Prospects for Expanding the Market for American Queen Bee in Europe and North America

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Abstract. In the current conditions of global beekeeping development, the efficiency of beekeeping largely depends on the genetic characteristics of queen bees used in production. The queen bee market is influenced by global trends, including an ever-increasing demand for highly productive breeds, increased competition between exporting countries, and the need to ensure product quality. At the same time, the issue of importing American queen bees to Europe and North America requires a detailed analysis, in particular in the context of economic prospects, regulatory requirements, and potential challenges for local beekeeping. The importance of the study stems from the need to develop comprehensive measures to stabilize the market, support local producers and increase the efficiency of the beekeeping industry. The study is aimed at analyzing the prospects for expanding the market for American queen bees in Europe and North America, assessing the economic benefits of their use, and developing measures to create favorable conditions for the integration of imported queen bees into local beekeeping systems. The study uses a comprehensive approach that combines methods of economic analysis, comparative legal analysis, and expert evaluation. The analysis of regulatory aspects is based on a comparative study of EU, US and Canadian legislation on the import of bee products. The study showed that the use of American queen bees can help increase the productivity of local apiaries due to the high honey production of bees and their resistance to diseases. At the same time, market expansion requires comprehensive measures to regulate imports, including setting minimum prices for imported honey in line with production costs, introducing anti-dumping duties, strengthening product quality control, and creating a mandatory system for tracing the origin of honey. It is proposed to develop state programs to support local beekeepers, finance breeding initiatives and provide preferences for domestically produced products. The use of American queen bees in beekeeping in Europe and North America has significant potential to increase apiary productivity. However, the effective integration of such queens into local production systems requires government regulation, economic support for local producers, and market transparency. The implementation of the proposed measures will help to increase the competitiveness of the beekeeping industry, maintain its economic sustainability and ensure high quality products for end consumers.

Keywords: market of medical and cosmetic products, economic potential, marketing strategies, logistics costs, customs procedures, certification.

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Перспективи розширення ринку американських бджолиних маток в Європі та Північній Америці

Анотація. У сучасних умовах розвитку світового бджільництва ефективність пасічництва значною мірою залежить від генетичних характеристик бджолиних маток, що використовуються у виробництві. Ринок бджолиних маток зазнає впливу глобальних тенденцій, включаючи щораз вищий попит на високопродуктивні породи, посилення конкуренції між країнами-експортерами та необхідність забезпечення якості продукції. Водночас питання імпорту американських бджолиних маток до Європи та Північної Америки потребує детального аналізу, зокрема в контексті економічних перспектив, регуляторних вимог і потенційних викликів для місцевого бджільництва. Важливість дослідження зумовлена необхідністю розроблення комплексних заходів для стабілізації ринку, підтримки місцевих виробників і підвищення ефективності бджолярської галузі. Дослідження спрямоване на аналіз перспектив розширення ринку американських бджолиних маток в Європі та Північній Америці, оцінювання економічних переваг їх використання, а також розроблення заходів для створення сприятливих умов інтеграції імпортованих маток у місцеві бджільницькі системи. У роботі використано комплексний підхід, що поєднує методи економічного аналізу, порівняльного правового аналізу та експертного оцінювання. Аналіз регуляторних аспектів здійснено на основі порівняльного дослідження законодавчих норм ЄС, США та Канади у сфері імпорту бджолопродукції. Дослідження показало, що використання американських бджолиних маток може сприяти підвищенню продуктивності місцевих пасік завдяки високій медоносності бджіл та їх стійкості до хвороб. Водночас розширення ринку потребує комплексних заходів щодо регулювання імпорту, зокрема встановлення мінімальних цін на імпортний мед відповідно до витрат виробництва, запровадження антидемпінгових мит, посилення контролю за якістю продукції та створення обов'язкової системи відстеження походження меду. Запропоновано розвиток державних програм підтримки місцевих бджолярів, фінансування селекційних ініціатив та надання преференцій для продукції національного виробництва. Використання американських бджолиних маток у бджільництві Європи та Північної Америки має значний потенціал для підвищення продуктивності пасік. Однак ефективна інтеграція таких маток у місцеві виробничі системи потребує державного регулювання, економічної підтримки місцевих виробників та забезпечення прозорості ринку. Реалізація запропонованих заходів сприятиме підвищенню конкурентоспроможності бджільницької галузі, збереженню її економічної стійкості та забезпеченню високої якості продукції для кінцевих споживачів.

