



A Comparative Study Of The Reality Of Breeding Bees In Iraq And Syria From The Point Of View Of Beekeepers

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ABSTRACT

Aim of this research is comparing state of bee breeding in Iraq and Syria, know state of bee breeder's through every research item, and find correlation between dependent and independent variables of research. Study sample included all bee breeders in Mosul - Iraq and from rural Damascus - Syria. A simple random sample was (120 (bee breeder, was taken (60) breeder from Iraq and (60) breeder from Syria. Results showed that bee breeders follow scientific methods in tending bees, researchers have required knowledge to run bee hive operations and that the following independent variables (academic achievement, purpose of bee breeding, training courses) play important role in applying bee breeders the correct guidance recommendations to enhance knowledge of bee breeders regarding bee breeding.

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1. INTRODUCTION

Bee breeding and producing honey is an important ancient agricultural activity. Old Greeks and Romans considered honey divinish gift and food of gods, ancient man drew bees on walls, containers, plates and coins, considered it a sacred insect, engraved on coffins and tombs of prestigious people and on walls of pyramids in ancient Egypt. Honeybee symbolizes honesty, loyalty, bravery and defying death (Krokafeer, 2009), (Al-Ghamedi, 2017). Bee breeding acquired great importance in agricultural sector not only locally but also globally. This importance came from bees' final product (i.e.honey) rich in nutritions, role to increase agricultural production up to 30%. This indicates the importance of bees in increasing food production, preserving wild species through mixed pollination of flowers. Bees don't only pollinate economical crops but also pollinate wild plants used by humans industrially and medically as well as part of balanced ecological system (Tareq, 2015), (Al-Saegh, 2015).

Breeding bees is a successful project and one of productive branches of the agricultural sector especially locally, given final product of bees of natural honey that is important in nutrition and health. For long times, breeding bees paid back positively on both man and environment. Bees are the most dedicated animals. Bees and other pollinating animals helps to increase grains, nuts, fruits as well as big variety, better quality and productivity, which in turn will provide food security (FAO, 2020), (Al-Saegh, 2018).

Managing and breeding honeybees, increase its kinds is an important agricultural production branch, a capital –free agricultural occupation (Al-Khafaje and Al-Badri, 2016). Bees productivity in Arab homeland, all together is no more than (2000 t/y) of honey, except for 6 countries (Algeria-Morocco-Tunisia-Egypt-Yemen-Syria). Iraq is least state in producing honey (Abe Al- Fotoh, 2015). Iraq's production of honeybees for 2018 was (1000t/y) which doesn't meet even half of local consumption that reached (2480 t). In Iraq, honeybee is considered one of economical insects, an important food source for many people. Breeding honeybee is a subsidiary job for an extra income (Mahana and Homam 2016). Breeding bees contribute in local agricultural production via natural honey, as well as (natural wax, royal feed, bee parcels, bee poison, pollination). This shows that breeding bees contributed in (53 billion iraqi dinars) in local gross production for 2007 mainly in three main products (natural honey, wax, and bees parcels) (Abe Al- Fotoh, 2015) (Nonita, 2015). Bee breeding is practiced by wide sector of farmers in Iraqi governorates. Despite these big numbers of bee breeders, there is lack of expertise is found among some bee breeders, lack of appropriate circumstances to breed bees, low production levels, not to forget to mention problems faced by bees like pests that decreased number of cells as well as breeders (Majde and Abdul Emam, 2016). This decrease affected production and productivity Breeding bees require expertise, knowledge of all apiary processes, certain roles that must be mastered, a knowledge of bee itself and its behaviours through seasons. Recently, Syria also suffered sharp fall in number of bee cells (about 19.5%) for many reasons decrease in number of cells which is globally known as loss and decline of bees colonies (Al-Hasnawe, 2012).

Here comes the role of agricultural guidance as linking tool between researchers specialized in breeding bees and beekeepers. Agricultural guides seek to know problems faced by beekeepers, increase their knowledge about raising bees, what they need from authorities to implement and solve (Soleman, 2018) (Al-Zaedi and Ashwaaq, 2016). Summary, bee breeding is considered an important aspect that must be focused on in programs of agricultural guidance. Because Nineveh governorate in Iraq Damascus in Syria are known for big number of bees as well as breeders, the researchers decided to make this research to know reality of breeding bees in both above mentioned governorates and know all the stages.

