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**Research article**

# Examining the Challenges and Problems of the Beekeeping Industry in Selected Provinces of Afghanistan

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## Abstract

The beekeeping industry in Afghanistan faces numerous challenges that significantly hinder its development. This study was conducted to provide an overview of the problems confronting the beekeeping sector across several provinces in Afghanistan. To this end, a Likert-scale questionnaire was randomly distributed both online and in person. This research is quantitative and descriptive in nature, with 164 individuals from specific segments of society participating in the survey. The reliability of the questionnaire was confirmed using Cronbach's alpha, yielding a coefficient of $\alpha = 0.80$. Data analysis was performed using IBM SPSS Statistics 25. The results indicate that 53.66% of respondents strongly agree that the beekeeping industry in Afghanistan has a significant impact on household economies. Additionally, 54.3% agree that the development of beekeeping can effectively contribute to poverty reduction. Moreover, 48.2% agree that the widespread use of toxic pesticides in orchards negatively affects honeybees. Furthermore, 52.4% agree that the lack of well-equipped laboratories for diagnosing honeybee diseases and pests hinders the industry's progress. About 61% strongly agree that the Ministry of Agriculture, Irrigation, and Livestock should provide greater support for the development of the beekeeping industry. Additionally, 57.3% strongly agree that establishing academic programs in beekeeping at undergraduate and postgraduate levels is essential. Supporting domestic production and preventing honey imports can reduce the country's dependency on foreign honeybee products and promote self-sufficiency and sustainable development.

**Keywords:** Beekeeping industry, honeybee, honey contamination, pesticides, beekeeping occupation

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## 1. Introduction

Beekeeping in Afghanistan, as an important industry in economic and social development, faces several challenges that affect production, the market, and beekeeping products in this field (Afghanistan Beekeepers Association; 2023). The beekeeping industry in some provinces of Afghanistan faces several challenges, which have negatively affected the production, quality, and development of this industry. Drought and climate change are among the most important natural factors that have reduced the availability of food sources for bees and honey production yields (Mangle et al., 2024). For example, frequent droughts in Afghanistan have reduced pollinators and honey-producing vegetation. Environmental pollution, such as dust storms, also negatively impacts honey production yields, and a significant decrease in beekeeping production has been reported (Zeidali et al., 2018). Unfavorable weather conditions and warming also affect the activities of honey bees, especially queen egg-laying and nectar collection from plants, which leads to a decrease in honey yield (Norouz et al., 2019).

The lack of water resources and suitable vegetation creates limitations in some areas, but in others, it depends on the climatic conditions and vegetation. In addition, problems such as the spread of diseases in the boxes and insufficient access to appropriate medicines to treat diseases are among the main concerns of beekeepers (Norouz et al., 2019). The low quality of queens and the lack of scientific methods for breeding them are other issues that can negatively affect the productivity of beekeepers ( Farkhary, 2024). Non-transparent markets, inappropriate product pricing, and marketing problems have reduced beekeepers' income. Moreover, the presence of counterfeit medicines in the market and the inability to access quality spices have increased costs and reduced the profitability of beekeeping (Ghanbari, 2018).

Rural deprivation, poverty, and lack of education, especially in remote areas, are limiting factors for the development of this industry. Insufficient investment and inadequate government support have prevented beekeepers from accessing the necessary facilities and equipment to improve their production.

The importance and necessity of this research lie in the fact that the most important problems and potential solutions are analyzed, especially in the context of an increase in the use of pesticides and other chemicals harmful to these insects. Beekeeping in Afghanistan as an economic activity: In recent years, beekeeping has been considered because of its natural potential and the need for job creation. However, limited research has analyzed the challenges facing this industry in depth. Climate change can significantly impact honey bee populations and behavior. It is hypothesized that rising temperatures and changes in rainfall patterns can lead to a decline in honey bee populations, thereby reducing their positive environmental impact.

