ALEXANDRIA
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BEHAVIOUR OF SOME HONEY BEE RACES AND HYBRIDS IN HYGIENE AND GROOMING

BY

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A Thesis Submitted on Partial Fulfillment of the Requirements
Governing the Award of the Degree of
Doctor of Philosophy in Agricultural Sciences

In

(ECONOMIC ENTOMOLOGY)

PLANT PROTECTION DEPARTMENT

From

ALEXANDRIA UNIVERSITY

2021

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5. SUMMARY

5.1. Evaluation of varroa percentages on Adult workers and broods of honey bee colonies:

The guessing experiments were carried out to measure infestation percentages with *varroa* in honey bee colony inside the covered brood and on the adult workers and as well on the grooming and hygiene behaviour.
The regular examination of brood and adult worker samples from honey bee races under infestation with varroa mites in the different races were significantly different The mean of infestation percentages were high in Italian hybrid (19.20%), while the lowest infestation percentages were recorded in Egyptian hybrid (11%) and finally the of infestation percentages in Carniola and Egyptian (Upper Egypt) were moderate (12.2 &13.60), respectively.

5.2. Evaluation of groming for different selected strains:

The results in table (5) and figure (29) show the evaluation of grooming behaviour for the selected strain; local carniola hybrid, hybrid Italian local, Egyptian Upper Egypt and Egyptian Alexandria.

Statistical analyses showed that there is a highly significant differences between the Hybrid Italian local strain and the Local carniola hybrid strain. In the same time there is no significant differences between the Egyptian Upper Egypt strain and the Egyptian Alexandria strain.

5.3. Evaluation of Hygienic behavior for different selected strains:

The data show that the highest mean percent of dead brood removed and uncapped after twenty four hours was for the Egyptian (upper Egypt) 40.4 which ranged from (40:42), its mean that is hygienic colonies. The lowest value was recorded for the hybrid Carniola local strain 34.2 which ranged from (30:39), its mean that is Non hygienic colonies. The hybrid Italian local strain and the Egyptian (Alexandria) recorded 34.4 and 39.8, respectively. The results of the mean percent of dead brood removed and uncapped were for the Egyptian (Upper Egypt) 94 which ranged from (98:95).

The lowest mean percent was recorded for the hybrid Carniola local strain 79 which ranged from (69:90).The Egyptian (Alexandria) colony and hybrid Italian local strain recorded 92 and 80 after 48 hours, respectively.

The results of the mean percent of dead brood not removed and uncapped after 24 hours show that The highest percent was recorded for the hybrid Carniola strain 65.8 which ranged from (61-70).The lowest value was recorded for the Egyptian (Upper Egypt) 59.6 which ranged from (58-61).The hybrid Italian local strain and the Egyptian (Alexandria) recorded 65.6 and 60.2 respectively.

The results of mean percent of dead brood not removed after 48 hours showed that the highest value was recorded for the hybrid Carniola local strain. 21 which ranged from (10-31) while the lowest value was recorded for the Egyptian (Upper Egypt), 6 which ranged from (2-10).The hybrid local Italian strain and the Egyptian (Alexandria) were recorded 20 and 8, respectively.

5.4. Biological activities of honey bee colonies during season 2017 and 2018:

5.4.1. Measured of pollen grains:

The collected pollen grains of the selected strains were measured during season 2017 showed that the highest mean of pollen grain was recorded in Egyptian Alexandria 142.77 (inch²) followed by Egyptian upper Egypt 109.31(inch²) then hybrid Carniola local 108.07 (inch²) and the lowest mean of pollen grains was recorded in hybrid Italian local strain 87.82 (inch²) . As well the data showed that the highest general mean of pollen grain during season 2018 was recorded in hybrid Italian local 202.84 followed by Egyptian upper Egypt 221.32 then hybrid Carniola local 190.09 and the lowest general mean was recorded in Egyptian Alexandria 183.04 (inch²) .

5.4.2. Measured of sealed broods:

The sealed brood of the selected races were measured during season 2017 showed that the highest mean of sealed brood during the season was Egyptian (upper Egypt) 591.17 (inch²) followed by hybrid Carniola local 572.55 (inch²) then Egyptian Alexandria 532.21(inch²) and the lowest mean of sealed brood was hybrid Italian local 494.59 (inch²) .

The means of the sealed brood of the selected races which measured during season 2018, showed that the highest mean of sealed brood was hybrid Italian local 619.52 (inch²), the medium mean were Egyptian upper Egypt 596.64 (inch²) followed by hybrid Carniola local 596.20 (inch²) and the lowest mean of sealed brood was Egyptian Alexandria 559.68(inch²).