Aims of research:

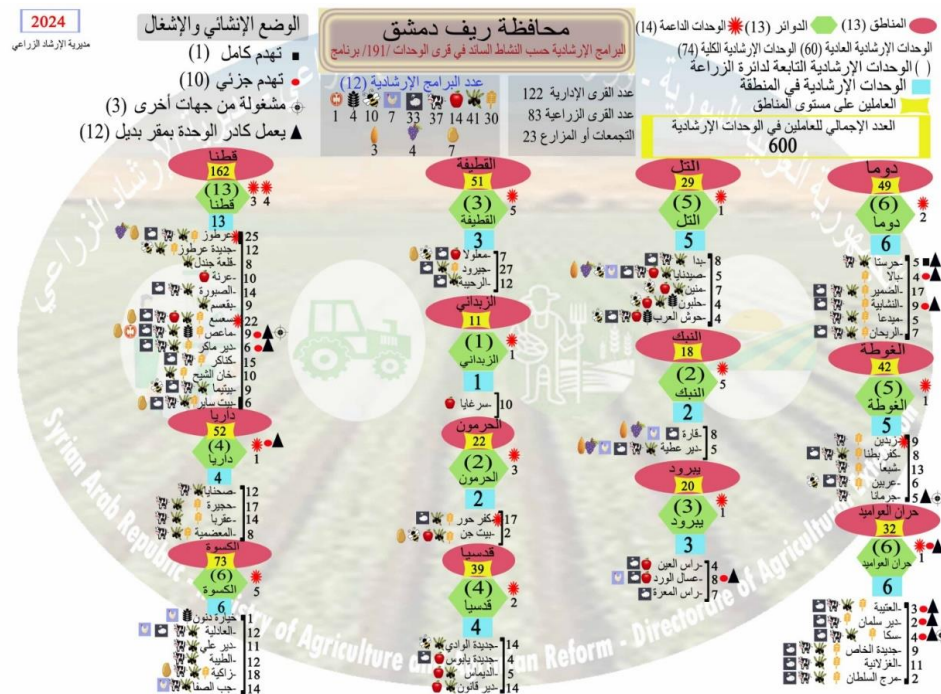
- 1- Know the reality of bee breeding in Iraq and Syria in general.
- 2- known reality of breeding bees in each field of research.
- 3- Arrange research aspects according to respondent's responses.
- 4- know the correlation between reality of breeding bees and independent variables of research (academic achievement, years spent in breeding bees, purpose of breeding bees, courses in breeding bees, and sources of information about breeding bees).

2. MATERIAL and METHOD

2.1. Society and Sample of Research

Research took place in Iraq and Syria due to large numbers of bee breeders, society included all bee breeders in (rural Damascus – Syria) and (Mosul-Iraq). A simple random sample (120) was chosen to be (60) in both cities.

This figure explain the bee breeders in rural Damascus – Syria (Jbawi, 2024).



2.2. Design of Research Tool

A two-part survey was used to collect data from breeders of Iraq and Syria:

First part: Several independent variables related to bee breeders: (academic achievement, years spent as a bee breeder, purpose of bee breeding, training courses of breeding bees, sources of information about bee breeding).

Second part: included five aspects related to breeding bees, with (45 items), items were formed respectively: field of building apiary (14 items), running apiary processes (8 items), feeding bees (7 items), and bees' diseases (10 items) and marketing honey (9 items) as shown in table (1):

Table 1. Field and item of research

Items	Always	Sometimes	Seldom	Never
1st aspect: building apiary				
1 Follow exact time to begin apiary				
2 Keep prescribed distance between apiary and food source				
3 Build apiary near clean water source.				
4 Build a room at apiary.				
5 Put cells under decidous trees when building apiary.				
6 Make sure that apiary floor is grass free.				
7 Keep apiary cells in row within the prescribed distance.				
8 Build apiary in a place far from orchards and zoos.				
9 Prefer to keep prescribed distance between every apiary.				

10 Choose an environment with flowers and nectars to build apary

14 Depend on magazines to record bees' species.

2nd: running apiary processes.