Ключові слова: ринок медичних та косметичних продуктів, економічний потенціал, стратегії маркетингу, витрати на логістику, митні процедури, сертифікація.

Introduction. In today's world, the demand for queen bees has grown significantly, driven by the need to ensure the stability of bee colonies for crop pollination and the expansion of the market for medical and cosmetic products based on bee products. Due to high quality and technological innovations in breeding, American queen bee producers hold a leading position in the global market. However, existing barriers such as international trade restrictions, logistical difficulties, different regulatory requirements and competition with other suppliers make it difficult for them to expand their market to new territories, particularly in Europe and North America.

Nevertheless, the expansion of the US queen bee market has significant economic potential that can be realized through improved marketing strategies, optimized supply chain processes, and adaptation to local conditions. Given these factors, it becomes relevant to study

the prospects for expanding the market for American queen bees in Europe and North America, identify the main challenges and opportunities facing producers, and develop recommendations for overcoming existing barriers and promoting further market growth.

Analysis of recent research and publications. Modern research and publications analysis show a relatively low scientific and practical interest in exporting queen bees and bee packages. The works of both foreign and domestic scientists focus on ensuring high-quality breeding material, improving logistics processes and increasing the economic efficiency of beekeeping. In particular, the research of R. Brodschneider et al. [1], as well as R. Buchler et al. [2], analyze the efficiency of the logistics of exporting queen bees from the United States to Europe, focusing on the need to reduce costs and shorten delivery times, which has a direct impact on the quality and survival of bee packages. In the works of L. V. Dicks et al., A. Khalifa et al. [4] examine the market demand in Canada and emphasize the importance of high-quality breeding material to increase apiary productivity, which creates demand for products of American producers. F. Mondet et al. [5] investigated the economic aspects of exporting bee packages, particularly certification and customs procedures that increase the final cost of products. R. Moritz, S. Erler [6] and F. Nainu [7] analyzed the competitive environment in the queen bee market in Europe and identified the main factors for selecting suppliers, including quality, price and logistics capabilities. In addition, K. S. Traynor [8] considers the genetic diversity of queen bees as a factor that increases the productivity of apiaries, which is an important argument in favor of importing high-quality breeding material.

The **purpose** of the article is to analyze the prospects for expanding the market of American queen bees in Europe and North America, as well as to identify the main factors that affect this process and to develop recommendations for overcoming barriers and using opportunities to optimize trade relations.

Objectives of the article**:**

- to assess the current state of the American queen bee market globally, in particular in Europe and North America;

- to identify the main factors affecting the expansion of this market, including political, economic and regulatory barriers

- Identify competitive advantages and unique offerings of U.S. queen bee producers that may contribute to their success in the European and North American markets.

Materials and methods

The study applies a comprehensive approach that includes economic analysis, comparative legal analysis and expert evaluation, which allows for a comprehensive study of the topic. To assess the current state of the American queen bee market and identify opportunities for its expansion in Europe and North America, economic analysis methods were used, namely, the analysis of key economic indicators, such as export volumes, queen bee prices, and the level of demand for products. This allowed us to identify the main trends in the market and the impact of various factors on its development.

Comparative legal analysis was applied to study the regulatory requirements and legal aspects of importing bee products in the European Union, the United States, and Canada. For this purpose, a comparative study of national regulations and international agreements governing the conditions and procedures for importing queen bees and bee packages was conducted. Particular attention was paid to analyzing certification requirements, quarantine procedures and sanitary standards that ensure the safety and quality of bee products.

The expert evaluation analyzed the prospects for expanding the queen bee market. This allowed us to collect insights on the main factors that may affect the success of this market expansion, as well as identify competitive advantages and potential barriers to business development.

All data for the analysis was collected from scientific publications, official reports, statistics, and materials from international organizations and competent government agencies.

Results

The queen bee market in the United States is an important part of the beekeeping industry, which meets both domestic needs for colony restoration and exports to other countries [9]. In recent years, the industry has faced numerous challenges, including a decline in the number of colonies, fierce competition with imported products, and increasingly high production costs.

