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The Constrains and Challenges of Beekeeping in Sulaymaniyah Governorate, Kurdistan Region, Iraq

Kawan Sirwan* ; Khansa Hameed and Hemin Abubakir Neima



Agribusiness and Rural Development ARD Department, College of Agricultural Engineering Sciences, University of Cross Mark Sulaimani, Kurdistan region, Iraq

Kawan.ismael@univsul.edu.iq, Khansa.Fatah@univsul.edu.iq, hemin.neima@univsul.edu.iq



ABSTRACT

This study was conducted in Sulaymaniyah Governorate aiming to determine the major constrains of beekeeping in this area. Locally produced Honeybee products are highly valued in Kurdistan region. Availability of adequate natural resources and climate are major factors in prompting Apiculture industry in this area. The structured questionnaires were distributed on 89 respondent beekeepers in the area. the major constraints determined in this study were ranked from very important to less important; marketing, honeybee colonies, pest and disease, harsh winter, no or limited access to credit, lack of skilled manpower and training institutions, respectively.

Keywords: Honeybees, Beekeepers, Beekeeping, Constraints, Kurdistan region, Sulaymaniyah

INTRODUCTION

The honeybee's relationship with humans is historical, since early people collected or stole honey from wild honeybees (Cramp, 2008). Bees is one of the most important insects for us which produce various products such as honey, pollen, propolis, royal jelly, beeswax and bee venom (Madras-Majewska and Majewski, 2016) that distinct efficacies with significant nutritional properties and functional values (Nega and Eshete, 2018). Additionally, bees provide an important ecosystem service via pollination, directly contributing to enhanced food security, and increasing yields approximately 75 percent of global crops (Klein *et al.*, 2007).

Honey is among the highly demanded products with high cash value on account of its weight and bulk, non-perishable product, economical and easy to transport. These features have made honey to become a strong factor for job creation and maintaining livelihoods (Desalgne, 2011). Meanwhile, honey production or beekeeping requires small investment, land, and labor, and even individuals can achieve significant production levels (Ito, 2014).

Currently, Beekeeping industry has a potential role in improving livelihood and sustainable socio-economic development worldwide and mostly for small scale farmers and urban farmers in developing countries (Kajobe *et al.*, 2009; Bradbear, 2009; Hilmi *et al.*, 2011). Beekeeping is an environmentally friendly and non-farm business activity that has immense contribution to the society and national economies (Godifey and Tassew, 2016) and it also plays a significant role in increased food security (Gratzer *et al.*, 2019).

In developing countries, the main constraints of beekeeping industry development and marketing for honeybee products are market instability, avoiding

technology input and dependence on traditional methods due to lack of access to financial credits, inactivity of extension services for developing the beekeeper knowledge and skills in production and marketing management (Guyo and Legesse, 2015; Haftu *et al.*, 2015; Namwata *et al.*, 2013; Munuo, 2015).

The main objectives of this study was to determine the major constraints and challenges facing beekeeper in Sulaymaniyah Governorate and find opportunities for improving apicultural industry in this area.

MATERIALS AND METHODS

1. Study Area

The study was conducted between 1st April 2019 to 1st August 2019, at Sulaymanyah Governorate located in Kurdistan region, northeast of Iraq. Sulaymaniyah is a mountainous Governorate with 15 districts located in Kurdistan region, northeast of Iraq, on the border with Iran. Sulaymaniyah climate is hot and dry in the summers and rainy and cold in the winters. Sulaymaniyah is rich and large in terms of land (total area 1,844,884ha, arable lands 607,972 ha) which host the fertile plains of Sharazur and Bitwen, and rich in water resources, this gave a great capacity to this region to grow various crops, rear various animals and apiculture (Sleman.gov.krd, 2019)

2. Sampling and Collecting Data

This research was come as the framework of the diagnostic research within the descriptive approach aiming to obtain a detailed data and facts about the needs of the individuals at a certain time. The designed questionnaires were distributed to 89 respondent beekeepers. The questionnaires were filled in face to face with selected beekeepers. The primary data such as socioeconomic parameters, and beekeeping constraints regarding: Marketing, Human resource, Pests, ect. were collected

* Corresponding author.

E-mail address: Kawan.ismael@univsul.edu.iq

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from respondent beekeepers through structured questionnaire.

3. Data Analysis

The collected data was analyzed using Statistical Package for Social Sciences (SPSS ver. 20.0). Descriptive analysis was used to test the significance of the consumers' perceptions in relation to lifestyle and diet and Chi-square test of qualitative indicators' dependency was applied to test the study hypothesis of this study.

RESULTS AND DISCUSSION

1. Socio-demographic profile of respondents

Table (1) shows the distribution of socio-demographic and socio-economic variables among the study population. The sample consisted of 89 respondents. The respondents' sex was male 91% and female 9% and their ages were ranged between 22 to over 62 years old with the average mean 41.853±1.108. The most of the respondents were educated, 32.6% had bachelor degree while less people were illiterate or undereducated; illiterate 9%, read and write 3.4% and read and primary school 16.9%. The highest rates of the respondent's experience were between 1 to 5 years (49.4%) then 6 to over 11 years (25.8%) and relatively lowest was between 5 to 10 (24.7).