1 Check cell on spring and summer from time to time.

2 Follow scientific steps when doing checks after protecting myself well.

3 Know where to stand when doing checks.

4 Know best place to check tires

5 Make sure to smoke cell while checking.

6 Buy bees' species on desired time (February, March).

7 Follow guidance recommendations when checking bees' species

8 Follow orders when preparing apiary floor

3rd aspect: feeding bees

1 Know importance of every food for bees.

2 Depend on most important material to feed bees.

3 Concentration of sweet serum must be within correct limits.

4 Must know level of concentration of sweet serum all year long.

5 Make sure to provide sweet serum in different ways.

6 Make sure to provide all species at one time.

7 Want to know symptoms of lack of nutrition in cell.

4th aspect: diseases of bees

1 I know symptoms of parallel of bees.

2 I know symptoms of diareah

3 Know symptoms of cyst of overians.

4 Know symptoms of American rotten overians

5 Know times of Euroean rotten overian

6 Know symptoms of parallel of bees

7 Know symptoms of diareah

8 Know enemies of bees

9 Know where enemies of bees are

10 Cooperate with other bee keepers to fight pesticides

5th aspect: marketing honey

1 Follow main dates during harvest

2 Know tools used to purify honey

3 Know best jars to save honey

4 Keep honey jars always well locked

5 Make sure that temperature in rooms saving honey is not high

6 Avoid saving honey in reffridgerators

7 Put labels of information on honey jars

8 I can tell real from fake honey

9 Make sure that transporting cars are equipped with safety gears

2.3. Design of Research Tool

A- Measuring dependent variables:

- Academic achievement: measured through the following levels: reads and writes, primary graduate, middle school, secondary, institution, BSc. Agriculture, postgraduate, graded (1, 2, 3, 4, 5) respectively.

- Years of experience as a bee breeder: measured by numbers of years spent in bee breeding,

- Purpose of breeding bee: a-as a hobby, b-to meet my family needs of honey, c-improve family income, d-as an occupation. Each alternative got one degree.

- Training courses in breeding bees: measured by number of courses the breeder took during data collection.

- Sources of information about breeding bees: measured through a group of references each alternative got a degree.

B- Measuring dependent variable (reality of breeding bees):

Measured through 4 alternative scale (always, sometimes, seldom, never) and graded (1, 2, 3, 4) respectively. By collecting data of bee breeders on every item we will have final degree.

- Collecting data:

After completing research tool (i.e.questionnaire), process of collecting data from bee breeders in Nineveh-Iraq and Damascus – Syria began from 1/4/2024 until 1/2/2024

- Statistical means:

The following means were used to analyze data

1- Percentage

2- Repitions

3- Pearson conjunction factor

4- Spearman brown equation

3. RESULTS and DISCUSSIONS

1- Know the reality of bee breeding in Iraq and Syria in general:

Results showed that the highest number bee breeders (respondents) got was (192) (theoretical perspective) and the least was (48) with an average of (140) bee breeders were categorized according to real state of bee breeding as shown in table (2). Table (2) shows that the category of highest rate of bee breeders was medium (96-142) reaching 70.83% and the least was in low (48-95) reaching 12.50%. Meaning that reality of bee breeding is medium tends to high. The reason may be that bee breeders follow correct recommendations and information in breeding bees, their state of breeding bees is positive.

Table 2. Categorized of respondents according to their to real state of bee breeding

Categories	Number	%
Low (48-95)	15	12.50
Medium (96-143)	85	70.83
High (144-192)	20	16.67
Total	120	100.00

2- Know state of bee breeding in each field of research:

First field: Building Apiary:

Results show that highest score of researchers was (56) and the least (14) with an average of (40). Respondents were categorized according to their building of an apiary as shown in table (3):

Table (3) shows that category with highest score was moderate (28-41) reaching 58.32% and the lowest was (14-27) got 16.67%, meaning that reality of breeding bees is moderate tends to be high, meaning that bee breeders follow correct procedures and recommendations of how to build an apiary and the conditions needed.

Table 3. Categorized of respondents according to field of building Apiary

Categories	Number	%
Low (14-27)	20	16.67
Moderate (28-41)	70	58.23

High (42-57)	30	25.00
Total	120	100.00

Second Field: Running apiary

Results showed that highest score of researchers was (32) and the least was (15) with an average of (21). Respondents were categorized according to processes of running an apiary as shown in table (4).