According to the U.S. Department of Agriculture (USDA), the number of honey-producing colonies decreased by 5.9% in 2023. The main reasons for this phenomenon were unusually high losses due to Colony Collapse Disorder (CCD) and the impact of unpredictable weather [10]. These factors led to higher honey prices, which in turn created conditions for the expansion of imports from countries such as Argentina and India, where production costs are much lower.

Increased competition from cheaper imports has become one of the key challenges for American beekeeping. In 2023, more than 60% of domestic demand for honey was covered by imported products. Accordingly, the decline in the share of domestic production and dependence on foreign suppliers negatively affected the industry's revenues, which have decreased by an average of 2.9% over the past five years.

Despite the general downward trend in revenues, a significant jump is forecast in 2025. Industry revenue is expected to reach $721.39 million, which includes a significant 6.7% increase due to increased demand for pollination services. U.S. farmers are increasingly dependent on beekeepers to provide effective pollination, especially in the cultivation of almonds, fruits, and vegetables. As the demand for these crops grows, the beekeeping industry has the opportunity to compensate for the losses associated with reduced honey production by increasing the cost of pollination services [11].

For a better understanding of the current state of the US beekeeping market and the main trends in its development, Table 1 shows the main factors affecting the industry.

Table 1

Overview of the main trends in the US beekeeping market

Factor	Impact on the industry
Competition with imports	Decrease in the share of domestic production, 60% of demand is covered by imports
Decrease in the number of colonies	Decline by 5.9% in 2023 due to environmental and climate factors
Demand for pollination services	Growth by 6.7% in 2024 due to expansion of almond and other crops
Diversification of offers	Expanding product portfolio and pollination services to maintain profitability
Market fragmentation	No dominance of large players due to low entry barriers
Climate change	Impact on seasonality of production and increased risk of diseases among colonies

Source: compiled by the author based on [10].

As for other aspects of beekeeping, the average price for queen bees in 2022 was $22, for packages $98, and for nucs $129. Pollination revenue amounted to $241 million, down 11% from 2021. Other honey bee revenues decreased by 31%, reaching $55.2 million. This may indicate a decline in activity in other segments of beekeeping or a change in demand for relevant services.

The number of honey bee colonies in the United States as of January 1, 2022 was 2.88 million, which is 1% less than the same date in 2021. During 2022, there was a downward trend in the number of colonies in different quarters, due to both natural losses and stress factors, including Varroa mites. The highest level of infection with these mites was recorded in the second quarter of 2021 - 50.7%, while in the first half of 2022, the figures were 33.7% and 45.2%, respectively [12].

The loss of colonies with symptoms of collapse increased by 12% in the first quarter of 2022, indicating serious health problems for bee colonies and the need to strengthen measures to protect them. Possible solutions include the use of the latest Varroa mite treatments, the introduction of more effective disease prevention strategies, improved wintering conditions for bees, and optimized approaches to feeding and colony care.

During March-May 2024, there were significant fluctuations in the volume of queen bee imports in different countries of the world. The dynamics of changes are shown in Table 2, which demonstrates significant differences in demand for these products among individual countries.

In particular, the largest increase in imports was recorded in the United States, where the indicator increased from zero in March to 1482.5 million USD in April, and in May reached 6526.6 million USD, which is an increase of 340.2% compared to April. A similar trend is observed in Italy, where imports increased from $148.6 million in April to $367.0 million in May, which is equivalent to an increase of 147.0%.

At the same time, some countries showed negative dynamics. For example, in Australia, after rising to $182.3 million in April, imports fell to $148.8 million in May, a decline of 18.4%. An even more pronounced decline was recorded in New Zealand, where imports, having risen to USD 120.9 million in April, fell to USD 40.4 million in May, a 66.6% decline.

Particular attention should be paid to Denmark, where there were no imports of queen bees in March and April, but in May a significant volume of USD 556.0 million was recorded, which may indicate a one-time large contract or seasonal features of purchases.

In general, the analysis of the table data indicates the heterogeneity of import activity in different countries, which may be due to both seasonal factors and changes in market demand and regulatory policy.

Table 2

Import volume of queen bees in some countries of the world, March - May 2024, mln USD

Country	March	April	May	Deviations May-April, %
USA	0	1482,5	6526,6	340,2
Italy	0	148,6	367,0	147,0
Australia	81,8	182,3	148,8	–18,4
Chile	0	196,7	205,8	4,6
New Zealand	10,2	120,9	40,4	–66,6
Denmark	0	0	556,0	0

Source: compiled by the author based on [13].

