



Problems And Solutions Of Beekeeping In Iraqi Kurdistan From The Seventies Of The Last Century Until 2018

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Abstract

Beekeeping in Iraq has been known since 6000 years B.C. in the Sumerian Era, where they found writings about bees on clay tablets older than 4000 years B. C., some writings were also found about the honey bee dating back to 2000 years. Kurdistan region is considered home to the original strain of bees deployed in Iraq and its neighboring countries.

The bee-keeping in Iraq flourished and evolved in the seventies of the nineteenth century and has arrived at 450,000 four hundred and fifty thousand local and modern beehives, but begin to deteriorate before the beginning of the Iranian-Iraqi war because of the wrong policies of the government at the time (forced displacement – Al-Anfal- Chemical attack) and deteriorated completely until the end of 1988 but flourished again in the beginning of the nineties from the last century due to the import of bees from neighboring countries, especially Iran and has now reached more than 250,000 two hundred and fifty thousand beehives, but the problems and obstacles need to be resolved through scientific means.

Introduction

Federal Republic of Iraq is divided according to the climate into three main areas:

Iraqi Kurdistan region belongs geographically to the northern region of the Federal Republic of Iraq and the region is characterized by varying temperatures as well as rainfall throughout the year and contains valid pastures and botanical environments for bees. While the central and southern regions characterized by high temperatures and thus the spread of beekeeping activity of these two regions is limited compared to the northern region (Morgenthaler, 1958; Behnam, 1999 and Mohamed et al. 2009).

Beekeeping in Iraq has been known since 6000 B. C. in the Sumerian Era, where they found writings about bees on clay tablets older than 4000 years B. C., carrying recipes using honey to treat skin infections or ulcers, and in the city of Ur in southern Iraq, writings were found about honey bees dating back to 2000 years B. C., and the Babylonians used honey to treat diseases as the Babylonian King Hammurabi mentioned honey in his writing written on the flint (which is now housed in the Louvre Museum in Paris) (Al-Mudhaffer, 1997; Hussein, 2000 and Hussein, 2012).

Based on the above information, lights will be shed on beekeeping in Kurdistan region of Iraq, through the following points:

1. Beekeeping before 1991

Beekeeping in Iraq tracking primitive methods of rearing, using cells made from local mountainous stones (Stone hives) or from tree trunks coated with mud and straw, or only made of clay (pottery). In the early seventies, the government introduced modern cells for the first time (Langstroth) to the apiaries as a project of modernization of beekeeping in Iraq through USAID (El-Mousa and Al-Rubae, 1972), but most beekeepers in the province of Iraqi Kurdistan had not trained in the use of these cells, and they prefer local cells instead. Beekeeping had been supported in Iraq by government institutions through importing Italian and Yugoslavian bee strains and hybridization with local bees when apiaries even created, the number of cells in 1979 reached to 500,000 cells and this represents the highest figure recorded so far. Then the bees started to deteriorate because of special conditions in Iraq during the Iran-Iraq War (1980-1988).

The Kurdistan region is the original home of the bee breeds deployed in Iraq and its neighboring countries. Since ancient times, then it was mentioned that bees were living in primitive inside caves, trees and stone fissures, and the nature of the environment in Kurdistan mountains, forests and natural vegetation is well suited for the survival and spread of bees in this area which is evidenced by historical traces that there found in many Kurdish areas and the Kurdish language Code and beekeeping and the ancient beekeepers. It is also proved that the oldest (first) protected apiaries found under the bishop and some of which still exist until now in some mountainous Kurdish areas.

Beekeeping started to expand in Kurdistan until the year 1979 and the number of old local beehives this year reached to more than (450,000) four hundred and fifty thousand hives, after then it was destroyed about half of these hives because of government policy at the time and which was designed to genocide people of Iraqi Kurdistan who were suffered from

deporting, displacing and burning of their villages in the genocide process.

