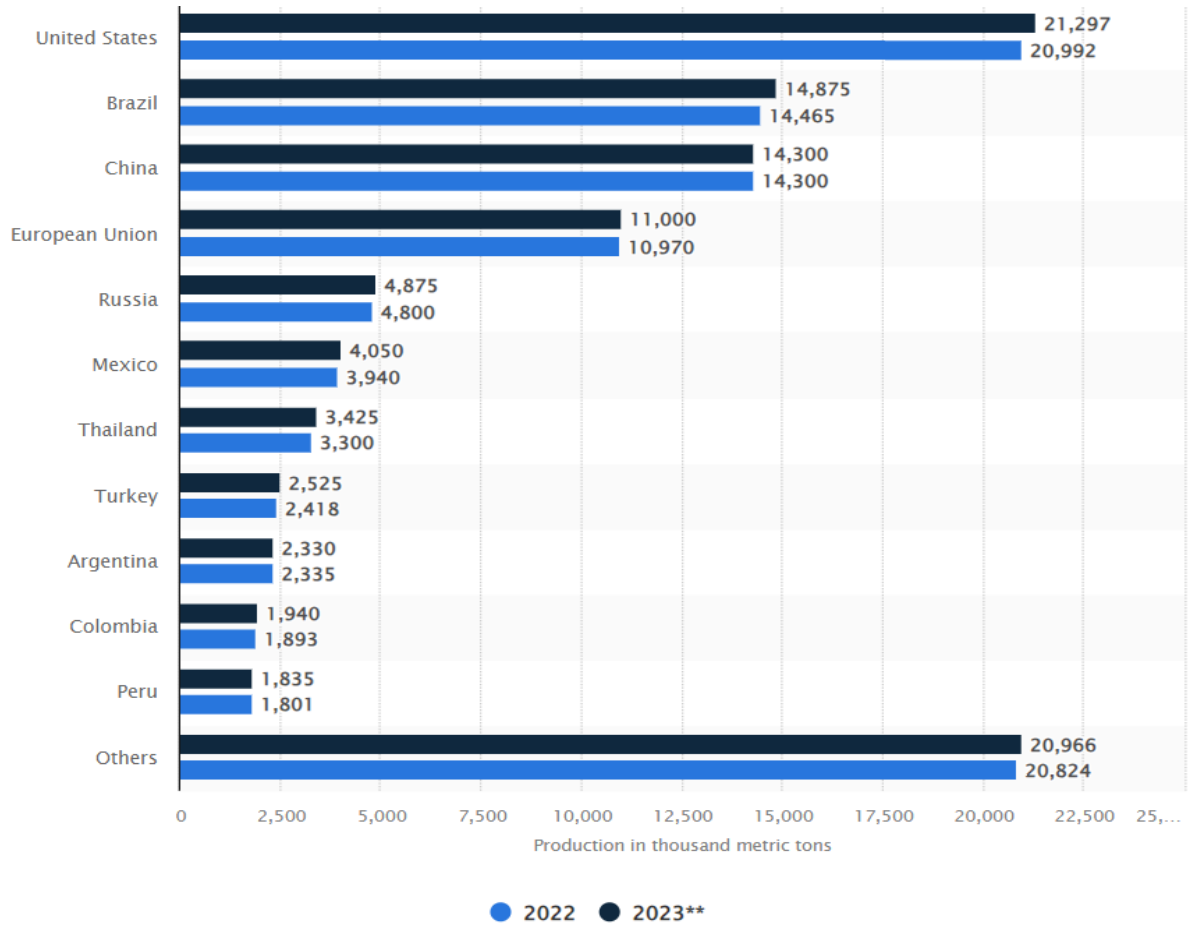

Fig. 5. Production of poultry meat by country in 2022-2023 [10]

Data up to 2021 indicate that poultry meat consumption in the European Union has increased to approximately 12.1 million metric tons. Over the next decade, consumption is likely to continue to trend upward, with a forecast of 12.26 million metric tons by 2032.

The European Union is the fourth largest producer of broiler meat in the world, growing to 10.97 million metric tons in 2022. In this year, the largest poultry producers in Europe were Poland and France, where 1.28 billion and 837.9 million poultry heads were slaughtered, respectively [10].

The poultry sector remains important for Ukraine, and among the various crosses, breeds and types of poultry, guinea fowls are of particular importance. These birds are sometimes called "regal" or "royal" because of their exquisite and harmonious plumage, as well as the high quality of dietary meat and eggs (Bawej et al., 2012; Abdul-Rahman et al., 2019). Guinea fowl eggs stand out for their nutritional value, particularly their high content of carotenoids and vitamin A, which are superior to chicken eggs (Avornyo et al., 2016). The taste of guinea fowl meat is similar to that of wildfowl, but it is softer, juicier and almost fiber-free (Kokoszyński et al., 2011). The content of the edible part of guinea fowls is greater than that of chickens (Baeza et al., 2001). Guinea fowls are also bred to fight pests: worms, slugs, insects (including the Colorado potato beetle). The guinea fowl rearing system has reached industrial industry status in countries such as France, England, Italy and the USA, and guinea fowl farms are already beginning to appear in Ukraine. The increase in the number of guinea fowls in Ukraine, as well as the production of their eggs and meat, will contribute to the expansion of the range of products in poultry farming [11, 12].