Does the beekeeping industry in Afghanistan significantly impact the economy of families? Can the development of the beekeeping industry in Afghanistan prevent the importation of honey from abroad? Can improvements in the beekeeping industry lead to a reduction in dependence on foreign aid? Does the widespread use of poisonous pesticides in bee orchards have a negative effect on the environment? Can the export of honey from Afghanistan improve the country's economy and the living conditions of its people? Can the development of beekeeping jobs in Afghanistan effectively alleviate poverty? Can security in Afghanistan lead to the growth of the beekeeping industry? Can honey fraud, the loss of trust in honey sellers, and the lack of monitoring systems be challenges for beekeeping? Does the lack of well-equipped laboratories for the diagnosis of diseases and pests in the country hinder the development of the beekeeping industry? Or is it necessary to establish beekeeping fields at the bachelor's and post-bachelor's levels in the country? These questions are addressed in this study.

The present study was conducted to investigate the challenges and problems faced by the beekeeping industry in some provinces of Afghanistan. By carefully examining environmental, economic, and social factors, it also provides scientific and practical solutions. Based on new data, it analyzes the complex interactions between environmental, economic, and social factors. This research fills existing gaps, especially in the field of current situation analysis, and provides valuable information for policymakers and international organizations.

## 2. Literature Review

A field study in Herat Province showed that 68% of beekeepers faced the problem of reduced honey production due to successive droughts. The study also points to the widespread prevalence of *Varroa destructor* in 85% of the hives in the region ( Ahmadi et al., 2021). A study in Nangarhar Province showed that 72% of beekeepers still use traditional methods because of a lack of knowledge of modern methods, which has limited the average honey production to 5 kg per hive. This study also points to the problems of marketing beekeeping products in eastern Afghanistan (Rahimi, 2020). A study by the Afghan Rural Development NGO (ARD) in Balkh Province in 2022 showed that the lack of beekeeping cooperatives has caused beekeepers to receive only 40% of the actual price of their crops. The report also points to the negative impact of regional insecurity on beekeepers' migration. A study by the Center for Development Studies in Bamiyan (2023) indicates that the extreme winter cold annually causes the loss of 25-30% of beehives in this region (Bamiyan Development Center; 2023). They suggested that the use of modern insulated hives could reduce these losses by up to 50%. A comparative study by Kabul University researchers (2022) between the status of beekeeping in Kabul and Kunduz showed that Kabul beekeepers earn 40% more than their counterparts in Kunduz because of better access to the market (Zazai, 2023). The study also highlighted significant differences in access to animal services between the two regions (Kabul University Research Team, 2022). A review of the sources shows that beekeeping challenges in different provinces

of Afghanistan have common denominators (e.g., climatic problems and technical know-how) and regional differences (e.g., security issues and market access) (MAIL, 2024). Further studies in other provinces can provide a more complete picture of the state of this vital industry in Afghanistan. Resource analysis shows that the challenges of beekeeping in Afghanistan are multidimensional and include environmental (drought, lack of effective flowers), technical (diseases, traditional methods), and economic (unregulated market, lack of investment) factors.

## 3. Materials and methods

This research was randomly distributed in the form of an online questionnaire and also in the form of face-to-face interviews based on the five-choice Likert comparison method for some relevant units. Then, by referring to the location of the units and completing questionnaires that contained information about the important indicators of this research, it was determined. The research was quantitative and descriptive in purpose. In this study, 164 people from specific social classes were selected. This study was conducted in person and online in some provinces in Kapisa, Kabul, Laghman, and Nangarhar. Considering the type of questions and classification, the answers were designed and completed by the participants. In terms of content, the questionnaire of this research has four main and basic parts. The first part collected general information about the respondents, including their educational degree, age, occupation, and place of residence. The second part examines attitudes and perspectives on the challenges. The problems of beekeeping in Afghanistan have been investigated. The third section included the needs assessment and strategies for beekeeping, and the fourth section included the suggestions and opinions of the participants. The validity of the questionnaire was determined using Cronbach's alpha formula. Data were analyzed using IBM SPSS Statistics for Windows, version 25 (IBM Corp., Armonk, NY, USA)

## 4. Results

After collecting information about the variables presented in the questionnaire, the data were analyzed, stabilized, and evaluated using Cronbach's alpha test. The results were arranged and expressed in specific figures and tables.