So we can see a series of planned operations that caused the destruction of bees as follows:

1. Due to the Algeria's Agreement in 1975 with the Iranian Shah's regime to give up at a depth of 25 km of the border from the Iraqi side with Iran in the Kurdistan region and deporting the families in 1979.
2. Because of the genocide with chemical weapons began in the town of Halabja in March 16th, 1988 and killing at least 5000 five thousand people of children, young people, women and the elders in less than half an hour and these genocide operations continued in several areas and villages in the provinces of Kirkuk, Sulaimaniya and Arbil under.
3. Because of the so-called Anfal operations, which began after the chemical weapon in Halabja, in which about 5000 five thousand villages, counties and districts were completely destroyed and the process continued until two months after the cessation of Iran-Iraq war in August 8th, 1988 while about 182,000 hundred and two and eighty thousand people of children, young and women were killed, and only released some elderly women and men to die oppression as a result of the death of their descendants in this way.

For the reasons mentioned above, more than (450,000) four hundred and fifty thousand bee hives were subjected to destruction (Statistical Iraqi Ministry of Agriculture, 1979). This led to the survival of small numbers of hives in the city centers of Mosul, Diyala, Baghdad, Sulaymaniyah and Duhok, out of which not more than (30, 000) thirty thousand hives were left safe (Mohammad, 2009; Hussein, 2000).

Some Iraqi commentators mentioned that the bees destruction in Kurdistan caused by varroa mites, which came from the packages bees came from Turkey in 1987, but the bees of Kurdistan were destroyed because of the reasons that we mentioned before the year 1987.

2. Bekeeping after 1991

After the uprising of the Iraqi people in 1991 against the injustice verdicts that resulted in liberated provinces of Kurdistan, reviving of villages and devastated areas began, displaced people and the remaining families from genocide were restored, during several years of efforts a large numbers of hives including Iranian bee strains (*Apis mellifera meda*) were imported from Iran, plus the support of some civil society organizations NGOs such as the Food and Agriculture Organization (FAO), which has distributed a large number of modern hives of Langstroth, as well as modern requirements of beekeeping, which led to a clear increase in the number of hives and beekeepers in different provinces of Kurdistan, hence the number of beehives had reached to 250, 000 local and modern hives so far (Sadr al-Din Abu Bakr, 2003; Ali, 2011; Al-Hisnawi, 2009).

2.1 The environment plant in the Kurdistan region

There is a clear diversity in the plant environment in different parts of Kurdistan region, according to the following (Hussein, 2000 and Hussein, 2012):

- Area of forests and mountain herbs: This area is located in within high mountains (2,000 m) above sea level which is concentrated mainly in the border areas with Iran and Turkey. This area is one of the densest regions of Iraq in terms of the environment and plant appropriate for the activity of bees because of the abundance of rain and mild temperatures, trees covering not less than 70% of the region, and the most important of these trees are oak, almond, walnut, pine, pistachio and hawthorn, also grasses and shrubs cover the rest of the region.
- Plains region: It includes semi-mountainous land (wavy), and most of the vegetation of grasses and some bulbous, thorny and spiny plants.
- Area of riverbanks: They include the banks of the Tigris river in addition to the banks of some rivers either arising from the mountains of the province and or from the Tigris river and the environment consists mainly of plants, some

trees especially willows, shrubs, grasses, liquorice and thorny plants.

2.2 Strains of bees in Iraq

The Iranian strain of bees (*Apis mellifera meda*) are the most prevalent in Kurdistan region, many scientific reports describes that this strains is native to northern Iraq, Iran, Armenia and Azerbaijan and the most important qualities of this strain is: ferocious, workers are yellow, drones are darker than the worker bees, tend to collect propolis, tend to swarming, tolerate the cold winter (successful in the process of wintering).

Iranian honeybees *Apis mellifera meda*, is one of the strains of honeybees in Iran and has appeared in the Kermanshah region, named after German scientist Goetz and word *meda* came from the name of a series Mad kings by Hakhmanshinan who ruled Iran before 700 B. C.