Since long-distance transportation of queen bees is accompanied by a number of risks, including mechanical damage, stress, dehydration, overheating or hypothermia, an important task is to develop a specialized cage that provides optimal conditions for maintaining the physiological state of the queen during the entire transportation period.

One of the main design features of a multifunctional cage is the use of materials that help maintain a stable microclimate. Typically, such cages are made of lightweight but durable plastic or wood, which ensures sufficient air circulation and at the same time protects the

uterus from mechanical damage. Specially designed ventilation holes allow for optimal humidity and temperature levels, which are critical factors during long-distance transportation, particularly when exporting queens from the United States to Europe and Canada.

Another important characteristic is the presence of a compartment with a feed plug, which consists of a paste-like feed (most often a mixture of honey and sugar molasses) that provides nutrition for the queen and accompanying bees during transportation. This helps to reduce stress and maintain the queen's energy balance, which is especially important during transportation, which can last several days.

In addition to transportation, the multifunctional cage performs another important function - gradually introducing the queen into a new bee family. In traditional practice, introducing a new queen to a family is difficult, as bees can be aggressive towards and kill a stranger's queen. To avoid this, modern cells are designed to allow bees to gradually get used to the new queen's pheromones. For this purpose, a special hole is closed with a feeding plug, which the bees gradually gnaw through. Thus, while eating food, the bees get used to the smell of the new uterus, and by the time it comes out, aggression is significantly reduced or completely disappears.

An important aspect of the effectiveness of multifunctional cages is their role in increasing the economic efficiency of queen bee exports from the United States to other countries. As the U.S. queen bee market is characterized by high growth rates and strong demand in Europe and North America, the issue of maintaining queen bee quality during transportation is key to maintaining the competitiveness of producers. Improvements in cage design have helped significantly reduce queen mortality during transportation, which has helped increase supply efficiency and the profitability of beekeeping operations.

In addition, in international trade and veterinary control, the use of multifunctional cages helps simplify logistics processes. As most countries importing queen bees have strict sanitary requirements, it is important that the packaging meets safety standards and ensures sterile transportation. Modern cages are made of materials that are easy to disinfect, an additional advantage in the face of strict veterinary control.

Thus, the multifunctional cage for transportation, rearing and rearing of queen bees in the United States is an important tool in modern beekeeping, allowing for the safe transportation of queen bees over long distances, facilitating their successful adaptation to new families, and increasing the efficiency of international trade. Innovative solutions in designing such cages help minimize the risks associated with transportation, reduce losses and contribute to the sustainable development of the beekeeping industry internationally.

The European queen bee market is an important component of the beekeeping sector, as it directly affects the sustainability of honey production and the efficiency of crop pollination. At the same time, this market segment faces numerous challenges due to economic, environmental and regulatory factors. Many negative factors influence the European Union's beekeeping sector. Among the main threats are climatic problems that lead to changes in the flowering regime of plants and deterioration of conditions for the development of bee colonies, lack of feed resources, especially in regions with intensive agricultural production, environmental pollution, in particular through the use of pesticides, risks associated with invasive species such as the Asian hornet (Vespa velutina), low profitability of production due to rising costs of keeping bees and competition with cheap imported honey, and fraud that undermines consumer confidence in European beekeeping products.

Recent studies show that the EU produces only 60% of its honey needs, with China accounting for a significant share of imports (36%). At the same time, 46% of imported honey does not meet EU standards due to fraudulent practices, such as mislabeling and adding sugar syrup [14]. In such circumstances, the demand for high-quality queen bees is growing, as

ensuring the productivity of apiaries and their adaptation to changing conditions is a key factor for industry's survival.

The main aspects that determine the development of the queen bee market in the EU include breeding and genetic improvement of bee breeds, as European beekeepers are actively working on developing disease-resistant and highly productive bee lines; regulatory policy, as the EU has strict veterinary and import rules that limit the import of uncertified queens from other countries; demand for pollinators, as some regions of the EU are already experiencing a shortage of bee colonies for effective crop pollination; the influence of American queen bees, as in recent years there has been a growing interest in using American genetic lines of bees that demonstrate high productivity and disease resistance. European beekeepers face competition from producers in other regions of the world. Bilateral trade agreements, such as the autonomous trade measures for Ukraine or the agreement with India under discussion, can help develop the market and exacerbate the situation. An agreement with Mercosur could increase honey imports by 15,000 tons, putting additional pressure on European producers.