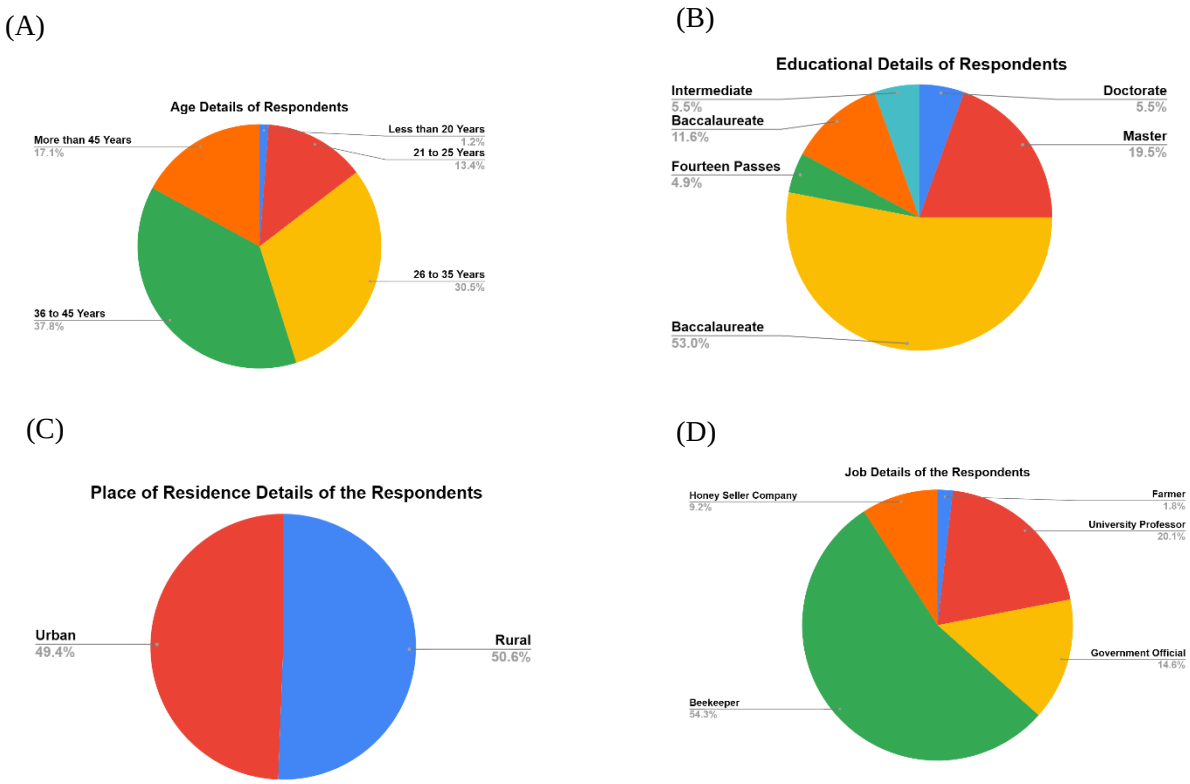


**Figure1.** Demographic information

A: Details of the age of the respondents show that (37.8%) were the highest number between the ages of 36 and 45, and the lowest number (1.2%) was under the age of 20 years; B: Educational details of the respondents show that the highest number was (53%) had a bachelor's degree, and the lowest number was (4.9%) fourteen passes; (C) The details of the participants' place of residence were 1.2 % more rural; and (D) The respondents' job details showed that the highest number were (54.3%) beekeepers and the lowest number was (1.8%) farmers (Figure 1).

Table 1. Does the beekeeping industry in Afghanistan have a significant impact on the economy of families?

| Attitude Level of Individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 1 | 0.61 |
| Neutral | 2 | 1.22 |
| Agree | 73 | 44.51 |
| Strongly agree | 88 | 53.66 |
| Total Respondents | 164 | 100 |

As presented in Table 1, the largest proportion of respondents (53.66%) strongly agreed that prioritizing the beekeeping industry would substantially strengthen household economies. In addition, (44.51%) of respondents agreed that the beekeeping industry exerts a considerable impact on household economic well-being.