The guinea fowl was not always a domesticated bird; it comes from Africa, where the breed of domestic guinea fowl was bred. Since then, the guinea fowl has become popular in the household. Guinea fowls were popular even in ancient Rome and ancient Greece. The meat of the guinea fowl has a special taste, similar to the taste of pheasant, and therefore this bird was highly appreciated, even Ivan the Terrible admired the taste of the guinea fowl meat [12].

Guinea fowls came to Ukraine in the 18th century with a special purpose, primarily as decorative birds. However, the history of the development of this poultry industry in Ukraine revealed their importance for the production of dietary products, and over time, guinea fowls began to be actively bred in poultry farms [13].

In Ukraine commercial breeding of guinea fowls currently isn't widespread, but it is developing. This royal bird has a number of advantages that may be of interest to a farmer-entrepreneur:

- ✓ high adaptability to keeping conditions: guinea fowls can withstand frost up to -20 ^{0}C, which makes them frost-resistant, and high temperatures up to +35-40 ^{0}C;
- ✓ strong immunity: guinea fowls hardly get sick, which distinguishes them from other poultry;
- ✓ guinea fowl meat has good and exotic taste properties;
- ✓ guinea fowl eggs are dietary, do not cause al-

lergic reactions;

- ✓ effective feed conversion - 3.4 kg;
- ✓ little competition on the market: there is no strong competition in the breeding of guinea fowls, which distinguishes this species from others, for example, broilers;
- ✓ high price policy: the price of a guinea fowl's egg is higher than that of a chicken, which allows maintaining competitiveness by setting slightly lower prices than in the market.

There are also disadvantages:

- ✓ guinea fowls are very noisy in a case of self-protection (appearance of extraneous animals, people, rats);
- ✓ do not choose a cozy place for laying eggs;
- ✓ the eggs hatch poorly due to timidity;
- ✓ the ability of guinea fowls to fly requires well-built walks with fences;
- ✓ low stress resistance of guinea fowls has a bad effect on their productivity.

Today, guinea fowls are often grown on private plots and farms [12, 14].

Guinea fowls are bred for meat, eggs and fluff. Guinea fowl products are distributed throughout the world and are produced on a large scale in some countries such as Australia, Belgium, Canada and France. The largest number of them are consumed in African countries.

Guinea fowl meat is highly nutritious, but it is low in calories and high in iron. The fillets of these birds do not have such a bright white color during cooking as, for example, chicken fillets, and have some brown shades. Its taste is similar to game, and it is quite popular in diet food. In addition, guinea fowl meat is recommended for enriching the diet of pregnant women and children with useful trace elements and vitamins. Guinea fowl carcasses contain about 81% edible parts, including 27% protein, 0.5-0.7% fat and 1-1.2% minerals, as well as many organic acids, vitamins and trace elements.

Guinea fowl eggs, although smaller than chicken eggs (about 45 g), are richer in dry matter, lipids, vitamin A and carotenoids. They are almost twice as high as chicken eggs in terms of vitamins A, D3, E and group B. Guinea fowl eggs are pear-shaped with a thick and strong light brown shell, a large yolk and a pleasant taste. They have fewer pores in the shell and greater thickness, compared to chicken eggs, which limits the access of microflora to them and preserves them for a long time at a temperature of +4-6 °C. These eggs remain fresh and retain their nutritional value for up to 90 days or even longer [13]. If the temperature is maintained from 0 to 10 degrees, eggs can retain their properties for 5 months.

Moreover, the droppings of these birds can also become an additional source of income as it is used as organic fertilizer.

Down and feathers of guinea fowl can be used to make pillows, duvets, and other down products. It impresses with its extraordinary beauty unlike the feather of chickens, ducks and geese,. Currently, ornaments made of guinea fowl feathers, such as earrings, pendants and amulets, which are included in the assortment of jewelry, are relevant. The feather is offered both in natural and tinted form. The places of sale can be hardware stores for making jewelry. Also, these feathers can be used in beauty salons to create a stylish manicure [14].