As part of the regulation of imports of bee products to the European Union, there are clearly defined legal requirements that ensure a high level of safety for human and animal health and the preservation of environmental cleanliness of products. The EU legal framework for the import of bee products consists of numerous regulations, among which the main ones are the regulations of the European Parliament and the Council of the EU, in particular, Regulation (EU) No. 228/2013 on sanitary requirements for trade with third countries [15], as well as Regulation (EU) No. 599/2014 on honey quality control measures [16].

According to these acts, every import of bee products, including honey, queen bees, pollen, wax and other derivative products, must meet safety and quality requirements, including laboratory tests for residual pesticides, mycotoxins, antibiotics and heavy metals, as well as control over the origin of the products. In particular, honey must be free of antibiotic and pesticide residues, which must not exceed certain limits, protecting consumer health and the environment.

One of the most important components of EU legislation is the requirement for the origin of bee products. All products imported from third countries must be accompanied by certificates confirming their origin and compliance with EU standards. This includes documentation on the country of origin and the processing and transportation of the product. Imports of queen bees and other live insects are subject to additional quarantine measures, including checks for diseases and pests that can be spread through these products.

Equally important is the issue of labeling imported bee products. All imported products must be clearly labeled by EU labeling requirements, including an indication of the country of origin, date of manufacture, expiration date and other relevant data. This allows consumers to obtain the necessary information about the product and make informed decisions.

Compliance with these requirements is monitored at all stages - from production to importation into the EU. It is important to note that the national authorities of the EU member states have the right to carry out additional inspections and sanctions in case of violations, which may include a ban on imports of products or their return to the country of origin. Thus, EU legal requirements for importing bee products aim to ensure high standards of quality, safety, and environmental friendliness, which helps protect the health of EU citizens and the stability of the bee products market.

In the context of the prospects of expanding the market for American queen bees in North America, especially in Canada, there are clearly defined legal requirements for the import of honey bees from the United States. The Canadian Food Inspection Agency (CFIA) regulates this process by setting strict requirements for documentation, certification, and the sanitary condition of the bees. A special import permit is required to import honey bees, which is issued before products or animals are imported into Canada. The application for this permit must be

submitted to the local CFIA office in advance, and the exporter must provide an export certificate issued by the competent authorities of the exporting country, which confirms compliance with all import permit requirements [9].

Documentation accompanying the import must be provided in the original or as a signed copy of the original and accompany the goods when crossing the border. It is important to note that only CFIA inspectors can change the import conditions; if other persons make changes, the import authorization becomes invalid. The documentation must be in English or French and accurately describe the cargo and its country of origin. Also, export documentation must be issued within 30 days before export and approved by an inspector of the US Animal and Plant Health Inspection Service (APHIS). It must contain the CFIA import authorization number. In case of changes in the epizootic situation in the country of origin of bees between the time of issuance of the permit and the actual import of products, the importer may be denied, or the shipment will be subject to additional quarantine, testing or treatment at the expense of the importer.

In addition, Canada pays special attention to the certification of apiaries that export queen bees. Apiaries must be officially recognized as being free of Africanized Apis mellifera scutellata genetics based on current maps and surveillance programs for this species. If Africanized bees are found within 30 miles of the apiary within the last year, exports will be prohibited. This is confirmed by a certificate issued by the state department of agriculture. Mitochondrial DNA testing (PCR-DNA) is also conducted on exported worker bees. The testing must be done within 180 days prior to export and if the presence of A. m. scutellata is detected, export will be prohibited.

Canada also requires that the Asian honey bee (Apis cerana) and its hybrids are not present in the country or region of origin. The apiary must be certified as free of major bee diseases, such as American Foulbrood (AFB), European Foulbrood (EFB) and Varroa mites. For this purpose, 5% or at least 25 bee colonies must be randomly selected and tested for clinical signs of these diseases within 90 days prior to export. If symptoms of the diseases are detected or Varroa levels exceed 1%, exports will be prohibited until appropriate treatment and retesting is carried out. These requirements emphasize the importance of high quality and safety standards in the process of importing queen bees to Canada, which is important for the development of the bee products market in North America.