Table 2. Are bee products, especially honey and wax, important sources of food and income?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 1 | 0.61 |
| Neutral | 4 | 2.44 |
| Agree | 77 | 46.95 |
| Strongly agree | 82 | 50 |

The results in Table 2 show that (50%) strongly agreed and (46.95%) agreed that beekeeping products are important sources of food and income for beekeepers.

Table 3. Does the high production of honey in Afghanistan help increase exports and foreign exchange earnings in Afghanistan?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Disagree | 3 | 1.83 |
| Neutral | 2 | 1.22 |
| Agree | 77 | 46.95 |
| Strongly agree | 82 | 50 |

The results in Table 3 show that (50%) of the respondents strongly agreed and (46.95%) agreed that the high production of honey in Afghanistan can help increase its exports and foreign exchange earnings.

Table 4. Can the development of the beekeeping industry in Afghanistan prevent the import of honey from abroad?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 1 | 0.61 |
| Neutral | 6 | 3.66 |
| Agree | 66 | 40.24 |
| Strongly agree | 91 | 55.49 |

In Table 4, it can be seen that (55.49%) strongly agreed and (40.24%) agreed that the development of the beekeeping industry is a function of preventing the import of honey from abroad.

Table 5. Can the improvement of the beekeeping industry lead to a reduction in dependence on foreign aid?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 2 | 1.22 |
| Disagree | 2 | 1.22 |
| Neutral | 22 | 13.41 |
| Agree | 80 | 48.78 |
| Strongly agree | 58 | 35.37 |

The analysis of the data in Table 5 shows that (48.78%) agreed and (35.37%) strongly agreed that the improvement of the beekeeping industry in the country can reduce dependence on foreign aid.

Table 6. Can exporting honey from Afghanistan improve the country's economy and people's living conditions?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Disagree | 2 | 1.2 |
| Neutral | 5 | 3.0 |
| Agree | 86 | 52.4 |
| Strongly agree | 71 | 43.3 |

The results in Table 6 indicate that most respondents (52.4%) agreed that exporting honey abroad could boost the country's economy and improve people's lives.

Table 7. Can the development of beekeeping professions in Afghanistan effectively alleviate poverty?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Disagree | 1 | .6 |
| Neutral | 3 | 1.8 |
| Agree | 89 | 54.3 |
| Strongly agree | 71 | 43.3 |

The results in Table 7 show that (54.3%) agreed and (43.3%) strongly agreed that the development of beekeeping careers in Afghanistan can be effective in alleviating poverty.

Table 8. Will security in Afghanistan boost the beekeeping industry?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 6 | 3.7 |
| Disagree | 4 | 2.4 |
| Neutral | 6 | 3.7 |
| Agree | 81 | 49.4 |
| Strongly agree | 67 | 40.9 |

From the results (Table 8), it can be inferred that (49.4%) agreed and (40.9%) strongly agreed that the presence of security in Afghanistan will lead to the growth of the beekeeping industry.

Table 9. Does the widespread use of poisonous pesticides in bee orchards have a negative effect?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 2 | 1.2 |
| Disagree | 2 | 1.2 |
| Neutral | 10 | 6.1 |
| Agree | 79 | 48.2 |
| Strongly agree | 71 | 43.3 |

Table 9 shows that (48.2%) agreed and (43.3%) strongly agreed, respectively, that the widespread use of toxic pesticides in bee orchards has a negative effect. Therefore, indiscriminate use of antibiotics should be prevented.

Table 10. Can the limited use of biological control methods to protect plants from diseases and pests be a challenge?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 2 | 1.2 |
| Disagree | 2 | 1.2 |
| Neutral | 10 | 6.1 |
| Agree | 79 | 48.2 |
| Strongly agree | 71 | 43.3 |

The results show that (49.4%) agreed and (37.8%) strongly agreed that the limited use of biological control methods to protect plants from plant diseases and pests can be a beekeeping challenge, which requires the widespread use of biological control rather than chemical control (Table 10).