The Iraqi bee strain had been examined by many researchers, including the scientist Brother Adam, who received samples collected from different parts of Iraq in 1968 and the initial diagnosis showed that the studied samples belonged to Anatolian bee breed, and it is believed that the origin of this strain is Iraq, and during the following a number of queens years were sent to study the specifications of this strain and it became clear that there are the following two models of this strain (Al-Mudhaffer, 1977):

1. The first model: the so-called bee strain Ghannami, workers are yellow colored, ratherly quiet on the combs.
- 2 – The second model: the so-called bee strain Siafi or brute (wild), workers are dark colored and furious.

Abd El-latif et al. (1977) studied the qualities of bee breeds belonging to the central region of Iraq, and found that these qualities are close to a large extent with Syrian strains.

Now, we can say that there was no pure breed in Iraq even in the Kurdistan region, where many breeds were introduced to Iraq, including the Egyptian strain, hybrid strain Carniolan 1986, then the Italian strain and several other strains were also introduced from the

neighborhood and naturally hybridized with Iraqi bees, namely:

- Turkish strain *Apis mellifera anatolica*
- Caucasian strain *A. m. caucasica*
- Iranian strain *A. m. meda*
- Syrian strain *A. m. syriaca*

Some stations specializing in breeding queens of germplasm have begun to spread and reported good strains as Italian and Carniolan bee which were sold to beekeepers in the form of virgins or fertilized (Crane, 1973). Most of these stations are:

1. Bazian station in the province of Sulaymaniyah under the guidance of the Ministry of Agriculture and began to experience in working in the breeding of queens in 2004, some breeds of Australian, Iranian, Italian Carniolan and local strains, and after two years of experience found that the best strains are hybrid Carniolan and hybrid Italian. Since 2006 and until now, 20-60 Queens were produced and distributed as a gift to discerning beekeepers.
2. Shahang project station, imported fertilized queens of pure strains Carniolan and Italian from Argentina, Bosnia since 2007 and until 2011.
3. Duhok Mount station in the province of Dohuk and began working in 2013.

2.3 Hives

As shown in table 1, there are different types of hives in different governorates in Kurdistan province as follows (Al-Mudhaffer, 1977 and Hussein, 2012):

A. Local hives: including the following types:

1. Mud hives (clay), considered the oldest hives in the region and spread particularly in mountainous areas.
2. Hives made from the trunks of trees, scattered in all areas of the region.
3. Hives made from the jungle (Bamboo or cane), scattered in areas adjacent to the rivers especially in Shahrazor Plains in Sulaimaniya governorate.

4. Long wooden hives, similar to hives made from tree trunks (twigs), but made of wood.

B. Modern wooden hives (Langstroth):

Spread widely in all areas of the provinces of the region.

Table 1. The number modern and old local beehives in kurdistan region.

Governorates	Local hives			Modern hives (langstroth)		
	2000	2004	2008	2000	2004	2008
Erbil	3706		2337	1101		3742
	9		1	2		6
Sulaimaniya	6467	5457	2852	8750	2572	3052
	8	1	1		0	5
Duhok	2820		1436	3075		2952
	6		0			4
Total	1299		6625	2283		9747
	53		2	7		5

- The vast majority of beekeepers prefer to use the local hives in beekeeping.

- Hard works should be done to raise the level of beekeeping culture to beekeepers because that will reflect on the increased productivity of communities of honey bees.

2.4 Beekeepers

Table 2 illustrates the significant disparity in the number of beekeepers in the provinces of Kurdistan Region during the period 2000-2008.

Table 2. Number of beekeepers in kurdistan region.

Governorates	2000	2004	2008
Erbil	3727		2577
Sulaimania	6950	7767	4792
Duhok	2407		3258
Total	13084		10627

2.5 Honey bee products

Governorates of Kurdistan region produce the following bee products: honey, swarmed bees, honey bee queens, bee venom and royal jelly.