The market opening to American queen bees has the potential to significantly increase the productivity of European apiaries. To ensure the beekeeping sector's stability, measures must be implemented to protect local producers, control product quality, and create fair competition. The primary task is to strengthen control over the quality of honey, including introducing stricter standards for verifying the authenticity of the product, increasing the number of spot tests of imported honey and expanding the powers of supervisory authorities in anti-counterfeiting. An important element of this process is modern analytical methods, including spectroscopic and isotopic analysis, which can detect the addition of artificial sweeteners and the origin of honey, which will help significantly reduce the level of counterfeiting in the market.

In addition, regulating imports is necessary to create conditions for fair competition between producers. Setting minimum prices for imported honey in line with real production costs will help protect European beekeepers from unfair competition and dumping policies by third countries. In this context, it is advisable to introduce anti-dumping duties on products supplied at a price lower than the EU production cost. Such measures will help stabilize the market and preserve local beekeeping as a viable agricultural economy sector.

Developing beekeeping support programs is also a key factor in strengthening the market. This requires expanding government and European financial initiatives to provide grants and subsidies for apiary modernization, improving the selection and breeding of quality

queen bees, and introducing innovative methods of keeping bees. Special attention should be paid to financial support for programs to preserve local bee breeds, contributing to biodiversity and resilience to external environmental factors.

An important step in ensuring market transparency is introducing a mandatory honey traceability system to control the entire supply chain, from the producer to the end consumer. Such a system will help increase confidence in European products, as buyers will be able to be sure of the high quality and naturalness of the honey they buy. At the same time, it is necessary to develop mechanisms to support local beekeepers through public procurement and preferences for their products, which will help develop the domestic honey market and support small and medium-sized producers.

Particular attention should be paid to simplifying the procedures for importing American queen bees, given their genetic advantages, which can significantly increase the efficiency of European apiaries. Using high-yielding queens will improve honey production and disease resistance of bee colonies, which will positively impact the industry's overall productivity. Thus, a combination of enhanced quality control measures, a level playing field, support for local producers and the integration of American queen bees will contribute to the stabilization and long-term development of the EU beekeeping sector.

The European queen bee market has great potential for development, but its sustainability largely depends on the effectiveness of policy decisions and economic support for the industry. Successful adaptation to challenges such as climate change, competition with imported products and the need to ensure sustainable pollination will require a comprehensive approach, including investments in breeding, quality control and fair trade promotion. Cooperation with American queen bee producers can play a special role in improving the genetic pool and increasing the productivity of European beekeeping.

Conclusions. The US queen bee market continues to show steady growth, particularly in Europe and North America, due to the high demand for products that contribute to the development of beekeeping and agricultural enterprises. However, this market faces specific challenges, mainly due to regulatory and environmental restrictions that determine the terms of imports. Nevertheless, the prospects for further growth remain positive, especially as global attention to organic products and the importance of pollination for agriculture increases.

The main barriers to market expansion are political, economic, and regulatory constraints. Political factors, such as changes in trade relations between countries, could lead to changes in import tariffs or quotas, which would affect the competitiveness of US queen bees in foreign markets. Economic factors, such as currency fluctuations and fuel and transportation costs, may also affect the affordability of products. Regulatory barriers, including certification requirements, quarantine inspections, and quality standards, may create additional challenges for U.S. exporters, particularly in the EU and Canada.

US queen bee producers have several competitive advantages that may contribute to their success in the European and North American markets. These advantages include high-quality products, confirmed by international certificates, and the development of innovative technologies in the field of beekeeping, which allows for increased production efficiency and ensures queen resistance to diseases and pests. In addition, American producers have experience in international trade, which enables them to adapt their products to the requirements of different markets effectively. Unique offerings, such as the use of specialized breeding programs to improve the genetic characteristics of bees, can be an essential factor in achieving a competitive advantage.

Thus, for the successful expansion of the American queen bee market, both external factors and the strategic use of competitive advantages of producers must be taken into account. An essential condition for further development is adaptation to regulatory requirements, support for innovation in the industry, and strengthening of trade relations at the global level.

Prospects for further research include an in-depth study of the impact of changes in international trade and regulatory requirements on the development of the queen bee market. In particular, it is essential to investigate how global economic and political changes may affect supply and demand in this market segment and the competitiveness of US producers in the European and North American markets.

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