Table (4) shows that the category that scored high was moderate (16-23) scoring 54.17% and the least was low one (8-15) scoring 20.83% meaning that bee breeders regarding running apiary is moderate tends to rise. Reason is that bee breeders adopt correct recommendations and information's in running an apiary.

Table 4. Categorized of respondents according to field the running apiary

Categories	Number	%
Low (8-15)	25	20.83
Medium (16-23)	65	54.17
High (24-32)	30	25.00
Total	120	100.00

Third Field: Feeding bees

In this aspect, results showed that highest value was (28) and the least (7) with an average of (19). Respondents were categorized according to feeding bees into the following divisions shown in table (5).

Table (5) shows that category with highest number was moderate (14-20) with a rate of 75% and the least was in low category (7-13) scoring 8.33% meaning that reality of breeding bees is moderate tends to high. This may be because bee breeders follow all that is correct and scientific regarding breeding bees.

Table 5. Categorized of respondents according to field the running apiary

Categories	Number	%
Low (7-13)	10	8.33
Medium (14-20)	90	75.00
High (21-28)	20	16.67
Total	120	100.00

Four Field: Bees' diseases:

Results showed that highest score was (40) and the least was (10) with an average of (25). Bee's breeders were categorized according to their reaction to bee's diseases as shown in table (6).

Table (6) shows that category of highest percent was moderate (20-29) with a rate of 54.17% and the least was low (10-19) with a ratio of 22.50% meaning that researchers regarding reality of breeding bees is moderate tends to high. The reason may be that bee breeders follow correct recommendations when it comes to diseases of bees. State of breeding bees is acceptable.

Table 6. Distribution of respondents according to field of bees' diseases

Categories	Number	%
Low (10-19)	27	22.50
Medium (20-29)	65	54.17
High (30-40)	28	23.33
Total	120	100.00

Fifth Field: Marketing honey:

Results showed that highest score in this field was (36) and the least was (9) with an average of (140). Researchers were categorized as shown in table (7).

Table (7) shows that moderate category (18-26) got highest score 41.67% and low category (9-17) got the lowest score 25% meaning that bee breeders level is moderate tends to high due to their information about bee breeding.

Table 7. Distribution of respondents according to field of marketing honey

Categories	Number	%
Low (9-17)	30	25.00
Medium (18-26)	50	41.67
High (27-36)	40	33.33
Total	120	100.00

3- Arrange research fields according to answers of respondents:

Four aspects of research were arranged according to answers given by bee breeders as shown in table (8).

Table (8) shows that running an apiary came first according to respondents answers meaning that bee breeders have enough information and skills of breeding bees.

Table 8. Arrange the research items according to the answer of respondents

Categories	Mean	Sequence
Running apiary	3.70	1
Bees' diseases	3.20	2
Building apiary	3.10	3
marketing	2.90	4

4- Know the correlation between the reality of bee breeding and independent variables:

1- Academic achievement:

Respondents were categorized according to academic achievement as shown in table (9):

Table (9) shows that highest number was BSc. Agriculture with (20.83%), reads and write (8.33%) the lowest. Results also showed there is correlation between reality of bee breeding and variable of academic achievement. Spearman rank conjunction factor value was (*0.014) it is significant at (0.05), thus rejecting null hypothesis stating that no correlation significant between state of bee breeding and academic achievement variable. Meaning that academic achievement of bee breeder plays a great role in correct and scientific application in bee breeding due to academic information's respondents got and being open to private sources of bee breeding.

Table 9. Distribution of respondents according to their breeding of bee and it is relationship with their academic achievement

Categories	Number	%	Spearman rank conjunction factor rs
Reads and writes	10	8.33	
Primary school	15	12.50	
Middle school	20	16.67	
Secondary school	15	12.50	
institute	20	16.67	
Bsc. agriculture	25	20.83	*0.014
postgraduates	15	12.50	
total	120	100	

2- Years of experience as a bee breeder:

Results showed that highest number of years spent was (30), the least (10) with an average of (20) years. Bee breeders were categorized according to their years of experience as a bee breeder as shown in table (10).