A. Honey:

1. Mountainous border regions of Kurdistan is famous with mountain natural honey with high

quality properties due to feeding of local bee communities there with natural nectar of wild plants and trees as well as honey dews existed on these trees onto which aphid insects feed, and the existence of these communities in high mountain areas (2000 m above sea level) leads to a lack of exposure to various environmental pollutants, and that is why mountain honey prices are rising in Kurdistan region compared to honeys produced in other regions. Kurdish honey has won the first place in 2009 Erbil International Exhibition, also it was ranked first among the different types of honey in the exhibition held in London in 2011.

2. The quantity of honey produced from different hives (modern and local) in Kurdistan region ranges between 600-800 tons with an average production of 4 kg/local hive and 8 kg/modern hive.

3. Average of honey per capita in Kurdistan region is 16 g/individual.

4. Honey prices range between 15-20 US\$/kg honey in plain areas and between 25-80 US\$/kg honey in mountainous areas.

5. In Iraq in general and Kurdistan in particular, there are no any standard specifications to determine the quality of honey product.

6. There are no specialized laboratories to judge the quality of honey.

7. There is an important factor negatively affects obviously the markets of honey in Kurdistan, now there is a spread of these markets from different regions, so there are natural honeys and cheated honeys at the same time, and there are honeys mixed with other materials or adulterated by adding glucose and sucrose. Intermingling among these different types of honey has an impact on the consumer in one hand and on the beekeeper on the other hand. Different quantities of honey is imported from Saudi Arabia, Iran, Germany and Turkey (Al-Hasnawi, 2012).

B. Swarmed (parceled) bees:

1. Several thousands of packaged bees is imported annually from each of Iran, Egypt and Denmark.

2. Several thousands of these packages are exported to the central and southern Iraq.

C. Honey bee queens:

In recent years, the spread of a number of breeding stations and production of queens for the sale and distribution of the pure breeds such as Italian and Carniolan strains is started in order to develop and improve the strain of honey bees in the region and to increase the productivity of bee communities. The specialized stations for breeding and production of queens include: Bazian Station in the province of Sulaymaniyah which belongs to the Ministry of Agriculture, and Shahang Project Station for the importation of queens in Dohuk.

D. Bee venom:

The opening of the first center specialist in treating patients with bee stings was done in October, 2011 in the city of Baquba-Diyala province in Iraq, through the Association of Iraqi Central Beekeepers, this center receives many patients with ED, nervous inflammation, back pain and arthritis. There is also a plan to deploy many similar centers in other Iraqi provinces.

E. Royal jelly:

The production of royal jelly is limited to consumers in order to treat some diseases.

3. Pests, parasites and diseases of honeybees

A range of honeybee pests, parasites and diseases threaten the beekeeping industry in Iraqi Kurdistan region, subjecting either immature or complete stages of honeybee life cycle. Most of these belong to insect pests plus some animals such as bears, mice and birds.

The parasites belong to a group of mites such as Varroa and Acarine, while bee diseases that infect immature or complete stages include the following pathogens: bacteria, fungus, virus and priorities.

The varroa parasite that has emerged in Iraq in general in 1985, one of the most important parasites that led to the destruction of most of the hives and is so far one of the most fundamental problems that threaten the beekeeping industry in Kurdistan region.

Bahnam (1997) showed a method of treating diseases and parasites using tobacco, vegetable oils, folbex, Filovanlit (Apistan).

The weakness of the communities of bees appeared clearly after the U.S. invasion of Iraq in 2003, especially in the period between 2005 to 2008 as it lost over 75% of the communities and the rest remained unproductive, and as an example for this: The production capacity of the honey per hive from bees in the province of Najaf was up to 15 kg, while now this productivity is lowered to only 7 kg/hive. The total production in this province in 2003 was 15 tons, while it now stands at only 3 tons.