Table 11. Is the lack of a regular regulatory system for the use of insecticides and their residues in beekeeping products a challenge to beekeeping?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Disagree | 1 | .6 |
| Neutral | 20 | 12.2 |
| Agree | 81 | 49.4 |
| Strongly agree | 62 | 37.8 |

From the results of Table 11, it can be inferred that (49.4%) agreed and (42.7%) strongly agreed, respectively, that the lack of a regulatory system for the use of insecticides and its adverse effects on beekeeping products have hindered the progress of the beekeeping industry in the country, which needs serious attention.

Table 12: Does the lack of equipped laboratories for the diagnosis of bee diseases and pests in the country hinder the development of the beekeeping industry?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 1 | .6 |
| Disagree | 2 | 1.2 |
| Neutral | 3 | 1.8 |
| Agree | 86 | 52.4 |
| Strongly agree | 72 | 43.9 |

From the results in Table 12, it can be inferred that (52.4%) agreed and (43.9%) strongly agreed that the lack of well-equipped laboratories for the diagnosis of diseases and pests in the country hinders the progress of the beekeeping industry.

Table 13. Honey quality is low due to a lack of attention to processing and packaging.

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 4 | 2.4 |
| Disagree | 5 | 3.0 |
| Neutral | 11 | 6.7 |
| Agree | 89 | 54.3 |
| Strongly agree | 55 | 33.5 |

From the analysis of the data, it can be inferred that (54.3 %) agreed and (33.5%) strongly agreed that the low quality of honey is due to the lack of attention to processing and packaging, which should be considered in this regard (Table 13).

Table 14. Have people's apathy, lack of capital, and lack of necessary awareness hindered the development of beekeeping in Afghanistan?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 1 | .6 |
| Disagree | 2 | 1.2 |
| Neutral | 12 | 7.3 |
| Agree | 81 | 49.4 |
| Strongly agree | 68 | 41.5 |

The results show that (49.4%) agreed and (41.5%) strongly agreed that people's apathy, lack of capital, and lack of necessary awareness have hindered the development of beekeeping in Afghanistan (Table 14). This can be considered one of the challenges of beekeeping.

Table 15. Can honey fraud, loss of consumer trust in honey sellers, and lack of regulatory systems pose significant challenges?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 2 | 1.2 |
| Disagree | 1 | .6 |
| Neutral | 6 | 3.7 |
| Agree | 89 | 54.3 |
| Strongly agree | 66 | 40.2 |

Table 15 shows that (54.3%) agreed and (40.2%) strongly agreed that honey fraud has caused the loss of high trust of honey sellers, and the lack of monitoring systems from the market, as well as the import of artificial fructose from China, has caused counterfeit honey to be produced in abundance and cheaply in the country and has had a bad effect on natural honey and honey producers.

Table 16. Contamination of honey with toxic substances when using miticides.

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 3 | 1.8 |
| Disagree | 2 | 1.2 |
| Neutral | 24 | 14.6 |
| Agree | 78 | 47.6 |
| Strongly agree | 57 | 34.8 |

The results in Table 16 indicate that (47.6%) of respondents agreed and (34.8%) strongly agreed that contamination of honey with toxic substances, resulting from the use of acaricides, has hindered Afghan honey from competing in international markets and has reduced demand among foreign consumers. This is a major challenge for the beekeeping industry in Afghanistan.

Table 17. Do insecurity and political problems pose challenges to the development of the beekeeping industry?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Disagree | 2 | 1.2 |
| Neutral | 20 | 12.2 |
| Agree | 87 | 53.0 |
| Strongly agree | 55 | 33.5 |

The data analysis presented in Table 17 shows that (53.0%) of respondents agreed and (33.5%) strongly agreed that insecurity and political problems pose challenges to the development of the beekeeping industry. Fortunately, security is currently ensured, and beekeepers do not face any concerns in this regard.