Table 1. Socio-demographic profile of respondents

Variables	Category	Frequencies	percentage
Gender	Female	8	9.0
	Male	81	91.0
	Total	89	100
Age	22-31	15	16.9
	32-41	30	33.7
	42-51	34	38.2
	52-61	6	6.7
	Over 62	4	4.5
	Total	89	100
Educational Background	Illiterate	8	9.0
	Read and Write only	3	3.4
	Primary School	15	16.9
	Secondary school	12	13.5
	High school	15	16.9
	Diploma	6	6.7
	Bachelor Degree	29	32.6
	Postgraduate Degree	1	1.1
Total	89	100	
Experience	1-5	44	49.4
	6-10	22	24.7
	Over 11	23	25.8
	Total	89	100

2. The constraints of beekeeping

The results of this study showed that the major constraints of beekeeping are; poor marketing infrastructure for honeybee products; poor honeybee species and characteristics; lack of medications supplements; lack of honeybee feed supplements while forage is not available during harsh environment; lack of financial subsidy; and lack of skilled workers (human resource).

Each beekeeper involved in the study was requested to rank the constraints mentioned earlier in accordance to Likert starting from "less important (1) to very important (5)". Accordingly, poor marketing infrastructure for honeybee products had come in the first rank (mean 3.58, SD 1.664), and poor honeybee species and characteristics

(mean 3.49, SD 1.358) were found to be the top two challenges for beekeeping in the area (see Table 2).

These problems may lead to poor quality honey production. Because of lack of knowledge on application of chemicals against ants, some farmers complained their bee hives are being affected.

The next constrain was related to frequency of pests, predators, honeybee diseases were the major challenges for the beekeepers. Consequently, the need of veterinary medicines and pesticides is highly demanded by the beekeepers (mean 3.31 SD 1.443) and ranked as third major constrain by the beekeepers.

Another constraint was due to climate of the area, in this region honeybees often face a cold, rainy and snowy winter, and also hot and drought summer which cause scarcity of honeybee forage and makes honeybees to struggle in getting enough forage during these seasons (Somerville, 2005; Woyessa and Alemu, 2016). Therefore, the beekeepers often rely on artificial supplementary feeds to save their honeybees. The availability, accessibility and high price of these feeds (mean 2.99, SD 1.566) were another problem that faced the beekeepers, ranked 4 out of 6 major constraints.

No or limited access to credit (mean 2.66 SD 1.267) and lack of skilled manpower and training institutions for beekeeping (2.09 SD 1.267) were two major reasons that had limited the access to modern facilities and expanding their industry.

Similarly, most of the discovered beekeeping constraints in this study were mentioned in previous studies elsewhere (Khan and Khan, 2018).

Table 2. Major constrains of beekeeping in the study areas.

Constrains of Beekeeping	Mean	Std. Deviation	Ranking
Marketing Problem	3.58	1.664	1
Problems Related to Honeybees Species	3.49	1.358	2
Veterinary Medicine	3.31	1.443	3
Supplementary Feed	2.99	1.519	4
No or limited access to credit	2.66	1.566	5
Lack of skilled manpower and training institutions	2.09	1.267	6

According to the results from this study the beekeepers were mentioned marketing as a first ranked constraint. This mainly due to instability of honeybee products' price from a year to year (mean 3.8 SD 1.424), Supply and demand in the marketplace from a year to a year (3.33 SD 1.550), honeybee product's price is controlled by channels (3.12 SD 1.615), and sometimes the rate of cost is higher than revenue (3,08 SD 1.479), respectively ranked from 1 to 4 (see Table 3). This due to importing honey and other honeybee products from other countries with lower price compared which create a big competition between local products and imported products. The recent attempts of Kurdistan regional government (KRG) to ban honey import, in accordance with the Law No. 4 of 2008 for the protection of domestic products, has significantly affected increasing honey production in closely to reach to self-sufficiency in the region. If we focus on the demand and consumption of honey in Iraq the honeybee products produced from this region are still low compared to the potential of the region

(Wali, 2019). Even though, thousands of tons of high-quality honey are produced every year, it is usually poorly packaged and sold for relatively high price. Therefore, the local produced honey's place in the local supermarkets is being taken by imported honey (Rudaw, 2017).

Table 3. Marketing constrains for honeybee products in the study areas.

Marketing Constraints	Mean	Std. Deviation	Ranking
Instability of Price	3.80	1.424	1
Supply and Demand	3.33	1.550	2
Controlling Price by the Channels	3.12	1.615	3
Rate of cost is higher than revenue	3.08	1.479	4

Another constraint observed in this study was honeybees reared by the beekeepers regarding their race and species (mean 3.6 SD 1.404) and their adaptation with the region's climate, some of the distributed honeybee colonies or queens are imported and carrier of diseases (mean 3.42 SD 1.405), and Price of honeybee colonies and queens (mean 3.01 SD 1.336), respectively ranked from 1 to 3 (see Table 4). This due to lack of honeybee breeders in Kurdistan region and the importation of honeybee colonies and queens from abroad, mainly from neighbor countries, which may carry and introduce new diseases (FAO, 2005).