There are various theories explain the reasons for the decline in the number of bee communities and productivity in the states of Iraq in general and Kurdistan in particular, including: radioactive materials, pollution from entering the occupation, resulting fires and vehicle gases vehicles, which all have been clearly observed to cause the disappearance of bees. There are some reports that the Israeli acute paralysis virus, which may be the primary cause of this phenomenon. Also dust storms that have increased significantly during and after the end of the U.S. occupation of Iraq, which resulted in the deterioration of most plant bee pastures in the region. The high temperature that sometimes reached more than 50 degrees Celsius in some parts of Iraq which resulted in the deaths of large numbers of bee communities.

4. The erroneous practices of beekeepers in beekeeping in Kurdistan Region

- Weak communities (where baptized a number of beekeepers to propagation of beehives by unjust division).
- Lack of movement (there are some beekeepers who not transferred their bees which leads to

weakness because of the lack of diversity of flowers throughout the year).

[• Inability to diagnose parasites and diseases and methods of control and prevention.

[• During food shortage, there is no feeding of bees, the nutrition is a necessary in seasons of drought, especially when you do not move bees.

[• Lack of modern methods in breeding queens and the adoption of the old traditional methods and lack of access to modern developments in beekeeping.

[• Rely on honey production only and neglecting other products.

5. Ways to raise the level of beekeeping in Kurdistan region

1. Expedite the request for assistance from relevant international organizations to detect the Iraqi apiaries and determine the cause of the collapse of bee communities in Iraq.

2. Importing strains of bees with high productivity because the queen is a good key factor in the abundance of production and to help improve the local strain, like Italian and Yugoslavian bees and supplying beekeepers with these strains to fill the shortage incident in this area and to raise the production capacity of apiaries and thus agricultural crops through different cross pollination.

3. Setting up a special research center for diagnosis and control of diseases of honey bees.

4. Scheduling crop spraying aircraft between neighboring provinces ahead of several days to be able to beekeepers move bees to neighboring provinces with the recommendation a few imports of agricultural pesticides toxic to bees.

5. Providing the requirements of bees and beekeepers under modern scientific standards.

6. Setting up a special research center for bees to improve bee breeds.

7. Working to expand the area of the environment and planting trees specialized in producing nectar and also working to prevent the indiscriminate cutting of trees producing nectar by the citizens and the imposition of a fine big violators like laws used in the Kurdistan region to maintain this natural wealth and mind nature

reserves in addition to planting nectary trees and encouraging cultivation of fences on roadsides and others.

8. That government agencies should establish scientific laboratories specializing in judging the specifications of locally produced honeys and honeys imported from abroad.

9. The urgent need to develop local standard specifications for various bee products, especially honey bees.

10. Demanding from the concerned authorities to impose preventive control on honey, both from within the country or from outside and impose custom taxes of honeys imported and preserving the rights of beekeeper and Iraqi consumer demand by issuing law prohibits the import of honey that is mixed with imported honeys, not the country of origin to be proceeds of the tax for the development of beekeeping in Iraq and the establishment of research stations and dispatch group from beekeepers distance to some developed countries in the field of beekeeping to increase expertise in this area.

11. Emphasizing the importance of the role of bees associations and civil society organizations in the provinces of Kurdistan. The first association of bee-keeping was founded in the province of Sulaymaniyah in July, 2001 and the number of members of the beekeepers at the end of 2011, were 2,500 members, and Society was established in Erbil, Dohuk and Kirkuk in 2004, these associations acted in the following activities:

1. Training courses for new and old beekeepers in different areas, more than 300 people from both genders in different villages and districts have been trained and provided with hives, bee communities and breeding and production requirements in the form of small-scale projects in the Sulaymaniyah.

2. Printing guidance brochures in the area of pests, parasites and diseases of honey bees and diagnostic methods including control and prevention.

3. Publishing and printing books and CDs in various fields of bees in Kurdish and Arabic languages.

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