5.4.3. Measured of honey yield:

The data showed that the highest mean of honey yield during season 2017 was hybrid Carniola local 1040.85 (inch²) followed by Egyptian Upper Egypt 1013.65 (inch²), then hybrid Italian local 487.33(inch²) and the lowest mean was Egyptian Alexandria ; while the data in 2018 showed that the highest mean of honey yield was Egyptian Upper Egypt 418.88(inch²) followed by hybrid Italian local 367.84 (inch²) then Egyptian Alexandria 303.16 (inch²). And the lowest mean of honey yield during season 2018 was hybrid Carniola local 294.80 (inch²).

5.5. Hatchability rate:

5.5.1. The hatchability rate of selected strains during seasons 2017:

a. The hatchability rate of hybrid Carniola local:

The hatchability rate is high in September due to the flowering season of *schinus molla* which recorded 1799.88 while the lowest hatchability rate was in March 888.25 due to the

lack of flowering, the same time the hatchability rate recorded moderate numbers ranged from 1199.23 to 1527.17in the rest of the season**.**

b. The hatchability rate of hybrid Italian local:

The hatchability rate is high in August and September 1589.50 due to the flowering season of *schinus molla* while the lowest rate was in March which recorded 748.00. The same time the hatchability rate recorded moderate numbers ranged from 929.81 to 1199.98 in the rest of the season.

c. The hatchability rate of Egyptian Upper Egypt:

The hatchability rate is high in September 1799.88 due to the flowering season of *schinus molla* while the lowest rate was in March which recorded 810.33. While the hatchability rate recorded moderate numbers ranged from 1254.46 to 1527.17 in the rest of the season.

d. The hatchability rate of Egyptian Alexandria:

The hatchability rate is high in September 140.29 due to the flowering season of *schinus molla* while the lowest rate was in March which recorded 763.58. While the hatchability rate recorded moderate numbers ranged from 1028.50 to 1402.50 in the rest of the season.

5.5.2. The hatchability rate of selected strains during seasons 2018:

a. The hatchability rate of hybrid Carniola local:

The hatchability rate is high in June which recorded 1694.00 while the lowest hatchability rate was in October 816, the same time the hatchability rate recorded moderate numbers ranged from 1043.63 to 1497.38in the rest of the season**.**

b. The hatchability rate of hybrid Italian local:

The hatchability rate is high in May 1648.63 and April 1633.30 while the lowest rate was in October which recorded 9813.3. In the same time the hatchability rate recorded moderate numbers ranged from 1149.50 to 11557.50 in the rest of the season.

c. The hatchability rate of Egyptian Upper Egypt:

The highest hatchability rate recorded in April 1595.69 while the lowest rate was in October which recorded 1270.50.While the hatchability rate recorded moderate numbers ranged from 1172.19 to 1542.75 in the rest of the season.

d. The hatchability rate of Egyptian Alexandria:

The hatchability rate is high in August 1504.94 due to the flowering season of *schinus molla* while the lowest rate was in October which recorded 862.13. While the hatchability rate recorded moderate numbers ranged from 1051.19 to 1451, 19 in the rest of the season.

5.6. Different values of RNA for selected strains:

5.6.1. Polymerase Chain reaction (PCR) using different primers:

Different values of pUf68* primer in the four strains. The highest value was 0.998 Egyptian (Upper Egypt), followed by 0.981 Hybrid Italian local then 0.979 Egyptian (Alexandria) and the lowest value was Hybrid carniola local 0.957.

The different values of Vg* primer in the four strains. The highest value was 0.975 Egyptian (upper Egypt) followed by Egyptian (Alexandria) 0.973 then Hybrid Italian local 0.962 and the lowest value was Hybrid carniola local 0.951.

The different values of Hym* primer in the four strains. The highest value was 0.970 Egyptian (Upper Egypt), followed by Egyptian (Alexandria) 0.959 then Hybrid carniola local 0.940 and the lowest value was Hybrid Italian local 0.935.

The different values of BICH* primer in the four strains. The highest value was Egyptian (upper Egypt) 0.963 followed by Egyptian (Alexandria) 0.954 then Hybrid Italian local 0.928 and the lowest value was Hybrid carniola local 0.898.

The different values of BICH* primer in the four strains. The highest value was Egyptian (upper Egypt) 0.963 followed by Egyptian (Alexandria) 0.954 then Hybrid Italian local 0.928 and the lowest value was Hybrid carniola local 0.898.