Table (10) shows that highest number was moderate sector (17-23) reaching (58.33%) while lowest was in high sector (24-30) scoring (16.67%). Results showed that there is no correlation between reality of bee breeding and years of experience as a bee breeder. Simple Pearson conjunction value (0.0094) it is not significant. Thus accept null hypothesis that there is no correlation significant between reality of bee breeding and years of experience as a bee breeder. Meaning that years spent as a bee breeder don't affect following correct scientific recommendations while other factors may affect following correct recommendations in bee breeding.

Table 10. Distribution of respondents according to their bee breeding and it is relationship with number years of experience as a bee breeder

Categories	Number	%	Simple Pearson conjunction value
Low (10-16)	30	25.00	0.0094
Medium (17-23)	70	58.33	
High (24-30)	20	16.67	
total	120	100.00	

3- Purpose of bee breeding:

Bee breeders were categorized according to purpose of bee breeding as shown in table (11).

Table (11) shows that highest number of researchers was in (as a job) scoring (45.83%) while (Do it as a hobby) with percent (8.34%). Results showed there is correlation between breeding bees and variable of purpose of breeding bees. Spearman rank conjunction value was (*0.024) it is significant at (0.01) level. Thus reject null hypothesis that there is correlation between state of breeding bees and purpose of having bees. Meaning that working as a bee breeder as a job and meet family needs of honey force bee breeder to follow correct instructions and recommendations to gain honey.

Table 11. Distribution of respondents according to their reality of breeding of bee breeding and it is relationship with purpose of bee breeding

Categories	Number	%	Spearman rank conjunction value
Do it as a hobby	10	8.34	*0.024
To meet my family needs of honey	15	12.50	
Improve family income	40	33.33	
As a job	55	45.83	
total	120	100.00	

4- Training courses:

Bee breeders were categorized into these three divisions shown in table (12).

Table (12). Shows that highest number was in trained constituting (70.83%) while untrained was lowest (29.17%). Results showed there is correlation between reality of bee breeding and between state of bee breeding and variable of training courses, the Spearman rank conjunction value was (*0.0171) it is significant at (0.05) level, thus reject null hypothesis stating that there is no morally significant relation between bee breeding and training variable, meaning that training courses that bee breeders take contribute in increasing their knowledge and information, help them to follow related instructions of breeding bees correctly.

Table 12. Distribution of respondents according to their reality of bee breeding and it is relationship with training courses

Categories	Number	%	Spearman rank conjunction value
Practiced	85	70.83	
Untrained	35	29.17	*0.0171
Total	120	100.00	

5- Sources of information:

Sample was categorized into the following divisions as shown in table (13).

Table (13) shows that reference that got highest number was (bee breeders association) (22.50%) while the lowest was (agricultural magazines) (1.67%). Analysis results showed there is no correlation between reality of bee breeding and sources of information about bee breeding. The Spearman rank conjunction value was (0.145), it is not significant. Thus accept null hypothesis stating that no morally significant relation is found between the state of bee breeding and sources of information, meaning that sources of information not play any role in increasing the knowledge of local bee breeders and help them to realize them on field.

Table 13. Distribution of respondents according to the reality of bee breeding and it is relationship with sources of information

Categories	Number	%	Spearman rank conjunction value
Brochures, leaflets and scientific references	5	4.17	
Internet	15	12.50	
Agricultural appliances suppliers	15	12.50	0.145
Guidance symposiums and agricultural training courses	10	8.33	
Agricultural institutes and colleges	10	8.33	
Agricultural tv and radio programs	3	2.50	
`bee breeders association	27	22.50	
Agricultural division or unit	10	8.33	
Agricultural magazines	2	1.67	
Agricultural guide and administrate of preserving plants	8	6.67	
Field explanations about bee breeding	3	2.50	
Other bee breeders	12	10.00	
Total	120	100.00	

4. CONCLUSIONS AND RECOMMENDATIONS

Results showed that bee breeders apply correct scientific recommendations of bee breeding, state of their bee breeding is acceptable. Researchers have efficient knowledge of running an apiary. The following independent variables (academic achievement, purpose of bee breeding, training courses) play a great role in application of respondents for correct Extension instructions. Authors recommend to work and enhance the information and knowledge of bee breeders in order to developing their knowledge in the in the breeding of bee in the research regions.

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Researchers' Contribution Rate Declaration Summary

The authors declare that they have contributed equally to the article.

Conflict of Interest Declaration

The authors declare that there is no conflict of interest between them.

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