Table 18. The shortage of skilled and professional personnel in beekeeping, along with insufficient attention from the government and private institutions, has hindered the development of the beekeeping industry in the country.

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Disagree | 4 | 2.4 |
| Neutral | 7 | 4.3 |
| Agree | 74 | 45.1 |
| Strongly agree | 79 | 48.2 |

Table 18 shows that (48.2%) of respondents strongly agreed and (45.1%) agreed that the shortage of skilled and professional personnel in beekeeping, along with insufficient attention from the government and private institutions, has hindered the development of the beekeeping industry in the country.

Table 19. Can support for domestic production reduce a country's dependence on imported honeybee products and promote self-sufficiency?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Strongly disagree | 1 | .6 |
| Neutral | 6 | 3.7 |
| Agree | 68 | 41.5 |
| Strongly agree | 89 | 54.3 |

The results in Table 19 indicate that (54.3%) of respondents strongly agreed and (41.5%) agreed that supporting domestic production can reduce the country's dependence on imported honeybee products and guide the nation toward self-sufficiency and sustainable development.

Table 20. The Ministry of Agriculture, Irrigation, and Livestock should provide more support and facilities for the development of the beekeeping industry.

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Neutral | 2 | 1.2 |
| Agree | 62 | 37.8 |
| Strongly agree | 100 | 61.0 |

The results and survey data presented in Table 20 show that (61%) of respondents strongly agreed and (37.8%) agreed that the Ministry of Agriculture, Irrigation, and Livestock should provide greater support and necessary facilities for the development of the beekeeping industry.

Table 21. Is it necessary to establish beekeeping programs at the bachelor's and postgraduate levels in the country?

| Attitude level of individuals | Frequency | Percentage |
|---|---|---|
| Disagree | 6 | 3.7 |
| Neutral | 4 | 2.4 |
| Agree | 60 | 36.6 |
| Strongly agree | 94 | 57.3 |

Table 21 shows that (57.3%) of respondents strongly agreed and (36.6%) agreed that establishing beekeeping programs at the Bachelor's and postgraduate levels in the country is necessary. Therefore, collaborating institutions and the government must pay serious attention to supporting beekeepers, attracting domestic and foreign investors, providing greater facilities to the private sector and entrepreneurs, and encouraging farmers and beekeepers to engage in beekeeping.

## 5. Discussion

The survey results and participants' responses in this study show that 53.66% strongly agreed that the beekeeping industry in Afghanistan has a significant impact on families' economy. 50% of respondents strongly agreed that bee products, especially honey and wax, are important sources of food and income. 50% strongly agree that high honey production in Afghanistan helps increase exports and foreign exchange earnings, and 55.49% agreed that the development of the beekeeping industry in Afghanistan can prevent the import of honey from abroad. In contrast, 48.78% agreed that improving the beekeeping industry could reduce dependence on foreign aid. Of the respondents, 54.3% agreed and 43.3% strongly agreed that the development of beekeeping occupations in Afghanistan could be effective in alleviating poverty. A total of 48.2% of respondents agreed that the extensive use of toxic pesticides in beekeeping orchards adversely affected the beekeeping industry. A total of 52.4% of the respondents agreed that the lack of well-equipped laboratories for the diagnosis of beekeeping diseases and pests in the country hinders the development of the beekeeping industry, and 48.2% strongly agreed that the lack of professionals and specialists in the field of beekeeping and the lack of attention of the government and private institutions to this industry have prevented the development of beekeeping in the country agree that it is necessary to establish a beekeeping discipline at the bachelor's and postgraduate levels in the country (Samady, 2024).

The beekeeping industry in Afghanistan faces numerous challenges, including the indiscriminate use of pesticides, insufficient technical knowledge, the adverse impacts of climate change, and the absence of well-structured markets. Beekeeping, however, holds significant potential for contributing to the restoration of degraded ecosystems through the promotion of ecological practices (Hakimi et al., 2023).