It is reasonable to believe that the first place in the production and consumption of guinea fowl meat belongs to refined gourmets, in particular the French. On the other hand, in Ukraine, guinea fowl meat remains practically unknown to many. The amount of production of this type of product remains small in Ukraine, and most people had not the opportunity to taste it. The profitability of the guinea fowl breeding business can be explained by the fact that this industry is relatively niche in Ukraine. Guinea fowls have a stable demand among a limited range of consumers, although they are quite exotic. This leads to virtually no competition in the market, and the business can make a profit throughout the year through the sale of meat, eggs, down, droppings and young guinea fowl. It is important to note that guinea fowl meat costs much more than chicken meat. Abroad, it is considered the best among domestic birds, which contributes to the high demand for this product. Therefore, starting the production of guinea fowl meat can be a promising area of business, especially for small poultry farms. In Ukraine although guinea fowl meat may not become a daily food product, it may find its place as a delicacy or a dish for the festive table. It is the most importantly, starting a business in the field of breeding guinea fowls does not require significant initial capital, and the investment made at the start pays off quickly. Breeding guinea fowls has significant business potential, especially since they do not require special conditions to be kept and can be kept in the same way as chickens.

Conclusions

Therefore, the high popularity of animal protein and its shortage in the food market determine the important role of the compound feed sector. A third of consumers prefer poultry products due to their availability and quality. In Ukraine, the industry is developing rapidly even in conditions of full-scale war, personnel shortages, power outages, inflation and disruption of logistics chains.

High competition in the field of breeding of laying hens and broilers stimulates the development of niche industries, such as guinea fowl breeding. Guinea fowls are raised for meat, eggs and fluff. This can be a very profitable business, especially for small poultry farms, due to the speed of payback of small investments and the unpretentiousness of the bird.

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АНАЛІЗ СТАНУ ГАЛУЗІ ПТАХІВНИЦТВА ТА ПРИХОВАНІ МОЖЛИВОСТІ

Анотація

На сьогоднішній день як виробники, так і споживачі кормів усвідомлюють, що досягнення високої продуктивності тварин і птиці, а також оптимальної якості кінцевої продукції неможливо без використання повноцінних та збалансованих за поживністю комбікормів. Вимоги до якості комбікормів неперервно зростають і змінюються, оскільки з'являються нові, більш продуктивні породи тварин і кроси птиці. Доведено, що пандемія COVID-19, повномасштабна війна в Україні, мінливість клімату та світова економічна криза серйозно підривають зусилля у боротьбі з голодом та поліпшенням ситуації щодо продовольчої безпеки та забезпечення повноцінного харчування. У країнах Європи та Центральної Азії збільшилась на 25,5 мільйонів осіб кількість людей, які стикаються з проблемами у доступі до належного харчування, включаючи якісні та безпечні продукти. За оцінками ФАО до 2050 року ми повинні будемо збільшити виробництво їжі і тваринного білка в тому числі на 60 %, щоб забезпечити харчування 9,3 мільярда населення світу. Встановлено, що найпоширенішим та доступним джерелом тваринного білка для задоволення потреб населення всього світу є продукція птахівництва. Представлено динаміку змін об'ємів виробництва комбікормів у 2018 – 2022 роках згідно з даними щорічного Agri-Food Outlook. Наведено топ-10 країн-лідерів з виробництва комбікормів у 2022 році. Вони споживають 64 % світового комбікорму, а половина світового споживання комбікорму зосереджена у чотирьох країнах (Китай, США, Бразилія та Індія). Порівняльний аналіз структури виробництва комбікормів за видами сільськогосподарських тварин та птиці за 2021 – 2022 роки свідчить, що майже за всіма видами спостерігається тенденція росту. На виробництво комбікормів для свиней негативно вплинула АЧС по всьому світу. Найбільший зріст спостерігається у галузі виробництва комбікормів для домашніх тварин. Доведено, що третина споживачів віддає перевагу продукції з м'яса птиці через її доступність і якість. В Україні галузь стрімко розвивається навіть в умовах повномасштабної війни, кадрового голоду, відключень електроенергії, інфляції та зриву логістичних ланцюгів. Наведено об'єми світового виробництва м'яса птиці з 2012 по 2023 рік, які постійно зростають, що викликано підвищенням попиту на доступний та відносно дешевий тваринний білок. В результаті аналізу динаміки виробництва м'яса птиці по країнах у 2022 – 2023 роках встановлено, що США залишаються лідерами з виробництва м'яса птиці у світі упродовж багатьох років. Друге та третє місця беззмінно посідають Бразилія та Китай. Найбільший приріст за звітний період має Бразилія. Висока конкуренція в галузі розведення курей-несучок і бройлерів стимулює розвиток нішевих галузей, наприклад розведення цесарок. Цесарок вирощують для отримання м'яса, яєць і пуху. Це може бути дуже прибутковий бізнес, особливо для невеликих птахівничих господарств, завдяки швидкості окупності незначних інвестицій і невибагливості птиці.

Ключові слова: цесарка, об'єми виробництва комбікормів, аналіз ринку, галузь птахівництва, м'ясо птиці, промислові виробники.

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