Table 4. Honeybee constrains in the study areas.

Honeybee Constraints	Mean	Std. Deviation	Ranking
Species	3.60	1.404	1
Carrier of Disease	3.42	1.405	2
Price	3.01	1.336	3

Another constraint facing the beekeeper is honeybee pests and diseases which sometimes causes big damages to their colonies. In order to mitigate these risks and prevention, beekeepers need to take precautionary actions. Therefore, veterinary medication is a necessary supplement for apicultural industry. The data in survey (Table 5) illustrate that beekeeper are uncertain on the quality of the veterinary medicines available in the market

Table 5. Honeybee Veterinary Medicine constrains in the study areas.

Veterinary Medicine	Mean	Std. Deviation	Ranking
Quality	3.82	1.275	1
Price	3.69	1.212	2
Availability	3.11	1.563	3

In this study, the price (mean 3.63 SD 1.191), Channel to buy (mean 3.56 SD 1.522), Quality (mean 3.22 SD 1.543), and poor storage facility (mean 3.08 SD 1.583) of the supplementary feed for honeybees were respectively ranked from 1 to 4. Additionally, it was found that most of the respondents are providing supplementary feed which is required for the honeybees when forage is not available or in the winter and drought seasons (Table 6).

Table 6. The constrains of Honeybee Supplementary feed in the study areas.

Honeybee feed	Mean	Std. Deviation	Ranking
Price	3.63	1.191	1
Buying channel	3.56	1.522	2
Quality of the supplementary feeds	3.22	1.543	3
Poor storage facility for feed	3.08	1.583	4

The results in table (7) shows that having no or limited access to credit constraints for beekeepers in the study areas was mainly due to lack of sources of credit

(mean 2.98 SD 1.685) and high interest rate (mean 2.24 SD 1.645). Easing access of beekeepers to credit will help to facilitate the utilization of inputs and applying advanced technologies for apicultural activities in the region (Lijalem *et al.*, 2017).

Table 7. The constraints of no or limited access to credit for beekeepers in the study areas.

No or limited access to credit	Mean	Std. Deviation	Ranking
Lack of sources of credit	2.98	1.685	1
High interest on debt	2.24	1.645	2

Basically, Beekeeping needs to be practiced by highly skilled people (FAO, 2009). In Sulaymaniyah Governorate, relatively less trained and skilled manpower are available to work in apicultural industry (mean 2.57, SD 1.637) due to the lack of training course for beekeeping. Furthermore, hiring a trained and/or experienced employee is relatively expensive (mean 2.33, SD 1.475) (See Table 8). This issue is mentioned in previous studies as a major problem facing the beekeeping sector (Serda *et al.*, 2015).

Table 8. Lack of skilled manpower and training institutions constrains in the study areas.

Lack of skilled manpower and training institutions	Mean	Std. Deviation	Ranking
Lack of Skilled Manpower	2.57	1.637	1
High wage	2.33	1.475	2

CONCLUSION

In conclusion, despite having adequate natural resources for apicultural industry, the region still imports honeybee products from abroad. This is due to some constraints that face beekeeper in this region. In this study some major constraints of beekeeping were determined aiming to improve beekeeping industry management and increasing productivity through providing training courses, improving marketing management of honeybee products and controlling the quality of beekeeping supplies. Additionally, further study need to be conducted to improving beekeeping management in Kurdistan region of Iraq.

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معوقات وتحديات تربية النحل في محافظة السليمانية ، إقليم كردستان العراق

كاوان سيروان و خنساء حميد و هيمن ابوبكر نعمه

قسم ادارة الأعمال الزراعية والتنمية الريفية ، كلية العلوم الهندسة الزراعية ، جامعة السليمانية ، إقليم كردستان العراق.

أجريت هذه الدراسة في محافظة السليمانية في إقليم كردستان العراق بهدف تحديد المعوقات الرئيسية لتربية النحل في هذه المنطقة. منتجات نحل العسل المنتجة محليا ذات قيمة عالية في إقليم كردستان. توفر الموارد الطبيعية والمناخ الكافي من العوامل الرئيسية في تحفيز صناعة تربية النحل في هذا المجال. تم توزيع الاستبيان على 89 من مربى النحل. تم تصنيف القيود الرئيسية المحددة في هذه الدراسة من المهم جداً إلى الأقل أهمية ؛ التسويق ، مستعمرات نحل العسل ، الأفات والأمراض ، الشتاء القاسي ، عدم الحصول على الائتمان أو محدودية الوصول إليه ، نقص القوى العاملة الماهرة ومؤسسات التدريب ، على التوالي.