According to a report by the Ministry of Agriculture (2022), approximately 85% of beekeepers are active in rural areas, where access to modern technologies such as standard beehive boxes remains limited. This lack of technological support

is considered one of the major constraints to production growth. Furthermore, the Afghanistan Beekeepers Union (2023) reported that honey production has declined by 40% over the past five years, primarily due to climate change and prolonged droughts.

A World Bank study (2021) estimated that the cost of honey production in Afghanistan is around 30% higher than the regional average, attributing low profitability to competition from smuggled honey (World Food Programme, 2024; United Nations Development Programme, 2023). Similarly, the Food and Agriculture Organization of the United Nations (FAO, 2019) emphasized the crucial role of bees in pollinating nearly 80% of Afghanistan's crops, warning that the destruction of bee colonies poses a direct threat to national food security. A USAID report (2021) further highlighted a 35% reduction in vegetation cover in beekeeping areas, particularly in southern provinces, as a key factor contributing to the decline in honey quality (Norwegian Refugee Council, 2023).

Research conducted by Kabul University (2023) revealed that 70% of women beekeepers in Parwan and Bamiyan provinces are compelled to sell their products to brokers at significantly reduced prices due to limited access to formal markets (Omidyar Network., 2024; International Fund for Agricultural Development; 2023). Insufficient analysis of international markets means that no studies have yet examined the potential for Afghan honey exports to European or Gulf markets.

Local solutions should therefore focus on context-specific interventions, including the use of low-cost greenhouses to ensure the availability of floral resources during dry seasons. Nevertheless, the lack of reliable and systematically organized data on beekeeping within the Ministry of Agriculture, Irrigation, and Livestock, as well as in provincial records, represents a significant limitation for both research and policy planning in this sector.

## 6. Conclusion

Despite its considerable economic potential and its vital contribution to food security, the beekeeping sector in Afghanistan requires greater coordination among the government, private sector actors, and the international community. The challenges facing this industry directly affect both the national food supply and the livelihoods of beekeepers. Key constraints include the prevalence of bee diseases and pests, the indiscriminate use of toxic pesticides in orchards, and the contamination of honey. Additional concerns are associated with the misuse of miticides, the importation of artificial fructose, and the increasing circulation of adulterated honey, all of which undermine product quality and consumer trust. Addressing these challenges, particularly issues related to import competition and gender-based restrictions, would not only safeguard the honey industry but also contribute significantly to sustainable rural development and the economic self-sufficiency of farming communities.

## 7. Suggestions

Proposed Solutions for the development of beekeeping in Afghanistan

1. Capacity building and training: Enhancing specialized training programs and promoting the application of scientific methods in beekeeping, such as high-quality queen breeding, can play a crucial role in improving productivity and efficiency.
2. Infrastructure development**:** Improving access to essential infrastructure, including reliable water sources, modern beekeeping equipment, and standardized veterinary medicines under the supervision of relevant institutions, is necessary for sustainable industry growth.
3. Economic support and market regulation: Providing financial assistance, creating organized markets, and improving marketing conditions for honey products are essential measures to increase the income and economic resilience of beekeepers.
4. Climate change adaptation: Incorporating climate change considerations into planning and adopting effective drought management strategies are vital for reducing environmental risks.
5. Governance and policy support: Strengthening management and security measures, alongside the formulation of supportive policies, is necessary to ensure the long-term sustainability of Afghanistan's beekeeping sector.
6. Farmer beekeeper cooperation**:** Promoting collaboration with farmers to reduce pesticide use, while organizing seminars, workshops, and training sessions for both farmers and beekeepers at the regional level, can mitigate environmental and production challenges.
7. Regulation of imports**:** Preventing the import of artificial fructose, frequently cited by honey companies as a major concern, can protect the authenticity and market value of local honey.
8. Academic development**:** Establishing formal programs in apiculture at the undergraduate and postgraduate levels will strengthen academic research, professional training, and innovation in the sector.
9. Support for domestic production: Encouraging domestic honey production and restricting imports will reduce dependency on foreign products and guide the country toward self-sufficiency and sustainable rural development.

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